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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

November 5, 1985

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 5, 1985 Volume 1060 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1060 OG 2
Notice of Maintenance Fees Payable	1060 OG 2
Reissue Applications Filed	1060 OG 3
Requests for Reexaminations Filed	1060 OG 3
Service by Publication	1060 OG 3
Errata	1060 OG 3
Application for Recordation of Trade Name	1060 OG 3
Plant Life — Patentable Subject Matter	1060 OG 4
Patent Certificates of Correction	1060 OG 5
Erratum	1060 OG 5
Disclaimers	1060 OG 5
Errata	1060 OG 5
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1060 OG 6
Condition of Patent Applications	1060 OG 7
Reexaminations	1
Defensive Patent Publications (106,001)	5
Reissue Patents Granted (32,017)	7
Plant Patents Granted (5,579)	11
Patents Granted	
General and Mechanical (4,550,445)	13
Chemical (4,551,150)	259
Electrical (4,551,575)	381
Design Patents Granted (281,200)	481
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 54
Index of Applicants of Defensive Publications	PI 57
Classification of	
Patents (Including Reissues and Reexaminations)	PI 59
Designs, Plants and Defensive Publications	PI 62
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 63
Designs, Plants and Applicants of Defensive Publications	PI 64
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	
if paid before Oct. 5, 1985	$ 125.00
if paid on or after Oct. 7, 1985	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	
if paid before Oct. 5, 1985	500.00
if paid on or after Oct. 7, 1985	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Oct. 12, 1985	680.00
if paid on or after Oct. 15, 1985	750.00
International fees	
Basic fee (first 30 pages):	
if paid before Oct. 29, 1985	230.00
if paid on or after Oct. 29, 1985	280.00
Basic Supplemental fee (for each page over 30):	
if paid before Oct. 29, 1985	4.00
if paid on or after Oct. 29, 1985	6.00
Designation fee (for the first 10 national or regional offices):	
if paid before Oct. 29, 1985	55.00
if paid on or after Oct. 29, 1985	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Aug. 28, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 2, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,356,569 through 4,357,713
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,397,648, Re. S.N. 762,051, Filed Aug. 2, 1985, Cl. 604/253, DROP SENSING UNIT AND ASSOCIATED DRIP CHAMBER FOR IV-FLUID ADMINISTRATION, Wallace L. Knute, Owner of Record: *IVAC Corp., San Diego, Calif.*, Attorney or Agent: Edward J. Lynch, et al., Ex. Gp.: 336

4,404,589, Re. S.N. 770,396, Filed Aug. 28, 1985, Cl. 358/086, CABLE TELEVISION WITH MULTI-EVENT SIGNAL SUBSTITUTION, W. Andrew Wright, Jr., Owner of Record: *Information Resources, Inc., Chicago, Ill.*, Attorney or Agent: William E. Anderson, et al., Ex. Gp.: 261

4,493,661, Re. S.N. 774,661, Filed Sept. 11, 1985, Cl. 440/077, OUTBOARD ENGINE, Tomio Iwai, Owner of Record: *Yamaha Hatsudoki Kabushiki Kaisha, dba Yamaha Motor Co., Ltd., Shizuoka-Ken, Japan and Shanshin Kogyo Kabushiki Kaisha, Shizuoka-Ken, Japan*, Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 315

4,509,741, Re. S.N. 772,481, Filed Sept. 3, 1985, Cl. 272/069, HEIGHT ADJUSTABLE CRUTCH, Alfred A. Smith, Owner of Record: *Guardian Products Co., Inc., Hollywood, Calif.*, Attorney or Agent: William H. Pavitt, Jr., et al., Ex. Gp.: 331

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Who Cares, Inc., Ridgewood, N.Y., Reg. No. 1,030,885, for the mark "SIMON SEZ", Canc. No. 14,938.

Total Person Institute, Inc., Marrietta, Ga., Reg. No. 1,201,594, for the mark "NUTRIONICS and design", Canc. No. 14,659.

The Griffin Ltd., Estes Park, Colo., Reg. No. 1,137,867, for the mark "THE GRIFFIN LTD. and design", Canc. No. 14,816.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Erratum

The following registration number was erroneously listed as cancelled and restored to pendency as Trademark Application Serial No. 446,893, in the "Inadvertently Issued Registration Numbers" section of the Trademark Official Gazette of Sept. 10. 1985:

1,328,126 TM 208 Sept. 10, 1985

Consequently, Registration No. 1,328,126 is still active.

PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Oct. 7, 1985.

Erratum

The following registration number was inadvertently listed as canceled in the "Trademark Registrations Canceled, Section 8" section of the Trademark Official Gazette of Sept. 17, 1985:

1,088,841 TM 211 Sept. 17, 1985

Consequently, the above-identified registration is still active.

PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Sept. 23, 1985.

Department of the Treasury
United States Customs Service
Application for Recordation of Trade Name: "CRYOMEC, INC."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Application for Recordation of Trade Name
Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "CRYOMEC, INC." used by Cryomec, Inc., a corporation organized under the laws of the State of California, located at 1265 N. Kraemer Blvd., Anaheim, Calif. 92806.

The application states that the trade name is used in connection with the following goods, manufactured in the United States: pumps, particularly reciprocating and centrifugal pumps for cryogenic liquids, cryogenic vaporizers, and conversion systems for converting cryogenic liquids to a gas, and related equipment, including heat exchangers.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.
Date: Comments must be received on or before Nov. 23, 1985.
Address: Written comments should be addressed to the Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

STEPHEN PINTER,
Acting Director, Entry Procedures and Penalties Division.

Sept. 18, 1985.

Plant Life — Patentable Subject Matter

The decision by the Board of Patent Appeals and Interferences in Ex Parte Hibberd (Sept. 18, 1985) held that the Plant Patent Act (35 USC 161–164) and the Plant Variety Protection Act (7 USC 2321 et seq.) do not represent the exclusive forms of protection for plant life covered by these acts, and that there is no irreconcilable conflict between these plant-specific statutes and 35 USC 101. It is clear from the Board decision that plant life is not excluded from patent protection under 35 USC 101.

Accordingly, the Patent and Trademark Office is now examining applications including claims to plant life — e.g., plants per se, seeds, plant parts. To the extent that the claimed subject matter is directed to a "nonnaturally occurring manufacture or composition of matter — a product of human ingenuity" (*Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980)), such claims will not be rejected under 35 USC 101 as being directed to unpatentable subject matter.

Oct. 8, 1985.

DONALD J. QUIGG,
Commissioner of Patents and Trademarks—Designate.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 5, 1985

Re. 31,518	4,467,246	4,506,667	4,521,940
Re. 31,617	4,468,443	4,507,236	4,522,627
D. 279,128	4,470,831	4,507,886	4,522,662
D. 279,750	4,473,772	4,508,559	4,522,685
4,218,834	4,474,641	4,508,813	4,523,462
4,265,039	4,474,656	4,508,911	4,524,852
4,296,021	4,475,136	4,510,138	4,525,036
4,317,678	4,478,045	4,510,669	4,525,105
4,327,224	4,478,622	4,510,816	4,525,406
4,336,513	4,479,966	4,511,025	4,526,141
4,347,619	4,480,757	4,511,784	4,526,518
4,363,774	4,482,312	4,512,896	4,527,781
4,364,946	4,482,637	4,513,175	4,528,034
4,380,782	4,483,393	4,514,263	4,528,062
4,398,851	4,490,883	4,514,399	4,528,066
4,414,950	4,494,216	4,514,401	4,528,304
4,418,399	4,495,219	4,514,935	4,529,307
4,419,545	4,496,557	4,515,587	4,529,535
4,419,837	4,497,869	4,516,750	4,530,034
4,429,435	4,498,256	4,516,864	4,530,463
4,430,851	4,498,714	4,517,389	4,531,092
4,431,212	4,498,967	4,517,391	4,531,235
4,432,068	4,499,091	4,518,469	4,531,592
4,433,380	4,499,157	4,518,615	4,531,851
4,436,745	4,499,556	4,518,631	4,532,805
4,438,593	4,500,392	4,519,024	4,532,826
4,448,635	4,500,716	4,519,270	4,533,158
4,454,632	4,500,871	4,519,292	4,533,563
4,456,595	4,501,978	4,519,869	4,533,774
4,456,840	4,502,774	4,520,480	4,534,094
4,456,868	4,503,243	4,521,103	4,536,704
4,457,473	4,504,449	4,521,413	4,537,549
4,460,579	4,504,865	4,521,488	4,538,371
4,462,943	4,505,264	4,521,497	4,539,448
4,463,488	4,506,503	4,521,591	

Erratum

In the notice of Certificates of Correction appearing in 1058 OG 4, dated Sept. 24, 1985, Patent No. 4,505,434 should be corrected to read — 4,504,434 —.

Disclaimers

4,392,882.—*Hans-Jochem Riebel,* Wuppertal; *Ludwig Eue,* Leverkusen; and *Wilfried Faust,* Odenthal, all of Fed. Rep. of Germany. N-N-BIS(HALOACYL)-DIAZA-CYCLOAL-KANES FOR PROTECTING PLANTS FROM HERBICIDE DAMAGE. Patent dated July 12, 1983. Disclaimer filed Aug. 22, 1984, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to all claims of said patent.

4,474,317.—*Roy W. Lessard,* Apple Valley, Calif. PANTS RACK. Patent dated Oct. 2, 1984. Disclaimer filed May 10, 1985, by the *inventor.*

The term of this patent subsequent to July 2, 2000 has been disclaimed.

Errata

In the notice of Disclaimers appearing in the Aug. 13, 1985 Official Gazette (1057 O.G. 14) all references to Patent No. 4,474,317, should be deleted.

In the notice of Disclaimers appearing in the Aug. 13, 1985 Official Gazette (1057 O.G. 14) all references to Patent No. 4,392,882, should be deleted.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 30, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-07-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-30-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-05-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-27-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during September 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,399,406 to 3,403,405, inclusive

Plant Patents ..... Numbers 2,830 to 2,834 inclusive

REEXAMINATIONS

NOVEMBER 5, 1985

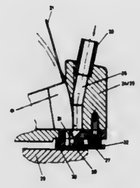
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,928,163 (411th)

SPARK DISCHARGE AND ELECTRO-CHEMICAL EROSION MACHINING APPARATUS

Werner Ullmann, Locarno; Bernd Schumacher, Losone; Silvano Mattei, Locarno-Solduno; Hans-Ueli Fenner, Ascona, and Arno Sieg, Locarno, all of Switzerland, assignors to A.G. fur industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

Reexamination Request No. 90/000,629, Sep. 17, 1984.
Reexamination Certificate for Patent No. 3,928,163, issued Dec. 23, 1975, Ser. No. 463,317, Apr. 23, 1974.
Claims priority, application Switzerland, Sep. 11, 1973, 13062/73
Int. Cl.[4] B23P *1/04, 1/08*
U.S. Cl. 204—206



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** and **13–16** is confirmed.

Claim **12** is determined to be patentable as amended.

New claims **17–24** are added and determined to be patentable.

1. An electro-erosion machine tool comprising a filamentary erosion electrode (**21**) and electrode guide and fluid delivery means, said electrode guide and fluid delivery means comprising a portion forming a guide for receiving said filamentary erosion electrode (**21**) and guiding movement of the electrode in the direction of the electrode axis, a portion defining an outlet for discharging a fluid medium alongside of said electrode in contact with the outer surface thereof and parallel to the axis thereof towards a working area of said electrode, and a portion providing duct means for leading said fluid medium from a supply conduit to said outlet in such a way as to cause said fluid medium to be discharged through said outlet as aforesaid when supplied from said supply conduit.

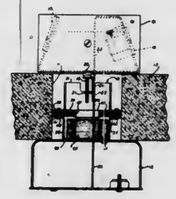
10. A spark-discharge erosion machine tool comprising supporting and guiding means (**1**) for supporting and guiding movement of a filamentary erosion electrode (**2**), fluid delivery means (**4**) which is positioned near the supporting and guiding means and which comprises portions defining an outlet for passing a dielectric flushing medium to a working area of said electrode to assist erosion thereby, collecting means (**5** and **6**) positioned and constructed for collecting used flushing medium passing from said working area, and a regeneration system which is constructed and arranged for receiving said used flushing medium from said collecting means, for regenerating it and for returning it to said fluid outlet means, the regeneration system including conductivity determining means (**12**) operably connected for determining the conductivity of said used flushing medium, and deionising means (**14**) which is connected for being brought into operation to deionise said used flushing medium under the control of said conductivity determining means when the conductivity of the used flushing medium rises above a predetermined level.

B1 4,099,020 (412th)

APPARATUS FOR SEALING PASSAGES THROUGH A CONCRETE FLOOR AND ABOUT A CONDUCTOR

John E. Kohaut, West Orange, N.J., assignor to Raceway Components, Inc., Nutley, N.J.

Reexamination Request No. 90/000,633, Sep. 21, 1984.
Reexamination Certificate for Patent No. 4,099,020, issued Jul. 4, 1978, Ser. No. 745,791, Nov. 29, 1976.
Continuation-in-part of Ser. No. 436,500, Jan. 25, 1974, Pat. No. 3,995,102.
Int. Cl.[4] A62C *3/16*
U.S. Cl. 174—48



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **2** is confirmed.

1. An insert device and apparatus for sealing passages through a floor, upon occurence of fire or excess temperatures, in a substantially solid structural member, said structural member having an opening formed therein and therethrough perpendicularly to the longitudinal axis thereof,

said insert device being adapted to be positioned in said opening, whereby cables may be passed through said insert device, and thereby through said structural member, said insert device comprising:

an insert housing proportioned to be so perpendicularly positioned in said opening in the structural member,

said insert housing including a wall member defining a continuous cable-receiving opening therein,

said wall member proportioned to be snugly positioned in said vertical opening in the structural member,

plate means in said housing positioned in said housing wall intermediate the length thereof and second plate means positioned at the lower end of said wall member,

said plate means having registering apertures therein for passage therethrough, and thus through the structural member, of cables,

an elongated hollow, cable-passage, fire-retarding member positioned on the second plate means and intermediate both plate means in alignment with said apertures therein,

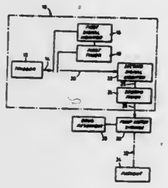
said fire retarding means formed of material enabling passage of cables therethrough at normal room temperatures, but automatically expanding and closing the opening therethrough and in said wall member and sealing the cables therein on occurence of excess heat or fire, thereby sealing the housing and said structural member opening.

B1 4,275,727 (413th)

DEVICE FOR MONITORING AND CONTROLLING SELF-ADMINISTERED INTRAVENOUS DRUG DOSAGE

Michael Keeri-Szanto, 10 Beechwood Pl., Apt. 612, London, Ont., Canada N6C 1H7.

Reexamination Request No. 90/000,379, May 10, 1983.
Reexamination Certificate for Patent No. 4,275,727, issued Jun. 30, 1981, Ser. No. 109,928, Jan. 7, 1980.
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—66



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 2 are cancelled.

[1. A device for monitoring and controlling the operation of a motorized syringe to dispense a predetermined drug dosage comprising:

(a) trigger means operable by a patient to initiate a demand signal indicative of a demand for an individual drug dose,

(b) first signal monitor means adapted to record the total number of occasions on which said demand signal is initiated by operation of said trigger means;

(c) first timer means for receiving said demand signal and selectively rejecting said demand signal or emitting said demand signal as an inject signal,

(d) second signal monitor means adapted to record the total number of occasions on which said first timer means emits a demand signal,

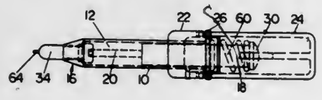
(e) second timer means for receiving said inject signal, said second timer means being operable on receipt of said inject signal to activate said motorized syringe for a preselected time period to dispense a predetermined individual dose of drug.]

B1 4,230,280 (414th)

EJECTOR HOLDER FOR CAPSULE-LIKE CARTRIDGE

Emery W. Dougherty, and Richard E. Welsh, both of Milford, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Reexamination Request No. 90/000,669, Nov. 13, 1984.
Reexamination Certificate for Patent No. 4,230,280, issued May 18, 1982, Ser. No. 252,558, Apr. 9, 1981.
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—90



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–4 is confirmed.

New claim 5 is added and determined to be patentable.

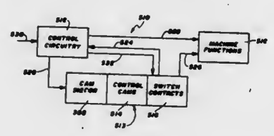
1. A manually operable ejector holder and a loaded capsule-like cartridge in which said cartridge has an annular collar on one end and a discharge tip on the other, and said holder comprising in combination, an elongated barrel, a plunger reciprocable therein and one end projecting beyond said barrel, manually operable lever means on one end of said barrel operable to reciprocate said plunger relative to the other end of said barrel, and said other end of the barrel being cutaway longitudinally a limited distance to provide a compartment having sidewalls extending a limited distance beyond the axis of said barrel, an undercut groove formed in said compartment within said sidewalls to receive the annular collar on said cartridge to prevent relative axial movement between said cartridge and compartment, and the outer longitudinally-extending portions of the sidewalls of said compartment having limited flexibility and extending toward each other a slightly lesser distance than the diameter of said cartridge to effect a snap-acting retaining means for said cartridge when inserted into said compartment.

B1 4,370,566 (415th)

APPLIANCE CONTROL SYSTEM

Leroy A. Perry, Danville, and Charles E. Scott, Noblesville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Reexamination Request No. 90/000,599, Jul. 30, 1984.
Reexamination Certificate for Patent No. 4,370,566, issued Jan. 25, 1983, Ser. No. 254,377, Apr. 15, 1981.
Int. Cl.[4] H01H *43/00*
U.S. Cl. 307—141



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 3, 5, 8, 9, 14 and 15 are cancelled.

Claims 1, 4, 6, 7 and 13 are determined to be patentable as amended.

Claims 10–12, dependent on an amended claim, are determined to be patentable.

1. A control system for an appliance having a plurality of different operational cycles, comprising:

cam operated switch means for controlling the coupling of electrical power to the appliance, said *cam operated* switch means including a plurality of rotatable cams for operating said *cam operated* switch means in response to the rotational position of said *rotatable* cams, said switch means being adapted for electrical rotation of said cams;

digital electronic control circuit means for controlling said electrical rotation, said *digital electronic* control circuit means including means for receiving a selection of any one of said cycles for the operation of said appliance; [and]

second circuit means *including at least one cam of* [coupled between] said *cam operated* switch means *coupled to* [and] said *digital electronic* control circuit means, *said cam* [and] responsive to said means for receiving *a selection of any one of said cycles* for supplying information on the rotational position of said [cams] *cam* to said *digital electronic* control circuit means to enable control of said electrical rotation in accordance with a cycle selection [.]; *and*

means transferring timing increments on said cams to said digital electronic control circuit for each event of a plurality of events of said cycle selection prior to termination of said event.

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 5, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T106,001
APPARATUS FOR THE ELECTROLYTIC GENERATION OF ALKALI ON BOTH SIDES OF A SUBSTRATE

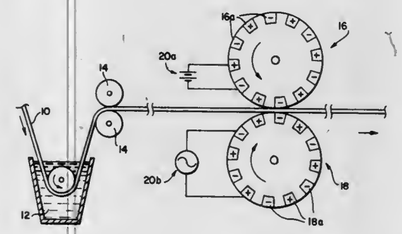
Kurt A. Dellian, 1201 Wakefield Rd., Greensboro, N.C. 27410

Continuation of Ser. No. 599,219, Apr. 13, 1984, abandoned, which is a continuation of Ser. No. 369,638, Apr. 19, 1982, abandoned. This application Nov. 7, 1984, Ser. No. 669,744

Int. Cl.[4] C25D *17/00*

U.S. Cl. 204—212

2 Sheets Drawing. 22 Pages Specification



An apparatus for the electrolytic generation of alkali on both sides of a substrate of hydrophilic material having applied thereto an alkali metal salt includes a pair of rollers positioned to rotate in contact with opposite sides of a substrate. Each roller has spaced around the periphery thereof a plurality of electrodes. Current of opposite polarities is applied to alternate electrodes on each roller, thereby to electrolytically generate alkali or acid on both sides of the substrate. The current may be DC, or alternatively may be AC at a low frequency. In an alternative arrangement the two rollers are replaced by a pair of endless belts of electrically conductive material positioned to move in contact with opposite sides of the substrate. An AC current at a low frequency is applied to the two belts, thereby to electrolytically generate alkali or acid on both sides of the substrate.

T106,002
SINGLE FLOAT STEP PHOSPHATE ORE BENEFICIATION

Alexander D. Mair, Rte. 7, Box 143, and Myra M. Soroczak, Rte. #9, Box 420, both of Florence, Ala. 35630

Filed Mar. 6, 1985, Ser. No. 708,914

Int. Cl.[4] B03B *1/00*

U.S. Cl. 209—9

No Drawing. 31 Pages Specification

A flotation process is taught for beneficiating phosphate ores containing, as impurities, silica and alkaline earth metal carbonates, particularly dolomite. Using a single flotation stage, the phosphate values are recovered in the overflow and quite unexpectedly both the siliceous and the carbonate gangue minerals are simultaneously removed in the underflow. Prior to flotation, surfaces of the minerals in the phosphate ore are selectively sulfidized with an insoluble copper-containing metal sulfide, permitting use of sulfide mineral collecting reagents such as alkyl xanthates in the flotation step to achieve a high degree of selectivity.

REISSUES

NOVEMBER 5, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

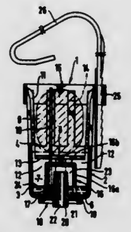
Re. 32,017
TOILET FLUSH WATER COLORIZER

Horst Hantmann, Neuburg, and Georg Schimanski, Hagen, both of Fed. Rep. of Germany, assignors to Globol-Werk GmbH, Neuburg, Fed. Rep. of Germany

Original No. 4,168,551, dated Sep. 25, 1979, Ser. No. 899,289, Apr. 24, 1978. Application for reissue Sep. 29, 1982, Ser. No. 427,493

Int. Cl.⁴ E03D *9/02*

U.S. Cl. 4—231 **8 Claims**



1. A toilet flush water colorizer comprising a container adapted for receiving therein a flush water-coloring block and having at least one entry opening *in the upper part of said container* for admitting *said* flush water thereinto and outlet means for the discharge of colored flush water from said container, said colorizer further comprising means for suspending said container at the inside of a toilet bowl, a diluting chamber in the lower part of the interior of said container and adapted for collecting drops of color concentrate dripping off a block after each flushing; supporting means in said container across the upper end of said diluting chamber and adapted for supporting a flush water-coloring block in the upper part of said container above said diluting chamber, said supporting means having at least one opening for permitting flush water to pass from the upper part of said container into said diluting chamber, said container having a bottom and side walls, said side walls being closed up to the upper end of said diluting chamber, and wherein said outlet means are located in the bottom of said container in communication with said diluting chamber and comprise siphoning means having a siphon passage the apex of which passage is below said upper end of said diluting chamber and below the level of said supporting means, said siphoning means being adapted for siphoning off flush water from said diluting chamber down to a minimum sump level.

Re. 32,018
METHOD OF PRODUCING SEALED PACKAGING CONTAINERS

Klaus Bomke, and Walter Saur, both of Ditzingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

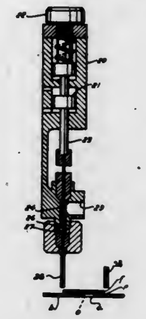
Original No. 4,290,253, dated Sep. 22, 1981, Ser. No. 104,898, Dec. 18, 1979. Application for reissue Mar. 8, 1982, Ser. No. 356,160

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856021

Int. Cl.⁴ B65B *51/02, 1/28, 3/18*

U.S. Cl. 53—480 **6 Claims**

8. A method of sealing a valve attached to a surface of a packaging container which valve includes two superimposed members one of which is attached to the container and having an opening communicating with the interior of the container and a second one being formed of a flexible material, said members when attached to each other forming a valve channel therebetween, the method comprising the step of applying a non-curing sealing fluid to at least one end of said channel to produce a fluid film in said channel, whereby, said flexible member may be lifted by expanded



gases which may occur in the closed container and said film may be broken to enable said gases to escape from said container and thereafter inherently reseal.

Re. 32,019
METHODS OF AND/OR MEANS FOR INDICATING THE LEVELS OF LIQUIDS

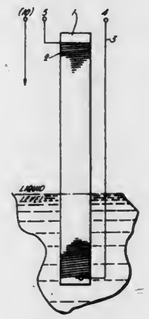
Dougald S. M. Phillips, and Peter A. J. Phillips, both of Hamilton, New Zealand, assignors to AHI Operations Limited, Manukau City, New Zealand

Original No. 4,229,972, dated Oct. 28, 1980, Ser. No. 42,106, May 24, 1979. Application for reissue Oct. 18, 1982, Ser. No. 434,851

Claims priority, application New Zealand, May 26, 1978, 187387

Int. Cl.⁴ G01F *23/24*

U.S. Cl. 73—304 R **15 Claims**



1. A method of indicating the level of an electrically conducting liquid milk in a vessel which contains a vertically disposed rod type resistor having adjacent lengths having an average cross sectional dimension between twenty and forty-five mm and a resistance of between three and thirty-two ohms per mm of length of the resistor, said method comprising the steps of (a) allowing the liquid *milk* to rise in the vessel in a manner such that the liquid *milk* interconnects the adjacent

lengths of the resistor thus changing the impedance of the resistor appearing at the terminals thereof, (b) measuring [that] *said* change of impedance and (c) converting [the] *said* change of impedance into a display which indicates change of level of liquid *milk* in the vessel, whereby said dimension enables the total area of the resistor in contact with the *liquid* milk to be sufficiently great to allow a good resistance connection to the *liquid* milk in contact with it and enables extremely small changes of impedance to be measured in step (b).

Re. 32,020
MULTIPLE-PURPOSE SAW BLADE SUSPENSION ARRANGEMENT FOR RECIPROCATING SAWS

Helmut Abel, 43 Ave. Berryer, 78600 Maisons-Lafitte, Paris, France

Original No. 3,878,876, dated Apr. 22, 1975, Ser. No. 431,930, Jan. 9, 1974. Application for reissue Apr. 18, 1983, Ser. No. 486,027

Claims priority, application France, Feb. 14, 1973, 73.05102; Apr. 9, 1973, 73.12617

Int. Cl.[4] B27B *19/02;* **B23D** *49/06*

U.S. Cl. 83—783 **10 Claims**



1. In a saw frame, a saw blade suspension arrangement for a saw blade (9) which is fixed at or adjacent its opposite ends to the saw frame (10), comprising

a clamping element (3, 5, 6, 7) located adjacent at least one end of the blade for attachment to the saw blade (9);

a fork-shaped element (2, 11, 14, 14') disposed at one end of said frame and rockably mounting said clamping element on the outside of the saw frame, to permit the saw blade (9) to extend through the fork gap to its opposite end attachment to maintain the clamping element in engagement, said rockable fork-shaped element and the clamping element being shaped to form a projecting fulcrum on one of said elements and a V-shaped or similarly shaped hollow seat in the other one of said elements, *the projecting fulcrum comprising a contact edge providing essentially a line contact with said V-shaped or similarly shaped hollow seat.*

Re. 32,021
SURGICAL RETRACTOR UTILIZING ELASTIC TUBES FRICTIONALLY HELD IN SPACED NOTCHES

Frank B. Scott, Jr., Houston, Tex., assignor to Lone Star Medical Products, Inc., Houston, Tex.

Original No. 4,274,398, dated Jun. 23, 1981, Ser. No. 38,469, May 14, 1979. Application for reissue Jun. 22, 1983, Ser. No. 506,624

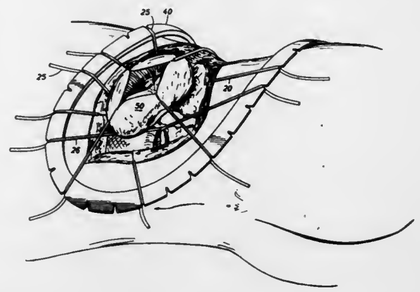
Int. Cl.[4] A61B *17/02*

U.S. Cl. 128—20 **8 Claims**

1. A surgical retractor for use in performing surgery upon a portion of the body having a surface contour, which comprises:

a generally annular frame conformed to fit the surface contour of the portion of the body to be operated upon, said frame having a periphery, said periphery having a plurality of notches having a width and depth spaced thereabout;

a stay which includes an elastic member having a length and a width and tissue holding means attached thereto, wherein the width of said elastic member is greater than the width of said notches such that said elastic member is held in place by friction when inserted into one of said notches; and



said elastic member includes a section of *hollow* elastic tubing and said tissue holding means including a hook having a handle portion inserted in said tubing.

Re. 32,022
ATOMIC ABSORPTION SPECTROSCOPY

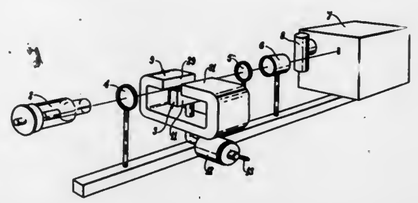
Clive Parker, Roseland, Fla.; Antony Pearl, deceased, late of Park Orchards, Australia, and by Edmund Calvert, administrator, 4 Withers Place, Weston, Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.

Original No. 4,341,470, dated Jul. 27, 1982, Ser. No. 810,232, Jun. 22, 1977. Continuation of Ser. No. 376,498, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 208,772, Dec. 16, 1971, abandoned. Application for reissue Jul. 26, 1984, Ser. No. 634,771

Claims priority, application Australia, Jan. 5, 1971, 364371

Int. Cl.[4] G01N *21/72, 21/74*

U.S. Cl. 356—307 **31 Claims**



31. Atomic spectrum analysis apparatus for elements exhibiting an anomalous Zeeman splitting characteristic including a light source made from an element exhibiting an anomalous Zeeman splitting characteristic, atomizing means for directing a cloud of an atomized sample into the path of a beam of light emitted by said source, photoelectric detection means for detecting and measuring the intensity of a selected spectral line of the atomic emission spectrum of said light source after said line has passed through said atomized sample, and transverse constant magnetic field means operative upon said atomized sample to cause anomalous Zeeman splitting of the absorption profile of said cloud of atoms, means to cause said photoelectric detection means to sense the effect of said splitting in the relationship between said selected emission line and a corresponding absorption line of said atomized sample, wherein said means to cause said photoelectric detection means to sense the effect of said splitting includes variable polarization means.

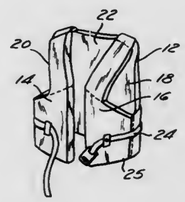
Re. 32,023
FLOTATION VEST

Robert G. Harr, Whittier, and Gaylord T. Soli, San Marino, both of Calif., assignors to America's Cup, Inc., City of Industry, Calif.

Original No. 4,380,441, dated Apr. 19, 1983, Ser. No. 239,460, Mar. 2, 1981. Application for reissue Feb. 6, 1984, Ser. No. 577,524

Int. Cl.[4] B63C *9/08*

U.S. Cl. 441—112 **23 Claims**



23. A flotation vest having an outer shell including a back section and left and right front sections joined to the back section at the top and at the sides to form arm holes, and internal buoyancy means carried by the shell and including front portions formed by at least four pieces of buoyancy material when properly fitted edgewise together, form a plurality of quadrilateral pieces such that waste material is minimized in cutting the pieces from rectangular sheets, the front buoyancy portions include a lower body piece and a shoulder piece carried by each of the left and right front sections, each of said body pieces having a lower edge, a central edge, a side edge, and an upper edge, each shoulder piece including a lower edge, an arm hole edge, a neck hole edge, and an upper edge, the shoulder piece lower edge being positioned to engage the body piece upper edge with said engaging edges being formed to engage at an angle such that the arm hole edge and the neck hole edge of the shoulder piece slope at an angle upwardly and outwardly away from the body piece central edge, wherein the width of a shoulder piece between the arm hole and neck hole edges being considerably less than the width of a body piece between its side and central edges a portion of the body piece upper edge forms an arm hole with the arm hole edge of a shoulder piece.

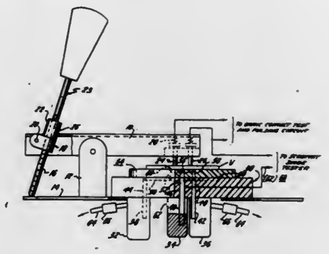
Re. 32,024
MERCURY PROBE

John H. Greig, Massapequa, N.Y., assignor to MSI Electronics Inc., Woodside, N.Y.

Original No. 4,101,830, dated Jul. 18, 1978, Ser. No. 768,824, Feb. 15, 1977. Application for reissue Jun. 21, 1979, Ser. No. 50,695

Int. Cl.[4] G01R *1/06, 31/02*

U.S. Cl. 324—158 F **17 Claims**



2. Electrical test apparatus [according to claim 1, wherein], *including means for supporting a test wafer at the face thereof to be tested, the supporting means providing a wafer-engaging face, a reservoir of mercury below said supporting means, means providing a passage from the reservoir through at least part of said supporting means to the wafer-engaging face thereof for enabling the mercury to contact said test face of the wafer, said passage means terminating in an aperture in said wafer-engaging face accurately determining an area of contact of the mercury to a wafer on said wafer-engaging face, said supporting means providing electrical insulation between the wafer and the mercury that contacts the wafer during use of the apparatus except for said determined contact area, means for developing a vacuum in the interface between the wafer-engaging face of said supporting means and the wafer near and at said aperture for drawing mercury from the reservoir to said contact area and for holding the wafer against said wafer-engaging face,* said supporting means [includes] *including* a chuck and a separate orifice plate on the chuck, a surface of said orifice plate providing said wafer-engaging face, said chuck and said orifice plate having aligned bores forming at least part of said passage means from the mercury reservoir to the wafer-engaging face, at least said orifice plate having a bore additional to said aligned bores providing part of said means for developing vacuum in the interface between the wafer-engaging face of said orifice plate and the wafer.

PLANT PATENTS

GRANTED NOVEMBER 5, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,579

ROSE PLANT 'SNOW BRIDE'

Betty J. Jolly, Sea Girt, N.J., and Nelson F. Jolly, Galena, Md., assignors to Jolly's Rosehill Farm of Kent, Inc., Galena, Md.

Filed May 23, 1983, Ser. No. 497,180
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by heavily petaled, relatively large, high centered, near white flowers with yellow-white toned centers borne primarily one to a stem.

5,580

CARNATION NAMED LONTRELOS

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,567
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct spray carnation plant, substantially as herein shown and described, characterized by the very light Orient Pink coloration of its small blooms which are produced profusely on long, straight and strong flowering stems; and by its vigorous and upright growth habit, abundant foliage and resistance to *Fusarium oxysporum*.

PATENTS

GRANTED NOV. 5, 1985

ERRATA

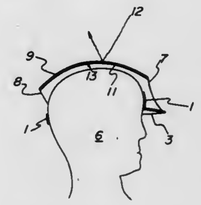
For CLASS	See PATENT NO.
623–001	4,550,447
623–016	4,550,448
623–016	4,550,449
623–018	4,550,450
426–656	4,551,351
250–396	4,551,599

PATENTS

GRANTED NOVEMBER 5, 1985

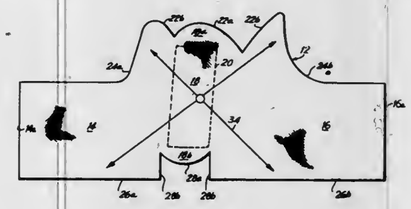
GENERAL AND MECHANICAL

4,550,445
VENTILATED ATHLETIC CAP
David A. Fender, 384 Pheasant Run Rd., Harleysville, Pa. 19438
Filed May 4, 1984, Ser. No. 607,265
Int. Cl.[4] A42C *5/04*
U.S. Cl. 2—181.6 6 Claims



1. A hat or cap comprising:
a headband of pliable, moisture-permeable material with tightness adjusting means;
a visor attached to said headband, said visor being formed from a semi-rigid material and shaped so as to incline downwardly from said headband, and in addition, to extend backwardly in an arcuate manner along each side so as to nearly encircle the head of the wearer;
a canopy of formed cloth elements or other semi-rigid materials attached to the outer edges of said visor, said canopy being formed from a plurality of elements having arcuate edges stitched or otherwise seamed together,
said canopy further comprising a radiation reflecting (light) outer material, and a radiation absorbing (dark) inner material,
and said canopy further having a semi-circular air vent in the front and a similar vent in the rear.

4,550,446
INSERT TYPE FOOTWEAR
Jack Herman, 3 Prince St., Spring Valley, N.Y. 10977
Filed Mar. 31, 1982, Ser. No. 364,010
Int. Cl.[4] A41B *11/00*
U.S. Cl. 2—239 7 Claims



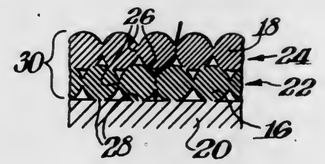
9. A sock-type article adapted to be worn on the foot within shoe-type apparel, comprising an article formed of lightweight flexible material which is waterproof to prevent moisture from entering into the interior thereof through said material, and which is breathable to allow water vapor to pass out from the interior thereof through said material, said article being formed from a one-piece pattern of said material whose edges are joined to each other at at least four seams of which none run adjacent to the sole or heel regions of the foot, and wherein said pattern includes a central region and a pair of side regions, said central region having rearward and forward peripheral edge regions which extend beyond the area to be contiguous to the sole and heel regions of the foot.

4,550,447
VASCULAR GRAFT PROSTHESIS
Louis Seiler, Jr., Huntington Beach, and Robert F. Rosenbluth, Laguna Niguel, both of Calif., assignors to Shiley Incorporated, Irvine, Calif.
Filed Aug. 3, 1983, Ser. No. 520,027
Int. Cl.[4] A61F *1/00;* B29G *7/02*
U.S. Cl. 623—1 9 Claims



1. A flexible, monolithic, polymer tube comprising:
a porous tube wall having a microstructure of interconnected nodes and fibers, and
a generally transverse regular, repeating pattern of external ribs on said wall, said ribs being an integral part of said wall and being less porous than said wall.
2. A vascular graft prosthesis comprising:
a flexible, monolithic, polymer tube, said tube having a wall and a closely spaced, generally transverse regular, repeating pattern of ribs on the external surface of said wall,
said wall, having a microstructure of interconnected nodes and fibers and having a porosity suitable for use as a vascular graft, and
said ribs being an integral part of said wall and being less porous than said wall.

4,550,448
BONE PROSTHESIS WITH POROUS COATING
Robert V. Kenna, Hackensack, N.J., assignor to Pfizer Hospital Products Group, Inc., New York, N.Y.
Filed Feb. 18, 1985, Ser. No. 350,130
Int. Cl.[4] A61F *1/00, 5/04*
U.S. Cl. 623—16 4 Claims



1. In a bone prosthesis comprising a substrate of a metallic material and a porous coating of said metallic material bonded to and extending over at least a portion of the surface of said substrate, with said porous coating consisting essentially of a multiplicity of spherical particles of said metallic material bonded together at their points of contact, and with said particles defining between themselves a plurality of connected interstitial pores extending through said porous coating to said surface of said substrate,
the improvement wherein said porous coating consists essentially of first and second layers of said particles, with the

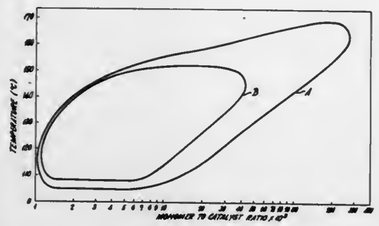
particles in said first layer being bonded to said substrate and said first layer being bonded to said second layer, the particles in said first and second layers being distributed upon said substrate and said first layer, respectively, at substantially uniform surface densities and the particles in said first and second layers being of from +30 to −20 U.S. Standard mesh size, and the distribution of said particles in each of said layers is such that, as determined by mercury intrusion porosimetry, the average pore size in said porous coating is from 390 microns to 465 microns, the volume occupied by pores in said coating of up to 200 microns in pore size is no more than 20 percent of the total volume of porosity in said coating, and the volume occupied by pores in said coating of 800 microns or more in pore size is no more than 14 percent of the total volume of porosity in said coating.

4,550,449

ABSORBABLE BONE FIXATION DEVICE

Deger C. Tunc, East Brunswick, N.J., assignor to Johnson & Johnson Products Inc., New Brunswick, N.J.

Division of Ser. No. 439,962, Nov. 8, 1982. This application Nov. 5, 1984, Ser. No. 668,042
Int. Cl.⁴ A61F *1/00, 5/04*
U.S. Cl. 623—16 **3 Claims**



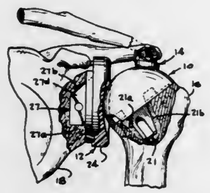
1. A resorbable bone fixation device capable of maintaining a tensile strength of at least 100 kilograms per square centimeter for 8 weeks after implantation in an animal body made from a poly L(−)lactide polymer having an inherent viscosity as a 1 percent solution in chloroform at 25° C. of from 4.5 to 10 and containing less than 2% of unreacted lactide monomer.

4,550,450

TOTAL SHOULDER PROSTHESIS SYSTEM

James G. Kinnett, 5534 St. Charles Ave., New Orleans, La. 70115

Filed Jul. 24, 1984, Ser. No. 634,482
Int. Cl.⁴ A61F *1/24*
U.S. Cl. 623—18 **23 Claims**



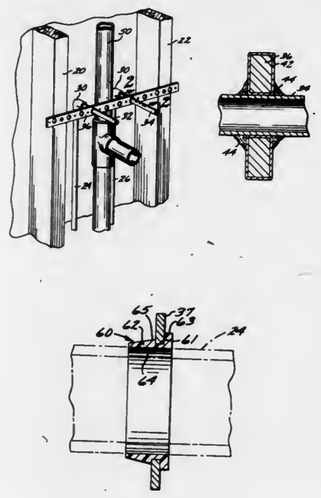
1. A total shoulder replacement prosthesis system for replacement of the articular surface portions of the humerus and glenoid and resurfacing of a portion of the acromion, comprising a humeral prosthesis component having a convex main body portion shaped to provide a complex generally hemispherical head formation defining a generally ovaloid rear face disposed generally perpendicular to a center axis of the component and a convex pseudo-hemispherical articulating front surface extending forwardly from the rear face, the humeral component having a fixation keel projecting integrally from the body portion from the mid region of said rear face for a distance substantially not greater than the maximum depth dimension of the pseudo-hemispherical head formation to be implanted on the proximal humerus portion of a shoulder and having a non-round cross-sectional configuration, a glenoid component formed of a two-part assembly of a rigid member and an articular member of plastic material shaped to provide a shallow concave articular surface to articulate with the front surface of the humeral component and having rounded corners bounding the concave surface and a rearwardly facing well and deflectable shouldered catch projections to nestingly receive a flat confronting face of the articular component in said well and interlock with said catch projections, said base member of the glenoid component having a rearwardly projecting integral fixation keel of similar shape and depth of projection as the humeral component keel to be implanted on the scapular portion adjacent the humerus, and an acromial component to be fixed on a resurfaced portion of the inferior aspect of the acromion formed as a two piece assembly of a rigid backing member and a plastic generally oval shaped facing member having a shallow concave articular front face and a rear face secured against a confronting face of the backing member, interfitting catch formations projecting from one to the other of the acromial component members to interlock them together, and the backing member having fixation projection formation means to be implanted in the resurfaced acromion portion.

4,550,451

UNIVERSAL PLUMBING PIPE LOCATOR AND SUPPORT

George R. Hubbard, 1855 Rockhoff Rd., Escondido, Calif. 92026

Continuation-in-part of Ser. No. 384,509, Jun. 3, 1982. This application Oct. 7, 1983, Ser. No. 540,007
Int. Cl.⁴ E03C *1/04*
U.S. Cl. 4—192 **17 Claims**



1. In combination with a pair of spaced apart building studs and an associated pair of pipes, an improved universal plumbing pipe locator and support for precisely and rigidly fixing said pipes permanently in position relative to said studs, said improved locator and support comprising:

an elongated supporting strap having upper and lower edges, and further having a first plurality of longitudinally aligned openings located between said upper and lower edges and extending the full length of said strap, said openings being spaced apart by a predetermined distance wherein said pipes are alignable and in registration therewith, said elongated supporting strap adapted to be dimensioned to a predetermined elongated length, said pipes projecting through a pair of said openings, said strap further having a second plurality of openings extending the full length of said strap;

fastener means extending through said plurality of openings and permanently fastenening said strap to said studs; and

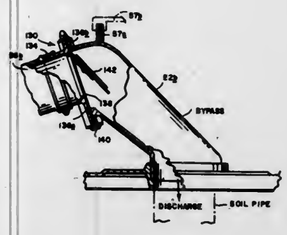
means fixing said pipes within said pair of openings, whereby said pipes are fixed in position in predetermined spaced apart relation for attachment to a pair of plumbing fixture conduits.

4,550,452

TOILET SYSTEM

Wesley M. Tufts, Holliston, Mass., assignor to Control Fluidics, Inc., Greenwich, Conn.

Filed Jan. 30, 1984, Ser. No. 575,072
Int. Cl.⁴ E03D *9/10*
U.S. Cl. 4—319 **3 Claims**



1. A toilet system comprising a toilet bowl having at the bottom a discharge opening, a treating chamber having an intake opening, a conductor connecting the discharge opening of the bowl to the intake opening of the treating chamber, an attrition member in the treating chamber, a discharge pump in the treating chamber for discharging treated effluent therefrom into a waste pipe, said conductor comprising a trap through which effluent is inducted by the discharge pump and a bypass conductor connected at one end to the trap and at its other end to the waste pipe containing a valve held closed by low pressure developed in the treating chamber by the discharge pump which is free to open in the event of a pressure head in the trap and a vent pipe connecting the top of the trap to the bypass conductor, a motor, means drivably connecting the attrition member and discharge pump to the motor for effecting simultaneous operation of the attrition member and the discharge pump, a valve connecting the bowl to a source of water operable to admit water to the bowl and means for sequencing of the valve and the motor to initiate operation of the attrition member and discharge pump, followed by operation of the valve to supply flush water to the bowl, terminate operation of the discharge pump and then close the valve.

4,550,453

COMPACT, PORTABLE DRAIN TO EMPTY AND CLEAN A RECREATIONAL VEHICLE HOLDING TANK

Howard M. Norman, Sacramento, Calif., assignor to Marion E. Norman, Sacramento, Calif., a part interest

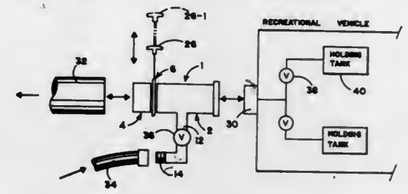
Filed Aug. 2, 1984, Ser. No. 636,968
Int. Cl.⁴ E03D *1/00*
U.S. Cl. 4—323 **8 Claims**

1. A drain to be interfaced with a recreational vehicle to permit the contents of a holding tank from said vehicle to be emptied, said drain comprising:

a hollow drain body defining a flow path communicating with the holding tank and through which the contents of said tank can pass,

flow control means to control the passage of the contents through the flow path of said drain body,

means by which to enable said flow control means to be moved to a first position at the interior of said drain body and across the flow path to block the passage of the holding tank contents therethrough or to a second position at the exterior of said drain body and out of said flow path to permit the passage of the holding tank contents therethrough, and



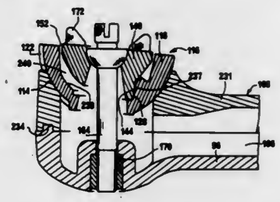
a fluid inlet communicating with said flow path for supplying to the holding tank a fluid for cleaning said tank after the contents thereof have been emptied, said fluid inlet interconnected at one end thereof with said drain body ahead of said flow control means and closer to the recreational vehicle than said control means, and said fluid inlet interconnected at another end thereof with a source of said fluid, said fluid inlet supplying fluid to said holding tank by way of said drain body only when said flow control means is moved to the first position across said flow path.

4,550,454

TOILET-BOWL BIDET APPARATUS

George M. Yui, 1543 Knareswood Dr., Mississauga, Ontario, Canada L5H 2L9

Filed Oct. 18, 1984, Ser. No. 661,976
Claims priority, application Canada, Oct. 18, 1983, 439212
Int. Cl.⁴ A47K *4/00, 3/20;* E03D *9/08*
U.S. Cl. 4—420.4 **14 Claims**



1. Bidet-apparatus, having a spray-apparatus, where the spray-apparatus is so disposed as to provide a stream of water directed upwards towards the perineum of a person using the bidet apparatus;

where the spray-apparatus includes a discharge outlet having a substantially continuous annular shape, the outlet being substantially non-adjustable as to its size;

where the spray-apparatus includes, upstream from the annular discharge outlet, a jet-member comprising several small nozzle-holes;

where the jet-member is adjustable to provide a range of volume flow rates from the annular discharge outlet, in that the nozzle-holes are adjustable as to size;

where the spray-apparatus includes a deflector, and where the nozzle-holes are so disposed in the spray-apparatus that water emerging from the nozzle-holes cannot pass

directly through the annular discharge outlet without first impinging against the deflector;

where the annular discharge opening is so dimensioned and arranged that the stream of water that emerges from the annular discharge opening remains as a coherent, coalesced, uninterrupted tube of water, with substantially no side-spray, over a substantial proportion of the said range of volume flow rates.

4,550,455

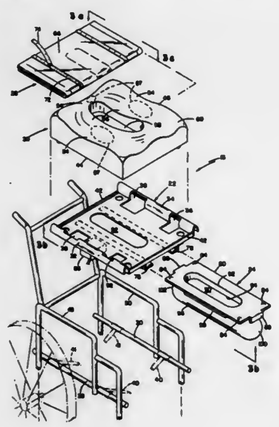
SLOSH DAMPENING WASTE RECEPTACLE FOR CHAIRS FOR CARE OF INCONTINENT PERSONS

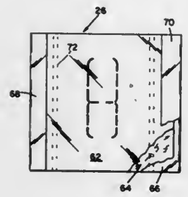
Donald W. Carson, Denver; Lee Penrose, Englewood, both of Colo.; Joseph E. Leich, Troy, and William C. Caugherty, Utica, both of Mich., assignors to Carson Medical Incorporated, Denver, Colo.

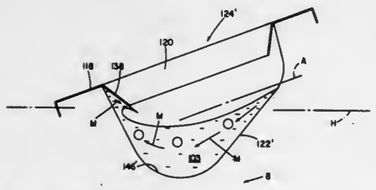
Filed Nov. 2, 1983, Ser. No. 548,227

Int. Cl.⁴ A47K *11/06*

U.S. Cl. 4—480 **5 Claims**







1. A wheelchair for an incontinent disabled person comprises an apertured seat disposed over a receptacle mounted to be removed from said wheelchair,

said seat comprising an upper detachable compliant seat member defining said aperture and an underlying, substantially rigid plate in supporting relationship to and having an elongated aperture corresponding with that of said compliant seat member,

said elongated apertures of said seat member and plate positioned to register with flow from the waste discharge passages of the person permanently seated-thereabove, and with said receptacle therebelow,

said receptacle disposed in waste-receiving relationship to said person being constructed and arranged to hold fluid discharges of said person, the inner surface of said receptacle being specially formed with concave sides to direct laterally-moving fluid waste in said container in a generally upward direction, and means for thereafter directing said fluid downwardly to permit spillage or sloshing due to motion of said chair or the motion of removal of said receptacle for emptying,

said receptacle being removable and replaceable via access means located below the level of the said support plate to enable emptying without disturbing said seated person, said receptacle having upper, sideways-directed portions slideably engaged for support with guides carried by said rigid plate.

4,550,456

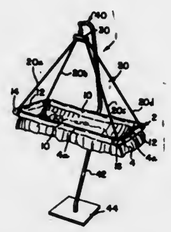
INFANT CRADLE ASSEMBLY

James E. Allen, 126 E. Colfax, Palatine, Ill. 60067

Continuation-in-part of Ser. No. 423,992, Sep. 27, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 577,559

Int. Cl.⁴ A47C *29/00*; A47D *7/00*

U.S. Cl. 5—98 B **10 Claims**



1. An infant cradle assembly comprising

a frame assembly having a plurality of parts capable of being disassembled;

bed means attached to said frame assembly and arranged to hang therefrom to form a bed;

a plurality of support cords being coupled to a plurality of points on said frame assembly and being arranged to be attached to a carrier;

said support cords being formed from a resilient material for inducing a multitude of motions on said frame means and said bed means while attached to a carrier;

said plurality of support cords comprise a pair of support cords having their opposite ends attached to opposed points on said frame means; and

a support sleeve through which an intermediate section of said support cords extend, said support sleeve further including means for attaching said sleeve to a carrier to support said frame assembly and said bed means.

4,550,457

RESTING DEVICE WITH ROTATABLE COVERING ENVELOPE

Hendricus W. A. Dukkers, Oude Entrepot 16, 1018 Ad Amsterdam, Netherlands

Filed May 22, 1984, Ser. No. 612,897

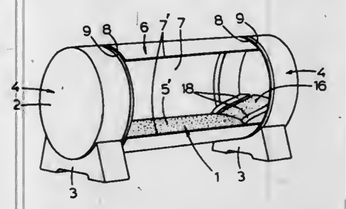
Claims priority, application Netherlands, Jun. 10, 1983, 8302073

Int. Cl.⁴ A47C *29/00*; A47G *9/00*

U.S. Cl. 5—414 **10 Claims**

1. Resting device, comprising an at least partly horizontal lying means extending at a distance above the ground and

connected at its end with uprights, which lying means is provided with an adjustably supported tube-shaped envelope, in which an opening is formed for getting in and out of the device, said envelope comprising on both sides an end ring, which end rings are supported within the uprights by support rollers, wherein the tube-shaped envelope is substantially formed as a circle cylinder which is rotatable about its at least approximately horizontal longitudinal axis, said support rollers having axes of rotation, which are parallel to said longitudinal axis, and wherein the lying means is connected on both sides to a stationary end cylinder, which is supported by a base member



and which is provided with a vertical end wall, each end cylinder forming one of the said uprights, said end cylinders being directed with their open sides towards each other and being coaxial with the intermediate rotatable cylinder, while each support roller is supported by a carrier, which is mounted within one of the base members and which is connected to this base member, the end rings extending over the whole circumference on both sides of the rotatable cylinder, while each end ring is at least partly received in a stationary outer ring with a slight play, each outer ring forming a part of one of the end cylinders and having openings for the support rollers.

4,550,458

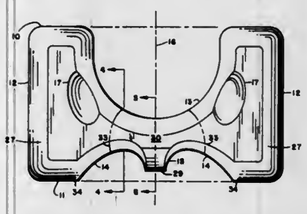
CERVICAL SUPPORT PILLOW

John W. Flore, 7240 Lem Turner Rd., Jacksonville, Fla. 32208

Filed Nov. 14, 1983, Ser. No. 550,804

Int. Cl.⁴ A47C *20/00*

U.S. Cl. 5—434 **19 Claims**



1. A flexible resilient pillow to support the cervical area of one using the pillow, said pillow having a central body terminated by a top edge and a bottom edge generally parallel to each other, a generally semicircular cutout section extending from said top edge into said body and adapted to receive the back of the head of the user, a pair of spaced sectorial cutout sections extending from said bottom edge into said body and adapted to fit over the shoulders of the user, said three cutout sections being generally symmetrical about an axis through said body and perpendicular to said top and bottom edges, said pillow having a narrow portion between said pair of cutout sections and terminating spacedly above and adjacent said bottom edge, said narrow section being pressed against the area of the back adjacent the seventh cervical vertebra of the user, said pillow further comprising a pair of spaced lateral wing portions extending laterally along said bottom edge from respective said pair of cutout sections to the lateral edges of said pillow, said wing portions adapted to extend forwardly of the respective shoulders of a user and thereby to apply anterior pressure onto said narrow portion and to apply a force against the cervical area of the back and the adjacent seventh vertebra restraining the spinal discs of the user from bulging.

4,550,459

ORTHOPEDIC PILLOW

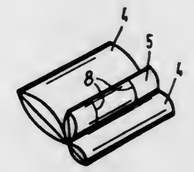
Dieter Endel, Konstanz, and Gerd Billerbeck, Wuppertal, both of Fed. Rep. of Germany, assignors to IBU Betten-Union GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 498,630

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220336

Int. Cl.⁴ A47G *9/00*

U.S. Cl. 5—437 **1 Claim**



1. An orthopedic pillow, comprising:

a generally rectangular main pillow portion having a stuffing with generally uniform thickness, this main pillow portion being bounded by an upper edge, a lower edge, and left and right side edges; and

an additional pillow portion having a stuffing with generally uniform thickness. this additional pillow portion being bounded by an upper edge, a lower edge, and left and right edges;

said additional pillow portion being substantially shorter in the direction extending between the upper and lower edges thereof than is said main pillow;

means operatively connecting said additional pillow portion to said main pillow portion so that:

said left edge of said additional pillow portion at least generally coincides with said left edge of said main pillow portion throughout at least part of the extent of each,

said right edge of said additional pillow portion at least generally coincides with said right edge of said main pillow portion throughout at least part of the extent of each,

said upper edge of said additional pillow portion is located substantially down said main pillow portion from said upper edge of said main pillow portion; and

said additional pillow portion, in a region extending substantially fully across the width thereof and throughout at least part of the height thereof in the direction extending between the upper and lower edges thereof is juxtaposed with said main pillow portion in such a manner as to provide a total pillow thickness throughout said region that is substantially greater than said generally uniform thickness of said main pillow portion;

said operatively connecting means comprising sewn seaming and said operatively connecting means leaves said additional pillow portion free of connection to said main pillow portion above the lower edge of said additional pillow portion, at least throughout a medial portion of said region having a substantial width;

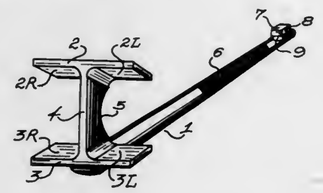
said means operatively connecting said additional pillow portion to said main pillow portion additionally leaving said lower edge of said additional pillow portion located up said main pillow portion from said lower edge of said main pillow portion;

said main pillow portion and said additional pillow portion being constituted by respective separate pillows, with the latter being superimposed upon the former; and

said additional pillow portion including left and right quilt-

ing seams applied through the thickness thereof extending approximately parallel to said left and right side edges thereof intermediate the width thereof bounding respective margins of said medial portion.

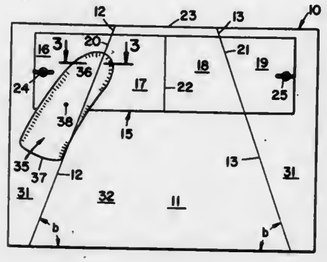
4,550,460
AIR BRAKE SLACK ADJUSTMENT AND MEASUREMENT TOOLS
Henry C. Smallbrook, 19255 Baker Rd., Bend, Oreg. 97702, and William E. Spicer, 2271 Key Cir., Sparks, Nev. 89431
Filed Jul. 5, 1983, Ser. No. 510,549
Int. Cl.⁴ B25F *11/00*
U.S. Cl. 7—164 **7 Claims**



1. An air brake adjustment tool for an air brake assembly including an air brake chamber, a slack adjustment pivotally supported at a first end thereof, and a clevis rod extending from said air brake chamber and pivotally attached at to a second end of said slack adjustment, said tool comprising: adjustment means having a handle portion and a gripper portion attached to said handle portion and adapted to engage said slack adjustment to move said slack adjustment between a braking position and a non-braking position, said gripper portion including a separated pair of jaw members attached to a first end of said handle and adapted to engage opposing edges of said slack adjustment, said jaw members being angled towards each other, said pair of jaw members of said gripper portion including a substantially planar inner jaw member coupled to said first end of said handle and a substantially planar outer jaw member, said gripper portion further comprising a connector member coupling said outer jaw member to said inner jaw member, said connector member being substantially planar and attached to said inner jaw member and said outer jaw member at substantially right angles, said connector member being substantially trapezoidal in shape having two, opposing parallel edges and two, opposing non-parallel edges, and wherein said inner jaw member is attached to a first of said non-parallel edges, and said outer jaw member is attached to a second of said non-parallel edges.

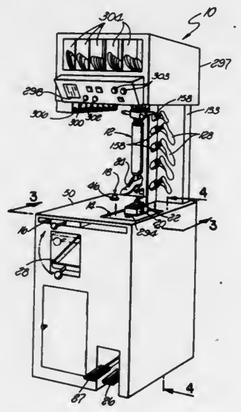
4,550,461
BIPLANE POSTING DEVICE
Kenrick J. Dennis, 376 Orange St., Oakland, Calif. 94610, and Robert A. Cooke, 341 Century Cir., Danville, Calif. 94526
Filed Jan. 23, 1984, Ser. No. 573,281
Int. Cl.⁴ A43D *39/00;* **A61F** *5/14*
U.S. Cl. 12—1 R **9 Claims**

1. A biplane posting device comprising:
a board having a flat upper surface, a front edge and a rear edge and indicia forming a straight line diverging from the rear edge and toward the front edge at a first angle; and
a thin plate overlying said upper surface, said thin plate having a planar portion parallel to said surface and in contact with it and a planar portion diverging from said upper surface at



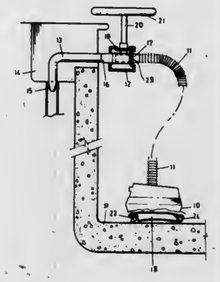
a second angle and with the line formed by the intersection of said planar surfaces overlying said straight line.

4,550,462
SHOE APPARATUS AND METHOD
Donald W. Phillips, Chateau Perigood 1 45 D 6 Laceto St. Leon, Monte Carlo, Monaco
Filed Sep. 30, 1981, Ser. No. 307,249
Int. Cl.⁴ A43D *87/00, 89/00, 95/22*
U.S. Cl. 12—17 R **67 Claims**



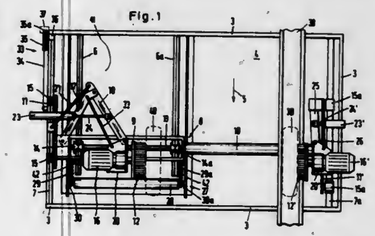
1. Apparatus for applying a wear portion to the underside of a shoe, comprising:
means for receiving a shoe;
means for locating an adhesive-coated wear portion in an initial position relative to the shoe, with the adhesive coating essentially opposite to and spaced from the underside of the shoe, including an actuating element carrying the wear portion and mounted for reciprocal movement toward and away from the shoe receiving means;
means for heating the wear portion in said initial position;
means for applying a first pressure to urge the actuating element and the shoe receiving means toward each other and urge the wear portion and the shoe together, said first pressure means comprising first lever means and means for transmitting tensile forces from the first lever means to the actuating element; and
means for applying a second pressure in situ through the force transmitting means to further urge the wear portion and the underside of the shoe together, the second pressure being greater than the first pressure.

4,550,463
STEERING DEVICE FOR A SUCTION CLEANING APPLIANCE
Johann N. Raubenheimer, Bedfordview, South Africa, assignor to Peacock Investments (Proprietary) Limited, Johannesburg, South Africa
Continuation-in-part of Ser. No. 480,392, Mar. 30, 1983, abandoned. This application May 16, 1984, Ser. No. 610,849
Claims priority, application South Africa, Jun. 16, 1982, 82/4243
Int. Cl.⁴ E04H *3/20*
U.S. Cl. 15—1.7 **3 Claims**



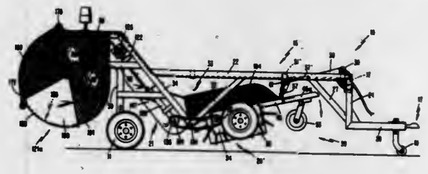
1. A steering device for a suction head for cleaning submerged surfaces which suction head is connected to a suction system by means of the flexible suction hose connecting with the head in a direction substantially normal to the surface to be cleaned and which has drive means which from time to time breaks adhesion of the head to the surface while causing the head to move, which steering device comprises a rotary swivel for interposition between the suction system and the suction hose, the swivel including a first member adapted to be fast with the suction system and the second member adapted to be fast with the suction hose and being rotatable relatively to the first member, and a manually operated device fitted to the second member by means of which the hose end connected to the swivel may be rotated.

4,550,464
DEVICE FOR CLEANING THE WHEELS PARTICULARLY THE RIMS OF A VEHICLE IN A CARWASH
Horst Messing, Lindlar, Fed. Rep. of Germany, assignor to Mr. Wash Auto-Service AG, Düsseldorf, Fed. Rep. of Germany
Filed Nov. 9, 1983, Ser. No. 549,854
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241559
Int. Cl.⁴ B60S *3/06*
U.S. Cl. 15—53 B **16 Claims**



1. An apparatus for cleaning the rims of laterally spaced wheels of a vehicle moving along a plane of travel in a car wash, comprising
means comprising a plurality of rotating cleaning brushes for pressing against respective of the rims of said wheels substantially in a direction perpendicular to the direction of travel of said vehicle in a cleaning process,
at least one driver drivable by at least one of said wheels,
a common carriage which is freely movable from a starting position in the direction of travel of said vehicle being operatively connected to said driver,
said plurality of brushes being mounted on said common carriage,
means for restoring said common carriage to said starting position,
said common carriage being actuated for moving along with the vehicle by at least one of said wheels via said at least one driver, the cleaning process commencing during said moving, and said common carriage being released via release of said driver from said at least one wheel at the end of said cleaning process whereupon said means for restoring returns said common carriage to said starting position,
said driver comprises a plurality of swing arms and a driver roller engageable by said at least one wheel for pushing said driver forward along with the movement of the vehicle,
a plurality of guide rails,
said driver roller being rotatably pivotally connected via said plurality of swing arms to a front portion of said common carriage and being operatively mounted on said plurality of guide rails,
each of said guide rails being bent downwardly at a downwardly bent portion thereof adjacent a portion of the car wash corresponding to the end of the cleaning process so as to cause lowering of said driver roller beneath said plane of travel of the wheels of the vehicle so that said at least one wheel of said vehicle passes over said driver roller releasing the latter and causing said means for restoring to return said common carriage to said starting position.

4,550,465
APPARATUS FOR COLLECTING LITTER AND OBJECTS FROM A GROUND SURFACE
Barney D. Chrisley, 742 Peach St., Abilene, Tex. 79602
Filed Mar. 8, 1983, Ser. No. 473,088
Int. Cl.⁴ E01H *1/00*
U.S. Cl. 15—84 **28 Claims**



1. Apparatus for collecting ground litter, comprising:
(a) a main frame including wheels supporting the frame for movement over the ground;
(b) front and rear rollers, and means for pivotally mounting the rollers to the main frame, each roller being driven in opposite direction to each other and respectively including plurality of fingers projecting outwardly therefrom a sufficient distance to contact the ground and lift objects engaged between adjacent fingers from the ground, said fingers on the front roller rotating upwardly into meshing contact with said fingers on the rear roller so that objects engaged between fingers of the front fingers by the rear fingers and entrapped between the rear fingers for transfer thereto;
(c) wiper means meshing with the front and rear roller fingers for dislodging objects entrapped between the fingers and to augment transfer of said objects towards said rear roller fingers, said wiper means including means

located to engage with the front fingers as the front fingers travel out of contact with the rear fingers to dislodge objects entrapped between the front fingers as the front fingers travel towards their uppermost position, said means being further located to direct said dislodged object onto the rear fingers;

(d) means on the main frame for storing objects lifted by the front and rear rollers; and

(e) means for conveying said objects from the rear roller to the storage means.

4,550,466

CLEANING ELEMENTS FOR INSIDE CLEANING OF THE TUBES OF TUBE-TYPE HEAT EXCHANGERS AND METHOD OF MANUFACTURING SAME

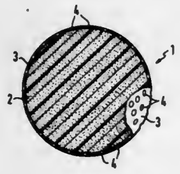
Günther Schmitz, Moers, Fed. Rep. of Germany, assignor to Taprogge Gesellschaft mbH, Düsseldorf, Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 494,665

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218254

Int. Cl.⁴ B08B *9/04*

U.S. Cl. 15—104.06 R **10 Claims**



1. Cleaning element for cleaning the interior of heat exchanger tubes by being carried along by a cooling water stream and automatically squeezed through the tubes by the cooling water stream, comprising a sphere with a center foamed in a closed mold, said sphere being formed of an open-cell sponge rubber core being condensed toward the surface of said sphere into a gradually denser open-pore water-permeable skin integral with said core.

4,550,467

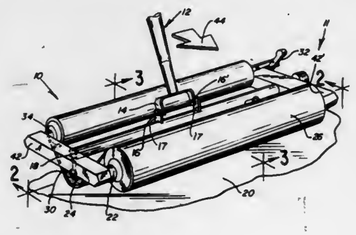
BOWLING LANE DUSTER

Richard H. Johnson, Muskegon, and George A. Muma, Casnovia, both of Mich., assignors to Brunswick Corporation, Skokie, Ill.

Filed Mar. 12, 1982, Ser. No. 357,603

Int. Cl.⁴ A47L *13/24*

U.S. Cl. 15—228 **15 Claims**



1. A lane duster, comprising:

a frame having a pair of spaced apart roller bars;

a center bar on the frame lying parallel to and located between the roller bars, the center bar having a handle pivot-hinged thereto;

pad means carried by the center bar and projecting below the plane of the roller bars, said pad means having a curved, downwardly facing surface and a foam covering on said downwardly facing surface;

one of the roller bars having a roll of cloth fabric wound therearound with the free end of the fabric being threaded below the pad means and onto the other roller bar, said pad means deforming so that the cloth fabric disposed below the pad means is continuously contacting and conforming to a bowling lane surface; and

the frame being pivoted about the line of contact of the pad means with the lane surface to selectively contact the fabric below one or the other of the roller bars with the lane surface to accommodate movement of the duster in opposite directions, said curved, downwardly facing surface maintaining the foam covering in contact with the bowling lane surface as the frame is pivoted and permitting effective lane dusting in each of said opposite directions.

4,550,468

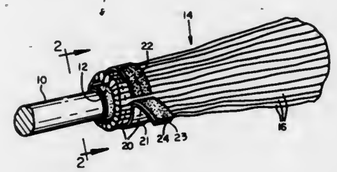
MOP

Marguerite D. Nelson, 415 N.E. 65th Ave., Portland, Oreg. 97213

Filed Oct. 12, 1984, Ser. No. 660,298

Int. Cl.⁴ A47L *13/20*

U.S. Cl. 15—229 A **4 Claims**



1. A mop comprising:

(a) a handle having opposite ends,

(b) a mop head having a floor cleaning end and an attaching end for attachment to one end of said handle,

(c) said attaching end comprising a wrap-around portion having inner and outer surfaces,

(d) and fabric-type interengaging releasable elements secured on each of said one end of the handle and on said inner surface of the wrap-around portion whereby the latter is arranged to be wrapped around said one end of the handle for engagement of said releasable elements for ready attachment to and detachment from said handle.

4,550,469

WINDSHIELD WIPER ASSEMBLY

Hans-Christian Deutscher, Ludwigsburg; Alfred Kohler; Hans Prohaska, both of Bietigheim-Bissingen, and Karl-Friedrich Schubert, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 6, 1981, Ser. No. 318,739

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045504

Int. Cl.⁴ A47L *1/02*

U.S. Cl. 15—250.34 **19 Claims**

1. A windshield wiper assembly for use with a motor drive unit comprising:

a wiper arm;

an elongated bushing member fixedly mounted relative to said wiper arm and having a central bore;

a shaft extending through and guided in said bore;

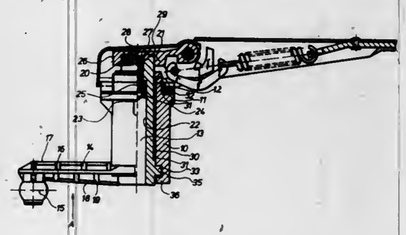
a driven unit coupled to one end of said shaft and to said wiper arm;

a drive member integrally formed on a portion of the other end of said shaft and extending radially outward therefrom, said drive member being coupled to said motor drive unit;

said shaft and said drive member being formed of plastic material;

said other end portion including a circumferential flange having an upper surface engaging a bottom surface of said bushing;

said bushing including a downwardly extending hook-shaped portion, said hook-shaped portion and said bottom surface cooperatively restraining axial movement of said shaft relative to said bushing;



said flange including a notch, said notch being of such dimensions and positioned on said flange such that said integrally formed drive member and shaft are assembled with said bushing by positioning said notch over said hook-shaped portion, by moving said shaft into said bushing until said flange upper surface engages said bushing bottom surface, and by rotating said integrally formed drive member and shaft relative to said bushing such that said hook-shaped portion engages said flange bottom surface.

4,550,470

COMBINED ROTARY DAMPER DEVICE INCLUDING A STORED ENERGY MECHANISM AND BRAKING MECHANISM

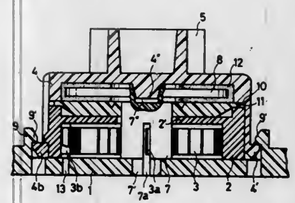
Nobuaki Omata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed May 29, 1984, Ser. No. 614,604

Claims priority, application Japan, Jun. 1, 1983, 58-95819

Int. Cl.⁴ E05F *5/02*

U.S. Cl. 16—85 **4 Claims**



1. A co-axial rotary damper device, comprising:

a plastic base plate adapted to be fixed to either a main body of a device to be served by said damper device or an opening-closing device used with said device,

a hollow plastic rotary cylinder rotatably disposed on said base plate and rotatable in either a clockwise or a counter-clockwise direction, separate damper plate means non-rotatably fixed relative to said base plate and positioned completely within said rotary cylinder thereby making said rotary cylinder subject to a braking force generated by said damper plate means and a viscous fluid when said rotary cylinder is rotated by a first suitable means activated by an opening or closing motion of said opening-closing device,

a coil spring fastened at one end thereof by a second suitable means to said base plate and connected by a third suitable means at the other end thereof to said rotary cylinder, said spring adapted to be wound and accumulate resilient force by the rotation of said rotary cylinder in one direction,

and a plurality of snap catch fastening means and cooperating shoulder means on said base plate and said rotary cylinder, respectively, to thereby insure rapid coaxial assembly of said rotary damper device.

4,550,471

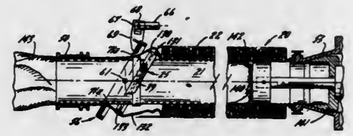
SHIRRED CASING ARTICLE

John H. Beckman, Downers Grove; George C. Haettinger, Lagrange, and Vytautas Kupcikevicius, Chicago, all of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 261,313, May 1, 1981, Pat. No. 4,467,499. This application Jul. 30, 1984, Ser. No. 635,614

Int. Cl.⁴ A22C *13/00*

U.S. Cl. 17—1 R **5 Claims**



1. A shirred casing article comprising:

a. a disposable tubular support including means for releasably mounting said support on a stuffing machine such that the product to be stuffed passes through said tubular support;

b. a shirred and compacted casing supply on said tubular support, said supply having an unshirred portion extendable forward over an end of said tubular support;

c. casing holdback means fixed on said tubular support adjacent said end and disposable within said unshirred portion, and said holdback means including a rigid member adapted to contact against the inner surface of said unshirred portion;

d. said member being movable with respect to said tubular support while within said unshirred portion between at least two positions for altering the contact between said member and said unshirred portion and for producing thereby casing holdback forces of at least two magnitudes; and

e. said member having a portion adapted for cooperative engagement with a stuffing machine control element pressable against the outside of said unshirred portion, and said member disposed within said unshirred portion being movable between said two positions responsive to said cooperative engagement.

4,550,472

APPARATUS FOR AND METHOD OF SHIRRING A TUBULAR CASING

Stephen Temple; Nigel J. Jones, and Alan N. Syrop, all of Cambridge, England, assignors to Devro, Inc., Somerville, N.J.

Filed Mar. 22, 1985, Ser. No. 714,772

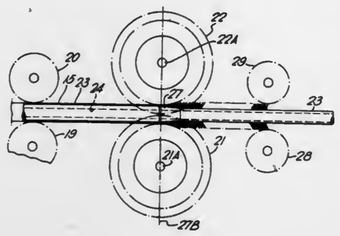
Claims priority, application United Kingdom, Mar. 30, 1984, 8408329

Int. Cl.⁴ A22C *13/02*

U.S. Cl. 17—1 R **13 Claims**

1. An apparatus for shirring a tubular casing comprising a mandrel along which an inflated casing is arranged to be fed, the mandrel comprising a cylindrical section having a uniform diameter followed, in the direction in which the casing is to be fed, by a section which tapers in the direction of casing feeding from the uniform diameter of the cylindrical section to a

smaller diameter, shirring means mounted at said tapered section for shirring said casing over said tapered section to reduce



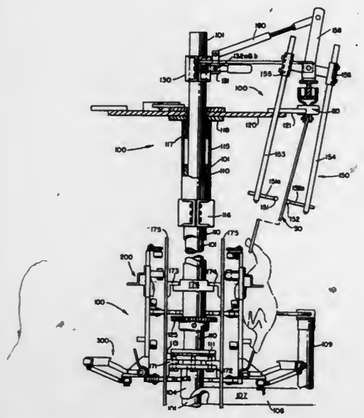
the inner diameter of the shirred casing to less than the uniform diameter of said cylindrical section.

4,550,473

POULTRY PROCESSING METHOD AND APPARATUS

Lacy W. Simmons, 101 Simmons Industrial Blvd., Dallas, Ga. 30132

Division of Ser. No. 284,087, Jul. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 873,370, Jan. 30, 1978, abandoned. This application Jul. 27, 1983, Ser. No. 517,811
Int. Cl.⁴ A22C *21/00*
U.S. Cl. 17—11 **9 Claims**



1. Processing apparatus adapted to be selectively engaged and driven by a moving processing line carrying successive objects to be processed, comprising:

(a) frame means supported for selective adjustment toward and away from a moving processing line;

(b) processing apparatus supported on said frame means, said processing apparatus including means for performing a processing operation on objects moving along said processing line;

(c) drive means on said frame means supported for selective engagement with said moving processing line, said drive means operable for effecting operation of said processing apparatus;

(d) adjustment means operatively connecting said frame means and said processing line, said adjustment means being operable for moving said drive means between operable and inoperable positions into and out of engagement with said moving processing line; and

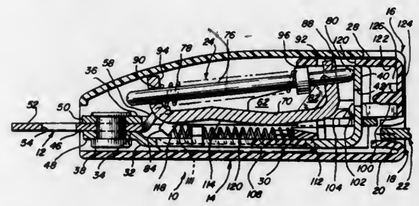
(e) adjustably supported guide means for guiding and holding objects to be processed in engagement with said processing apparatus when in an operable adjusted position and for guiding and holding objects to be processed out of engagement with said processing apparatus when in an inoperable position, wherein said guide means includes linkage support means operatively connected to said frame adjustment means whereby said guide means is automatically moved to said operable object guiding position in response to movement of said frame means into said operable line engaging drive position and is automatically moved to said inoperable object guiding position in response to movement of said frame means to said displaced inoperable position.

4,550,474

SAFETY BELT BUCKLE

Gerald A. Doty, Crown Point, and William E. Hunter, Jr., Highland, both of Ind., assignors to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Nov. 21, 1983, Ser. No. 553,763
Int. Cl.⁴ A44B *11/26*
U.S. Cl. 24—633 **10 Claims**



1. A safety belt buckle for retaining a tongue plate tip within its interior, the buckle comprising:

a frame means having an open forward end for receiving the tongue plate tip and an opposite rearward end for attachment to a belt end;

a latch mechanism movable between a latching position for retaining the tongue plate tip within the buckle and an open position for enabling the tongue plate tip to travel into or out of the buckle;

locking means movable between a locked position for securing the latch mechanism in its latching position and an unlocked position for enabling the latch mechanism to shift from closed position to open position; and

a push button for actuating the locking means from said locked position to said unlocked position to allow release of the tongue plate tip;

the latch mechanism comprising a pivoting latch plate having guide means thereon for guiding and supporting the locking means;

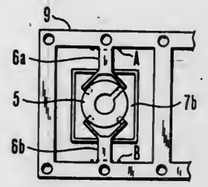
the locking means comprising an elongated locking member extending in a fore and aft direction and slidably mounted on the guide means on the latch plate, said locking member having a free end for sliding forwardly and rearwardly along the latch plate while the latch plate swings to bring the free end end of the locking member into and from locking engagement with the frame means, and spring means for automatically urging the locking member toward the locked position when the latch mechanism is in its latching position.

4,550,475

QUARTZ UNIT

Sumiyuki Ishigami, and Mitsuru Sato, both of Tokyo, Japan, assignors to Tokyo Denpa Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Goto Seisakusho, Kanagawa, both of, Japan

Division of Ser. No. 417,451, Sep. 13, 1982, Pat. No. 4,486,681. This application Jan. 3, 1984, Ser. No. 567,541
Claims priority, application Japan, Sep. 21, 1981, 56-150036
Int. Cl.⁴ H01L *41/22*
U.S. Cl. 29—25.35 **10 Claims**



1. A method of forming a quartz unit comprising the steps of forming flexible Y-shaped fittings from a piece of thin metal plate with the Y-shaped fittings comprising a common stem and a pair of branch parts each extending at an acute angle outwardly from one end of the stem with a support part on each of said branch parts at a location spaced from the connection of the branch part to the stem and with the support part bent out of the plane of the branch part approximately perpendicular relative to the branch part, arranging a pair of Y-shaped fittings with all of the support parts in a common plane and with the branch parts of one fitting extending generally toward the branch parts of the other fitting and the stems extending away from one another in opposite directions, placing a quartz vibrator on the support parts located in the common plane, and then bonding the quartz vibrator to the support parts, after the bonding step enclosing the quartz vibrator and at least the branch parts and support parts of the Y-shaped fittings within a pair of container parts having contacting surfaces, and next securing the contacting surfaces of the container parts together in a sealed and airtight manner.

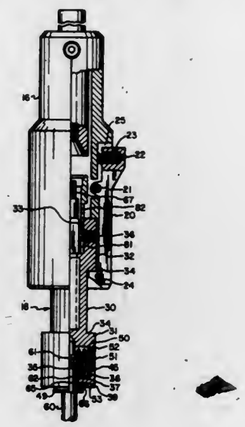
4,550,476

ADJUSTMENT MEANS FOR A DRIVER BIT

Charles J. DeCaro, Charlotte, N.C., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 466,637, Feb. 18, 1983, Pat. No. 4,491,443. This application Jan. 12, 1984, Ser. No. 570,280
Int. Cl.⁴ B23B *45/00;* B25F *1/10*
U.S. Cl. 29—26 A **7 Claims**

1. In an adapter for a torquing tool including an elongated body having a bore in at least one end to accommodate a working member and a coupling means for detachably attaching the body to the tool, the improvement comprising a depth adjustment bushing threadably engaged within said bore, said bushing including an externally threaded shank for engagement with said bore, an axial passageway through said shank, an axial slot extending through said shank in communication with said passageway and a hollow body section forward of said shank and a screw threadably engaged in a radial opening through the body into the bore whereby said working member is housed within said hollow body section and extends into said passageway, said bushing being rotatable so as to align the slot



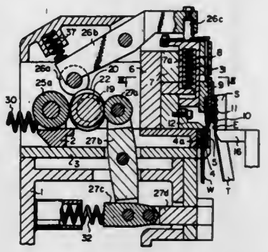
and the radial opening so that the screw can be tightened into engagement with the working member through said slot.

4,550,477

APPARATUS FOR FORMING AND PLANTING SLIDE FASTENER ELEMENTS

Kenichiro Iai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 296,822, Aug. 27, 1981, abandoned. This application Dec. 30, 1983, Ser. No. 566,997
Claims priority, application Japan, Sep. 25, 1980, 55-133478
Int. Cl.⁴ B21D *53/56*
U.S. Cl. 29—33.2 **3 Claims**



1. A high speed apparatus for forming and planting slide fastener elements comprising: a first ram mounted on a frame for reciprocal movement and having at the forward end thereof a cutting die provided with a passage for a wire to be used for fastener elements extending therethrough and a forming die for forming an engageable head in each element; a cutting punch placed on the upper surface of the first ram for relative movement between the cutting punch and the first ram so that the cutting punch cuts out each element having at least one outwardly extending leg from the wire as the first ram moves backward; a forming punch for forming the engageable head placed above the first ram so that it aligns with the forming die when the first ram is at the end of its backward movement; and a side punch means for engaging the at least one leg of each element and deforming it inward for planting the fastener element on a fastener tape, characterized in that the apparatus includes an output drive shaft having first ram drive cam means, forming punch drive cam means and side punch

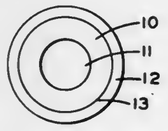
drive cam means; cam follower mechanisms connecting said cam means to the first ram, the forming punch and the side punch means, respectively; a second ram to which said forming punch is connected, said second ram being mounted for reciprocal movement in the direction perpendicular to the movement of the first ram and adapted to be actuated by the cam follower mechanism for the forming punch, said first ram drive cam means being so shaped that the first ram dwells for a predetermined time at the end of each forward and backward movement, the shapes of said cam means and their mutual relation being so selected that the side punch means engages and holds the at least one leg of the element during the dwell at the end of the backward movement of said first ram, begins deformation of the at least one leg during the forward movement of said first ram, and plants the at least one leg on the fastener tape when said first ram is at the end of its forward movement and the forming punch is actuated during the dwell at the end of the backward movement of said first ram.

4,550,478

TWO-PLY SPINNING COTS

Robert S. Olcott, Jr., Millersville, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 4, 1981, Ser. No. 290,013
Int. Cl.⁴ B21B *27/02*
U.S. Cl. 29—130 **4 Claims**



1. A two-ply spinning cot for mounting on an arbor of a spinning frame said cot comprising:

an inner layer comprising a resilient rubber composition, said inner layer having a hole disposed approximately axially through the center thereof to receive said arbor and having a Shore A hardness of from about 50 to 70, and

an outer layer comprising a butadiene-acrylonitrile rubber composition, said outer layer being bonded to said inner layer and having a Shore A hardness of from about 70 to 85,

said inner layer comprising from about ⅜ to ½ of the total thickness of said inner and outer layers, and said outer layer comprising from about ½ to ⅝ of said total thickness, said inner and outer layers having different Shore A hardness values.

4,550,479

PROCESS FOR THE PRODUCTION OF A HEAT TREATED BEARING RING

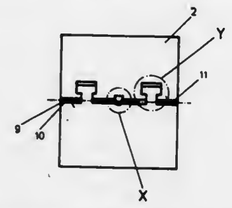
Lothar Walter, Schweinfurt, and Walter Reith, Bad Bocklet, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,190
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206126
Int. Cl.⁴ B21D *53/12*
U.S. Cl. 29—148.4 C **3 Claims**

1. A process for production of a heat treated bearing ring with a least one longitudinal slit extending axially therethrough, said slit being formed between two opposing ends facing one another in the circumferential direction, comprising:

stamping one or more flat band sections of a heat treatable strip material with at least one holding tongue and at least one fastening tongue extended on at least one opposing end, and at least one holding recess and at least one fastening recess on the opposite end, each holding and fastening recess having a shape substantially the same as the holding and fastening tongue, respectively, then

bending the band section to form a bearing ring with engagement of the tongues of the one opposing end in respective recesses of the opposite end along the longitudinal slit, the holding tongues and holding recesses engaging with a tight fit without play therebetween, said fastening tongues



and recesses engaging with circumferential and axial play therebetween, then

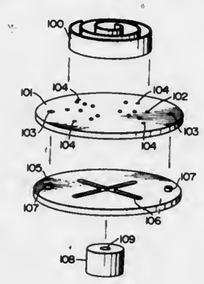
heat treating the bearing ring, said at least one fastening tongue and recess remaining engaged with said play therebetween during said heat treating, and then breaking off the at least one holding tongue of the bearing ring and releasing said tongue from its respective holding recess.

4,550,480

METHOD OF PRODUCING SCROLL TYPE COMPRESSOR

Minoru Tanikawa, Shimizu; Yutaka Imaizumi, Yaizu; Masami Suzuki, Shizuoka; Kazumi Aiba, Shimizu; Minoru Sato, Shimizu, and Mineo Takahashi, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1983, Ser. No. 497,868
Claims priority, application Japan, May 31, 1982, 57-91235
Int. Cl.⁴ B23P *15/00*
U.S. Cl. 29—156.4 R **3 Claims**



1. A method of producing an orbital scroll member of a scroll type compressor, with the compressor including the orbital scroll member and a stationary scroll member each having an end plate and a spiral wrap protruding upright from said end plate, said spiral wrap of the stationary scroll member being of substantially the same spiral shape as that of the spiral wrap of the orbital scroll member and being engaged by the spiral wrap of the orbital scroll member, the method comprising the steps of:

forming a spiral wrap for the orbital scroll member by cutting a strip of a length and breadth matching a desired spiral wrap and bending said strip in the spiral shape of the desired spiral wrap;

providing an upper half part of an end plate for the orbital scroll member;

forming by plastic working, on a surface of said upper half part, a plurality of projections constituting a discontinuous protrusion extending spirally substantially in conformity with the spiral form of the spiral wrap, forming a plurality of through holes for oil at portions of said upper half part which are to contact with a flange of the end plate for the stationary scroll member, and forming a plurality of locating holes through said upper half part near the outer periphery thereof;

placing said spiral wrap on said discontinuous protrusion of the upper half part and fixing said spiral wrap to said upper half part by resistance welding;

providing a lower half part of said end plate having the same external size as that of said upper half part;

forming by plastic working, in a surface of said lower half part adapted to contact with said upper half part, grooved oil passage means for permitting all of said oil holes of the upper half part to communicate with each other, and forming projections in a shape adapted to fit into said locating holes of the upper half part on said surface of said lower half part at positions corresponding to those of said locating holes;

securing uniting together said upper half part and said lower half part by fitting said projections of the lower half part into said locating holes of the upper half part;

providing a bearing boss formed with a bearing metal receiving bore adapted to communicate with said oil passage means of the lower half part; and

fixing said bearing boss to said lower half part of the end plate by welding and fitting a bearing metal into said bearing metal receiving bore in such a manner that said bearing metal receiving bore is held in communication with said grooved oil passage means of the lower half part.

3. A method of producing a stationary scroll member of a scroll type compressor, the compressor including an orbital scroll member and the stationary scroll member each having an end plate and a spiral wrap protruding upright from said end plate, said spiral wrap of the stationary scroll member being of substantially the same spiral shape as that of the spiral wrap of the orbital scroll member and being engaged by the spiral wrap of the orbital scroll member, the method comprising the steps of:

forming a spiral wrap for the stationary scroll member by cutting a strip of a length and breadth matching those of a desired spiral wrap and bending said strip in the spiral shape of the desired spiral wrap;

forming an end plate for the stationary scroll member by punching a sheet blank, and forming a flange from the remaining sheet blank after the punching of said end plate;

forming by plastic working, on a surface of said end plate, a plurality of projections constituting a discontinuous protrusion extending spirally substantially in conformity with the spiral form of said spiral wrap;

placing said spiral wrap on said discontinuous protrusion of the end plate and fixing said spiral wrap to said end plate by resistance welding;

providing a sleeve for the stationary scroll member having a stepped portion formed in a bore thereof at one end of the sleeve for receiving said end plate and another stepped portion formed at an outer peripheray of said sleeve at the other end thereof for receiving said flange constituting a surface adapted to contact with the end plate of said orbital scroll member;

fixing said end plate to said sleeve by brazing with said end plate fitted into said stepped portion at one end of the sleeve; and

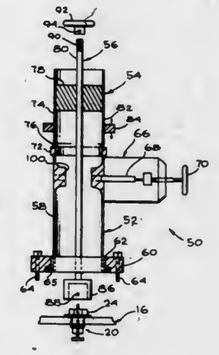
fixing said flange to said sleeve by brazing said another stepped portion of the sleeve fitted into the punched bore of the flange.

4,550,481

ELEMENT REMOVAL TOOL FOR SYSTEM CARRYING FLUID UNDER PRESSURE

Stephen W. Preston, 393 W. Marigold St., Altadena, Calif. 91001

Filed Dec. 27, 1983, Ser. No. 565,636
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—213 R **5 Claims**



1. A tool for replacing an axle box in a member such as a meter, or the like, in a gas distribution system carrying gas under pressure, said member, having, a flat surface carrying said axle box, said flat surface having threaded openings proximate to the periphery thereof;

a base sealing portion including a first pipe having first and second ends, said first end carrying threads and said second end carrying a flange;

said flange on said second end of said first pipe having openings therein for passing threaded bolts therethrough, said flat surface of said member having corresponding threaded openings for receiving said bolts and securing said flange directly to said member;

a gate valve included in said base sealing portion intermediate its first and second ends for controlling the flow of gas through said first pipe;

a stuffing box portion having a second pipe with first and second ends, said first end of said second pipe carrying threads sized and pitched to cooperate with said threads carried by said first end of said first pipe;

said stuffing box portion including a bleed-hole in the wall of said second pipe;

stuffing means carried in said second pipe between said bleed-hole and said second end of said second pipe, said stuffing means having an axial opening therethrough;

closing means for selectively closing said bleed-hole; and,

an element-removal portion including a shaft, a handle removably attached to said shaft at one end and a socket coaxially affixed to said shaft at its other end, said shaft being sized to hermetically seal said axial opening in said stuffing means, said socket being sized to firmly engage said element to be removed.

4,550,482

METHOD OF CONSTRUCTING A BEAM SPREAD LENS

Galen L. Buckley, Irvine, and Paul L. Fox, Whittier, both of Calif., assignors to Pyramid Optical, Inc., Irvine, Calif.

Filed Dec. 22, 1983, Ser. No. 564,566
Int. Cl.⁴ B23P *17/00*
U.S. Cl. 29—412 **1 Claim**

1. A method of constructing a lens of the type receiving a collimated beam of input radiation for transmitting a narrow sheet of output radiation of substantially uniform intensity over an angular range of approximately + and −45 degrees relative to the input radiation beam, the lens being constructed from an

optically transmissive material having an index of refraction no greater than 1.6; the method comprising the following steps:

a. selecting the number of lens surfaces that will be required to affect the incoming radiation beam for a given transmissive material,

b. providing each surface selected in step a. with lenticulations comprising alternating convex and concave elements having mathematically simple contours such as circular arcs,

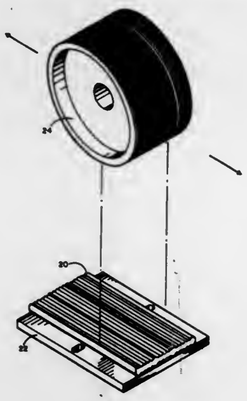
c. determining the output radiation angles of incident beam rays as a function of the distance along the exiting surface of a lenticulation element,

d. applying a modification factor to the output radiation angle spacing to achieve a desired output radiation intensity pattern as a function of angle relative to the input radiation beam,

e. determining the curve representing the altered output radiation spacing,

f. deriving the mathematical equation of the curve of the tangents of the slope angles of the lens surface as a function of the distance from the axis of the lenticulation elements,

g. integrating the equation determined in step f. to generate the equation of the lens surface element contour which provides the altered output radiation spacing,



h. repeating steps c. through g. for each additional lens surface element contour which must be also altered to achieve the desired output radiation pattern for the entire lens, and

i. defining the entire lens geometry in accordance with the results of steps a. through h.,

j. constructing a generating wheel for each surface selected in step a., each such wheel having a contour approximately equal to the obverse of the geometry for the corresponding surface as defined in step i.,

k. generating rough lenticulated surfaces on a plate of said transmissive material by rotating said generating wheels while each such wheel is in compressive linearly reciprocating engagement with the corresponding surface,

l. constructing a grinding fixture for each surface selected in step a., each such fixture having a contour approximately equal to the obverse of the geometry for the corresponding surface as defined in step i.,

m. grinding the respective surfaces of said plate of transmissive material with the corresponding grinding fixture while each such fixture is in compressive linearly reciprocating engagement with the corresponding surface,

n. polishing each of said surfaces, and

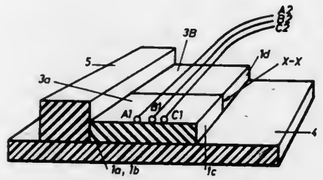
o. cutting said plate into a plurality of lenses.

4,550,483

METHOD OF MANUFACTURING A STRUCTURE WITH A FIXED AND A MOVABLE PART PROVIDED WITH OPTICAL FIBRES

Lars P. Ingre, Huddinge, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 9, 1983, Ser. No. 502,693
Claims priority, application Sweden, Jul. 1, 1982, 8204086
Int. Cl.⁴ B23P *17/00*
U.S. Cl. 29—416 **3 Claims**



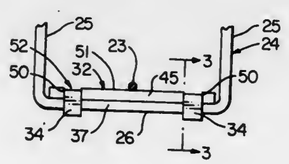
1. A method of manufacturing a structure including fixed and movable parts provided with optical fibres included in an optical fibre relay in which an optical switching function is performed by moving the movable part from an aligned rest position and relative to the fixed part in a direction at right angles to the axial direction of the fibres to a coupling position, said fibres (A1-A2, B1-B2, C1-C2) being fixed in mutually parallel relation and with a given spacing (δ) on a common carrier (1), said method comprising separating the carrier and the fibres along a cut at right angles to the axial direction of the fibres to form the fixed part and the movable part (*3a* and *3b*) such that mutually conforming fibre end surfaces are formed and mounting said parts for relative movement such that said end surfaces of said fibres are mutually opposing in said rest position after said cut, and upon a returning of the movable part to said rest position after the same has been moved to said coupling position, the fibre end surfaces are again in mutually opposing relation and in substantially the same position.

4,550,484

METHOD OF MAKING BRAKE SYSTEM ASSEMBLY FOR RAILWAY VEHICLE

Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 286,139, Jul. 23, 1981, Pat. No. 4,452,345.
This application Jun. 4, 1984, Ser. No. 617,045
The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—434 **3 Claims**



1. In a method of making a brake system for a railway vehicle comprising the steps of, providing a brake rod member, fastening a support structure for said brake rod member on said vehicle, said support having a horizontally disposed supporting member which is adapted to support said rod member for sliding movements thereon, providing an antifriction component made primarily of an ultra high molecular weight polymeric material, and attaching said component on one of said members, said component serving to minimize wear and enable

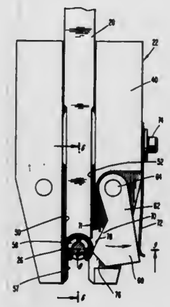
antifriction movements during said sliding movements, the improvement in which said step of providing said component comprises providing a solid elongated strip portion of substantially rectangular cross-sectional configuration, providing a cut-out slot extending inwardly from a top surface of said elongated strip, and said attaching step comprises providing self-contained U-shaped clip means and locking said strip portion against said supporting member with said self-contained U-shaped clip means and locking said strip portion against said supporting member with said self-contained U-shaped clip means, said clip means comprising a pair of resilient parallel legs and a locking projection extending from the outer end portion of each parallel leg toward the other parallel leg, said clip means being disposed during said locking step with said parallel legs embracing opposed vertical surfaces of said supporting member and with said projections snap locked beneath a bottom surface thereof, and said U-shaped clip has the bight thereof disposed in nested relation within said slot.

4,550,485

METHODS AND APPARATUS FOR INSTALLING A RADIALLY APPLIED RETAINING RING INTO AN EXTERNAL GROOVE OF A WORKPIECE

Edmund F. Killian, Merrick, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,559
Int. Cl.⁴ B23P *11/02, 19/04*
U.S. Cl. 29—450 **20 Claims**



19. A method of installing a retaining ring into a grooved workpiece comprising the steps of:

positioning said workpiece within a forwardly open slot of a base plate of an applicator such that a movable locator on said base plate projects into a groove of said workpiece,

retaining said workpiece against side surfaces of said slot which are spaced apart by a distance corresponding to a non-grooved diameter of said workpiece, so that said workpiece does not skew relative to said slot,

positioning a retaining ring within a channel aligned with said slot such that a split side of said ring faces said workpiece, and

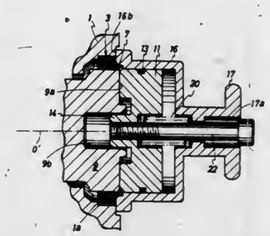
sliding a pusher forwardly within said channel and relative to said base plate to push said retaining ring forwardly into engagement with a cam surface of said locator to cam the latter out of said groove against a spring bias as said retaining ring enters said groove.

4,550,486

METHOD AND APPARATUS FOR MOUNTING OIL SEAL IN MACHINE HOUSING

Kenichi Yarimizu, Fukushima, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 567,979
Claims priority, application Japan, Jan. 24, 1983, 58-8923[U]
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—451 **10 Claims**



10. A method of ensuring the correct mounting of an unidirectional oil seal in a machine housing comprising biasing a hub member to extend outwardly beyond the end of a cylinder in which said hub member is slidable with a biasing force which is greater than the resistance encountered when said oil seal is fitted onto said hub member in a first orientation in which one side of said oil seal faces said cylinder, fitting said oil seal onto said hub member in said first orientation as said spring means urges extension of said hub member outwardly of said cylinder, transferring said oil seal from said hub member onto said machine housing such that the oil seal is thereby mounted in said machine housing in the ensured correct orientation as determined by the fact that the oil seal is capable of being fitted onto said hub member, attempting to fit an oil seal member onto said hub member in a second orientation in which the other side of said oil seal faces said cylinder, precluding fitting of said seal member onto said hub member by biasing said hub member with a biasing force which is less than the resistance encountered when said oil seal is attempted to be fitted onto said hub member in said second orientation, indicating that said second orientation is the incorrect orientation by the fact that the oil seal is incapable of being fitted onto said hub member, and reversing the disposition of the oil seal from said second orientation to said first orientation so that said oil seal is thereby capable of being fitted onto said hub member and subsequently transferred into and correctly assembled in said machine housing in the ensured correct orientation.

4,550,487

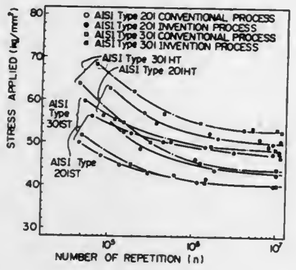
PROCESS FOR PREPARING STRIPS OR SHEETS OF HIGH STRENGTH AUSTENITIC STEEL HAVING IMPROVED FATIGUE STRENGTH

Kazuo Hoshino; Teruo Tanaka, and Kenjiro Ito, all of Yamaguchi, Japan, assignors to Nisshin Steel Company, Ltd., Japan

Filed Sep. 28, 1982, Ser. No. 425,621
Claims priority, application Japan, Oct. 21, 1981, 56-167059
Int. Cl.⁴ B23P *17/00*
U.S. Cl. 29—527.7 **1 Claim**

1. In the process for preparing cold-rolled strips or sheets of metastable austenitic stainless steel for use in the manufacture of rolling stock subject to high frequency vibrations comprising the known steps of casting a melt of the steel, producing a hot strip therefrom, annealing and pickling said hot strip, cold-rolling the hot-rolled strip, wherein pickling and annealing are properly performed, and finally temper-rolling the obtained

sheets, an improved process for producing steel sheets with improved fatigue resistance characterized in that the mechani-



cal polishing step of belt polishing is included before temper-rolling.

4,550,488

GANG HEAD TYPE MACHINE TOOL

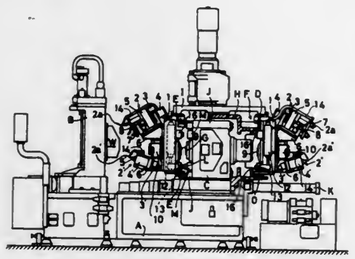
Takeshi Okubo, Sayama; Hideo Kodachi, Kodaira, and Masaki Miyanaka, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,236

Claims priority, application Japan, Dec. 12, 1981, 56-199484; Feb. 15, 1982, 57-21079

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **5 Claims**



1. A gang head means for a replaceable gang head type machine tool, said machine tool including a base, a jig table, driving means mounted on said base and movable to advance and retract with respect to said jig table, means for advancing and retracting said driving means, and annular rail means surrounding said driving means and holding plural gang head means, said annular rail means having a rear stationary rail and a movable front rail, said movable rail movable to advance and retract with respect to said jig table along the same direction as said driving means, each said gang head means comprising base frame means mounted on said movable rail, a working unit mounted on said base frame means and having at least one tool thereon, said driving means being provided for driving the gang head means which is on said movable rail, wherein said working unit is inclined at an angle, other than a right angle, with respect to the direction of advance and retraction of said movable rail, an oil pressure motor mounted on said working unit operatively driving said at least one tool independently of said driving means, and an oil pressure operated cylinder, said oil pressure cylinder being operatively coupled to said working unit for advancing and retracting said working unit with respect to said jig table independently of movement of said driving means.

4,550,489

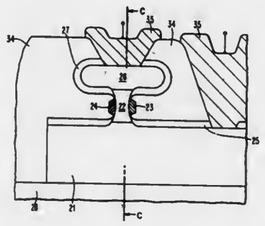
HETEROJUNCTION SEMICONDUCTOR

Barbara A. Chappell; Terry I. Chappell, both of Amawalk, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 324,240, Nov. 23, 1981, Pat. No. 4,460,910. This application Dec. 1, 1983, Ser. No. 557,015

Int. Cl.⁴ H01L *29/80, 29/48, 29/161, 29/06*

U.S. Cl. 29—571 **10 Claims**



1. In the manufacture of individual and functional groups of semiconductor devices, the improvement comprising the steps of:

providing a monocrystalline semiconductor body having lower first and an upper third external semiconductor layer, each forming a semiconductor carrier responsive heterojunction with a second central semiconductor layer, the thickness of said second central layer being of the order of the carrier transport distance of the semiconductor device being manufactured,

removing for each device a portion of said upper and said central layers on each side of a web,

removing for each web a portion of said upper layer at one end of said web,

photoetching said web to a specific transverse dimension, and

applying metal electrical contacts to at least one side of said web and to each of said external semiconductor layers in the vicinity of each said web.

4,550,490

MONOLITHIC INTEGRATED CIRCUIT

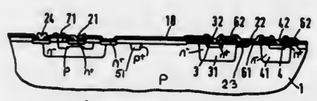
Lothar Blossfeld, Freiburg-Hochdorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 13, 1984, Ser. No. 599,946

Claims priority, application European Pat. Off., Apr. 18, 1983, 83103719.7

Int. Cl.⁴ H01L *21/265*

U.S. Cl. 29—571 **4 Claims**



1. A method of producing a monolithic integrated circuit comprising at least one integrated insulated-gate field-effect transistor whose drain zone and whose source zone of a second conductivity type are introduced into one surface of a semiconducting substrate of a first conductivity type, with at least one of said source or drain zones being surrounded by a partial zone of said second conductivity type which is doped weaker than said source or drain zones, said method comprising the steps of:

(a) forming a first ion masking layer on said substrate surface, with the aid of a first photoresist mask, said ion masking layer having openings over at least one partial zone area of said partial zones or the partial zone to provide non-covered portions of said substrate surface;

(b) implanting into said non-covered portions of the substrate surface ions of said second conductivity type in a dose corresponding to the doping of said partial zones;

(c) removing said first ion masking layer;

(d) annealing said substrate;

(e) producing an oxidation masking layer by employing a second photoresist mask, said oxidation masking layer covering the entire area of said field-effect transistor including the pn junction areas of the produced partial zones or partial zone only, said oxidation masking layer including at least a lower partial layer adjoining said substrate surface and an upper partial layer, said lower and upper partial layers being selectively etchable, and of which at least the lower partial layer is capable of being used as a gate insulating layer;

(f) oxidizing the unmasked portions of said substrate surface by forming an oxide layer;

(g) depositing a third photoresist mask;

(h) using said third photoresist mask as an etching mask, to expose a first zone area within a first one of said partial zone areas and/or a second zone area within a second one of said partial zone area of said substrate surface;

(i) employing said third photoresist mask as an implantation mask and implanting ions of said second conductivity type in a dose corresponding to the doping of said zones into the already implanted areas;

(j) removing said third photoresist mask;

(k) covering the surface of the arrangement including the oxide layer and the masking layer with a foreign oxide layer;

(l) activating the dopings by annealing;

(m) depositing a fourth photoresist mask comprising openings extending to said zones at predetermined distances in relation to the rim portions thereof, and to the portion of said oxidation masking layer lying above the gate area;

(n) removing the foreign-oxide layer within the openings of the fourth photoresist mask by etching selectively down to said upper partial layer or down to said lower partial layer and, within said zone area of said zone areas down to the said zones for the purpose of forming contact openings;

(o) depositing a conductive layer;

(p) depositing a fifth photoresist mask; and

(q) utilizing said fifth photoresist mask for etching at least electrodes out of said conductive layer.

4,550,491

METHOD OF MAKING SUBSTRATE INJECTION LOGIC OPERATOR STRUCTURE

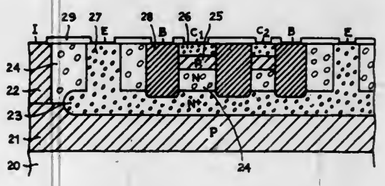
Maurice Depey, Paris, France, assignor to Thomson CSF, Paris, France

Continuation of Ser. No. 261,935, May 8, 1981, abandoned. This application Dec. 3, 1984, Ser. No. 677,885

Claims priority, application France, May 12, 1980, 80 10566

Int. Cl.⁴ H01L *21/74*

U.S. Cl. 29—577 C **6 Claims**



1. A process for manufacturing a substrate-fed logic operator, including a PNP injection transistor and an NPN multicollector transistor on a semiconductor wafer, comprising the steps of:

(a) providing a low-doped P-type substrate,

(b) boron implanting the substrate through a first masking layer to form a first P-type layer with high doping concentration,

(c) phosphorus implanting the substrate through a second masking layer covering part of the first P-type layer to form a second N-type layer having a high doping level, and annealing the wafer,

(d) forming, by epitaxy, a third N-type layer having a low doping level and overlying all previous layers,

(e) phosphorus diffusing the epitaxial third layer through a third masking layer to subsequently form an emitter access to the second N-type layer through said epitaxial third layer, and annealing,

(f) boron diffusing the third epitaxial layer through a fourth masking layer, to form a fourth P-type layer of high doping level, corresponding to base contacts and separation between collectors of said NPN multicollector transistor, said fourth layer subsequently diffusing down to said second layer,

(g) boron implanting said third epitaxial layer through a fifth masking layer to form a fifth P-type layer of intermediate doping level, corresponding to the base of said NPN multicollector transistor,

(h) introducing an N-type impurity in the epitaxial third layer through a sixth masking layer to form a sixth N-type layer of high doping level corresponding to collector regions of said NPN multicollector transistor, and

(i) forming metal contacts with said emitter access, with said fourth layer and with said sixth layer.

4,550,492

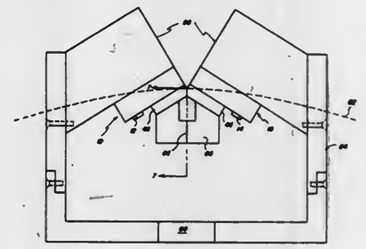
METHOD OF MANUFACTURING A MULTITRACK MAGNETIC HEAD

James U. Lemke, Del Mar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 254,249, Apr. 15, 1981, Pat. No. 4,477,853. This application Jul. 2, 1984, Ser. No. 610,906

Int. Cl.⁴ G11B *5/42*

U.S. Cl. 29—603 **3 Claims**



1. A method of making an integrated magnetic head comprising the steps of

(a) doping parts of a semiconductor wafer to form electronic components therein,

(b) depositing a film of magnetic material on parts of said wafer for cooperation with said electronic components,

(c) cutting said wafer into parts through said films of magnetic material,

(d) depositing non-magnetic material on one or more of the edges of said film formed by cutting said wafer into parts, and

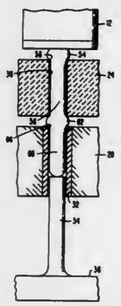
(e) holding said wafer parts in side-by-side relationship with said non-magnetic material therebetween so as to form a transducer gap between the two parts of said magnetic film.

4,550,493

APPARATUS FOR CONNECTING CONTACT PINS TO A SUBSTRATE

Russell E. Darrow, Endicott; Glenn J. Ingraham, Vestal, both of N.Y.; John D. Larnerd, Owego, N.Y., and Robert W. Nesky, Nicholson, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1984, Ser. No. 578,147
Int. Cl.[4] H05K *3/32*
U.S. Cl. 29—739 **14 Claims**



1. A device for forming a head and bulge on a predetermined end and an inner portion, respectively, of at least one elongated pin blank, each said blank being located in a mutually exclusive pin receiving hole of a workpiece and extending outwardly from first and second surfaces of said workpiece, said device connecting each said blank to said workpiece in each said hole between said head and bulge thereof, said device comprising:

a die block having a third surface and an opening aligned with each said hole of said workpiece, each said opening extending inwardly from said third surface and receiving therein the other end of a said blank, said third surface being spaced from said second surface of said workpiece,

means for restraining each said pin blank against axial movement;

spring means for resiliently supporting said workpiece adjacent said third surface of said die block;

first locating means for controlling a first distance extending between said first surface of said workpiece and said predetermined end of each said pin blank to provide a first predetermined length of each said blank therebetween;

second locating means for controlling a second distance extending between said second surface of said workpiece and said third surface of said die block to provide a second predetermined length of each of said blank therebetween; and

means for striking said predetermined end of each said pin blank at high speed with a predetermined energy to form said head and said bulge with said first and second lengths, respectively, of each said blank.

4,550,494

AUTOMATED PRINTED CIRCUIT BOARD ASSEMBLY METHOD

Robert S. Wilks, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

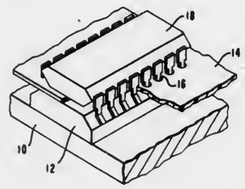
Filed Jun. 22, 1984, Ser. No. 623,681
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—838 **4 Claims**

1. The method of assembling in automated fashion lead-mounted electric components to a printed circuit board, comprising:

(a) stationing a magnetic field-controllable base, adapted to receive a plurality of lead-crimping anvils of ferromagnetic material thereon, within the working envelope of a robotic manipulator;

(b) controlling said magnetic field-controllable base to provide a moderately low strength magnetic field;

(c) selectively positioning and orienting said crimping anvils on said base in an array to completely accommodate the leads of all the lead-mounted electrical components to be crimped for a given circuit board;



(d) increasing the field strength of said base to provide an adequately high strength field to ensure retention of said anvils in the proper location and orientation during subsequent steps; and

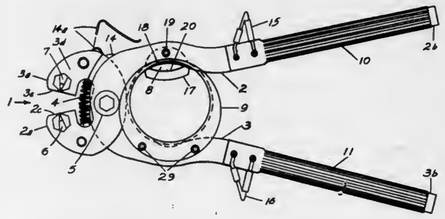
(e) mounting said components to said board and crimping said leads to produce said given circuit board.

4,550,495

NUT KERNEL EXTRACTOR

Gaston G. Fornes, 2400 Bennington Rd., Charlottesville, Va. 22901

Filed Feb. 16, 1983, Ser. No. 449,590
Int. Cl.[4] A47J *43/26;* **B26B** *17/00*
U.S. Cl. 30—120.3 **1 Claim**



1. A nut kernel extractor comprising:

(a) first and second handles, each of said handles having a major longitudinal axis, wherein each of said handles has a first end and a second end,

(b) wherein said handles are pivotally connected at a point between said first ends and said second ends such that each of said handles comprises a right side extending from said pivotal connection to said second end and a left side extending from said pivotal connection to said first end,

(c) said extractor further comprising a first nipper mounted on said first end of said first handle and a second nipper mounted on said first end of said second handle,

(d) wherein each of said nippers comprises a linear cutting edge, wherein

(e) said nippers are mounted such that said linear cutting edges are always parallel,

(f) and wherein each of said nippers also comprises a sharpened relieved section,

(g) wherein said nippers are positioned on said first ends such that one of said cutting edges is pivotally positionable close enough to said other cutting edge to cut the shell of a split nut,

(h) and wherein said extractor further comprises a splitter and a slotted safety ring wherein said splitter is mounted on said right side of said first handle and said safety ring is attached to said right side of said second handle,

(i) wherein said splitter comprises a shoulder wherein said

shoulder comprises a surface which is substantially perpendicular to the surface of said splitter thereby preventing excessive penetration of said splitter,

(j) wherein said safety ring has a pocket comprising a relieved section in said safety ring and wherein said pocket is positioned opposite to said splitter such that when force is applied to a nut with said splitter, the nut is held securely in said pocket,

(k) said extractor further comprising biasing means connected to said left side of each of said handles wherein said biasing means urge said first ends apart,

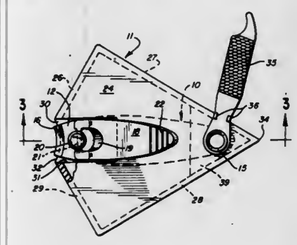
(l) said extractor further comprising retractable locking means comprising a retractable locking pin and a single leaf detent spring wherein said pin has two circumferential grooves and said pin passes through said left side of said second handle and protrudes from said second handle to obstruct the relative rotation of said first and second handles when said pin is in a locking position, and wherein said spring is positioned adjacent to said pin such that said spring rests in one of said grooves when said pin is in a retracted position and in the other of said grooves when said pin is in a locking position.

4,550,496

NAIL CLIPPER RECEPTACLE

Raymond C. Reinicke, Box 5402 RFD, Long Grove, Ill. 60047

Filed Apr. 27, 1984, Ser. No. 605,015
Int. Cl.[4] A45D *29/02*
U.S. Cl. 30—124 **2 Claims**



1. In combination with a nial clipper having two relatively movable jaw members with mating cutting edges, a jaw-operating means associated with the jaw members for manipulating the cutting edges thereof, and means securing the jaw members together in spaced relationship, a nail clippings receptacle comprising a top member, a bottom member, and a plurality of side members, said receptacle being quadrilateral shaped, the receptacle having a concave opening therein sized to receive the nail clipper and slightly oversized with respect to the clipper jaws, and jaw member securing means extending through the receptacle top and bottom members for securely positioning the nail clipper within the receptacle with the cutting edges of the jaw members being positioned within the opening of the receptacle while permitting rotational movement of the clipper about the securing means between either side of the opening and side top and bottom members having first edges angled toward one another adjacent the opening and second edges progressively narrowing and meeting at an apex opposite said opening.

4,550,497

TOOL TO PRODUCE A NEW ANGLE ON A FAN BLADE

Harold M. Sharon, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 322,097, Nov. 16, 1981, abandoned. This application Dec. 5, 1983, Ser. No. 558,135
Int. Cl.[4] B23D *79/08*
U.S. Cl. 30—169 **4 Claims**

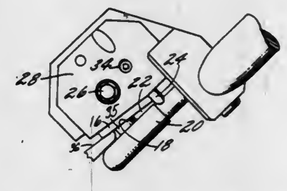
1. A cutting tool for use in producing a new angle for the opposite sides of a fan blade at a point closely spaced from the leading edge including:

a mounting block;

a handle extending from said mounting block;

a tool bit secured in said block and having an exposed cutting edge;

a pin in said block in the same plane as the cutting edge and spaced therefrom forming a notch with said cutting edge



and making the desired blade edge angle with the cutting edge with the blade edge positioned between said cutting edge and pin, said cutting edge and pin extending at an obtuse angle to the handle; and

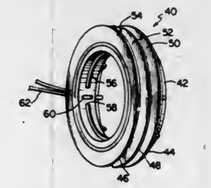
means adjacent the base of the notch to engage the blade edge for limiting the depth of movement of the blade edge into said notch, the blade thus cutting one side surface of the blade adjacent the edge.

4,550,498

REPLACEMENT SPOOL FOR ROTATING LINE VEGETATION CUTTER

Ronald A. Oliver, 8940 Tarragon Ct., Manassas, Va. 22110

Filed Feb. 17, 1984, Ser. No. 581,032
Int. Cl.[4] A01D *50/00*
U.S. Cl. 30—276 **5 Claims**



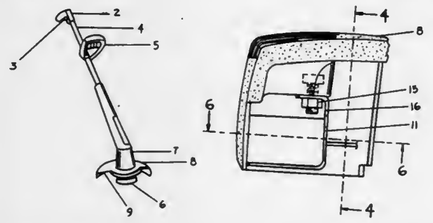
1. A replacement spool for a rotating line vegetation cutter comprising a central generally cylindrical hub portion, a pair of outer flanges on the outside surface of said hub portion at the ends of said hub portion, a central flange between said outer flanges for dividing said spool into two sections for receiving line wound on said hub in each section, an elongated line receiving slot formed in said hub portion and extending substantially parallel to the longitudinal axis of said hub portion, said elongated slot being positioned on said hub so as to extend beneath said central flange and being of a length such as to extend from approximately the middle of one of said sections to approximately the middle of the other of said sections, and a continuous length of vegetation cutting line wound on said spool in such a manner that one end of said line is wound in one of said sections and the other end of said line is wound in the other of said sections, and a midsection of said line lies in said slot behind said central flange and connects the ends of said line.

4,550,499

STRING TRIMMER WITH CUT LINE RETENTION POCKET

Alan V. Ruzicka, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Jul. 18, 1983, Ser. No. 515,015
Int. Cl.⁴ A01D *50/00*
U.S. Cl. 30—276 **12 Claims**



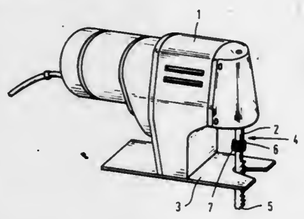
1. An apparatus for cutting vegetation and the like comprising head means rotatable about an axis in a cutting plane, flexible line member having at least one portion coiled within said head means and having at least one uncoiled portion extending outwardly of the periphery of said head means and rotating in said cutting plane, a housing means generally overlying at least an arc of the portion of said cutting plane in which said uncoiled portion rotates, and cutting means associated with said housing means and spaced from said axis in said cutting plane for trimming said line member to a predetermined length upon rotation of said head means, the improvement comprising catching means located on said housing for catching and retaining segments of said line member cut by said cutting means so that the danger of personal injury to persons in the vicinity of said apparatus when said head means is rotating and said line member is cut is reduced.

4,550,500

COMPASS SAW WITH A CONNECTING DEVICE FOR A FLAT SAW BLADE

Gerhard Kuhlmann, and Bernhard Remmele, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 535,774
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247178
Int. Cl.⁴ B23D *49/16*
U.S. Cl. 30—392 **7 Claims**



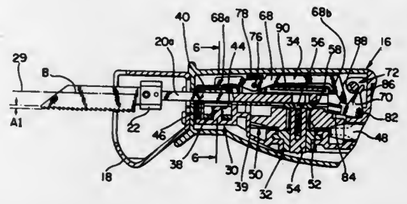
1. In a motor-driven compass saw, a combination comprising an elongated reciprocating rod; a flat saw blade with a flat shaft and having a longitudinal axis; and means for connecting said saw blade to said reciprocating rod, said connecting means comprising a clamping sleeve rotatable about the longitudinal axis of the saw blade and provided with a bore through which the shaft of the saw blade passes to be connected to the reciprocating rod, said shaft being formed with two opposing pins extended outwardly from its edges, said clamping sleeve being formed with two additional bores extended radially outwardly from said bore and opposing each other, said reciprocating rod having an end portion adapted to support an end of said shaft, said reciprocating rod being substantially flat; and a rotary member connected to the end of the reciprocating rod and aligned therewith in the direction of elongation thereof, said rotary member being inserted into said clamping sleeve and connected thereto by internal and external threads respectfully formed on the rotary member and the clamping sleeve, said rotary member having a substantially flat perforation extended in the direction of elongation of the reciprocating rod and the direction of elongation of said saw blade, said perforation being formed so that it receives said shaft after the latter has passed said bore but prevents said pins from entering said perforation, and also receives the end of the flat reciprocating rod to tightly connect said rotary member to said reciprocating rod, said rotary member being formed with surface means in which said pins of said shaft are clamped whereby said clamping sleeve is clamped with said shaft when the said sleeve is connected to the rotary member.

4,550,501

ORBITAL-ACTION RECIPROCATING POWER SAW

Robert G. Moores, Jr., Reisterstown, Md.; Daniel H. Sides, New Freedom, Pa., and Howard L. Burnside, Upperco, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 23, 1984, Ser. No. 573,199
Int. Cl.⁴ B27B *11/02*
U.S. Cl. 30—393 **21 Claims**



16. An orbital-action reciprocating power saw, comprising:
saw blade carrier means for supporting a saw blade;
reciprocating motion means located on one side of the saw blade carrier means for transmitting reciprocating motion to the carrier means;
transverse motion means located on the other side of the saw blade carrier means for transmitting motion to the carrier means in a direction transverse to the axis of reciprocation of the saw blade carrier means wherein the transverse motion means comprises a rocker arm pivotally mounted intermediate its ends and having one end for moving said saw blade carrier means;
driving means for providing driving motion to the reciprocating motion means and the transverse motion means so that the saw blade carrier means moves in a composite orbital path wherein the driving means comprises a rotatably driven member having an axial-face cam surface with rising and declining profile portion for facilitating movement of the other end of said rocker arm.

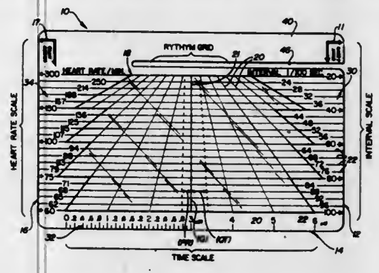
4,550,502

DEVICE FOR ANALYSIS OF RECORDED ELECTROCARDIOGRAM

Joseph Grayzel, 262 Fountain Rd., Englewood, N.J. 07631

Filed Apr. 15, 1983, Ser. No. 485,287
Int. Cl.⁴ A61B *5/04;* **G01B** *3/02*
U.S. Cl. 33—1 B **8 Claims**

1. A gauge which facilitates the analysis of a recorded electrocardiogram which comprises a flat sheet of transparent material having:
(a) a plurality of straight diverging lines disposed on said sheet with the lines being spaced apart at equal angular increments;
(b) a plurality of straight, parallel lines disposed on said sheet extending in a direction transverse to said diverging lines and perpendicular to a line extending medially between the outermost of said diverging lines, said diverging lines intersecting said parallel lines as to define equal increments, along a given parallel line, and said transverse lines being spatially arranged such that they intersect with said diverging lines to form a grid therewith wherein the distance between adjacent points of intersection with said



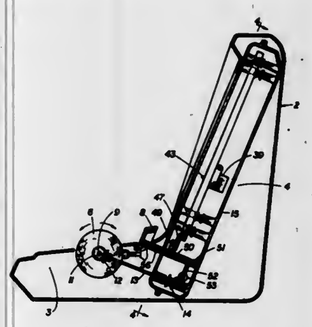
diverging lines on any of the parallel lines bear a relation to the heart beat rates or heart rate cycle interval of a periodic wave form recorded on an electrographic chart or strip;
(c) indicia means disposed on said sheet for designating the transverse parallel lines as graduations of a scale comprising intervals which correspond to said heart rate cycle intervals or heart beat rates; and
(d) said gauge being physically sized so that said diverging lines are laterally spaced apart to encompass at least two heart beat cycles of said periodic wave form.

4,550,503

TOY COMPUTER IMAGE PROCESSOR ASSEMBLY

Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.

Filed Jun. 15, 1984, Ser. No. 621,196
Int. Cl.⁴ B43L *13/00*
U.S. Cl. 33—18 R **5 Claims**



1. A toy assembly simulating an image processing computer comprising: a closed console housing including a keyboard section and a screen section; manual actuating means mounted on said keyboard section for manual manipulation by a child; image producing means movably mounted in said screen section; a flat translucent sheet forming the front surface of said screen section; powdered material disposed in said housing adapted to move toward the inner surface of said sheet to adhere thereto and render said sheet opaque; and mechanical linkage means disposed within said console housing connected

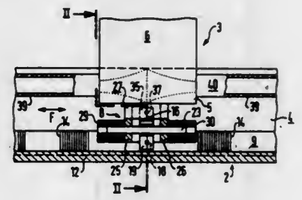
at one end to said manual actuating means on said keyboard section and at the other end to said image producing means in said screen section to selectively move said image producing means into and out of contact with said powdered surface of said sheet and in selected contacting directions along said sheet to remove powdered material therefrom and produce preselected images thereon, said manual actuating means on said keyboard section including separate members to control the directional movement of said image producing means along said powdered sheet and to control the movement of said image producing means into and out of contact with said powdered sheet, said image producing means including a movably mounted stylus; spring means to urge said movably mounted stylus in one direction relative said powdered sheet; and spring compression means to move said movably mounted stylus in an opposite direction, said spring compression means being mechanically linked to said manual actuating member which controls movement of said image producing means into and out of contact with said powdered sheet.

4,550,504

METHOD AND APPARATUS FOR THE MEASUREMENT OF THE LENGTH OF A STRAIGHT LINE OR AN ARC

Walter Mehnert, Grillparzerstr. 6, D-8012 Ottobrunn, Fed. Rep. of Germany

Filed Dec. 22, 1982, Ser. No. 452,376
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151798
Int. Cl.⁴ G01B *11/02*
U.S. Cl. 33—125 C **28 Claims**



1. A method for measuring the distance between a first marking which is provided on a first body and at least one second marking which is one of a plurality of markings provided on a first marking carrier which is fixedly connected to a second body, said bodies being movable with respect to each other, comprising
(a) providing a first sensor movably attached to said first body and being adapted during its movement to sense each marking of said plurality of markings;
(b) imparting oscillatory movemeht to said first sensor for oscillatory movement thereof with respect to said first body independent of the relative movement of said two bodies, said first sensor moving to and fro between two reversal points in a direction being essentially parallel to the direction of relative movement of said two bodies and crossing said at least one second marking at each to and fro stroke of said oscillatory movement;
(c) generating at each crossing by said first sensor of said at least one second marking, a time-significant signal correlated in time to the crossing event;
(d) generating a reference signal for each to and fro stroke of said oscillatory movement of the first sensor when the latter is predeterminatally related to said first marking;
(e) measuring the distance, as a function of time, between said time-significant signal and said reference signal during at least one of the strokes of said oscillatory movement;
(f) providing a value, representing the mean value of the velocity of said oscillatory movement, between the gener-

ation of said time-significant signal and said reference signal; and

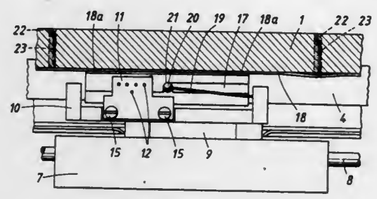
(g) determining from step (c) to (f) the unknown distance between said first and said second marking.

4,550,505

INSTRUMENT FOR MEASURING LENGTHS

Heinz Rieder, Riedersbach 90, A-5120 St. Pantaleon, and Max Schwaiger, A-5121 Ostermiething No. 298, both of Austria

Filed Nov. 8, 1984, Ser. No. 669,608
Claims priority, application Austria, Nov. 22, 1983, 4087/83
Int. Cl.⁴ G01B *11/04*
U.S. Cl. 33—125 C **6 Claims**



1. In an instrument for measuring lengths, comprising

a carrier,

a rule secured to said carrier and provided with a light-modifying scale,

an optoelectronic scanning unit which is movable along said scale and comprises a plurality of parts, including light-emitting means for emitting light onto said scale, a light-modifying scanning plate for receiving light that has been emitted by said light emitting means onto said scale, and light receivers for receiving light that has been modified by said scale and said scanning plate and for generating changing electric outputs in response to the light thus received as said scanning unit is moved along said scale,

auxiliary tracks for guiding a part of said scanning unit along said scale,

an actuating member for moving said scanning unit along said scale, and

yieldable connecting means which are yieldable transversely to the longitudinal direction of said scale and connect said actuating member to a part of said scanning unit,

the improvement residing in that

said rule has a surface which constitutes one of said auxiliary tracks,

said scanning plate bears on and is guided by said auxiliary tracks,

said light-emitting means and said light receivers are rigidly secured to said actuating member, and

said yieldable connecting means connect said actuating member to said scanning plate.

4,550,506

MEASURING MACHINE

Takao Katayama, No. 21-2, 2-chome, Chuo, Ohta-ku, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,359
Claims priority, application Japan, Sep. 14, 1982, 57-15880
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—143 L **1 Claim**

1. A measuring machine, comprising:

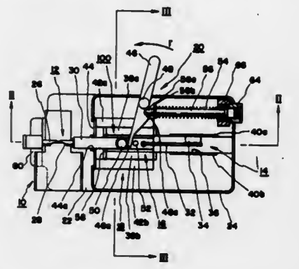
a housing provided with a base and a casing mounted on the base;

means, secured to the base, for measuring a dimension of an object, said measuring means having a stationary measuring contact point, a movable measuring contact point, a slidable spindle means for carrying the movable measuring contact point into contact with the stationary measuring contact point, said slidable spindle means having longitudinal rectangular slots in opposite sides thereof;

sensor means, attached to one end of the slidable spindle means, for reading the dimension obtained by the measuring means;

means, attached to the base, for guiding movement of the slidable spindle means, said guiding means including bars arranged on the opposite sides of the slidable spindle means, said bars having longitudinal rectangular slots in opposite sides thereof;

actuator means, mounted on the casing, for moving the slidable spindle means;



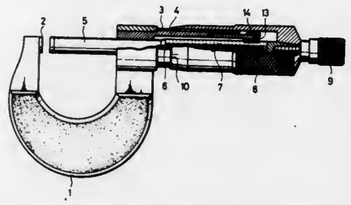
at least a pair of linear bearings, positioned between the slots in the opposite sides of the slideable spindle means and the slots in the sides of the bars of the guiding means, each of said pair of linear bearings including a supporting frame having a plurality of supporting brackets, a plurality of tubular rollers having cylindrical shafts, each of the plurality of tubular rollers being rotatably supported by one of the plurality of supporting brackets and having its longitudinal axis perpendicular to but spaced equidistant from longitudinal axes of adjacent ones of the plurality of tubular rollers.

4,550,507

THREAD CONSTRUCTION IN LENGTH MEASURING INSTRUMENT AND METHOD FOR MANUFACTURING THREAD CONSTRUCTION

Goro Nishikata, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,412
Claims priority, application Japan, Dec. 15, 1982, 57-221035; Dec. 15, 1982, 57-221036
Int. Cl.⁴ G01B *3/18*
U.S. Cl. 33—164 R **10 Claims**



1. A thread construction of a length measuring instrument wherein a frame body comprises an anvil and a spindle linearly movable to and from said anvil and said spindle is of a screw feed type, an externally threaded portion provided on said spindle and made of a ceramic material, and an internally threaded portion provided on said frame body and coupled to said externally threaded portion and defined by a plurality of externally threaded pieces cut out of an externally threaded member made of a material identical with and having a pitch equal to said externally threaded portion, each said piece being

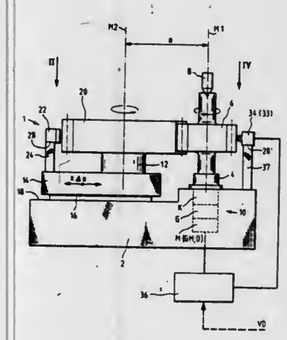
secured to an inner peripheral surface of said frame body at arcuately spaced intervals and where said externally threaded portion is positioned.

4,550,508

DOUBLE-FLANK COMPOSITE ERROR TESTER

Hans Spaeth, Kloten, Switzerland, assignor to Maag Gear-Wheel and Machine Company Limited, Zurich, Switzerland

Filed Feb. 25, 1985, Ser. No. 705,150
Claims priority, application Switzerland, Mar. 1, 1984, 996/84
Int. Cl.⁴ G01B *5/20*
U.S. Cl. 33—179.5 C **18 Claims**



1. A double-flank composite error tester for determining gear errors and comprising:

at least one first gear holding support;

at least one spring-loaded displaceable slide;

said at least one first gear holding support being mounted at said at least one spring-loaded displaceable slide;

a second gear holding support;

said at least one spring-loaded displaceable slide being displaceable relative to said second gear holding support;

said at least one first gear holding support and said second gear holding support supporting at least one pair of gears to be tested;

each one of said gears of said at least one pair of gears to be tested defining respective gear teeth with a predetermined number of tooth tips and tooth spaces;

aligning means for mutually aligning the gears of said at least one pair of gears to be tested such that the tooth tip of one gear of said at least one pair of gears to be tested is aligned with the tooth space of the other gear of said at least one pair of gears to be tested;

said aligning means including gear teeth means fixedly associated with said one gear of said at least one pair of gears to be tested and a magnet acting upon said gear teeth means in order to position said one gear in a predetermined rotary position;

said aligning means further including a positioning device associated with said other gear of said at least one pair of gears to be tested;

said positioning device positioning said other gear in a predetermined relative position with respect to said predetermined rotary position of said one gear of said at least one pair of gears to be tested; and

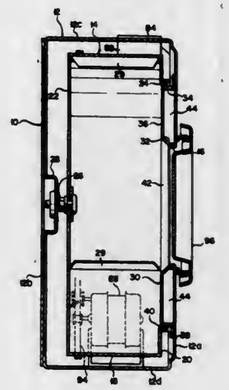
means for interengaging the gear teeth of said one gear and said other gear of said at least one pair of gears to be tested after aligning said one gear and said other gear by said aligning means.

4,550,509

AIR GUIDE ARRANGEMENT FOR A DRUM-TYPE DRIER

Koji Murase, Ichinomiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 9, 1983, Ser. No. 492,828
Claims priority, application Japan, Jan. 16, 1982, 57-104120
Int. Cl.⁴ D06F *58/00*; F26B *11/02*
U.S. Cl. 34—133 **8 Claims**



1. A drum type drier comprising:

a housing having a front board with an opening therein;

a drum, rotatably provided in the housing to receive clothing to be dried, said drum including a cylindrical body and first and second end plates closing both ends of the cylindrical body, the first end plate having a circular opening formed concentrically with the drum;

a frame-like air guide fixed to the front board around the front board opening, positioned in the circular opening of the first end plate for rotatably supporting the drum and defining an inlet-outlet port through which clothing is placed into or removed from the drum;

first guide means having an air inlet positioned in the air guide and communicating with the interior of the drum to guide air into the drum;

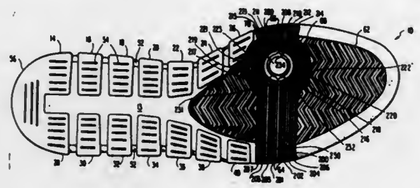
second guide means having an air outlet positioned in the air guide and communicating with the interior of the drum to guide air from the drum, said air inlet and air outlet being opposite to each other with respect to said inlet-outlet port with said inlet-outlet port arranged between them;

heating means for heating air passing through the first guide means;

driving means for rotating the drum; and

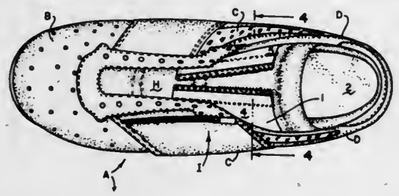
air-ventilating means which conducts heated air from the heating means into the drum through the first guide means to remove moisture from the clothing and to conduct air from the drum through the second guide means, wherein said frame-like air guide includes a cylindrical outer wall fitted in the circular opening of the first end plate, and an inner wall arranged around the opening of the front board and defining the inlet-outlet port jointly with the circular opening and the front board opening, and an annular wall having an opening, connecting the cylindrical outer wall and inner wall and being substantially flush with the first end plate, and wherein said air inlet and air outlet are formed in the annular wall, and wherein said air guide and front plate jointly define an air-discharging passage communicating with the air outlet, and said first guide means including an air-blowing cylinder provided in the air guide, communicating with the air inlet, and defining an air-introducing passage separated from the air-discharging passage.

4,550,510
BASKETBALL SHOE SOLE
Jerry D. Stubblefield, Portland, Oreg., assignor to Pensa, Inc., Portland, Oreg.
Division of Ser. No. 250,899, Apr. 3, 1981, Pat. No. 4,449,307. This application Apr. 30, 1984, Ser. No. 605,560
Int. Cl.⁴ A43B *13/04, 13/18, 5/00*
U.S. Cl. 36—32 R **7 Claims**



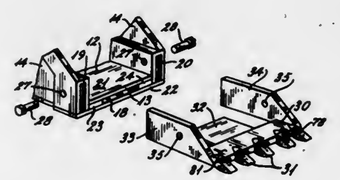
1. A basketball shoe sole, comprising:
an outer surface for contacting the basketball floor;
groove means extending transversely along said outer surface across the metatarsal heads for facilitating flexing of the shoe sole and foot thereat;
means formed in said outer surface under the position of the ball of the great toe for facilitating pivoting of the sole and foot thereat,
wherein said pivoting means comprises substantially circular pivot cup means and a portion of said groove means;
wherein said portion of said groove means is substantially semi-circular and is formed above and below said pivot cup means; and
wherein said groove means further includes substantially linear portions on both sides of said pivot cup means that connect with said semi-circular portions in a continuous manner.

4,550,511
INSTEP SUPPORT FOR FOOTWEAR
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 319,682, Nov. 9, 1981, abandoned, and a continuation-in-part of Ser. No. 458,219, Jan. 17, 1983, abandoned, and a continuation-in-part of Ser. No. 481,165, Apr. 11, 1983,. This application Apr. 22, 1983, Ser. No. 487,881
Int. Cl.⁴ A43B *11/00*
U.S. Cl. 36—50 **13 Claims**



1. In an instep support for footwear, and being a shoe of the type having an upper incorporating a vamp, quarter and heel portions, all securing together and being integrally connected with the shoe sole, a gusset provided within the shoe upper, an insole applied upon the shoe sole, the improvement which comprises, a support system provided within the shoe and useful for furnishing of support for the instep, arch, and associated components of the foot of the wearer, said support system including band means extending upwardly from the insole and arranged for overlying substantially the entire instep for the foot and being snugly secured therewith for bracing the foot within the applied shoe, said band means operatively associated with the insole means for the shoe and extending upwardly therefrom for also embracing the lateral arch portions of the foot in conjunction with the application of bracing to its instep, said band means incorporating a pair of band members, at least one of said band members extending upwardly from the insole means substantially inwardly from its lateral edge to also embrace the arch portion of the contiguous foot of the shoe wearer, said insole means having a central portion, said central portion of the insole means having a pair of slots formed therethrough, the band means inserting through said pair of slots for underlying the central portion of the insole means intermediate said pair of slots, said band means projecting upwardly through said slots and extending upwardly along the lateral portions of the arch and around the instep of the foot of the shoe wearer.

4,550,512
EXCAVATOR BUCKET WITH DETACHABLE IMPLEMENTS
Rickerd M. Felstet, P.O. Box 341, East Helena, Mont. 59635
Filed Aug. 17, 1984, Ser. No. 641,654
Int. Cl.⁴ E02F *3/76*
U.S. Cl. 37—117.5 **11 Claims**

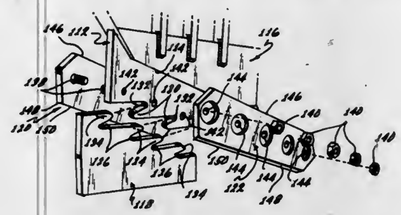


1. An excavator bucket assembly comprising the combination of a bucket means and earth working implements, said bucket means having a foward lower edge portion, a rear wall and oppositely disposed side walls, said forward lower edge portion having a first socket means therein for selectively receiving and mounting one of said earth working implements therein so as to project from said forward lower edge portion, said first socket means being defined by spaced walls which form at least a portion of said forward lower edge portion, second and third socket means provided adjacent each of said side walls of said bucket means and extending from adjacent said forward lower edge portion toward said rear wall of said bucket means, said earth working implements having earth engaging means supported on a tool bar means, said tool bar means having spaced ends, a first tang means extending rearwardly from said tool bar means and intermediate said ends thereof so as to be selectively receiveable within said first socket means, said earth working implements having second and third tang means which extend rearwardly therefrom on opposite sides of said first tang means so as to be selectively receivable in said second and third socket means, respectively, and fastening means for selectively connecting said tool bar means to said bucket means.

4,550,513
REPLACEABLE WEAR-EDGE ROUTER BIT
Robert Rasmussen, Rancho Palos Verdes, Calif., assignor to Industrial Parts Depot, Torrance, Calif.
Continuation-in-part of Ser. No. 217,953, Dec. 19, 1980, abandoned. This application May 4, 1984, Ser. No. 607,243
Int. Cl.⁴ D06F *79/00*
U.S. Cl. 37—141 R **19 Claims**

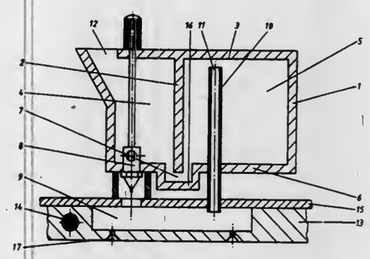
1. A router bit for use with earth moving equipment comprising:
a first member having a forward end and a rear end and being adapted to be mounted on said earth moving equipment;
a lower insert including a portion defining an earth cutting edge;

said first member having a first plurality of downwardly and forwardly extending finger means and finger apertures, said lower insert having a second plurality of finger means and finger apertures extending upwardly and rearwardly, said first and second pluralities interlocking to prevent upward and rearward movement of said insert relative to said first member; and
retainer means comprising at least one pair of side plates releasably affixed in opposing relationship to opposite



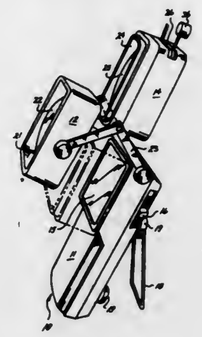
sides of one of said first member or said insert, each side plate having an upper edge and a lower edge, said side plate being crowned concavely in a direction generally transverse to both said edges, each side plate being affixed with its concave side facing said first member and with said upper edge lying against said first member and said lower edge against said insert such that said lower edges clamp said insert against separation from said first member.

4,550,514
STEAM IRON
Gerald Reiss, Friedhofstrasse 5, D-6050 Heusenstramm 2, and Rudolf Schneider, Schnurstrasse 11, D-645 Hanau (Main), both of Fed. Rep. of Germany
Filed Aug. 6, 1984, Ser. No. 638,092
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328453
Int. Cl.⁴ D06F *75/18*
U.S. Cl. 38—77.81 **5 Claims**



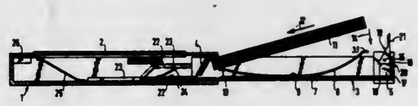
1. A steam iron comprising: a water tank; said tank having a dividing wall dividing said tank into first and second chambers; an electrically heated sole-plate; a vaporizing chamber formed in said sole-plate; a drip valve mounted in said first chamber to supply water from said first chamber to said vaporizing chamber; means connecting said first chamber to atmosphere; said dividing wall of said tank being connected in sealed manner to an inner wall of said tank; means defining at least one opening in a lower region of said tank to put said first and second chambers in flow communication; and a tube connecting said vaporizing chamber to said second chamber, the mouth of the tube opening into said second chamber above the filling level of water therein.

4,550,515
X-RAY AND PHOTOGRAPHIC VIEWER
Robert N. Simmons, 30 N. Michigan Ave., Suite 1284, Chicago, Ill. 60602
Continuation-in-part of Ser. No. 322,646, Nov. 18, 1981, Pat. No. 4,454,669. This application Oct. 31, 1983, Ser. No. 546,838
Int. Cl.⁴ G02B *27/02*
U.S. Cl. 40—362 **8 Claims**



1. A portable transparency viewer for viewing X-ray film, photographic slides, filmstrips and like items, comprising, in combination, a viewer body having a fixed imaging screen upon which items to to viewed may be placed for direct viewing, a light source disposed behind the imaging screen within said viewer body, power means contained within said viewer body for permitting selective energization of said light means to illuminate said screen, first magnifying means, adjustable support means for positioning said first magnifying means in parallel spaced relation relative to said screen to permit magnified viewing of items disposed on said fixed imaging screen, and auxiliary removable magnifying means adapted for selected releasable engagement with said viewer body over said viewing screen and including means for receiving items between said auxiliary magnifying means and said screen so as to permit selective viewing of said received items directly through said auxiliary magnifying means as well as through both said first and auxiliary magnifying means.

4,550,516
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed Dec. 12, 1983, Ser. No. 560,385
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1982, 3246103
Int. Cl.⁴ G09F *11/30*
U.S. Cl. 40—513 **14 Claims**

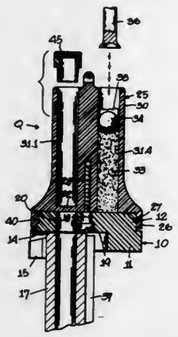


1. A picture viewer comprising:
(a) a housing member adapted to accommodate a stack of pictures of substantially equal size, the housing member having a top wall provided with a viewing window, a bottom wall opposite the top wall, side walls, a rear end wall, and an open front end;
(b) a slider member adapted to slide into and out of the open front end of the housing parallel to the plane of the viewing window of the housing member;
(c) a picture exchange means comprising: (i) a separator bar adapted to move pictures in the stack of pictures out of the

housing member when the slider is moved out of the housing member; and (ii) a retentive element in the housing member adapted to engage a first picture in a stack of pictures in the housing member to retain the first picture in the housing member when the slider is moved out of the housing member, the first picture being at a first end of the stack of pictures, whereby, in use, when the slider member is moved out of said housing member, the first picture is separated from the stack of pictures and when the slider member is moved back into the housing member, the first picture is returned to a second end of the stack opposite to the first end; and

(d) bias means in the slider member adapted to urge the topmost picture of a stack of pictures in the picture viewer against the viewing window when the slider member is moved into the housing member.

4,550,517
QUICK-LOADING DEVICE FOR MUZZLE-LOADING RIFLES
George F. Mansfield, 236 Greenbriar Dr., Cortland, Ohio 44410
Filed Jul. 7, 1983, Ser. No. 511,550
Int. Cl.⁴ F42B *39/04;* **F41C** *27/00*
U.S. Cl. 42—90 **9 Claims**



1. A device for quickly loading a muzzle-loading gun, comprising:

a base, said base having a circular upper portion,

a cylinder extending upwardly from said base and revolvable about a pivot axis on said base, said cylinder having a circular skirt portion which closely and slidably receives said base upper portion to assist in guiding revolution of said cylinder thereon, said base having a flat upper surface slidably interengaging with a flat lower surface on said cylinder,

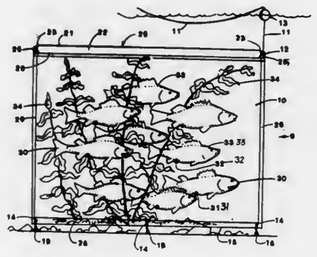
said cylinder having a plurality of elongated openings, the longitudinal axes of said openings being parallel to said pivot axis and disposed in a circle concentric with the latter, one of said openings having a bottom wall to close the lower end thereof at all times, the other of said openings being open from top to and through the lower flat surface thereof, said other opening being adapted to receive a charge of powder, ball and patch,

said base having an off-center hole therethrough and a recess in its lower surface for receiving the muzzle end of a gun and positioning the same in axial alignment with said hole,

said base hole being on a circle having a radius the same as the circle on which said openings are located, whereby said cylinder may be rotated about said pivot axis to align any one of said elongated openings with said base hole,

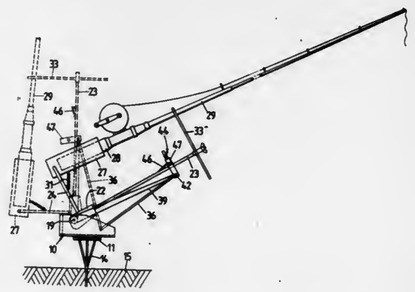
said other of said openings when said one opening is aligned with said base hole being temporarily closed by the flat upper surface of said base, thereby to be in position to receive a charge which may be transferred therefrom to the rifle muzzle by axially aligning one of said other of said openings with said base hole and pushing the charge into the rifle by means of a ram rod.

4,550,518
FISH DECOY
Alfred M. Layson, 771 N. Walnut, Waukegan, Ill. 60085
Filed Sep. 15, 1983, Ser. No. 532,409
Int. Cl.⁴ A01M *31/06*
U.S. Cl. 43—2 **3 Claims**



1. A fishing decoy comprising two sheets of flexible, transparent material, means for connecting the two sheets along the edges, the sheets having means defining an integral inflatable air chamber extending along the upper edge for flotation purposes and weight means fixed to the lower edge of the sheets opposite the air chamber in order to hold the decoy in a vertical position, underwater, the weight means being sufficient to cause the sheets to submerge to a desired level and the air chamber creating sufficient buoyancy to balance against the weight and maintain the sheet in the relatively vertical position, a plurality of individual life-like fish images projected on the sheet, each of said fish images being formed by a sealed outline inflatable to provide a three-dimensional form approximating the average size of the represented fish, a plurality of seaweed images to depict the fish in their natural habitat, and a retrieving line attached to the upper edge having the air chamber for the purposes of retrieving the decoy from the water.

4,550,519
FISHING ROD HOLDER WITH AUTOMATIC HOOK SETTER
Harold J. Simmons, and Billy R. Simmons, both of P.O. Box 188, Margaret, Ala. 35112
Filed Apr. 5, 1984, Ser. No. 597,126
Int. Cl.⁴ A01K *97/10*
U.S. Cl. 43—15 **11 Claims**



1. A fishing rod holder with automatic hook setter comprising:

(a) a supporting frame,

(b) a rod holder operatively connected to said supporting frame in position to support the handle end of a fishing rod and adapted for vertical pivotal movement relative to said supporting frame,

(c) a trigger rod pivotally connected at one end to said supporting frame with the other end of said trigger rod being adapted to extend forwardly beneath a fishing rod supported by said rod holder,

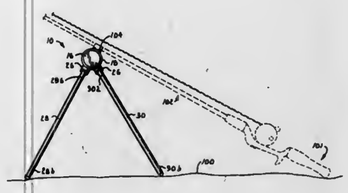
(d) a fishing rod support member carried by a forward portion of said trigger rod in position to support a fishing rod and move with said trigger rod selectively to a lower inoperative position and to an upper operative position so that the fishing rod supported by said rod holder is moved upwardly to a hook setting position,

(e) a jerk rod pivotally connected at one end to said supporting frame forwardly of the pivotal connection between said one end of said trigger rod and said supporting frame with the other end of said jerk rod extending forwardly and upwardly toward said trigger rod,

(f) resilient means urging said other end of said jerk rod upwardly toward said trigger rod,

(g) releasable means operable to connect said other end of said jerk rod to said trigger rod in a position to hold said trigger rod and said fishing rod support member carried thereby in said inoperative position and operable to release said jerk rod for movement relative to said trigger rod in response to downward movement of said other end of said trigger rod by downward movement of said fishing rod support member so that said jerk rod is urged by said resilient means in a direction to move said trigger rod and the fishing rod supported by said fishing rod support member to said hook setting position.

4,550,520
FISHING POLE HOLDER
Carl E. Bogue, 11402 E. 10th, Independence, Mo. 64054
Filed Aug. 20, 1984, Ser. No. 642,087
Int. Cl.⁴ A01K *97/10*
U.S. Cl. 43—21.2 **8 Claims**



1. A fishing pole holder comprising:

a support member for said fishing pole, said support member having an imaginary longitudinal axis underlyingly traversing a fishing pole;

a stirrup member for receiving a longitudinal portion of said fishing pole therein;

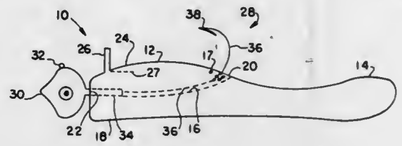
a plurality of leg members having upper and lower ends for elevating said support member;

a fastener member for engaging the upper end of each leg member thereto with said lower end contacting an underlying surface below said support member to elevate said support member from said surface;

means for selectably positioning each fastener member about said support member in a manner to position each leg member at a selectable angular relationship with said surface so as to elevate said support member above said surface; and

means for selectably positioning said stirrup about the perimeter of said support member so as to receive a portion of said fishing pole therein, said stirrup member cooperating with said elevated support member to maintain an inclination of said fishing pole having one end in contact with said surface and extending over said elevated support.

4,550,521
LURE HAVING BAIT STORAGE COMPARTMENT
Martin P. Hayden, 9951 53rd La., N., Pinellas Park, Fla. 33565
Filed May 3, 1984, Ser. No. 606,513
Int. Cl.⁴ A01K *97/04*
U.S. Cl. 43—41 **3 Claims**



1. A fishing lure, comprising,

a jig head hook member,

a lure means having a body and a tail integrally formed therewith,

said lure means formed of a soft, flexible plastic,

said jig head hook member including a head portion in the image of a fish head, a hook member having a barb and a straight shank, and a boss member that receives said shank,

a hollow cavity formed in the upper half of said body, of sufficient dimension to receive a piece of bait therein,

a plurality of small openings formed in the upper, rearward quadrant of said body, just forwardly of said tail,

a first large opening formed in the proximal end of said body to receive said boss member into said cavity,

a second large opening formed in an upper, horizontal wall of said body to admit said piece of bait into said cavity,

said hook shank disposed within said cavity, mounted by said boss member to the head portion of said jig head hook member, said head portion being external to said cavity, and positioned forwardly thereof,

the barb of said hook member disposed externally of said cavity, upwardly of the body of said lure means,

said hook member extending through a preselected one of said small openings,

whereby the lure means is mounted to a jig head hook member and the hook member is disposed out of snagging engagement to the floor of the area being fished, and whereby small string-like pieces of bait will trail from said small openings attendant drawing said lure means through water.

4,550,522
LIVE-BAIT VENDING APPARATUS
Ted W. Morton, 7229 E. Shea Blvd., Scottsdale, Ariz. 85254
Filed Aug. 2, 1984, Ser. No. 637,136
Int. Cl.⁴ A01K *97/04*
U.S. Cl. 43—55 **5 Claims**

1. An apparatus for vending live fishing bait such as minnows comprising:

a housing comprising two sections,

an elongated support shaft journaled in said housing to extend within one of said sections and rotatably driven by a motor means mounted in the other section,

a carrousel means mounted around said support shaft for rotatable movement thereby,

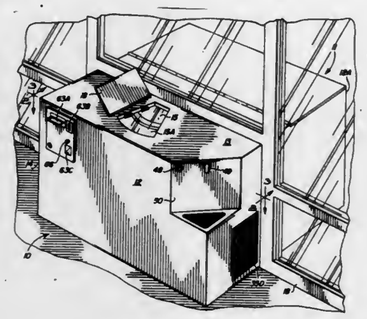
said carrousel means comprising a ring-like circular tank divided into a plurality of sequentially positioned compartments extending around said tank,

said one of said sections containing water which substantially fills said tank,

means mounted in the other of said sections in fluid communication with said one of said sections to aerate, filter and

maintain the temperature condition of the water in said one of said sections,

said means to aerate, filter and maintain the temperature includes a valve controlled outlet for dispensing in a time controlled manner water from said one section to outside of said housing and into a minnow bucket of a purchaser of said bait,



said housing comprising means for viewing bait in at least one of said compartments and exposing and removing the bait observed in said one of said compartments when said apparatus is actuated, and

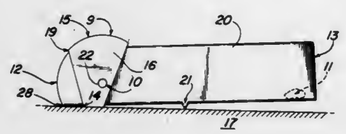
a money controlled means for rotatably indexing said carrousel means to successively register a compartment with said means for viewing and exposing said bait for removal of the bait observed from the apparatus.

4,550,523

DISPOSABLE OR REUSABLE ANIMAL TRAP

Robert S. Spiller, 24676 Mendocino Ct., Laguna Hills, Calif.

Filed Jan. 9, 1984, Ser. No. 569,223
Int. Cl.[4] A01M *23/02*
U.S. Cl. 43—61 **9 Claims**



1. An animal trap, comprising:

a housing defining an enclosure having an entrance opening therein and short cylindrical appendages adjacent the entrance opening;

an integral fulcrum at the approximate midpoint of the bottom exterior surface of the enclosure, such fulcrum permitting the entire enclosure to assume a downward inclination toward whichever end of the enlosure a trapped animal chooses to occupy;

a door member attached to the exterior of the enclosure and pivoting thereon in an arc between positions allowing access through, and closure of, said entrance opening;

said door member consisting of a surface conforming to the shape of the open end of the enclosure, and two sides, each side having a hole which permits the door member to be pivotally mounted on the short cylindrical appendages on the enclosure; and

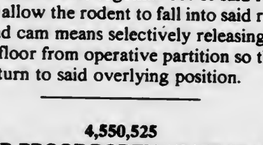
said appendages on the enclosure exterior located horizontally and vertically on the side of the enclosure so as to facilitate a pivotal axis such that: (a) an arc is provided for the door surface to traverse so that part of the arc affords closure of the entrance opening and a contiguous part of the arc allows the entrance opening to be unobstructed, and (b) an arc path is provided for a point on the door member side panel opposite the door surface, such that, when the trap is viewed in profile, the arc path pass beneath the enclosure bottom surface whenever the door is in transition from an opened to closed or closed to opened position whereby the surface on which the enclosure rests prevents rotation of the door whenever the enclosure assumes a downward inclination toward the end thereof corresponding to the entrance opening to facilitate such obstruction.

4,550,524

RODENT TRAP

Joseph A. Goebel, 319 S. Barker Ave., Evansville, Ind. 47712

Filed Aug. 23, 1984, Ser. No. 643,554
Int. Cl.[4] A01M *23/10, 23/30*
U.S. Cl. 43—75 **7 Claims**



1. A rodent trap comprising a rodent receiving chamber, bait retaining means within said chamber selectively controlling operational sequence, said chamber having a floor with a slidable portion continually urged into a position overlying a rodent receiving member, a partition movable across said chamber from a first position to a second or eradicating position, means moving said partition in response to movement of said bait retaining means to eradicate said rodent, said partition and said slidable portion of said floor being operatively connected so as to be movable together out of said rodent receiving chamber to allow the rodent to fall into said rodent receiving member, and cam means selectively releasing said slidable portion of said floor from operative partition so that said floor portion may return to said overlying position.

4,550,525

TAMPER PROOF RODENT BAIT STATION

Stanley Z. Baker, Pepper Pike; Bart M. Baker, Richmond Hts., and Benjamin H. Baker, Chesterland, all of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio

Filed Aug. 22, 1984, Ser. No. 643,037
Int. Cl.[4] A01M *25/00*
U.S. Cl. 43—131 **17 Claims**

1. A rodent bait protection box comprised of:

a generally triangularly-shaped enclosure having a floor and at least first, second, and third enclosure walls extending vertically upright therefrom, a first corner between said first and second enclosure walls, a second corner between said second and third enclosure walls, and a third corner between said first and third enclosure walls;

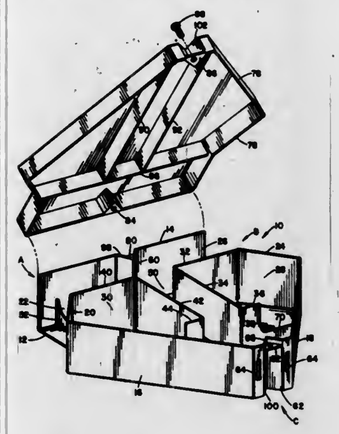
rodent access entrances at each of said first and third corners;

first and second bait retention areas segregated within said enclosure, each having first, second, and third partition walls in combination with a different one of said second and third enclosure walls to form said bait retention areas;

said first enclosure wall and each of said first partition walls being in parallel spaced relationship to define an entrance passageway therebetween directed from said first rodent access entrance to said second rodent access entrance;

said second partition walls being in parallel spaced relationship and defining a central passageway therebetween intersecting said entrance passageway and extending from said entrance passageway toward said second corner;

said third partition walls of said rodent bait retention areas each having a bait retention area entrance, indirectly accessible from said central passageway;



said second corner provided with rodent-inaccessible opening means, perceivable from said intersection of said entrance passageway and said central passageway; and

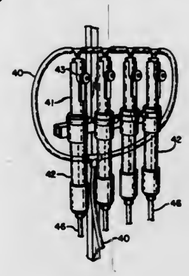
a removable cover.

4,550,526

IMPLEMENT FOR CONTACT APPLICATION OF LIQUID HERBICIDES TO CROPS

Willard Smucker, 23175 Powerline Rd, Harrisburg, Oreg. 97446

Filed Jan. 23, 1984, Ser. No. 572,941
Int. Cl.[4] A01G *13/00*
U.S. Cl. 47—1.5 **5 Claims**



1. A farm implement for contact application of a liquid to growing plants, comprising:

frame means adapted to be moved across a field of growing plants on which a liquid is to be applied;

an elongated wiper bar supported by the frame means and extending transversely to the direction of movement thereof, the wiper bar comprising a plurality of longitudinally-extending sections, each of the sections comprising a rigid support member and liquid-absorbent material surrounding the support member;

a tank for the liquid mounted on the frame means above the wiper bar at a first elevation above the wiper bar;

a feed line extending downwardly from the tank for gravity feeding liquid to the wiper bar;

a plurality of drip valves connected in parallel to the feed line below the tank, each of the drip valves being at a second elevation which is less than the first elevation above the wiper bar, each of the drip valves being associated with a respective section of the wiper bar; and

a plurality of closed distribution conduit means, one of the plurality of conduit means connecting each of the drip valves with the interior of its respective section of the wiper bar for individually supplying liquid to each said section and to the material surrounding the support member thereof, each of the conduits means including sighting means for viewing the level of liquid in the conduit means;

the drip valves being adjustable and the distribution conduit means being sized to establish an independent visible head of liquid in each of the conduit means during flow of liquid from the tank, thereby to obtain a constant flow of liquid to each of the sections of the wiper bar regardless of the relative elevation of the sections with respect to each other.

4,550,527

METHOD AND MATERIAL FOR IMPROVING THE GROWTH OF PLANTS

Timothy J. Hall, Rustington, and Eric J. Tridgell, London, both of England, assignors to National Research Development Corporation, England

Filed Apr. 18, 1983, Ser. No. 486,193
Claims priority, application United Kingdom, Apr. 22, 1982, 8211679; Jul. 27, 1982, 8221637
Int. Cl.[4] C12N *1/14*
U.S. Cl. 47—58 **16 Claims**

1. The method of producing a mycorrhizal condition in a root system of the plant, which method comprises growing the plant and positioning across the path of growth of at least part of the root system, a root-penetrable, integral, self-supporting carrier material having thereon an adherent layer comprising inoculum of a mycorrhizal fungus, so that at least part of the root system of the plant grows into contact with the carrier material and thereby becomes infected.

4,550,528

ASEXUAL PROPAGATION OF PINE TREES

Asha Mehra-Palta, Monsey, and Kimnaja Gross, Cornwall, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,750
Int. Cl.[4] A01G *1/00, 23/00*
U.S. Cl. 47—58 **9 Claims**



1. A method of asexually propagating pine trees, comprising:

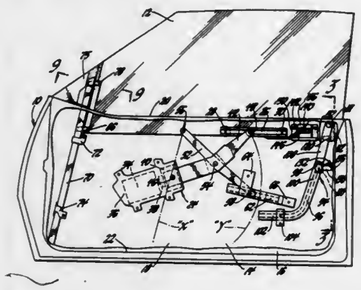
(a) severing the main stem of a pine seedling at a height above the ground of up to 12 inches and detaching the branches from the remaining main stem such that only one lateral branch remains intact and attached to the remaining main step;

(b) growing the remaining main stem and attached lateral branch at least until the cut end of the remaining main stem produces shoots having juvenile characteristics;

(c) severing the shoots from the remaining stem; and

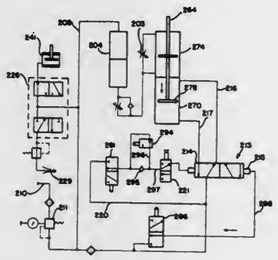
(d) rooting the shoots.

4,550,529
WINDOW STABILIZING MECHANISM
James R. Drouillard, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 24, 1984, Ser. No. 664,354
Int. Cl.⁴ E05F *11/38*
U.S. Cl. 49—348 **3 Claims**



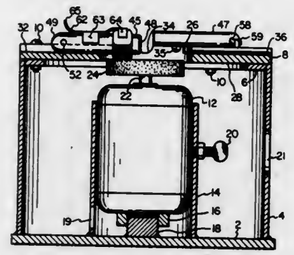
1. In a vehicle body door having a window opening and a window storage cavity beneath the window opening, a window movable between a raised position closing the opening and a lowered position stored in the storage cavity, and window regulator means connected to the window for moving the window along a defined path of movement between the raised and lowered positions, a stabilizer mechanism comprising:
a guide track mounted on the body within the storage cavity said track being curved to define a generally vertical upper portion and a more horizontal lower portion;
link means having one end associated with the track and movable therealong in a manner to enable pivotal movement of the link means with respect to the track and an other end pivotally connected to the window so that the movement of the window to the closed position causes the link means to stand up between the upper portion of the track and the window to stabilize the window and movement of the window to the lowered position causes the link means to assume a laying down position; and
interconnecting means provided respectively between the link means and the door and between the link means and the window and adapted to automatically interconnect therebetween when the window reaches the closed position causing the link to stand up whereby the link substantially stabilizes the closed position of the window.

4,550,530
SHORT-STROKING HONING MACHINE
Donald Rottler, Seattle, and David Engnell, Issaquah, both of Wash., assignors to Rottler Manufacturing Co., Kent, Wash.
Filed Jun. 10, 1983, Ser. No. 503,279
Int. Cl.⁴ B24B *5/08*
U.S. Cl. 51—34 R **2 Claims**



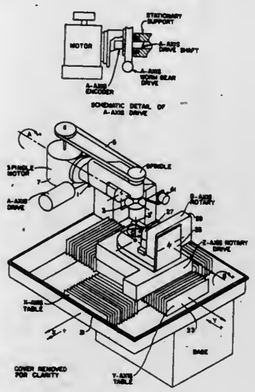
1. In a honing machine of the type having a honing tool, means for rotating the honing tool, and stroking means for vertically stroking the honing tool including a pneumatic system operative from a compressed air supply and including a double-acting piston in a cylinder having a piston rod with a variable stroke determining full stroking and short stroking of the honing tool, the improved pneumatic system comprising:
a control valve operatively connected to opposite ends of the cylinder and to the compressed air supply, and having a spool movable between a tool raising station whereat a first end of the cylinder is pressurized and the second end is vented, and a tool lowering station whereat said first end is vented and the second end is pressurized;
first and second air supply circuits to the control valve from the air supply;
a normally closed upper limit control valve in the first circuit caused to open when said piston rod is at a first limit of its travel corresponding to an upper stroke limit of the honing tool, and move the control valve from its tool raising station to its tool lowering station;
means in the second circuit for reducing the air pressure supplied by the second circuit to the control valve to a pressure less than the air pressure supplied by the first circuit to the control valve so that the spool will always move to the tool lowering station when the lower limit control valve is in closed position;
a normally open upper limit control valve in the second circuit caused to open when said piston rod is at a second limit of its travel corresponding to a lower stroke limit of the honing tool, and move the control valve from its tool lowering station to its tool raising station;
a normally short stroking dwell valve and a check valve in the second circuit and arranged in parallel relation to one another, the check valve preventing flow in the air supply direction;
the valves in the second circuit being arranged so that opening of the short stroking dwell valve isolates compressed air in the second circuit between the control valve and the check valve and short stroking dwell valve whereby each time the lower limit control valve opens and vents the portion of the second circuit between the control valve and the lower limit control valve, the spool in the control valve responsively moves toward its tool raising station by way of said isolated compressed air in the second circuit.

4,550,531
GRINDING BOX
William L. Frey, 303 Ivory Avenue, Pittsburgh, Pa. 15214
Filed Dec. 19, 1983, Ser. No. 563,214
Int. Cl.⁴ B24B *7/00*
U.S. Cl. 51—125 **8 Claims**



1. Apparatus for grinding bolt heads and nuts, said bolt heads and nuts each having a plurality of faces, said apparatus comprising:
(a) a housing, including a base, a sidewall and a cover, said cover being a flat plate having a top surface;
(b) abrading means disposed within the housing and beneath the cover, said abrading means being a power driven abrading wheel having a top surface;
(c) an opening through the cover providing access to the abrading wheel, said abrading wheel being adjacent the opening and spaced below the top surface of the cover, and
(d) bolt positioning means for positioning a bolt head against the abrading wheel and nut positioning means for positioning a nut against the abrading wheel such that the faces of the bolt heads and nuts are abraded and the bolt heads and nuts are reduced to a predetermined smaller size, said bolt positioning means being one or more channels in the cover which extend outwardly from the opening along the top surface of the cover, each of the channels having a bottom and being adapted to receive a threaded portion of a bolt of a particular size and position the corresponding bolt head against the top surface of the abrading wheel, whereby the bolt head is reduced to a smaller size as determined by the spacing between the bottom of the channel and the top surface of the abrading wheel, and said nut positioning means being a nut pilot shaft pivotally mounted to the top surface of the cover adjacent each channel and having means for positioning each nut pilot shaft within said adjacent channel, wherein the nut has a central opening through which the nut pilot shaft enters, said nut surrounding the nut pilot shaft, each nut pilot shaft having a size which will accept a nut corresponding to the size of the bolt which the adjacent channel is adapted to receive, and each nut pilot shaft adapted to be positioned within said adjacent channel and position the nut against the top surface of the abrading wheel, whereby the nut is reduced to a smaller size as determined by the spacing between the bottom of the channel and the top surface of the abrading wheel.

4,550,532
AUTOMATED MACHINING METHOD
George R. Fletcher, Jr., Central; George H. Messick, Jr., Clemson; Charles K. Roby, Clemson, and Cecil O. Huey, Jr., Clemson, all of S.C., assignors to Tungsten Industries, Inc., Greer, S.C.
Filed Nov. 29, 1983, Ser. No. 556,157
Int. Cl.⁴ B24B *1/00*
U.S. Cl. 51—288 **5 Claims**



1. A process for producing a machined article from an elongated blank, comprising the steps of:
providing an apparatus which comprises:
a chuck for holding said elongated blank,
means for rotating said elongated blank about a B axis, said B axis providing rotation about the central axis of said blank,
means for rotating said chuck in a horizontal plane about a Z axis,
means for moving said said means for rotating said chuck about a Y axis in a horizontal plane,
means for moving said means for moving along said Y axis about an X axis in a horizontal plane which is perpendicular to said Y axis,
a generally circular cutting wheel,
means for rotating said cutting wheel about the center thereof,
means for rotating said cutting wheel about an A axis perpendicular to the axis of rotation of said wheel,
means for measuring movement along each of said A, B, X, Y, and Z axes;
rotating said cutting wheel about the center axis thereof;
rotating said cutting wheel about said A axis;
rotating said elongated blank about said B axis;
moving said blank along said X, Y, and Z axes so as to engage said blank with said cutting wheel;
measuring the movement along said A, B, X, Y, and Z axes;
generating signals representative of said measurement along said axes;
establishing predetermined desired geometrical ratios with regard to the desired configuration of the machined blank;
assigning specific dimensional measurements which relate to said ratios to establish absolute predetermined desired measurements;
transposing said desired ratios into movement along said A, B, X, Y and Z axes;
comparing said signals with predetermined desired signals representative of said predetermined desired geometrical ratios; and
generating desired paths of movement for all axes simultaneously to maximize utilization of all available axes;
controlling movement along all said axes simultaneously along said path.

4,550,533
AIR-SUPPORTED STRUCTURE FOR SPORT ACTIVITIES
Donato M. Fraioli, 884 Palmer Ave., Mamaroneck, N.Y. 10543
Filed Sep. 30, 1982, Ser. No. 431,553
Int. Cl.⁴ E04B *1/345*
U.S. Cl. 52—2 **20 Claims**



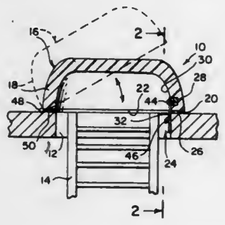
1. An air-supported structure for use in housing sport activities such as a golf-driving range and the like comprising, a flexible, collapsible and inflatable sheet mountable in an anchored condition on a surface of an area prior to inflation thereof and when inflated in an anchored condition defining an air-supported structure with arcuate surfaces, said structure having at its base periphery, the configuration of a truncated triangle, said structure being symmetrical about a vertical plane of symmetry passing through the longitudinal axis and an arcuate longitudinal profile in which a front end of the structure corresponding to a larger base of the truncated triangle is lower than a rear end of the structure at a smaller base of said truncated triangle, the top of the structure extending upwardly from the front toward the rear at an increasing pitch along the major length of the structure to a substantially highest portion of the structure and rapidly curving downwardly at the rear toward its anchor area, the structure having a transverse sectional elevation profiles with a substantially arcuate convex

central area surface symmetrical about said plane of symmetry with symmetrical wing surfaces extending laterally therefrom curving downwardly away from the central portion.

4,550,534
ATTIC STAIRCASE

Kenneth E. Mariano, c/o George Spector, 3615 Woolworth Bldg., and George Spector, 3615 Woolworth Bldg., both of 233 Broadway, New York, N.Y. 10007

Filed Aug. 23, 1983, Ser. No. 525,736
Int. Cl.⁴ E06C *9/06*; E06B *5/00*; E04D *13/035*
U.S. Cl. 52—19 **3 Claims**



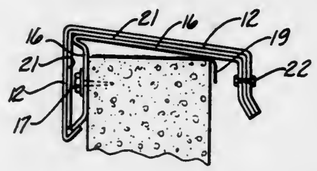
1. A sealing cover for an attic floor well opening and attic stairs which comprises:
(a) a dome made of insulated material, covering the attic floor well opening, pivotable at one side to close and open the attic floor well opening;
(b) a seal made of weather stripping mounted around bottom edge of said dome;
(c) means for holding down said dome over the attic floor well opening and compressing said seal around perimeter of the attic floor well opening making said dome draft free; and
(d) means for raising up said dome from the attic floor well opening so that a person may gain access through the attic floor well opening via the attic stairs, wherein said means for holding down said dome over the attic floor well opening comprises:
(a) a flexible strap mounted on the dome inner surface with grip formed at bottom end and a transverse aperture near the handle thereof;
(b) a hook mounted in the attic floor well opening below said dome so that when said strap is stretched down via the hand grip handle said transverse aperture can be placed over said hook, wherein said means for raising up said dome from the attic floor well opening is a spring hinge mounted between the bottom edge of said dome and the attic floor opposite said strap so that when said strap is removed from said hook said spring hinge will pivot said dome to an open position, wherein said means for raising up said dome from the attic floor well opening further comprises:
(c) a leaf spring pivotally connected between a top center point within a groove in said dome and a second hinge on the attic floor.

4,550,535
COPING SYSTEM

Edward J. Drogosch, 27049 Grand River, Redford, Mich. 48240

Filed Jul. 21, 1983, Ser. No. 515,792
Int. Cl.⁴ E04D *13/14*; E04F *19/02*
U.S. Cl. 52—60 **5 Claims**

1. A coping system covering a top of a wall comprising:
a substantially inverted U-shaped continuous cleat having an anchor leg secured to a first side of the wall and extending upwardly from the top of said wall, an interior leg disposed adjacent to a second side wall, a top leg extending substantially in a single plane between the anchor leg and interior leg, formed means interconnecting the anchor leg and the top leg at a location spaced upwardly from the top of said wall near the first side, said formed means comprises a reversely bent portion of said cleat having a flange portion extending at an oblique angle outwardly from the anchor leg at a point spaced upwardly from the top of the wall in a direction generally away from the first side of the wall, a bight being formed at the outermost point of the flange portion which contiguously interconnects the

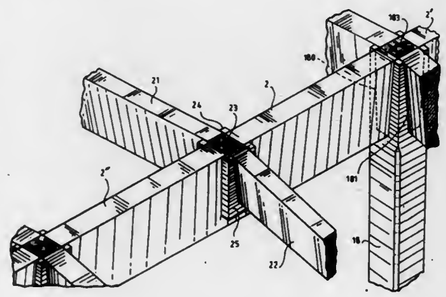


flange portion to the top leg to form the reversely bent portion which biases the top leg toward the top of the wall when the cleat is installed thereon to hold the coping system firmly into engagement with the top of the wall adjacent the second side; and
a coping panel having an exterior face overlaying the anchor leg, a top face overlaying the top leg, an interior face overlaying the interior leg, and means for gripping the anchor leg being formed on said exterior face.

4,550,536
INDUSTRIAL BUILDING FRAMEWORK FORMED FROM PREFABRICATED REINFORCED CONCRETE ELEMENTS

Jean F. Lamoure, 30, rue Montaigne, 47000 Agen, France

Filed Nov. 23, 1982, Ser. No. 444,017
Claims priority, application France, Nov. 23, 1981, 81 21902
Int. Cl.⁴ E04B *7/02*
U.S. Cl. 52—91 **4 Claims**

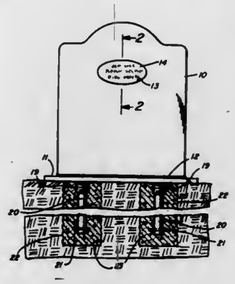


1. A framework for receiving a slanted roofing of a building, said framework comprising an assembly of prefabricated reinforced concrete elements substantially parallelepipedic in shape, said assembly including:
a plurality of pairs of vertical posts, each post comprising an upper end provided with a substantially horizontal supporting surface, said pair of vertical posts defining a first vertical plane;
a horizontal ridge beam, having a longitudinal axis, first and second vertical opposite faces and upper and lower horizontal opposite faces, and lower horizontal face bearing on said supporting surfaces of said posts and said horizontal upper face being provided with at least two transversal recesses perpendicular to said longitudinal axis and reinforcement bars incorporated in said horizontal beams and passing through said transversal recesses;
at least two slanted roof truss structures respectively extending in second and third spaced vertical planes perpendicular to said longitudinal axis, each of said roof truss structures comprising a first slanted half roof truss having a first upper extremity with a first upper substantially vertical face bearing on a first portion of said opposite face of said horizontal ridge beam, and a second slanted half roof truss comprising a second upper extremity with a second substantially vertical upper end face bearing on a second portion of the second opposite face of said horizontal ridge beam, said upper end faces of the first and second half roof trusses, each having an upper part located in front of one corresponding of said two recesses, said half roof trusses further comprising reinforcement bars incorporated therein, which have end portions extending beyond said respective upper parts into said corresponding recess, the two half roof trusses of each slanted roof truss structure being symmetrical relative to said first vertical plane;
connecting means for at least said end portions of the reinforcement bars of the first and the second half roof trusses, whereby the horizontal thrusts developed by the two half slanted roof trusses of each slanted roof truss structure produce both a counterbalanced pulling force on the corresponding reinforcement bars and a counterbalanced compressional force on the corresponding first and second portions of the horizontal ridge beam;
a protecting concrete forelock building up said recesses
a plurality of rectilinear horizontal stringers supported by said half roof trusses and extending parallel to said ridge beam.

4,550,537
MONUMENTS FOR GRAVES

Wallace R. Smith, 76 University St., Portland, Me. 04103

Filed Jun. 16, 1983, Ser. No. 504,812
Int. Cl.⁴ E04H *13/00*
U.S. Cl. 52—103 **1 Claim**

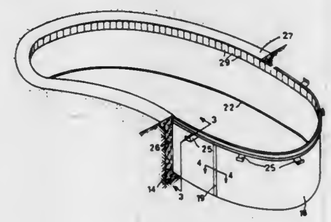


1. A monument for graves, said monument including a base and a head each of which consists of a single flat sheet of stainless steel the thickness of which is in the approximate range of five-eighths of an inch to two inches, the length and width of the base greater than the width and thickness of the head, a weld joining the head and the base and extending continuously about the head with said head normal to the base and so located that marginal portions of the base are exposed on both sides of and at both ends of the head, a concrete support in the ground in the ground in the form of a pair of tubular forms in the ground and of a diameter less than the width of the base and spaced lengthwise thereof, a body of concrete in each form, and said base including a connecting means depending from and secured to its undersurface and embedded and anchored in a selected one of said concrete filled forms in a manner such that the monument is installed with said base substantially flush with the ground surrounding the monument, whereby the wheels of a lawn mower may travel across marginal portions of the base while the mower is cutting grass at the edges thereof.

4,550,538
POOL AND METHOD OF MAKING SAME

Stanley R. Blakeway, Stafford, Australia, assignor to Blakeway Marviroll Pools Pty. Ltd., Queensland, Australia

PCT No. PCT/AU82/00119, § 371 Date Mar. 1, 1983, § 102(e) Date Mar. 1, 1983, PCT Pub. No. WO83/00521, PCT Pub. Date Feb. 17, 1983
PCT Filed Jul. 29, 1982, Ser. No. 474,580
Claims priority, application Australia, Jul. 29, 1981, PE9976
Int. Cl.⁴ E04H *3/16*
U.S. Cl. 52—169.7 **6 Claims**

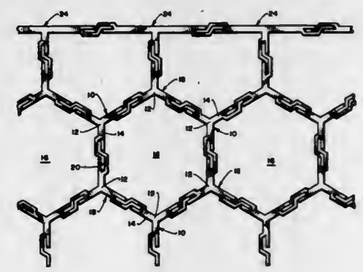


1. A method of making a liquid storage container including the steps of:
supporting an endless base strip with its upper edge substantially in a horizontal plane;
applying an endless former strip of resiliently deformable material about the base strip, the top of the former strip being above the top of the base strip;
applying concrete to embed therein the base and former strips, concrete inwardly of the base strip being substantially level with the top of said base strip, concrete outwardly of the former strip being above the level of the base strip;
removing the former strip after the concrete has set to form an endless groove of which the base strip forms the inside face;
inserting into said groove the bottom part of a container wall consisting of an endless loop of vertical sheet material; and
force-fitting a sealing strip of resiliently deformable material into said groove between the base strip and the inserted bottom part of said wall.

4,550,539
ASSEMBLAGE FORMED OF A MASS OF INTERLOCKING STRUCTURAL ELEMENTS

Terry L. Foster, 12716 Cijon St., San Diego, Calif. 92129

Filed Dec. 27, 1983, Ser. No. 565,391
Int. Cl.⁴ E04C *1/30*
U.S. Cl. 52—236.1 **12 Claims**



1. An assemblage formed of a plurality of elongated structural elements, said assemblage comprising:
each said elongated structural element being constructed in

transverse cross-section of a hub from which extends a plurality of sheet material panels, each said panel having a free outer edge, said hub having a longitudinal center axis, each said panel substantially defining a plane, each said plane intersecting at said longitudinal center axis, said longitudinal center axis being totally confined within each said plane; and

interlocking means connected to each said panel directly adjacent said free outer edge, said interlocking means of one said panel to matingly engage with a said interlocking means of another said panel of a separate elongated structural element forming a pair of interlocked said panels, said interlocked said panels substantially forming a continuous sheet material member having substantially flush abutting exterior wall surfaces.

4,550,540

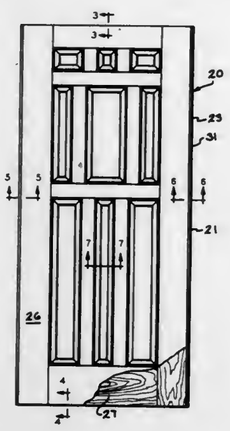
COMPRESSION MOLDED DOOR ASSEMBLY

John E. Thorn, Sylvania, Ohio, assignor to Therma-Tru Corp., Toledo, Ohio

Continuation-in-part of Ser. No. 456,400, Jan. 7, 1983, abandoned. This application Mar. 29, 1984, Ser. No. 594,549

Int. Cl.⁴ E06B *3/36*

U.S. Cl. 52—309.4 **13 Claims**



1. A door assembly comprising, in combination, a rectangular frame, a pair of opposed compression molded skins mounted on said frame, and a foamed core positioned within said frame between and adhered to said opposed compression molded skins, said skins each having an outer side and an inner side, a vertically extending projection positioned on each vertical edge of said inner side of said compression molded skins, said projections engaging said rectangular frame, said compression molded skins being integral, including a molding resin and glass fibers, said outside of said skin being essentially devoid of glass fibers for a predetermined depth of at least 0.005 inch, said outer side of said skin defining a textured pattern simulating the grain and texture of a wood door, said textured pattern having a pattern depth between 0.003 inch and 0.009 inch, but not in excess of such predetermined depth.

4,550,541

SCAFFOLDING

Joseph E. Whitlam, Barnsley, and Alwyn H. Richards, Pontefract, both of England, assignors to Stevecleave Limited, South Yorkshire, England

Continuation of Ser. No. 442,907, Nov. 19, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,190

Claims priority, application United Kingdom, Nov. 28, 1981, 8136001

Int. Cl.⁴ E04C *1/18*

U.S. Cl. 52—309.8 **16 Claims**

1. A scaffolding tube comprising: a hollow extruded aluminum tube of circular cross section with a uniform external diameter along the entire length thereof, the aluminum tube having an outer diameter in the range of about 4.70 to 5.08 cm, the aluminum tube also having a wall thickness in the range of about 0.38 to 0.51 cm and having a mean weight of aluminum in the range of about 1.488 to 1.789 Kg/m of the tube length, the interior of the aluminum tube being filled along the entire length thereof with a low density foam material to prevent jetting of the scaffolding tube when dropped into sea water, said foam material having a closed cell content of not less than about 90% to inhibit water from entering the scaffolding tube, and said foam material having a density selected to give the scaffolding tube positive buoyancy in sea water to eliminate the necessity of recovering the scaffolding tube from the sea bottom.

16. A scaffolding structure comprising: a plurality of scaffolding tubes, each scaffolding tube including an extruded aluminum tube of uniform size and shape along the entire length thereof, the interior of each aluminum tube being filled along the entire length thereof with a low density foam material to prevent jetting of the scaffolding tube when dropped into sea water, said foam material having a closed cell content of not less than about 90% to inhibit water from entering each scaffolding tube, said foam material having a density selected to give each scaffolding tube positive buoyancy in sea water to eliminate the necessity of recovering the scaffolding tube from the sea bottom, and detachable means that connects the scaffolding tubes to each other to form said scaffolding structure.

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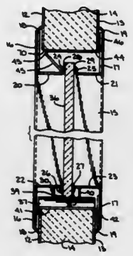
VISION PANEL FRAME

Jack La See, 308 West Cedar, Abbotsford, Wis. 54405, assignor to Jack La See, Abbotsford, Wis.

Filed Aug. 9, 1984, Ser. No. 639,066

Int. Cl.⁴ E06B *3/62, 1/04*

U.S. Cl. 52—476 **25 Claims**



1. A fire resistant vision unit for assembly in an opening in a door or the like comprising:

a first frame member adapted to be mounted in said opening to one side of said door;

a second frame member adapted to be mounted in said opening and to the opposite side of said door;

said first and second frame members having flange sections for extending over peripheral edges of said opening;

securing means clamping the first and second frame members to the door and to a transparent panel member

support arms extending toward each other from said first and second frame members into said opening and defining an open holding channel;

said transparent panel member disposed in said channel;

wherein said support arms maintain said panel in place including times when said panel becomes semi-molten said support arms including inwardly biased sharp edge portions in contact with said panel member wherein said sharp edge portions will imbed in said panel member when said panel becomes semi-molten and;

at least one support element positioned between said first and second frame members and closing the open channel to support the bottom of said panel member.

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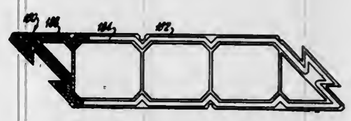
CONSTRUCTION FORMS

Marcello Valenzano, 154-09 33rd Ave., Flushing, N.Y. 11354

Filed Jan. 9, 1984, Ser. No. 569,040

Int. Cl.⁴ E04C *1/39, 2/52*

U.S. Cl. 52—309.7 **4 Claims**



1. Prefabricated structural assembly composed of interconnected construction forms and comprising,

(a) standard construction forms in the form of shells having side walls and biased end terminations,

(b) extrudable shells disposed to fit within the said forms, said shells having separate cells and support members for the transmission of cables, fluids and other utility carriers, and

(c) solidifying means within the said forms between the said shells and forms to maintain their spaced relationship upon solidification of the said solidifying means.

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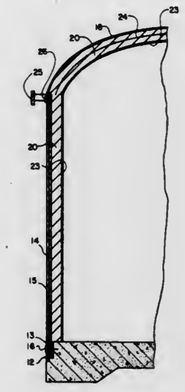
METHOD FOR FORMING STRUCTURES

Theodore T. Thoeny, 1054 Haviland Ter., Seaside, Calif. 93955

Filed Aug. 17, 1983, Ser. No. 523,887

Int. Cl.⁴ E04B *1/34*

U.S. Cl. 52—741 **22 Claims**



1. A method for forming a structure comprising the steps of:

(a) Forming a foundation,

(b) Attaching panels to said foundation to form an assembled panel construction,

(c) Installing at least a door in said panels,

(d) Fabricating an unshaped flexible membrane having a middle portion and further having a peripheral portion,

(e) Draping said flexible membrane over the upper portion of said assembled panel construction, such that the middle portion of said membrane hangs down within said panel construction lower than the peripheral portion of said membrane, adjusting said membrane such that the draped mode of said membrane will be the reverse of the desired shape of the roof of the structure, thereafter attaching the peripheral portion of the membrane to the upper portion of the panel construction, and thereafter

(f) Inflating said membrane with air pressure,

(g) Applying foam to a surface of said panels,

(h) Applying foam to a surface of said membrane,

(i) Applying a fire barrier to the interior or exterior exposed side of said foam, and

(j) Applying an exterior sealant to any exterior exposed foam surfaces,

Whereby structures of various sizes and configurations can be constructed and modified without the necessity of an extensive structural framework.

4,550,545

VENTILATION INSET FOR SHIELDING CABINS AND ROOM SCREENING DEVICES

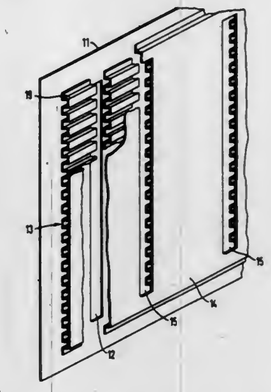
Hans-Werner Schulz, Wenzenbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 497,811

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220287

Int. Cl.⁴ E04C *2/32*

U.S. Cl. 52—799 **5 Claims**



1. Ventilation inset for shielded cabins and room screening devices, comprising mutually parallel and spaced apart adjacent metal sheets each having slots formed therein, said slots in each of said sheets being shifted relative to said slots in the next adjacent sheet, and a multiplicity of air-permeable waveguides disposed between each two adjacent sheets providing communication between the interior of the cabins and the surroundings.

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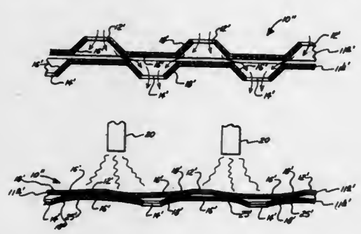
STERILIZABLE PERFORATED PACKAGING MATERIAL

Garland E. Raley, Terre Haute, Ind., and Richard W. Goodrum, Richmond, Va., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 423,956, Sep. 27, 1982, which is a continuation-in-part of Ser. No. 270,609, Jun. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 289,369, Aug. 3, 1981, abandoned. This application Sep. 17, 1984, Ser. No. 651,449

Int. Cl.⁴ B65B *55/10*

U.S. Cl. 53—425 **19 Claims**



1. A method for sterilizing an item in a package comprising:
a. placing the item between a fiber-free top sheet and a fiber-free bottom sheet of a sterilizable package, which package comprises said top sheet connected at its edges to said bottom sheet, said sheets being made from a material comprising a first layer of perforated thermoplastic extruded film and a second layer of perforated thermoplastic extruded film, said second layer of said film connected to said first layer of said film, said first layer of said film and said second layer of said film each having protuberances therein in which the perforations are located, and said first layer of said film being oriented relatively to said second layer of said film so that said perforations in said first layer of said film are mis-aligned with said perforations in said second layer of said film;
b. subjecting said package to a stream of sterilizing gas sufficient to enter the interior of said package and sterilize the item inside; and thereafter,
c. subjecting said package to heat sufficient to seal the areas of said layers of film around said perforations in said package to each other and thereby make said package water-tight and airtight.

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METHOD AND APPARATUS FOR ROLLING AND PACKAGING CONVOLUTED FOAM PADS

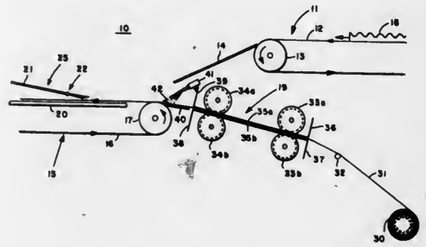
Bill L. Wagner, Sr., Redlands, Calif., assignor to Bio Clinic Company, Rancho Cucamonga, Calif.

Filed May 17, 1983, Ser. No. 495,600

Int. Cl.⁴ B65B *11/56, 61/12, 63/02*

U.S. Cl. 53—430 **10 Claims**

1. In a method of packaging a rollable and compressable foam pad with a continuous flexible sheet material divided into a plurality of sections separated by transverse pre-weakened lines, the sections having a length greater than the circumference of the foam pads when the pad is in a rolled and compressed condition and a width greater than the length of the foam pad when the pad is in a rolled and compressed condition, the steps comprising:
a. feeding the continuous flexible sheet material to a set of clutch-brake nip rolls;
b. engaging the clutch-brake nip rolls to feed the continuous flexible sheet material into a set of drive nip rolls;
c. guiding the flexible sheet material during its travel between the nips of the clutch-brake nip rolls and the drive nip rolls;
d. braking the clutch-brake nip rolls while the drive nip rolls are engaged in advancing the continuous flexible sheet material, so that a tension is exerted on the continuous sheet material sufficient to tear the sheet material along the transverse pre-weakened line and separate a single section from the length of the continuous sheet material;
e. synchronously feeding the foam pad, in a non-compressed condition, and the separated single section in a predetermined direction and into adhesive contact such that a trailing portion of the pad in said direction of feeding adheres to a leading portion of the separated single section; and



f. rolling and compressing the foam pad thereby causing the single section to completely wrap around the exterior of the pad and maintain the pad in a rolled and compressed condition.

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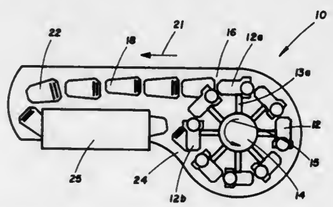
METHOD AND APPARATUS FOR VACUUM PACKAGING WITH PRESHRINKING

Joseph E. Owensby, Spartanburg; Jody W. Rupp, Buffalo; Frederick A. Dobbins, Lyman, and Thomas E. Waldrop, Greer, all of S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed May 26, 1983, Ser. No. 498,426

Int. Cl.⁴ B65B *31/00, 51/32, 53/06*

U.S. Cl. 53—434 **6 Claims**



1. A method for continuously packaging products comprising:
(a) placing a product in a heat shrinkable thermoplastic bag; then
(b) shrinking said bag in a heated gaseous medium while
(c) partially constricting the mouth of said bag to cause ballooning of said bag, further provided that said constricting is selected such that shrinkage of said bag overcomes said ballooning to collapse said bag onto said product;
(d) cooling the mouth of said bag during said constricting of the mouth sufficiently to prevent self-welding of the bag material to itself; and then
(e) placing said bag in a vacuum chamber followed by vacuumizing and in-chamber sealing, further provided that the rate of vacuumizing is limited to substantially prevent ballooning of said bag.

2. Apparatus for continuously vacuum packaging a product, comprising:

(a) means for shrinking a heat shrinkable thermoplastic bag in a heated gaseous medium; having associated therewith
(b) means for partially constricting the mouth of said bag to cause ballooning of said bag, further provided that said constricting is selected such that shrinkage of said bag overcomes said ballooning to collapse said bag onto said product;
(c) means for cooling the mouth of said bag in conjunction with said constricting means; and,
(d) a vacuum chamber, separate from said shrinking means, having means for vacuumizing and in-chamber sealing further provided that the rate of vacuumizing is limited to substantially prevent ballooning of said bag.

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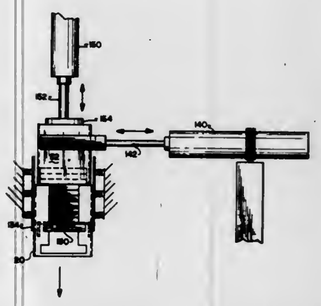
APPARATUS AND METHOD OF PACKING ARTICLES

Nyles V. Reinfeld, P.O. Box 2321, Bath, Ohio 44210, and Michael J. Valentine, 78 Tower Rd., Pines Lake, Wayne, N.J. 07470

Continuation-in-part of Ser. No. 443,354, Nov. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 338,440, Jan. 11, 1982, abandoned. This application Mar. 15, 1984, Ser. No. 589,877

Int. Cl.⁴ B65B *43/00, 35/50*

U.S. Cl. 53—447 **18 Claims**



1. A method of packing articles in a container comprising the steps of:
forming articles into stacks of different heights but of substantially constant cross-sectional shape and area in a temporary retainer, measuring the heights of the stack of articles,
after measuring the height of the stacks, molding an open-ended container of a length to receive said articles as stacked, and
telescoping said newly molded container over said articles to enclose the same.

4,550,550

AUTOMATED MINERAL WOOL ROLL-UNIT PROCESSING SYSTEM

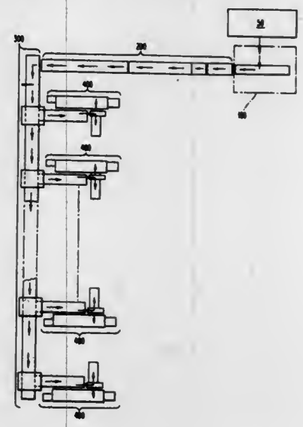
Peter T. Scott, Bogart, Ga., assignor to CertainTeed Corporation, Valley Forge, Pa.

Filed Mar. 31, 1983, Ser. No. 480,941

Int. Cl.⁴ B65B *1/24*

U.S. Cl. 53—529 **8 Claims**

4. An automated system for processing insulation roll units of different facings and widths for packaging comprising:
a. receiving means located adjacent a production line for receiving a roll-set from the production line, and orienting said set for a desired placement of end tabs thereof;
b. roll-set breaking means located adjacent said receiving means for receiving a set of a plurality of separable but connected-together roll units and for separating said set into a plurality of individual roll units;
c. verifying means located downstream of said roll-set breaking means for verifying preselected characteristics of said units;
d. delivery means located downstream of said roll-set breaking means for conveying roll units to a packaging station while maintaining desired predetermined orientations of the units to deliver them for packaging, each under a predetermined packaging orientation; and
e. at least one packaging means located downstream of said verifying means and delivery means for packaging rolls with end tabs thereof in predetermined orientation,



wherein said receiving means includes cradling means located at a first upper position for releasably grasping said set therebetween and connected to a first drive means for rotating said set to a preselected final position while maintaining said set above a predetermined level, wherein said receiving means includes conveyor means connected to a second drive means and located at a first lower position for engaging said set and releasably transporting said set away from said receiving means, wherein said conveyor means includes rejection means for ejecting a defective roll set backwards out of said receiving means.

4,550,551

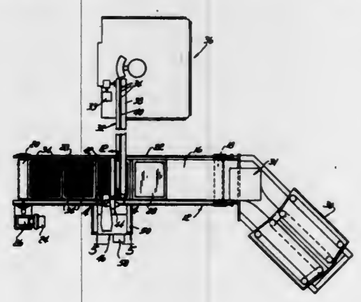
SAGGER LOADER AND CONVEYOR APPARATUS AND METHOD

Raymond P. DeSantis, 2710 Timberwyck Trail, Troy, Mich. 48098

Filed Feb. 9, 1983, Ser. No. 465,166

Int. Cl.⁴ B65B *5/08, 5/10;* **B65G** *47/52*

U.S. Cl. 53—534 **13 Claims**



1. An apparatus for transferring parts, comprising a first

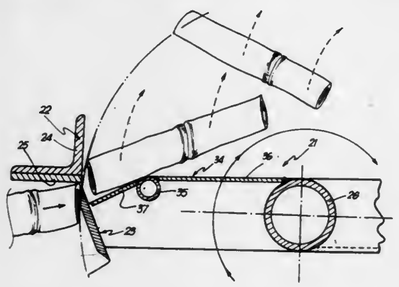
conveyor for carrying a single row of parts and travelling along a first axis of travel, a second conveyor having a receptable thereon and travelling along a second axis of travel at an angle to said first axis of travel, said receptacle for carrying parts placed therein in consecutive rows of a predetermined plurality of said parts, a stationary housing disposed at a location where said first axis of travel and said second axis of travel intersect, an elbow-joint arm supported by said housing and pivotable relative to said housing, said elbow-joint arm having a first arm pivotable around a single pivot axis relative to said housing and a second arm mounted on the end of said first arm pivotable around a second pivot axis relative to said first arm, said first and second pivot axes being substantially parallel, a part pick-up member mounted on the end of said second arm, means in said housing for pivoting said first arm relative to said housing and said second arm relative to said first arm for placing said part pick-up member over said parts on said first conveyor for picking up at least one of said parts and for pivoting said first arm relative to said housing and said second arm relative to said first arm for placing said part pick-up member over said receptacle on said second conveyor for placing said part in said receptacle, and means in said part pick-up member for controllably and sequentially grasping and releasing said parts; said part pick-up member comprising a slide, a part pick-up head mounted on said slide, means supporting said slide, and means linearly displacing said slide from a part pick-up position to a part loading position for picking up a single part from said first conveyor and for placing said part in said receptacle on said second conveyor at a predetermined location in a row.

4,550,552

SUGAR CANE HARVESTING METHOD AND APPARATUS

Rodney A. Stiff, Bundaberg, Australia, assignor to Toft Bros. Industries Ltd., Bundaberg, Australia

Continuation of Ser. No. 64,437, Aug. 7, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,544
Claims priority, application Australia, Aug. 16, 1978, PD5515
Int. Cl.⁴ A01D *45/10*
U.S. Cl. 56—13.9 **8 Claims**



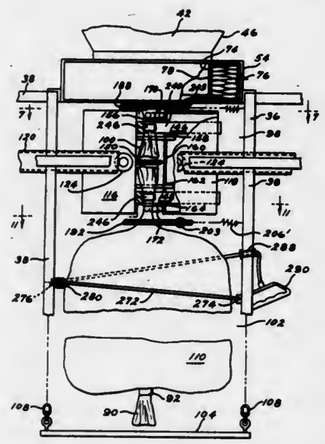
1. A cane harvester comprising cutter means to cut cane, feed means to feed said cut cane longitudinally along a feed path, chopping means to chop said cane into billets, billet engaging means to engage said cane and billets and a discharge chute to discharge billets from said cane harvester, said chopping means comprising longitudinal movable blade means rotatable about an axis and operable to sweep a substantially cylindrical or frusto-conical path, fixed blade means mounted on said feed path and cooperating with said movable blade means, said movable blade means movable upwardly past said fixed blade means, said billet engaging means being located between said axis and said movable blade means and being rotatable with said movable blade means, said billet engaging means being operable to engage and pretension said cane prior to said cane being cut into billets and to throw said cut billets upwardly and away from said chopping means into said discharge chute.

4,550,553

PLASTIC SHEET TUBING, BAG-FORMING APPARATUS FOR LAWN MOWERS

John L. Gaither, Louisville, Ky., assignor to Richard L. Caslin, Louisville, Ky.

Filed Oct. 20, 1983, Ser. No. 543,615
Int. Cl.⁴ A01D *53/06*
U.S. Cl. 56—202 **25 Claims**



1. A lawn care machine having a mobile main frame which carries high velocity airstream means for removing material from the ground and moving it through a discharge opening, the improvement comprising:

a. an auxiliary frame adapted to be supported from the rear of said machine and having an air-release funnel section at the top of this frame for receiving the delivery of material from the said discharge opening and separating out much of the airstream from the material, the lower end of the funnel section having a discharge opening through which the material falls;

b. a supply of large plastic sheet tubing that is folded lengthwise into a compact annular cartridge that is arranged horizontally beneath the discharge opening of the funnel section;

c. a plastic bag supporting platform positioned at the bottom of the auxiliary frame for supporting a plastic bag after it is formed from the plastic sheet tubing and filled by the removed ground material;

d. whereby the leading edge of the said supply of large plastic sheet tubing is first sealed to create the bottom of a plastic bag, so that as the ground material passes through both the funnel section and the annular cartridge the plastic bag is being filled causing it to pay out from the cartridge and pass downward by gravity due to its increasing weight and volume until the bag comes to rest on the said supporting platform;

e. a throttle section positioned beneath the cartridge of plastic sheet tubing comprising double-acting means for collapsing the empty top of the filled plastic bag while in place into a generally flat plane, as well as applying a collapsing force at the opposite ends of this generally flat plane to gather the plastic sheet tubing into a rope-like formation, and a pair of vertically-spaced sealing means for sealing the plastic rope-like formation at two locations, and cutter means for severing the rope-like formation at a location between the two sealed locations so as to seal both the top of the filled plastic bag and seal the bottom of the next bag to be formed;

f. and remote control means for operating the said throttle section of the auxiliary frame to effect the collapsing operation of the top of the bag, as well as for operating the two sealing means, and operating the cutter means;

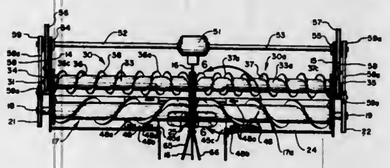
g. and remote control means for unloading the sealed bag from the supporting platform.

4,550,554

CROP PROCESSOR

E. Cordell Lundahl; James G. Wiser, both of Logan; W. Ray Thornley, Hyde Park, and Laurel H. Jensen, Hyrum, all of Utah, assignors to Ezra C. Lundahl, Inc., Logan, Utah

Filed Jan. 3, 1984, Ser. No. 567,661
Int. Cl.⁴ A01D *55/20, 49/00*
U.S. Cl. 56—294 **6 Claims**



1. A crop processor comprising

a support frame adapted to be coupled to a prime mover;

at least one elongate cutting auger journalled by said support frame and including a central shaft having a helical flange extending therearound;

cutting teeth spaced along and cut into the outer peripheral edge of the helical flange and with the outermost edge of each tooth extending from the flange in the direction of travel of the crop cut by the teeth and carried by the helical flange;

means for rotating the cutting auger about its longitudinal axis;

roller means on the frame for traveling the frame over the ground;

means to hold the cutting auger a selected distance off the ground and with its longitudinal axis substantially normal to the direction of travel of the frame;

cover means to direct crop cut by the cutting auger to a rear discharge location and to bend crop to have stalks thereof cut by the cutting auger;

a towbar connected to and projecting from the frame to connect to the drawbar of a towing prime mover;

crop pick up by means carried by the frame and positioned to be between each cutting auger and wheels of the prime mover, said crop pick up means including

support shafts fixed to the frame, and a wheel carried by each support shaft,

flexible fingers radiating from the periphery of each wheel to engage the ground during rotation of such wheel, and

means carried by the frame to rotate the wheel whereby the fingers sweep the ground in a plane traverse to direction of travel of the prime mover and raise crop knocked down by the wheels to be bent by the housing.

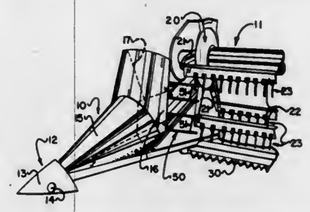
4,550,555

CROP GUIDING ATTACHMENT FOR A COMBINE DIVIDER

John W. Rohlik, R.R. 1, Box 75, Vesta, Minn. 56292

Filed Aug. 2, 1984, Ser. No. 636,975
Int. Cl.⁴ A01D *63/00*
U.S. Cl. 56—314 **7 Claims**

1. A crop guiding attachment for a crop divider of the type used on a harvester having a transverse frame and reel, said crop divider extending forward from a relatively wide rear end to a relatively narrow snout, said attachment comprising crop guiding tines and means for mounting said tines to the rear end of said divider to extend laterally inward toward the center of the header for deflecting crops travelling along the inside of the sidewall toward the center of the reel whereby end wrap is prevented, each of said tines formed from resilient metal rod



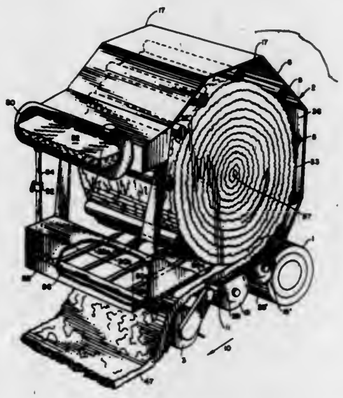
bent to form an annular spring near the mounting end thereof, said spring providing a resilient flexure point permitting said tines to move temporarily rearward under extreme crop-load conditions and permitting said tines to move temporarily downward if interfering with said reel.

4,550,556

SYSTEM FOR INJECTION OF LIQUID OR GRANULAR MATERIAL INTO A ROUND HAY BALE

Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Filed Jun. 4, 1984, Ser. No. 617,251
Int. Cl.⁴ A01D *39/00, 75/00*
U.S. Cl. 56—341 **7 Claims**



1. In a round baler of the type including a housing, running gear for supporting the baler in a field and for pulling the baler through the field, bale forming means cooperative with the housing, bale discharge means for discharge of a formed bale from the housing, and a pick-up assembly for directing material to be baled into bale forming means, said pick-up assembly including means for feeding a layer of material from field level into the bale for forming a round bale, said layer having a transverse dimension, the improvement in combination of:

a hold down assembly for the means for feeding material into the baler, said hold down assembly comprising a plurality of hollow tines positioned against the top of the layer as the layer enters the baler, said tines being directed toward the flow of material into the baler, said hold down assembly further comprising a manifold tube transverse to the layer, said hollow tines being connected from the manifold for simultaneously holding the top side of the layer and for dispersing liquid or particulate matter on and into the layer prior to forming the layer into a round bale, each

of said hollow tines including at least one ejector outlet for said liquid or particulate matter.

4,550,557

DEVICE TO FORM CROP INTO ROUND BALES

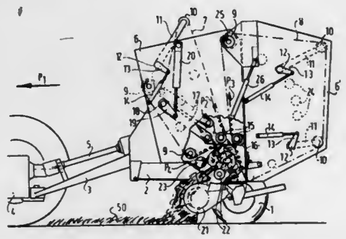
Hermanus H. Vissers, Nieuw-Vennep, and Jan Wondergem, Rijsenhout, both of Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed May 2, 1984, Ser. No. 606,246

Claims priority, application Netherlands, May 9, 1983, 8301647

Int. Cl.⁴ A01D *39/00*

U.S. Cl. 56—341 **19 Claims**



1. A device for forming crop lying on the ground into a round bale mainly comprising a frame movable across the field and having two relatively spaced walls, a group of guiding and stretching members arranged between and supported by said walls for guiding and stretching respectively one or more endless belt-like elements, means for picking up the crop from the ground, a group of supporting members journalled between said walls and arranged in a substantially complete circle, said supporting members cooperating with said endless belt-like elements to limit the diameter of the round bale in accord with the diameter of said circle.

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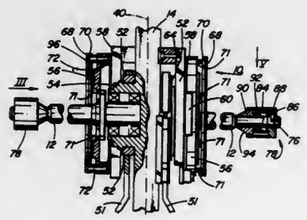
CRADLE FOR A TWISTING MACHINE

Jean Bouffard, Lachine; André Dumoulin, Montagnes, and Edgar K. Lederhose, Chateauguay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 27, 1983, Ser. No. 565,743

Int. Cl.⁴ B65H *59/04;* **D01H** *7/44, 7/86*

U.S. Cl. 57—58.52 **6 Claims**



1. A cradle for a twisting machine comprising

a reel spindle for supporting a reel of filamentary material in a reel support position upon the spindle,

the spindle rotatably mounted upon a support and having a free end,

an annular braking member surrounding and secured to the spindle,

means to apply a braking force to the braking member and thus to the spindle,

friction engaging means rotatable together with and about the axis of the spindle, for frictional engagement with the reel, said friction engaging means having a friction surface facing towards the free end of the spindle, and

resiliently compressive means to urge the friction surface towards the free end of the spindle, and

means for urging a reel when mounted upon the spindle against the friction surface

to urge the friction engaging means against the resiliently compressive means

to positively drivably couple the reel with the spindle and the braking member.

4,550,559

CABLES AND PROCESS FOR FORMING CABLES

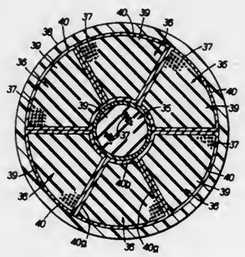
Ian M. Thomson, Wokingham, England, assignor to Cable Belt Limited, Edinburgh, Scotland

Filed Sep. 1, 1983, Ser. No. 528,439

Claims priority, application United Kingdom, Sep. 1, 1982, 8224956; Jun. 2, 1983, 8315181

Int. Cl.⁴ D07B *1/08, 1/10, 1/16, 7/14*

U.S. Cl. 57—223 **25 Claims**



1. A cable comprising:

at least one layer of strands twisted together,

each strand of said at least one layer being of circular cross-section and being formed of a plurality of elements twisted together,

each strand of said at least one layer being covered with an individual sheath of a plastics or rubber material,

at least some of said individual sheaths being of non-circular cross-section prior to the twisting of said at least one layer such that the sheaths of adjacent strands interlock to provide a layer in which the sheaths provide the circular strands with a generally fixed spatial relationship both to each other and within the cable.

4,550,560

METHOD FOR PIECING FASCIATED YARN

Akira Tanaka, Kariya; Takahiko Tsunekawa, Aichi; Kazuo Seiki, Kariya, and Haruyoshi Nakamura, Obu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Mar. 26, 1984, Ser. No. 593,633

Claims priority, application Japan, Mar. 30, 1983, 58-52508; Mar. 30, 1983, 58-52509; Apr. 15, 1983, 58-65605; Oct. 8, 1983, 58-187696

Int. Cl.⁴ D01H *15/00*

U.S. Cl. 57—261 **15 Claims**

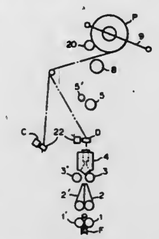
1. A method for piecing a yarn in a fasciated yarn spinning unit, said unit comprising a drafting means for delivering a fiber bundle and an air nozzle for receiving said delivered fiber bundle and twisting it therein by a vortex to form a fasciated yarn, comprising steps of:

a1. stopping said delivery of said fiber bundle to said air nozzle;

a. displacing said air nozzle from a normal spinning position to a threading position such that a space exists in front of an inlet of said air nozzle;

b. guiding a yarn to be pieced to an outlet of said air nozzle;

c. applying a suction force through said inlet of said air nozzle to said outlet by a displaceable suction means, whereby the yarn is sucked into said suction means through said air nozzle;



d. returning said air nozzle from the threading position to the normal spinning position; and

e. resuming the delivery of said fiber bundle to said air nozzle, whereby said fiber bundle and said yarn to be pieced are united.

4,550,561

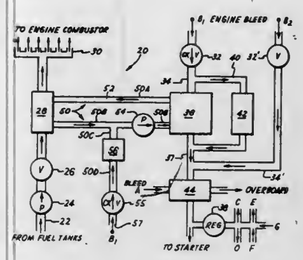
METHOD FOR IMPROVING THE FUEL EFFICIENCY OF A GAS TURBINE ENGINE

George A. Coffinberry, West Chester, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 132,364, Mar. 20, 1980, Pat. No. 4,404,793. This application Aug. 30, 1982, Ser. No. 413,101

Int. Cl.⁴ F02C *6/08*

U.S. Cl. 60—39.02 **4 Claims**



1. A method of recovering heat in a gas turbine engine which drives a fan in an aircraft, comprising:

(a) tapping a first compressor bleed airstream, B1, having a first temperature;

(b) tapping a second compressor bleed airstream, B2, having a second temperature higher than the first temperature;

(c) transferring heat from B1 through a first heat exchanger and into an aquaeous heat transfer medium;

(d) transferring heat from the aqueous medium of (c) into high-pressure fuel having a pressure exceeding 500 psig;

(e) bypassing some of B1 past the first heat exchanger of (c) when the temperature of the fuel of (d) reaches a predetermined level to thereby reduce heating of the high-pressure fuel;

(f) mixing B2 with both the B1 which passed through the first heat exchanger and with the B1 which bypassed the first heat exchanger in order to provide a mixed airstream; and

(g) directing some of the mixed airstream of (f) to one or more of the following engine suport components: wing anti-icer, cowl anti-icer, cabin air conditioner, or engine starter for absorption of heat from the mixed airstream prior to the overboard disposal of any significant amounts of B1 or B2 or the mixed B1 and B2 of (f).

4,550,562

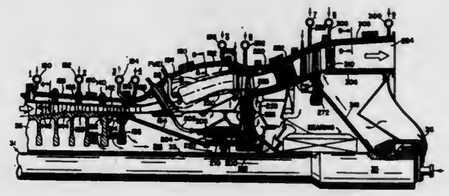
METHOD OF STEAM COOLING A GAS GENERATOR

Ivan G. Rice, P.O. Box 233, Spring, Tex. 77373

Continuation-in-part of Ser. No. 274,660, Jun. 17, 1981, Pat. No. 4,384,452, and a continuation-in-part of Ser. No. 224,496, Jan. 13, 1981, Pat. No. 4,438,625, which is a division of Ser. No. 954,832, Oct. 26, 1978, Pat. No. 4,272,953, said Ser. No. 274,660, is a division of Ser. No. 47,571, Jun. 11, 1979, Pat. No. 4,314,442. This application Sep. 9, 1982, Ser. No. 416,173

Int. Cl.⁴ F02C *7/143, 7/16*

U.S. Cl. 60—39.02 **9 Claims**



1. In a method of producing work in a gas generator, said gas generator including a gas compressor, a combustor downstream of said compressor and a gas turbine downstream of said combustor, compressing ambient air by means of rotating blades within said compressor, igniting a combustible fuel in the presence of said compressed air in said combustor to form an exhaust gas and expanding said exhaust gas through the blading of said gas turbine, said compressor comprising an outer shell confining said rotating blades, and further controlling the tip clearance of at least a portion of said rotating blades relative to said outer shell by passing a controlled amount of coolant in heat exchange relationship with said outer shell to shrink or expand said outer shell, the improvement comprising; wherein said outer compressor shell comprises hollow steam chambers contained therein and an inner casing in contact with said compressed air and an outer casing annularly spaced from said inner casing, controlling the blade-tip clearance of said rotating blades within said outer compressor shell by passing coolant steam through said hollow steam chambers to provide heat exchange with said compressor shell to shrink or expand said compressor shell and further directing air or steam as a thermal barrier in said annular space between said inner and outer casings of said compressor shell.

4,550,563

GAS TURBINE COMBUSTION SYSTEM UTILIZING RENEWABLE AND NON-CRITICAL SOLID FUELS WITH RESIDUE REMOVER TO MINIMIZE ENVIRONMENTAL POLLUTION

William C. Marchand, 11339 Roxbury, Detroit, Mich. 48224

Continuation of Ser. No. 393,978, Jun. 30, 1982, abandoned, Division of Ser. No. 96,760, Nov. 23, 1979, Pat. No. 4,338,782. This application Aug. 17, 1984, Ser. No. 642,728

Int. Cl.⁴ F02C *3/26*

U.S. Cl. 60—39.06 **16 Claims**

1. A method for burning pulverized solid fuel with oxidizing fluid and for removing solid residues from the products of combustion, said method comprising the steps of:

introducing pulverized solid fuel into a fuel injector mounted to a combustor;

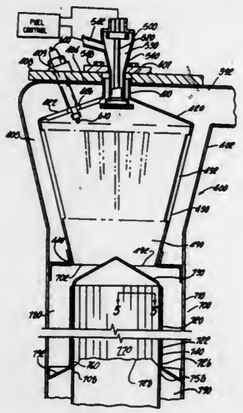
grinding and metering said pulverized solid fuel in said fuel injector to a ground pulverized solid fuel of a predetermined particle size;

injecting said ground pulverized solid fuel along a plane substantially radial of said fuel injector into a combustion chamber in said combustor, said injecting of said ground

pulverized solid fuel further imparting a tangential velocity component to said solid fuel within said radial plane as said ground pulverized solid fuel exits said fuel injector;

introducing swirling preheated oxidizing fluid into said combustion chamber such that swirling preheated oxidizing fluid crosses said radially injected ground pulverized solid fuel in said combustion chamber;

mixing said injected ground pulverized solid fuel with said swirling preheated oxidizing fluid to form a swirling combustible mixture in said combustion chamber;



igniting said swirling combustible mixture in said combustion chamber to form swirling gaseous products of combustion in said combustion chamber and solid residues suspended in said swirling gaseous products of combustion;

passing said swirling gaseous products of combustion and solid residues along an inertia separator; and

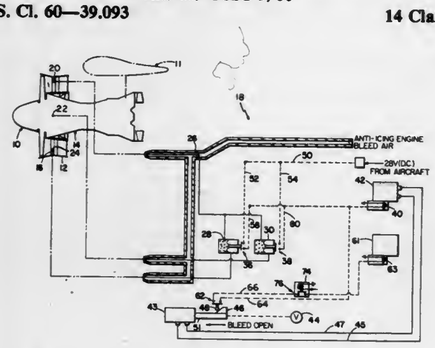
separating said solid residues from said swirling gaseous products of combustion in said inertia separator.

4,550,564

ENGINE SURGE PREVENTION SYSTEM

David J. Callahan; Robert S. Mazzawy; Howard Y. Stryker, all of Glastonbury, Conn., and James B. Kelly, Lake Worth, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 19, 1984, Ser. No. 590,661
Int. Cl.⁴ F02C *9/00*
U.S. Cl. 60—39.093 **14 Claims**



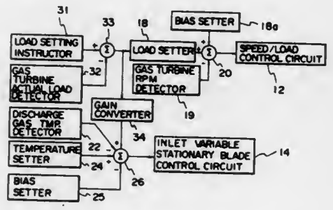
1. A surge control system for a fan jet engine for powering aircraft, said aircraft having independent means for detecting aircraft stall, said engine having a fuel control, including compressor speed control means, for controlling the thrust generated by said engine, said compressor having means, including a bleed valve and actuator therefor, for bleeding air from said compressor, a fan discharge duct housing said fan, the surge control system including at least a pair of total pressure probes circumferentially spaced and mounted in said duct and disposed so that one of said three pair of total pressure probes is in a predetermined location that is insensitive to pressure changes occasioned by a condition of said engine going into surge and the other total pressure probe is sensitive to pressure changes in said duct occasioned by said engine going into surge, computing means responsive to said pair of total pressure probes for producing a signal indicative of an imminent surge condition, means responsive to said signal for opening said bleed valve and simultaneously resetting said compressor speed control means to increase the thrust being generated by said engine.

4,550,565

GAS TURBINE CONTROL SYSTEMS

Jiro Ozono, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 16, 1984, Ser. No. 571,068
Int. Cl.⁴ F02C *6/18, 9/20*
U.S. Cl. 60—39.182 **5 Claims**



1. A gas turbine control system comprising:

an electric power generating system including an air compressor having inlet variable stationary blades, a fuel burner supplied with compressed air from said compressor for burning fuel, a gas turbine driven by combustion gas from said fuel burner, a waste heat recovery boiler for generating steam by utilizing waste heat of gas exhausted from said gas turbine, a steam turbine driven by said steam, and an electric generator driven by said gas turbine;

means for detecting an actual load of said gas turbine and for producing an actual load signal indicative of said detected actual load;

a load setting instructor for producing a load demand signal;

first comparator means for determining a difference between said actual load signal and said load demand signal and for producing a first difference signal indicative of said determined difference;

means for detecting a speed of said gas turbine and for producing a speed signal indicative of said detected speed;

second comparator means for determining a second difference between said first difference signal and said speed signal and for producing a second difference signal indicative of said second difference;

a speed/load control circuit responsive to said second difference signal for controlling a quantity of fuel supplied to said burner;

a temperature detector for producing a signal representing a temperature of gas discharged from said gas turbine;

a temperature setter for setting the temperature of exhaust gas of said gas turbine and producing an output indicative of said set temperature;

third comparator means for comparing said output of said temperature setter, said first difference signal, and said signal produced by said temperature detector, and for producing an output indicative of the results of said comparison; and

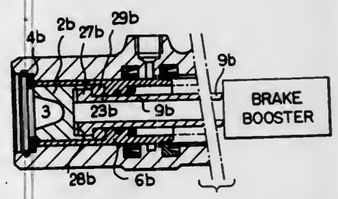
an inlet variable stationary blade control circuit inputted with said output of said third comparator means for controlling a degree of opening of said input variable stationary blades.

4,550,566

BRAKE MASTER CYLINDER

Juan S. Bacardit, Juan C. Coll, and Joaquim F. Bofill, all of Barcelona, Spain, assignors to Bendiberica, S.A., Barcelona, Spain

Division of Ser. No. 283,391, Jul. 15, 1981, abandoned. This application Mar. 7, 1984, Ser. No. 586,644
Claims priority, application Spain, Jul. 30, 1980, 494.695
Int. Cl.⁴ B60T *13/20*
U.S. Cl. 60—554 **9 Claims**



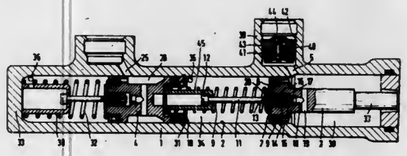
1. A brake master cylinder to be coupled at one end to a brake booster, including a body formed with a longitudinal bore within which is movably received at least one annular master cylinder piston, an assisting pull rod to be actuated by said booster slidably extending through said piston and having an end portion opposite said one end of said master cylinder and formed with an outwardly radially extending flange member, an elastomeric annular reaction member arranged around said pull rod and interposed between said flange member and said piston, a push member slidingly arranged within the other end of said master cylinder adjacent said piston and connectable to a brake actuating member, said push member forming a cavity having a bottom facing said end portion of said pull rod and a peripheral edge, said flange member being received within said cavity, said peripheral edge and said flange member adapted for bearing engagement with said elastomeric annular reaction member, and said piston movable by both said pusher member and by said pulling rod via said elastomeric annular reaction member.

4,550,567

TANDEM MASTER CYLINDER FOR HYDRAULICALLY OPERATED VEHICULAR BRAKES

Ernst-Dieter Schaefer, Pliezhausen, Fed. Rep. of Germany, assignor to ITT Industries Incorporated, New York, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,764
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, 3241881
Int. Cl.⁴ B60T *11/20*
U.S. Cl. 60—562 **3 Claims**



1. A tandem master cylinder for use in a hydraulically operated brake system for a vehicle in which said cylinder comprises a housing having an elongated axial bore therein, a master cylinder piston and an intermediate piston axially aligned in said bore and spaced within said housing,

an individual restoring spring for each piston, each such spring at one end bearing against one face of the respective piston, an individual spring support for the opposite end of each spring secured in a fixed axial location to said housing,

a valve mechanism in the one face of each piston for providing a communication therethrough to an output chamber adjacent the one face of the respective piston within said bore with its respective piston in its at rest condition, each valve mechanism including a valve seat in the respective piston and a displaceable valve body,

an individual clamping element for positioning and aligning each restoring spring with each clamping element affixed to and carrying the respective valve body of the mechanism in the one face of the respective piston,

each said clamping element engaging the spring support for the respective spring to position the valve body carried by that clamping element relative to the fixed axial location on the housing to prevent displacement of each valve body from its at rest position at less than predetermined operating pressures in the respective output chambers of said cylinder bore, and

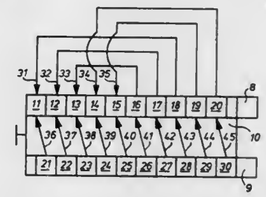
wherein said spring support for supporting said master piston restoring spring includes a central bore through which a stop sleeve extends fixed to said master piston clamping element and supported on the one face of said intermediate piston.

4,550,568

DIESEL INTERNAL COMBUSTION ENGINE

Herbert Deutschmann, Friedrichshafen, and Gerd-Michael Wolters, Markdorf, both of Fed. Rep. of Germany, assignors to MTU-Motoren-und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,784
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322168
Int. Cl.⁴ F02B *37/00*
U.S. Cl. 60—612 **6 Claims**



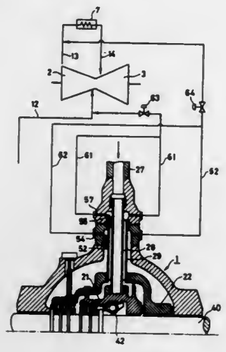
1. A diesel internal combustion engine, with low compression ratio and which is charged by an exhaust gas turbocharger, comprising a plurality of cylinders, at least one of said plurality of cylinders being operated as an engine cylinder during starting and partial load operation, said engine cylinder being charged by another cylinder of said plurality of cylinders operated as a compressor, the piston of the cylinder operated as a compressor leading the piston of the engine cylinder in a manner such that the engine cylinder is charged directly by the cylinder operated as a compressor by way of a connecting line, and the engine cylinder being additionally charged by a further cylinder of said plurality of cylinders operated as a compressor.

4,550,569

MAIN STEAM INLET STRUCTURE FOR STEAM TURBINE

Hitoshi Isa; Ryoichi Kaneko, and Katsuto Kashiwahara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 11, 1984, Ser. No. 619,533
Claims priority, application Japan, Jun. 10, 1983, 58-102631
Int. Cl.⁴ F01K *19/00*
U.S. Cl. 60—657 **11 Claims**



1. A main steam inlet structure of a steam turbine provided with a turbine rotor with a plurality of blades, an inner casing which has nozzles and diaphragms with stationary blades in the interior thereof, and an outer casing surrounding the inner casing with a spacing for exhaust steam therebetween, which comprises:

a first inlet tube connected to said inner casing at one end thereof and at the other end to said outer casing for introducing main steam into said nozzles therethrough; and

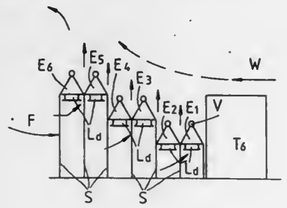
a second inlet tube, surrounding said first inlet tube with a spacing therebetween, connected to said outer casing at one end thereof and at the other end to said inner casing, said spacing between said first and second inlet tubes forming a first cooling passage communicating with an intermediate stage of the turbine for passing steam extracted from said intermediate stage through thereby cooling said first inlet tube, said extracted steam being lower in temperature and pressure than the main steam in said first inlet tube and higher than steam exhausted from the turbine.

4,550,570

FORCED-AIR COOLED CONDENSER SYSTEM

Burghard Trage; Franz-Josef Hintzen, and Richard Leitz, all of Ratingen, Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,631
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3325054
Int. Cl.⁴ F28B *1/06*
U.S. Cl. 60—693 **6 Claims**



1. In a forced-air cooled condenser system having a plurality of roof-shaped heat exchange elements of finned tubes, to which cooling intake air is fed via fans, and to which steam which is to be condensed is fed via steam distribution lines, each of which forms a ridge of a given one of said heat exchange elements; the heat exchange elements are disposed directly by a turbine housing, and are disposed next to one another or consecutively, with the ridges of said heat exchange elements being disposed parallel to one another;

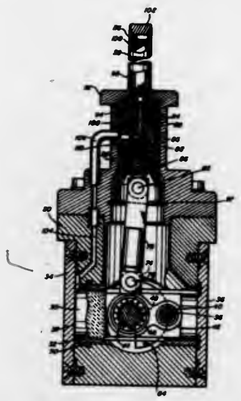
the improvement therewith which comprises having that heat exchange element, which is spaced the furthest from said turbine housing, arranged structurally higher than the heat exchange elements located therebetween so that, on one hand, in-flow losses of intake air can be reduced thereby having a favorable effect upon power required for cooling, and on the other hand, considerably reducing danger of recirculation of warmed air from the heat exchange elements due to inclined upwardly directed direction due to higher arrangement of that heat exchange element spaced furthest from said turbine housing.

4,550,571

BALANCED INTEGRAL STIRLING CRYOGENIC REFRIGERATOR

Peter K. Bertsch, Harvard, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Dec. 28, 1983, Ser. No. 566,212
Int. Cl.⁴ F25B *9/00*
U.S. Cl. 62—6 **12 Claims**



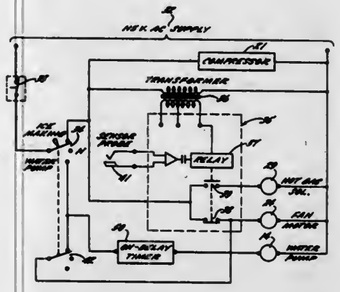
1. A cryogenic refrigerator comprising a rotary drive shaft, a reciprocating compressor piston assembly including a compressor piston driven along a first axis by the drive shaft through a drive eccentric, a reciprocating displacer driven along a second axis, angled about 90 degrees from the first axis, by the drive shaft through said drive eccentric and a displacer connecting rod, and an eccentric counterweight mounted to the drive shaft with a center of gravity about 180 degrees about the drive shaft from the drive eccentric center, the displacer connecting rod having a pivotal connection to each of the displacer and the drive eccentric such that it has a wobbling motion as it drives the displacer, wherein the weight of the compressor piston is substantially greater than the weight of the displacer, the displacer connecting rod comprises high density material such that the weight of the connecting rod is greater than the weight of the displacer, the combined weight of the displacer and connecting rod is about the same as the weight of the compressor piston assembly, and the weight of the counterweight is such that it substantially balances the rotating drive eccentric and the reciprocating compressor piston assembly, displacer connecting rod and displacer in the first harmonic.

4,550,572

ICE MACHINE ANTI-BLOCK CONTROL

Carl J. Schulze-Berge, Manitowoc, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Mich.

Filed Jul. 27, 1984, Ser. No. 635,157
Int. Cl.⁴ F25C *1/12*
U.S. Cl. 62—138 **4 Claims**



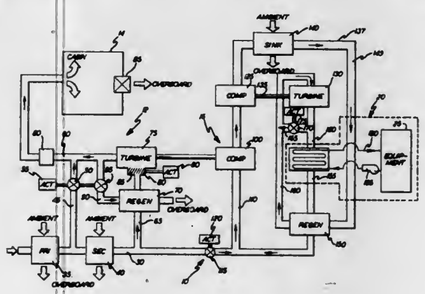
1. In an ice making machine having an evaporator and ice mold, a water circulation system including a pump for circulating water over the mold during an ice making cycle, a circuit for stopping the pump at the end of an ice making cycle to initiate an ice harvesting cycle, and a circuit for starting the pump at the end of an ice harvesting cycle to initiate the next ice making cycle, the improvement comprising, a delay device in said circuit for starting the pump so that the ice making cycles start with a period for cooling the evaporator and mold before water is circulated over the mold.

4,550,573

MULTIPLE LOAD, HIGH EFFICIENCY AIR CYCLE AIR CONDITIONING SYSTEM

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1983, Ser. No. 560,613
Int. Cl.⁴ F25B *19/02*
U.S. Cl. 62—172 **7 Claims**



1. An air cycle air conditioning system characterized by:

a first load requiring the maintenance of the temperature and pressure thereof by fresh air continuously supplied thereto and subsequently discharged therefrom;

a first turbine having an inlet and an outlet and adapted for communication with, and driven by a source of pressurized air, said first turbine expanding and chilling said pressurized air and discharging said expanded and chilled air to said first load;

first means, providing fluid communication between the inlet of said first turbine and said pressurized air source;

a first compressor having an inlet and an outlet and connected to, and driven by said first turbine and being adapted for the pressurization of a quantity of air circulated therethrough;

a second turbine having an inlet and an outlet and being connected to said first compressor for providing a measure of input power thereto;

second means providing fluid communication between the outlet of said first compressor and the inlet of said second turbine, said second turbine being driven by an expanding and chilling said air supplied thereto from said first compressor;

a second load isolated from said expanded and chilled air discharged to said first load by said first turbine, said second load being capable of having the pressure and temperature thereof maintained by chilled air recirculated therethrough, said chilled air being ducted to said second load from said second turbine; and

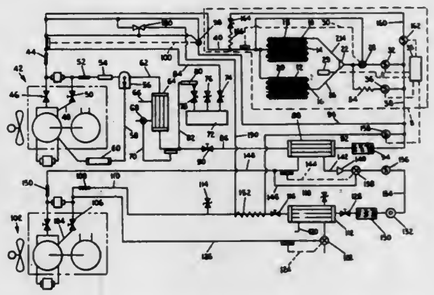
third means providing fluid communication between the outlet of said second load with the inlet of said first compressor whereby substantially all the air supplied to said second load by said second turbine is returned from said second load to said first compressor and subsequently to said second turbine for continuous recirculation through said first compressor, said second turbine and said second load, thereby efficiently cooling and pressurizing said second load under power from said first turbine.

4,550,574

REFRIGERATION SYSTEM WITH LIQUID BYPASS LINE

John E. Hohman, Evart, Mich., assignor to Sexton-Espec, Inc., Zeeland, Mich.

Continuation-in-part of Ser. No. 500,266, Jun. 2, 1983, abandoned. This application Oct. 19, 1984, Ser. No. 663,033
Int. Cl.⁴ F25B *41/00*
U.S. Cl. 62—197 **8 Claims**



1. A refrigeration system including a compressor and cooling system for supplying a refrigerant to an evaporator unit for cooling a chamber to a selected temperature, said evaporator unit being located adjacent said chamber and remote from said compressor and cooling system and including a heat-exchange surface;

supply conduit means for communicating said refrigerant from said compressor and cooling system to said evaporator unit, said supply conduit including first and second conduits connected in series, said second conduit being adjacent said chamber;

expansion valve means for providing a cooled and expanded refrigerant to said evaporator unit disposed in said second conduit and between said evaporator unit and said compressor and cooling system;

first control valve means in said second conduit for controlling the flow of refrigerant to said expansion valve means;

first control means for controlling said first control valve means responsive to the temperature in said chamber; and

a return line for communicating spent refrigerant from said evaporator unit to said compressor and cooling system;

the improvement which comprises:

first bypass conduit means for diverting cooled refrigerant from said supply conduit line around said evaporator unit and to said return line, said first bypass conduit connected at one end to said first conduit means at said evaporator unit and at the other end thereof connected to said return line at said evaporator unit, said bypass conduit means including second control valve means for selectively diverting said refrigerant to said return line;

a second bypass line connected at one end to said first conduit at said compressor and cooling system and at the other end thereof connected to said return line at said compressor and cooling system to return refrigerant to said compressor and cooling system;

a third control valve means in said second bypass line to control the flow of refrigerant through said second bypass line;

said first control means simultaneously controlling said first, second and third valve means to open said second and third control valve means while closing said first control valve means and vice versa, in responsive to temperature changes in said chamber;

whereby said first bypass conduit and said second bypass conduit operate in response to low-demand conditions at said evaporator unit so as to provide a constant liquid refrigerant flow through said refrigeration system.

4,550,575

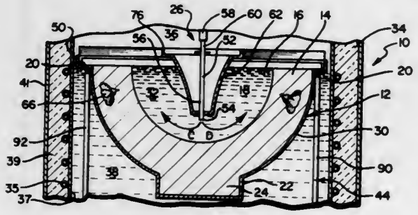
ICE BOWL FREEZING APPARATUS

G. Scott DeGaynor, 188 Wealthy, SW., Grand Rapids, Mich. 49503

Continuation of Ser. No. 518,648, Jul. 29, 1984, abandoned. This application Jan. 25, 1985, Ser. No. 694,831

Int. Cl.⁴ F25C *1/18*

U.S. Cl. 62—308 **23 Claims**



1. A self-contained, decorative ice bowl freezing apparatus, said apparatus comprising:

a bowl mold means for forming an ice bowl of a selected size and shape, said bowl mold means for containing water to be frozen adjacent the walls thereof only and for forming the ice bowl thereby, and said bowl mold means having an upper extremity around the rim thereof;

air circulation means disposed within the opening of said bowl mold means from the top thereof for supplying a stream of air bubbles to the freezing water in said bowl mold means for slowing the freezing thereof to provide ice of greater clarity, and also for freezing of the water substantially adjacent to the walls of the bowl mold means, but simultaneously for maintaining the water in the center of the bowl mold means continuously in an unfrozen condition, such that when the remaining unfrozen water is removed from the central area of the bowl mold means, a frozen bowl shape results therefrom;

frame means mounted on substantially the upper extremity of the bowl mold means for positionally holding said air circulation means within the opening of said bowl mold means at the rim thereof;

a portable and free-standing freezer tank, said freezer tank having an opening at the top thereof and said bowl mold means disposed therewithin, said freezer tank being adaptable for containing a refrigerant liquid, the level of which in said freezer tank extends a substantial distance up the side of said bowl mold means to a level less than that of the upper extremity of said bowl mold means, whereby said bowl mold means is substantially immersed within the refrigerant liquid contained within, but the refrigerant liquid does not spill over the bowl mold means to contaminate the freezing water thereof;

refrigerant liquid circulation means disposed solely within said freezer tank for circulating the refrigerant liquid thereof and to prevent stratification of temperature levels within the refrigerant liquid, whereby uniformity of freezing of the water in the bowl mold means except in the center of said bowl mold means is enhanced; and

frame means engaging substantially the upper extremity of said bowl mold means to fixedly support said bowl mold means at the selected level within said freezer tank.

4,550,576

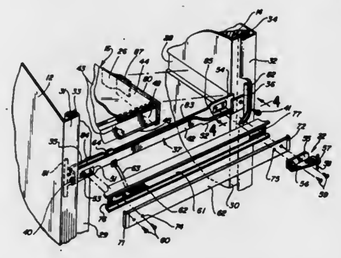
CENTER RAIL ASSEMBLY FOR REFRIGERATOR

Ralph Tate, Jr., Center Township, Vanderburgh County, and John T. Woods, Scott Township, Vanderburgh County, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 19, 1984, Ser. No. 651,901

Int. Cl.⁴ F25D *11/02*

U.S. Cl. 62—441 **33 Claims**



1. In a refrigerator cabinet assembly having a sheet metal outer shell which defines a transverse flange terminating in a channel generally parallel with said flange and opening transversely inwardly, a liner having sidewalls and an end wall defining an open-ended storage space, said sidewalls terminating with a transverse outwardly turned peripheral flange continuous around its perimeter except for a pair of notches, said flange being received in said channel to support said liner in said shell and to define a wall space, and insulation essentially filling said wall space, the improvement comprising:

support means on said liner sidewall adjacent said notches;

a generally rectangular compartment separator received in said support means and dividing said storage space into an above-freezing compartment and a below-freezing compartment, said separator spaced from said liner sidewalls defining a horizontal passage forwardly along the sidewalls of said liner;

a center rail bracket spanning opposite sides of said wall space along the front edge of said channel adjacent one of said liner flange notches, wherein said notch, one end of said bracket and said channel form a duct between said above-freezing compartment and said below-freezing compartment;

a center rail cover overlying said center rail bracket defining a generally horizontal chamber therewith, wherein at least a portion of said cover is metal, said passage, said chamber, and said duct being interconnected and in fluid communication with said above-freezing compartment and said below-freezing compartment; and

seal means to prevent air currents across or along any portion of said duct or said chamber.

4,550,577

KNITTING MACHINE WITH ROCKING KNOCK-OVER BITS, AND METHOD OF KNITTING THEREWITH

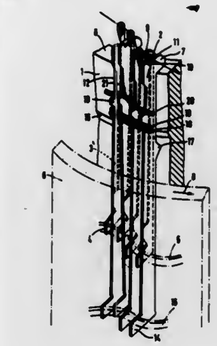
Falk Kühn, Kiebingen, and Alfred Buck, Hailfingen, both of Fed. Rep. of Germany, assignors to Memminger GmbH, Freudenstadt, Fed. Rep. of Germany

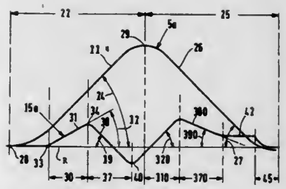
Filed Dec. 8, 1983, Ser. No. 559,494

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247767

Int. Cl.⁴ D04B *15/24; 15/06*

U.S. Cl. 66—104 **20 Claims**





1. Method of knitting yarn to form stitches or loops (36) on a knitting machine having

a needle bed (1);

a plurality of elongated latch needles (2), each having a pivotable latch (35), the needles being longitudinally slidable on the needle bed;

including the step of

moving the needles between a base or rest position (28; FIGS. 4, 12) and a clearing position (29; FIG. 8) through a tuck position (FIG. 7) in a raising or extending phase, and

from the clearing position (29; FIG. 8) through a yarn insertion position (FIG. 10) to the base or rest position (28; FIGS. 4, 12) in a lowering or retracting phase,

and comprising, in accordance with the invention, the step of

positively moving (FIG. 6) the last-formed stitch or loop (36) on the needle during the raising phase in the direction of movement of the needle with a speed which is slower than the raising speed of the needle at least until (FIG. 6) the stitch or loop (36) has engaged the latch (35) of the needle and is opening the latch;

and positively moving the last-formed stitch or loop (36) in a direction counter the raising or extending direction of the needle upon opening of the latch on the needle (FIG. 7, FIG. 8).

4,550,578

APPARATUS FOR LOW-TEMPERATURE PLASMA TREATMENT OF A TEXTILE PRODUCT

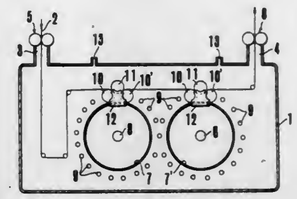
Yoshikazu Sando, Wakayama; Tokuju Goto, Nara; Itsuo Tanaka, Osaka; Hiroshi Ishidoshiro, and Matsuo Minakata, both of Wakayama, all of Japan, assignors to Sando Iron Works Co., Ltd., Tokyo, Japan

Division of Ser. No. 452,101, Dec. 22, 1982, Pat. No. 4,466,258. This application Feb. 23, 1984, Ser. No. 583,002

Claims priority, application Japan, Jan. 6, 1982, 57-817; Jan. 6, 1982, 57-819

Int. Cl.⁴ D06B *3/12*

U.S. Cl. 68—5 E **1 Claim**



1. An apparatus for uniformly applying a low-temperature plasma to a textile product comprising a reaction chamber, seal meohanisms for maintaining the interior of the chamber under a reduced pressure while allowing for the transportation of a cloth to be treated therethrough, one or more guide drums having a permeable surface provided in the reaction chamber for transporting the cloth therearound, and a gas supply inlet for supplying a gas to the reaction chamber, a plurality of electrodes spacedly provided around the outer circumference of said guide drums for producing a low temperature plasma atmosphere which can permeate the fabric on the drums and at the rotation center of the drums a vacuum pipe connecting to a vacuum pump.

4,550,579

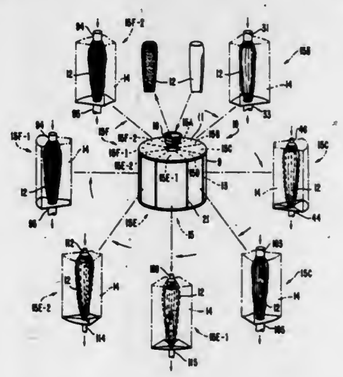
APPARATUS FOR THE DYEING OF SHAPED ARTICLES

G. Frank Clifford, P.O. Box 163, Old Hwy. 27, Stanley, N.C. 28164

Filed Apr. 13, 1984, Ser. No. 600,284

Int. Cl.⁴ D06B *1/04, 23/04*

U.S. Cl. 68—5 C **28 Claims**



1. An apparatus for the dyeing of shaped articles comprising:

(a) a treatment chamber;

(b) means for surrounding a shaped article with a non-reactive environment in said treatment chamber; and

(c) means for flowing a thin continuous film of a dye compo-

sition over the surfaces of said shaped article at an elevated temperature in the non-reactive environment.

4,550,580

ROTATABLE CONNECTION DEVICE

Guy Neyret, Oullins, France, assignor to Neiman S.A., Courbevoie, France

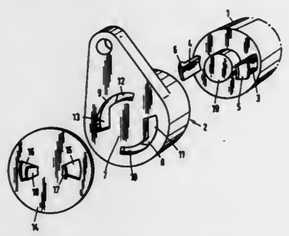
PCT No. PCT/EP83/00123, § 371 Date Jan. 11, 1984, § 102(e) Date Jan. 11, 1984, PCT Pub. No. WO83/04067, PCT Pub. Date Nov. 24, 1983

PCT Filed May 16, 1983, Ser. No. 579,891

Claims priority, application France, May 19, 1982, 82 08755

Int. Cl.⁴ E05B *9/08*

U.S. Cl. 70—370 **2 Claims**



1. Rotatable connection device for a driving part to a driven part, wherein the driven part has a rotational play relative to the driving part, characterised in that the driving part (1) exhibits at least two axial elastic dogs (3,4) which each end in a radial tooth (5,6) and each cooperate with a circular arcuate slot (8,9) in the driven part (2), which exhibits an enlarged region (11, 13) for the passage of the radial tooth (5,6) of the corresponding dog (3,4), and with a securing part (14) which is provided with holes (15, 16) to receive the ends of the elastic dogs (3,4), and the holes (15, 16) of which each exhibit a bendable strap (17, 18) which, after being bent behind the relevant dog (3,4), come into abutment opposite the tooth (5,6) at the end of said dog.

4,550,581

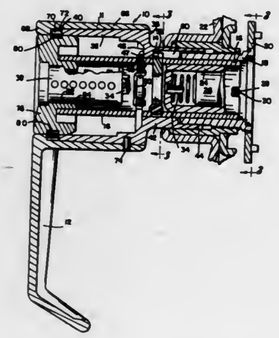
BREAK-AWAY KNOB DRIVER

Walter E. Best, and William R. Foshée, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 503,769, Jun. 13, 1983, which is a continuation-in-part of Ser. No. 270,825, Jun. 5, 1981, Pat. No. 4,394,821. This application Jul. 22, 1983, Ser. No. 516,549

Int. Cl.⁴ E05B *3/04*

U.S. Cl. 70—422 **20 Claims**



1. In a door lock mechanism having a cylindrical knob sleeve or the like on which a knob or handle is rotatably mounted, a retainer for retaining the knob or handle on the knob sleeve, the knob sleeve having an inner face, means for connecting the knob against rotation on the knob sleeve comprising

a separate driver mounted transversely in the knob sleeve in a spaced-relation to the retainer, and

a drive lug on the driver, the drive lug projecting radially from the knob sleeve into positive engagement with an inward-opening recess in the knob, the drive lug being formed with a weak section adapted to shear under a predetermined torque to release the torque-transmitting connection between the knob and knob sleeve.

4,550,582

METHOD OF PRODUCING STEEL H-SHEET PILE

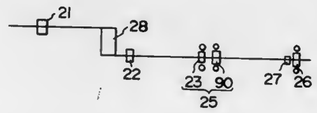
Takashi Ehiro; Teruaki Tanaka, and Eisuke Yamanaka, all of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Continuation-in-part of Ser. No. 229,111, Jan. 28, 1981, abandoned. This application Oct. 27, 1982, Ser. No. 436,993

Claims priority, application Japan, Feb. 4, 1980, 55-12222; Feb. 4, 1980, 55-12223; Feb. 19, 1980, 55-19589

Int. Cl.⁴ B21B *1/10, 13/08*

U.S. Cl. 72—234 **4 Claims**



1. A method of producing a steel H-sheet pile from a beam blank of an H-shape cross section defined by a web and a pair of flanges on both ends of the web symmetrical in vertical and lateral directions, said beam blank prepared through blooming rolling or continuous casting, said method comprising the ordered steps of:

(a) rolling the beam blank in a breakdown mill having a preparatory step forming caliber and a forming caliber, said rolling step comprising the steps of:

shifting the positional relationship between the web and flanges in said preparatory step forming caliber so as to roll the beam blank into an asymmetrical shape in its vertical direction by moving the web in one vertical direction while restraining the flanges in their positions; and subsequently

forming roughly a finger joint portion having a longer projection piece and shorter projection piece at one end of one of said flanges in said forming caliber;

(b) further rolling the beam blank roughly formed in said breakdown mill in a group of roughing universal mills including a roughing universal mill and a sizing universal mill, said further rolling step comprising the steps of:

reducing the thickness of the web and flanges of the beam blank by said roughing universal mill; and

sizing the end portions of the flanges while supporting the flanges so as to prevent the flanges from falling down, said sizing step being performed by horizontal rolls of said sizing universal mill and said supporting step being performed by vertical rolls of said sizing universal mill;

(c) forming said finger joint portion at the end of one of said flanges by a joint forming device having first and second rollers without using any intermediate mills, said forming step being performed by bending said longer projection piece by a first forming ridge on said second roller while limiting the bending position of said longer projection piece by pressing said longer projection piece against a second forming ridge on said first roller; and

(d) completing the forming of the beam blank to provide the steel H-sheet pile by rolling said blank in a finishing universal mill.

4,550,583

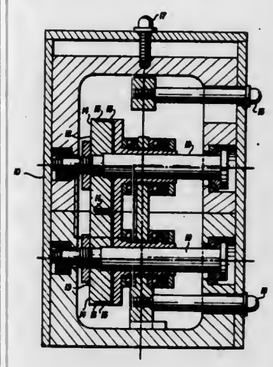
QUICK ADJUSTING ROLLING MILL

Eugene T. Sanders, LaGrange, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 10, 1982, Ser. No. 376,359

Int. Cl.⁴ B21B *31/18*

U.S. Cl. 72—247 **13 Claims**



1. A square wire and rectangular wire rolling mill of the type wherein wire is deformed by the grooves of cooperating work rolls comprising:

at least two segmented work rolls each having first and second concentrically aligned segments; and

means coupled to one of said segments on each roll for simultaneously adjusting the position of said one segment relative to the other segment of each of said work rolls in equal increments.

4,550,584

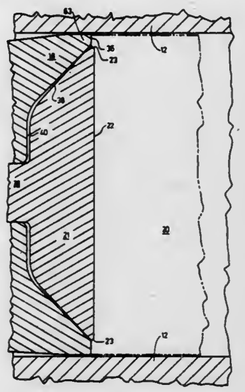
FIXED DUMMY BLOCKS

Max F. Degen, Weston, Canada, assignor to Indalex, Division of Indal Limited, Canada

Continuation-in-part of Ser. No. 107,932, Dec. 28, 1979. This application Aug. 29, 1983, Ser. No. 527,404

Int. Cl.⁴ B21C *26/00*

U.S. Cl. 72—273 **26 Claims**



1. In an expandable fixed dummy block for fixing on the end of a stem of an extrusion press, the dummy block having a longitudinally extending axis of symmetry and outer wall, comprisng a base having a central cavity symmetrical about the axis symmetry, and a mandrel symmetrical about the longitudinal axis for sitting in the cavity in the base and mounted to rotate freely therein, the cavity defined by an endless side wall sloping radially inwardly away from its mouth from the outer wall to a bottom and the mandrel having a face and side wall sloping radially inwardly from the edge of the mandrel to a rear seat and having an outer edge bevelled so as not to extend radially beyond the inner radial dimensions of the mouth of the cavity, the angle of the side wall defining the cavity to the axis of symmetry being less than the angle of the side wall of the mandrel to the axis of symmetry.

4,550,585

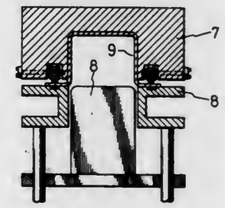
DEVICE FOR HOLDING A WORKPIECE IN A PRESS

Naoyoshi Sasaki, 1067-2, Kami-Echi, Atsugi 243, Japan

Filed Oct. 12, 1984, Ser. No. 660,017

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—351 **10 Claims**



1. In a sheet metal working press including an upper press member and a lower press member which are movable relative to each other to work a sheet of metal therebetween, the improvement which comprises:

one of said press members having a groove formed in the vicinity of an effective working area defined by the movement of said press members relative to each other;

at least one holding block fitted loosely in said groove and having at least one holding surface, said block having a plurality of first holes formed in a surface remote from said holding surface; and

an elastic member of polyurethane fitted tightly in each of said holes.

4,550,586

DEVICE FOR FORMING PART OF A PRESS BRAKE FOR DETERMINING AUTOMATICALLY THE THICKNESS OF THE SHEET

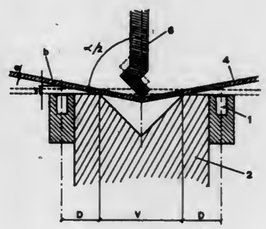
Jean-Daniel Aubert, Le Mont s/Lausanne, and André Fornerod, Giez s/Yverdon, both of Switzerland, assignors to Cybelec S.A., Renens, Switzerland

Filed Nov. 1, 1983, Ser. No. 547,641

Claims priority, application Switzerland, Nov. 5, 1982, 6440/82

Int. Cl.⁴ B21D *9/05*

U.S. Cl. 72—389 **7 Claims**



1. A process for bending a sheet by means of a press brake, comprising the step of simultaneously determining the thickness of the sheet by measuring the difference between the

position of the tip of the forming tool and that of the upper surface of the die, at the moment that the lower surface of the sheet rises from the upper surface of the die, and correcting the travel of the tool according to the determined thickness of the sheet, thus obtaining the required bend angle without any interruption of the forming cycle.

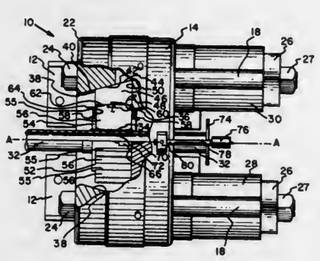
6. A device forming part of a press brake for determining automatically the thickness of a sheet being formed and for simultaneously correcting the travel of a forming tool operatively connected to a press brake beam, comprising at least one detector located at the level of the upper surface of a die, said die facing said forming tool and cooperating therewith provided to detect the moment that the lower surface of the sheet rises from the upper surface of the die, at least one lineal digital transducer at the end of the press brake beam, a numerical control system operatively connected to the detector and the lineal digital transducer for continuously measuring the difference between the position of the tip of the forming tool located by means of said lineal digital transducer and the position of the upper surface of the die, and for adding the value of this difference to the value of the distance travelled by the tip of the forming tool due to the bend in the sheet until the moment that the lower surface of the sheet rises from the upper surface of the die, and said numerical control system further including means for correcting the travel of the tool according to the determined thickness of the sheet, provided to obtain the required bend angle without any interruption of the forming cycle.

4,550,587

HEAVY DUTY HOSE CRIMPER

George W. Eisenzimmer, Lakemore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 15, 1983, Ser. No. 561,833
Int. Cl.⁴ B21D *41/04*
U.S. Cl. 72—402 **11 Claims**



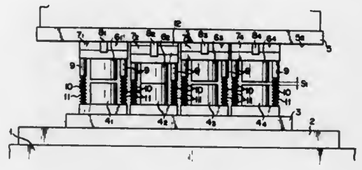
1. A crimping apparatus for radially compressing a tubular fitting against the exterior of a cylindrical hose comprising a first head, a crimping head mounted for relative axial movement toward and away from said first head, said crimping head having a circular opening located around an axis of the apparatus for receiving said hose and tubular fitting, a die supporting ring mounted on said first head in axial alignment with said opening in said crimping head, said die supporting ring having circumferentially spaced guides, die members slidably mounted in said guides so that said die members are radially positioned thereby establishing said opening, pusher members positioned at locations radially outward of said die members and in unconnected contact with said pusher members for pushing said die members radially inward against said tubular fitting, means connecting each of said die members to the die supporting ring and urging said die members radially outward to an open position in said die supporting ring, said pusher members having sloped flat surfaces inclined to said axis engageable with sloped flat surfaces on said crimping head inclinded to said axis and power means for moving said crimping head and said first head together whereby sliding movement of said sloped flat surfaces of said pusher members along said sloped flat surfaces of said crimping head causes said pusher members to move radially inward forcing said die members radially inward into crimping engagement with said tubular fitting and pusher means connecting said first head and each of said pusher members to urge said pusher members radially outward against said sloped flat surfaces on said crimping head and permit said pusher members to slide radially along a radial surface of said first head.

4,550,588

PRESS MACHINE

Toshio Abe, and Terushige Sakurai, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,172
Int. Cl.⁴ B21J *7/46*
U.S. Cl. 72—441 **3 Claims**



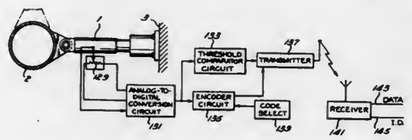
1. A press machine, comprising:
a bed;
a bolster mounted on said bed;
a plurality of lower dies each mounted on said bolster;
a slide movable towards and away from said bed;
a plurality of upper dies movably mounted to said slide each facing said respective lower dies;
a plurality of die clamper means each for mounting said respective upper dies to said slide;
a plurality of adapter means each disposed between said respective upper dies and said slide in such a manner that a predetermined gap exists between each pair of said upper and lower dies when said slide is moved down to a bottom dead center of the press with each of said adapter means making contact with said slide;
a plurality of biasing means each for biasing said respective upper dies towards said adapter means so that said respective adapter means make contact with said slide; and
activating means selectively insertable between any of said adapter means and said slide so that said activated upper die or dies are allowed to make contact with said opposing lower die or dies.

4,550,589

SYSTEM FOR MONITORING SNUBBER LOADS

William S. Wright, Jr., Corona Del Mar, Calif., assignor to Pacific Scientific Company, Anaheim, Calif.

Filed May 2, 1984, Ser. No. 606,287
Int. Cl.⁴ G01M *7/00*
U.S. Cl. 73—11 **18 Claims**



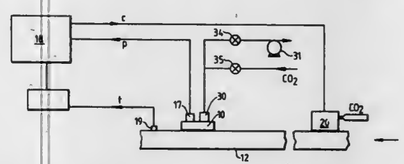
1. An apparatus for monitoring pipe motion snubbers in a piping system, comprising:
sensing circuits which measure the effects of pipe movement on the pipe motion snubbers;
data transmitters, electrically connected to the sensing circuits, which transmit signals responsive to the measured effects, which signals identify the pipe motion snubbers on which the effects are measured;
data receivers which receive the transmitted signals from a plurality of data transmitters and which generate output signals which identify the pipe motion snubbers on which the effects were measured; and
a device, electrically connected to the output of the data receivers, which indicates the pipe motion snubbers on which the effects were measured.

4,550,590

METHOD OF AND APPARATUS FOR MONITORING CONCENTRATION OF GAS IN A LIQUID

James Kesson, Edinburgh, Great Britain, assignor to Scottish & Newcastle Breweries plc, Edinburgh, United Kingdom

Continuation-in-part of Ser. No. 275,964, Jun. 22, 1981, Pat. No. 4,461,165. This application Aug. 18, 1983, Ser. No. 524,190
Claims priority, application United Kingdom, Aug. 24, 1982, 8224218
Int. Cl.⁴ G01N *7/10*
U.S. Cl. 73—19 **11 Claims**



1. A method of monitoring the concentration of gas in a liquid comprising the steps of:
passing said liquid across a semi-permeable membrane in order that gases in the liquid may permeate through the membrane into a chamber;
measuring the pressure in said chamber after a predetermined first period to obtain a first pressure reading, said first period being such as to allow permeation of a first gas and a second gas through said membrane until equilibrium conditions with respect to both gases is reached;
evacuating said chamber;
measuring the pressure in said chamber after a second, relatively shorter period to obtain a second pressure reading, said second period being sufficient to allow equilibrium conditions with respect only to said first gas to be reached; and
deriving from said first and second pressure readings a reading indicative of the concentration of said second gas in said liquid.

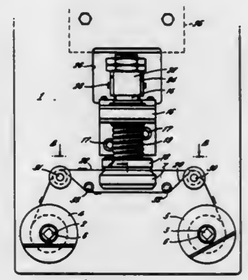
4,550,591

APPARATUS FOR MONITORING PARTICULATE MATTER

Anthony F. Cox, Nr Baddesley; Roger Glanville, Chandlers Ford; Owen Lloyd, Lyndhurst, and Keith V. Robbins, Liss, all of England, assignors to Central Electricity Generating Board, London, England

Filed Mar. 19, 1984, Ser. No. 591,152
Claims priority, application United Kingdom, Mar. 25, 1983, 8308246
Int. Cl.⁴ G01N *15/00*
U.S. Cl. 73—28 **7 Claims**

1. Apparatus for monitoring particulate matter in a fluid, including filter means comprising
an elongate strip filter medium in the form of a separable laminate formed of a filter material and backing strip;
a filter medium transport arrangement comprising two rotatable spools having the filter medium extending between them with means to separate the backing strip from the filter material over a short distance between the spools;
means for passing the fluid through the filter material where separated from the backing strip at a substantially constant flow rate, the transport arrangement being operable to move the filter medium between the spools thereby to present a new portion of filter material for passage of fluid therethrough;
pressure sensing means arranged to sense the fluid pressure difference across the filter material where the fluid is



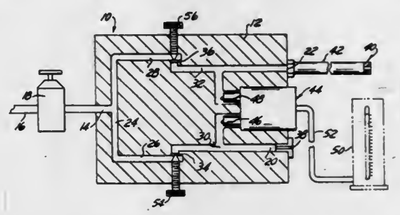
passing therethrough and to produce a pressure signal indicative of the pressure difference sensed; and
processing means arranged to receive the pressure signal and to evaluate therefrom the rate of change of the pressure difference thereby to give an indication of the particulate matter level in the fluid.

4,550,592

PNEUMATIC GAUGING CIRCUIT

Michel L. Dechape, 19963 Schoolhouse Ct., Northville, Mich. 48167

Filed May 7, 1984, Ser. No. 607,783
Int. Cl.⁴ G01B *13/10*
U.S. Cl. 73—37.5 **2 Claims**



1. A pneumatic circuit for pneumatic gauging, said pneumatic circuit comprising an inlet to which compressed air is supplied, a first branch passageway connected to said inlet, said first branch passageway having a first outlet, a second branch passageway connected to said inlet, said second branch passageway having a second outlet, a first needle valve adjustable control orifice in said first branch passageway between said inlet and said first outlet defining a first pressure chamber between said first control orifice and said first outlet, a second needle valve adjustable control orifice between said inlet and said second outlet defining a second pressure chamber between said second control orifice and said second outlet, a differential pressure transducer having a first port connected to said first chamber and a second port connected to said second chamber, said differential pressure transducer being adapted to provide an electrical output signal to a measurement display instrument as a function of the pressure differential between said chambers, said first and second adjustable orifices being adjustable for effecting respectively sensitivity and datum scale settings of the measurement display instrument, a first flow orifice connected to said first outlet, and a second flow orifice connected to said second outlet, wherein at least said first flow orifice

connected to said first outlet is a variable flow first nozzle whose flow rate is dependent upon the distance separating said first nozzle from a surface causing the pressure of the air circulating in said first chamber to vary as a function of the air flow through said first nozzle and said second flow orifice connected to said second outlet is a calibrated orifice fitting having a fixed area and venting said second pressure chamber to the ambient for effecting measurements by means of said variable flow first nozzle, said calibrated orifice fitting being replaceable by a variable flow second nozzle whose flow rate is dependent upon the distance separating said second nozzle from a surface causing the pressure of the air circulating in said second chamber to vary as a function of the air flow through said second nozzle for effecting differential measurements by means of said variable flow first and second nozzles.

4,550,593

TURBOMOLECULAR PUMP SUITABLE FOR PERFORMING COUNTERFLOW LEAKAGE TESTS

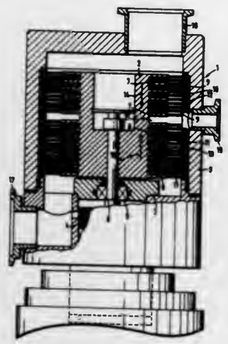
Günter Reich, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,403

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3133781

Int. Cl.⁴ G01M *3/20*

U.S. Cl. 73—40.7 **6 Claims**



1. A turbomolecular pump for a counterflow gas-leakage testing arrangement having one of a container to be tested or a test tank with a container therein to be tested for a leakage-testing test gas, a test gas detector for detecting the test gas, and a forepump for assisting the turbomolecular pump, the turbomolecular pump comprising:

two, tandemly-arranged, turbomolecular pump stages (**12,13**) for pumping toward each other into a common, open space (**21**) directly therebetween;

a common pump casing (**3**) about the pump stages and the common, open space (**4**) directly therebetween;

means (**6**) for rotating the pump stages;

first and second connections (**17,18**) through the common pump casing at opposite ends of the pump stages for respective connection to the one of the container or test tank and to the test gas detector; and

a connection (**19**) through the common pump casing to the common, open space between the pump stages for connection to the forepump.

4,550,594

SEPARABLE COLUMN FOR CHROMATOGRAPHY WITH A DETECTION AND SIGNAL DEVICE AND AN ELUTION SYSTEM - IN COMBINATION OR SEPARATE

Nils M. L. Engström, Gothenburg, Sweden, assignor to Lars G. I. Hellgren, Vastra Frolunda and Jan G. Vincent, Stockholm, both of, Sweden

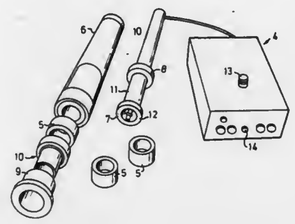
PCT No. PCT/SE83/00309, § 371 Date May 2, 1984, § 102(e) Date May 2, 1984, PCT Pub. No. WO84/00900, PCT Pub. Date Mar. 15, 1984

PCT Filed Sep. 2, 1983, Ser. No. 610,296

Claims priority, application Sweden, Sep. 3, 1982, 8205033

Int. Cl.⁴ G01N *31/08*

U.S. Cl. 73—61.1 C **9 Claims**



1. A chromatography column for dry column chromatography comprising a support tube, a plurality of ring-shaped members capable of being removably inserted into and supported by said support tube, said ring-shaped members further capable of being packed with a chromatographic gel whereby after elution the ring can be removed from the support tube to recover an eluted material.

4,550,595

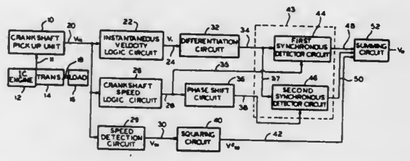
TORQUE MEASUREMENT CIRCUIT AND METHOD

Harry J. Venema, Wheaton, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 11, 1984, Ser. No. 609,601

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—116 **20 Claims**



1. A torque measurement circuit for an internal combustion engine of the four cylinder, two-cycle type which accounts for inertia forces due to the mass of the pistons and connecting rods, said circuit comprising:

pick-up means having an input indicative of the angular displacement of the crankshaft in an internal combustion engine from top dead-center position for generating a first signal directly proportional to the rotational speed of the crankshaft, said first signal having a portion indicative of when the piston is at top dead-center position;

first circuit means responsive to said first signal proportional to the rotational speed for generating a second signal directly proportional to the engine's instantaneous rotational velocity;

second circuit means responsive to said portion of said first signal indicative of when the piston is at top dead-center position for generating a sine wave signal at twice the angular displacement of the crankshaft;

third circuit means also responsive to said portion of said

first signal for generating a third signal directly proportional to the engine's average angular velocity;

fourth circuit means for differentiating said second signal to generate a fourth signal directly proportional to angular acceleration;

fifth circuit means responsive to said sine wave signal for phase shifting said sine wave signal by 90 degrees for generating a cosine wave signal;

sixth circuit means responsive to said fourth signal proportional to acceleration, sine wave signal, and cosine wave signal for generating fifth and sixth signal both representative of average torque due to pressures inside of the cylinders and of impulse torque due to the mass of the pistons and connecting rods;

seventh circuit means responsive to said third signal for generating a seventh signal directly proportional to the square of the engine's average angular velocity; and

eighth circuit means for combining said fifth and sixth signals from said sixth circuit means with said seventh signal from said seventh circuit means to produce a resultant output signal proportional to the average torque and independent of the engine's speed with the effects of inertia forces being cancelled.

4,550,596

APPARATUS FOR INDICATING AN OPTIMUM SHIFT POSITION FOR A MANUAL TRANSMISSION INSTALLED IN A VEHICLE

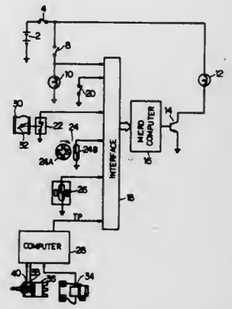
Masahiro Ueda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 2, 1984, Ser. No. 596,104

Claims priority, application Japan, Apr. 6, 1983, 58-60157; Apr. 6, 1983, 58-60158

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—117.3 **56 Claims**



1. An apparatus for indicating an optimum gearshift position for a manual transmission installed in a vehicle, comprising:

an engine speed sensor for detecting a speed of an engine;

an engine load sensor for detecting a load on an engine;

memory means for storing parameters of engine speed and parameters representing engine load for creating an upshift zone;

comparison means for determining whether the detected speed of the engine and the detected load on the engine fall within the stored parameters of engine speed and engine load which create the upshift zone;

timing means for measuring a predetermined amount of elapsed time when the detected speed of the engine and the detected load on the engine fall within the stored parameters of engine sped and engine load which create the upshift zone;

indication means for instructing that upshifting is necessary when the detected speed of the engine and the detected load on the engine fall within the stored parameters of engine speed and engine load which create the upshift zone; and

delay means for delaying the instructing by the indication means that upshifting is necessary until the detected speed of the engine and the detected load on the engine have been within the stored parameters of engine speed and engine load, which create the upshift zone, for a predetermined amount of time.

4,550,597

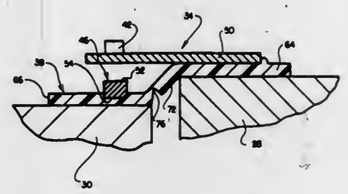
METHOD AND APPARATUS FOR SENSING RELATIVE MOVEMENT BETWEEN MEMBERS

Gilbert H. Drutchas, Birmingham, and John S. Borza, Sterling Heights, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 4, 1984, Ser. No. 596,655

Int. Cl.⁴ G01R *33/06*

U.S. Cl. 73—118 **19 Claims**



1. Apparatus for sensing relative rotational movement between two members, said apparatus comprising:

a first part for movement with one member,

a second part for movement with the other member, said first and second parts having means for creating an electrical signal upon relative movement thereof,

a base having first and second portions, said first and second portions of said base being fixedly mountable on said respective members, said base having a third portion which is separable after said first and second portions are fixedly mounted on said first and second members to effect separation of said first and second portions.

4,550,598

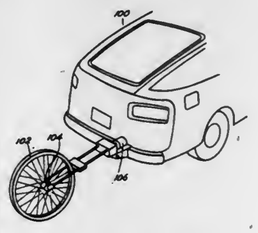
APPARATUS AND METHOD ADAPTED TO TEST TIRES BY ELIMINATING JITTER FROM DATA SIGNALS WITHOUT LOSING DATA

Frans N. Breedyk, Hunsdorf, Luxembourg, and Guido van Gelderen, Amstelveen, Netherlands, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 31, 1983, Ser. No. 547,330

Int. Cl.⁴ G01M *17/02*

U.S. Cl. 73—146 **24 Claims**



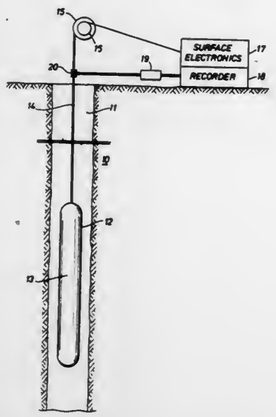
1. A method of testing tires comprising:

mounting the tires on a vehicle;

connecting to the vehicle a data signal generator for generating data signals having a period representing the distance traveled by the vehicle;

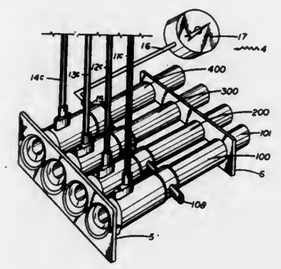
generating output signals substantially free of jitter;
generating a number signal in response to said data signals and said output signals, said number signal representing a digital number that remains substantially constant if the frequency of the data signals equals the frequency of the output signals, varies generally in a first direction if the frequency of the data signals is greater than the frequency of the output signals and varies generally in a second direction opposite the first direction if the frequency of the data signals is less than the frequency of the output signals; and
conditioning the number signal so that the frequency of the output signals tracks the frequency of the data signals over a substantial range of frequencies, whereby the number of output signals produced when the frequency of the data signals decreases from a first predetermined frequency to a second predetermined frequency can be counted by a digital computer so that the braking performance of the tires can be measured.

4,550,599
APPARATUS FOR RESTRAINING ELECTRONIC ASSEMBLIES
Michael L. Bridge, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Jan. 21, 1983, Ser. No. 459,865
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—151 **17 Claims**



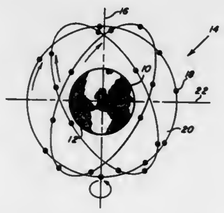
1. A system for restraining an elongated instrument chassis adapted for mounting electronic circuitry thereon within a tubular housing, comprising:
a biased cam assembly for providing substantially rigid restraint of said chassis within said housing said cam assembly comprising;
a cam cooperatively arranged on said instruemnt chassis; and
bias means for biasing said cam into cooperative engagement with said housing; and
means for latching said cam assembly in a retracted position on said chassis for allowing insertion of said chassis within said housing.

4,550,600
LIQUID LEVEL GAUGE
Peter B. Lindgren, 4491 Crystal Lake Dr., Pompano Beach, Fla. 33064
Filed Aug. 8, 1983, Ser. No. 521,333
Int. Cl.[4] G01F *23/14*
U.S. Cl. 73—299 **6 Claims**



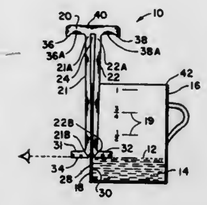
1. A device for determining the level of liquid (**11***b*) in a tank (**11**) comprising:
(a) A piston chamber (**107**) having one closed end and one open end;
(b) A piston (**101**) movable within said chamber and extending through said open end so as to be externally manipulable;
(c) Spring means (**102**) between the inner end of said piston and said closed end of said chamber;
(d) First conduit means (**11***c*, **11***cc*) for providing a flow path for said liquid and for connecting the liquid in the tank (**11**) to the interior of said chamber (**107**) through a wall thereof;
(e) An air-operated gauge (**17**);
(f) Second conduit means (**15**) for connecting the interior of said chamber (**107**) and said gauge (**17**);
(g) Means (**103**) carried by said piston for normally sealing off connection between the interior of said chamber and said first and second conduit means, but permitting connection between said chamber and said conduit means upon manipulation of said piston so as to press said piston inwardly; and
(h) Check valve means (**108**) to the atmosphere in one end of said second conduit means (**15**).

4,550,601
METHOD FOR DETERMINING THE MAGNITUDE OF EARTH'S GRAVITY
Alan G. Evans, LaPlata, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 27, 1984, Ser. No. 583,562
Int. Cl.[4] G01V *7/16*
U.S. Cl. 73—382 R **15 Claims**



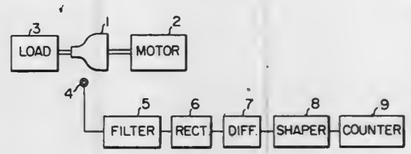
1. A method for directly and continuously determining the magnitude of the gravity at one or more selected points in relation to the earth's surface, the method comprising the steps of:
continuously transmitting encoded RF signals from a plurality of Global Positioning System (GPS) earth-orbiting satellites, such that the trasmitted RF signals of each GPS earth-orbiting satellite are a pair of encoded RF signals at predetermined frequencies that are directed in a radial direction towards the earth's surface, all GPS satellites of the plurality of satellites progressively and continuously advancing about the earth in relation to the field of view of the antenna of a user platform of the GPS system;
continuously and selectively processing the encoded RF signals received by the platform at one or more selected points from a series of GPS satellites of the plurality in the field of view of the antenna so as to initially determine the Doppler pseudo range between each satellite of the series and the platform and the radial relative velocity therebetween,
further processing the encoded RF signals of the series of satellites so as to select and track an optimum group of satellites of the series that will provide minimal error in determining the navigation position of the platform and the relative radial velocity of the platform with respect to each satellite of the optimum group,
also further processing the encoded RF signals of the optimum group of selected and tracked satellites so as to determine the relative radial acceleration of the platform with respect to each satellite thereof and to resolve the radial acceleration of the platform with respect to each satellite into the GPS vertical acceleration thereof,
measuring the vertical acceleration of said platform at one or more selected points by way of a gravimeter accelerometer arrangement mounted on the platform, and
also still further processing the encoded RF signals of the optimum group so as to compare the vertical acceleration of the platform with the GPS vertical acceleration of the platform, the comparison providing a difference that indicates the magnitude of the gravity in relation to the platform.

4,550,602
LIQUID LEVEL MARKER FOR CONTAINER
William L. Burke, Sr., 1701 W. Brandon Blvd., Brandon, Fla. 33511; Elwood Marple, 317 - 34th Ave. N., #109, St. Petersburg, Fla. 33704, and A. Eileen Suisman, 1004 Warwick Ct., Sun City Center, Fla. 33570
Filed May 11, 1984, Ser. No. 609,323
Int. Cl.[4] G01F *19/00*
U.S. Cl. 73—428 **7 Claims**



1. A device for visually sighting the level of a liquid material or a solid particulate material within a container having a container sidewall with markings on an external surface of the container sidewall, comprising in combination:
a handle;
a first leg having a first top end portion and a first bottom end portion;
a second leg having a second top end portion and a second bottom end portion;
said first and second top end portions being integrally connected to said handle and spaced apart a distance to accommodate the thickness of the container sidewall;
said first and second legs extending from said handle in a converging relationship establishing the first and second bottom end portions to be spaced apart a distance closer than said first and second top end portions;
a first and a second foot integrally connected to said first and second bottom end portions with said first and second feet extending substantially perpendicular to said first and second legs respectively;
said first and second legs being resilient, enabling the first and second bottom end portions to be separated upon positioning the first and second legs on the external and internal surfaces of the container sidewall and for enabling said first and second bottom end portions to resiliently engage the external and internal surfaces of the container sidewall to maintain the position of said first and second bottom end portions relative to said container sidewall; and
said first and second feet providing sighting lines external and internal the container for enabling an operator to determine the level of the material internal the container relative to the container sidewall marking or the external surface of the container sidewall.

4,550,603
ABNORMAL NOISE DETECTOR FOR USE IN THE INSPECTION OF GEAR UNITS
Koichi Fukada, Kobe, and Hiroshi Sugimoto, Toyonaka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Mar. 27, 1984, Ser. No. 593,836
Claims priority, application Japan, Mar. 29, 1983, 58-55602
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—587 **3 Claims**



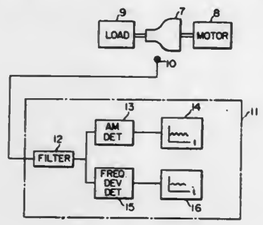
1. An abnormal noise detector for the inspection of gear units having gears, two of which mesh and produce noise of a normal fundamental frequency which is a function of the rate at which the teeth of said two gears mesh, comprising:
a microphone placed in the vicinity of a gear unit to be tested; and
detecting means responsive to an electrical output signal from said microphone for continuously detecting momentary variations in the amplitude of the component of said signal having a prescribed frequency which is an integral multiple of said normal fundamental frequency.

4,550,604
ABNORMAL NOISE DETECTOR FOR INSPECTING GEAR UNITS
Hiroshi Sugimoto, Toyonaka, and Koichi Fukada, Kobe, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Mar. 22, 1984, Ser. No. 592,367
Claims priority, application Japan, Mar. 24, 1983, 58-50869
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—587 **3 Claims**

1. An abnormal noise detector for inspecting gear units having gears, two of which mesh and produce noise of a normal fundamental frequency which is a function of the rate at which the teeth of said two gears mesh, comprising:

a microphone placed in the vicinity of a gear unit to be tested; and

detecting means responsive to an electrical output signal from said microphone for detecting the amplitude and



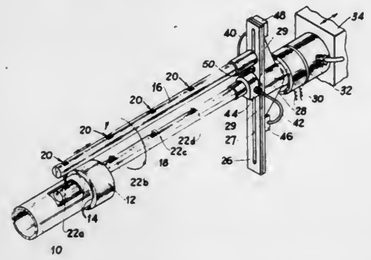
frequency deviations of said signal from the center frequency within a band of frequencies, the center frequency being an integral multiple of said normal fundamental frequency.

4,550,605

HOPPING MECHANISM FOR PIPE AND COUPLING INSPECTION PROBE

Elizabeth M. Bains, Pearland, Tex., assignor to AMF Inc., White Plains, N.Y.

Filed Aug. 15, 1984, Ser. No. 641,090
Int. Cl.⁴ G01N *29/04, 27/82*
U.S. Cl. 73—622 **11 Claims**



1. In the nondestructive inspection of a tubular member having a cylindrical coupling of a different diameter secured to one end of the tubular member, wherein an inspection probe moves along the surface of the tubular member and encounters the end of the coupling as an obstacle to its further movement in a direction parallel to the tubular member axis, an improved mechanism for causing the probe to hop over the obstructing end of the coupling and onto the surface thereof, comprising the combination

a probe member adapted to include nondestructive tubular member inspection means,

a probe housing adaptive to receive said probe member,

the probe member being translatable relative to the housing onto and away from the surface of a tubular member placed adjacent said housing,

support means for supporting said housing for movement between first and second positions,

means for translating said support means with said housing and probe member parallel to the axis of a tubular member to be inspected, the obstructing end of the coupling forcing the housing to its second position when the moving probe member encounters said obstructing end, and

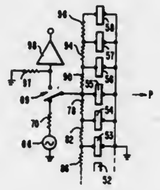
means operable only when the housing moves to its second position for withdrawing the probe from the surface of the tubular member and radially clear of the obstructing end of the coupling and for extending the probe member to the surface of the coupling when the housing returns to its first position once the obstructing end of the housing is cleared.

4,550,606

ULTRASONIC TRANSDUCER ARRAY WITH CONTROLLED EXCITATION PATTERN

Cornelis J. Drost, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 28, 1982, Ser. No. 425,798
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—626 **33 Claims**



1. An ultrasonic transducer array exhibiting a transducer directivity pattern which is substantially symmetrical along at least one coordinate of the transducer surface, comprising:

a source of excitation;

a plurality of transducer elements;

first and second excitation electrode means connected first and second opposed surfaces, respectively, of each said transducer element;

impedance means interconnecting adjacent transducer elements; and

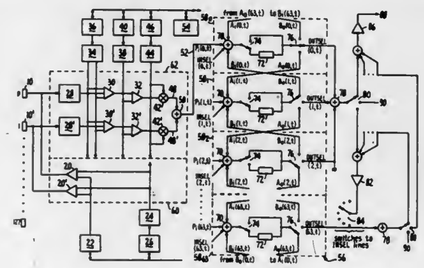
means to sequentially connect said source of excitation to selected transducer elements and simultaneously through said impedance means to adjacent transducer elements to excite said selected and adjacent transducer elements to produce said directivity pattern and to scan said pattern sequentially across the transducer array by said sequential connections.

4,550,607

PHASED ARRAY ACOUSTIC IMAGING SYSTEM

Samuel H. Maslak, and John N. Wright, both of Palo Alto, Calif., assignors to Acuson, Mountain View, Calif.

Filed May 7, 1984, Ser. No. 607,670
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—626 **19 Claims**



1. In an acoustic imaging system having means for repeatedly transmitting an acoustic pressure wave into a body to be examined, an array of transducers for transducing the acoustic echo that impinges on each of them into a corresponding electrical receive signal, one of a plurality of substantially identical channels for processing the receive signal from each transducer and an intermediate frequency summing point for combining, for each scan line, the processed receive signal

from each of the transducers in the array, the improvement comprising:

a summing delay line causing the processed receive signal for each transducer to arrive at the summing point in time overlapped relationship including

a plurality of delay cells forming the summing delay line in selective sequence, each delay cell consisting of

(a) delay cell input summing means for at least one of (1) a signal derived from the processed receive signal of at least one transducer, (2) an inselected signal, (3) the output of a first adjacent delay cell or (4) the output of a second adjacent delay cell to produce a delay cell summed input signal,

(b) delay cell output switch means, and

(c) at least one discrete delay element connecting the delay cell summed input signal to the delay cell output switch to form a delay cell output, said delay cell output switch selectively connecting the delay cell output to any one of (1) the input summing means of a first adjacent delay cell, or (2) the input summing means of a second adjacent delay cell or (3) an outselection path; and

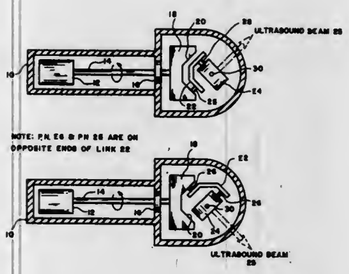
a digital control means for coordinating the position of the output switch means for each delay cell to configure the delay line in a preselected manner for each particular scan line of said transducer array.

4,550,608

OSCILLATING SCANNER AND DRIVE MECHANISM THEREFOR

Ronald C. Carnes, Folsom, and Ted F. Naumann, Jr., Shingle Springs, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 29, 1983, Ser. No. 566,864
Int. Cl.⁴ G01N *29/04*
U.S. Cl. 73—633 **9 Claims**



5. An ultrasonic sector scanner comprising

a housing,

a drive motor mounted inside of said housing and having a rotating shaft and shaft axis,

a crank member attached to said shaft for rotation therewith,

an oscillating transducer element pivotally attached to said housing and having an axis of oscillation, and

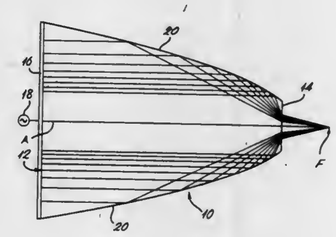
a linkage member attached to said crank member and to said oscillating transducer element for oscillating said transducer element about said axis for oscillation as said shaft and crank member are rotated, said linkage member is attached by a first pin to said crank means, said firt pin having a first axis, and said linkage member is attached by a second pin to said oscillating transducer element, said second pin having a second axis, whereby said shaft axis, said axis of operation, said first axis, and said second axis intersecting at a point.

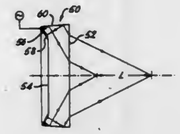
4,550,609

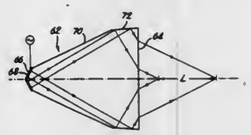
ACOUSTIC LENS

Nicholas D. Johnson, London, England, assignor to National Research Development Corp., London, England

Filed Sep. 16, 1983, Ser. No. 532,913
Claims priority, application United Kingdom, Sep. 23, 1982, 8227166
Int. Cl.⁴ G01N *29/04*
U.S. Cl. 73—642 **13 Claims**







1. Apparatus for focussing or collimating a beam of high frequency acoustic radiation comprising a solid body of material capable of transmitting acoustic radiation, having a first surface with an electroacoustic transducer coupled thereto to generate acoustic radiation therein, a second surface remote from said first surface for propagation of acoustic radiation between said body and an acoustic transmission medium in contact with said surface and a third internally-reflecting surface cooperable with said first surface to focus said acoustic radiation externally to said body and beyond said second surface.

4,550,610

RESONATOR PRESSURE TRANSDUCER

Errol P. EerNisse, Sandy, Utah, assignor to Quartztronics, Inc., Salt Lake City, Utah

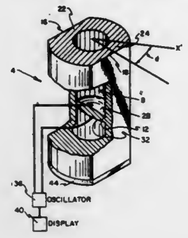
Filed Nov. 28, 1983, Ser. No. 555,822
Int. Cl.⁴ G01L *9/08*; H01V *7/00*
U.S. Cl. 73—702 **19 Claims**

1. A resonator pressure transducer comprising:

a generally disc-shaped resonator section;

a housing surrounding the resonator section and joined to the perimeter thereof, said housing having sidewalls which extend generally normal to the plane of the resonator section, with selected portions of the sidewalls being thinner than the remaining portions of the sidewalls so

that when the housing is immersed in a fluid, a non-uniform stress is produced in the resonator section; and



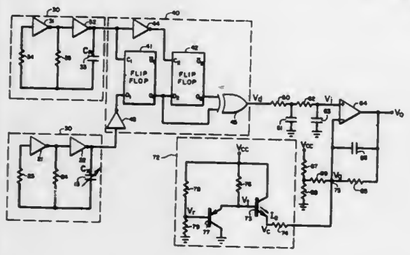
means for causing said resonator section to vibrate, with the frequency of vibration varying with variation in pressure applied to the housing sidewalls.

4,550,611

ELECTRONIC PRESSURE TRANSDUCER

Wlodzimierz S. Czarnocki, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1984, Ser. No. 568,551
Int. Cl.[4] G01L *19/04*
U.S. Cl. 73—708 **27 Claims**



1. An electronic pressure transducer for providing a pressure-indicative output signal indicative of an applied pressure, comprising:

a reference oscillator providing a reference signal having a frequency independent of the applied pressure;

a sensor oscillator providing a pressure signal having a frequency dependent on the applied pressure;

combining means for providing a difference signal having a duty cycle related to the frequency difference between said reference signal and said pressure signal over a relative frequency range of 2:1 to 1:1; and

integrating circuit means responsive to said duty cycle for providing the pressure-indicative output signal.

4,550,612

INTEGRATED PRESSURE SENSOR

Kazuji Yamada; Shigeyuki Kobori; Satoshi Shimada; Ryosaku Kanzawa, all of Hitachi; Ryoichi Kobayashi, Ibaraki, and Hideo Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

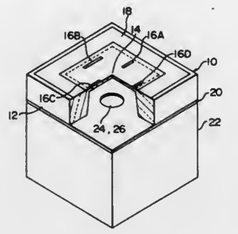
Filed May 31, 1984, Ser. No. 615,524
Claims priority, application Japan, May 31, 1983, 58-97477
Int. Cl.[4] G01L *9/06*
U.S. Cl. 73—727 **7 Claims**

1. An integrated pressure sensor comprising:

a silicon chip having a thin diaphragm portion and a peripheral fixed portion, gauge resistors being formed on said diaphragm portion, said fixed portion being thicker than said diaphragm portion;

a substrate made of the same material as said silicon chip for supporting said silicon chip;

a thin insulating film interposed between said silicon chip and said substrate; and



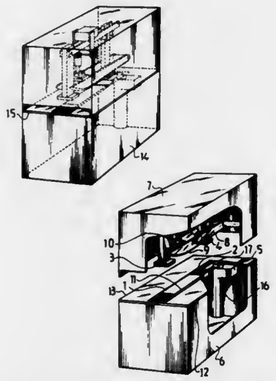
a signal processing circuit formed in the surface of said fixed portion.

4,550,613

APPARATUS FOR AUTOMATIC DETERMINATION OF THE TENSILE STRENGTH PROPERTIES OF A SHEET OF PAPER

Olavi Lehtikoski, Sölvenkatu 8, SF-78300 Varkaus 30, and Martti Nissinen, Kirvesniementie 2, SF-78880 Kuvansi, both of Finland

Filed Dec. 13, 1983, Ser. No. 560,829
Claims priority, application Finland, Dec. 30, 1982, 824510
Int. Cl.[4] G01N *3/08*
U.S. Cl. 73—834 **3 Claims**



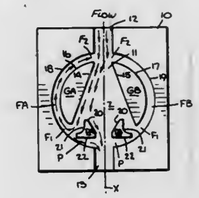
1. Apparatus for the automatic determination of the tensile strength properties of a sheet of paper, said apparatus comprising a substantially flat fixing block of predetermined and uniform width and a pulling block which is displaceable relative to the fixing block in the same plane, a fixing head pressable against the fixing block for holding a sheet of paper therebetween, a pulling head pressable against the pulling block for holding a sheet of paper therebetween, said pulling head being movable along with the pulling block, a measuring device for measuring the tensile strength properties of paper, a cutter means adapted to cut off said sheet of paper a sample blank of standard width as the sheet is positioned between and pressed by the fixing block and fixing head at one end of said sample blank and between and pressed by said pulling block and said pulling head at the other end of said sample blank, said cutter means comprising two parallel blades spaced apart by said width of said fixing block and extending in the direction of said fixing block on opposite sides of said fixing head and said pulling head, and drive means mounted on the blades for pushing said blades towards the two longitudinal sides of the fixing block for cutting a sample blank of said predetermined width.

4,550,614

OSCILLATORY FLOWMETER

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Jan. 14, 1985, Ser. No. 691,003
Int. Cl.[4] G01F *1/20*
U.S. Cl. 73—861.19 **10 Claims**



1. An oscillatory flowmeter yielding an output signal whose frequency is a linear function of flow rate, said flowmeter comprising:

A. a meter body having a steering chamber therein, a power nozzle to project a jet stream of the fluid being metered into the chamber, and an output duct in line with the power nozzle to provide a fluid exit from the chamber;

B. twin guides disposed in the chamber on either side of the power nozzle to define an interaction zone, the inner walls of the guides diverging outwardly from the power nozzle, the outer walls of the guides being spaced from the opposing sidewalls of the chamber to define feedback paths, each having an inlet at the downstream end of the related guide and an outlet at the upstream end forming a control nozzle adjacent the power nozzle;

C. twin diverters disposed in the chamber on either side of the output duct, each diverter acting to split the jet stream which is emitted from the power nozzle and attaches itself to the inner wall of the related guide into a control stream which is diverted toward the inlet of the feedback path and an output stream which is directed toward the output duct, the control stream which flows through the feedback path and is discharged from its control nozzle acting in the interaction zone to deflect the incoming jet toward the inner wall of the other guide where the same hydraulic action is repeated, whereby the jet stream is switched alternately from guide to guide; and

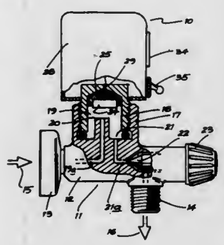
D. means to sense the resultant fluidic forces exerted on the diverters to produce said output signal.

4,550,615

FLUID FLOWMETER

Graham C. Grant, P.O. Box 40, Northbridge, New South Wales 2063, Australia

Filed Aug. 29, 1983, Ser. No. 527,326
Claims priority, application Australia, Sep. 6, 1982, PF5752
Int. Cl.[4] G01F *1/20, 1/66*
U.S. Cl. 73—861.21 **8 Claims**



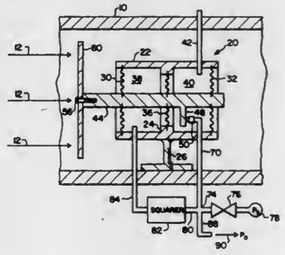
1. A fluid flowmeter comprising a body portion, a chamber within the body portion through which fluid is passed in use of the flowmeter, first and second fluid flow channels in the body portion, the first channel being connectable at one end to a supply of fluid and communicating at its other end with a nozzle which projects into the chamber, the second channel communicating at one end with the chamber and being connectable at its other end to a fluid delivery line, an acousto-electrical transducer located within the chamber and exposed directly to fluid flowing through the chamber and to acoustical energy which is emitted by the fluid, the nozzle being orientated toward the transducer whereby fluid passing into the chamber from the nozzle is caused to impinge on the transducer, the transducer being in the form of a microphone including a vibratable member which provides an electrical output signal when exposed to acoustical energy emitted by the fluid, the vibratable member or casing portion of the transducer being apertured to permit pressure equalisation at opposite faces of said vibratable member, and an indicator in circuit with the transducer for providing indication of the electrical output of the transducer.

4,550,616

PNEUMATIC FLOW STATION

Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 21, 1983, Ser. No. 534,525
Int. Cl.[4] G01F *1/28*
U.S. Cl. 73—861.74 **4 Claims**



1. A fluid flow measurement system for use in a duct comprising:

force means positioned in the duct to receive the fluid and to produce a first force that varies with the square of the fluid velocity in the duct;

rebalance means including a first chamber having flexible walls connected to said force means and having an input to receive a rebalance pressure which, when applied to the chamber, moves the flexible walls in a direction opposite to the direction the first force is applied, including a second chamber having flexible walls also connected to the force means, the second chamber being exposed to atmospheric pressure, and including squaring means connected to said force means to receive the first force and operable to produce a variable pressure, said squaring means operating on the variable pressure to produce the rebalance pressure which varies with the square of the variable pressure; and

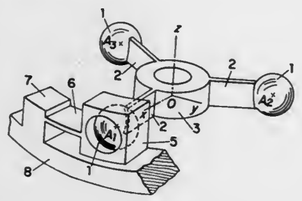
means connecting the squaring means to said first chamber to apply the rebalance force to said first chamber to produce a rebalance force opposing the first force, the variable pressure thereby varying as the square root of the first force and thus varying substantially linearly with the fluid velocity as an output indicative of flow measurement.

4,550,617

MULTI AXIS FORCE AND MOMENTS TRANSDUCER

Bernard Fraignier, Villemonble, and Daniel E. Géry, Saint Remy, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", France

Filed May 4, 1984, Ser. No. 607,262
Claims priority, application France, May 6, 1983, 83 07957
Int. Cl.⁴ G01L *5/16*
U.S. Cl. 73—862.04 **21 Claims**



1. A multi-axis force and moment transducer for determining the forces and moments existing between first and second bodies comprising:

(a) a first element attached to the first body, the first element having a first axis;

(b) a second element attached to the second body;

(c) a plurality of housing means disposed about the first element, each of the housing means defining a socket opening with a central axis extending generally perpendicular to the first axis;

(d) a plurality of first relatively thin flexible plates, each having a first end attached to the first element and oriented so as to flex only in a direction generally perpendicular to the first axis;

(e) first attachment means to attach a second end of each of the first flexible plates to a housing means, the first attachment means comprising a ball attached to the second ends of the first flexible plates such that the ball fits within the socket opening in the housing means;

(f) a plurality of second relatively thin flexible plates, each having a first end attached to the second element and oriented so as to flex only in a direction generally parallel to the first axis;

(g) second attachment means to attach a second end of each of the second flexible plates to a housing means; and,

(h) means associated with each plate to determine the force exerted thereon by the flexing caused by relative movement between the two bodies.

4,550,618

TORQUE DETECTOR

Tokio Kohama, Nishio; Hideki Obayashi, Okazaki; Toshikazu Ina, Nukata, and Seiichi Narita, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Jun. 15, 1983, Ser. No. 504,425
Claims priority, application Japan, Jun. 17, 1982, 57-104118
Int. Cl.⁴ G01L *3/10*
U.S. Cl. 73—862.34 **8 Claims**

1. A torque detector comprising:

a driving member connected to an engine;

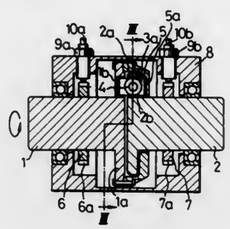
a driven member connected to a load and driven by said driving member to be rotated;

an elastic member for connecting said driving member to said driven member;

a transmission means for varying the rotating speed ratio of said engine to said load, which is provided in said driving member or said driven member;

an angular phase difference detecting means for detecting the angular phase difference between said driving member and said driven member, which is produced due to the deformation of said elastic member;

a rotating speed ratio detecting means for detecting the rotating speed ratio of said engine to said load, which is controlled by said transmission means; and



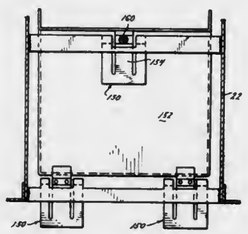
a torque processing means for calculating engine torque and load driving torque from the rotating speed ratio detected by said rotating speed ratio detecting means and the angular phase difference detected by said angular phase difference detecting means.

4,550,619

SUSPENSION FOR A LINEAR FORCE TRANSDUCER

Joseph A. Volk, Jr., Florissant, and Joseph A. Volk, Chesterfield, both of Mo., assignors to Beta II, Incorporated, St. Louis, Mich.

Division of Ser. No. 479,252, Mar. 28, 1983. This application Jun. 27, 1984, Ser. No. 625,120
Int. Cl.⁴ G01F *1/30*; G01L *1/04*
U.S. Cl. 73—862.62 **16 Claims**



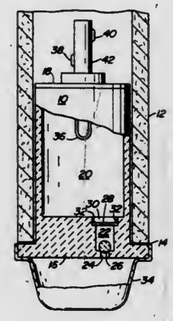
1. In a device to measure the magnitude of a force applied to a surface by a flow of material impacting the surface, the device including a force detection means, and means coupling the force detection means to the surface, the coupling means and force detection means having means to define one or more parallel axes along which the force is measured including a rod means, the improvement comprising means to support the surface, said support means having means to limit movement of the surface to a substantially linear motion along one of the defined axes and including at least one leaf spring, said at least one leaf spring having a plurality of leaves with a first leaf attached to the surface, means to attach said rod means to said first leaf, and another of its leaves attached to the support means so that movement of the surface deflects said first leaf with respect to said other leaf.

4,550,620

END-FILLING SAMPLER FOR MOLTEN METALS

John R. Wiese, Pittsburgh, and Thomas J. Walsh, Butler, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 25, 1983, Ser. No. 555,218
Int. Cl.⁴ G01N *1/12*
U.S. Cl. 73—864.55 **9 Claims**



1. An end-fill immersion sampling device for molten metal comprising

a sampler chamber for molten metal,

a passageway through the immersion end of said device for flow of molten metal into said sampler chamber when said device is immersed in molten metal,

gas vent means at the opposite end of said sampler chamber to permit gas to escape from said sampler chamber when said molten metal is flowing into said sampler chamber, and

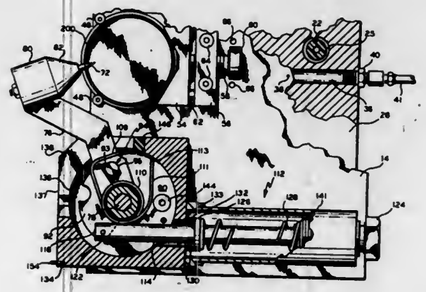
check valve means within said passageway for opening said passageway when said molten metal tends to flow into said sampler chamber and for closing said passageway when said molten metal tends to flow out of said sampler chamber.

4,550,621

CONTAINER PIERCING DEVICE

Elton E. Rush, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 210,504, Nov. 26, 1980. This application Oct. 21, 1983, Ser. No. 544,184
Int. Cl.⁴ G05G *17/00*
U.S. Cl. 74—2 **3 Claims**



1. Apparatus comprising:

(a) a support plate;

(b) a dowel extending generally normal from the support plate;

(c) a cam pivotally mounted to the dowel for pivoting from a first position to a second position;

(d) an arm pivotally mounted to the dowel and extending radially past the cam;

said arm pivoting from a first position past the first position of the cam to a second position;

(e) means for biasing the cam toward its first position;

(f) means for biasing the arm toward its second position, wherein the arm and the cam are biased by their respective means in opposite directions;

(g) means cooperating with the arm for engaging the cam, said means for engaging the cam being movable from a first position to engage the cam to a second position to disengage the cam;

(h) means for biasing the means for engaging the cam toward its second position; and

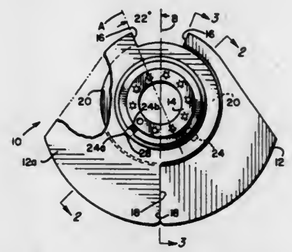
(i) means for restraining the arm in its second position against movement toward its first position when the cam is engaged.

4,550,622

PLURAL-AMPLITUDE VIBRATION ASSEMBLY

David E. La Bonte; Kurt W. Richter, both of Shippensburg, and Robert F. Goehler, Greencastle, all of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 12, 1983, Ser. No. 493,995
Int. Cl.⁴ B06B *1/16*
U.S. Cl. 74—87 **11 Claims**



1. A plural-amplitude vibration assembly, for use in vibratory, surface compactors and the like, comprising:

first and second apertured, eccentric weights;

a rotatable shaft in penetration of both of said weights; and

means engaging said shaft retaining said weights on said shaft; wherein

each of said weights has a recessed land formed therein;

said lands are confrontingly nested together in juxtaposition;

one of said weights and said shaft have engaging means interposed therebetween to cause said one weight to rotate in common with said shaft;

the other of said weights is freely rotatable relative to said shaft;

said weights are substantially identical;

said shaft has a given diameter; and

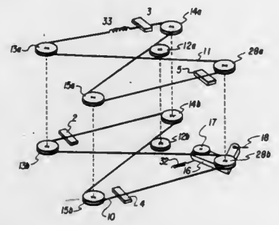
said weights each have a shaft-engaging aperture which has an inside diameter which is slightly greater than said given outside diameter, to define a relative slidable interface between said outside diameter of said shaft and said inside diameters of said apertures.

4,550,623

MOTORIZED CABLE MECHANISM FOR POSITIONING TRACTORS IN A PRINTER

Peter Gysling, Boise, Id., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Oct. 24, 1983, Ser. No. 545,014
Int. Cl.⁴ F16H *27/02*
U.S. Cl. 74—89.2 **19 Claims**



1. A drive system for imparting translational motion to a plurality of pairs of elements, the elements of each pair having a fixed relationship with respect to each other, for moving a continuous web element, said drive system comprising:

a support;

drive means fixedly mounted on said support for providing rotational motion;

at least two linking means coupled to the drive means;

at least two pairs of elements slidably coupled to the support for translational motion with respect to said support, each pair of said elements being fixedly attached to a respective one of said linking means; and

a plurality of routing means mounted on said support for routing each of said linking means such that each of said linking means, responsive to rotational motion of the drive means, moves each element of said pair of elements in the same direction and the same distance with respect to said support.

4,550,624

REVERSING MECHANISM MODULE FOR A DOUBLE ACTING RECIPROCATING PUMP AND METHOD FOR REPAIRING THE PUMP

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 320,584, Nov. 12, 1981, Pat. No. 4,436,493, which is a continuation-in-part of Ser. No. 77,544, Sep. 21, 1979, abandoned. This application Oct. 21, 1983, Ser. No. 544,060
Int. Cl.⁴ F16H *21/10*; F16K *31/44*
U.S. Cl. 74—110 **16 Claims**

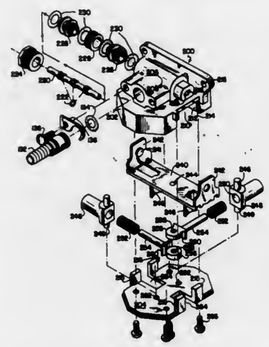
2. An article for use with a double-acting reciprocating pump comprising:

(a) a module housing including first and second separate portions connected together;

(b) a guide slot in said module housing;

(c) a valve actuating member mounted for reciprocating movement within said guide slot back and forth between two end positions, said valve actuating member having a first actuating means extending transversely from said member on one side of said member, said valve actuating member also having a second actuating means on the opposite side of said member; and

(d) snap-acting spring means mounted in said module housing and operatively connected to said valve actuating member for rapidly completing the movement of said member from one of its two end positions to the other after said member has already been moved part way to said other end position.

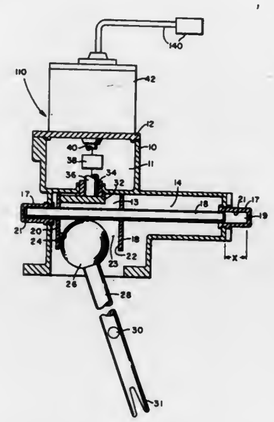


4,550,625

ELECTRICALLY CONTROLLED SHIFT ACTUATOR

George Martin, Lancaster, Ky., and Robert H. Brouckson, Portage, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 27, 1982, Ser. No. 423,921
Int. Cl.⁴ F16H *5/06*; B60K *20/10*
U.S. Cl. 74—335 **31 Claims**



1. A shift actuator responsive to an electrical control for selectively moving a shift member engagement means between a selected one of at least two spaced-apart first and second shift positions, said actuator of the type comprising a housing, a rotatable member rotatably mounted on the housing and having at least a first and second rotational position relative to the housing respectively corresponding to the first and second shift positions, and means moveable with respect to the housing having means associated therewith for moving the shift member engagement means to the first and second shift positions in response to rotation of the rotatable member respectively to the first and second rotational positions, said control comprising:

a motor operable to rotate the rotatable member between the first and second rotational positions thereof relative the housing;

first switch means connected to the motor, said first switch means having a first condition and a second condition;

second switch means connected to the motor and to the first switch means, said second switch means having a first condition and a second condition;

third switch means connected to a power supply and to said first and second switch means, said third switch means having a first condition for directing power from the power supply to the motor when the first switch means is in the second condition and the second switch means is in either the first or second condition and having a second condition for directing power from the power supply to the motor when the second switch means is in the first condition and the first switch means is in either the first or second condition;

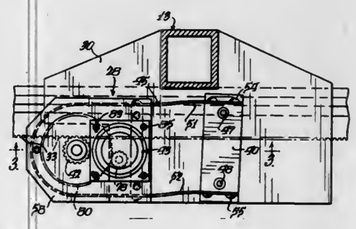
and said rotatable member comprising a cam operable to control the relative conditions of said first, second and third switch means such that said third switch means is in the first condition and said first and second switch means are respectively in said second condition when the shift member engagement means is at the second shift position and to change said second switch means to said first condition to start the motor rotating to move the shift member engagement means to the first shift position and to then change said first switch means to said second condition to stop the motor from rotating and change said first switch means to said first condition and said third switch means to said first condition when the shift member engagement means is at the first shift position and to then change said first switch means to said second condition to start the motor rotating to move the shift member engagement means to the second shift position and to then change the second switch means to the second condition to stop the motor from rotating when the shift member engagement means is at the second shift position.

4,550,626

SERVO-MOTOR ASSEMBLY FOR MACHINE SLIDES

Frans Brouwer, 410 Greenwood Ave., Glencoe, Ill. 60022

Filed Mar. 14, 1983, Ser. No. 475,197
Int. Cl.⁴ F16H *55/18, 1/04, 35/06*
U.S. Cl. 74—409 **11 Claims**



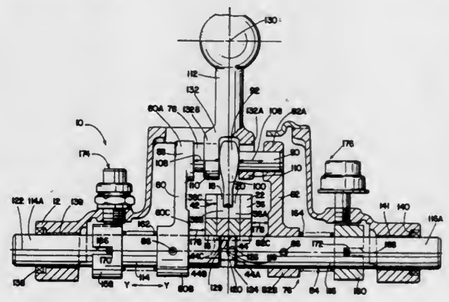
1. A servo-drive for machine slides of the type driven by a rack gear carried by a first machine member and a pinion gear drivingly engaged with the rack gear carried by a second machine member movable relative to the first machine member, comprising: a base member fixed with respect to the second machine member, a servo-motor support transversely movable with respect to the rack having an output shaft rotatably mounted therein for carrying the pinion gear, a servo-motor carried by said servo-motor support and connected to rotate the output shaft and pinion, and means for biasing the pinion against the rack including a generally flat spring interconnecting the fixed base member and the servo-motor support, said generally flat spring supporting the servo-motor support for movement toward and away from the rack gear without any rotary bearings.

4,550,627

TRANSMISSION SHIFTING MECHANISM

Ernst H. Lauer, Kalamazoo, and Joseph D. Reynolds, Climax, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 6, 1982, Ser. No. 447,346
Int. Cl.⁴ G05G *5/10, 9/12*
U.S. Cl. 74—475 **24 Claims**



1. A shifting mechanism for a change gear transmission comprising;

a shift mechanism housing mountable to a change gear transmission;

a plurality of substantially parallel generally equal width shift rails mounted in aligned side-by-side relationship for selective axial movement in said housing, each of said shift rails operatively connected to shift elements for engaging and disengaging selected gears, each of said shift rails having an axially nondisplaced neutral position and at least one axially displaced in-gear position, each of said shift rails having means defining a transversely extending shift notch on one of the upper and lower surfaces thereof adapted for engagement by a shift finger and means defining a transversely extending through interlock notch on one of the upper and lower surfaces thereof, all of said shift notches aligning when all of said shift rails are in an axially nondisplaced neutral position, all of said interlock notches aligning when all of said shift rails are in an axially nondisplaced neutral position;

a shift shaft-shift finger assembly mounted in said housing for axial movement along and rotatable movement about an axis extending substantially transverse to the axes of said shift rails, said shift shaft-shift finger assembly comprising a shift shaft mountable in said housing for axial movement along and rotational movement about its axis in said housing, said shift shaft axially slidable within the space partially defined by the peripheral surfaces of said interlock notches of those shift rails in the nondisplaced neutral positions thereof and adapted to interfere with the peripheral surfaces of said interlock notches to prevent substantial axial movement of said shift rails from the axially nondisplaced neutral positions thereof, said shift shaft defining a gap therein having a width greater than the thickness of one shift rail but less than the thickness of two shift rails, said gap permitting axial movement therethrough of a shift rail aligned therewith from the axially nondisplaced position of said shift rail aligned with said gap, said shift shaft-shift finger assembly further comprising a shift finger fixed to said shift shaft for axial movement along and rotational movement about the axis of said shift shaft therewith and having a surface engagable with the shift notch of an aligned shift rail for imparting a selected axial movement to said aligned shift rail, said shift finger aligned with said gap whereby alignment of said shift finger with a selected shift rail will align said gap with said selected shift rail allowing selected axial movement of said selected shift rail while preventing substantial

axial movement of all of the shift rails not aligned with said shift finger from the axially nondisplaced neutral position thereof; and

means drivingly attachable to said shift shaft-shift finger assembly to selectively axially move said assembly along the axis of said shift shaft and to selectively rotate said assembly about the axis of said shift shaft.

4,550,628

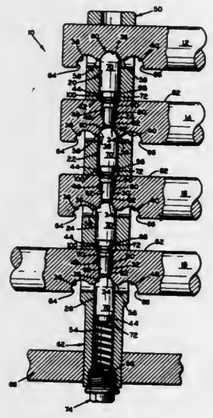
TRANSMISSION INTERLOCK SYSTEM

James A. Yarnell, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 2, 1984, Ser. No. 585,802

Int. Cl.⁴ G05G 5/10

U.S. Cl. 74—477 **11 Claims**



1. In a transmission including shift rods oriented along parallel axes, said rods selectively movable between axially spaced gear positions, said rods reciprocally slidable relative to each other, said rods each including interlock notches, all except at least one of said rods including a bore extending transversely to said axes, each bore communicating with one of said notches, each bore containing an interlock pin, said transmission further including a plurality of interlocks, each interlock being registrable with the notches on one of said rods, one interlock being disposed between each pair of pins for coaction therewith, and spring means for loading said springs and interlocks together; an improvement comprising said interlocks each defining a pair of large and small diameter coaxially oriented cylindrical ends, wherein small diameter ends are disposed for extension into said pin bores.

4,550,629

CONTINUOUSLY VARIABLE SPEED TRANSMISSION FOR MOTOR VEHICLES

Mutsumi Kawamoto, Aichi, Japan, assignor to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Aug. 3, 1982, Ser. No. 404,730

Int. Cl.⁴ F16H 57/10

U.S. Cl. 74—689 **16 Claims**

1. A continuously variable speed transmission for motor vehicles comprising:

a first shaft;

a second shaft parallel to said first shaft;

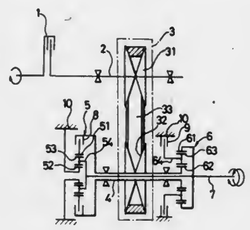
an intermediate shaft disposed side by side and parallel to said first shaft and arranged coaxial with and surrounding said second shaft;

a first variable pitch pulley fixedly mounted to said first shaft for rotation therewith;

a second variable pitch pulley fixedly mounted to said intermediate shaft for rotation therewith;

an endless belt interconnecting said first and second variable pitch pulleys, said pulleys and belt comprising a belt type continuously variable change ratio device;

a forward-drive planetary gear mechanism of a single planetary pinion type disposed on one side of said second variable pitch pulley and mounted on said intermediate shaft and subject to interconnecting said intermediate shaft and said second shaft;



a reverse-drive planetary gear mechanism of a single planetary pinion type disposed on the other side of said second variable pitch pulley and mounted on said intermediate shaft and subject to interconnecting said intermediate shaft and said second shaft; and

an individual control means provided for each of said forward and reverse drive planetary gear mechanisms for selectively interrupting the rotational transmission of the associated planetary gear mechanism between said intermediate shaft and said second shaft, whereby forward and reverse rotations are selectively provided at said second shaft.

4,550,630

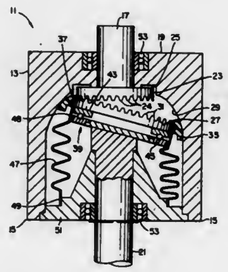
HERMETICALLY SEALED DRIVE

Casimer F. Remus, Tunkhannock, Pa., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 23, 1982, Ser. No. 410,226

Int. Cl.⁴ F16H 1/28, 23/00; F16J 15/50

U.S. Cl. 74—800 **6 Claims**



1. In a system having an input driven connection and an output drive connection, one of which connections is located outside of a hermetically sealed volume, and the other of which connections is connected to components in the hermetically sealed volume to allow rotary force to be transferred from outside of the hermetically sealed volume to the components in the hermetically sealed volume, apparatus for connecting the input drive connection to the output drive connection, said apparatus characterized by:

(a) a housing body having a first shaft bore, a first gear bore, an outer bore and a bore connection between the first gear bore and the outer bore;

(b) the bore connection comprising a bore section formed as a smooth spherical segment which converges in the direction of the first shaft bore and diverges in the direction of the outer bore;

(c) a first shaft having a first face gear fixed to the end thereof and coaxial therewith;

(d) a second shaft mounted coaxially with the first shaft and having a first end facing the first gear;

(e) a spherical thrust washer is provided to comply with the spherical segment;

(f) a second face gear which rides against the spherical segment, the second face gear having a different number of teeth than the first gear, the second face gear being mounted to the spherical thrust washer so as to prevent the second face gear from substantially engaging the spherical segment when the second face gear is riding against the spherical segment;

(g) sealing means cooperating with the second face gear to effect a hermetic seal across the housing body the sealing means preventing the second gear from rotating about its axis of symmetry; and

(h) drive means which causes the second face gear to rotationally nutate against the spherical segment, the drive means including a cam on the first end of the second shaft, the cam's cam follower being the second face gear, the rotation of the second shaft causing the cam to nutate the second face gear, and the second face gear's nutation causing the second face gear's teeth to successively engage the first face gear's teeth, wherein

the first shaft is the output drive connection and is located within the hermetically sealed volume and the second shaft is the input drive connection and is located outside of the hermetically sealed volume.

4,550,631

INDEXING SYSTEM OF MACHINE TOOLS AND THE LIKE

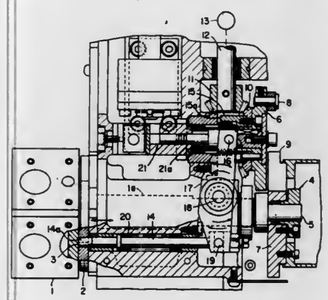
Yoshinori Yamazaki, Koganei, and Tsutomu Ogawa, Fuchu, both of Japan, assignors to Kabushiki Kaisha Miyano Tekkosho, Ueda, Japan

Filed Sep. 27, 1983, Ser. No. 536,356

Claims priority, application Japan, Oct. 6, 1982, 57-176894

Int. Cl.⁴ B23B 3/16, 7/04, 29/32, 39/20

U.S. Cl. 74—822 **3 Claims**



1. An indexing system comprising:

an indexing driven structure, such as the turret of a lathe; a hydraulic motor having an inlet port and an outlet port; a geneva mechanism driven by said motor for causing the indexing driven structure to undergo indexing movement, said geneva mechanism having a driving wheel;

an annular locking cam fixed coaxially to said driving wheel of the geneva mechanism and having an annular cam surface with high and low portions in the axial direction of the driving wheel;

a locking bolt for engaging the indexing driven structure to place and mechanically lock the same in a specific indexing position, said locking bolt being movable so as to be disengaged from the indexing driven structure;

resilient means urging the locking bolt into engagement with the indexing driven structure;

hydraulic actuator means having a plunger to be advanced when the actuator means is operated;

a cam follower interposed between said annular cam surface and said plunger in such a manner that the force of the advancing plunger will cause the cam follower to be pressed against the cam surface;

coupling means connecting said cam follower and said locking bolt in such a manner that when the plunger is advanced the locking bolt is shifted into positive engagement with the indexing driven structure against a reactive counter force from the same, said resilient means exerting such a force to said cam follower by way of said locking bolt and coupling means as to cause the cam follower to be continually pressed against said cam surface; and

hydraulic circuit means including a change-over valve having,

first and second ports at one side thereof and third and fourth ports at the other side thereof, said changeover valve being movable between a first changeover position and second changeover position, a hydraulic pressure source, a hydraulic fluid reservoir, hydraulic pipe means connecting said pressure source to said fourth port of the changeover valve and to said inlet port of the hydraulic motor, a motor exhaust pipe connecting said outlet port of the hydraulic motor to said first port, a single pipe line connecting said second port to said actuator means, and an exhaust conduit connectng said third port of the changeover valve to said reservoir,

said first changeover position of the changeover valve causing said second and fourth ports theeof to communicate with each other whereby hydraulic fluid is allowed to flow from the pressure source to the hydraulic actuator means so as to cause the latter to operate to engage the locking bolt with the indexing driven structure, said first changeover position preventing communicative connection of said first and third ports thereby blocking said motor exhaust pipe so as to stop the motor and therefore the indexing movement,

said second changeover position of the changeover valve causing said first and second ports to communicate with said third port whereby the outlet port of the motor is communicatively connected to the reservoir thereby to allow the motor to rotate and therefore the indexing movement to start and whereby the actuator means is caused to communicate with the reservoir by way of said single pipe line and as a result said high portion of the annular cam surface, which is rotated as a result of the indexing movement, pushes back the plunger via said cam follower thereby to disengage the locking bolt from the indexing driven structure.

4,550,632

KNIFE SHARPENER

Roger Inman, Sheffield, England, assignor to Archant Limited, England

Filed Oct. 28, 1983, Ser. No. 546,272

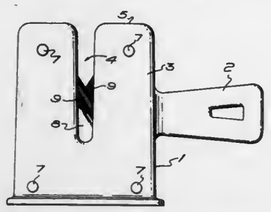
Claims priority, application United Kingdom, Jan. 18, 1983, 8301312

Int. Cl.⁴ A01D 3/00; B24B 3/36

U.S. Cl. 76—86 **2 Claims**

1. A sharpener for blades having a cutting edge comprising two sharpening elements mounted in overlaping V-formation and spring-loaded to each other, said sharpening elements being pivotally mounted at one end such that on pivotal movement of the sharpening elements consequent upon the application of a blade between the sharpening elements, the V-angle between the elements varies dependent upon the depth of

insertion of the blades, said two sharpening elements each being of circular cross-section and each being mounted on a



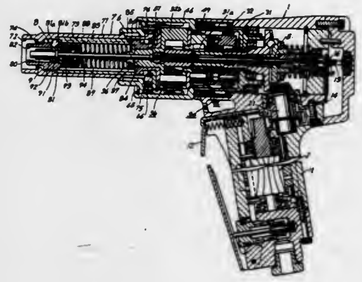
respective pivotally mounted arm to be freely rotatable on the respective arm.

4,550,633

POWER TIGHTENING DEVICE HAVING DETACHABLE SOCKET UNIT

Masahiro Fujita, Sennan, and Yukio Uemura, Yokohama, both of Japan, assignors to Maeda Metal Industries Ltd., Osaka and Nissan Motor Co., Ltd., Kanagawa, both of, Japan

Filed Jun. 26, 1984, Ser. No. 624,549
Claims priority, application Japan, Jun. 27, 1983, 58-99788[U]
Int. Cl.⁴ B25B *17/00*
U.S. Cl. 81—56 **4 Claims**



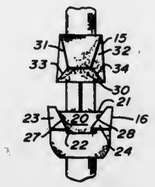
1. A power tool including an inner socket having a bolt tip engaging bore, an outer socket having a nut engaging bore and the inner socket rotatably fitted therein, and an epicyclic train coupled to a drive assembly and having an inner gear case and a planet gear support frame, the outer socket being coupled to the gear case, the inner socket being connected to the support frame, so as to tightly screw a nut on a bolt by torques acting on the two sockets, the power tool being characterized in that the inner socket is formed with a cavity at its base end, the planet gear support being formed with a projection, the inner socket being engagable with or disengageable from the support frame axially thereof and rotatable therewith, a holder main body being formed with a non-circular hole concentrically therewith and rotatably fitted in the front end of the gear case, a bearing plate being disposed on the inner side of the main body rotatably with the gear case and being concentrically formed with a non-circular hole identical with the hole of the main body in shape, the outer socket being provided with a non-circular flange conforming to the shape of the holes of the main body and the bearing plate, the holder main body being provided with an engaging member for softly holding the main body to the bearing plate in a position where the hole of the main body is out of phase with the hole of the bearing plate.

4,550,634

SEAM PULLING TOOL FOR TEARING OUT WELDED SEAMS OF CONTAINERS

Robert W. Speegle, 50 N. Corona Dr., Porterville, Calif. 93257

Filed Apr. 2, 1984, Ser. No. 595,902
Int. Cl.⁴ B25B *7/02, 7/22*
U.S. Cl. 81—418 **3 Claims**



1. A seam pulling tool for use, with a selected can having a metal wall with a rectilinear welded side seam, in quality control of can manufacture, including in combination:

a pair of pliers with an upper jaw and a lower jaw,

said lower jaw having a trapezoidal central flat portion having a front and a rear edge and two sides and being wider at the rear edge between said sides than at the front edge, and a vertical side portion extending up from each side of said flat portion, each said side portion having a sharp cutting upper edge, inclined upwardly toward said rear edge,

said upper jaw having a flat surface the same shape and nearly the same size as said central flat portion and having side walls perpendicular to said flat portion, said side walls providing a sharp cutting bottom edge at each side of said flat surface,

the difference in size between said flat portion and said flat surface being only enough to enable engagement of said flat portion and said flat surface against each other when said upper and lower jaws are closed against each other, so that when said jaws are closed said side walls pass closely adjacent to their respective side portions and each said sharp cutting bottom edge moves by said sharp cutting upper edge to provide shearing action that can cut the wall of said selected can on each side of the selected can's side seam at an angle that is wide at the top and narrow toward said seam due to the divergence from front to rear of the cutting edges, then, when said jaws are closed on opposite sides of the can wall, said tool grasps a strip portion between cut lines of said can wall and said tool can then be pulled down along said seam for as far as desired.

4,550,635

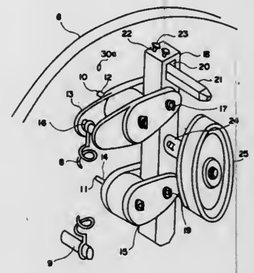
PIPE END CUTTING APPARATUS

Kiyoshi Kanayama, Ebina, and Shoji Asano, Atsugi, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo and Nippon Kokan Koji Kabushiki Kaisha, Yokohama, both of, Japan

PCT No. PCT/JP82/00408, § 371 Date Jun. 14, 1983, § 102(e) Date Jun. 14, 1983
PCT Filed Oct. 15, 1982, Ser. No. 509,444
Claims priority, application Japan, Oct. 16, 1981, 56-152804
Int. Cl.⁴ B23B *5/16*
U.S. Cl. 82—4 C **3 Claims**

1. A pipe end cutting apparatus comprising: a support arm adapted to be positioned adjacent to the end of a pipe; a support shaft carried by said support arm; setting means for setting a pipe to be beveled coaxially with respect to the support shaft; force transmitting means rotatably supported by said support shaft; machining means mounted on said force transmitting means and facing an end portion of the pipe to be beveled; driving means for moving the machining means about the pipe axis and adjacent the pipe end; wherein said machining means includes a main arm having spaced ends, a longitudinal axis

positioned in a plane transverse to the axis of the pipe, and having a pivot point intermediate its ends, said main arm pivotally supported on said force transmitting means to be pivoted in a plane about said pivot point, an auxiliary arm spaced from and parallel to said main arm, said auxiliary arm having an end thereof supported at a predetermined distance from the pivot point of said main arm to be pivoted in the pivot plane of said main arm, a machining tool holder supported at one end of said main arm and at an end of said auxiliary arm allowing the main arm and the auxiliary arm to pivot with their longitudinal axes



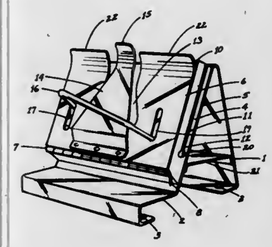
parallel to each other, a machining tool mounted on said machining tool holder and having a cutting edge carried on said machining tool holder and movable circumferentially along the inner surface of said pipe, guide means on said toolholder for maintaining the cutting edge of said machining tool at the pipe end, and means mounted on the other end of said main arm for urging said control means toward the inner surface of the pipe, whereby a parallelogram linkage is defined by said main arm, said auxiliary arm and said machining tool holder to minimize the change in the cutting angle between the machining tool and the pipe end for a range of pipe diameters.

4,550,636

SLICING APPARATUS

Marc Josselson, San Diego, Calif., and Doug Henderson, Carrollton, Tex., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jun. 4, 1984, Ser. No. 617,009
Int. Cl.⁴ B23Q *3/00*
U.S. Cl. 83—743 **26 Claims**



1. A slicing apparatus on a support stand comprising:

a. a holder for an item to be sliced connected to said stand, said holder having a first surface which comprises a flat stationary plate for receiving one surface of the item to be sliced, and a second surface spaced opposite to said plate which is movably connected to said holder to provide a movable cover for said holder so as the movable cover is opened, an item to be sliced can be placed in the holder and as the cover is closed, the cover holds the item to be sliced against the stationary plate;

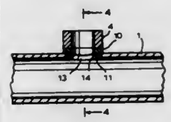
b. a support means based between the first and second surfaces of said holder to support the item to be sliced which includes a slicer blade receiving means for a blade to be inserted through the support means and slice the item, wherein said blade receiving means include a stop means to control the depth of the cut by the blade through the item.

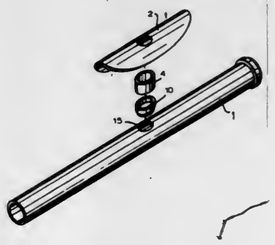
4,550,637

FLUTE HEADJOINTS HAVING REPLACEABLE LIP PLATES AND A METHOD OF REPLICATING SAME

Sanford Drelinger, 13 Park Cir., White Plains, N.Y. 10601

Filed Feb. 23, 1983, Ser. No. 468,894
Int. Cl.⁴ G10D *7/02*
U.S. Cl. 84—384 **16 Claims**





1. In combination:

a flute headjoint tube having an alignment hold through the side wall of the headjoint tube; and

a tube section dimensioned to closely fit within said alignment hole, said tube section having an opening defining a flute blow hole bottom for opening into said headjoint tube when said tube section is inserted in said alignment hole, and said tube section having a surface surrounding the blow hole bottom and defining an entire blow hold undercut surface with said flute headjoint tube free of undercut surface.

4,550,638

PORTABLE KEYBOARD-TYPE MUSICAL INSTRUMENT

Kenkichi Kaneko; Takeshi Hattori; Kensaku Hakamata; Satoru Hayashi; Takayuki Goshima, and Masakazu Matsumoto, all of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed May 20, 1983, Ser. No. 496,433
Claims priority, application Japan, May 31, 1982, 57-80368
Int. Cl.⁴ G10C *3/12*
U.S. Cl. 84—431 **6 Claims**

1. In a portable, keyboard-type musical instrument having a main frame, a keyboard pivotally connected to the main frame and movable between an outwardly extended operative position and a retracted storage position, and frame members providing legs and which are attachable to the musical instrument in an extended supporting position or in a retracted storage position, the improvement comprising:

a mounting plate at each end of said frame member and rigidly secured thereto, each said mounting plate including means for positioning and locating a mounting member;

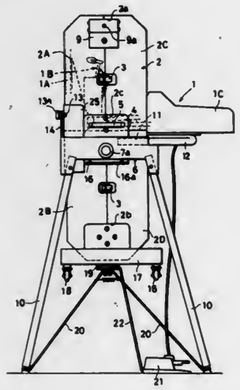
each said mounting member carrying supporting legs for

said musical instrument, and each including an elongate inverted U-shaped clamp for the reception of a keyboard support member, each said mounting member being securable to the associated said mounting plate by screw means extending through said clamp of said mounting member;

each said keyboard support member comprising an elongate U-shaped tubular member providing two arms and having one arm positioned within said U-shaped clamp and clamped therein upon appropriate actuation of said screw means;

means on said frame member for supporting an internally threaded other arm of each said keyboard support member in a keyboard supporting position; and,

an upstanding bracket on each said mounting member having other screw means carried thereby;



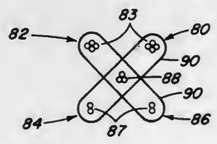
said keyboard support members, on relaxation of said U-shaped clamps, being movable axially to withdraw them from engagement with said support means on said main frame, then being swingable about the axis of said one arm, then being movable axially towards the associated upstanding bracket of the associated mounting member to move said internally threaded other arm into registration with said other screw means of said associated upstanding bracket, and then being rigidly securable to the associated mounting member by threading the associated said other screw means into said internally threaded other arm of said keyboard support member, and, by then retightening the screw means associated with the associated U-shaped clamp.

4,550,639

SHAPED MECHANICAL COMPRESSION PACKING

George B. Champlin, Stoneham, Mass., assignor to The Seal Company of New England, Manchester, N.H.

Filed Dec. 17, 1982, Ser. No. 450,517
Int. Cl.⁴ D04C *1/06, 1/12*
U.S. Cl. 87—7 **4 Claims**



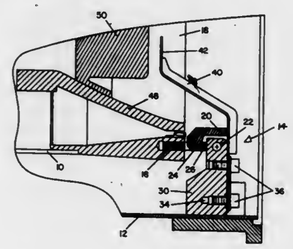
1. In braided mechanical compression packing of square or rectangular cross-section, the combination of a plurality of axial warp yarns placed in a predetermined non-symmetrical pattern such that additional corner fill exists adjacent the outer corners of the packing material vis a vis the amount of corner fill adjacent the inner corners of the packing material, and carrier yarns being braided about said warp yarns, whereby parallelism of opposite cross-sectional sides of said completed packing is maintained as said packing is wrapped about a cylindrical surface.

4,550,640

MISSILE CANISTER RESTRAINT DEVICE

Robert R. Harter, Apopka, Fla., assignor to Werkzeugmaschinenfabrik Oerlikon-Buehrle AG, Zurich, Switzerland

Filed Sep. 16, 1983, Ser. No. 532,743
Int. Cl.⁴ F41F *3/04*
U.S. Cl. 89—1.806 **6 Claims**



3. A springless, no-load missile restraint arrangement involving substantially no compromise of the aerodynamic configuration of the missile, for releasing a rocket propelled missile from its canister promptly after ignition of its rocket motor, and the expulsion of a nozzle seal from its rocket motor nozzle, said release arrangement comprising an elongate anchor means of small diameter secured to the aft end of the missile, to which releasable restraint means are attached, said restraint means comprising a base member mounted in an aft portion of the canister, adjacent the aft end of the missile, a pivotable member supported upon said base member, and having first and second positions, said pivotable member having a nose portion arranged, when the pivotable member is in its first position, to engage said elongate anchor member, said pivotable member moving to its second position, to bring about the release of the anchor member, upon expulsion of the seal from the nozzle of the rocket motor, and the seal striking a deformable component operatively associated with said pivotable member.

4,550,641

SAFETY APPARATUS IN EXTERNALLY POWERED FIRING WEAPON

Werner Bruderer; Hans Brieger, and Ernst Hürlemann, all of Zurich, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Nov. 28, 1983, Ser. No. 555,689
Claims priority, application Switzerland, Dec. 8, 1982, 7127/82; Jan. 28, 1983, 489/83
Int. Cl.⁴ F41F *11/00*
U.S. Cl. 89—12 **10 Claims**

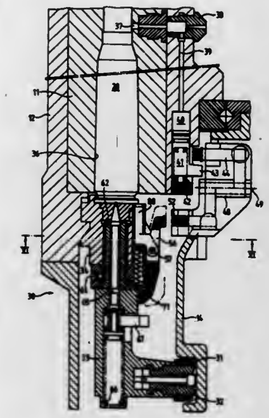
1. A safety apparatus for an externally powered weapon including a weapon barrel and into which cartridges are insertable which may be subject to ignition delay, said safety apparatus comprising:

a breechblock positively reciprocating between a forwardmost position and a rearmost position;

means for locking said breechblock to said weapon barrel in said forwardmost position;

said breechblock comprising a breechblock head and a breechblock carrier which are operatively coupled to each other; and

decoupling means for decoupling said breechblock head from said breechblock carrier in said forwardmost posi-



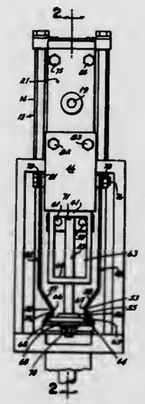
tion in which said breechblock head is locked to said weapon barrel in response to said ignition delay condition.

4,550,642

FLUID PRESSURE OPERATED PISTON ENGINE ASSEMBLY

Alfred Langer, Norcross, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 2, 1984, Ser. No. 667,543
Int. Cl.⁴ F01L *31/02*
U.S. Cl. 91—346 **2 Claims**



1. A fluid pressure operated piston engine assembly comprising:

a fluid pressure operated piston engine including a piston chamber, a piston reciprocable in the chamber, and a drive shaft attached to the piston and reciprocable therewith through a drive shaft stroke having a first end and a second end;

fluid valve means for coupling fluid under pressure to alternative portions of the piston chamber, including a valve rod translatable to (a) a first position in which the valve means is operable to couple fluid under pressure to a first portion of the piston chamber, tending to move the drive shaft toward the second end of its stroke and (b) a second position in which the valve means is operable to couple fluid under pressure to a second portion of the piston chamber, tending to move the drive shaft toward the first end of its stroke;

a drive frame, mounted for limited translation on the valve rod, including a pair of opposed flat springs disposed on opposite sides of the valve rod, each spring having a contoured portion with (a) a first spring surface applying a force to the valve rod when the drive frame is in a first position relative to the valve rod to forcibly urge the valve rod into its first position and (b) a second spring surface applying a force to the valve rod when the drive frame is in a second position relative to the valve rod to forcibly urge the valve rod into its second position; and

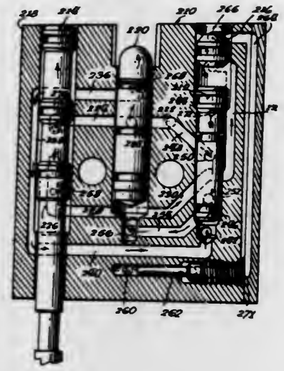
means for (a) coupling the piston engine drive shaft to the drive frame as the drive shaft approaches the first end of its stroke so that the drive frame is moved to its first position relative to the valve rod and (b) coupling the piston engine drive shaft to the drive frame as the drive shaft approaches the second end of its stroke so that the drive frame is moved to its second position relative to the valve rod, whereby, as the drive shaft approaches its end of its stroke, fluid under pressure is coupled to a portion of the piston chamber to effect reversal of the direction of travel of the drive shaft.

4,550,643

FASTENER DRIVING TOOL

Julius W. Schwartzenberger, Chicago, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed May 2, 1984, Ser. No. 606,153
Int. Cl.⁴ F15B *11/15*
U.S. Cl. 91—356 **12 Claims**



1. In a tool for driving fasteners into a workpiece using a pressurized fluid motor for actuating a fastener driving means, comprising:

a manually actuated trigger valve means,

a safety means actuated by placing the tool adjacent the workpiece,

fluid actuated valve means controlled by the trigger valve means and the safety means for controlling the application of pressurized fluid to the fluid motor, and

control means interconnecting said trigger valve means and said safety means selectively actuable to a first mode preventing operation of the fluid actuated valve means unless said safety means is first actuated followed by the actuation of the trigger valve means whereupon the sequence must be repeated for repeated operation of said fluid actuated valve means and to a second mode allowing repeated operation of the fluid actuated valve means upon repeated actuation of said trigger valve means after first actuating said safety means.

4,550,644

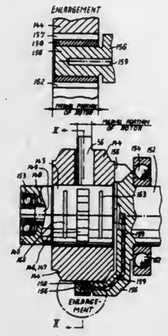
DRIVE SHAFT ARRANGEMENT TO REDUCE LEAKAGE IN FLUID MACHINES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 235,058, Feb. 17, 1981, abandoned, which is a division of Ser. No. 910,809, May 30, 1978, abandoned, which is a division of Ser. No. 911,246, May 31, 1978, abandoned. This application Jan. 31, 1984, Ser. No. 575,622

Int. Cl.[4] F01B *13/06*

U.S. Cl. 91—486 **2 Claims**



1. A fluid machine which has in a housing an around a substantially concentrically located controlbody with a cylindrical outer face revolving rotor with fluid intaking and expelling working chambers and with a cylindrical inner face which bears and seals substantially on said outer face while fluid flows through said working chambers and through said inner and outer faces; wherein a shaft is revolvably borne in said housing with the axis of said shaft substantially coinciding with the extension of the axis of said control body while said shaft is coupled to said rotor to revolve said rotor and said shaft in unison and to permit relative radial movement of said rotor relatively to said shaft and to said control body;

wherein axially and parallel to the axis of said rotor extending reception slots are prevailed in the axially seen medial portion of said rotor which extend axially to at least one end of said medial portion of said rotor and provide in said medial portion of said rotor radially of the medial center points of said outer and inner faces plane reception faces on the walls of said slots;

wherein arms extend from an axially of said rotor located portion of said shaft radially outwards endwards of said rotor to bend radially outwards of a portion of said shaft towards said rotor and partially substantially axially along said rotor to end in fingers of suitable size to be receivable in said slots while drive faces are provided on said fingers which are at least partially parallel to said reception faces;

wherein said fingers are received in said slots and at least one of said drive faces presses against at least one of said reception faces when said rotor drives said shaft to revolve and when said shaft drives said rotor to revolve;

wherein said drive faces and reception faces slide along each other when the axes of said control body and of said rotor are distanced from each other and said sliding permits said rotor to be borne with its inner face on said outer face of said control body around which it revolves regardless of the accuratenes of the coincidence of the axes of said control body and said rotor;

whereby said rotor obtains the ability to revolve in response to fluid between said inner and outer faces slightly eccentrically around said control body to reduce leakage between said inner and said outer faces by locally narrowing the distance between said inner face and said outer face in the high pressure zone between said inner and outer face, and;

wherein said control body has a centric bore which extends axially through said control body, and,

wherein said shaft has an axial extension which extends through said bore in said control body into at least the rear end of said control body to be radially borne in a respective bearing arrangement close to the rear end of said control body.

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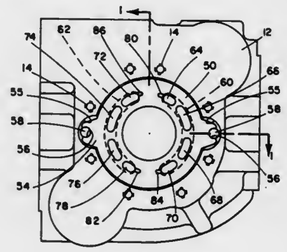
THIN VALVE PLATE FOR A HYDRAULIC UNIT

Richard Beck, Jr., Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 27, 1984, Ser. No. 605,019

Int. Cl.[4] B23P *15/60;* **B21K** *1/20, 1/24*

U.S. Cl. 91—499 **24 Claims**



1. A valve plate for a hydraulic unit comprising a housing having inlet and outlet ports therein, a cylinder block having cylinders therein and being rotatable relative to the housing, each of said cylinders having a cylinder port, said cylinder ports serially communicating with said inlet and outlet ports, pistons slidable in said cylinders, displacement setting means for reciprocating said pistons within said cylinders, and valve means positioned between said cylinder block and said inlet and outlet ports in said housing to selectively provide fluid communication between said housing ports and said cylinders in said cylinder block as said cylinder block rotates, said valve means including; a valve plate secured against rotation relative to said housing, said valve plate having a plurality of valve plate ports radially positioned so as to serially communicate with said cylinder ports, at least one of said valve plate ports having means at the leading edge thereof for increasing communication between the approaching cylinder ports and the associated one of said inlet and outlet ports, said means to increase communication including a slot extending through said valve plate, said valve plate having a thickness not substantially greater than 0.100 inch and less than the maximum width of said slot, and a housing portion abuts the side of said valve plate opposite said cylinder block to form the bottom of said slot.

4,550,646

METHOD AND ARRANGEMENT FOR RETAINING CYLINDER LINERS IN A RECIPROCATING PUMP

John E. Miller, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 4, 1984, Ser. No. 678,189

Int. Cl.[4] F16J *10/00*

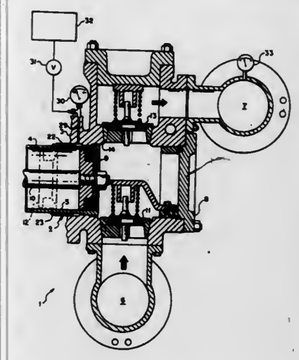
U.S. Cl. 92—128 **12 Claims**

1. In a reciprocating piston pump including a frame having a bore and a tubular piston cylinder liner mounted within the bore supported by the frame, the improvement comprising a seal and retaining arrangement securing the cylinder liner to the frame, wherein:

said frame includes an annular mounting face at one end of said bore and a counterbore at the other end of the bore of a predetermined diameter relative to the diameter of the bore defining an annular ridge extending from said mounting face;

said cylinder liner is received within said bore in sliding engagement with said annular ridge and is provided with an annular shoulder abutting said mounting face;

a removable annular sleeve is releasably secured about said cylinder liner and is slidingly received within said counterbore to form an annular chamber between the juncture of said annular ridge and the cylinder liner and said sleeve;



a passage is provided in the frame communicating with said annular chamber; and

a source of pressurized fluid is connected with said passage for introducing fluid into said annular chamber at a predetermined pressure to prevent the ingress of the fluid being conveyed by the pump into the chamber while maintaining a differential force against the sleeve to secure the cylinder liner within the frame.

4,550,647

PISTON PIN AND PISTON, NOTABLY FOR AN INTERNAL COMBUSTION ENGINE, EQUIPPED WITH SAID PIN

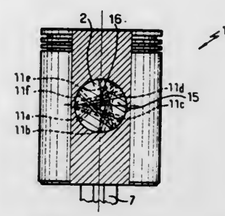
Jean-Paul Coulin, Montmorency, France, assignor to Societe d'Etudes de Machines Thermiques (SEMT), St. Denis, France

Continuation of Ser. No. 497,557, May 24, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,600

Claims priority, application France, May 28, 1982, 82 09424

Int. Cl.[4] F01B *31/10;* **F16J** *1/08*

U.S. Cl. 92—157 **20 Claims**



1. A cylindrical piston pin for pivotally connecting a piston to the piston end of a connecting rod, the piston pin having a first end, a second end, a cylindrical outer surface, and a plurality of straight internal passages, at least one of said passages having one end opening through the cylindrical outer surface of the pin in a region midway between the ends of the pin and another end opening through the cylindrical outer surface of the pin at a location axially spaced from the opening of the one end of the passage toward the first end of the pin, wherein the improvement comprises:

the piston pin has a completely solid substantially cylindrical and coaxial central portion, the central portion having a diameter of at least one tenth of the diameter of the piston pin, and

said passages are provided in a peripheral portion of the piston so as to avoid said solid central portion.

4,550,648

ATTIC VENTILATION SYSTEM

Jon R. Eagle, 10625 Vessey Rd., Bloomington, Minn. 55437

Filed Jul. 11, 1983, Ser. No. 512,780

Int. Cl.[4] F24F *13/18*

U.S. Cl. 98—37 **4 Claims**



1. A frame for securing a screen over a ventilation opening having a perimeter, said opening in a building, said frame comprising:

a pair of elongated screen mounting members and one or more rigid cross members holding said mounting members in a substantially parallel relationship, said mounting members and said cross members each including a plurality of longitudinally extended bendable mounting tab means for securing said mounting members substantially to said opening perimeter, and, said mounting members and said cross members are formed from sheet metal and wherein said mounting members and said cross members are secured to said opening perimeter by manually bending said tab means down on the inside of the opening to clamp said frame thereto, and each of said mounting members and one of said cross members further including on a side generally opposite said tab means, a longitudinal screen engaging slot and, at least one of said cross members connects corresponding ends of said parallel mounting members and includes a slot for slideably receiving the end of a screen.

4,550,649

PROCESS AND APPARATUS FOR REDUCING THE TEMPERATURE GRADIENT IN BUILDINGS

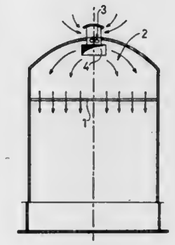
Marco Zambolin, via Gassendi 13, 20155 Milan, Italy

Filed Jul. 15, 1982, Ser. No. 398,629

Claims priority, application Italy, Jul. 31, 1982, 23283 A/81

Int. Cl.[4] F24F *9/00*

U.S. Cl. 98—39.1 **7 Claims**



1. Process for diminished thermal dissipation air-conditioning of the open interior space of a building such as an industrial building, having side walls covered over by a roofing to form such open interior space and which open interior space defines an upper zone adjacent the roofing and a lower zone therebelow, so as to maintain the lower zone in generally existing

heated condition to the extent of diminishing thermal dissipation of heat therefrom through the roofing, which comprises

forcing outside air into the building through an inlet opening at the roofing and then laterally and tangentially in laminar flow in generally evenly spreading fashion along the adjacent inner surface of the roofing at a higher pressure relative to the existing pressure of the inside air in the open interior space and at a lower temperature relative to the existing temperature of said inside air and sufficiently to distribute the incoming outside air throughout the upper zone and to form an intervening insulating layer of stratified relatively overpressured outside air generally completely filling the upper zone and defining a thermally downwardly flowing generally horizontal uniformly distributed fluid barrier horizontally separating the inside air in the remainder of the open interior space in the lower zone therebelow from the roofing thereabove, for diminishing upward thermal flow of adjacent portions of the inside air from the lower zone to the roofing and otherwise resultant thermal dissipation of the existing heat content of the inside air through the roofing, and for permitting in turn generally uniformly distributed downward thermal flow of the outside air from the upper zone into the lower zone and into contact with the adjacent portions of the inside air to absorb heat content therefrom.

4,550,650

HOOD FOR THE EXTRACTION OF GASES, VAPORS AND SUSPENDED MATTER

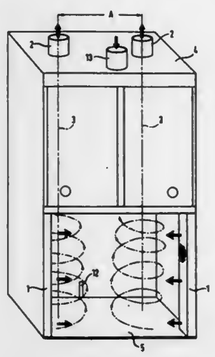
Wolf J. Denner; Andreas Biernacki, and Günter Breitschwerdt, all of Stuttgart, Fed. Rep. of Germany, assignors to Waldner Laboreinrichtungen GmbH & Co., Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,817

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208622

Int. Cl.⁴ F24F *9/00*

U.S. Cl. 98—115.3 **14 Claims**



1. Hood for the extraction of gases, vapors, and suspended matter, particularly a laboratory hood, comprising a hood casing, a supply air feed device, at least one suction outlet, supply air being supplied at least partly from the ambient air through a connection from the hood casing to the external air, wherein the supply air feed device includes at least one nozzle ledge that is located within the hood and has a discharge outlet directed in the plane of a front suction inlet of the hood, and wherein each said suction outlet is located within said hood in association with a respective said nozzle ledge in a manner producing a vortex air flow therebetween in such a way that air is extracted by the suction outlet in the direction of the axis of the vortex flow produced, characterized in that two suction outlets (2) are arranged on the cover plate (4), whilst two nozzle ledges (1), arranged vertically, on the side walls are provided and the discharge outlets of said ledges are directed counter to one another, the discharge outlets of the ledges and suction outlets being arranged with respect to each other in such a way as to produce a pair of oppositely rotating, vertical axis, tubular vortexes.

4,550,651

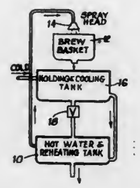
BATCH-BREWING COFFEE SYSTEM

Joel Haynes, Tarzana, Calif., assignor to Richard B. Mindlin, Prairie Village, Kans.

Filed Nov. 19, 1982, Ser. No. 442,947

Int. Cl.⁴ A47J *31/00*

U.S. Cl. 99—279 **16 Claims**



1. A coffee brewing and dispensing system comprising:

(a) a brewing basket for holding coffee grounds and producing hot brewed coffee upon the introduction of hot water therein;

(b) a holding and cooling tank for receiving and cooling a substantial volume of hot brewed coffee from said basket and storing same at a reduced temperature available for use on demand; said tank including cooling means for cooling said coffee; and

(c) means for draining off and quickly heating small volumes of cooled coffee from said tank as needed.

4,550,652

COFFEE MAKER

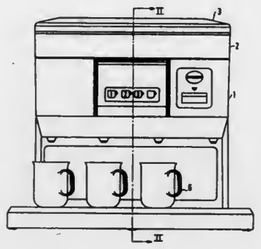
Artur F. Da Silva, Sao Paulo, Brazil, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1983, Ser. No. 543,746

Claims priority, application Brazil, Oct. 26, 1982, 8206233

Int. Cl.⁴ A47J *31/00*

U.S. Cl. 99—279 **4 Claims**



1. A coffee maker which comprises a housing; a filtering device for arrangement in the housing, said filtering device having a single outlet; and a distributor for positioning in the housing below the filtering device, said distributor having a plurality of inlets and an equal number of outlets and a duct system interposed between said inlets and said outlets; the filtering device being positionable in said housing with its outlet sequentially in contact with each distributor inlet; and the duct system being so formed that it connects each distributor inlet in sequence with the distributor outlets.

4,550,653

APPARATUS FOR MAKING FOOD PRODUCTS

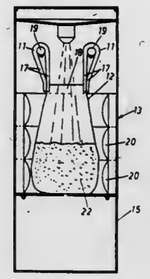
Gunnar Hedenberg, Grundsund, Sweden, assignor to Heden-Team A.G., Triesenberg, Liechtenstein

Filed Apr. 1, 1983, Ser. No. 481,154

Claims priority, application Sweden, Dec. 28, 1982, 8207438

Int. Cl.⁴ A47J *27/62*

U.S. Cl. 99—348 **17 Claims**



1. An apparatus for automatically making food products in piece form from dough-like substances comprising a dough preparation station containing holding means adapted to be affixed to the opening of a flexible sealable bag containing the necessary substantially dry ingredients for the dough-like substance; liquid means for introducing a predetermined amount of liquid into the bag; kneading means for mechanically working the liquid and dry ingredients in said bag; and transfer means for transferring the kneaded dough-like substance to a heat treating station which contains a receptacle and heating means whereby the kneaded doughlike substance is treated; the operation of the aforementioned elements being all predetermined with program means and therefore the apparatus will make the food product and such product will be in the fresh prepared state at the desired time.

4,550,654

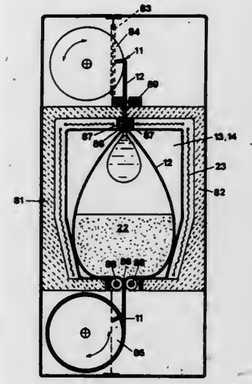
APPARATUS FOR AUTOMATIC PREPARATION OF FOOD PRODUCTS SUCH AS BREAD, CAKES AND THE LIKE

Gunnar Hedenberg, Grundsund, Sweden, assignor to Heden Team A.G., Triesenberg, Liechtenstein

Continuation-in-part of Ser. No. 481,154, Apr. 1, 1983,. This application Dec. 27, 1983, Ser. No. 565,398

Int. Cl.⁴ A47J *37/01*

U.S. Cl. 99—348 **8 Claims**



1. An apparatus for automatically making food products in piece form from dough-like substances comprising a housing containing holding means adapted to be affixed to either end of a flexible sealable bag containing the ingredients for the dough-like substance, and a dough preparation station having two slit openings; kneading means for mechanically working the ingredients in said bag, said kneading means including the holding means and slit openings at each end of said bag, the bag being attached to the holding means and passing through the slit openings, and means for creating relative oscillating movement between the bag and the slit openings so that the ingredients are kneaded into a dough-like substance; and a heat treating station in said housing whereby the kneaded dough-like substance is treated; the operation of the aforementioned elements being all predetermined with program means and therefore the apparatus will make the food product and such product will be in the fresh prepared state at the desired time.

4,550,655

APPARATUS FOR MAKING WAFER BLOCKS

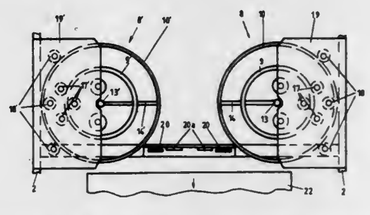
Franz Haas, Sr., Vienna; Franz Haas, Jr., Leobendorf, and Johann Haas, Klosterneuburg, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Jul. 16, 1984, Ser. No. 631,391

Claims priority, application Austria, Aug. 1, 1983, 2785/83

Int. Cl.⁴ A21D *13/00;* **A23G** *3/00*

U.S. Cl. 99—450.4 **12 Claims**



1. In apparatus for assembling coated wafer sheets to form a wafer block, comprising

two laterally spaced apart helical conveyors rotatable about respective parallel, substantially vertical axes of rotation and arranged to receive on one side on a first level successive individual wafer sheets coated on their top side,

drive means for rotating said helical conveyors about said axes of rotation in such opposite senses that said helical conveyors move each of said wafer sheets thus received in a predetermined direction to travel toward the opposite side of said helical conveyors and raise said wafer sheet above said first level, and

stop means disposed on said opposite side of said helical conveyors and movable between operative and inoperative positions, said stop means in said operative position being arranged to engage each of said wafer sheets on said helical conveyors during the rotation thereof so that said helical conveyors are operable to raise each of said wafer sheets engaging said stop means to a second level and join said wafer sheet to an overlying wafer sheet previously disposed on said second level and thus to assemble a plurality of said wafer sheets in a wafer block, and said stop means in said inoperative position being arranged to permit said helical conveyors to deliver said wafer block on said second level on said opposite side of said helical conveyors,

the improvement comprising

at least two parallel helical wire flights constituting each one of said helical conveyors and surrounding the axis of rotation of the helical conveyor, the helical wire flights of each conveyor being radially spaced apart with respect to said axis, and

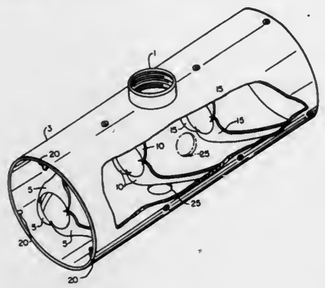
said helical flights of said helical conveyors defining a common imaginary surface supporting each of said wafer sheets.

4,550,656

VEGETABLE PEELER

Norbert A. Kirk, 1458 West Belle Plaine, Chicago, Ill. 60613

Filed Aug. 30, 1984, Ser. No. 645,758
Int. Cl.[4] A23N *7/00*; A47J *17/00*
U.S. Cl. 99—590 **4 Claims**



1. A vegetable peeler, comprising:
an elongate housing having at least one drain hole;
a plurality of sets of cooperating peeling blades mounted in said housing, said sets of peeling blades being spaced from an adjacent set along the longitudinal direction of said housing, each said set of peeling blades including at least two elongate peeling blades made of a flexible material which have a cutting edge at one end disposed centrally of said housing and adjacent the cutting edges of the others of said peeling blades of a respective set and at the other end are attached to said housing such that said cutting edges of a set of peeling blades provide an area therebetween smaller than a vegetable which is received therebetween in order to peel a thin layer from the vegetable as the vegetable is moved longitudinally through said housing and said adjacent cutting blades of a set are forced apart; and
a means mounted on said housing for immovably attaching said housing to a water faucet and for directing water flowing out of the faucet through said housing whereby vegetable peels produced by said sets of peeling blades are washed out of said housing.

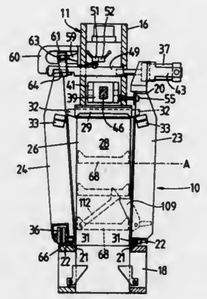
4,550,657

BALING CHAMBER ASSEMBLY

Donald W. Van Doorn; James B. Hawkins; Francis W. Carpenter, III; Robert E. Lange, and Tommy W. Webb, 2021 Coventry Dr., all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed Oct. 18, 1984, Ser. No. 662,226
Int. Cl.[4] B30B *15/16*
U.S. Cl. 100—43 **10 Claims**

1. In an up-packing baler having a supporting frame and a movable platen for compressing fibers into a bale:
(a) a baling chamber adapted to receive said movable platen and in part defined by four rigid upright doors with each of said doors being pivotally supported along its lower edge by said supporting frame so that its upper portion is movable inwardly and outwardly relative to said chamber;
(b) means responsive to the compressive force exerted on said fibers by said movable platen for decreasing the lateral pressure exerted on said fibers by said doors; and



(c) means for displacing one of said doors for removing said bale from said baling chamber.

4,550,658

DEVICE FOR SORTING AND COMPRESSING PACKAGINGS, PRINCIPALLY BEVERAGE CANS, IN SEVERAL STAGES

Sten Trolle, Skansgränd 7, Ystad, Sweden

PCT No. PCT/SE82/00259, § 371 Date Apr. 14, 1983, § 102(e) Date Apr. 14, 1983, PCT Pub. No. WO83/00643, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 16, 1982, Ser. No. 492,028
Claims priority, application Sweden, Aug. 18, 1981, 8104892
Int. Cl.[4] B30B *15/30*; B07C *5/34*
U.S. Cl. 100—215 **9 Claims**



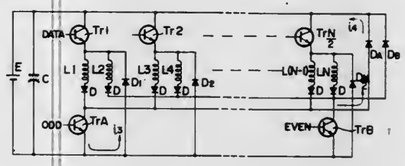
1. A device for sorting out and compressing packagings, principally of can type having overall dimensions within a predetermined interval in regard to length and diameter, for example, from packagings having dimension deviating from within said interval, said device comprising two sorting stages, one of said two sorting stages including a pivoted supporting member for carrying the packagings and a frame with an opening through which the supporting member is movable to the second stage, the second sorting stage including pressing members cooperating with the supporting member to effect axial compression of the packaging carried by said supporting member, the opening of the frame being of a size which limits the dimensions in at least one direction of the packaging passing through the opening, said second stage being provided with a second opening through which compressed packagings pass, whereby the second opening maximizes the axial length of the compressed packagings which pass through the second opening and are thereby sorted out.

4,550,659

HAMMER DRIVING CIRCUIT FOR A DOT SYSTEM LINE PRINTER

Nobuki Yamanaga, Iruma, Japan, assignor to Ye Data Inc., Tokyo, Japan

Continuation of Ser. No. 333,619, Dec. 22, 1981, abandoned. This application May 22, 1984, Ser. No. 613,015
Claims priority, application Japan, Jan. 6, 1981, 56-85
Int. Cl.[4] B41J *3/10*
U.S. Cl. 101—93.04 **3 Claims**



1. A hammer driving circuit for a dot system line printer, said printer having a plurality of hammers which are controlled by an electromagnet means including hammer driving coils and which are arranged in a row on a carriage, printing being effected while simultaneously shifting said hammers, wherein said hammers are divided into (n+1) interspersed groups which are arranged such that two hammers from one group are separated by one hammer from each of said other groups, wherein n is a positive integer, and the hammers of all but one of said groups are arranged so as to be displaced from a position in said row that they would be in if all of said hammers were arranged such that adjacent hammers in said row were spaced apart by equal distances, and wherein one end of the hammer driving coils of the same group are respectively connected to a negative terminal of a DC driving power source through an anti-inhibit diode and group operated electrical switches, and wherein the other end of each of said hammer driving coils is connected to a positive terminal of said DC driving power source through a data operated electrical switch, and wherein fly-wheel diodes are respectively connected to parallel with each series circuit comprising said hammer driving coils, said anti-inhibit diode and said group operated electrical switches; and wherein each of said group operated electrical switches are driven once in a pulse repetition period of each of said hammer driving circuits by a first pulse driving signal having a pulse width which is less than or equal to 1/(n+1) times its pulse repetition period and said data operated electrical switches are selectively driven as necessary by a second pulse driving signal having a pulse width which is less than that of said first pulse driving signal and having a pulse repetition period which is equal thereto so as to thereby print said desired characters.

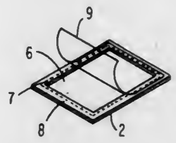
4,550,660

STENCIL

Morio Sato, and Tatsuya Igawa, both of Kanagawa, Japan, assignors to Pilot Man-Nen-Hisu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,979
Claims priority, application Japan, Oct. 8, 1982, 57-176405; Dec. 28, 1982, 57-200779[U]
Int. Cl.[4] B41N *1/24*
U.S. Cl. 101—128.21 **5 Claims**

1. A stencil, comprising:
a porous support; and
a masking film formed on the support, wherein the masking film consists of a water-insoluble polymer selected from the group consisting of:
(a) a homopolymer of diethylaminoethyl methacrylate,
(b) a homopolymer of tertiary aminoalkyl acrylate,
(c) a homopolymer of 2-vinylpyridine,
(d) a homopolymer of 4-vinylpyridine,
(e) a copolymer of dimethylaminoethyl methacrylate and at least one monoethylenic monomer,
(f) a copolymer of tertiary aminoalkyl acrylate and a monoethylenic monomer,
(g) a copolymer of 4-vinylpyridine and a monoethylenic monomer,



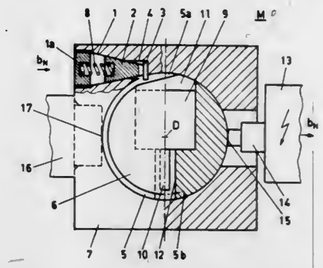
(h) a copolymer of 2-vinylpyridine and a monoethylenic monomer, and
(i) a copolymer of 4-vinylpyridine and 2-vinylpyridine and a monoethylenic monomer, wherein said water-insoluble polymer is one which can be made soluble in water or an aqueous solution upon being contacted with an acid.

4,550,661

SAFETY DEVICE FOR AMMUNITION

Robert Rehmann, Neerach, Switzerland, assignor to Ems-Inventa AG, Switzerland

Continuation-in-part of Ser. No. 355,877, Mar. 8, 1982, abandoned. This application Sep. 14, 1983, Ser. No. 532,200
Claims priority, application Switzerland, Sep. 16, 1982, 5481/82
Int. Cl.[4] F42C *15/29*
U.S. Cl. 102—251 **10 Claims**



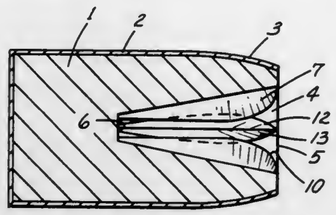
1. A safety device for releasibly preventing undesired movement of a primer pellet holder in a housing of a projectile from an unarmed to an armed position, comprising a groove along an edge of a pellet holder having a locking member at one end thereof, a bore in the housing intersecting said groove of the pellet holder, said bore having a longitudinal axis parallel to an expected direction of acceleration of the projectile and being conical over at least a part of its length, a bolt slideably mounted for longitudinal movement in said bore, said bolt having a corresponding conical shape over at least a part of its length such that the bolt is capable of transverse as well as well as longitudinal movement in said bore, whereby said bolt remains operable under acceleration forces that are transverse to the expected direction of acceleration, said bolt further having a projection at one end thereof for projecting into said groove for engagement with said locking member at the end of said groove to maintain the pellet holder in an unarmed position, and means normally urging said bolt into said groove, said bolt being movable against the force of said urging means to remove the projection from said groove and release the pellet holder to the armed position in response to the expected acceleration forces upon firing of said projectile.

4,550,662

EXPANDING PROJECTILES

Thomas J. Burczynski, 508 Johnson Hollow Rd., R.D. 1, Millport, N.Y. 14864

Filed May 3, 1978, Ser. No. 902,487
Int. Cl.⁴ F42B *11/10*
U.S. Cl. 102—509 **9 Claims**



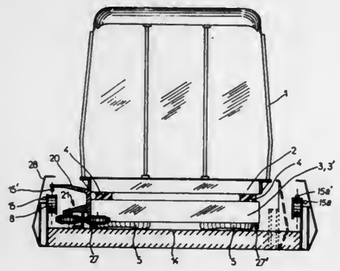
1. A bullet having a central body of malleable material including an ogival end in which is provided an integral open cavity of generally frusto-conical form, a series of rib members extending longitudinally and radially inwardly in said cavity, integral with the body and spaced circumferentially therein, said rib members being formed to split and thereafter concentrate forces from incoming fluidic materials to effect expansion of the cavity and thereby flatten the ogival walls upon penetration of a target area.

4,550,663

TRANSPORTATION SYSTEM HAVING A CABLE DRAWN VEHICLE

Guy DeViaris, Neuilly, France, assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 349,890, Feb. 18, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 584,069
Claims priority, application France, Feb. 27, 1981, 81 03998
Int. Cl.⁴ B61C *11/02*
U.S. Cl. 104—119 **1 Claim**



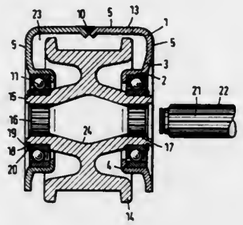
1. A transportation system comprising:
two vehicles pivotally attached about a horizontal axis for climbing articulation and having air cushion means underneath for suspending the vehicles by an air cushion effect;
a guideway having a smooth, uninterrupted flat surface, defined as an air cushion effect area, upon which the air cushion effect operates;
a motor-driven cable disposed in the guideway, outside of the air cushion effect area, for propelling the vehicles, wherein the cable is a closed loop, having a first part that propels the vehicles and a second part vertically displaced from the first part that travels in a direction opposite to the direction of the vehicles;
an arm disposed on at least one of the vehicles for attaching to the cable;
a rail disposed in the guideway, outside of the air cushion effect area, for guiding the vehicles;
a pinch roller arrangement disposed on the vehicles, for engaging the rail; and
wherein the cable is supported vertically by vertical sheaves in straight sections of the guideway and is supported both vertically and horizontally by inclined sheaves in curved sections of the guideway.

4,550,664

TRACK WHEEL BLOCK

Harald Bitsch, Witten; Klaus Donner, Hagen; Heinz Hasselmann, Hagen-Emst, and Rainer Horbach, Witten, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 674,489
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134750
Int. Cl.⁴ B66C *23/04*; B61D *1/00*
U.S. Cl. 105—180 **5 Claims**



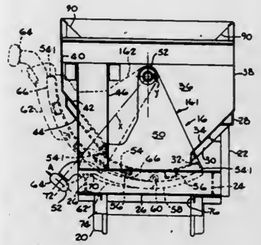
1. A track wheel block comprising:
(a) a track wheel having a lateral riding surface;
(b) said track wheel having a central hollow hub with an external cylindrical surface extending laterally beyond said track riding surface;
(c) a pair of roller bearings means rotatively supporting said cylindrical surface of said hollow hub;
(d) means for retaining said roller bearings means fixed with respect to said hub;
(e) a bearing box comprised of two substantially equal sized wall means welded together, said bearing box having front, back, sides and top surfaces that substantially enclose a significant portion of said track wheel;
(f) recesses mounted in each of said side surfaces of said wall means and adapted to receive said bearing means;
(g) a toothed driving gear, said hollow hub including an interior cylindrical surface with teeth for receiving said toothed driving gear to drive said track wheel;
(h) said roller bearing retaining means including annular slots in said external cylindrical surface of said hollow hub and removable snap rings which fit within said slots;
(i) a space is provided between said track riding surface and the inside walls of said bearing box sufficient to allow lateral shifting of said track wheel when one of said roller bearing retaining means is removed; and
(j) a plurality of bores in the respective surfaces of said bearing box to enable said bearing box to be selectively connected to another element.

4,550,665

BOTTOM DISCHARGE HOPPER STRUCTURES

Cornelis Brouwer, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Potchefstroom, South Africa

Continuation of Ser. No. 902,319, May 3, 1978, abandoned. This application Mar. 1, 1984, Ser. No. 583,494
Claims priority, application South Africa, May 4, 1977, 77/2681
Int. Cl.⁴ B61D *7/30, 7/04, 7/18*
U.S. Cl. 105—241.2 **8 Claims**



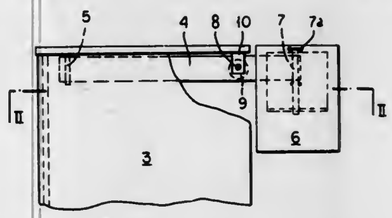
1. A bottom discharge hopper rail car comprising a hopper body mounted on a chassis and a door pivotally mounted on the body, the chassis including wheels rotatable about axes extending in the transverse direction of the car, the body having a pair of inclined, downwardly converging side walls spaced apart in said transverse direction of the car, the longitudinally extending lower edges of the side walls defining a discharge opening from the body, the angle of inclination of one side wall with respect to horizontal being different to the angle of inclination of the other side wall with respect to horizontal, and the door being displaceable between a position in which it closes said opening and a position in which it is spaced from said opening to permit discharge of the contents of said body.

4,550,666

EQUIPMENT STAND

Rudolf Svoboda, Ottokar-Kernstock-Str. 17, A 3100, St. Pölten, Austria, assignor to Firma Svoboda Entwicklung AG, St. Pölten, Austria

Filed May 11, 1983, Ser. No. 493,645
Claims priority, application Austria, May 11, 1982, 1847/82
Int. Cl.⁴ A47B *57/00*
U.S. Cl. 108—96 **18 Claims**



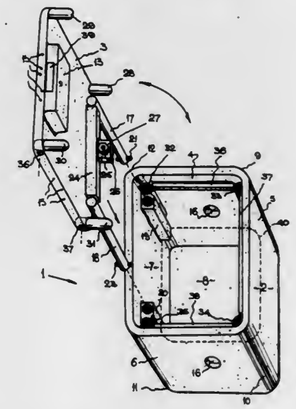
1. A data-processor stand, comprising:
a base;
a vertically adjustable support mounted on said base;
a first generally rectangular platform affixed to said support for receiving a component of a data processor;
an elongated link pivotally connected to said support beneath said first platform at an articulation proximal to one edge of said first platform;
a second platform adapted to receive another component of said data processor and pivotally connected to said link, said link extending beyond an opposite edge of said first platform; and
height-adjustment means engaging said link for raising and lowering said second platform relative to said first platform while holding said second platform generally in the region of said opposite edge.

4,550,667

SAFE HAVING CONCEALED HINGES

Grahame A. Meyers, 29 Rondelay Dr., Castle Hill, N.S.W. 2154, Australia

Filed Jul. 25, 1983, Ser. No. 516,895
Claims priority, application Australia, Jul. 28, 1982, PF5090
Int. Cl.⁴ E05D *7/14*; E05G *1/00*
U.S. Cl. 109—70 **4 Claims**



1. A safe comprising a body defining a chamber and a door therefor, sidewalls of said body being formed from a sheet of mild steel roll-formed and welding into tubular configuration, a rear wall of said body being a mild steel plate welded into place to thereby provide a substantially unitary construction of the said body, having rounded corners; an elongated block secured to the inside face of said door; at least two slide bars the ends of which are pivotally affixed to said elongated block and which slidingly extend through co-operating bores in associated slide channels on the inside of said body, the elongated block carrying a stop means to limit the inward movement of the door when closed and detents on the free ends of said slide bars permitting limited movement of the said door to and away from said body; a plurality of mild steel registering pegs projecting perpendicularly from the said inside face of said door; a co-operating plurality of registering tubes on the inside of the sidewalls of said body, each registering peg being receivable within a respective one of said co-operating registering tubes so that the front face of the safe when closed is flush; and a locking mechanism for the door.

4,550,668

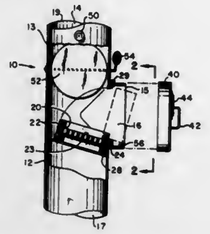
COMBUSTOR UNIT FOR WOODBURNING STOVE

Carl F. Piontkowski, 38 Ridge Dr., Old Saybrook, Conn. 06475

Filed Jul. 1, 1983, Ser. No. 509,794
Int. Cl.⁴ F23B *5/00*; B01D *46/42*
U.S. Cl. 110—210 **18 Claims**

1. A combustor unit for a wood stove comprising:
a flue assembly defining an exhaust passageway having an axis and an access passageway having an axis which intersects the exhaust passageway axis at an angle, the junction of said passageways defining a plane;
combustor means pivotally mounted in said flue assembly, said combustor means being pivotal between a combustion

position wherein said combustor means is positioned across said exhaust passageway and an open position wherein said combustor means is positioned substantially within said access passageway;



a seat means interiorly positioned in said exhaust passageway to define a stop for limiting pivotal movement of said combustor means; and

crank means extending exteriorly from said flue assembly and affixed to said combustor means to manually pivot said combustor means.

4,550,669

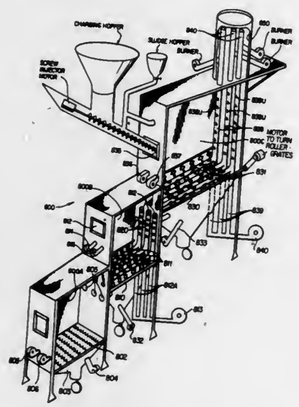
BURNING APPARATUS WITH MEANS FOR HEATING AND CLEANING POLLUTED PRODUCTS OF COMBUSTION

Sam Foresto, 243 Willis Ave., Mineola, N.Y. 11501

Continuation-in-part of Ser. No. 541,217, Oct. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 404,665, Aug. 3, 1982, Pat. No. 4,430,950. This application Jan. 15, 1985, Ser. No. 691,686

Int. Cl.⁴ F23G *5/00*

U.S. Cl. 110—245 **22 Claims**



1. Apparatus for cleaning gases within which pollutants are entrained and which gases are produced from burning material such as fuel, waste material and the like comprising:

at least one combustion chamber, the combustion area of said combustion chamber being defined by wall means for enclosing the same including a top;

means for retaining burning material in said combustion chamber up to a level below said top;

flue tube means including at least one tube extending substantially below the level to which material to be burned in said chamber is retained;

one end of said at least one tube comprising means for communication with a source of polluted gases produced by burning material;

said flue tube means intermediate its ends comprising means for conducting such polluted gases through said flue tube means within the material being burned in said combustion chamber and for directly transferring heat between the material being burned in said chamber and the polluted gases conducted through said tube means;

the other end of said flue tube means comprising means for exhausting gases conducted through said flue tube means;

said flue tube means including means for direct fluid communication between the material being burned in said chamber and the conducted gases.

4,550,670

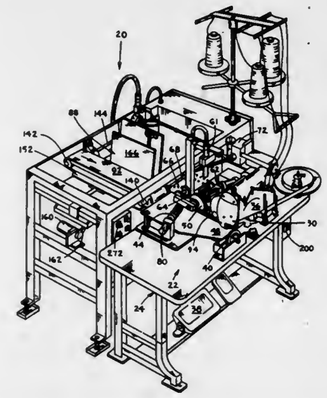
MATERIAL HANDLING SYSTEM

Kenneth J. Thompson, Lexington; Joel C. Rosenquist, Kernersville, and Wayne G. Foster, Advance, all of N.C., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed Jan. 12, 1983, Ser. No. 457,457

Int. Cl.⁴ D05B *19/00*

U.S. Cl. 112—121.11 **8 Claims**



1. A system for use in the manufacture of garment components, and the like, in which a plurality of fabric materials are utilized comprising: support means, a machine having sewing instrumentalities mounted upon said support means to sequentially stitch preselected portions of a series of first fabric materials to a second fabric material, means for dispensing said second fabric material from a supply while guiding the second fabric material in a predetermined manner prior to reaching said sewing instrumentalities, chopper means downstream of said sewing instrumentalities for selectively severing portions of said second fabric materials to form discrete garment components, each garment component comprising a first fabric material having selected portions sewn to said second fabric material, said chopper means including angularly disposed blade means traversing said second fabric material for severing simultaneously two portions of said second fabric material, means for feeding said second fabric material to said chopper means and means for vertically stacking said garment components, said stacking means including elevator means for positioning the top of a stack of garment components at a selected position.

4,550,671

MATERIAL PRESSER DEVICE FOR A SEWING MACHINE

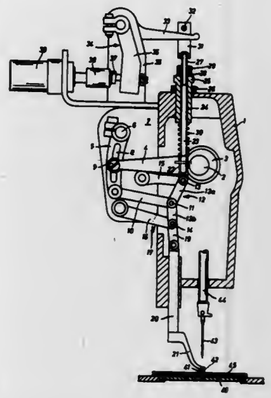
Albert Dusch, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 7, 1984, Ser. No. 648,696

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333046

Int. Cl.⁴ D05B *27/04, 29/02*

U.S. Cl. 112—235 **4 Claims**



1. A material presser device for a sewing machine having a rotatable main shaft operably driving a reciprocatable needle, comprising a presser bar having a presser foot engageable with the material workpiece, a rocking lever driven by the shaft, a four joint knee-joint connected to said rocking lever and having one joint end connected to said presser and an opposite joint end, a rod bushing mounted on the sewing machine adjacent said rocking lever, and having an abutment adjacent one end, a rod slidably mounted in said bushing having one end connected to said opposite knee joint end, said rod having a further abutment engageable with said abutment of said bushing for stopping motion of said rod at a selected position toward said presser bar, and spring means biasing said rod toward said presser bar.

4,550,672

THREAD-HOLDING APPARATUS FOR BUTTONHOLE MACHINE

Eberhard Kastrup, Bielefeld, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,198

Claims priority, application Fed. Rep. of Germany, May 4, 1983, 8313114

Int. Cl.⁴ D05B *65/02, 53/00*

U.S. Cl. 112—293 **10 Claims**

1. In combination with a buttonhole machine having:

a support head;

a stitching needle for a needle thread displaceably mounted on the support head; and

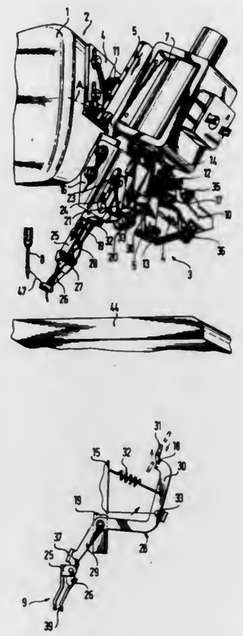
means for cutting the needle thread after a stitching operation and forming thereon a free end extending laterally from the needle; a thread-holding device comprising:

a support plate pivoted on the head;

a thread clip having a pair of jaws displaceable between a closed position engaging each other for holding the thread and an open position for releasing it;

means including an actuator on the support plate and carrying the thread clip for moving same vertically between an upper position spaced laterally relatively far from the needle and a lower position laterally relatively close to the needle; and

control means connected to the clip and to the actuator for moving the clip from the open to the closed position while moving it from the upper to the lower position after a stitching operation to grasp the free end of the cut thread adjacent the needle.



4,550,673

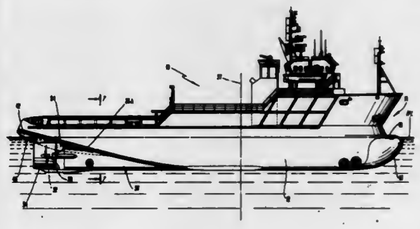
HULL CONSTRUCTION FOR SEAGOING VESSELS

Sigurdur Ingvason, Gördesvagen 31, 43080 Hovås, Sweden

Filed Jun. 2, 1983, Ser. No. 500,359

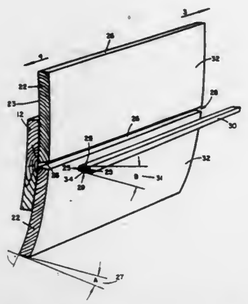
Int. Cl.⁴ B63B *1/06, 1/08*

U.S. Cl. 114—56 **23 Claims**



1. A seagoing vessel comprising a hull having side walls which converge forwardly to define a bow, and a forwardly projecting bulb at said bow, said bulb including an upper periphery exposed above the water surface when the vessel is stationary and in a fully loaded condition, said bulb including side walls which curve divergingly downwardly and outwardly from said upper periphery of said bulb to a location defining a maximum width of said bulb and then curve convergingly downwardly and inwardly to a bottom of said bulb, said maximum width of said bulb extending from a rear end of said bulb to a location adjacent a front end of said bulb, said bow extending downwardly and rearwardly from a deck of said vessel to a location above said bulb and then extending forwardly and downwardly to said rear end of said bulb.

4,550,674
BOAT HULL PLANKING METHOD
Kazimierz Zatek, 19 Forest St., So. Weymouth, Mass. 02190
Filed Aug. 3, 1984, Ser. No. 637,511
Int. Cl.[4] B63B *5/02*
U.S. Cl. 114—358 **7 Claims**



1. A method of constructing a wooden boat hull with fore and aft ends and containing ribs defining its framework, comprising the steps of:

arranging as an interior layer a plurality of wooden planks with outside and inside faces, and longitudinal edges in a longitudinally extending fore to aft direction, perpendicular to and outside the hull ribs;

applying glue to the longitudinal edges of the planks of the interior layer;

abutting the longitudinal edges of the planks of the interior layer;

attaching the planks of the interior layer to the hull so that the inside faces of the planks are positioned against the hull ribs;

applying glue to the outside faces of the planks of the interior layer;

arranging as an exterior layer a plurality of wooden planks with outside and inside faces and beveled longitudinal edges in a longitudinally extending fore to aft direction perpendicular to the hull ribs and positioned such that the inside faces of the planks adjoin the outside faces of the planks of the interior layer;

applying glue to the inside faces of the planks of the exterior layer;

positioning the planks of the exterior layer so that the middle of the inside face of each is intermediately placed over the abutted longitudinal edges of the planks of the interior layer;

positioning further the planks of the exterior layer so that their beveled edges form a longitudinal groove extending the length of the hull in a fore to aft direction;

attaching the planks of the exterior layer through the interior layer to the hull ribs;

applying glue to the longitudinal grooves formed by the beveled edges of the planks of the exterior layer;

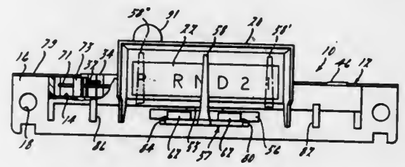
forcing longitudinal splines with a width slightly greater than the width of the longitudinal grooves into said grooves so that the splines are flush with the outside faces of the planks of the exterior layer;

clamping the splines, interior and exterior planks until the glue sets and hardens;

repeating the above steps until the entire hull is covered with an interior layer of wooden planks and an exterior layer of planks with splines forced into the grooves formed by the longitudinal edges of the planks of the exterior layer; and

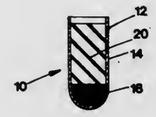
applying a sealer over the completed hull.

4,550,675
SELF-ADJUSTING SHIFT INDICATOR FOR AUTOMATIC TRANSMISSION
Jere R. Lansinger, Bloomfield Hills; George D. Dorr, Troy; Paul L. Farago, Royal Oak, and Gerald A. Miller, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 31, 1983, Ser. No. 480,975
Int. Cl.[4] G09F *9/40*
U.S. Cl. 116—28.1 **3 Claims**



1. An automatic transmission selector indicator mechanism for use with a vehicle transmission control system comprising a housing having a dial in the form of a plate member associated therewith displaying a plurality of spaced indicia corresponding to different transmission settings, said plurality of indicia including a first low drive range terminal indicia and a second park terminal indicia each at a respective extreme end of the dial, a carriage assembly supported on the housing in a longitudinally extending guide slot having parallel side edges, said carriage assembly operative for longitudinal movement in said guide slot relative to said housing in opposite directions between first and second stop means on said housing, said carriage assembly comprising a carrier member and an indicator member, said indicator member in the form of a rectangularly shaped pad disposed in a horizontal plane beneath said housing guide slot, said pad having its upper surface formed with a plurality of opposed inwardly chamfered guide tabs laterally spaced to define a chamber therebetween, said carrier member formed with an upper head section and a lower rectangularly shaped sled, said sled having each of its longitudinal side edges outwardly sloped complementary to its associated inwardly chamfered guide tabs thereby providing interlocking scarf-like engagement relatively slidable surfaces therebetween, such that carrier member may slide in either longitudinal direction in said channel relative to said indicator member upon said indicator member contacting respective ones of said first or second stop means, a resilient spring clip interposed between said sled and said pad for biasing said sled and said pad engaging surfaces into frictional engagement to frictionally oppose longitudinal sliding movement of said indicator member relative to said carrier member, such that said carrier and indicator members are adapted for conjoint longitudinal movement between said first and second stop means, said pointer adapted to be aligned, respectively, with either said first or second terminal indicia upon said pad contacting respective ones of said first and second stop means, a coil spring on said housing with its principal axis disposed horizontally for movement in a direction parallel to said guide slot, said spring having one end connected adjacent one end of said housing and its other end supporting a pulley for rotation about a substantially vertical axis, flexible cable means including first and second cable sections disposed in a common horizontal plane including said coil spring principal axis, said first cable section secured between one end of said carrier member upper head portion and the other end of said housing, said first cable section having a first bight portion return-looped around said pulley and a second bight portion return-looped around a housing arcuate reel, such that the tension force of said coil spring urging said pulley toward said housing one end, means for securing said second cable section between the other end of said head portion and said selector lever assembly on the vehicle, whereby said pulley travels a predetermined longitudinal distance less than the longitudinal travel of said pointer between its two extreme indexed stop positions causing said coil spring to be always maintained under a tension load force, said carriage assembly movable in one longitudinal direction between said housing first and second stop means in response to rotary movement of said lever between its park and low drive range positions, such that upon said pad contacting said first stop means the tension load force of said coil spring overcoming the force of said resilient spring clip, whereby said carrier member is free to slip in said one direction relative to said indicator member by means of said engaging surfaces until said lever places the transmission into its first low drive range position, and whereby upon said carriage assembly being moved in the opposite direction by reverse movement of said lever said pad contacting said second stop means such that continued movement of the selector lever overcoming the resilient spring clip force, whereby said carrier member is free to slip in said other longitudinal direction relative to said indicator member until movement of said lever puts the transmission into its second park position, said indicator mechanism causing said pointer to be automatically aligned, respectively, with each said low drive range and park terminal indicia each time said lever is cycled between its low drive range and park positions.

4,550,676
ELAPSED TIME INDICATOR
Alan W. Francis, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Aug. 25, 1983, Ser. No. 525,928
Int. Cl.[4] G01D *21/00*
U.S. Cl. 116—206 **17 Claims**



1. An indicator to signal the passage of a predetermined, approximate time, comprising:

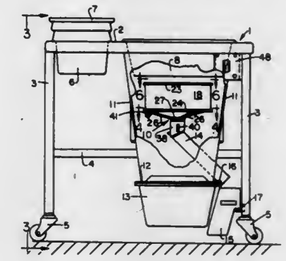
flowable colorant indicator means; and

means enclosing said indicator means, at least a portion of said enclosure means consisting of a substance adapted to volatilize during passage of the predetermined approximate time to release said indicator means from said enclosure means thus providing an indication of the passage of the predetermined approximate time;

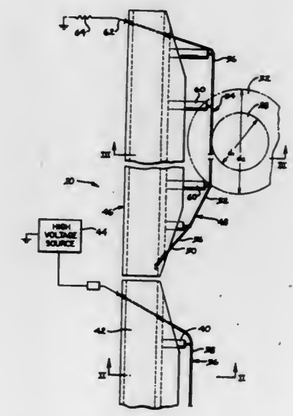
said flowable colorant indicator means being intermixed with and held in a sublimable core substance to define a core, said core being disposed within said enclosure means.

4,550,677
SIFTER FOR BREADING APPARATUS
Vernon E. Reese, Tulsa, Okla., and Roger A. Schwierking, Tipp City, Ohio, assignors to Henny Penny Corporation, Eaton, Ohio
Filed Sep. 21, 1984, Ser. No. 653,721
Int. Cl.[4] B05C *19/00, 11/10*
U.S. Cl. 118—31 **15 Claims**

1. A sifter for separating reusable breading from dough balls formed as an incident of a breading operation, said sifter comprising a foraminous cylindrical basket having a downwardly tapered conical bottom, an opening at center of said conical bottom, a pair of spaced-apart concentric annular walls surrounding said opening and projecting upwardly from the conical bottom of said basket, a plurality of spaced-apart openings in each of said annular wall extending upwardly from the bottom edges of said walls, the openings in one of said annular walls being offset circumferentially with respect to the openings in the other of said annular walls, and a cover at the upper ends of said annular walls enclosing the area of the bottom of the basket lying within the confines of the outermost annular wall.



4,550,678
APPARATUS FOR REMOVING AN ELECTROSTATIC CHARGE FROM A CHARGE COLLECTOR
Gary L. Demeny, Delavan, and Robert G. Smead, St. Charles, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 15, 1984, Ser. No. 660,684
Int. Cl.[4] B05B *5/02*
U.S. Cl. 118—630 **7 Claims**



1. In an electrostatic coating system having a conveyor arranged for moving a plurality of workpiece supports along a predetermined path, each of the supports having a first end operatively attached to the conveyor and a second end adapted for supporting a workpiece, an electrostatic charge collector on each of the supports between the first and second ends, means for electrically connecting each of the collectors to its respective workpiece, and means defining an electrostatic charging zone at an inlet of the path, the improvement comprising:

means defining a non-arcing electrical discharge zone at an outlet of the path and so arranged that the electrostatic charge collectors pass through the discharge zone subsequent to passing through the charging zone and having an electrostatic charge imposed thereon, the discharge zone means including an elongate electrical conductor extending along a portion of the path, a resistor, means for connecting one end of the resistor to the conductor and the

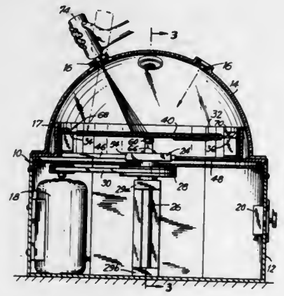
other end to ground, an approach section having an inlet end, and a spaced second end, a portion of said conductor extending between the inlet and second ends in a converging relationship with respect to the predetermined path, the conductor at the inlet end of the approach section being spaced from the path a distance greater than the arcing distance of the electrostatic charge on the charge collector and at the second end being at the path, and a contact section adjoining the converging approach section and extending along the path, positioned so that the electrical charge collectors are in electrical contact therewith substantially along the entire length of the contact section as the collectors pass through the electrical discharge zone, whereby as the supports pass along the path through the approach section the collectors continually converge upon the conductor before contacting the conductor at the contact section of the discharge zone.

4,550,679

DEVICE FOR PRODUCING DECORATIVE PATTERNS ON CLOTHING

William Pipa, New Hyde Park; Robert F. Warren, Brooklyn, and Harvey Russack, Chappaqua, all of N.Y., assignors to Harvey Russack, Chappaqua, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,543
Int. Cl.⁴ B05B *13/02*; B05C *11/08*
U.S. Cl. 118—52 **2 Claims**



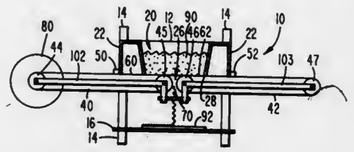
1. A device for producing decorative patterns on clothing comprising a housing, a motor mounted to said housing, stretcher carrier means operatively engaged with said motor, said stretcher carrier means including a first support arm, a second support arm, a first end block mounted proximate to the end of said first support arm, a second end block mounted proximate to the end of said second support arm, means for adjustably supporting said first arm support relative to said second arm support to permit the distance between said first and second end blocks to be varied, a plurality of stretcher means releaseably engaged with said first and second end blocks of said stretcher carrier means, said stretcher means being formed of different sizes to support various sized articles of clothing while the decorative patterns are produced on the clothing, cover means mounted to said housing, said cover means including at least one port, pliable flap means mounted to said port providing a closeable access to the interior of said device to receive the nozzle portion of a container of decorative paint to permit the application of decorative paint to the interior of said device and allow the decorative paint to be applied to the clothing to be decorated from various angles, and activation means electrically engaged with said motor and adapted to cause said stretcher carrier means to rotate within said housing while said paint is applied to said clothing to permit decorative patterns to be created on clothing.

4,550,680

APPARATUS FOR APPLYING A LAYER OF POWDER TO A SURFACE

Max Derendinger, Zurich, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 19, 1984, Ser. No. 672,957
Int. Cl.⁴ B05D *7/00*, *5/00*
U.S. Cl. 118—308 **10 Claims**



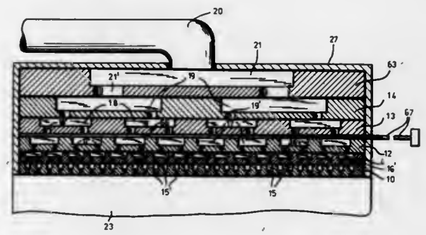
1. An apparatus for distributing a layer of powder over a surface of a part having a predefined shape comprising:
(a) support means for holding said part so that said surface is facing upwardly;
(b) container means disposed above said surface for holding a quantity of said powder, said container means having an opening facing downwardly and being defined by a peripheral edge having a shape related to said predefined shape of said part; and
(c) closure means for interacting with said edge of said opening so that said opening is either completely closed or said opening is open only through an aperture that is selectively movable to traverse both said opening and said surface of said part.

4,550,681

APPLICATOR FOR UNIFORMLY DISTRIBUTING A FLOWABLE MATERIAL OVER A RECEIVING SURFACE

Johannes Zimmer, Ebentaler Str. 133, A-9020, and Karl Mayer, Klagenfurt, both of Austria, assignors to Johannes Zimmer

Filed Oct. 7, 1983, Ser. No. 539,913
Claims priority, application Austria, Oct. 7, 1982, 3716/82; Oct. 7, 1982, 3717/82
Int. Cl.⁴ B05C *5/02*
U.S. Cl. 118—410 **12 Claims**



1. An applicator for uniformly distributing a flowable material over a surface of a relatively moving substrate, comprising a body provided with a channel system having a branched structure extending from an entrance port to a multiplicity of exit ports disposed in a row transverse to the direction of relative motion, the branches of said channel system becoming progressively more numerous and correspondingly narrower from said entrance port to said exit ports, said channel system forming a multiplicity of tiers paralleling said row and communicating with one another through connecting passages, the number of said branches increasing from one tier to the next, said body comprising a housing and a stack of slabs tightly lodged in said housing perpendicular to the direction of relative motion, said slabs having longitudinally extending cavities in the shape of upwardly open recesses with bottoms having

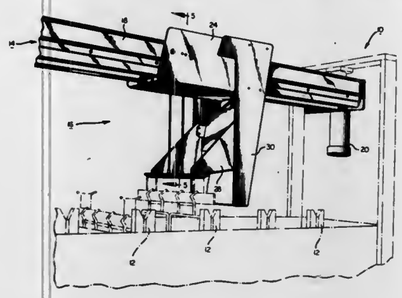
restricted bores, said cavities forming respective tiers of said channel system.

4,550,682

MICRO CRANE FINISHING LINE SYSTEM

Robert J. Juve, Sterling Heights, and Michael J. Eagen, Pleasant Ridge, both of Mich., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Feb. 27, 1984, Ser. No. 584,034
Int. Cl.⁴ B05C *3/09*
U.S. Cl. 118—425 **10 Claims**



1. A material finishing line comprising:
a essentially longitudinal series of work stations;
a stationary support beam having a relatively thin vertical dimension said beam extending horizontally above each of said work stations;
stationary drive means supported by said support beam;
transmission means extending along and supported by said support beam and operatively connected to said stationary drive means;
a cart supported by said support beam and operatively connected to said transmission means so that said cart may be selectively propelled along said support beam and having a relatively thin vertical dimension which has minimal extension beyond the vertical extension of said beam;
lift means supported by and substantially contained within said cart;
conductor means for suppling power to said lift means from a stationary source;
a lift arm connected to and supported by said lift means for operative connection to at least one workpiece, said lift arm allowing the workpiece to be raised and lowered, from and to at least one of said work stations; said lift arm being substantially aligned with said cart when said arm is fully raised, so that the vertical extension of said lift arm in a fully raised position substantially overlaps the vertical extension of said cart, thereby minimizing the portion of said lift arm extending vertically beyond the beam and the cart; and
a lift arm guide supported by said cart for restraining movement of said lift arm in a horizontal plane relative to said cart.

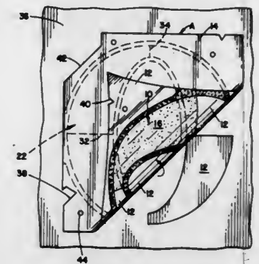
4,550,683

SHEET CONSTRUCTION AND METHOD

Wallace R. Jones, 7621 Eagle Mills Rd., Waite Hill Village, Ohio 44094

Filed Jan. 23, 1984, Ser. No. 573,009
Int. Cl.⁴ B05C *21/00*
U.S. Cl. 118—505 **16 Claims**

1. A laminated sheet construction adapted to be secured to a work surface for placing a predetermined design configuration thereon, said sheet construction comprising:
a first layer having a first contact-type adhesive disposed on a first face surface thereof;
a second layer removably affixed to said first layer at said first face surface;
a third layer removably affixed to a second face surface of said first layer opposed to said first face surface by a second adhesive of lower bonding strength than said first adhesive for defining a laminated-type sheet structure; and,
first score lines coextensively penetrating both said second and first layers for defining a predetermined design configuration, preselected areas of said first and second layers



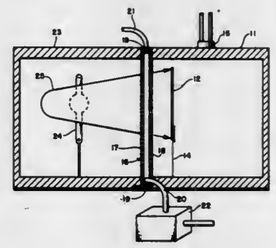
being removable to expose corresponding areas of said second adhesive for allowing said sheet construction to be adhesively secured to a work surface, removal of a selected portion of said second layer incorporating said predetermined design configuration exposing said first adhesive disposed therebeneath for enabling the portion of said first layer associated with said exposed first adhesive to be adhesively secured to a work surface, and removal of said third layer and the remainder of said first and second layers enabling said first layer portion to define the predetermined design configuration on the work surface.

4,550,684

COOLED OPTICAL WINDOW FOR SEMICONDUCTOR WAFER HEATING

Imad Mahawili, Sunnyvale, Calif., assignor to Genus, Inc., Mt. View, Calif.

Filed Aug. 11, 1983, Ser. No. 522,638
Int. Cl.⁴ C23C *13/08*
U.S. Cl. 118—724 **11 Claims**



1. An apparatus for chemical vapor deposition on a wafer of semiconductor material comprising:
housing means for containing said wafer;
heating means external to said housing means for generating light for directly heating said wafer;
window means interposed between said heating means and said wafer, for transmitting said light into the interior of said housing means and in the direction of said wafer, said window means comprising a first wall and a second wall with a space therebetween for channeling the flow of cooling liquid, with said second wall forming at least a

portion of the innermost surface of said housing means, and said walls arranged such that said light passes through both of said walls and through said cooling liquid before impinging on said wafer; and

fluid control means for actively cooling said second wall by pumping cooling liquid between said walls.

4,550,685

DEVICE FOR SUPPLYING FARM ANIMALS WITH A LIQUID FEED

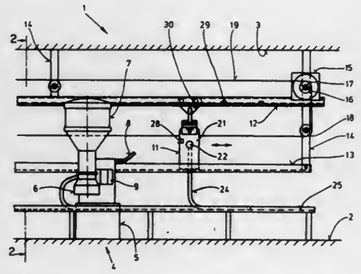
Martin Förster, Gerwigstrasse 27, D 7707 Engen, Fed. Rep. of Germany

Filed May 10, 1984, Ser. No. 609,095

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1984, 3401168

Int. Cl.⁴ A01K *9/00*

U.S. Cl. 119—71 **8 Claims**



1. A device for supplying farm animals with a liquid feed, comprising, a fixed automatic feeder a flexible feed discharge line connected to said feeder and terminating in an animal operated discharge, a member carrying said animal operated discharge, and conveying means connected to said member for moving said member with said flexible line connected thereto through a plurality of feeding stations, said animal operated discharge member comprises a sucker which is moved with said flexible connecting line through a horizontal path, said sucker comprising a nipple exchangeably inserted in said member, said member comprising a plate, said conveyor means comprising an upper guide rail and a lower guide rail, said plate being displaceable between said upper and lower guide rail, said lower guide rail having a channeled cross section into which said plate extends.

4,550,686

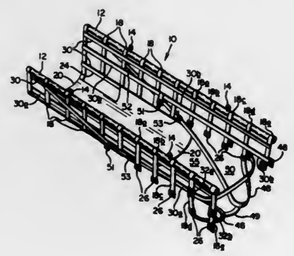
ANIMAL SLING

R. Leonard Munks, 1143 W. March Point Rd., Anacortes, Wash. 98221

Filed Dec. 12, 1983, Ser. No. 560,595

Int. Cl.⁴ A61D *3/00*

U.S. Cl. 119—102 **11 Claims**



1. A sling for supporting a four-legged animal, the sling having a pair of poles with front and rear ends, the sling further having two sides and comprising:

a plurality of longitudinally spaced, transversely extending straps adapted to extend between the poles;

web means extending between forward ones of said transverse straps for supporting the belly of the animal and defining a forward end of an udder/genital opening;

a pair of diagonal straps, one of which extends generally forwardly and upwardly on each side of the sling and which is affixed to a plurality of said transverse straps;

a pair of generally longitudinally extending leg straps mounted between the rearward ends of said diagonal straps and rearward ones of said transverse straps, said longitudinal leg straps crossing the underside of the animal to define the rearward end of said udder/genital opening.

4,550,687

APPARATUS FOR OPERATING A HIGH PRESSURE BOILER

Karl A. Jacob, Industriestr. 2, D-8501 Feucht, Fed. Rep. of Germany

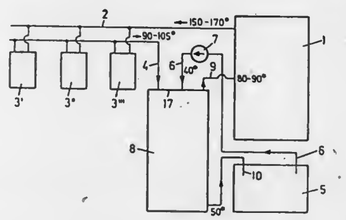
PCT No. PCT/DE83/00006, § 371 Date Sep. 21, 1983, § 102(e) Date Sep. 21, 1983, PCT Pub. No. WO83/02658, PCT Pub. Date Aug. 4, 1983

PCT Filed Jan. 19, 1983, Ser. No. 552,134

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202144; Apr. 8, 1982, 3213165; Jun. 29, 1982, 3224153; Dec. 31, 1982, 3248785

Int. Cl.⁴ F22B *33/00*

U.S. Cl. 122—1 C **42 Claims**



1. Apparatus for improving the efficiency of a high-pressure steam boiler, especially for dry-cleaning plants, laundries or the like, including consuming units connected to the high-pressure steam boiler, and in which condensate from the consuming units is returned to a feed water reservoir contained in a condensate tank, the feed water being pumped from the condensate tank to the boiler, said apparatus comprising:

a heat exchanger;

means for feeding the condensate to the heat exchanger through a line located up-stream from the condensate tank, the feed water from the condensate tank being pumped into the heat exchanger through a further pipe and being fed from the heat exchanger to the boiler,

said heat exchanger consisting of a second tank with one line disposed therein for one medium and a connection for a second medium, said second tank including a cover in which are disposed connections for a condensate line, a feed water feed line and a feed water discharge line,

said heat exchanger housing therein a feed water coil, said coil extending over the height of the tank and being disposed between the feed water feed line and the feed water discharge line, said feed water line extending to the lowest point of the feed water coil and said feed water discharge line extending from the highest point of the feed water coil,

said condensate line supplying hot condensate opening into the free space of the tank opposite the upper end of the feed water coil, said second tank including an impingement baffle, said baffle defining means for diverting the inflow of hot condensate toward the feed water coil,

and means for feeding the feed water to be heated into said coil from a cold zone, to a hot zone, of said second tank.

4,550,688

STEAM OUTLET CONNECTION FOR A STEAM GENERATOR

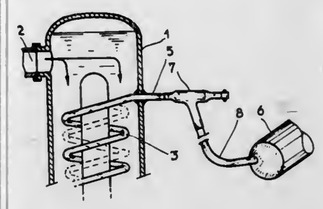
Thierry Zuber, Paris, and René Traiteur, Ris Orangis, both of France, assignors to Novatome, Le Plessis-Robinson and Commissariat a l'Energie Atomique, Paris, both of, France

Filed Jul. 20, 1984, Ser. No. 632,750

Claims priority, application France, Jul. 28, 1983, 83 12476

Int. Cl.⁴ F22B *37/22*

U.S. Cl. 122—360 **4 Claims**



1. A steam outlet connection intended to be disposed between the outlet (5) of a tube (3) of a bank of tubes of a steam generator and a pipe (8) connecting this tube to a steam header, said connection comprising a straight tubular portion (10) welded at one of its ends to said outlet and closed at its other end, and a tubular portion (19) attached as a side branch to said straight portion and at its other end to said connecting pipe (8) leading to said steam header, wherein said closed end of said straight portion (10) has an end wall (14) of a thickness sufficiently slight to permit its easy perforation for the purpose of injecting a gas into the tube through an aperture formed by said perforation of said end wall (14).

4,550,689

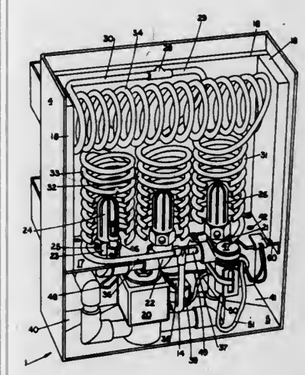
GAS INSTANTANEOUS WATER HEATER

Gerry Wolter, 2341 Maryland Ave., Cincinnati, Ohio 45204

Filed Oct. 31, 1983, Ser. No. 546,874

Int. Cl.⁴ F22B *37/42*; F22D *5/00*

U.S. Cl. 122—448 R **19 Claims**



1. An instantaneous gas water heater comprising a casing with a large compartment and a small compartment separated by a dividing wall; a gas inlet coupler attached to the casing through the small compartment and capable of being coupled to a source of gas; an electric gas solenoid valve positioned near the gas inlet coupler, which is normally closed; three gas nozzle jets positioned in the large compartment on the dividing wall and being fluidly connected to said gas inlet coupler in said small compartment; a water coupler connected to said casing through said large compartment and capable of being connected to a source of water; a plurality of coils connected to said water coupler, which surround said gas nozzle jets in said large compartment; a water outlet line which projects through said small compartment and is fluidly connected with said coils in said large compartment; an electronic igniter positioned adjacent one of said gas nozzle jets, which is capable of igniting all the gas nozzle jets; an optical flame sensor positioned in said small compartment which is capable of optically sensing flame in said large compartment; a thermal overriding switch means fastened to said water outlet pipe for sensing outlet water temperature and interrupting the operation of said electric gas solenoid valve is said water is too hot; and an electronic control module for operating said heater, when said water is flowing through said coil and for deactivating said heater when said water or said gas is not flowing through their respective lines.

4,550,690

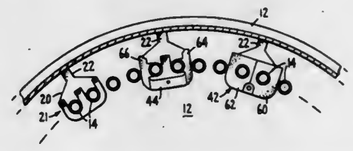
STEAM TUBE YOKE AND HANGER ASSEMBLY INSULATION COVER

Stuart W. Baugher, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 19, 1984, Ser. No. 672,626

Int. Cl.⁴ F22B *37/24*

U.S. Cl. 122—510 **7 Claims**



1. In a steam generator furnace having a generally cylindrical housing forming a conduction heating section, a multiplicity of steam tubes substantially equally spaced apart around the inner circumferential surface of said cylindrical housing and extending axially therethrough, each of said tubes being radially displaced from the surface of said housing by tube hanger means supported by said inner circumferential surface, yoke means overlying said steam tubes and means securing said yoke means to said hanger means with at least one of said steam tubes enclosed for support thereby,

a replaceable refractory cover member enclosing said yoke and at least a portion of said hanger means for installation or removal therefrom without disassembly of said steam tubes from support in said housing by said yoke and hanger means which comprises:

a box member open at the top and one end, the base of said box member including at least one U-shaped opening to frictionally engage one of said tube members to permit said base to abut one side of both said yoke and said portion of said hanger, the sides of said box member extending axially along said tube member and beyond the axial thickness of said yoke and hanger means,

a lid member for enclosing said box member top comprising a pair of nesting elements, each element having a U-shaped opening for slidably engaging a steam tube on the opposite side of said yoke and hanger members, each of said U-shaped openings surrounding diametrically opposed portions of said steam tube and both of said U-shaped openings being at right angles to said box member U-shaped opening,

an end closure member nestable between said open end and said base of said box member to overlie said one side of said yoke and hanger means, said closure member having a U-shaped opening therein slidably engagable with said U-shaped opening in said box member to surround the diametrically opposed portion of said steam tube to com-

plete the enclosure of said tube yoke and at least a portion of said hanger and the portion of said steam tube extending therethrough, and

means for securing one of said pair of lid elements to said box member to clamp said end closure and the other of said pair of lid elements therebetween.

4,550,691

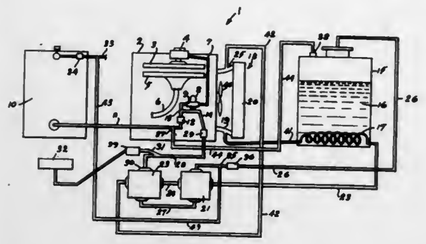
FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Duncan R. McWade, Lot 4, Kiandra Crescent, Yerrinbool, N.S.W. 2575, Australia

Filed Jan. 16, 1985, Ser. No. 691,876

Int. Cl.⁴ F02B *75/12, 43/08*

U.S. Cl. 123—3 **16 Claims**



1. A fuel system for a motor vehicle having an internal combustion engine, said system comprising carburetor means to supply said engine with an air-fuel mixture; pump means to supply said carburetor means with a first liquid fuel from a first reservoir and a second vapor fuel from a heated second reservoir, each of said first and second reservoirs being located on said motor vehicles, said second fuel being produced by fermentation within said second reservoir, means for withdrawing vapor given off by said first liquid fuel in said first reservoir and means for mixing air and said vapor given off by said first liquid fuel with said second vapor fuel being supplied to said carburetor means by said pump means.

4,550,692

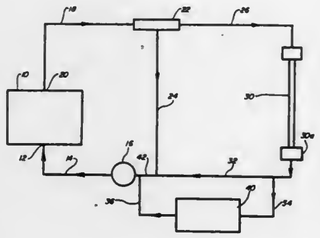
COOLING SYSTEM

John G. Crofts, Sr., Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Feb. 13, 1984, Ser. No. 579,396

Int. Cl.⁴ F02B *29/04;* **F01P** *3/12*

U.S. Cl. 123—41.1 **7 Claims**



1. A cooling system for an internal combustion engine comprising an engine having a liquid coolant inlet and a liquid coolant outlet; a liquid coolant pump having an outlet connected to the engine inlet; a thermostatically controlled valve having an inlet connected to the engine outlet and first and second outlets, the setting of said valve being dependent upon the temperature of the coolant leaving said engine outlet; a radiator having an inlet connected to the valve first outlet and an outlet connected by a first flow line to an inlet of said pump; a by-pass flow line interconnecting the valve second outlet with the said first flow line at a first location upstream of said pump inlet; an aftercooler having an inlet connected to the said first flow line at a second location upstream of said first location and an outlet connected to the said first flow line at a third location downstream of said first location and upstream of said pump inlet; and flow-control means disposed within the said first flow line intermediate said first and third locations.

4,550,693

TEMPERATURE CONTROL ARRANGEMENT FOR COMBUSTION ENGINE

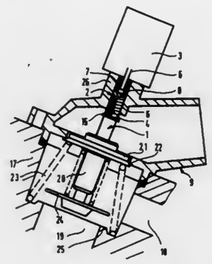
Roland Saur, Stuttgart, Fed. Rep. of Germany, assignor to Behr-Thomson Dehnstoffregler GmbH, Kornwestheim, Fed. Rep. of Germany

Filed Aug. 15, 1984, Ser. No. 640,964

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332587

Int. Cl.⁴ F01P *7/16*

U.S. Cl. 123—41.1 **14 Claims**



1. An arrangement for controlling the temperature in a coolant circulating system of an internal-combustion engine of a motor vehicle, which includes a thermostatic valve means for controlling the coolant flow from said internal-combustion engine through a direct return flow line and through a heat exchanger back to said internal-combustion engine, a thermostatic working element having a housing supporting a valve disk for controlling coolant flow leading to said heat exchanger, and a working piston extending under heat relative to said thermostatic working element and being, supported at a counterbearing, said working piston and said counterbearing forming an adjusting mechanism, and control means, connected to said working piston or said counterbearing, for forcing said working piston into an adjusted position selectively to delay or accelerate actuation of the thermostatic working element.

4,550,694

PROCESS AND APPARATUS FOR COOLING INTERNAL COMBUSTION ENGINES

John W. Evans, Sharon, Conn., assignor to Evans Cooling Associates, Sharon, Conn.

Filed May 11, 1984, Ser. No. 609,575

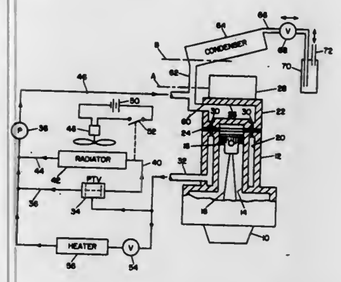
Int. Cl.⁴ F01P *3/22;* **C09K** *5/04*

U.S. Cl. 123—41.02 **21 Claims**

1. A process for cooling an internal combustion engine comprising the steps of mechanically pumping a boilable liquid coolant having a saturation temperature above about 132° C. at atmospheric pressure from the engine coolant jacket through a heat exchanger and back to the coolant jacket to provide heat rejection in the heat exchanger such that no vapor is formed in the liquid outside the coolant jacket as a result of the pressure drop induced by the pump and such that the temperature of the coolant within portions of the head portion of the coolant jacket that are in elevation above locations adjacent to combustion chamber domes and exhaust runners is maintained below the saturation temperature of the coolant at the system

pressure, continuously removing from the engine coolant jacket by substantially unrestricted convection through at least one outlet leading from the highest region in the head portion of the coolant jacket substantially all gases other than gases that condense within the coolant in the jacket, including vapor formed by localized boiling of the liquid coolant in areas adjacent to combustion chamber domes and exhaust runners, whereby the major part of the head portion of the engine coolant jacket is kept filled with coolant in the liquid state at all times, conducting gases from the outlet to a condenser means that includes a condenser chamber, and returning the condensate from the condenser means to the coolant jacket.

11. Apparatus for cooling an internal combustion engine comprising a coolant jacket around at least part of each combustion chamber and exhaust runner of the engine and containing a boilable liquid coolant having a saturation temperature above 132° C. at atmospheric pressure, a liquid cooling circuit including a heat exchanger and mechanical pump means for circulating the coolant from the coolant jacket through the heat exchanger and back to the coolant jacket to provide heat



rejection in the heat exchanger such that no vapor is formed in the liquid cooling circuit as a result of the pressure drop induced by the pump and such that the temperature of the coolant within portions of the head portion of the coolant jacket that are in elevation above locations adjacent to combustion chamber domes and exhaust runners are maintained below the saturation temperature of the coolant for the system pressure, at least one outlet from the highest region in the coolant jacket adapted to remove and release continuously by substantially unrestricted convection from the coolant jacket substantially all gases, including vapor formed by localized boiling of the liquid coolant in areas adjacent to combustion chamber domes and exhaust runners, other than gases that condense in the coolant within the jacket, whereby the major part of the coolant jacket in areas around combustion chamber domes and exhaust runners is kept filled with coolant in the liquid phase at all times, condenser means including a condenser chamber for receiving the gases removed and released from the coolant jacket through the outlet and condensing condensable constituents thereof, and return means for returning the condensate from the condenser means to the coolant jacket.

4,550,695

FAN DEVICE FOR INTERNAL COMBUSTION ENGINE

Yasuyuki Kikuchi; Eiichi Matsumoto, both of Yokohama, and Yoshimasa Tanaka, Ayase, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 27, 1984, Ser. No. 605,675

Claims priority, application Japan, Jun. 8, 1983, 58-102108; Jun. 8, 1983, 58-102109

Int. Cl.⁴ F01P *5/02*

U.S. Cl. 123—41.12 **12 Claims**

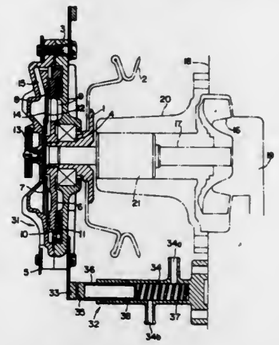
1. A fan device for an internal combustion engine, comprising:

a driving member;

a fan;

means for providing a fluid coupling between said driving member and said fan; and

brake means for preventing rotation of said fan at a predetermined temperature indicative of engine temperature, said



brake means including a temperature responsive portion variable in shape in response to changes in engine temperature, said portion having a first shape preventing fan rotation at said predetermined temperature.

4,550,696

INTERNAL COMBUSTION ENGINE WITH DISC INLET VALVE

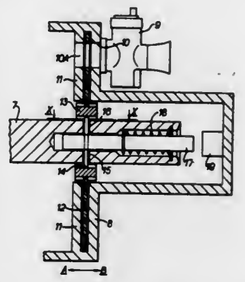
Josef Ehrlich, Berkhamsted, England, assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 20, 1984, Ser. No. 642,177

Claims priority, application United Kingdom, Aug. 26, 1983, 8323081

Int. Cl.⁴ F01L *7/06*

U.S. Cl. 123—73 D **4 Claims**



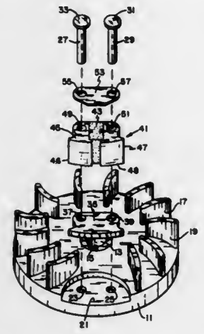
1. An internal combustion engine having a rotary disc inlet valve, means for varying timing of opening and closing of said inlet valve to a fully retarded condition in response to an increase in engine speed, and latch means for holding said inlet valve in the fully retarded condition and including a magnet which latches a part of the means for varying the timing of said inlet valve in a position corresponding to the fully retarded condition of said inlet valve.

4,550,697

FLYWHEEL MOUNTING OF PERMANENT MAGNET GROUP

Kenneth W. Campen, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Dec. 20, 1983, Ser. No. 563,690
Int. Cl.⁴ F02P *1/00*
U.S. Cl. 123—149 D **12 Claims**



1. A flywheel assembly for a small internal combustion engine of the type supporting a permanent magnet structure near the flywheel outer periphery for cooperating with a fixed ignition assembly for inducing spark creating voltages in the ignition assembly as the magnet structure rotates past the ignition assembly and comprising:

a ferromagnetic flywheel;

a permanent magnet structure having a permanent magnet and a pair of flux transmitting pole shoes adjacent the respective poles of the permanent magnet, the poles of said magnet and the pole shoes circumferentially arranged near the periphery of said flywheel;

a substantially non-magnetic spacer axially positioned intermediate the flywheel and the permanent magnet structure for reducing flux leakage between the pole shoes by way of the flywheel; and

a solid generally cylindrical fastener of substantially non-magnetic material passing through apertures in the magnet structure, spacer and flywheel, said fastener expanded radially in said apertures to tightly engage the magnet structure, spacer and flywheel and fix the relative positions thereof.

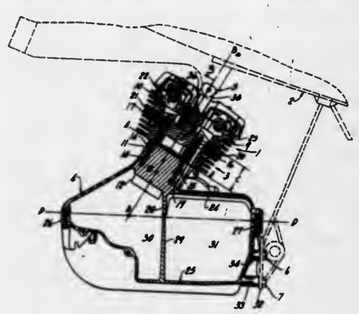
4,550,698

INTERNAL COMBUSTION ENGINE MOUNT

Reinhard Könneker, Monsheim, Fed. Rep. of Germany, assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jul. 13, 1984, Ser. No. 630,699
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326321
Int. Cl.⁴ F02F *7/00*
U.S. Cl. 123—195 AC **9 Claims**

1. An internal combustion engine, which together with a motorcycle underframe forms a supporting unit, said engine comprising a cylinder head having axially extending wall portions and a crankcase housing, a support core comprising a first body extending between the wall portions of said cylinder head and being integral with and disposed within said cylinder head, holding members for securing the internal combustion engine to the motorcycle underframe, one of said holding members being coupled to the cylinder head and another to the crankcase housing of said engine, said holding member attached to the cylinder head being disposed in a median plane of the cylinder head and joined to the support core provided inside the cylinder head, an attachment tie comprising a second body disposed within and integral with the crankcase housing, said second body being in abutment with and forming a continuation of the first body forming said support core, said support core and said attachment tie being connected to one another by



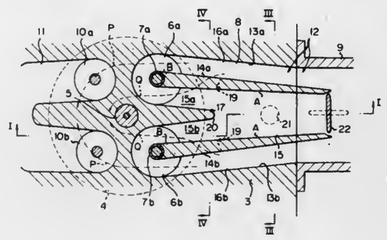
bolts to provide a continuous body extending between said cylinder head and said crankcase for supporting said one of said holding members.

4,550,699

INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

Takeshi Okumura; Tomio Warashina, and Kiyoshi Nakanishi, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 6, 1984, Ser. No. 679,066
Claims priority, application Japan, Jan. 13, 1984, 59-3551
Int. Cl.⁴ F02B *31/00*
U.S. Cl. 123—308 **16 Claims**



1. An internal combustion engine having cylinders each having a first intake valve, a second intake valve, an intake passage common to said first and second intake valves, a first valve stem guide projecting into the intake passage and supporting the first intake valve, and a second valve stem guide projecting into the intake passage and supporting the second intake valve, the intake passage having a first side wall which extends from an outer periphery of the first intake valve towards the upstream of the intake passage and having a second side wall which extends from an outer periphery of the second intake valve toward the upstream of the intake passage, said engine comprising:

a first side separating wall extending in said intake passage from said first valve stem guide toward the upstream of said intake passage;

a second side separating wall extending in said intake passage from said second valve stem guide toward the upstream of said intake passage, said first side separating wall and said second side separating wall defining a first side passage between said first side separating wall and said first side wall of said intake passage, a second side passage between said second side separating wall and said second side wall of said intake passage, and a central passage between said first side separating wall and said second side sepa-rating wall;

a central separating wall extending between said first intake valve and said second intake valve and between said first side separating wall and said second side separating wall at a downstream end portion of said central passage, said central separating wall defining a first branch passage between said central separating wall and said first side separating wall and defining a second branch passage between said central separating wall and said second side separating wall, said first side separating wall having a first opening which interconnects said first side passage to said first branch passage, said second side separating wall having a second opening which interconnects said second side passage to said second branch passage;

a fuel injector arranged in said central passage upstream of said central separating wall; and,

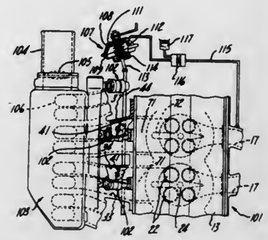
a control valve arranged in said central passage upstream of said fuel injector and opening when the engine is operating in a predetermined operating state.

4,550,700

INTAKE SYSTEM FOR MULTI-INTAKE VALVE TYPE ENGINE

Takumori Yoshida, Iwata; Akira Yamada, Shizuoka, and Sadayuki Shinmura, Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Continuation of Ser. No. 332,825, Dec. 21, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,815
Claims priority, application Japan, Dec. 22, 1980, 55-182223
Int. Cl.⁴ F02M *35/10*
U.S. Cl. 123—432 **24 Claims**



1. In an induction system for an internal combustion engine of the type having a pair of intake ports for providing an air charge to a common chamber of the engine, first and second intake passages each independently serving a respective one of said intake ports, throttle valve means for controlling the flow through said induction system, the improvement comprising an interconnecting passage extending transversely between said first intake passage and the second intake passage downstream of said throttle valve means and upstream of said intake ports and a fuel injection nozzle discharging against a transverse wall that defines a portion of said interconnecting passage in a downstream direction relative to the interconnected portion of said first and second intake passages.

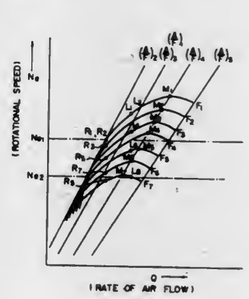
11. In an induction system for an internal combustion engine of the type having a pair of intake ports for providing a charge to a common chamber of the engine, separate intake passages each independently serving a respective one of said intake ports, throttle valve means for controlling the flow through said intake passage so that an idle charge is delivered to said chamber through a first of said intake passages and wide open load charge requirements are supplied through both of said induction passages, the improvement comprising an interconnecting passage extending between said first intake passage and the second intake passage in proximity to said intake ports downstream of said throttle valve means and upstream of said intake ports for communicating said intake passages with each other regardless of the position of said throttle valve means for flow to said chamber through each of said intake ports regardless of the position of said throttle valve means.

4,550,701

AIR-FUEL RATIO CONTROL IN AN INTERNAL COMBUSTION ENGINE

Atsushi Suzuki; Masakazu Ninomiya, both of Kariya; Katsuya Maeda, Obu, and Yutaka Kawashima, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 5, 1984, Ser. No. 597,098
Claims priority, application Japan, Apr. 8, 1983, 58-62669
Int. Cl.⁴ F02D *37/02*
U.S. Cl. 123—436 **8 Claims**



1. A method for controlling the air-fuel ratio in an internal combustion engine for a vehicle operable in either of an automatic constant speed control state and a non-automatic speed control state in which speed of said vehicle is controlled, respectively, to be constant or varied as commanded by an operator of said vehicle, said method comprising the steps of:

changing the amount of air supplied through a by-pass air supply path which by-passes the main air supply path to realize at least two different values of the air-fuel ratio in the vicinity of a base air-fuel ratio;

running the engine with said realized different values of the air-fuel ratio;

detecting at plural operation points the signals of parameters of the engine running state, including at least one of engine rotational speed and engine torque, under the running of the engine with said realized different values of the air-fuel ratio;

deciding whether the base air-fuel ratio is in the rich or in the lean side of the air-fuel ratio for optimum specific fuel consumption by comparing said signals detected at said plural operation points; and

correcting the air-fuel ratio on the basis of the result of said decision;

a different number of operation points for detecting said signals of said parameters of the engine running state being selected for said automatic constant speed control state and for said non-automatic speed control state.

4,550,702

SPILL CONTROL SYSTEM FOR DISTRIBUTOR PUMP

Ilija Djordjevic, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Oct. 5, 1984, Ser. No. 658,288
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—450 **28 Claims**

1. A fuel injection pump adapted to deliver discrete charges of pressurized fuel to the cylinders of an associated internal combustion engine comprising:

a housing;

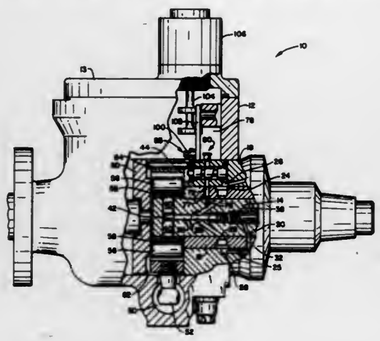
a rotor rotatably mounted within said housing and including a pump chamber for receiving charges of fuel, a set of reciprocable plungers mounted in said chamber for pressurizing the fuel charges, a fuel distributor passage communicating with said pump chamber for delivering charges of pressurized fuel to the associated engine, and a spill passage communicating with said pump chamber;

a cam ring operatively engageable with said plungers for

reciprocating said plungers upon rotation of said rotor to pressurize fuel charges received in said pump chamber, said cam ring being angularly adjustable relative to said housing to control the timing of reciprocation of said plungers;

spill passage means communicating with said spill passage to divert pressurized fuel into the interior of said housing;

spill valve means to variably control the passage of fuel from said spill passage means into said housing interior, said



spill valve means including a valve member which is axially positionable for selectively closing the spill passage means to the passage of fuel therethrough and angularly adjustable to variably control the quantity of fuel diverted into the housing interior; and

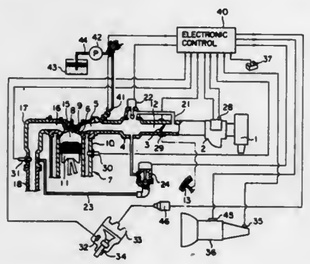
valve actuator means actuable to control the axial position of said valve member, said valve actuator means being angularly adjustable with said cam ring for regulating the timing of the actuator means in accordance with the reciprocation of the plungers;

4,550,703

CONTINOUS METHOD OF FUEL INJECTION IN ELECTRONICALLY CONTROLLED ENGINE

Takayuki Ootuka, and Toshiyuki Murai, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 11, 1982, Ser. No. 357,148
Claims priority, application Japan, Sep. 28, 1981, 56-152045
Int. Cl.⁴ F02M *51/00*
U.S. Cl. 123—478 **10 Claims**



1. A method for fuel injection in a vehicle with an electronically controlled engine having a calculated fuel injection amount and a minimum fuel injection amount, the minimum fuel injection amount, in the absence of fuel cut-off, being supplied to the engine when the calculated fuel injection amount is less than the minimum fuel injection amount, said method comprising the steps of:

setting the minimum fuel injection amount to a first predetermined value; and

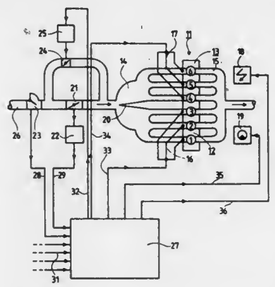
setting the minimum fuel injection amount to a second predetermined value higher than said first predetermined value whenever driveability of the vehicle is adversely affected by the setting of the minimum fuel injection amount to said first predetermined value.

4,550,704

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE HAVING DISCONNECTABLE GROUPS OF CYLINDERS

Hans Barho, and Helmut Denz, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,879
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313038
Int. Cl.⁴ F02D *17/02*
U.S. Cl. 123—481 **21 Claims**



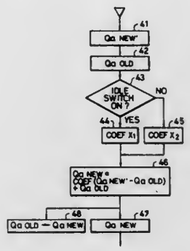
1. A multi-cylinder internal combustion engine, particularly for use in motor vehicles, having its cylinders divided into a plurality of groups each including at least one cylinder, at least one of said groups being disconnectable in dependence on the occurrence of at least one operational parameter of the engine, comprising an electrically controlled disconnecting means for disconnecting said one group, monitoring means for monitoring the operational parameters of the engine, control means controlled by said monitoring means to activate said disconnecting device when a predetermined value of the operational parameter is detected, said monitoring means including a device for measuring the engine load and a device for measuring the rotary speed of the engine, said control means including an ignition angle adjusting device and a fuel metering device, means for generating a threshold value depending on the measured engine load and the rotary speed, said threshold value generating means being coupled to said disconnecting means so as to inactivate the same when the threshold value is exceeded, a second means for generating a second threshold depending on the engine load and the rotary speed of the engine, the second threshold being larger than the first-mentioned threshold and being coupled to said disconnecting means so as to disconnect at least one of the cylinder groups in dependence on the second threshold value, and further comprising means for enriching the fuel mixture by a correction factor and means for exchanging the ignition angle prior to the changeover of the cylinder groups so that within a predetermined time interval a maximum torque of the engine is generated.

4,550,705

ELECTRICAL FUEL INJECTOR

Masami Nagano; Takeshi Atago, and Tatsuya Yoshida, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1983, Ser. No. 471,432
Claims priority, application Japan, Mar. 3, 1982, 57-32362
Int. Cl.⁴ F02D *5/00*
U.S. Cl. 123—488 **7 Claims**



1. In an electrical fuel injector comprising:

an injection valve for injecting fuel into an internal combustion engine; an air flow meter for detecting an amount of intake air fed to said internal combustion engine through a throttle valve; a revolution counter for measuring the rate of rotations of said internal combustion engine; and an electronic circuit for determining an opening and closing time of said injection valve based on output signals from both said air flow meter and said revolution counter,

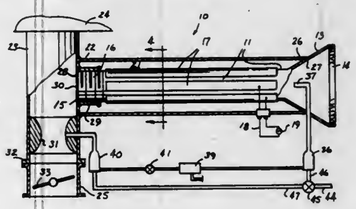
the improvement in that there is provided a first digital filter which filters an input signal with a first coefficient when an opening degree of said throttle valve is smaller than a predetermined value and filters the input signal with a second coefficient larger than said first coefficient when the opening degree of said throttle valve is larger than the predetermined value, and the output signal from said air flow meter is applied to said electronic circuit as the input signal through said first digital filter, whereby said digital filter has a larger effect with said first coefficient than with said second coefficient.

4,550,706

FUEL VAPORIZER

Paul H. Hoffman, Hialeah, Fla., assignor to Hoffman-Lewis, Ltd., Coral Gables, Fla.

Continuation of Ser. No. 534,410, Sep. 21, 1983, abandoned. This application Dec. 19, 1984, Ser. No. 683,468
Int. Cl.⁴ F02M *31/00*
U.S. Cl. 123—549 **11 Claims**



1. A fuel vaporizer for an internal combustion engine, comprising:

carburetor means for regulating the supply of air and fuel mixture to the engine, said carburetor means including a tubular housing for flow of a primary air stream to the engine;

fuel atomizing means for atomizing liquid fuel supplied thereto;

fuel vaporizing means connected between the fuel atomizing means and the carburetor means to vaporize the atomized fuel and to supply air and vaporized fuel to the primary air stream, said fuel vaporizer means comprising a vaporizer chamber having an inlet end for receiving air and atomized fuel and an outlet end for delivery of air and vaporized fuel to the carburetor means, and heating means operatively associated with the vaporizer chamber to heat the air and atomized fuel flowing therethrough to dry and vaporize the atomized fuel; and

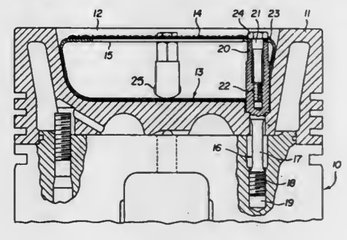
supplemental vaporized fuel supply means connected with the carburetor means to supply vaporized fuel directly to the carburetor means during start up and acceleration of the engine.

4,550,707

METHOD FOR IMPROVING THE PERFORMANCE OF AN INTERNAL COMBUSTION ENGINE, DEVICE FOR IMPLEMENTING THE METHOD, AND INTERNAL COMBUSTION ENGINE EQUIPPED WITH SAID DEVICE

Alain Kervagoret, 12 bis, rue de Modenheim, 68390 Sausheim, France

Filed Aug. 17, 1984, Ser. No. 641,980
Claims priority, application France, Sep. 7, 1983, 83 14352
Int. Cl.⁴ F02F *3/02*
U.S. Cl. 123—669 **13 Claims**



1. Method for improving the performance of an internal combustion engine of relatively low compression ratio and having at least one piston, the head of which defines a cavity, wherein within the cavity of the head (**11**) of the piston there is provided a device (**13, 14**) for storing heat energy during the combustion phase and for releasing the stored heat into the intake air during the intake and compression phase, wherein said device includes a bulbous casing, and said device (**13**) is attached within the cavity (**12**) of the head (**11**) of the piston (**10**), with a space between the concave interior walls of the cavity (**12**) of the piston head and the convex exterior walls of the casing (**13**) for permitting the free expansion of the heat storing device and decreasing the heat exchange with the piston, wherein said device has mesh conductive to thermal energy exchange attached above said casing over an upwardly facing opening thereat, said mesh creating a turbulence downstream and providing an increased heat exchange surface.

4,550,708

ABRASIVE CUTTING WHEEL FOR CUTTING ROCK-LIKE MATERIAL

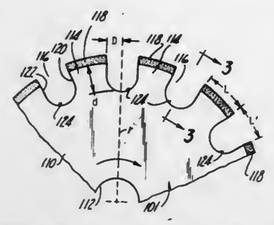
Carl F. Roemmele, Leawood, Kans., and Joseph D. Ekland, Birmingham, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Jul. 6, 1983, Ser. No. 510,439
Int. Cl.⁴ B28D *1/04*
U.S. Cl. 125—15 **23 Claims**

1. A rotatable cutting wheel for wet cutting of rock or rock-like material, said cutting wheel comprising:

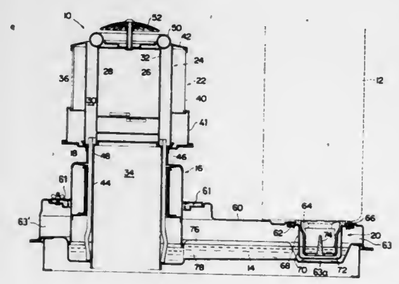
a circular generally disc-shaped drive core having a plurality of circumferentially extending and circumferentially-spaced support surfaces, each of said support surfaces

having affixed thereto for substantially the full circumferential length thereof an abrasive cutting material means capable of cutting an abradable rock or rock-like material;
said core having a plurality of generally U-shaped gullets, each said U-shaped gullet therein being defined by the space between each adjacent pair of said support surfaces, said U-shaped gullet extending between a closed gullet end located a substantial radial distance inwardly of said support surfaces and an open gullet end being in communication with the space between said adjacent pair of said support surfaces, the circumferential width of said open gullet and being generally coextensive with the circumferential length of said space;
the ratio of said circumferential length of each said adjacent



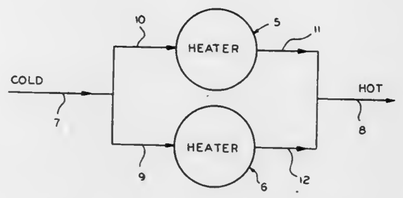
pair of said support surfaces to the circumferential length of said space being in the range of approximately 0.75 to 1.20, the total circumferential length of said support surfaces being approximately equal to the total circumferential width of said U-shaped gullets at the open end thereof, and the radial distance between the open and closed ends of each said U-shaped gullet closely approximating the circumferential width of each said open gullet end;
whereby each said U-shaped gullet and its respective space between adjacent support surfaces cooperate to define a fluid passageway having a substantial volumetric capacity through which a fluid coolant can be circulated in substantial amounts to the cutting area, can cool the drive core in the area immediately adjacent the abrasive cutting material means, and can carry away swarf therefrom.

4,550,709
CONSTRUCTION FOR PREVENTING OIL LEAKAGE IN OIL BURNER
Kazuharu Nakamura; Yoshimasa Tsuboi, and Akinobu Kondo, all of Nagoya, Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Jul. 23, 1984, Ser. No. 633,322
Claims priority, application Japan, Jul. 21, 1983, 58-113466[U]
Int. Cl.⁴ F24C *5/04*
U.S. Cl. 126—96 **6 Claims**



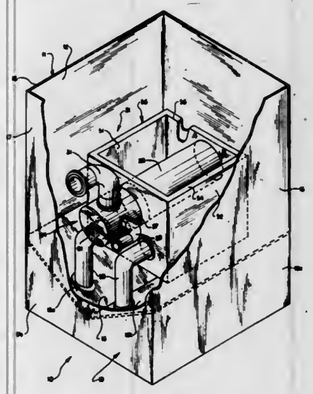
1. A construction for preventing oil leakage in an oil burner of the type that a cartridge-type oil tank having a valve-operated cap is invertedly supported on an auxiliary tank provided in said oil burner through an oil tank supporting means provided at the upper wall of said auxiliary tank and fuel oil is fed from said oil tank through said auxiliary tank to a combustion mechanism of said oil burner, comprising:
an oil reservoir mounted through said oil tank supporting means of said auxiliary tank to said auxiliary tank to surround said valve-operated cap of said oil tank; said oil reservoir being formed at the side portion thereof facing said combustion mechanism of said oil burner with a through-hole;
said auxiliary tank having a volume determined to allow an oil level in said auxiliary tank obtained when said oil burner falls down in the forward or rearward direction to be substantially lower than said through-hole of said oil reservoir and allow an oil level in said auxiliary tank obtained when said oil burner falls down in the lateral direction to be substantially lower than said through-hole of said oil reservoir, so that said through-hole of said oil reservoir may be constantly above the oil level when said oil burner falls in any direction;
said oil tank supporting means being oil-sealedly mounted with respect to said auxiliary tank.

4,550,710
MODULAR WATER HEATER CONNECTION APPARATUS AND METHOD FOR FABRICATING SAME
William E. McDonald, II, 1560 Cloverdale, Highland Park, Ill. 60035
Filed Sep. 13, 1982, Ser. No. 416,951
Int. Cl.⁴ F24H *1/00*
U.S. Cl. 126—362 **6 Claims**



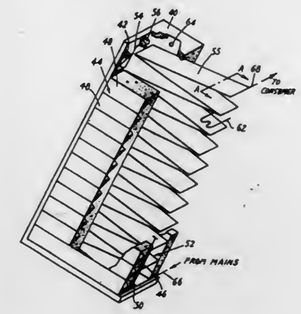
1. A modular water heater connection apparatus for integrally joining the cold water input and hot water output bungs respectively of a plurality of conventional water heaters arranged in tandem, said apparatus comprising:
low-profile cold water connection means including single cold water circuit input means for directing substantially cold water from a single input source to said apparatus and a plurality of cold water heater input means operably connected at their first ends to said cold water circuit input means for diverting cold water from said circuit input means to each of the cold water input bungs possessed by each of said tandem water heaters respectively;
each of said cold water heater input means operably connected at their second ends to each of said respective cold water input bungs;
low-profile hot water connection means including a single hot water circuit output means for directing water heated by each of said water heaters to a single output destination and a plurality of hot water heater output means operably connected at their first ends to said hot water circuit output means and at their second ends to each of said respective hot water output bungs to transfer said heated water from each of said water heaters to said single output destination;
one or more of said cold water connection means and hot water connection means including flow stoppage means for closing off the flow of water therethrough for purposes of servicing one or more of said plurality of heaters;
said low-profile cold and hot water connection means being connected to said respective bungs by bung connection means, and to said respective circuit input and output means by circuit attachment means;
said apparatus further including hot water segregation means for isolating the entire position of said hot water connection means to preclude inadvertent contact therewith;
water flow balancing means for equalizing the flow of cold water into and hot water out of each of said tandem water heaters;
said water flow balancing means including said cold water circuit input means being equidistantly positioned between each of said plurality of cold water heater input means; and said hot water circuit output means being equidistantly positioned between each of said plurality of hot water heater output means; and
said equidistant positioning of said cold and hot water circuit input and output means serving to equalize and balance flow through each of said heater input and output means respectively.

4,550,711
PULSE COMBUSTION DEEP FAT FRYER
James C. Griffiths, Cleveland, Ohio, assignor to Gas Research Institute, Chicago, Ill.
Filed Dec. 9, 1983, Ser. No. 559,943
Int. Cl.⁴ A47J *27/00*
U.S. Cl. 126—391 **8 Claims**



1. A deep fat fryer comprising an open top vessel for containing a quantity of cooking oil and a heater unit disposed within the vessel and adapted to be substantially immersed in the oil, said heater unit including a pulse combustion burner and a heat exchanger arranged to receive combustion products from the burner and deliver such products to an exhaust, the heat exchanger including a plurality of pairs of substantially flat plates extending substantially vertically in the vessel and forming relatively narrow passages having a height substantially greater than their narrow width dimension, said narrow passages being adapted to receive the combustion products of the burner, said pairs of plates being adapted to be in thermal contact with the surrounding oil and providing heat exchange between the combustion products and the oil, said plates being adapted to induce relatively strong convection currents in the oil to improve the efficiency of the heater unit.

4,550,712
SOLAR WATER HEATING APPARATUS AND SOLAR CONCENTRATOR USEFUL THEREWITH
Zvi Moravnik, Hadera, Israel, assignor to Solar Power Laboratories, Ltd., Hadera, Israel
Continuation-in-part of Ser. No. 395,981, Jul. 7, 1982, Pat. No. 4,471,763. This application Jun. 28, 1983, Ser. No. 508,535
Claims priority, application Israel, Jun. 29, 1982, 66166
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—439 **10 Claims**

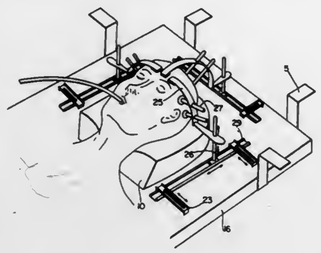


1. Solar water heating apparatus comprising:
a housing;
means disposed in the housing for receiving incident solar energy and for heating a first fluid thereby and comprising a non-focusing solar energy concentrator comprising:
a solar energy absorbing plate defining first and second parallel back-to-back solar energy absorbing surfaces;
solar energy transmissive material disposed adjacent said first and second parallel absorbing surfaces, said solar energy transmissive material defining first and second incident surfaces and also defining first and second reflecting surfaces operative to reflect radiation incident at said first and second incident surfaces and having an index of refraction and a configuration selected to provide total internal reflection at said first and second incident surfaces of radiation incident on said incident surfaces within a predetermined angular range of incident radiation relative to said first and second absorbing surfaces;
heat exchanger means disposed in said housing for contacting said heated first fluid and being operative to heat a second fluid; and
means for providing circulation of said first fluid through said receiving and heating means and in thermal contact with said heat exchanger means, and
wherein said first fluid is maintained at atmospheric pressure.

4,550,713
METHOD AND APPARATUS FOR OPPOSING DEFORMITY, DISPLACEMENT, AND EXPULSION OF THE OCULAR TISSUES DURING OPEN EYE SURGERY
Frederic E. Hyman, 40 E. 9th St., New York, N.Y. 10003
Filed Mar. 10, 1983, Ser. No. 474,812
Int. Cl.⁴ A61B *17/00*
U.S. Cl. 128—1 R **54 Claims**

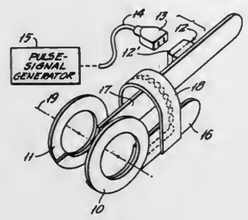
1. A method for opposing deformity, displacement, and expulsion of ocular tissues during eye surgery of the types in which a cut is present through the ocular wall comprising the steps of:
(a) generating an air pressure higher than ambient atmospheric pressure in a space outside the eye that bears upon a designated surgical field;

(b) concurrent with step (a), maintaining those surfaces of the eye that lie outside the border of said designated surgical field at ambient atmospheric pressure;



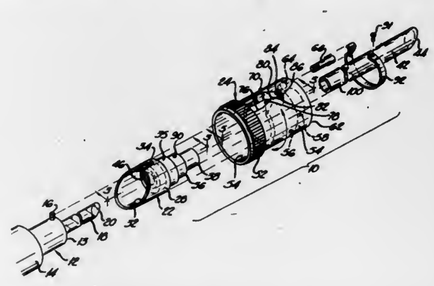
(c) concurrent with steps (a) and (b), stabilizing the eye against the applied pressure; and
(d) concurrent with steps (a), (b), and (c), providing access of the surgeon to the designated surgical field.

4,550,714
ELECTROMAGNETIC COIL INSERT FOR AN ORTHOPEDIC CAST OR THE LIKE
Roger J. Talish, Fairfield, and Victor F. Banko, Dover, both of N.J., assignors to Electro-Biology, Inc., Fairfield, N.J.
Filed Mar. 9, 1983, Ser. No. 473,801
Int. Cl.[4] A61N *1/40*
U.S. Cl. 128—1.5 **19 Claims**



1. An electromagnetic bodytreatment device for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising, as an article of manufacture, an insert for an orthopedic cast or the like to enclose an afflicted body-member region and an adjacent unafflicted body-member region, said insert comprising a stiffly flexible elongate strip of magnetically transparent material, a single multiturn electrical coil of initially generally flat annular configuration and fixed to one side of said strip, with said strip extending in at least one generally radially outward direction from said coil and to a longitudinally offset location removed from said coil, said strip being elongate to the extent of at least the coil diameter and thus sufficiently elongate to enable a stabilizing wrapped application thereof to the unafflicted body-member region while positioning the axis of the coil for intersection with the afflicted region, said coil having leads mounted to said strip and extending to said offset location, the annular configuration of said coil establishing a circular central region within which magnetic flux may be concentrated upon application of an electrical signal via said leads, and means including an externally accessible cable connector carried by said strip at said location and connected to said leads for electrically exciting said coil with a therapeutically beneficial electrical signal, whereby in the course of conventionally applying a cast for orthopedic support of an afflicted limb or other body region, said insert may be embedded in the cast in longitudinal overlap of said coil and strip to leave externally exposed essentially only said cable connector.

4,550,715
ENDOSCOPE INSERTION CANNULA ASSEMBLY
John A. Santangelo, East Freetown, and Michael DiGiantommaso, Brockton, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Oct. 24, 1983, Ser. No. 544,680
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—4 **17 Claims**

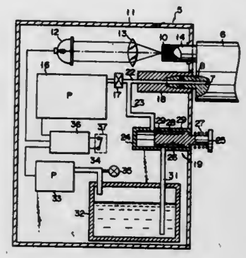


1. A cannula assembly for inserting an endoscopy instrument through an opening into the body in a known orientation and for locking the instrument in that known orientation during use comprising:
means affixed to an endoscopy instrument for controlling rotational orientation of said endoscopy instrument;
guide means for receiving an endoscopy instrument and for operatively engaging said controlling means for placing said controlling means in a desired rotational orientation as said instrument is advanced into said guide means and for holding said desired orientation as said instrument advances further into said guide means regardless of the rotational orientation of said instrument when it is first inserted into said guide means;
spring biased locking means for restraining said controlling means in a desired axial position including a cam surface biased in interfering relationship with said controlling means and adapted to move out of the way as said controlling means advances into said guide means and to return towards its original biased position as said controlling means reaches its desired axial position;
to thereby position said instrument in its desired rotational orientation and to hold said instrument in its desired rotational and axial position during use.

4,550,716
LIQUID SUPPLYING DEVICE FOR ENDOSCOPE
Kunio Kinoshita, Tokyo, Japan, assignor to Olympus Optical Company, Tokyo, Japan
Filed Apr. 25, 1984, Ser. No. 603,695
Claims priority, application Japan, Apr. 30, 1983, 58-77327
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—6 **12 Claims**

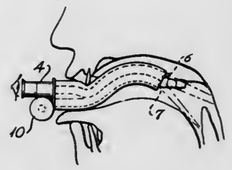
1. A liquid supplying device for an endoscope which includes a control section, an insertion section extended from the control section and having a nozzle at its distal end, a light guide cable extended from the control section and having a connector at its distal end, an air supply channel extending in the endoscope and having one end communicating with the nozzle and the other end opening to the connector, and a light guide extending in the endoscope from the distal end of the insertion section to the connector; said liquid supplying device comprising:
a housing with a connecting portion to which the connector of the endoscope is connected;

air and liquid supplying means, arranged inside the housing, for supplying liquid and air into the air supply channel from the other end of the air supply channel;
a light source which is arranged inside the housing and



which emits light which becomes incident on the light guide from that end of the light guide which is near the connector; and
regulating means for preventing the air and liquid supplying means from supplying liquid while the light source is ON.

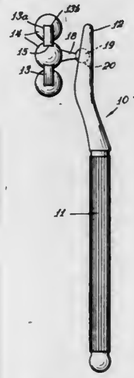
4,550,717
THROAT EXAMINATION DEVICE
Karl Berger, 2357 Woodcrest Dr., Johnstown, Pa. 15905
Filed Apr. 9, 1984, Ser. No. 598,064
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—16 **13 Claims**



1. A device for use by a physician in examining the throat of a patient, and comprising:
a source of light;
means for directing said light to particular areas of the throat for illumination thereof and having a light emitting end;
means for directing an image of said particular areas of the throat to a viewing lens, said image direction means having an image receiving end; and
means for housing said lens, said light directing means, and said image directing means and being configured so that, in use, a portion of said housing is positionable within an alert patient's mouth without causing gagging of the patient, said physician observing said particular areas through said viewing lens which is positioned outside of said mouth and via said image directing means extending into said mouth, said housing portion positioning said light emitting end and said image receiving end above the tongue and adjacent the palate of said patient.

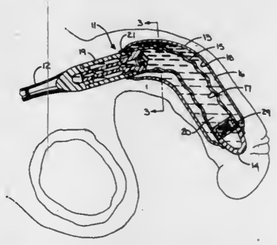
4,550,718
FACIAL MASSAGE DEVICE
Charles Kaeser, Pully, Switzerland, assignor to P. F. Cosmetique, Paris, France
Filed Mar. 21, 1983, Ser. No. 477,334
Claims priority, application France, Mar. 22, 1982, 82 4824
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—57 **16 Claims**

1. A facial massage device comprising a support and at least one rotary massage ball mounted on said support, characterized by the fact that the support is composed of a handle (11) and of a plate (13) articulated on said handle, and by the fact that the plate comprises at least one circular opening (15) so arranged that said rotary ball (14) is retained in said opening while being capable of turning freely in all directions around it, characterized by the fact that the plate is connected to the handle by means of ball joint (19) housed in a suitable socket (20) in the handle, and further characterized by the fact that



said plate (13) is of circular shape and comprises a circular opening (16) within which a central ball (17) is housed, said ball being connected by at least one rod (18) to the ball joint (19), in such a manner that the plate is articulated around the central ball and that the assembly consisting of the plate and central ball is articulated on the swivel joint which is connected to the handle.

4,550,719
IMPLANTABLE PENILE ERECTILE SYSTEM
Roy P. Finney, Tampa, Fla.; Robert E. Trick, and Henry W. Lynch, both of Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.
PCT No. PCT(US83/00196, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983, PCT Pub. No. WO84/03038, PCT Pub. Date Aug. 16, 1984
Continuation-in-part of Ser. No. 289,879, Aug. 4, 1981, Pat. No. 4,399,811. This PCT application Feb. 14, 1983, Ser. No. 571,902
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 **3 Claims**



1. In a penile erectile system including a penile implant having an elongated unitary body with a tip at one end and an anchoring stem at the other end and including an intermediate inner chamber with a radially disposed outer chamber, the inner chamber being non-distensible so that when pressurized and filled with fluid it becomes rigid; a passage providing communication between said inner and outer chambers; pump means within the body for transferring fluid from the outer chamber into the inner chamber to pressurize it and make it rigid and a control valve for controlling the pressure in said

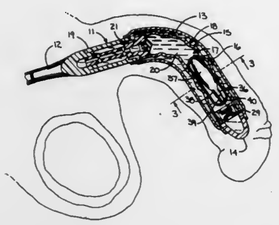
inner chamber, the improvement which comprises an improved control valve located adjacent the tip, said valve including a housing having an inlet communicating with the inner chamber and an outlet communicating with the outer chamber, a sealing member for the inlet in the housing and a precalibrated spring positioned in the housing, between the sealing member and the outlet, said spring normally holding the sealing member against the inlet, said valve automatically opening when the pressure in the inner chamber exceeds the force of the precalibrated spring.

4,550,720

CAPACITANCE DEVICE FOR MEDICAL IMPLANT

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Nov. 15, 1983, Ser. No. 551,876
Int. Cl.⁴ A61F *5/00*
U.S. Cl. 128—79 **7 Claims**



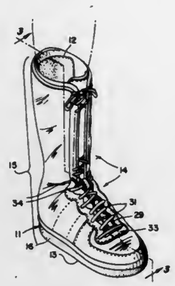
1. In a medical implant having a hydraulic system including a pressure chamber in which hydraulic pressure must be maintained at a working level, the improvement which comprises capacitance means for compensating for hydraulic fluid loss from the pressure chamber and resultant pressure drops, said capacitance means comprising an impermeable bladder located within said pressure chamber, said bladder being elastic and filled with gas under pressure so that it expands to compensate for any minor hydraulic fluid loss from the pressure chamber.

4,550,721

FOOT SUPPORT

Lorraine M. Michel, 613 S. Walter Reed Dr., Apartment 611C, Arlington, Va. 22204

Filed Jul. 1, 1983, Ser. No. 510,318
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—80 E **16 Claims**



1. A support for maintaining a wearer's foot at approximately a right angle with the wearer's leg comprising (a) a shoe having a sole and an upper which comprises a posterior aspect and which covers a portion of the leg and (b) a brace having a vertical part disposed adjacent to said posterior aspect and a horizontal part adjacent to said sole, wherein

said brace is substantially rigid and fixedly connected to said shoe,

a surface of said brace which is adjacent the foot is provided with a means for releasably engaging the foot or an article of wearing apparel covering the foot,

said upper further comprises an elastic support connected to a first portion of said upper which is adjacent to the metatarsus or phalanges of the foot, and connected to a second portion of said upper which is adjacent to the leg,

a portion of said upper adjacent to the leg is divided substantially vertically to form two sides and said sides are releasably connected with lacing, and

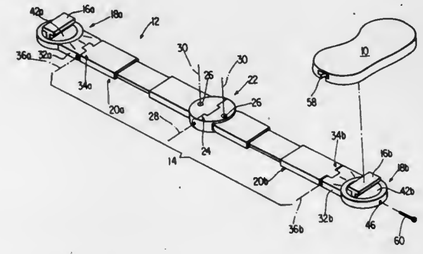
said elastic support is disposed underneath said lacing.

4,550,722

ORTHOPEDIC FOOT SPLINT WITH SWIVEL AND STOP

Robert J. Kurtz, New York, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 531,583, Sep. 13, 1983, Pat. No. 4,481,940, which is a continuation of Ser. No. 358,531, Mar. 16, 1982, abandoned. This application Dec. 2, 1983, Ser. No. 557,215
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—80 A **10 Claims**



1. An orthpedic foot splint which is attached to the shoes of a user comprising:

a pair of shoe engaging plates, each said plate having a longitudinal axis approximately parallel to the longitudinal axis of the shoe which is attachable thereto;

an elongate connecting means for horizontally interconnecting said pair of shoe engaging plates, said connecting means including

(a) two elongate sections, one end of each said elongate section being connected to a respective shoe engaging plate,

(b) longitudinal pivot means comprising the connection between at least one elongate section and shoe engaging plate, and

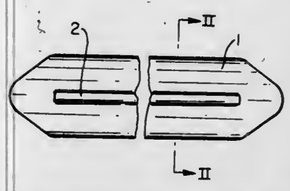
(c) a central joint means including a longitudinal hinge to permit said sections to move with respect to each other in a plane perpendicular to the axis of said hinge, pivot means disposed perpendicular to said longitudinal hinge for permitting angular movement of one of said elongate sections with respect to the other elongate section on an axis vertically disposed with respect to the axis of said longitudinal hinge, and a restricting means for preventing angular movement of one of said elongate sections beyond a predetermined angle with respect to the longitudinal axis of the other of said elongate sections whereby one shoe engaging plate is prevented from moving in front of the other shoe engaging plate while permitting the other shoe engaging plate to move in front of said one shoe engaging plate.

4,550,723

JOINING ELEMENT FOR FIXATION OF BONE TISSUES

Sergei I. Belykh, 2 Krestovsky pereulok, 4, kv. 66; Anatoly B. Davydov, ulitsa Krasny Kazanets, 19, korpus 1, kv. 28; Igor L. Kovalenko, ulitsa Chapaeva, 7, kv. 30; Lidia Y. Loktionova, ulitsa Skryabina, 25/1, korpus 2, kv. 49, all of Moscow; Anatoly D. Moschensky, Malakhovka, Bykovskoe shosse, 41, kv. 66, Moskovskaya oblast; Gely G. Pershin, Krivorozhskaya ulitsa, 9, kv. 62, Moscow; Grigory N. Pershin, ulitsa Ulbrikhta, 19/10, kv. 75, Moscow; Elena N. Padeiskaya, Lenisky prospekt, 13, kv. 24, Moscow; Lidia M. Polukhina, Alleya Zhemchugovoi, 3, korpus 1, kv. 2, Moscow; Nikolai I. Ochirov, Tashkentskaya ulitsa, 34, korpus 2, kv. 195, Moscow, and Jury I. Filippov, Zaraiskaya ulitsa, 41, kv. 55, Moscow, all of U.S.S.R.

Continuation of Ser. No. 416,320, Sep. 9, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 580,755
Claims priority, application U.S.S.R., Jan. 4, 1979, 2712921
The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.
Int. Cl.⁴ A61F *5/04, 1/00*
U.S. Cl. 128—92 B **4 Claims**



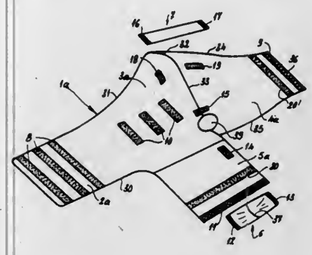
1. A joining element for fixation of bone tissues comprising on oblong solid provided with a recess having an insert in said recess, said insert comprising a biologically compatible polymer which is degraded and absorbed into the body, and from about 19 to about 29 weight percent of a physiologically active medicine based on the weight of said insert.

4,550,724

ORTHOPEDIC VEST FOR SUPPORT AND RESTRAINMENT IN THE TREATMENT OF SUBJECTS TO TRAUMA AND SURGERY OF THE SHOULDER, SCAPULAR ARCH AND UPPER LIMB

Mohamed Berrehail, Immeuble Royal, Les Doux-Alpes (Isere), France

PCT No. PCT/FR82/00071, § 371 Date Dec. 28, 1982, § 102(e) Date Dec. 28, 1982, PCT Pub. No. WO82/03767, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 14, 1982, Ser. No. 456,020
Claims priority, application France, Apr. 28, 1981, 81 08625; Dec. 14, 1981, 81 23781
Int. Cl.⁴ A61F *13/00, 5/40*
U.S. Cl. 128—133 **19 Claims**



1. An orthopedic vest for support and restraint of the shoulder, the scapular arch and the upper arm limb, comprising: three joined panels including a first panel having a back portion for restraint of the rear portion of the thorax, and extending laterally to a chest portion for the restraint of the front portion of the thorax, the front part of the shoulder, and the upper arm limb, said chest portion extending laterally to a second panel for the restraint of the rear part of the shoulder and the upper arm limb and for receiving at least one part of said first panel and keeping same in place, said chest portion being extended over a lower portion thereof by a third panel forming with said chest portion a rest for the forearm, said panels being provided on both faces thereof with closing and progressive fastening means allowing the vest to be used without difference on the left side and on the right side of the wearer by simple reversal thereof, said first and second panels acting to enclose the shoulder and upper arm limb and being further provided with an opening formed in a lower portion of said first and second panels for the passage of the forearm.

4,550,725

METHOD AND APPARATUS FOR ABSORBING MOISTURE

Marvin Wishman, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 260,473, May 4, 1981, , which is a continuation of Ser. No. 844,350, Oct. 21, 1977, abandoned. This application Nov. 30, 1983, Ser. No. 556,672
Int. Cl.⁴ A61F *13/00;* A61L *15/00*
U.S. Cl. 128—155 **6 Claims**



1. A bandage comprising:

a sterilizable compress in the form of a batt of nonwoven fabric including a plurality of staple polypropylene fibers, a first portion of said polypropylene fibers being unfused on a first side of said fabric and forming liquid-pervious unfused fiber facing means for engaging a liquid-bearing surface, and a second portion of said polypropylene fibers being fused on the opposite side of said fabric separated from the liquid-bearing surface by said first portion of said polypropylene fibers, whereby liquid absorbed by said liquid-pervious unfused fiber facing means migrates through the unfused fibers toward the fused fibers; and

a flexible backing sheet disposed adjacent to the opposite side of said batt of nonwoven fabric, wherein said backing sheet is formed of a flexible plastic material adhered on one side therof to the fused side of said nonwoven fabric and having adhesive means on said one side thereof for securing said bandage with said compress engaging a wound.

4,550,726

METHOD AND APPARATUS FOR DETECTION OF BREATHING GAS INTERRUPTIONS

James A. McEwen, 8371 No. 4 Rd., Richmond, British Columbia, Canada V6Y 2T7

Filed Jul. 15, 1982, Ser. No. 398,716
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—202.22 **19 Claims**

11. Apparatus for detecting an interruption in the supply of breathing gas to a patient, said apparatus comprising:

pressure sensing means for sensing the pressure in the patient's breathing gas during a breathing cycle of a patient and for producing an output signal representative thereof;

means for deriving breathing information including a reference breathing cycle waveform parameter from said output signal during a predetermined time period within at least one of said breathing cycles significant of a reference time period during which a normal breathing cycle of a patient occurs;

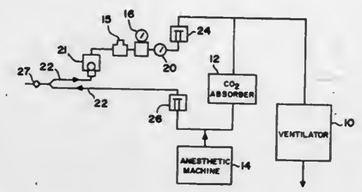
memory means for storing said reference breathing informa-

tion including said reference breathing cycle waveform parameter derived from said output signal during said reference time period;

means solely actuable by an operator for initiating the reference time period to cause storage of said reference breathing information including said reference breathing cycle waveform parameter;

means for deriving active breathing information including an active breathing cycle waveform parameter from said output signal after said reference time period;

signal comparison means for comparing:



active breathing information including said active breathing cycle waveform parameter derived from said output signal after said reference time period; with

said reference breathing information including said reference breathing cycle waveform parameter derived from said output signal; and,

alarm means for producing an alarm signal upon detection, by said comparison means, of a predetermined variation between said breathing cycle waveform parameters of said active breathing information and said reference breathing information.

4,550,727

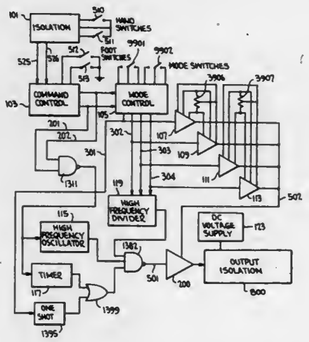
ELECTROSURGICAL GENERATOR

Frederick W. Rexroth, Dunedin, Fla., assignor to Medical Research Associates, Ltd. #2, Clearwater, Fla.

Continuation-in-part of Ser. No. 447,808, Dec. 8, 1982, Pat. No. 4,473,075. This application Jul. 8, 1983, Ser. No. 512,044

Int. Cl.[4] A61B *17/39*

U.S. Cl. 128—303.14 **9 Claims**



1. An electrosurgical generator for delivering a high frequency cutting signal to a surgical site comprising a human joint having a first impedance, without damaging softer tissue having a second lower impedance and surrounding said joint, said electrosurgical generator comprising:

actuable source means responsive to application of a control signal thereto for providing a high frequency cutting signal;

terminal means responsive to application of said high frequency cutting signal thereto for delivering the applied cutting signal to said surgical site;

selectively actuable control means for providing selective application of said control signal to said source means; and

impedance matching means interposed between said source means and said terminal means for establishing the effective output impedance of said source means, said effective output impedance being selected to be substantially equal to said first impedance and substantially higher than said second impedance such that said source means efficiently transfers energy in said cutting signal to said joint and transfers comparatively negligible energy to said surrounding tissue;

wherein said first impedance is in the range between 1100 and 1400 ohms;

wherein said impedance matching means is a transformer circuit having an output impedance value equal to said first impedance;

said electrosurgical generator further comprising:

rapid start means responsive to said control signal for applying said high frequency cutting signal to said terminal means continuously for a predetermined time interval; and

further means responsive to expiration of said predetermined time interval for cyclically and alternatively applying and inhibiting application of said high frequency cutting signal to said terminal means such that each cycle of application and inhibition is very much shorter than said predetermined time interval.

4,550,728

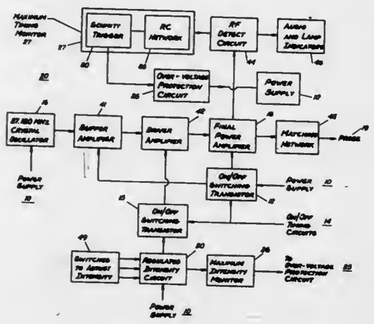
EPILATOR

Wayne Runyon, Ridgewood, and Larry Hower, New York, both of N.Y., assignors to L. P. Systems Corporation, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,456

Int. Cl.[4] A61B *17/41*

U.S. Cl. 128—303.18 **20 Claims**



1. Epilator apparatus for outputting epilator pulses to a germinative portion of hair, comprising:

an insulated bulbous probe for delivering radio frequency energy to the germinative portion of the hair;

radio frequency generating means for generating the radio frequency energy and applying the radio frequency energy output from said radio frequency generating means to said probe;

maximum intensity monitor circuit means coupled to said radio frequency generating means to determine the maximum amplitude of the radio frequency energy output;

timing monitor circuit means coupled to said radio frequency generating means to predetermine the maximum duration of the radio frequency energy output; and

power supply means for supplying power to said radio frequency generating means including overvoltage means responsive to said maximum timing monitor circuit means and said maximum intensity monitor circuit means for cutting off power to said radio frequency generating means when a voltage is reached by said intensity monitor

circuit means or said timing monitor circuit means in excess of a pre-set value.

4,550,729

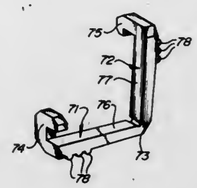
NON-METALLIC, BIO-COMPATIBLE HEMOSTATIC CLIPS WITH INTERLOCKING LATCH MEANS

Robert J. Cerwin, Pittstown, N.J.; Madhusudan Joshi, E. Aurora, N.Y.; John R. Menges, Woodbridge, N.J.; Robert W. Mericle, Lebanon, N.J., and William J. Zwaskis, Carteret, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 296,672, Aug. 27, 1981, Pat. No. 4,449,531. This application Mar. 5, 1984, Ser. No. 586,376

Int. Cl.[4] A61B *17/12, 17/00*

U.S. Cl. 128—325 **2 Claims**



1. A hemostatic clip comprising first and second leg members, each leg member having an elongated vessel clamping inner face in opposition to a vessel clamping inner face of the other leg member, said first leg member terminating at its distal end in a bend forming a hook member extending from said vessel clamping inner face, said second leg member terminating at its distal end in a complementary bend forming a complementary hook member for engagement by said hook member of said first leg member, resilient hinge means joining said first and second leg members at their proximal end, the hook member of the first leg member extending towards said resilient hinge means and the hook member of said second leg member extending at an angle to said resilient hinge means, said first and second leg members being rotatable about said hinge means from an open position wherein said legs diverge from one another to a closed position wherein said legs are substantially parallel, said hook members being disposed complementary with regard to one another to interlock the legs in the closed position and maintain said legs substantially parallel and to prevent lateral movement between the vessel clamping inner faces of the leg members when the clip is in the closed position.

4,550,730

FLEXIBLE MONOFILAMENT SURGICAL SUTURES COMPRISING POLY(POLYMETHYLENE TEREPHTHALATE, ISOPHTHALATE OR CYCLOHEXANE-1,4-DICARBOXYLATE-CO-DIMERATE)

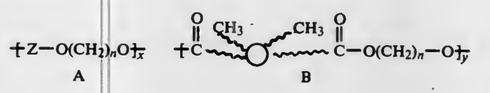
Shalaby W. Shalaby, Lebanon, and Edgar S. Schipper, Cranford, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 328,351, Dec. 7, 1981, abandoned. This application Nov. 28, 1983, Ser. No. 555,746

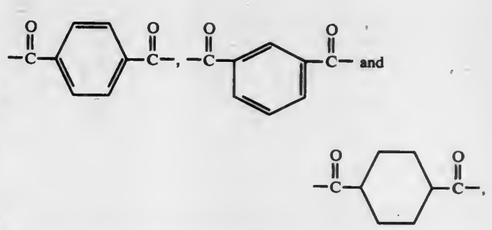
Int. Cl.[4] A61L *17/00;* **C08F** *34/00*

U.S. Cl. 128—335.5 **10 Claims**

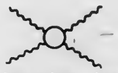
1. A drawn and oriented, flexible thermoplastic surgical filament, comprising a copolymer consisting essentially of a multiplicity of random recurring A [poly(polymethylene terephthalate, isophthalate or cyclohexane-1,4-dicarboxylate)] and B [poly(polymethylene dimerate)] units having the following general formula:



wherein—Z—represents a member selected from the group consisting of



n is 4 to 8, x and y are numbers having average values such that the A units comprise 87 to 92 mole percent, and the B units comprise 13 to 8 mole percent of the copolymer, and



denotes a branched hydrocarbon chain containing from 24 to 32 carbon atoms, in which a size 3/0 strand of said filament has the following combination of mechanical properties:

Knot strength—at least about 35,000 psi

Tensile strength—at least about 60,000 psi

Young's modulus—between about 80,000 and 280,000 psi

Elongation—from about 20% to 80%

4,550,731

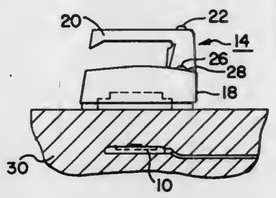
ACQUISITION CIRCUIT FOR CARDIAC PACER

William P. Batina, and Robert M. White, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Mar. 7, 1984, Ser. No. 587,262

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 PT **16 Claims**



1. A cardiac pacing system including an acquisition circuit for a cardiac pacer to indicate when an external telemetry head is adequately positioned over an electronic stimulator implanted in a human body for data transmission comprising:

oscillator means for producing an externally generated magnetic signal at a first predetermined frequency;

enabling means for generating a second signal at a second predetermined frequency which is lower than said magnetic signal;

drive means for combining said magnetic and second signals to provide a third signal containing said second signal enveloping said magnetic signal for each half cycle;

an implantable pacer including an inductor coil means tuned to said magnetic signal frequency for generating an induced signal in the presence of said magnetic signal at the same frequency to which said coil means in tuned, means for providing, to said induced signal, a phase-shift relative to said magnetic signal dependent upon the distance of said pacer to said telemetry head;

circuit means responsive to said magnetic signal and said

induced signal for generating pulse signals when said telemetry head is over said electronic stimulator; and

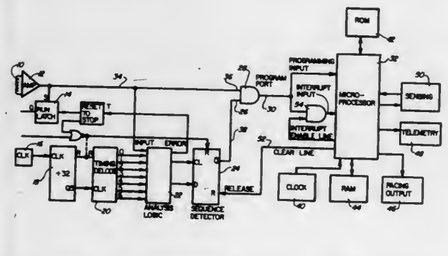
indicating means coupled to said circuit means for transmitting signals changing from pulsing to a steady on condition as the pulses from said circuit means increase when said telemetry head is moved closer to and adequately positioned over said implant to indicate that positive acquisition has been obtained.

4,550,732

SYSTEM AND PROCESS FOR ENABLING A PREDEFINED FUNCTION WITHIN AN IMPLANTED DEVICE

John R. Batty, Jr., and Chester D. Slocum, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Mar. 23, 1984, Ser. No. 592,412
Int. Cl.⁴ A61N *1/36*
U.S. Cl. 128—419 PG **24 Claims**



1. A system for enabling a predefined function within a device implanted in a patient from an external command unit, comprising:

an external command unit for generating external signals including a first access signal and a command signal;

an implanted device having means for receiving external signals, means for storing a temporarily operated selected routine to be generated in response to a command signal from the external command unit, means for decoding the first access signal to prevent access to the routine storing means unless the first access signal is received, and means for detecting the command signal to prevent access to the routine storing unless both the first access signal and the command signal are received, whereby the temporarily operated selected routine is generated only if both the first access signal and the command signal are received.

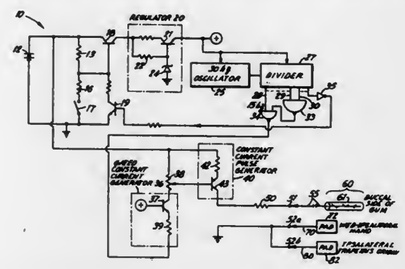
4,550,733

ELECTRONIC DENTAL ANALGESIA APPARATUS AND METHODOLOGY

Saul Liss, and Bernard S. Liss, both of Glen Rock, N.J., assignors to Pain Suppression Labs, Inc., Elmwood Park, N.J.

Filed Jan. 9, 1984, Ser. No. 569,476
Int. Cl.⁴ A61N *1/34*
U.S. Cl. 128—421 **3 Claims**

1. A method for suppressing pain otherwise associated with a dental procedure in a subject's oral cavity including the steps of securing a first electrode at the buccal side of the gum of a subject adjacent the work area, securing second ad third electrodes connected electrically in common to the web of the subject's ipsalateral hand and to the subject's ipsalateral trapezius origin, and supplying an electrical wave comprising a high



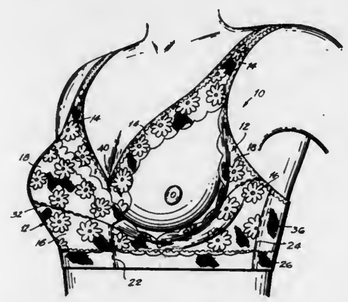
frequency amplitude modulation to said first, and said second and third electrodes.

4,550,734

BRASSIERE

Frank Porco, Bronx, N.Y., assignor to Exquisite Form Industries, Inc., New York, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,854
Int. Cl.⁴ A41C *3/04*
U.S. Cl. 128—460 **19 Claims**



1. A nursing brassiere having openable breast cups connected to side panels and having shoulder strap means, comprising: a plurality of panels forming each of said breast cups; and each said breast cup having at least one bust panel section, and a fold-over panel; said fold-over panel at least partially overlying said bust panel section; said fold-over panels being joined to each other between said breast cups, and to said brassiere along seam lines, and being free of any fastener and at least a portion of said fold-over panel being unattached to any other panel sections so as to enable said fold-over panel to be stretched or deformed along the unattached edge, using one hand to open said breast cup and expose a breast; whereby upon a breast cup being opened, said cup is maintained in the open position by the exposed breast.

4,550,735

ELECTRODE FOR AN ELECTROCARDIOGRAPH

Norio Akamatsu, 1-8, Higashiyoshinocho 2-Chome, Tokushima-shi, Tokushima, Japan (770), and Yasuhiro Toyosu, 15-5, Minamikomatsushimacho, Komatsushima-shi, Tokushima, Japan (773)

Continuation-in-part of Ser. No. 405,955, Jul. 29, 1982, Pat. No. 4,517,983. This application Sep. 13, 1983, Ser. No. 531,643
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—639 **6 Claims**

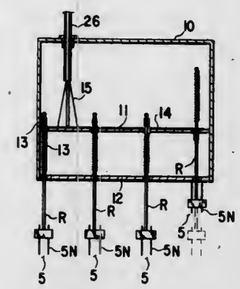
1. An electrode means for an electrocardiograph used for measuring potentials of a number of points of a body surface

near the heart and producing an isopotential map thereof, said electrode means comprising:

a plurality of rods movably mounted for reciprocal movement in the direction of the lengths thereof;

resilient members, one connected to each rod, for resiliently urging one end of each rod in the direction of its length toward the human body surface;

a pin contact set on said one end of each rod, each pin contact set having a plurality of parallel pin contacts, each pin contact being conductive at least on its surface and each pin contact being movably mounted for movement reciprocally in the direction of its length for directly contacting the human body surface;



further resilient members, one connected to each pin contact, for resiliently urging the end of each pin contact in the direction of its length toward the human body surface;

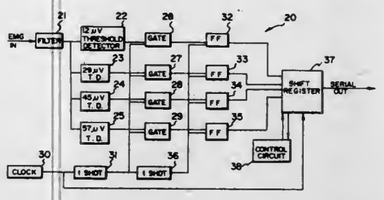
the pin contacts of each set being mounted in a small area close to one another on said rod and being mutually electrically connected in parallel, the space between the pin contacts of each pin contact set being much smaller than the space between the adjacent small areas of the pin contact sets, whereby the potential at a position on the body surface contacted by a pin contact set can be detected as long as one pin contact in the set is in good contact with the body, even if the other pin contacts in the set are in bad contact.

4,550,736

MOVEMENT ARTIFACT DETECTOR FOR SLEEP ANALYSIS

Roger Broughton, and Bernardo da Costa, both of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Oct. 10, 1984, Ser. No. 659,295
Claims priority, application Canada, Oct. 14, 1983, 439061
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—731 **5 Claims**



1. A movement detector for a sleep analyser comprising:

means for receiving an electroencephalogram (EEG) signal;

first monitoring means for detecting only components in the EEG signal having a real-time frequency greater than approximately 30 Hz and greater than a first predetermined amplitude;

a second monitoring means for detecting only components in the EEG signal having a real-time frequency greater than approximately 30 Hz and a second predetermined amplitude smaller than the first predetermined amplitude;

third monitoring means for detecting only components in the EEG signal having a real-time frequency less than approximately 1.2 Hz and a third predetermined amplitude at least an order in magnitude greater than the first predetermined amplitude; and

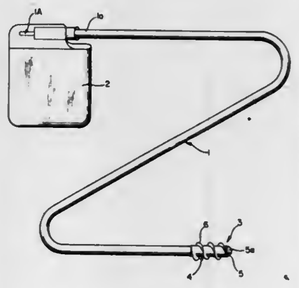
means connected to the first, second and third monitoring means for providing an output only if at least one of the predetermined components are detected.

4,550,737

INTRAVENOUSLY IMPLANTABLE ELECTRODE LEAD FOR USE WITH CARDIAC PACEMAKERS

Peter Osypka, Hornrain 31, D-7889 Grenzach-Wyhlen, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,389
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—785 **19 Claims**



1. An intravenously implantable electrode lead for transmission of stimuli from a cardiac pacemaker to a selected portion of a patient's heart, comprising elongated flexible conductor means for conducting the stimuli from the pacemaker to the selected portion of the heart, said conductor means having a first end portion adapted to be located nearer to and a second end portion adapted to be located distal from the pacemaker, and said second end portion being provided with a stimulation surface; and means for anchoring the distal end portion of the conductor means in the heart, including a screw consisting at least in part of yieldable soft material and surrounding the distal end portion of the conductor means behind the stimulation surface, said screw comprising a screw thread having a root adjacent to and a tip remote from the distal end portion of the conductor means, and said screw thread tapering in a direction from said root to said tip so that the latter is narrower than said root.

4,550,738

SANITARY ASHTRAY SYSTEM

Herman C. Estey, P.O. Box 3024, Longwood, Fla. 32750

Filed Mar. 26, 1984, Ser. No. 593,657
Int. Cl.⁴ A24F *19/14*
U.S. Cl. 131—236 **5 Claims**

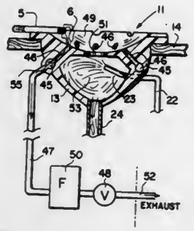
1. An ashtray system comprising:

a reservoir for holding a supply of water;

a plurality of ash receivers, each of said receivers comprising an ashtray and a water chamber, each said ashtray having groove means for holding cigarettes eahc said chamber being separate from and disposed below each said ashtray; each said ashtray having an opening in the lower portion thereof communicating with the corresponding one of said chambers, each said chamber having a drain attached to a lower portion thereof and a water jet disposed along one wall thereof;

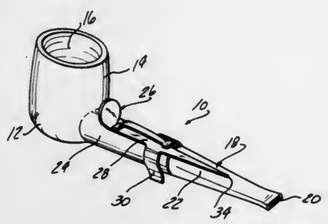
first pump means for drawing water from said reservoir;

a waterline connected from an output of said pump to said water jet of each of said ash receivers for supplying water under pressure to said jet;
a filter;



a drainline connected between said drain of each of said ash receivers and said filter; and
second pump means connected to said filter and to said reservoir for pumping filtered water from said filter into said reservoir.

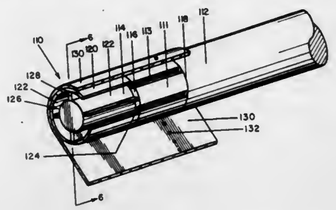
4,550,739
PIPE TAMPING TOOL
George H. Henderson, Lennon, Mich., assignor to G.E.M.M. Manufacturing, Vernon, Mich.
Filed May 23, 1983, Ser. No. 497,079
Int. Cl.[4] A24F *3/02, 9/10, 9/14*
U.S. Cl. 131—247 **5 Claims**



1. A pipe tamping tool, comprising:
(a) means for tamping tobacco within a bowl of a pipe;
(b) means for cleaning the interior of a bowl of a pipe; and
(c) means for retaining a bowl of a pipe in a vertical position when a pipe is placed upon a horizontal surface, the means for retaining comprising:
(1) an arcuate member having an arc less than 360° and which envelopes the stem of a pipe; and
(2) a leg formed at each free end of the arcuate member and which radiates outwardly therefrom.

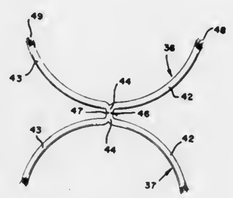
4,550,740
MOUTHPIECE FOR A CIGARETTE AND A CIGARETTE HAVING SAME
Tilford F. Riehl, Jr., Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Dec. 5, 1983, Ser. No. 558,414
Int. Cl.[4] A24D *3/04*
U.S. Cl. 131—336 **10 Claims**

1. A mouthpiece adapted to be attached to a cigarette tobacco column comprising:
a generally cylindrically shaped filter plug adapted to be coaxially located at one end of the cigarette tobacco column, the filter plug having substantially the same diameter as the tobacco column;
means defining a plurality of generally longitudinally extending grooves in the peripheral surface of the filter plug, the grooves extending from one end to the other end of the filter plug;
an air and smoke impermeable core member having at least one end of generally circular shape of a diameter smaller than the diameter of the filter plug coaxially disposed to the end of the filter plug opposite the tobacco column with the at least one circular end in juxtaposition with the end of the filter plug;



a generally cylindrically shaped hollow air and smoke impermeable sleeve having substantially the same diameter as the filter plug concentrically located over the core member and cooperating therewith to define an annular channel open at both of its ends; and,
means for supporting the sleeve member in position over the core member.

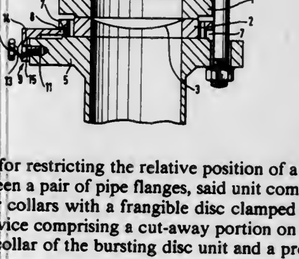
4,550,741
DEVICE FOR CLEANING TEETH TO PREVENT THE FORMATION OF PLAQUE
Mark D. Krag, Los Gatos, Calif., assignor to Dental Preventech, Inc., Santa Clara, Calif.
Continuation of Ser. No. 215,811, Dec. 12, 1980, abandoned.
This application Feb. 21, 1984, Ser. No. 580,331
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—89 **10 Claims**



1. A device for cleaning teeth, comprising:
(a) a pair of flexible limp strands of substantially equal length having corresponding end portions in close proximity; and
(b) means joining said corresponding end portions to complete a closed loop;
(c) said means joining said corresponding end portions comprising a pair of adhesive tabs between which said corresponding end portions are sandwiched.

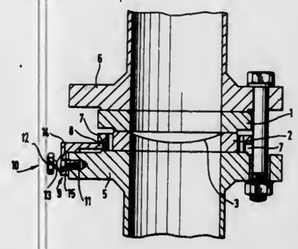
4,550,742
VARIABLE TENSIONING SYSTEM FOR SHEAR SEAL VALVES
Stanley D. Stearns, 15 Pine Creek La., Houston, Tex. 77055
Filed Jan. 23, 1984, Ser. No. 572,746
Int. Cl.[4] F17D *1/16*
U.S. Cl. 137—14 **17 Claims**

1. An instrumentation valve comprising:
(a) a first housing comprising a valve body having a first fluid flow passage therethrough cooperatively arranged relative to a valve seat;
(b) a valve element adapted to be seated against said valve seat and having first and second operative positions, one position opening said first fluid flow passage through said valve body for fluid flow and the other position closing said first fluid flow passage against fluid flow, said first housing enclosing said valve element therein against said valve seat;
(c) a second housing joined to said first housing, said second housing having a second fluid flow passage therethrough operatively connected with said first fluid flow passage;
(d) valve element bias means providing a relatively fixed force, said bias means bearing against said valve element to relatively urge said valve element into sealing engagement with said valve seat to enable fluid flow up to a minimum pressure to flow through said first fluid flow passage and past said valve seat without leakage;



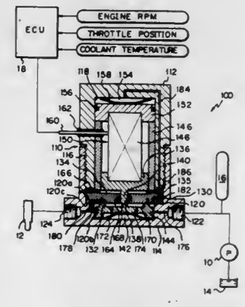
(e) fluid pressure responsive means in said second housing cooperatively arranged relative to said second fluid flow passage including a fluid pressure receiving chamber means adapted to be connected to the source of fluid to be switched by the valve, said chamber means further including coupling means extending from said chamber means to said valve element to provide a variable force to said valve element responsive to fluid pressure in said second fluid flow passage to variably load said valve element as a function of the pressure of the fluid to be switched; and
(f) said first and second fluid flow passages being cooperatively connected to permit fluid to flow from the source of fluid to be switched through the second fluid flow passage in said second housing and then through said first fluid flow passage in said first housing.

4,550,743
BURSTING DISC ORIENTATION DEVICE
Glenton P. McFarlane, Wembley, and Steven G. Swift, Chelmsford, both of England, assignors to Johnson Matthey plc, London, England
Filed Jun. 3, 1983, Ser. No. 500,690
Claims priority, application United Kingdom, Jun. 4, 1982, 8216294
Int. Cl.[4] F16K *13/04*
U.S. Cl. 137—68.1 **4 Claims**



1. A device for restricting the relative position of a bursting disc unit between a pair of pipe flanges, said unit comprising a pair of annular collars with a frangible disc clamped therebetween, said device comprising a cut-away portion on a predetermined one collar of the bursting disc unit and a projection, which is cooperable with the cut-away portion and which is attached to or forms a part of that pipe flange against which the said one collar is required to bear whereby the unit can be prevented from being located between the pipe flanges in other than a predetermined orientation in which the projection is located in the cut-away portion, the projection comprising an angle bracket having a first arm, which is securable to the periphery of the flange and a second arm, which is locatable radially inwardly with respect to the periphery and disposable in the cut-away portion in the collar.

4,550,744
PIEZOELECTRIC HYDRAULIC CONTROL VALVE
Toshihiko Igashira, Toyokawa; Yasuyuki Sakakibara, Nishio; Toru Yoshinaga; Seiko Abe, both of Okazaki, and Kazuhide Watanabe, Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Nov. 14, 1983, Ser. No. 551,693
Claims priority, application Japan, Nov. 16, 1982, 57-199706; Nov. 30, 1982, 57-210793
Int. Cl.[4] F16K *17/38*
U.S. Cl. 137—80 **24 Claims**



1. A piezoelectric hydraulic control valve, comprising:
(a) a housing having an axially-extending, closed-end central bore and having an inlet port for receiving pressurized fluid and an outlet port for delivering said pressurized fluid and a fluid passage communicating said inlet and said outlet port;
(b) a valve seat in said housing and extending across said passage;
(c) a movable valve member cooperating with said valve seat;
(d) a column of piezoelectric material received coaxially within said bore and having an upper and a lower end;
(e) means for applying a voltage to said piezoelectric column to induce axial expansion of said column;
(f) connecting means provided between said lower end of said column and said valve member for transmitting axial expansion of said column to said valve member to thereby open and close said fluid passage;
(g) a thermal expansible sleeve received within said bore concentrically with said column, having a coefficient of linear expansion equal to that of said piezoelectric column and having an upper and a lower end, said lower end of said sleeve being fixedly supported by said housing but other portions of said sleeve being loosely fitted within said bore to permit said upper end of said sleeve to displace axially in response to thermal expansion of said sleeve due to a variation in the ambient temperature; and
(h) movable supporting means, received movably within said bore and attached to the upper end of said sleeve, for maintaining said lower end of said column at a constant distance from said valve member regardless of ambient temperature variations by supporting said upper end of said piezoelectric column such that is displaces together

with said upper end of said sleeve, whereby expansion and contraction in one direction of said sleeve compensates for the expansion and contraction, due to ambient temperature variation, in the opposite direction of said piezoelectric column, thereby maintaining said constant distance.

4,550,745

DEVICE FOR DISCHARGING A MIXTURE OF TWO LIQUIDS

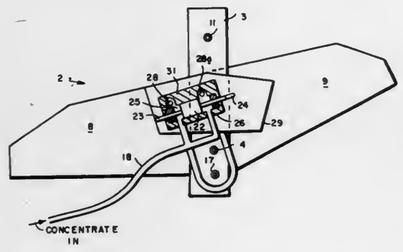
Michael G. Stratford, and Harry C. Spencer-Watkins, both of Tring, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Dec. 29, 1982, Ser. No. 454,417

Claims priority, application United Kingdom, Jan. 5, 1982, 8200131; Aug. 12, 1982, 8223186

Int. Cl.⁴ G05D *11/04*

U.S. Cl. 137—99.5 **2 Claims**



1. A device for replenishing an animal dipping tank with a mixture of first and second liquids, the device comprising, a first inlet for the first liquid; a second inlet for the second inlet, said second inlet comprising a pump having at least one cylinder, piston and piston rod; a two-compartment rocking pan mounted for reciprocal rocking movement between first and second positions about an axis located below the top of the compartments, the first position being such that a first said compartment receives the first liquid and the second position being such that the second said compartment receives the first liquid, said rocking movement being effected by the successive filling of the said two compartments and being such as to empty at least partially the compartment which has just been filled; the pump being mounted to rock in consonance with the rocking pan and the piston rod of said pump being struck against a stop by each reciprocation of the rocking pan such that a measured quantity of the second liquid is ejected from the pump into the said compartment about to receive the first liquid.

4,550,746

REGULATOR FOR MOUNTING ON THE OUTLET CONNECTION OF A GAS CYLINDER OR LIKE CONTAINER

Frits U. Hansen, Rungsted Kyst, and Ove Jensen, Helsingor, both of Denmark, assignors to Kosan Teknova A/S, Niva, Denmark

Filed Aug. 3, 1984, Ser. No. 637,712

Claims priority, application Denmark, Aug. 11, 1983, 3662/83

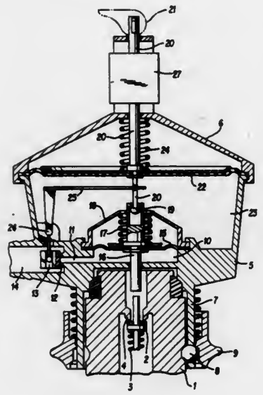
Int. Cl.⁴ F16K *17/00*

U.S. Cl. 137—461 **1 Claim**

1. A regulator adapted to be mounted on the outlet connection (1) of a gas cylinder; comprising a housing (5, 6) releasably connectable to said outlet connection and having a spring-biased spindle (16) for controlling a self-closing valve (2) in the outlet connection, and a spring-biased diaphragm (22) forming a wall of a low-pressure chamber (23) and adapted to control a valve (13) upstream of the outlet (14) of the regulator in response to the pressure in the low-pressure chamber,

said control spindle (16) being operatively coupled, via a connecting rod (20) movable in unison with the diaphragm (22), to a manually operable open/close-selector (21),

said selector (21) being pivotally supported on a bearing pin (35) secured in the top part (6) of the housing and oriented transversely of the connecting rod (20), and having a cam face (37) which is eccentric relative to the bearing pin (35) so that the selector may be pivoted between a first position in which the control spindle (16) is lifted clear of the valve (2) in the outlet connection against the force of the biasing spring (17) acting on the spindle, and a second position in which the spindle is free to perform an automatic control of said valve (2), characterized in



that the cam face (37) of the selector cooperates with an axially displaceable spring retainer (29) associated with a compression spring (28) interposed between that retainer and the housing,

and that the selector (21) comprises a spring-biased, manually releasable locking pin (38) which in the open-position of the selector engages in a bore (33) in the spring retainer (29), which bore (33) also receives the end portion of the connecting rod (20), whereby an upward movement of the rod causes automatic disengagement of the locking pin.

4,550,747

DIGITAL FLUID PRESSURE FLOW RATE AND POSITION CONTROL SYSTEM

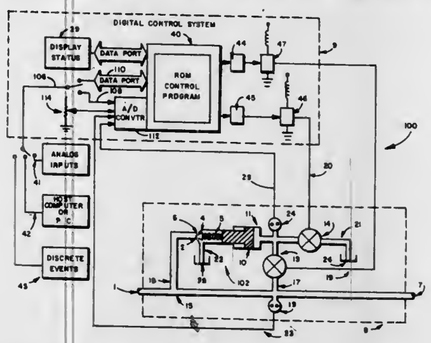
Raymond D. Woodworth, San Clemente; James F. Stoutamore, Norwalk, and Philip S. Vanderhoek, Anaheim, all of Calif., assignors to Digital Hydraulics, Inc., Costa Mesa, Calif.

Filed Oct. 5, 1983, Ser. No. 539,299

Int. Cl.⁴ G05D *16/00*

U.S. Cl. 137—487.5 **18 Claims**

1. In a fluid pressure control system including a flow control pressure amplification valve having a first port, a second port, a moveable closure element interposed therebetween operated by fluid at a control pressure and in communication with said first port, the improvement comprising a relief line, a control pressure enhancement valve in flow communication with said first port and with said pressure amplification valve, a control pressure reduction valve in fluid communication with said control pressure enhancement valve, said pressure amplification valve and said relief line, a control pressure enhancement solenoid coupled to operate said control pressure enhancement valve, a control pressure reduction solenoid coupled to operate said control pressure reduction valve, a command signal source for providing a digital command control pressure signal corresponding to a desired flow rate between said first and second ports, a control pressure feedback transducer coupled in line between said control pressure enhancement and reduction valves to provide a feedback signal indicative of actual pressure at said control pressure enhancement and control pressure reduction valves of a magnitude amplified by said pressure amplification valve to a factor greater than one for enhanced sensitivity, and electronic digital control means which receives said command control pressure signal and said feedback signal and responsively selects one of said solenoids



to provide thereto an error correction signal of duration controlled in accordance with the magnitude of initial difference between said command control pressure signal and said feedback signal and a predicted time at which said difference will approach zero, as determined by iterative resampling of said difference and comparison thereof with a predetermined portion of said initial difference.

4,550,748

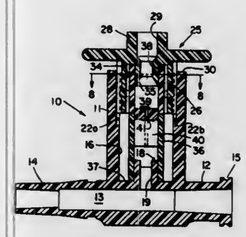
FLUID FLOW REGULATING UNIT FOR INTRAVASCULAR CATHETER SYSTEMS

Chris E. Nunez, Sandy, Utah, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 8, 1983, Ser. No. 483,398

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 137—605 **13 Claims**



1. A fluid flow regulating and control unit for intravascular catheter systems used to infuse fluid, medication and the like in medical and surgical procedures comprising,

a. a control housing having an operating chamber formed therein at one end and being open opposite thereto,

b. a closure member slidably connected in the open end of the control housing for limited inward and outward movement relative to said operating chamber,

c. said closure member having an inlet fluid passage for the fluid to be controlled,

d. said control housing having an outlet manifold for the controlled fluid with at least one connector thereon for connection to the associated intravascular catheter system, and a continually open connecting port communicating at one end with the outlet manifold,

e. an annular resilient member in the operating chamber connected at one end to the control housing about the connecting port and at the opposite end to the closure member, and the inner wall of the annular resilient member forming a fluid flow passage between the inlet fluid passage and the connecting port for the controlled fluid,

f. a restrictor member mounted in interference fit with the inner wall of the annular resilient member, and

g. said closure member and said annular resilient member operatively connected to each other to permit the closure member to exert axial forces on the annular resilient member to deform the same whereby the controlled fluid will flow around the restrictor member to the continuously open connecting port and into the associated outlet manifold for delivery to the intravascular system.

4,550,749

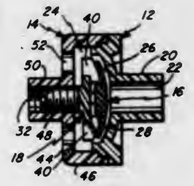
ADJUSTABLE CHECK VALVE

Donald J. Krikorian, Cranston, R.I., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 12, 1984, Ser. No. 588,289

Int. Cl.⁴ E16K *15/14*

U.S. Cl. 137—843 **10 Claims**



1. A check valve comprising:

a housing defining a chamber, the housing having an inlet and an outlet, said inlet extending along a central axis;

said outlet being displaced transversely from the central axis;

a valve seat surface formed within the housing coaxially about the inlet;

a flexible, resilient disk adapted to bear against the valve seat surface in a dished configuration in which the peripheral edge and peripheral margin of the disk normally engages the valve seat surface;

means for supporting the disk from the downstream side of the disk, said means comprising a post mounted to the housing downstream of the disk, the post being disposed axially along the central axis, the post having a head end for engaging and supporting the disk in a manner which enables the peripheral portion of the disk to flex, said disk supporting means being constructed and arranged as to bias the disk toward the seating surface to seal at least the peripheral edge of the disk against the seating surface; and

means mounting the post to the housing for movement toward and away from the seating surface and along the central axis for varying the degree to which the disk is biased toward the seating surface and for varying the surface area of engagement of the disk with the seat.

4,550,750

HYDRAULIC FLUID DISTRIBUTOR

Jürgen Korth, Hanover, Fed. Rep. of Germany, assignor to P.A. Rentrop Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,340

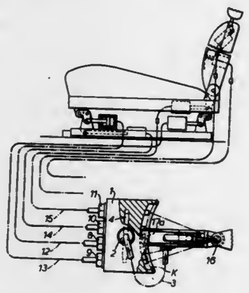
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333745

Int. Cl.⁴ F16K *11/10*

U.S. Cl. 137—868 **6 Claims**

1. A distributor device for pressurised medium, including a pressurised medium inlet connection, a distributor line connected to said inlet connection, a plurality of adjacently disposed pressurised medium outlet connections adapted to be

connected to a corresponding plurality of pressure cylinders via lines, a corresponding plurality of valves of a push-rod type, and actuating means adapted to be operable to open each said valve against a spring force, a pump having a housing and a discharge line connected to said distributor line via said inlet



connection, said actuating means being the housing of said pump, each said valve being associated with a respective one of said pressure medium outlet connections, each said valve when actuated into an open condition permitting pressurised medium connection between said distributor line and said associated pressurised medium outlet connection.

4,550,751

BALLAST EXHAUST PIPE CLOSING APPLIANCE FOR A SHIP

Hayato Shimamura, Yokohama, and Osamitsu Maeda, Higashino, both of Japan, assignors to Misuzu Machineries & Engineering Ltd., Hyogo and Toner Tanker K.K., Tokyo, both of, Japan

Filed Nov. 17, 1982, Ser. No. 442,437

Claims priority, application Japan, Nov. 17, 1981, 56-171547[U]

Int. Cl.⁴ F16L *55/12*

U.S. Cl. 138—93 **1 Claim**

1. A pipe closing appliance which closes temporarily an outward opening of a pipe, comprising:

a closing stopper which has two end faces and which is an inflatable, cylindrical bag body insertable in said outward opening,

a first communicating slender pipe means for supplying compressed air and for withdrawing leaked fluid, said first pipe means passing through the bag body along a central longitudinal axis of the bag body,

a first feed and exhaust hose connected at one end face of said closing stopper to said bag body such that both communicate with each other,

a second feed and exhaust hose connected at one end face of said closing stopper to said first communicating slender pipe means such that both communicate with each other,

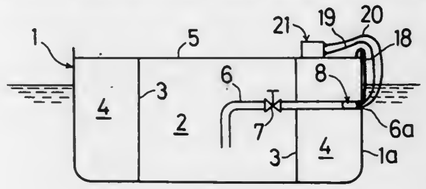
a change-over control means, connected to ends of said two feed and exhaust hoses, for switching compressed air feed and exhaust for said two feed and exhaust hoses,

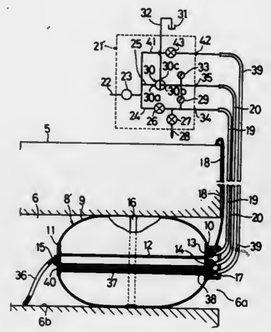
a second communicating slender pipe means for supplying compressed air in said closing stopper in such a fashion that it is substantially in parallel with said first communicating slender pipe means and passes through the bag body,

an air supply hose having one end connected to the second communicating slender pipe means and an opposite end connected to the change-over control means, and

a short pipe extending from one end of the first communicating slender pipe means of the closing stopper to open facing an inner wall bottom part of the ballast exhaust pipe,

whereby, when the outward opening must be closed, compressed air is supplied to said air supply hose by the operation of the change-over means and, by raising the air pressure in the ballast exhaust pipe through the second communicating slender pipe means, and any fluid which





has leaked in the ballast exhaust pipe is drawn out by the short pipe into the first communicating slender pipe means for passage to the second feed and exhaust hose.

4,550,752

METHOD FOR CONVEYING A FLEXIBLE THREAD BY MEANS OF PRESSURIZED GAS

Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Ruti-te Strake B.V., Netherlands

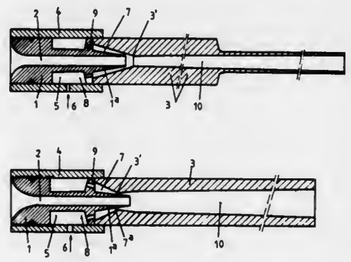
PCT No. PCT/NL81/00026, § 371 Date Jun. 29, 1982, § 102(e) Date Jun. 29, 1982, PCT Pub. No. WO82/01728, PCT Pub. Date May 27, 1982

PCT Filed Nov. 13, 1981, Ser. No. 394,936

Claims priority, application Netherlands, Nov. 17, 1980, 8006265; Nov. 17, 1980, 8006264; Dec. 31, 1980, 8007127

Int. Cl.⁴ D03D *47/30*

U.S. Cl. 139—435 **3 Claims**



1. An injector for conveying a flexible thread by means of a subsonic flow of pressurized gas for inserting a weft thread into the weaving shed of a weaving machine, comprising an inlet element provided with a chamber connected to a source of pressurized gas, a first channel extending from said chamber

for a primary gas flow, a central channel provided in said inlet element in which the thread to be conveyed is supplied together with a secondary air flow, a second channel merging with said first channel, a mixing tube in an abutting relationship with a said inlet element and defining a third channel of circular cross-section therein, said third channel combining said primary gas flow and said secondary air flow into a single gas flow taking along the thread to be conveyed, said third channel defining a restriction downstream of the merger of said second channel with said first channel, an end portion of said inlet element terminating upstream of said restriction, said restriction followed by a predetermined increase in cross-section of said third channel, wherein the third channel has, as seen in the conveying direction, a gradually increasing cross-section between a conical angle of a fraction of one degree and one degree, the circular cross-section of the third channel deformed at an exit end portion of the third channel so as to narrow the cross-section at the exit in at least one direction while maintaining said gradually increasing cross-sectional area at the exit end.

4,550,753

WEFT TRANSFER CONTROL SYSTEM IN AN AIR JET LOOM

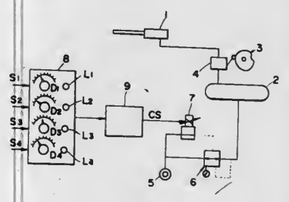
Kanji Tsuji, Kanazawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan

Filed Dec. 14, 1983, Ser. No. 561,465

Claims priority, application Japan, Dec. 14, 1982, 57-189496[U]

Int. Cl.⁴ D03D *47/30*

U.S. Cl. 139—435 **3 Claims**



1. A weft transfer control system for an air jet loom having a main nozzle and a plurality of weft supply members, the end of the weft released from one weft supply member being connected to the beginning of the weft released from the adjacent weft supply member, the air jet loom capable of continuously releasing the weft from said weft supply members, said system comprising:

means for detecting that the release of the weft is being transferred from one weft supply member to another adjacent weft supply member and for generating a transfer signal corresponding to the adjacent weft supply member;

a control box, connected to said detecting means, for presetting a plurality of initial supply pressures for the main nozzle, respectively corresponding to the weft supply members, said control box generating a control signal corresponding to the one of the plurality of preset initial supply pressures corresponding to the transfer signal generated by said detecting means;

nozzle pressure adjusting means for adjusting the supply pressure to the main nozzle to the one of the initial supply pressures in dependence upon the control signal generated by said control box; and

delay means for delaying the adjusting operation of said nozzle pressure adjusting means for a predetermined time after said detecting means generates the transfer signal.

4,550,754

WEFT PICKING SYSTEM OF LOOM AND METHOD FOR OPERATING SAME

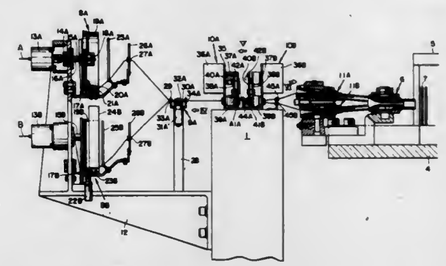
Hideo Iida, Hachioji, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 11, 1984, Ser. No. 619,197

Claims priority, application Japan, Jun. 29, 1983, 58-116168; Jun. 29, 1983, 58-116171

Int. Cl.⁴ D03D *47/36*

U.S. Cl. 139—452 **22 Claims**



1. A method of operating a weft picking system of a loom, of the type wherein a weft yarn is wound around a stationarily maintained drum by a weft winding-guide member rotated a predetermined number of times to measure out a length of the weft yarn to be picked through a weft inserting nozzle, said method comprising:

driving said weft winding-guide member by a pulse motor having a variable revolution speed;

slowly decreasing the revolution speed of said pulse motor from a predetermined level until said pulse motor stops so as to measure out a predetermined portion of a weft length to be required for one pick of the weft yarn by a point in time at which said pulse motor stops; and

slowly increasing the revolution speed of said pulse motor to said predetermined level from an initiation of revolution of said pulse motor so as to measure out a remaining portion of said weft length by a point in time at which weft picking terminates.

4,550,755

VACUUM BAG FILLER

Edric W. Vredenburg, Sr., 2690 Milo Way, Salt Lake City, Utah 84117

Filed Jun. 24, 1983, Ser. No. 507,476

Int. Cl.⁴ B65B *1/28*

U.S. Cl. 141—59 **3 Claims**

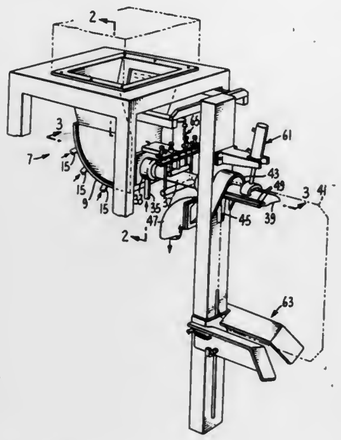
1. A bag filling machine for packing a finely divided particulate material into a bag, comprising in combination:

(a) a hopper for receiving a supply of said material,

(b) said hopper having at least some porous walls and means for directing air through said walls to fluidize said material along the walls, leaving the main body substantially not fluidized of said material,

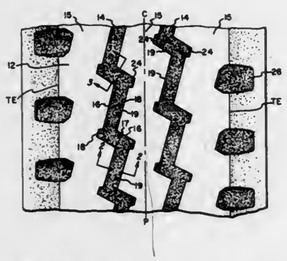
(c) an outlet near the bottom of said hopper leading to a discharge nozzle,

(d) means for blasting air into said discharge at the bottom of said hopper adjacent the nozzle, and



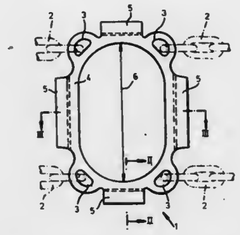
(e) vacuum means at least partially surrounding said discharge nozzle.

4,550,756
PNEUMATIC TIRE TREAD
Walter W. Hinkel, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 16, 1984, Ser. No. 571,394
Int. Cl.⁴ B60C *11/04*
U.S. Cl. 152—209 R **17 Claims**



1. A radial tire having a ground-engaging tread portion, said tread portion comprising at least two circumferentially extending grooves which have a substantially constant width, each groove comprising a plurality of alternating zig-zag segments, each segment having a pair of oppositely disposed sidewalls, one sidewall comprising a first portion extending from substantially the base of the groove radially outwardly in a substantially perpendicular direction with respect to a line tangent to the tread surface, a second portion extending from the radially outer end of said first portion radially outward to the tread surface, and being inclined at a first angle with respect to a line perpendicular to the tread surface, said first portion having a height no greater than approximately 50% of the depth of said groove, said second sidewall extending from substantially the base of the groove radially outwardly to the surface of the tread and being inclined at a second angle with respect to a line perpendicular to the tread surface, and said second sidewall and said second portion of the first sidewall forming an included angle of at least 30°, said first angle of said second portion of said first sidewall being at least 10° greater than said second angle of said second sidewall, and wherein said first and second angles are substantially constant in each segment.

4,550,757
TRACTION CHAIN FOR A DRIVEN WHEEL OF A WHEELED VEHICLE
Rütger Berchem, Essen-Schuir, Fed. Rep. of Germany, assignor to Berchem & Schaberg GmbH, Gelsenkirchen, Fed. Rep. of Germany
Filed Oct. 20, 1983, Ser. No. 543,951
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239099
Int. Cl.⁴ B60C *27/20*
U.S. Cl. 152—228 **4 Claims**



1. A traction chain for a pneumatic tire wheel of a wheeled vehicle comprising at least one die-forged one piece traction element in the form of a flat unitary ring-shaped generally oval body having a long axis corresponding substantially to the width of a tire to which the chain is to be applied and provided at four diametrically opposite locations spaced apart from one another with respective eyes, and link means engageable in said eyes to incorporate said element in said chain, said body being formed between said eyes unitarily with ribs projecting codirectionally from said body, said ribs including ribs transverse to the direction of travel of the wheel and ribs parallel to the direction of travel thereof, said body being dimensioned to extend substantially the full width of said wheel, said ribs having a wedge-shaped self-sharpening cross section whereby each rib is defined between a pair of outwardly concave mutually converging curved flanks.

4,550,758
EXTERIOR INSULATING FLEXIBLE GLAZED SURFACE COVERING, MOVABLE AND STOWABLE FROM INDOORS
Carter F. Johnson; Cheryl L. Larson, both of 3868 Miller Trunk Hwy., Duluth, Minn. 55811, and Judy M. Tepley, P.O. Box 7203, Duluth, Minn. 55807
Filed Sep. 9, 1983, Ser. No. 530,503
Int. Cl.⁴ A47H *3/00*; E06B *9/17*
U.S. Cl. 160—271 **6 Claims**

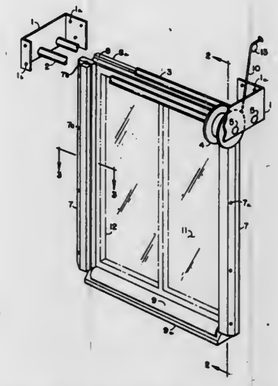
1. Exteriorly mounted window covering apparatus comprising:

a nontransparent window covering member including first and second layers of a weather resistant ultraviolet impermeable material mounted in surrounding relation to an insulative layer having a relatively large R rating and wherein the peripheral edges of said first and second layers are sealed to one another with two opposed edges each including a lengthwise extending beal-like portion of a thickness greater than the combined thickness of said first and said layers, said window covering further including a weighted member mounted along one peripheral edge orthogonal to said bead including edges:

means mountable to a window for storing and guiding said covering member in relation to said window and wherein said covering member is rotatively coupled to a first roller and rotatively supported by a second roller such that said covering can be furled around and released from said first roller as desired;

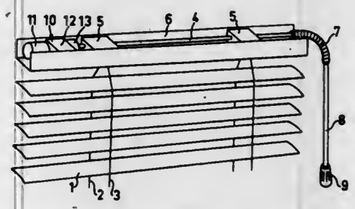
means mounted to opposed sides of said window in tangential relation to said second roller for receiving said bead-like edges of said window covering in sliding relation thereto;

first seal means mounted to said window orthogonally of the path of travel of said window covering at one end of said slide means in overlapping wiping relation to said window covering so as to contact the back of said window covering as it passes over said second roller; and



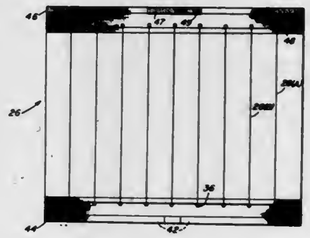
second seal means mounted to said window at the end of said guide means opposite said first seal means for compressively mating with said weighted member upon extending said window covering in covering relation to said window, said slide means and said first and second seal means thereby forming a substantially airtight space between said window covering and the glazed surface of said window.

4,550,759
APPARATUS FOR SIMULTANEOUSLY CLOSING AND OPENING A GROUP OF BLINDS
John Archer, Nynäshamn, Sweden, assignor to Ambient Energy Design, Nynäshamn, Sweden
Filed May 16, 1983, Ser. No. 495,276
Claims priority, application Sweden, May 20, 1982, 8203173
Int. Cl.⁴ E06B *9/26*
U.S. Cl. 160—176 R **7 Claims**



1. An apparatus for simultaneously closing and opening a group of blinds each consisting of a number of thin slats which are suspended by means of vertical cords from at least one horizontal axis of rotation disposed above the slats, rotation of said axis being operable via the vertical cords to turnably adjust said slats between a substantially horizontal open position and a substantially vertical closed position, said axis being connected to a hand-operated mechanism for individual adjustment of the slats in each blind, an individual drive means for each of said blinds, each of said drive means being connected to said axis of rotation, each of said drive means being provided with means for limiting the torque exerted on said drive means when said hand-operated mechanism is operated to manually adjust the position of the slats, and a timing device connected to all of said drive means in the group of blinds for automatic energization of said drive means at predetermined points of time and for a preset time interval to set the slats in all blinds in the group to their closed or open positions irrespective of their then existing positions previously set by said hand-operated mechanisms.

4,550,760
TRANSPARENT ACCESS CURTAIN FOR COOLERS AND THE LIKE
Kenneth N. Gidge, Nashua, N.H., and Henry J. Richard, Lowell, Mass., assignors to BSL Corporation, Nashua, N.H.
Continuation of Ser. No. 494,499, May 18, 1983, Pat. No. 4,420,027, which is a continuation of Ser. No. 287,303, Jul. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 93,193, Nov. 13, 1979, Pat. No. 4,313,485. This application Dec. 5, 1983, Ser. No. 558,118
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.⁴ A47H *23/01*
U.S. Cl. 160—328 **8 Claims**



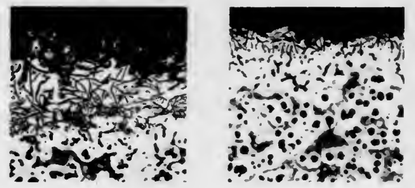
1. An access curtain for use over the opening of a display refrigerator or similar apparatus, comprising:

a body member formed of flexible material having slit-like apertures disposed between substantially parallel strip-like portions of the body member, the strip-like portions being disposed relative to each other in substantially abutting edge-wise relationship;

a pair of strips formed of reinforcing material, one strip being joined to an upper portion of the body member and the other strip being joined to a lower portion of the body member; and,

means carried by at least a portion of the curtain along an upper edge thereof for connecting the curtain to the refrigerator in proximity to the upper edge of said opening, the access curtain being dimensioned to span and cover the opening.

4,550,761
MOLD COATING
William H. Moore, Whitehall Apts.-6E, Whitehall Rd., Chattanooga, Tenn. 37405
Filed Nov. 3, 1982, Ser. No. 438,779
Int. Cl.⁴ B22C *1/04*
U.S. Cl. 164—14 **5 Claims**



1. A method of avoiding sulphur contamination of a nodular

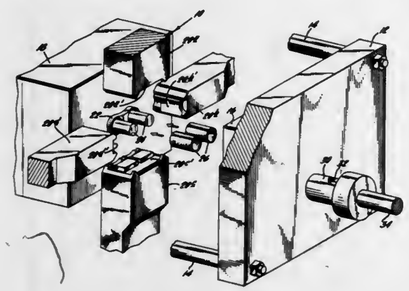
iron casting derived from a sand foundry mold containing sulphur bearing binders, said method comprising applying a wash to said sand foundry mold prior to making said casting, said wash containing an oxide or chloride of barium that will combine with sulphurous gases emitted from the sand foundry mold during casting, to form a solid sulphur compound, and said oxide or chloride of barium acting to protect nodular graphite in said casting from deterioration.

4,550,762

DIE CASTING PROCESS USING DISPOSABLE INSERTS DURING WARM UP

James C. West, Libertyville, and Elmer G. Gesell, Waukegan, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 21, 1983, Ser. No. 544,011
Int. Cl.⁴ B22D *19/00, 17/20*
U.S. Cl. 164—98 **8 Claims**



1. In a die casting process comprising the sequential steps of:
opening a pair of opposed die halves;
positioning a metallic insert in one of said die halves;
closing said die halves to form a die cavity containing said insert;
injecting molten metal into said die cavity to form a casting incorporating said insert as an integral part thereof;
opening said die halves; and
ejecting the casting from said die halves; and
wherein a series of warm-up casting cycles are initially required to bring the die halves to the correct casting temperature;
the improvement comprising substituting a non-metallic insert of inexpensive material for said metallic insert during the warm-up casting cycles.

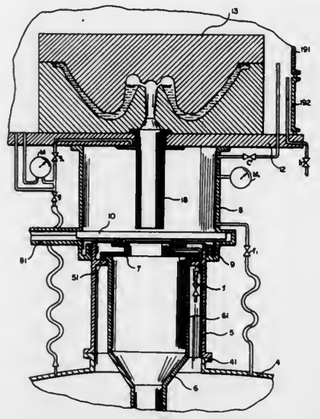
4,550,763

METHOD AND MACHINE FOR PRESSURE DIECASTING

Ivan D. Nikolov, Sofia, Bulgaria, assignor to Institute po Metaloznanie I Technologia na Metalite, Sofia, Bulgaria

Filed Dec. 2, 1981, Ser. No. 326,479
Claims priority, application Bulgaria, Dec. 11, 1980, 49948
Int. Cl.⁴ B22D *17/06*
U.S. Cl. 164—119 **7 Claims**

1. A pressure die casting method which comprises the steps of:
(a) introducing a melt of a molten metal into a reservoir within a pressurizable housing and having a feed tube extending upwardly from said melt and downwardly through an upper surface of said melt;
(b) providing a casting die with a mold cavity having a downwardly extending die tube adapted to communicate with said feed tube;
(c) initially blocking communication between said tubes at least in part by axially separating same and closing the top of said feed tube by sliding a plate across the top of the feed tube and across the bottom of a chamber in which said die tube is disposed;
(d) thereafter pressurizing said housing with a pressurized gas phase and communicating said pressurized gas phase to said feed tube above the melt therein to generate a superatmospheric pressure above the melt in said reservoir and feed tube, said pressure being above a pressure in said die;
(e) then interconnecting said tubes by opening the top of said feed tube and lowering said die tube axially into said feed tube and establishing a pressure differential between said die and said reservoir tending to displace melt from said reservoir through said feed tube and said die tube into said die while displacing the pressurized gas phase of said feed tube ahead of the melt therein into said die, said melt



filling said cavity, and said chamber being in gas communication with said housing during the displacement of the melt into said cavity;
(f) subsequently to the filling of said cavity with said melt, equalizing pressure between the upper portion of said feed tube and said housing, thereby permitting melt in said feed tube to recede to said reservoir;
(g) thereafter closing communication between said tubes by withdrawing said die tube from said feed tube and sliding said plate across the top of said feed tube and the bottom of said chamber, and closing gas communication between said chamber and said housing;
(h) removing the cast body from said die; and
(i) flushing said cavity in said die with said pressurized gas phase before displacing said melt into said cavity.

4,550,764

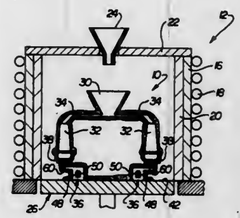
APPARATUS AND METHOD FOR CASTING SINGLE CRYSTAL ARTICLES

Robert A. Horton, Chesterland, and Gowri S. Jayaraman, Cleveland Heights, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 22, 1983, Ser. No. 564,299
Int. Cl.⁴ B22D *27/04*
U.S. Cl. 164—122.2 **15 Claims**

1. An apparatus for use in casting a doubly-oriented single crystal article in a mold cavity, said apparatus comprising a chill plate having an upper side surface, primary growth passage means extending upwardly away from said upper side surface of said chill plate for receiving molten metal during casting of the article, said primary growth passage means having an upper end portion offset to one side of said mold cavity and a lower end portion exposed to the upper side surface of said chill plate to promote the growth of metal crystals most favorably oriented for growth in an upward

direction at a rate which is greater than the growth rate of less favorably oriented crystals to enable the more favorably oriented crystals to retard the growth of the less favorably oriented crystals during solidification of the molten metal in said primary growth passage means, gradient inducing growth passage means extending upwardly away from the upper side surface of said chill plate for receiving molten metal during casting of the article, said gradient inducing growth passage means having a lower end portion exposed to the upper side surface of said chill plate and an upper end portion connected with the upper end portion of said primary growth passage means to promote the growth in said gradient inducing growth passage means of metal crystals simultaneously with the growth of metal crystals in said primary growth passage means and to promote the transmission of heat from the upper end portion of said primary growth passage means to said chill plate after solidification of metal crystals in said gradient inducing growth passage means, and secondary growth passage means for receiving molten metal during casting of the article, said secondary growth passage means extending sidewardly from the upper end portion of said primary growth passage means in a direction transverse to the direction of crystal growth in said primary growth passage means, said secondary growth passage means having a first end portion connected with the mold cavity and a second end portion connected with the upper end portions of said primary and gradient inducing growth passage means to promote the growth in said secondary growth passage means of metal crystals which are most favorably oriented for growth in a direction toward said first end portion of said secondary growth passage means at a rate



which is greater than the growth rate of less favorably oriented crystals under the influence of a heat gradient which is at least partially the result of a flow of heat from said secondary growth passage means to said chill plate through said gradient inducing passage means.

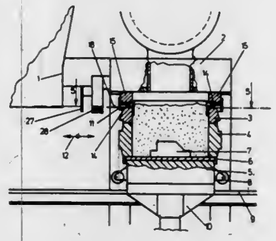
10. A method of casting an article comprising the steps of providing a mold having a cavity with a configuration corresponding to the configuration of an article to be cast, a secondary growth passage connected in communication with the mold cavity, a primary growth passage having an upper end portion connected with the secondary growth passage and an open lower end portion, and a gradient inducing growth passage having an upper end portion connected with the upper end portion of the primary growth passage and an open lower end portion, supporting the mold with a chill plate, said step of supporting the mold including positioning the mold with the open lower end portions of the primary and gradient inducing growth passages opening downwardly and with the upper end portions of the primary and gradient inducing growth passages disposed at the same vertical distance from an upper side surface of the chill plate, filling the mold cavity, and the primary, secondary and gradient inducing growth passages with molten metal, growing metal crystals upwardly in the primary and gradient inducing growth passages, reaching the upper end portions of the primary and gradient inducing growth passages with the upper end portions of the metal crystals, growing crystals away from the upper end portion of the primary growth passage into the secondary growth passage toward the mold cavity, and, while performing said step of growing crystals into the secondary growth passage, conducting heat from the upper end portion of the primary growth passage to the chill plate along a first path extending downwardly to the chill plate through the primary growth passage and along a second path extending downwardly to the chill plate through the gradient inducing growth passage to thereby promote the growth of crystals in the secondary growth passage.

4,550,765

APPARATUS FOR COMPACTING GRANULAR MOLDING MATERIALS

Kurt Fischer, Schaffhausen, and Franz Muller, Neuhausen, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Nov. 14, 1983, Ser. No. 551,257
Claims priority, application Switzerland, Nov. 15, 1982, 6634/82
Int. Cl.⁴ B22C *15/00*
U.S. Cl. 164—194 **18 Claims**



1. An apparatus for compacting granular molding materials, particularly foundry molding material, comprising:
a molding unit movable in a first direction;
filling means for supplying molding material into said molding unit;
compression means for compacting the molding material in said molding unit; and
coupling means, at an outlet of said compression means, for forming a closed system between said compression means and said molding unit, said coupling means including a sealing surface and first and second pairs of opposed sealing strips engaging said sealing surface, said first pair of sealing strips extending substantially parallel to said first direction and having relatively broad and substantially planar contact surfaces oriented substantially parallel to said sealing surface for transmitting forces between said compression means and said molding unit when said contact surfaces engage said sealing surface, said second pair of sealing strips extending substantially perpendicular to said first direction and having relatively sharp, projecting edges formed by an apex of an angle between sides of each of said sealing strips of said second pair for contacting said sealing surface and repelling molding material from said sealing surface.

4,550,766

ROLL CASTER APPARATUS HAVING NOZZLE TIP ASSEMBLY WITH NOVEL SPACER MEMBER

Daniel K. Ai, New Kensington, and Ho Yu, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 9, 1984, Ser. No. 597,835
Int. Cl.⁴ B22D *11/06, 11/10*
U.S. Cl. 164—428 **10 Claims**

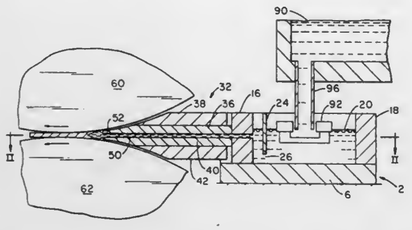
10. An improved roll caster tip apparatus having improved uniformity of metal flow velocity for casting wide strips of metal comprising:
(a) a reservoir for molten metal comprising a bottom plate and at least one sidewall; and
(b) a tip member attached to said sidewall and terminating in

an exit port spaced from said reservoir, said tip member comprising:

(i) a top wall and a bottom wall;

(ii) a pair of side risers members between said top wall and said bottom wall to form a passageway with said top and bottom walls; and

(iii) at least one spacer member between said top wall and said bottom wall spaced from said side riser members to



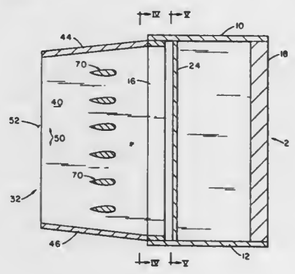
provide support for said top wall and bottom wall, said spacer member having a curved leading edge (72) facing said reservoir to permit the metal flow to smoothly pass on both sides and streamlined trailing edges (74) and (76) which terminate in a point (78) in the direction away from said reservoir to provide a streamlined shape to minimize disturbance to the main flow of metal and minimize or eliminate separation.

4,550,767

ROLL CASTER APPARATUS HAVING UNIFORM FLOW OF MOLTEN METAL INTO NOVEL NOZZLE TIP ASSEMBLY

Ho Yu, Murrysville, and Daniel K. Ai, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 9, 1984, Ser. No. 597,912
Int. Cl.[4] B22D *11/06, 11/10*
U.S. Cl. 164—428 **4 Claims**



1. An improved roll tip caster assembly for casting wide strips of metal comprising a molten metal reservoir comprising:

(a) a sidewall terminating in a bottom plate;

(b) a nozzle tip member attached to said sidewall having a top wall, a bottom wall and a pair of converging side riser members between the top wall and the bottom wall forming a converging passageway terminating in an exit port for molten metal to flow from the reservoir to a pair of rollers;

(c) an opening in said sidewall extending along the entire width of said nozzle tip member; and

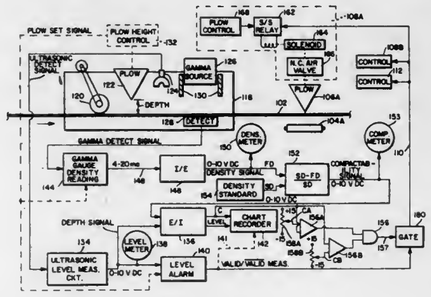
(d) a baffle member in said reservoir extending across the entire width of said sidewall opening and extending down from the top of said reservoir to a point just above said bottom plate, thereby providing a shielding from any turbulence created in said reservoir as well as providing a uniform friction for the metal flowing from said reservoir into said nozzle tip whereby metal flowing into said tip member from said reservoir has a uniform velocity across the entire width of said nozzle and said converging side risers maintain said uniform metal velocity as said molten metal flows through said nozzle to said rollers.

4,550,768

COMPACTABILITY MEASUREMENT METHOD AND APPARATUS FOR SAND CASTING

Carl R. McMullen, Waverly, and Marshall S. Campbell, Chattanooga, both of Tenn., assignors to Foundry Technology, Inc., Waverly, Tenn.

Filed Feb. 28, 1983, Ser. No. 470,566
Int. Cl.[4] B22C *25/00;* **B22D** *46/00, 47/02*
U.S. Cl. 164—456 **28 Claims**



10. A method comprising the steps of:

(a) subjecting granular material in a granular material casting foundry system to radiation from a radiation source,

(b) detecting an amount of radiation which has passed through the granular material from the radiation source,

(c) using the detected radiation to derive a density signal dependent on the density of the granular material, and

(d) operating on the density signal with a reference density value to derive a compactability signal dependent on the conpactability of the granular material, and

wherein the granular material is subjected to the radiation as it is moving from a mixer to at least one molding machine and the steps (a), (b), and (c) are performed in non-batch fashion, and wherein the granular material is subjected to the radiation as it is moving on a conveyor belt, and further comprising, before the granular material is subjected to the radiation, the steps of:

placing the granular material on the conveyor belt,

plowing the granular material to a level at or below a particular depth,

detecting the depth after the plowing, and

generating a depth signal depending on the detected depth.

26. A compactability measurement system for use with a granular material casting foundry system, the compactability measurement system comprising:

(a) a density detector for detecting in a non-batch fashion the density of granular material as it is moving from a mixer to at least one molding machine of the foundry system,

(b) a density signal generator connected to said density detector for generating a density signal dependent on the detected density, and

(c) a compactability signal generator connected to receive said density signal generator for generating a compactability signal dependent on said density signal and a reference density value, and

wherein said density detector comprises a radiation source and a radiation detector for detecting radiation which has passed through the granular material, and wherein said density detector detects density of the granular material as it moves on a conveyor belt and the system further comprises:

a plow upstream from said density detector for plowing the granular material to a level at or below a particular depth,

a depth detector between said plow and density detector for detecting the depth of said granular material, and

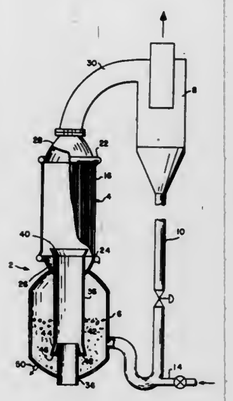
a depth signal generator for generating a depth signal on the detected depth.

4,550,769

SOLIDS QUENCH BOILER AND PROCESS

Arju H. Bhojwani, Chelmsford, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Continuation of Ser. No. 82,162, Oct. 5, 1979, Pat. No. 4,351,275. This application May 7, 1982, Ser. No. 375,730
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.
Int. Cl.[4] F28D *19/02*
U.S. Cl. 165—1 **9 Claims**



1. A process for quenching reactor effluent in first and second quenching zones comprising the steps of:

a. passing the effluent from the reactor outlet directly into a quench riser located in the first quenching zone, which quench riser is aligned with the reactor outlet tube;

b. introducing particulate solids of a lower temperature than the effluent into the effluent stream in the quench riser to partially quench the effluent; and, thereafter,

c. passing the composite stream of partially quenched effluent and particulate solids into the second quenching zone in indirect heat exchange relationship with a coolant to further quench the composite stream of effluent and particulate solids;

d. separating the quenched gas from the particulate solids after the effluent and particulate solids have passed in indirect heat exchange relationship with the coolant; and

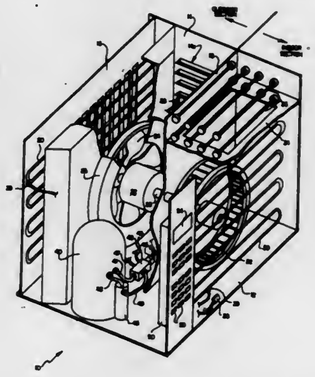
e. returning the separated particulate solids for reintroduction to the effluent stream leaving the reactor.

4,550,770

REVERSE CYCLE ROOM AIR CONDITIONER WITH AUXILLIARY HEAT ACTUATED AT LOW AND HIGH OUTDOOR TEMPERATURES

William R. Nussdorfer, Greenville; Harry A. Brancheau, Gowen, and Steven C. Clark, Grand Rapids, all of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 4, 1983, Ser. No. 538,943
Int. Cl.[3] F25B *29/00*
U.S. Cl. 165—29 **14 Claims**



1. A self-contained room air conditioner for heating or cooling air within a room to maintain a predetermined indoor room temperature over a wide range of outdoor ambient temperatures comprising:

a refrigerant compressor, an inside heat exchange coil, an outside heat exchange coil, and a reversing valve, said compressor, coils, and valve being interconnected to provide a reverse cycle refrigeration system having a cooling mode of operation wherein heat is extracted from the room air via said inside coil, and having a heat pump mode of operation wherein heat is provided to the room air via said inside coil, said reverse cycle refrigeration system when in said heat pump mode being operable only over a limited range of outdoor ambient temperatures within said wide range of outdoor ambient temperatures; and

heating element means of the electrical resistance type for automatically providing heat to said room air when said outdoor ambient temperature is greater than the upper limit of said limited range of outdoor ambient temperatures, and said predetermined indoor room temperature is to be maintained above said outdoor ambient temperature greater than said upper limit.

4,550,771

WASTE WATER HEAT RECOVERY APPARATUS

Morteza Arbabian, P.O. Box 1270, Madison, Wis. 53701

Division of Ser. No. 401,115, Jul. 23, 1982, Pat. No. 4,454,911, which is a division of Ser. No. 203,718, Nov. 11, 1980, Pat. No. 4,341,263. This application Jun. 18, 1984, Ser. No. 621,525
Int. Cl.[4] F28D *15/00*
U.S. Cl. 165—47 **2 Claims**

1. A heat exchanger adapted for the recovery of heat contained in waste water, comprising:

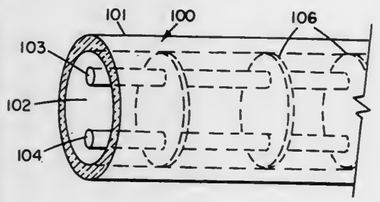
(a) an outer tube formed of heat insulating material and having an inner bore which is filled with heat transfer liquid having a high heat capacity;

(b) a waste water conduit running through the bore of the tube from an inlet end to an outlet end;

(c) a supply water conduit running through the bore of the tube from an inlet at the outlet end of the waste water

conduit to an outlet at the inlet end of the waste water conduit;

(d) a plurality of baffle plates mounted within the bore of the tube in spaced relation to divide it into a plurality of individual compartments each containing heat transfer liquid separated from the heat transfer liquid in adjacent compartments, the baffle plates further mounting the



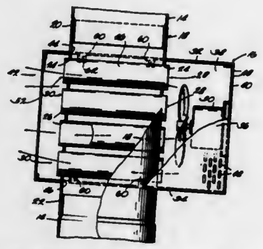
waste water and supply water conduits within the tube, whereby a temperature gradient will exist between the compartments in the tube divided by the baffles when warm waste water is passed through the waste water conduit from its inlet to its outlet with the temperature of the heat transfer liquid in the compartments decreasing from the inlet end of the waste water conduit to the outlet end.

4,550,772

HEAT RECOVERY DEVICE FOR EXHAUST FLUES

Darrell G. Knoch, C/O Miracle Heat, Inc. P.O. Box 553, Escanaba, Mich. 49829

Filed Mar. 31, 1983, Ser. No. 480,854
Int. Cl.⁴ F28D *7/02*
U.S. Cl. 165—47 **9 Claims**



1. A device for recovering and recirculating heat normally lost from the exhaust flues of a stove, furnace or the like, having a cylindrical flue said device including

a section of cylindrical flue pipe which has opposite ends adapted for connection to the existing cylindrical flue, which has an inside diameter substantially the same as that of the existing flue and through which the hot flue gases flow;

a plurality of hollow heating tubes extending diametrically through said flue pipe section so that the hot flue gases flow over the outer surfaces thereof, said heating tubes having opposite air inlet and discharge ends and being disposed in a single axially extending row;

a housing defining an air flow chamber completely surrounding the portion of said flue pipe section containing said heating tubes, said housing having an ambient air inlet on the same side of said flue pipe section as the inlet ends of said heating tubes and a heated air outlet on the same side of said flue pipe section as the discharge ends of said heating tubes; and

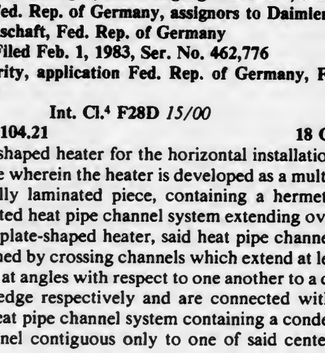
fan means inside said housing for drawing ambient air into said housing through said air inlet and propelling a flow of air toward said heated air outlet, both through said heating tubes and over the outer surface of the portion of said flue pipe section inside said housing.

4,550,773

HEAT EXCHANGER

Gerald L. Martin, Minneapolis, Minn., assignor to EER Products Inc., Minneapolis, Minn.

Filed Feb. 2, 1984, Ser. No. 576,352
Int. Cl.⁴ F24H *3/02*
U.S. Cl. 165—54 **2 Claims**



1. Heat exchanger comprising;

a. means for side-by-side laminar straight-thru non-turbulent air flow with counter flow heat transfer and exchange;

b. means for housing said heat transfer means in a lower two third portion and fresh air supply means and exhaust air means in an upper third portion of said housing means including exhaust air out and fresh air out ducts symmetrically opposing each other, and fresh air in and exhaust air ducts in diametrically opposing each other in said housing means, said exhaust air out and said fresh air out ducts in an upper third portion of said housing means and connected to blowers, said fresh air in and exhaust air in ducts are in a middle third portion of said cabinet, said blowers mount on a slideable tray also in an upper third portion of said cabinet and aligned with said exhaust air out holes and air passage holes between an upper third and said middle third portion of said cabinet; and,

c. divider means in a lower third of said housing means extending into said heat exchanger means for providing a lateral downward path an a lateral upward path through said heat exchanger means.

4,550,774

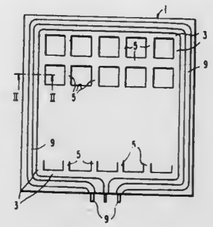
SURFACE HEATING BODY FOR VEHICLES

Rudolf Andres; Helmut Grantz, both of Sindelfingen; Wolf-Dietrich Muenzel, Ehningen, and Wolfgang Odebrecht, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,776
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1982, 3203369
Int. Cl.⁴ F28D *15/00*
U.S. Cl. 165—104.21 **18 Claims**

11. A plate-shaped heater for the horizontal installation and use in a vehicle wherein the heater is developed as a multilayer inflated partially laminated piece, containing a hermetically sealed, connected heat pipe channel system extending over the surface of the plate-shaped heater, said heat pipe channel system being formed by crossing channels which extend at least in two directions at angles with respect to one another to a center and an outer edge respectively and are connected with one another, the heat pipe channel system containing a condensate collector channel contiguous only to one of said center and

outer edge and into which the crossing channels lead, the condensate collector channel being connected at least approxi-



mately over its whole length in a heat-conducting manner with a heat source extending correspondingly at least approximately along the whole course of the condensate collector channel.

4,550,775

COMPRESSOR INTERCOOLER

John C. Edwards, Onalaska, Wis., and Russell A. Ford, Winona, Minn., assignors to American Standard Inc., New York, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,028
Int. Cl.⁴ F28B *9/00;* **F28F** *9/22*
U.S. Cl. 165—111 **11 Claims**

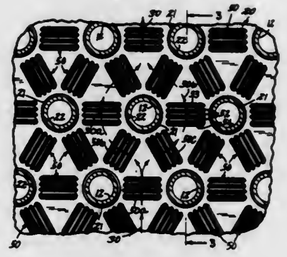
1. A compressor intercooler comprising a cylindrical shell having an inlet nozzle and an outlet nozzle therein; said inlet nozzle disposed in the upper middle portion of said shell to discharge downward into the central area of the interior of said shell; first and second vertical coil banks disposed longitudinally in said shell, said coil banks being spaced from each other and spaced from the shell so that said inlet nozzle discharges downward between said first and said second coil banks; and baffle means for constraining a fluid entering said inlet nozzle to flow through said coil banks, said baffle means disposed between each of said first and said second coil banks and said shell, said baffle means cooperating with said first and said second coil banks to further constrain the flow of a fluid entering said intercooler through said inlet nozzle to be split and to change direction a first time prior to passing through said coil banks and to change direction at least a second time, subsequent to passing through said coil banks, said splitting of fluid flow and said first fluid direction change causing said fluid to pass horizontally through said first and second coil banks in equal portions and at a velocity substantially reduced from the inlet velocity of said fluid to minimize the carryover of liquid condensed from the fluid as the fluid passes through said coil banks, said second direction change for promoting the disentrainment of condensed liquid carried out of said coil banks by said fluid as said fluid passes through said coil banks.

4,550,776

INCLINED RADIALLY LOUVERED FIN HEAT EXCHANGER

James W. B. Lu, 5868 Oxford Dr., Greendale, Wis. 53129

Filed May 24, 1983, Ser. No. 497,661
Int. Cl.⁴ F28F *1/32*
U.S. Cl. 165—151 **1 Claim**



1. A tube fin heat exchanger assembly, comprising:

a plurality of parallel, spaced round sectioned tubes extending transversely through holes provided in a plurality of generally planar, spaced parallel fins;

a plurality of louver groups on said fins extending radially from tubes toward adjacent tubes;

said louver groups comprising a plurality of parallel slits formed in said fins extending in a direction generally between adjacent tubes and defining elongate rectangular portions therebetween;

said elongate rectangular portions inclined with respect to the plane of said fin to extend one edge thereof above one side of the fin and the other edge thereof above the other side of the fin to form a group of inclined louvers; and

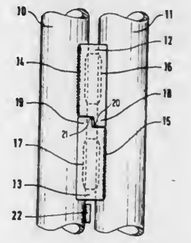
the direction of inclination of said louvers being opposite in alternating groups of said louvers which extend radially outward from each tube.

4,550,777

SYSTEM FOR INTERLOCKING CLOSELY AJACENT VERTICAL LENGTHS OF TUBE IN A HEAT EXCHANGER HAVING LOOPS

Jean Fournier; Henri Patron, both of Rochefort en Yvelines, and Paul Meynard, Verrieres le Buisson, all of France, assignors to Stein Industrie, France

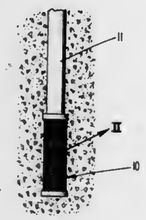
Filed Nov. 19, 1984, Ser. No. 673,052
Claims priority, application France, Nov. 25, 1983, 83 18815
Int. Cl.⁴ F28F *9/00*
U.S. Cl. 165—162 **2 Claims**



1. A system for interlocking closely adjacent vertical lengths of tubes in a heat exchanger in which each tube forms loops between an inlet length of tube and an outlet length of tube and in which tubes are suspended from a rigid structure by said inlet and outlet lengths of said tubes, said system comprising an upper hollow member and a lower hollow member located between each adjacent pair of lengths of tube, the upper hol-

low member being welded to a first length of tube in each adjacent pair and pressing laterally against the other or second length of tube in the pair, and the lower hollow member being welded to the second length of tube of the pair and pressing laterally against the first length of tube of the pair, the upper and lower hollow members having facing bottom and top ends, respectively, being located so as to come into end-to-end contact with each other and said upper and lower hollow members bottom and top ends having longitudinally overlapping lips projecting towards each other such that the lip of each hollow member is received between the lip of the other hollow member and the length of tube to which the other hollow member is welded, thereby laterally interlocking the lengths of tube of the pair, and enabling at least a portion of the weight of the first length of tube to be supported, via the interlocking hollow members, by the second length of tube of the pair, the first length of tube of each pair being chosen as that one of the lengths of tube which is further from the corresponding supporting length of tube than the other length of tube of the pair.

4,550,778
WELL SCREEN
Dale W. Sullivan, Wayne; Kermit W. Janssen, Valley Forge, both of Pa., and Andrew Mitchell, Pompano Beach, Fla., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jun. 20, 1983, Ser. No. 505,904
Int. Cl.⁴ E21B *43/08*
U.S. Cl. 166—234 **6 Claims**



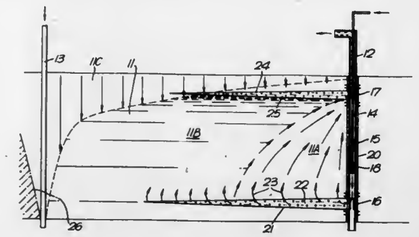
1. A well screen of generally hollow tubular configuration and comprised of at least one molded screen portion, such screen comprising a peripheral skin, rib means inwardly of the skin providing rigidifying support for the skin, said skin being of fluted construction defining a plurality of alternating longitudinal channels and longitudinal mounds on the outer peripheral surface thereof, and a plurality of longitudinally spaced slots in the skin, extending generally transverse to the axis of the tube, and creating openings through the skin, wherein said skin is further characterized by a plurality of longitudinal channels on the inner peripheral surface thereof, wherein said skin is of sawtooth configuration on both inner and outer peripheral surfaces when viewed in transverse cross-section, comprised of alternating mounds and channels on one surface complementarily aligned through the wall with alternating channels and mounds respectively on the opposite surface.

4,550,779
PROCESS FOR THE RECOVERY OF HYDROCARBONS FOR MINERAL OIL DEPOSITS
Bohdan M. Zakiewicz, 4521 E. 75th, Tulsa, Okla. 74136
Filed Mar. 6, 1984, Ser. No. 586,714
Claims priority, application United Kingdom, Sep. 8, 1983, 8306307
Int. Cl.⁴ E21B *43/24, 43/267*
U.S. Cl. 166—248 **22 Claims**

1. A process for recovery of hydrocarbons from mineral oil deposits, comprising the steps of:

(a) establishing fluid communication between a subterranean oil bearing strata and a processing facility on the overlying surface;

(b) injecting mining liquids at an injection level into the strata to displace and render flowable hydrocarbon deposits contained therein, the liquids being at a temperature not substantially in excess of 100° C. and being injected in hydrodynamic pulsations at a pressure greater than the

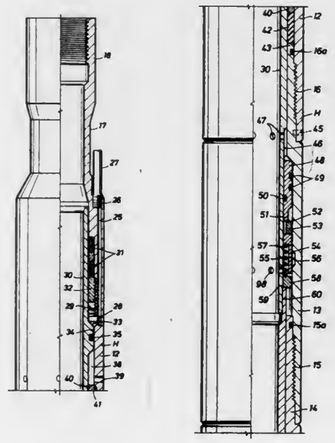


ambient pressure of the strata, but insufficient to induce fracturing and undesirable channelling differential within the formation;

(c) collecting the mixture of mining liquids and flowable hydrocarbons at a collecting level and bringing the mixture to the processing facility; and

(d) hydrodynamically recycling the mining liquids.

4,550,780
PRESSURE OPERATED SAFETY VALVE WITH LOCK MEANS
James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.
Continuation of Ser. No. 256,194, May 23, 1972, abandoned, which is a continuation of Ser. No. 72,034, Sep. 14, 1970,. This application Apr. 30, 1981, Ser. No. 259,019
Int. Cl.⁴ E21B *34/10*
U.S. Cl. 166—323 **39 Claims**



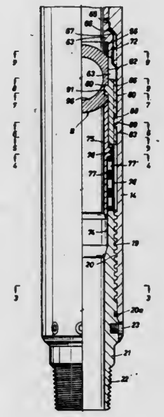
1. A safety valve for mounting in a well tubing at a subsurface location in a well, comprising:

a housing having a longitudinal bore therethrough and adapted to be connected at its upper and lower ends to a well tubing with said bore in alignment with the bore of the well tubing;

a valve disposed in the bore of said housing for movement to and from an open position for enabling upwardly flow in said bore and a closed positions for blocking upwardly flow through said bore;

valve actuator means disposed in said housing for imparting movement to said valve to move it to and from the open and closed positions for controlling upwardly flow in the bore of the well tubing in response to a remote control signal; and

lock means for mechanically locking said valve in the open position to prevent closing the valve for enabling repeated passages of well tools through said bore, said means for mechanically locking said valve selectively releasable to



unlock said valve to enable closing of said valve to resume control of upwardly flow.

4,550,781
METHOD OF AND APPARATUS FOR CUTTING AND RECOVERING OF SUBMARINE SURFACE CASING
Edmond Kagler, Jr., Sugar Land, Tex., assignor to A-Z International Tool Company, Houston, Tex.
Filed Jun. 6, 1984, Ser. No. 617,746
Int. Cl.⁴ E21B *29/00*
U.S. Cl. 166—340 **12 Claims**

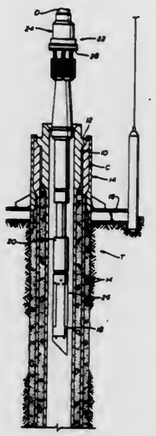
1. An apparatus for cutting and retrieving a submarine casing comprising:

a lower casing cutter having cutting arms which can be urged outwardly to cut submarine casing while the cutter is rotated;

an integral anchor and swivel combination above the casing cutter mounted for movement between an anchored engaged position with the casing to restrain longitudinal movement relative to the casing, and a disengaged position to permit movement thereof relative to the casing, said integral anchor and swivel combination having a central bore therethrough and gripping elements for engaging the casing in a gripping relation;

a mandrel suspended from a drill string extending through said central bore in said anchor and swivel combination and mounted for rotation relative to said combination, said mandrel connected in drive relation to said casing cutter for rotating said cutter in cutting relation to said casing;

latching means between said mandrel and said anchor and swivel combination selectively movable between a latched position in which said mandrel and said anchor and swivel combination rotate together, and an unlatched



position in which said mandrel rotates relative to said anchor and swivel combination and is permitted to move longitudinally relative to said combination; and

actuating means for said gripping elements mounted on said mandrel for longitudinal movement therewith and for relative rotational movement, said actuating means upon movement of said latching means to an unlatched position and raising of the mandrel moving said gripping elements into gripping relation with said casing and placing said mandrel and drill string in tension, and upon subsequent lowering of said mandrel and drill string releasing said gripping elements from gripping relation with said casing, said mandrel being mounted for rotation relative to said gripping elements and said actuating means in both the raised and lowered positions thereof.

4,550,782
METHOD AND APPARATUS FOR INDEPENDENT SUPPORT OF WELL PIPE HANGERS
John E. Lawson, Houston, Tex., assignor to Armco Inc., Middletown, Ohio
Filed Dec. 6, 1982, Ser. No. 446,995
Int. Cl.⁴ F16L *21/00*; E21B *19/10*
U.S. Cl. 166—382 **14 Claims**

1. In a remotely installed underwater well installation capable of operating under conditions of high internal fluid pressure and of supporting long and heavy strings of well pipe, the combination of

a support member having

an elongated upright through bore,

a generally upwardly facing lower support, and

a transverse annular inwardly opening groove in a portion of the wall of the through bore which is of substantially uniform diameter, the groove being located above the

lower support and having a lower wall constituting a load-bearing shoulder;

first hanger means seated on the lower support of the support member and having a first string of pipe depending therefrom,

the load applied by the first hanger means under the weight of the first string of pipe being applied directly to the support member via the upwardly facing lower support;

second hanger means from which a second string of pipe depends, the second hanger means comprising

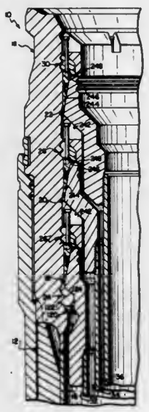
an annular load-bearing member having

a first lower surface portion,

a second lower surface portion disposed inwardly of the first lower surface portion and constituting a stop surface, and

an upwardly directed downwardly and inwardly tapering camming surface,

the annular load-bearing member being resiliently deformable between a first condition, in which the load-bearing member is relaxed and has an outer diameter sufficiently small to allow the load-bearing member to be passed through the through bore of the support member, and a second condition, in which the load-bearing member is



expanded to present an outer diameter substantially larger than the inner diameter of the load-bearing shoulder of the groove,

the load-bearing member being in its second condition and engaged in the groove with the first lower surface portion of the load-bearing member in flush engagement with the load-bearing shoulder of the groove, and

a camming member to which the weight of the second string of pipe is applied downwardly and which includes a downwardly and inwardly tapering camming surface engaged with the camming surface of the load-bearing member to maintain the load-bearing member engaged in the groove; and

upwardly projecting stop means which, at the time of lowering the second hanger means into the through bore of the support member, is located below the groove in a position to be engaged by the second lower surface portion of the annular load-bearing member to stop the annular load-bearing member so that downward movement of the camming member of the second hanger means cams the load-bearing member to its second condition;

the load applied by the second hanger means under the weight of the second string of pipe being applied directly to the support member via the lower wall of the groove.

4,550,783

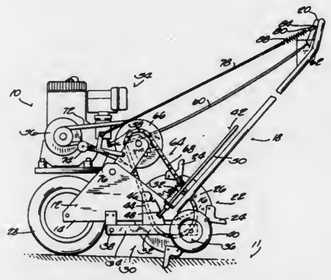
SELF-PROPELLED AERATING DEVICE

Loren F. Hansen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 874,209, Feb. 1, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,277

Int. Cl.⁴ A01B *45/02*

U.S. Cl. 172—21 **9 Claims**



1. A self-propelled aerating device including a chassis having a handle, aerating means for penetrating the ground, an engine having an idle speed, a throttle operatively connected with said engine and movable between a normally idle position for operating said engine at said idle speed and an advanced position for operating said engine at above said idle speed, aerator drive means movable between a normally disengaged position for rendering said aerating means inoperative and an engaged position for drivingly connecting said operating means with said engine, and control means for moving said aerator drive means from said disengaged position to said engaged position before moving said throttle from said idle position to said advanced position and for moving said throttle from said advanced position to said idle position before moving said aerator drive means from said engaged position to said disengaged position, said control means including a control handle attached to said handle and movable between a neutral position and a drive position, a throttle control linkage operably connected between said throttle and said control handle for locating said throttle in the idle position when said control handle is in the neutral position and for locating said throttle in the advanced position when said control handle is in the drive position, and a control linkage operatively connected between said aerator drive means and said control handle for locating said aerator drive means in the disengaged position when said control handle is in the neutral position and for locating said aerator drive means in the engaged position when said control handle is in the drive position, and spring means for biasing said throttle control linkage toward said idle position, said control handle including an override bracket operatively connected with said throttle and attached to said spring means for moving said throttle from said idle position to said advanced position in response to movement of said control handle from said neutral to said drive position, and for moving said throttle from said advanced position to said idle position in response to said spring means.

4,550,784

TOOL MOUNTING MEANS FOR A HYDRAULICALLY POWERED IMPACT HAMMER

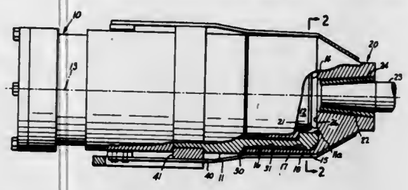
Jack B. Ottestad, 1442 Muirlands Dr., La Jolla, Calif. 92037, and Bernard W. Duehr, Jr., 4525 Twain Ave., Apt. 17, San Diego, Calif. 92120

Filed Jan. 3, 1983, Ser. No. 455,213

Int. Cl.⁴ B25D *9/14*

U.S. Cl. 173—114 **5 Claims**

1. In combination with a hydraulically powered impact hammer of the type which has an axis and utilizes a hydraulically compressed gas charge to store energy, which energy is abruptly released axially to drive the hammer for the purpose of axially driving a tool, said hammer and the means to drive it being mounted to a frame, said frame having a nose with an external peripheral axially-extending bearing surface, the improvement comprising: a tool mount adapted to hold said tool,



said mount having an internal axially-extending bearing surface, said bearing surfaces being in axial sliding embracing telescopic relationship with part of said mount extending around said nose, said mount being so disposed and arranged as to be struck by said hammer in order to drive said tool.

4,550,785

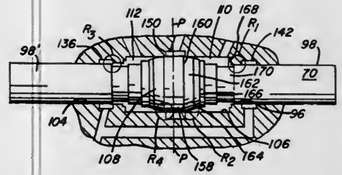
HAMMER

George A. Hibbard, Claremont, and Ward D. Morrison, South Acworth, both of N.H., assignors to Consolidated Technologies Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 680,823, Apr. 28, 1976,. This application May 29, 1979, Ser. No. 43,089

Int. Cl.⁴ B25D *9/00*

U.S. Cl. 173—134 **11 Claims**



1. A hydraulic drive for actuating a tool comprising: a body member having an elongated bore therein with a central longitudinal axis and with one end of said bore being adapted to receive at least a portion of an actuatable tool structure internally thereof; an elongated piston axially reciprocal within said bore to deliver impact blows to such a tool structure; said bore having an axially intermediate chamber section of greater cross-sectional extent than the cross-sectional extent of the adjacent sections of said bore axially outwardly thereof; said piston having a formed axially intermediate head section; said head section having axially extending outer peripheral surface closely slideably received within said chamber section to define chamber portions within said chamber section on axially opposite sides of said central portion of said head section which chamber portions vary inversely in volume as said piston reciprocates; first passageway means in said body member having axially spaced fluid inlet port means in communication with said bore axially outwardly of said chamber section, respectively, said piston having formed axially spaced means cooperable with said port means, respectively, for selective admission of hydraulic fluid to said chamber portions alternately; second passageway means in said body member having a discharge port means with an axial extent in communication with said chamber section; said outer peripheral surface having the axially spaced ends thereof cooperable with said axial extent of said discharge port means to control the discharge of hydraulic fluid from said chamber portions; said head section having formed portions extending axially outwardly from the ends of said axially extending outer peripheral surface respectively, and said formed portions being of a configuration to uniformly increase the flow of hydraulic fluid through said discharge port means and said second passageway means after an initiation of flow therethrough during reciprocation of said piston.

4,550,786

METHOD OF DRIVING STEEL PROFILES INTO A ROCK SUBSTRATUM

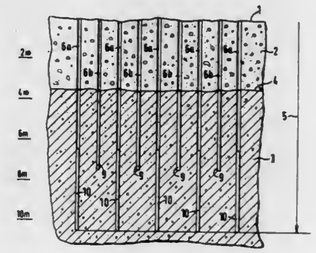
Winfried Rosenstock, Heyestrasse 28, 3063 Obernkirchen, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 564,710

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3248430

Int. Cl.⁴ E21B *43/11*

U.S. Cl. 175—2 **7 Claims**



1. A method of driving the lower ends of sheet piles into a rock substratum for the purpose of constructing a sheet pile wall, comprising the steps of boring boreholes in the rock substratum at predetermined intervals along the intended sheet pile wall, inserting at least one closed container containing an explosive charge into each borehole and disposing the containers in adjacent boreholes in at least two zones located at different depths, selecting a small volume of the explosive charge relative to the volume of the container, first detonating the explosive charges in at least two adjacent zones at one depth and then the explosive charges in at least two adjacent zones at a different depth to shatter the rock substratum in its internal structure but leave the substratum almost undamaged in its external form between the boreholes and subsequently driving sheet piles into the disintegrated rock substratum.

4,550,787

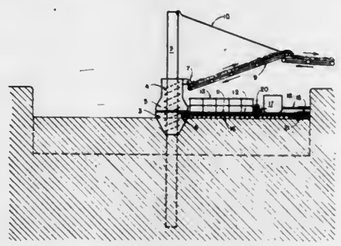
EARTH BORING MACHINE AND WORKING CRANE

Alexander Stefan, 4680 W. Russell Rd., Las Vegas, Nev. 89118

Filed Jul. 5, 1983, Ser. No. 510,746

Int. Cl.⁴ E21B *41/00*

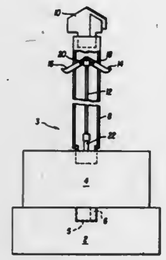
U.S. Cl. 175—88 **7 Claims**



1. A machine assembly for, first, excavating a hole in the ground, and then constructing a structure therein, comprising, in combination, an earth boring machine, a working crane and a post mountable in the ground, for selectively mounting said earth boring machine or said working crane thereupon; said earth boring machine comprising a rotatable unit and a non-

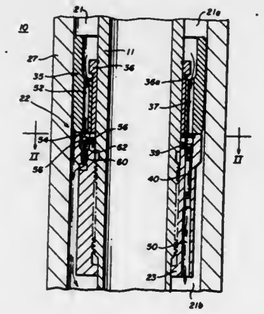
rotatable unit, said rotatable unit being under said non-rotatable unit; said rotatable unit including means to dig a circular ground surface around said post, and including means to raise upwardly loose earth taken from said hole; said rotatable unit comprising an upwardly flared lower sleeve surrounding a lower portion of a spiralled screw welded around a tubular collar through which said post extends, an opening on a side of said sleeve, a radially extending, horizontal chain frame secured at one end to said sleeve adjacent said sleeve opening, an endless chain rotated on said frame, and a plurality of earth-digging teeth along said chain, said chain frame being forwardly angled, and forming an acute corner at said sleeve opening, for aiding loosened, dug earth to enter said opening for being raised up said spiral screw.

4,550,788
ROOF BOLT HOLE GROOVER
Duk-Won Park, Northport, Ala., assignor to The Board of Trustees of the University of Alabama, University, Ala.
Filed Nov. 8, 1983, Ser. No. 549,736
Int. Cl.⁴ E21B *10/32, 7/28*
U.S. Cl. 175—173 **17 Claims**



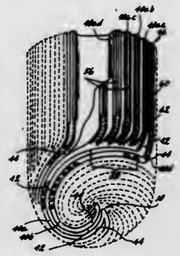
1. A drilling device for use in bolting together a discontinuous rock mass in order to provide a safe mine roof, said drilling device comprising:
(a) a hollow drill rod having a first axis;
(b) a drill bit mounted on the distal end of said hollow drill rod;
(c) at least two groove bits pivotally mounted in said hollow drill rod, the distal ends of said groove bits projecting through slots in said hollow drill rod over at least part of the pivotal motion of said groove bits and extending radially outwardly beyond the diameter of said drill bit, said at least two groove bits being shaped to score the surface of a hole drilled by said drill bit during use of the drilling device;
(d) a connecting rod disposed inside said hollow drill rod, the distal end of said connecting rod being operatively connected to said at least two groove bits such that axial reciprocating motion of said connecting rod causes pivotal reciprocating motion of said at least two groove bits;
(e) first means for rotating said hollow drill rod about said first axis; and
(f) second means for axially reciprocating said connecting rod, said second means comprising:
(i) a worm gear operatively connected to said first means and radially offset from said hollow drill rod such that said worm gear rotates in a circle which is concentric to said hollow drill rod, said worm gear being rotatable about a second axis which is parallel to said first axis but which rotates around said first axis;
(ii) a planetary spur gear operatively connected to said worm gear such that said planetary spur gear rotates about said second axis and such that the rotational motion of said planetary spur gear is transferred to said worm gear;
(iii) a stationary female sun gear which is concentric to said first axis and which meshes with said planetary spur gear;
(iv) a helical gear which meshes with said worm gear and which is mounted for rotation about a third axis which is perpendicular to said first axis;
(v) a conecting pin which is eccentrically mounted on said helical gear about a fourth axis which is parallel to said third axis but which rotates around said third axis; and
(vi) a first link the distal end of which is operatively connected to said connecting rod and the proximal end of which is connected to said connecting pin,
whereby said first means causes said worm gear and said planetary spur gear to rotate about said first axis, the meshing of said planetary spur gear with said stationary female sun gear causes said planetary spur gear and said worm gear to rotate about said second axis, the rotation of said worm gear about said second axis causes said helical gear to rotate about said third axis, the rotation of said helical gear about said third axis causes said connecting pin to rotate about said third axis, the rotation of said connecting pin about said third axis causes the distal end of said first link to reciprocate axially, the axial reciprocation of the distal end of said first link causes said connecting rod to reciprocate axially, and the axial reciprocation of said connecting rod causes said at least two groove bits to reciprocate pivotally, thereby scoring the surface of the holding drilled by said drill bit during use of the drilling device.

4,550,789
HYDRAULIC JARRING TOOL
Morgan L. Crow, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Mar. 23, 1984, Ser. No. 592,637
Int. Cl.⁴ E21B *31/113*
U.S. Cl. 175—297 **5 Claims**



1. An improved hydraulic jarring tool comprising:
an outer cylindrical member;
an inner cylindrical member disposed in spaced relationship therein and defining a closed chamber therebetween containing an operating fluid;
sleeve valve means partitioning said chamber into an upper chamber and a lower chamber, said means being axially driven by one of said members and in sliding sealing engagement with the other whereby relative axial movement of said members changes the volume of each said upper and lower chamber;
a first fluid passage in said sleeve valve means for fluid flow communication between said upper and lower chambers and a flow restriction means in said first passage permitting metered fluid flow during said relative axial movement; the improvement comprising:
a second fluid passage in said sleeve valve means for fluid communication between said upper and lower chambers during said relative axial movement, said second passage containing a normally open valve means responsive to a predetermined fluid velocity therethrough for closing said second passage and wherein said sliding sealing engagement between said sleeve valve and said other member becomes open at a predetermined axial location of said sleeve valve, to permit relatively free flow between said upper and lower chamber as the members are moved in a relatively axial direction and said fluid flow velocity through said second fluid passage is dependent upon the rate of relative movement of said members to said predetermined axial location whereby such rate of relative axial movement determines the condition of said normally open valve means.

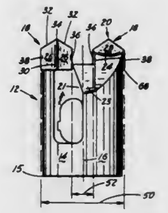
4,550,790
DIAMOND ROTATING BIT
Howard D. Link, Salt Lake City, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah
Filed Feb. 28, 1983, Ser. No. 470,507
Int. Cl.⁴ E21B *10/46, 10/60*
U.S. Cl. 175—329 **15 Claims**

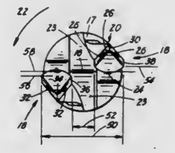


1. In a rotating bit having a bit face and center, and including a plurality of polycrystalline diamond elements, each element having a generally triangular prismatic shape characterized by two opposing triangular end surfaces connected by planar side surfaces, said element disposed on said bit face and extending therefrom, an improvement comprising:
disposition of each said polycrystalline diamond element on said bit face wherein said end surfaces of each said element are disposed at an angle with respect to a radius of said rotary bit so that an edge defined by the intersection of an adjacent end and side surface of said element serves as a leading edge with respect to the direction of travel of said element as said bit rotates about said bit center;
wherein each said polycrystalline diamond element is disposed on said bit face on a raised land having an edge and wherein said end surface of each polycrystalline diamond element is approximately parallel to and substantially adjacent to said edge of said raised land; and
wherein said land is disposed on said bit face in a generally spiral pattern whereby said direction of travel of said diamond element is acutely inclined with respect to the longitudinal length of said spirally patterned land,
whereby a dihedral leading edge is provided for cutting and fully parallel flow across said end surface adjacent said leading edge is also provided.

14. In a rotating bit having a center, a bit face and gage for said bit for drilling a bore, an improvement comprising:
a plurality of cutting teeth disposed on said bit and extending above said bit face, the amount of extension of said plurality of teeth above said bit face defining at each location a clearance between said bit face and said bore drilled by said bit, said plurality of teeth having a graduated height above said bit face beginning at a maximum near said center of said bit and decreasing toward the gage of said bit, the height of said plurality of teeth extending above said face of said bit being approximately inversely proportional to the radial distance of said tooth from said center of said bit, whereby the total flow area (TFA) of said bit is approximately uniform across the face of said bit.

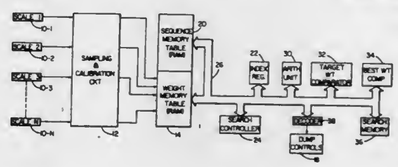
4,550,791
TWO-PRONG ROTARY BIT, ESPECIALLY FOR USE WITH ROOF DRILLS, AND INSERT THEREFOR
Edmund Isakov, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Continuation of Ser. No. 538,765, Oct. 3, 1983, abandoned. This application Apr. 3, 1985, Ser. No. 719,027
Int. Cl.⁴ E21B *10/54*
U.S. Cl. 175—410 **18 Claims**





1. A two-prong bit especially for use with roof drills comprising: a supporting body having an axis of rotation; a pair of inserts, each of said inserts having a cutting portion facing in the direction of rotation, a mounting portion and, when viewed in a direction parallel to the axis of rotation, a cross sectional configuration which is generally wedge-shaped and forms a longitudinally extending face cutting edge at the apex of said wedge.

4,550,792
COMBINATION WEIGHING SYSTEM
Oren A. Mosher; Oren G. Mosher, both of Hayward, and Ellwood S. Douglas, Orinda, all of Calif., assignors to Eagle Machinery Company, Oakland, Calif.
Division of Ser. No. 430,354, Sep. 30, 1982, Pat. No. 4,466,500. This application Jun. 6, 1984, Ser. No. 617,973
The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.
Int. Cl.⁴ G01G *19/22, 19/00, 19/52*
U.S. Cl. 177—25 **24 Claims**



1. A combination weighing system to search for and obtain a qualified weight of product not less than a target weight from among multiple quantities of the product in a cyclic operation comprising:
a plurality (N) of weighing scales, each receiving and weighing a quantity of product, and providing a weight signal

representative of the weight of the product in the scale when the scale is loaded;

arithmetic means connected with the plurality of scales to receive the weight signals for determining the combined weight of the product in selected combinations of the scales during a search operation;

comparator means connected to the arithmetic means for comparing the total weight of product of a selected combination of the scales with a target weight to identify combinations of scales qualified to form a package of the product at and above the target weight;

dump control means for dumping desired combinations of scales which are qualified in each cycle of machine operation;

combination search means for generating during each cycle of machine operation an ordered search sequence of scale combinations, each combination of the generated sequence consisting only of loaded scales which are ready to be dumped, the weights of each combination being determined by the arithmetic means in a search for a desired combination, the searching means including search control means for searching in different cycles of machine operation different numbers of loaded scales in ordered search sequences of correspondingly different length whereby each step of a search sequence comprehends a different combination of loaded scales regardless of the number (N) of scales in the system.

4,550,793

METHOD AND APPARATUS FOR CHECKING THE WEIGHT OF A MOVING ARTICLE

Alan F. Giles, Welwyn Garden City, England, assignor to Precision Engineering Products Limited (Suffolk), Suffolk, England

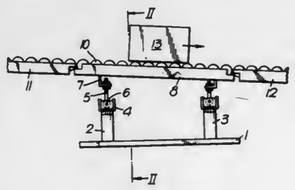
PCT No. PCT/GB82/00143, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/04123, PCT Pub. Date Nov. 25, 1982

PCT Filed May 12, 1982, Ser. No. 448,896

Claims priority, application United Kingdom, May 13, 1981, 8114584

Int. Cl.⁴ G01G *19/00, 21/22*

U.S. Cl. 177—145 **6 Claims**



1. A method of checking the weight of a moving article comprising passing the article across a weigh platform connected to at least two load cells spaced apart in the direction of travel of the article, sensing the output signals from the load cells, equating the output signals from each of the load cells to determine when the output signals from the load cells are equal and the article is correctly positioned on the platform for weighing, and adding together the output signals from the load cells when they are equal to provide a measure of the weight of the article and indicating only that measure of the sum of the output signals.

4,550,794

MOTORCYCLE HAVING AN ENGINE WITH A SUPERCHARGER

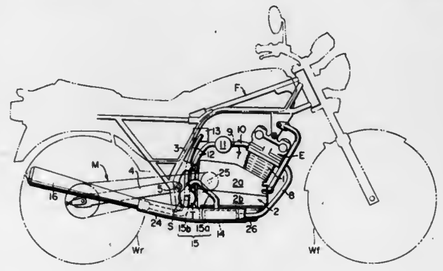
Kazuo Inoue, Tokyo, and Tsuneo Otsuka, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,472

Claims priority, application Japan, Jan. 14, 1981, 56-4368; Jan. 20, 1981, 56-6660; Jan. 20, 1981, 56-6662; Jan. 20, 1981, 56-6663; Jan. 22, 1981, 56-8225; Jan. 26, 1981, 56-9823

Int. Cl.⁴ B60K *13/00*

U.S. Cl. 180—219 **11 Claims**



1. A motorcycle comprising a frame member and an engine mounted on said frame member, a rear fork having at least one shaft at its front end connected to said frame member for vertical oscillation, said rear fork supporting at its rear end a rear wheel, a transmission case integrally mounted at the rear of said engine, a supercharger disposed backwardly of said transmission case below said rear fork shaft for compressing intake air fed to said engine, said supercharger comprising a turbine in an exhaust passage means and adapted to be driven by exhaust gas discharged from said engine as well as a compressor disposed in an intake passage means and connected with said turbine for rotation therewith for compressing intake air in said intake passage means, and an air cleaner connected to said compressor of the supercharger through said intake passage means, wherein said intake passage means comprises an upstream portion for connection between said air cleaner and said compressor and a downstream portion having a prechamber interposed therein on the side closer to said engine and being so formed as to extend upwardly from said compressor to pass by said rear fork shaft, said air cleaner being located rearwardly of said prechamber as well as said downstream portion of the intake passage means with respect to the advancing direction of the motorcycle.

4,550,795

EXHAUST SUPPORT SYSTEM

Hitoshi Teshima, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 15, 1984, Ser. No. 660,877

Claims priority, application Japan, Oct. 14, 1983, 58-193120

Int. Cl.⁴ E21F *17/02;* **F16F** *7/00*

U.S. Cl. 180—296 **16 Claims**

1. An exhaust support system for a midship engine rear wheel drive-type vehicle having a transversely mounted engine, comprising:

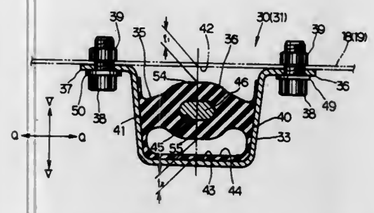
a cylindrical exhaust device extending in a lateral direction across the vehicle, having an inlet passage and an outlet passage;

an exhaust pipe having an inlet passage communicated with the engine and outlet passage communicated with said inlet passage of the exhaust device;

a first and a second mounting means for mounting said cylindrical exhaust device onto a body portion of the vehicle, each of said mounting means comprising:

a bracket secured onto the vehicle body portion;

a resilient member having an upper surface and a lower surface, said resilient member being contained within said bracket such that the resilient member is fixed to said bracket at vertical portions thereof and a vertical clearance is provided between said upper surface on the



resilient member and said vehicle body portion and a vertical clearance is provided between said lower surface of the resilient member and said bracket; and

a support rod fixed to said cylindrical exhaust device at one end thereof and a second end is slidably fixed to said resilient member at a second end thereof.

4,550,796

MOUNT FOR LOUDSPEAKER ON VEHICLE PANEL

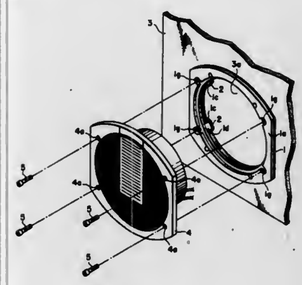
Shuichi Tomita, Yamagata, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,444

Claims priority, application Japan, Dec. 20, 1983, 58-196072[U]

Int. Cl.⁴ H04R *1/20*

U.S. Cl. 181—141 **4 Claims**



1. A mount for mounting a loudspeaker on a panel of a vehicle or the like, comprising:

a spacer having an aperture formed therein shaped to receive said loudspeaker;

a plurality of fitting inserting members provided around an inside periphery of said aperture in said spacer, each of said fitting inserting members comprising an arm protruding inwardly from an underside of said spacer, and a sack-shaped fitting inserting member extending from an inward end of said arm said arm having a mounting hole formed therein aligned with a hole in said spacer inwards of said fitting inserting member, and a hinge connecting said arm to said spacer; and

a fitting shaped to be received in one of said fitting inserting members, said fittings each having a screw hole for supporting a mounting screw on an underside of a respective one of said holes in said spacer,

wherein said loudspeaker is mounted in said panel by placing said spacer over a corresponding aperture in said panel, bending said fitting inserting members so as to hold said spacer to said aperture in said panel and align said screw holes in said fittings with the corresponding holes in said spacer, inserting said loudspeaker into said aperture in said spacer, and screwing screws through screw holes formed in said loudspeaker and into said screw holes in said fittings through said holes in said spacer.

4,550,797

LOUDSPEAKER DIAPHRAGM MADE OF A MOLDED, SINTERED CERAMIC BODY

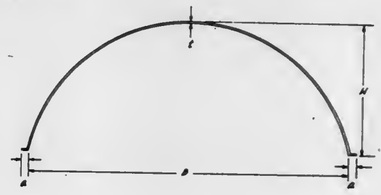
Kiyoaki Suzuki, Zama; Hidetsugu Suzuki, Sagamihara; Katsuhiro Onuki, Tokyo; Isami Nomoto, Yokohama; Yoshiaki Fukuda, and Takeshi Sato, both of Yokoze, all of Japan, assignors to Victor Company of Japan, Yokohama and Mitsubishi Mining & Cement Co., Ltd., Tokyo, both of, Japan

Filed Jan. 17, 1984, Ser. No. 571,652

Claims priority, application Japan, Jan. 17, 1983, 58-4143; Sep. 8, 1983, 58-164244

Int. Cl.⁴ G10K *13/00;* **H04R** *7/00*

U.S. Cl. 181—167 **7 Claims**



1. A ceramic loudspeaker diaphragm in cone or domed form and having an opening at one end thereof, said diaphragm comprising crystal grains of a ceramic, said crystal grains having a maximum size of below 1/5 times a thickness of said diaphragm, the thickness of said diaphragm ranging from 30 to 100 microns.

4,550,798

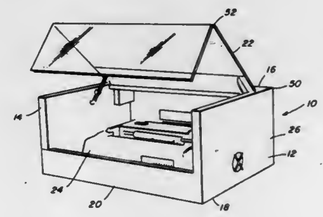
ACOUSTIC PANEL AND ENCLOSURE

Henry D. Swartz, Chestnut Hill, Mass., and Alan H. Miller, Hickory, N.C., assignors to Anechoic Systems Company, Inc., Westwood, Mass.

Filed Jan. 4, 1985, Ser. No. 688,649

Int. Cl.⁴ B41J *29/08;* **E04B** *1/82*

U.S. Cl. 181—201 **13 Claims**



8. An acoustic enclosure comprising:

(a) a pair of side panels, each said side panel including a polymeric outer stratum, a thermoplastic intermediate stratum having inner and outer sheets disposed parallel to one another and a plurality of interior walls forming a plurality of internal chambers between said inner and outer sheets, the longitudinal axis of each said internal chamber lying in a plane which is in spaced parallel relationship to the plane in which the polymeric outer stratum lies, and an inner stratum composed of an open celled acoustic material, said outer, intermediate, and inner strata superposed on one another and fixed to one another;

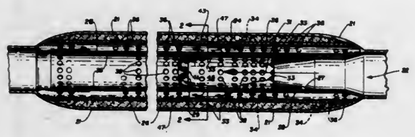
(b) a rear panel having an open celled acoustic material outer stratum, a thermoplastic intermediate stratum and an open celled acoustic material inner stratum, said strata of said rear panel being superposed on one another and in a fixed relationship to one another;

(c) a bottom panel having an inner stratum composed of an open celled acoustic material, an intermediate stratum composed of a thermoplastic material and an outer stratum composed of an open celled acoustic material, said strata of said bottom panel being superposed on one another and in a fixed relationship to one another;

(d) said side panels, said rear panel and said bottom panel attached to one another to form an enclosure having an opening at the top and front; and

(e) a cover hinged to said enclosure, said cover moveable between an open position and a closed position, said enclosure being closed when said cover is in said closed position and opened when said cover is in said open position.

4,550,799
MUFFLER FOR EXHAUST GASES
Ray T. Flugger, Santa Rosa, Calif., assignor to Wayne King, Modesto, Calif.
Filed Feb. 22, 1983, Ser. No. 468,866
Int. Cl.⁴ F01N *1/24*
U.S. Cl. 181—244 **4 Claims**



1. A muffler for exhaust gases or the like having a sound component therein, said muffler including a casing having a fluid inlet opening and a fluid outlet opening, stream forming means positioned proximate said inlet opening and formed to direct exhaust gases in a stream inside said casing from said inlet opening toward said outlet opening, sound absorbing material positioned to extend longitudinally inside said casing laterally of said stream, and partition means positioned inside said casing and formed to extend transversely across said stream and to terminate in a periphery of said partition means spaced apart from said casing to deflect said stream formed by said stream forming means and sound components therein laterally in said casing around said periphery of said partition means for flow toward said sound absorbing material and said outlet opening, wherein the improvement in said muffler comprises:

said partition means being provided with stream splitting means formed to positively divide said stream into a plurality of stream portions for flow around said periphery of said partition means, said stream splitting means being positioned in said casing proximate the center of the area of impact of said stream with said partition means to laterally deflect stream portions of substantially equal volume toward said sound absorbing material to prevent perferential erosion of said sound absorbing material, and

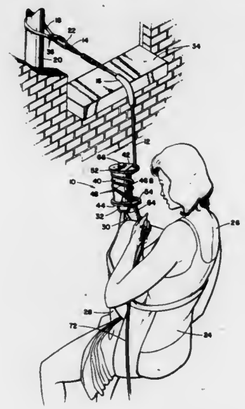
said stream formed means and said stream splitting means being further formed to cooperatively define a plurality of flow paths for exhaust gases which extend through said casing from said inlet opening around said periphery of said partition means to said outlet opening without reversal of the direction of flow of said gases for low backpressure flow of said gases through said muffler.

4,550,800
SHOPPING CART SAFETY BELT
Glory A. Dietrich, 8406 Sedan Ave., Canoga Park, Calif. 91304
Filed Jan. 24, 1983, Ser. No. 449,406
Int. Cl.⁴ B62B *9/24;* **A47D** *15/00*
U.S. Cl. 182—3 **1 Claim**



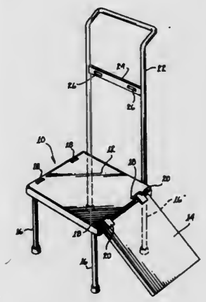
1. The method of securing a child to a shopping cart of the type having a seat forming part of a basket made from heavy wires or rods, wherein said seat includes a back rest, using a safety belt of the type made from a webbing material and having at one end a snap hook and at the other end a slide engaging said webbing at a point intermediate both ends and forming an adjustable loop, placing the child on the seat, placing said loop around the child, inserting the safety belt and part of said loop between a pair of wires or rods forming the seat back, pulling on said safety belt until the child is held firmly against the seat back to ensure a snug fit of the webbing around the child and attaching said snap hook to one of the wires or rods forming said basket.

4,550,801
PERSONAL HIGH RISE EVACUATION APPARATUS
William E. Forrest, Denver, Colo., assignor to Advanced Evacuation Systems, Denver, Colo.
Filed Nov. 29, 1984, Ser. No. 676,386
Int. Cl.⁴ A62B *1/14, 1/20*
U.S. Cl. 182—7 **10 Claims**



1. A descent control device for use with a load-carrying harness suspended therefrom to lower a load down on a rope from an elevated position where one end is anchored to a relatively lower position reached by its free end which comprises: a friction drum of a length adapted to receive a plurality of turns of rope wrapped therearound, said drum having an upper end and a lower end; top and bottom endplates attached respectively to the upper and lower ends of said drum, said endplates both having a portion thereof overhanging said drum, each of said overhanging portions containing an aperture therethrough sized to loosely receive the rope, the aperture in the bottom plate including at least one arcuate slot with an entryway of a width adapted to freely admit the rope opening into the latter, said slot tapering from said entryway as it follows the contour of the drum part way therearound to a relatively narrower blind end; and means depending from the bottom plate for attaching the load-carrying harness, said drum with several turns of the rope coiled upwardly therearound in the direction of the slot cooperating therewith and with the aperture in the top endplate when the free end of said rope is allowed to hang free and seek a position intermediate the entryway and blind end of said slot to slowly lower the load at a predetermined safe rate, said slot providing means for varying the descent rate by manually positioning the rope therealong, and said slot becoming operative as a manually-actuated brake when the free end of the rope is tensioned and held in the blind end thereof.

4,550,802
FOOTSTOOL WITH INCLINED RAMP
Colleen F. Roper, 8935 W. Peoria Ave., Peoria, Ariz. 85345
Filed Dec. 31, 1984, Ser. No. 687,950
Int. Cl.⁴ A47C *9/00*
U.S. Cl. 182—113 **19 Claims**



1. A footstool comprising:

a top, supporting legs, a removable inclined ramp;

engagement means for attaching an end of said ramp to said top; and

an upwardly extending handle and support railing.

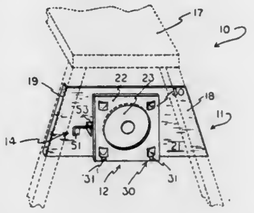
4,550,803
ADJUSTABLE IMPLEMENT HOLDER FOR STEPLADDERS
Emma R. Finster, and Peter W. Finster, both of 217 Glasgow St., Kitchner, Ontario, Canada
Filed Feb. 4, 1985, Ser. No. 697,612
Int. Cl.⁴ E06C *7/14*
U.S. Cl. 182—129 **8 Claims**

1. An apparatus for adjustably supporting diverse articles on a stepladder wherein the apparatus comprises:

a base unit including a base member whose outboard edges are adapted to frictionally engage the exterior surface of the stepladder legs;

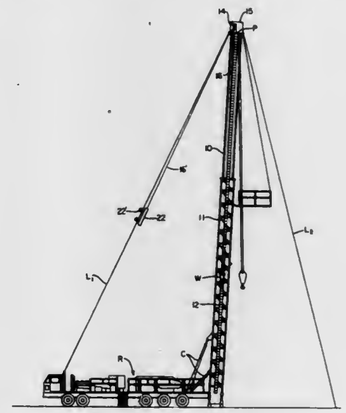
a support unit rotatably mounted on said base unit;

an article securing means releasably engaged by said support unit, and adapted to operatively support diverse articles; and



a releasable locking means operatively associated with said base unit, and said support unit for restricting the relative rotation between said base unit, and said support unit.

4,550,804
CLIMBING ASSIST APPARATUS HAVING CONTROLLED DESCENT AND ESCAPE MECHANISM
Bruce L. Bummer, 5017 Alcova Rte., P.O. Box 56, Casper, Wyo. 82604
Filed Feb. 15, 1984, Ser. No. 580,523
Int. Cl.⁴ A62B *35/02, 1/12*
U.S. Cl. 182—233 **9 Claims**



1. In climbing assist apparatus adapted for use in climbing a ladder on a derrick and the like wherein a cable is attached to a worker climbing the ladder, said cable being trained over a sheave mounted at the upper end of said ladder and said cable passing downwardly and connected to counterweight means to remove any slack in said cable as the worker is climbing the ladder, the improvement comprising:

positive displacement motor drive means including a motor drive shaft keyed to said sheave, said motor drive means being freely rotatable in one direction of rotation in response to advancement of said cable over said sheave as the worker is climbing said ladder; and

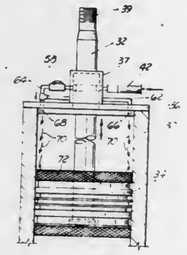
a hydraulic fluid circuit including flow controller means in said circuit applying a predetermined resistance to rotation of said motor drive in response to the application of force by said cable to said motor drive shaft in a direction opposite to the one direction whereby to control the rate of descent of the worker in the event of a fall or escape from the ladder.

4,550,805

HYDROSTATIC LUBRICATION SYSTEM FOR A WALKING BEAM

Gregory L. Zimmerman, 625 S. Patton, Denver, Colo. 80209

Filed Nov. 30, 1984, Ser. No. 676,852
Int. Cl.[4] F16N *1/00*
U.S. Cl. 184—18 **4 Claims**



1. An improved lubrication system for the hydrostatic lubrication of a bearing mounted in a bearing housing and disposed around a piston shaft and cooling a piston and inner cylinder wall of a walking beam compressor, the compressor mounted on a walking beam pump, the piston connected to a piston shaft which is raised and lowered by the movement of the walking beam of the walking beam pump, the shaft supported by the bearing housing having the bearing disposed around the piston shaft, the compressor used for compressing low pressure natural gas, the system comprising:
   a pressure oil lubricator;
   an oil line connected to the lubricator;
   a bearing housing inlet port in the side of the bearing housing;
   a bearing inlet port in the bearing and communicating with the bearing housing inlet port, the inlet ports receiving oil from the oil line and introducing oil around the piston shaft;
   a bearing housing outlet port in the side of the bearing housing communicating with the inlet port;
   an adjustable pressure relief valve connected to the bearing housing outlet port; and
   excess oil lines connected to the adjustable pressure relief valve and to excess oil ports in the top of the walking beam compressor for introducing excess oil into the top of the compressor and around the inner cylinder wall and the top of the piston.

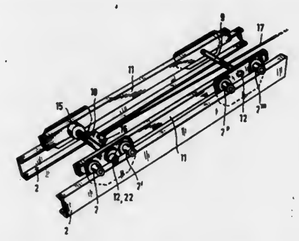
4,550,806

ELEVATING APPARATUS

Albert Bocker, Werne, Fed. Rep. of Germany, assignor to Albert Bocker GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,288
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222508
Int. Cl.[4] B66B *9/20*
U.S. Cl. 187—10 **6 Claims**

1. A load-carrying elevator having a first linear section inclined at a specified angle and a second linear section downwardly inclined from the higher end of the first section, a pair of spaced tracks located on said sections and forming guide rail extensions from one section to the other, a chassis arranged to travel along said tracks and movable by means of a cable, said chassis comprising spaced side plates, a pair of axles extending between said side plates spaced at intervals along the length of the chassis, rocker arms mounted on each of said axles and pivoted therewith, rollers mounted on said rocker arms engaging the underside of the tracks, and rollers mounted on said rocker arms at either side of the axle arranged to roll on the top surface of the tracks, the load on the carriage being distributed between the axle while the load on each axle is distributed between the rollers engaging the top of the track, the construction being such as to enable a smooth transition of the carriage from a position where both axles are over the first linear section of the elevator to one where one axle is over the first section and the other axle is over the second section of the elevator.

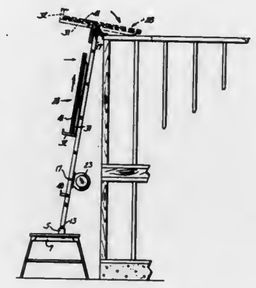


4,550,807

BUILDING CONSTRUCTION LIFT APPARATUS

Eilef J. Ohlgren, Rte. 2, Box 23, Clear Lake, Minn. 55319

Filed Aug. 4, 1983, Ser. No. 520,419
Int. Cl.[4] B66B *9/20*
U.S. Cl. 187—10 **4 Claims**



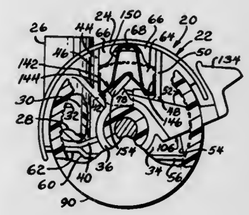
4. A portable lift apparatus for use in building construction comprising:
   (a) two elongated spaced apart support members extending in a generally vertical direction, each including an upper end and a lower end;
   (b) each of said elongated support members including separate means for independently stabilizing said elongated support members with respect to a building structure;
   (c) conveyor means associated with each of said elongated support members for movement generally along the longitudinal extent of said elongated support members between said upper and lower ends;
   (d) said conveyor means of each of said elongated support members being operatively interconnected to one another by universal joint means providing for cooperative conveying action by said conveyor means such that said conveyor means move at generally the same speeds and in generally the same direction, said universal joint means being readily detachable to enable said conveyor means to be readily interconnected for operation and disconnected for transport;
   (e) said conveyor means each including a lift bracket means for cooperatively supporting an article conveyed by said conveyor means, said lift bracket means being configured to pivot said article toward the building structure about a generally horizontal axis proximate the upper ends of said elongated support members;
   (f) on each of said elongated support members, a chain passing around a first and a second pulley, the first pulley being mounted at said upper end of said support member, the second pulley being mounted near the lower end of said support member and at least one of said pulleys being sprocketed to interact with said chain such that when said sprocketed pulley rotates said chain passes around said pulleys and moves said lift bracket means, said lift bracket means being pivotally mounted on said endless chain; and
   (g) on the first of said elongated support members,
      (i) a motor connected to the sprocketed pulley mounted on the same elongated support member for causing said sprocketed pulley to rotate;
      (ii) two or more rods and one or more universal joints detachably connected to each other and interacting to connect said motor with the sprocketed pulley mounted on the second of said support members to allow said motor to rotate said sprocketed pulley on said second support member and for adjusting the relative rotation rates of the sprocketed pulley mounted on the first said support member and the sprocketed pulley on the second said support member such that said lift members mounted on each of said chains will each move at substantially the same speeds and for substantially the same distance when said sprocketed pulleys are rotated by said motor.

4,550,808

BRAKE FOR TWIN WHEEL CASTERS

Henry J. Folson, Redondo Beach, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 30, 1984, Ser. No. 575,135
Int. Cl.[4] B60B *33/00;* **F16D** *51/00*
U.S. Cl. 188—1.12 **10 Claims**



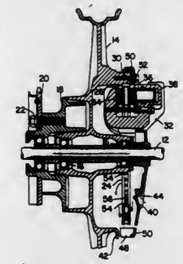
1. A braking wheel construction comprising a wheel having a cylindrical flange with the inner surface thereof accessible as a brake drum, means for mounting said wheel including an axle, a brake operating lever pivotable about said axle, a brake shoe engageable with said inner surface, and an over center mechanism including a flat link member capable of snapping into and out of spreading engagement between said brake operating lever and said brake shoe, and spring means for resiliently urging said shoe out of engagement with said surface, a first edge of said link being disposed in a notch in said lever, and a second edge of said link being in contact with said shoe, whereby pivoting of said lever in one direction forces said shoe into braking engagement with said surface and said shoe is released from such braking engagement upon pivoting of said lever in an opposite direction.

4,550,809

DISC BRAKE SYSTEM WITH FAN MEANS

Takeshi Kawaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 340,768, Jan. 19, 1982, abandoned, and a continuation-in-part of Ser. No. 340,770, Jan. 19, 1982. This application Jul. 12, 1982, Ser. No. 397,506
Claims priority, application Japan, Jan. 24, 1981, 56-8584; Jan. 24, 1981, 56-8585; Feb. 6, 1981, 56-14957[U]; Feb. 6, 1981, 56-14958[U]; Jul. 17, 1981, 56-105319[U]; Jul. 17, 1981, 56-105317[U]; Jul. 17, 1981, 56-105318[U]; Jul. 17, 1981, 56-105320[U]
Int. Cl.[4] B60T *1/06;* **F16D** *55/224, 65/12*
U.S. Cl. 188—18 A **6 Claims**



1. A disc brake system for a motorcycle having a wheel hub including a brake disc fixed on one side to said hub to rotate with said hub, said brake disc including radial passages therethrough defining a plurality of webs between said passages, a caliper member fixed to the motorcycle in braking engagement with said brake disc, a side panel of substantially the same diameter as said brake disc covering said brake disc and having a cooling air introduction port, wherein the improvement comprises a radial flow fan means for inducing radial outward air flow from said brake disc, said fan means having a plurality of vanes positioned adjacent the periphery of said brake disc and aligned with said webs, a shroud ring extending from the periphery of said side panel to cover the outer surface of said radial flow fan means and a flange on said hub extending radially to cover the inner surface of said radial flow fan means.

4,550,810

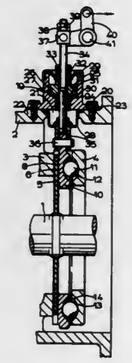
DISC BRAKES FOR VEHICLES

Anthony G. Price, Gwent, Wales, and Roy Campbell, Worcestershire, England, assignors to Lucas Industries public limited company, England

Filed Nov. 21, 1983, Ser. No. 553,759
Claims priority, application United Kingdom, Nov. 25, 1982, 8233692
Int. Cl.[4] F16D *55/39, 55/40*
U.S. Cl. 188—71.4 **12 Claims**

1. A disc brake for vehicles comprising a stationary housing having a relatively stationary surface, at least one friction disc having a braking face of annular outline and a peripheral edge, said disc being rotatable within said stationary housing and adapted to be moved axially into engagement with said relatively stationary surface, and actuating means for moving said friction disc into engagement with said surface to apply said brake, said actuating means comprising at least one pressure plate superimposed upon said braking face and having spaced side edges located outside said peripheral edge of said disc, a non-rotatable reaction member, and camming means cooperating with said pressure plate and said reaction member, movement of said pressure plate in a radial direction relative to said reaction member causing a camming effect to be produced so that said pressure plate moves axially to urge said friction disc into engagement with said surface, means for producing said movement in said radial direction, and further means for constraining said pressure plate against angular movement,

said further means comprising means rigid with said housing defining first parallel guide surfaces located outside said peripheral edge of said disc, and second parallel guide surfaces on said side edges of said pressure plate for slidable engagement with said first guide surfaces, said engagement between said first and second guide surfaces being so constructed and arranged as to positively guide said pressure plate for total bodily



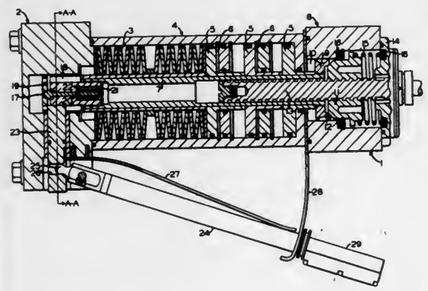
movement in said radial direction in response to operation of said means for providing said movement in a radial direction, to prevent angular movement of said pressure plate with respect to said reaction member, but to permit movement of said pressure plate in an axial direction with respect to said reaction member at the same time as said pressure plate is being moved in said radial direction.

4,550,811

MANUALLY RELEASABLE PARKING BRAKE DEVICE

Steven C. Rumsey, N. Huntingdon, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Feb. 6, 1984, Ser. No. 577,406
Int. Cl.⁴ F16D *65/24*
U.S. Cl. 188—170 **17 Claims**



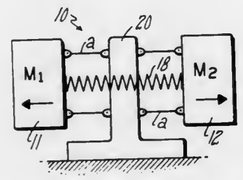
1. A manually releasable, spring-applied, air-released parking brake device comprising:
(a) a cylinder housing;
(b) a non-rotatable spindle coaxially disposed in said housing;
(c) spring means disposed in said housing for exerting an axial spring force in a direction to effect a brake application;
(d) piston means subjectable to fluid pressure for exerting an axial force in opposition to such spring force such that, said spring means is compressed to effect a brake release;
(e) clutch means threadingly engageable with said spindle for selectively engaging and disengaging said spring means with said spindle, said clutch means having at least a portion which is rotatable;
(f) a guide rod coaxially extending through at least a portion of said housing and being secured to a portion of said clutch means;
(g) a spline member secured to the end of said guide rod opposite said clutch means for movement therewith, said spline member having a plurality of spline grooves formed externally thereon;
(h) latching means extending partially within said housing and having at least one extending surface for engaging at least one of said plurality of spline grooves and restraining said spline member from rotational movement;
(i) manual-release means connected to said latching means for manually removing said extending surface of said latching means from engagement with said spline groove; and
(j) blocking means retractably connected to said spline member for blocking said extending surface of said latching means from engagement with said spline groove following operation of said manual-release means and until said guide rod is moved axially to a brake-release position.

4,550,812

FIXED POSITION, FIXED FREQUENCY PENDULAR-TYPE VIBRATION ABSORBER WITH FREQUENCY LINEARIZATION

Kenneth C. Mard, Stratford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 931,085, Aug. 4, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 185,070
Int. Cl.⁴ F16F *7/10*
U.S. Cl. 188—379 **8 Claims**



1. A fixed frequency vibration absorber adapted to be fixedly attached to a vibration prone system to cooperate with the principal vibration excitation source which primarily generates vibrations in a given direction so as to control system vibrations and comprising:
base means,
two mass means of selected equal mass,
pendular connecting means, having a pendular arm of length "a", connecting said mass means in opposed positions to said base means for support from and allochiral pendular motion in said given direction.
spring means operatively connected between said mass means in selectively preloaded condition to exert a force "Fnr"on said mass means to establish the desired natural frequency thereof, and to also cause said mass means to move in coincident, allochiral pendular motion so that motion of said mass means produces additive forces in said given direction to absorb the vibration force established by said principal source, and so that all other forces so produced mutually cancel, said spring means also being of selected spring rate "Ks" to compensate for the spring rate reduction caused by pendular motion of the pendular connecting means and thereby provide an essentially linear spring rate acting on said mass means for angles of pendular motion "θ" of at least $\pm 45°$, so that the natural frequency of the vibration absorber is substantially constant throughout this range of operation, and wherein "Ks" is selected according to the equation:

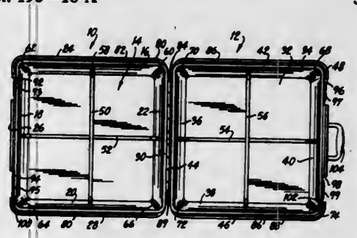
$$K_s = F_{nr}/a\left[\frac{\left(1-\frac{\sin\theta}{\theta}\right)\left(\frac{\theta}{2\sin\theta}\right)}{(1-\cos\theta)}\right]$$

4,550,813

MOLDED WHEELED LUGGAGE, ENSEMBLE THEREOF AND PROCESS FOR MAKING THE SAME

Arthur J. Browning, P.O. Box 4508, Toms River, N.J. 08754-4508

Filed Mar. 28, 1984, Ser. No. 594,122
Int. Cl.⁴ A45C *13/26*
U.S. Cl. 190—18 A **37 Claims**



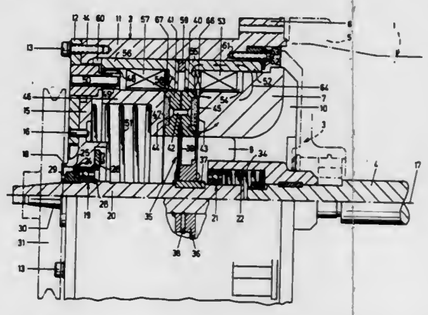
1. A lightweight, strong, molded, rigid, plastic luggage comprising in combination a first molded one-piece plastic section and a second molded one-piece plastic section adapted to cooperate with each other, each of said sections including a side panel, four integrally molded, sloping walls having sloping curved corners and angled edges projecting upwardly from and enclosing said side panel; integrally molded support means disposed on the side panel of at least one of said sections extending up said walls towards said angled edges substantially midway between the ends of said walls; each of said sections further being provided with integrally molded butt hinge means and a reinforcing rib disposed on the periphery of one of said walls and a plurality of shaped recesses for receiving the cooperating halves of locks or catches disposed on the wall directly opposite; the wall provided with the butt hinge means of at least one of said sections also being provided with at least two integrally molded feet located in the vicinity of the ends of and opposite said butt hinge means; three of the walls of said second section being porvided with a pair of peripheral parallel ribs forming an offset groove extending continuously around and near the periphery thereof and three of the walls of said first section being provided with an offset tongue including a supporting rib which extends continuously around and near the periphery thereof; the butt hinge means on said first and second sections being positioned thereon so that they interleave with each other and form a continuous passageway for reception of a hinge pin, said offset tongue and said offset groove being positioned on the respective sections so that they mate and said shaped recesses being positioned on the respective sections so that they are located across from each other when said sections are assembled in cooperative relationship.

4,550,814

ELECTROMAGNETIC CLUTCH-BRAKE FOR INDUSTRIAL SEWING MACHINE

Alan J. Harry, Royston, England, assignor to Frankl & Kirchner GmbH & Co. KG Fabrik für Elektromotoren u. elektrische Apparate, Schwetzingen/Baden, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,607
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142570
Int. Cl.⁴ B60K *41/24*
U.S. Cl. 192—18 B **6 Claims**



1. A clutch-and-brake unit for use with a continuously-rotating, motor-driven shaft, comprising:
(a) a rotatable shaft;
(b) a disk connected to the rotatable shaft for rotation therewith and having a clutch surface on one side and a brake surface on the other side, the disk being secured against axial movement relative to the rotatable shaft and comprising a spider which is resiliently bendable axially of the shaft;
(c) a clutch pressure plate rotated by the motor-driven shaft and facing the clutch surface of the disk;
(d) a brake pressure plate facing the brake surface of the disk, secured against rotation, and movable axially of the rotatable shaft into engagement with the brake surface;
(e) means for constantly urging the brake pressure plate into engagement with the brake surface of the disk with a force which is sufficient to brake the disk against rotation only when the clutch surface of the disk is not operatively engaged with the clutch pressure plate, the resilient force of the spider and the force of the means for constantly urging the brake pressure plate into engagement with the brake surface being in equilibrium; and
(f) clutch and brake surfaces of the disk respectively into clutching and braking operative engagement with the clutch and brake pressure plates.

4,550,815

CLUTCH WEAR INDICATOR

Ronald J. Gale, Hornchurch, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

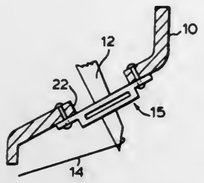
Filed Oct. 27, 1983, Ser. No. 546,147
Claims priority, application United Kingdom, Dec. 24, 1982, 8236770
Int. Cl.⁴ F16D *23/00*
U.S. Cl. 192—30 W **7 Claims**

1. A clutch wear indicator adapted for use with a clutch which comprises a clutch lining and which is mounted within a clutch housing, wherein a clutch actuating lever operably engages said clutch and extends through an aperture in said clutch housing, said clutch actuating lever being adapted to travel a distance from a clutch release position to a first clutch engaged position corresponding to an unworn clutch lining and a greater distance to a second clutch engaged position

corresponding to a substantially worn clutch lining, said clutch wear indicator comprising:

a base mounted to said clutch housing about said aperture, said clutch actuating lever extending through an aperture in said base:

a carrier frame mounted within the aperture of said base via an engagement which permits movement of said carrier frame relative said base in the direction of movement of said clutch actuating lever for clutch release and substantially no movement relative said base in other directions, said clutch actuating lever extending through an aperture in said carrier frame and movable therein from a clutch



engaged position at a first end of said aperture to a clutch released position at a second end of said aperture: and

contact means mounted to said carrier frame and operably connected to signal means adapted to give a signal upon actuation of said contact means, said contact means being adapted for actuation by contact with said clutch actuating lever:

wherein said carrier frame is movable in said base by movement of said clutch actuating lever to a location at which said contact means is positioned to be in contact with said clutch actuating lever in said clutch engaged position corresponding to a worn clutch lining.

4,550,816

SYSTEM FOR CONTROLLING STALL SPEED FOR AN ELECTROMAGNETIC CLUTCH

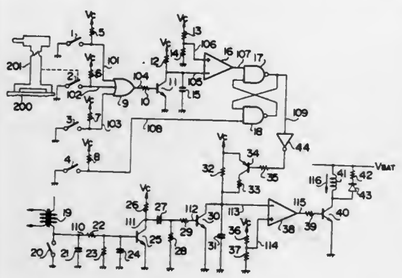
Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1983, Ser. No. 461,333

Claims priority, application Japan, Jan. 29, 1982, 57-13550

Int. Cl.⁴ F16D *37/02;* **B60K** *41/00, 41/02*

U.S. Cl. 192—0.052 **16 Claims**



1. A system for controlling stall speed for an electromagnetic clutch having a magnetizing coil for engaging a crankshaft of an internal combustion engine with an input shaft of a transmission of a vehicle, comprising:

means comprising a first electric circuit for allowing clutch current to flow through said magnetizing coil;

means comprising a second electric circuit for increasing said clutch current with an increase of engine speed;

a third electric circuit having two states, one of said states being a low clutch current providing state which decreases the clutch current;

heavy load detecting means for producing a first signal at heavy load conditions of the engine;

means comprising a vehicle speed switch for producing a second signal in a low vehicle speed range below a low predetermined speed;

gate circuit means responsive to simultaneous occurrence of the first and second signals for producing a third signal;

means comprising a fourth electric circuit responsive to the third signal for producing a fourth signal for changing said third electric circuit to the low clutch current providing state.

4,550,817

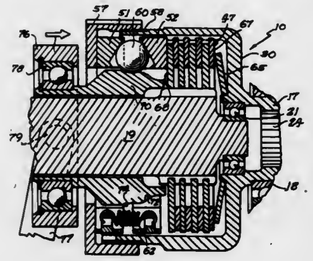
MECHANICAL CLUTCH

John W. Euler, Benton Harbor, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Feb. 29, 1984, Ser. No. 585,248

Int. Cl.⁴ F16D *13/42, 15/00*

U.S. Cl. 192—70.23 **19 Claims**



1. A mechanical clutch comprising, in combination, a first shaft, a cup element fixed to the first shaft, first discs radiating inwardly from the first shaft and mounted for rotation with the first shaft and for limited axial movement therealong, a second shaft coaxial with the first shaft, second discs radiating outwardly from the second shaft and interleaved with the first discs to form a disc stack, collar cam means carried by the cup element and including a collar cam movable element movable in a first direction to squeeze the disc stack and couple the shafts and movable in a second direction to release the disc stack and permit the shafts to rotate freely of one another, a collar cam fixed element, interconnector means interposed between said collar cam fixed and movable elements for urging the movable collar cam element in said first direction, ring means carrying said collar cam fixed element, and threaded attachment means for attaching said ring means to said cup element, the threaded attachment means having an axis substantially coincident with a clutch shaft so as to permit the position of the collar cam fixed element to be adjusted along the axis of said shaft.

4,550,818

COIN HANDLING APPARATUS FOR USE IN MERCHANDISE VENDING MACHINES

Robert A. Holliday, 4046 N. 80th Dr., Phoenix, Ariz. 85033

Filed Oct. 24, 1983, Ser. No. 544,791

Int. Cl.⁴ G07F *9/04*

U.S. Cl. 194—1 D **23 Claims**

1. A coin handling apparatus for use in a vending machine comprising:

(a) housing means defining an internal caivty;

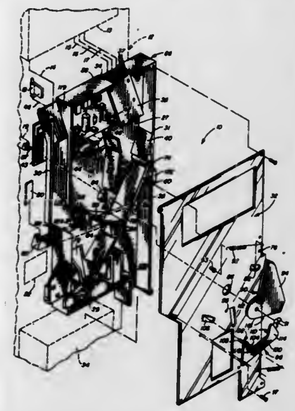
(b) an escrow box in the internal cavity of said housing means for receiving coins from the vending machine, said escrow box including,

I. a first pivot pin means in the internal cavity of said housing means,

II. a coin return gate having one end mounted on said first pivot pin means for pivotable movement from a normally closed position wherein said coin return gate extends angularly upwardly from said first pivot pin means to an open position wherein said coin return gate extends angularly downwardly from said first pivot pin means,

III. a second pivot pin means in the internal cavity of said housing means in angularly upwardly spaced relationship with respect to said first pivot pin means,

IV. a vend gate having one end mounted on said second pivot pin means and having an extending end, said vend gate being pivotably movable from a normally closed position wherein it extends angularly downwardly from



said second pivot pin means with its extending end in bearing engagement with the one end of said coin return gate to an open position wherein the extending end of said vend gate is spaced from the one end of said coin return gate;

(c) biasing means connected between said housing means and said vend gate to bias said vend gate to its closed position; and

(d) a vend cam rotatably movable on said housing means and having a cam surface, said vend cam being rotatably movable from an inoperative position to an operative position wherein the cam surface thereof is in bearing engagement with said vend gate to move said vend gate to its open position against the bias applied thereto by said biasing means.

4,550,819

COIN APPARATUS

Barry L. Smith, Florissant, Mo., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Sep. 24, 1982, Ser. No. 422,956

Int. Cl.⁴ G07F *1/04, 5/08*

U.S. Cl. 194—1 N **11 Claims**

1. For use in a coin-controlled vending machine which has first and second dispensing members manually operable by purchasers to obtain items of a first and a second price, respectively, means for locking said dispensing members against operation to obtain any item comprising a first latch and a second latch, each of said latches being movable between a locking position and a retracted position permitting operation of a dispensing member, the first latch normally occupying its locking position and the second normally occupying its retracted position and being movable to its locking position on operation of a second dispensing member,

coin apparatus for controlling said latches comprising:

a first latch release member for releasing said first latch;

a second latch release member for releasing the second latch;

coin chute means for coins of different denominations;

logic means for totalizing the value of coins passing through the chute means;

means for storing data as to said first and second prices at which items are to be vended;

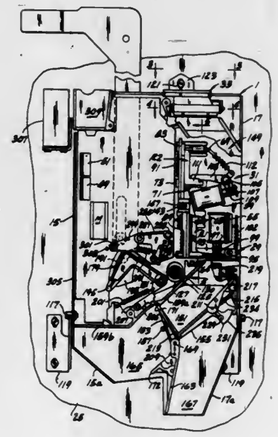
means controlled by the logic means for operating the first latch release member upon the totalized value reaching the first stored price and operation of a first dispensing member, thereby to effect release of said first latch, and for operating both latch release members upon the totalized value reaching the second stored price and operation of a second dispensing member, thereby to effect release of said first and second latches;

each latch release member being movable away from a retracted position for releasing the resective latch and being biased to its retracted position; and

the means controlled by the logic means comprising:

first solenoid-operated means for holding the first latch release member against latch-releasing movement;

second solenoid-operated means for holding the second latch release member against latch-releasing movement; and



means operable on manual operation of a first dispensing member for moving the first latch release member, upon its release, away from its retracted position for releasing the first latch and operable on manual operation of a second dispensing member for moving both latch release members, upon their release, away from their retracted position for releasing both latches.

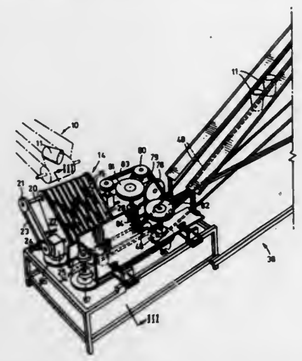
10. Coin apparatus comprising first, second and third chutes for coins of a first, a second and a third denomination, said chutes being located in side-by-side relation, first means for projecting a first beam of light across the first and third chutes, a first sensor for sensing said first beam, second means for projecting a second beam of light across the first and second chutes, and a second sensor for sensing said second beam, a coin of the first denomination passing through the first chute intercepting both beams to cause the first and second sensors to signal the passage of a coin of the first denomination, a coin of the second denomination passing through the second chute intercepting the second beam to cause the second sensor to signal the passage of a coin of the second denomination, and a coin of the third denomination passing through the third chute intercepting the first beam to cause the first sensor to signal the passage of a coin of the third denomination.

4,550,820

APPARATUS FOR ORIENTING AND STACKING HOLLOW, FRUSTO-CONICAL CONTAINERS

Robert R. Bishop, 93 Palmdale Dr., Agincourt, Ontario, Canada (M1T 1P2)

Filed Sep. 6, 1983, Ser. No. 529,292
Int. Cl.⁴ B65B *25/00*; B65G *57/00*
U.S. Cl. 198—389 **14 Claims**



1. Apparatus for orienting frusto-conical articles having opposite ends of different width, comprising:

downwardly inclined ramp means for receiving said articles in random orientations and allowing said articles to fall along said downwardly inclined ramp means;

means extending transversely of the ramp means and spaced by a gap from the lower end of said ramp means and constituting an abutment for said articles;

said gap being greater than the width of the widest end of said articles and less than the length of said articles;

conveyor means beneath said gap for receiving and conveying said articles;

said conveyor means comprising a pair of conveyor belts extending parallel to said gap and spaced apart by a distance which is greater than the width of the narrowest end of said articles and less than the length of said articles and means for driving said conveyor belts;

said downwardly inclined ramp means having means for displacing upwardly of said ramp means an adjacent portion of any of said articles which bridges said gap, whereby said articles are caused to fall between said conveyor belts with said widest ends thereof uppermost.

4,550,821

CIGARETTE REVERSING APPARATUS

Motonobu Horie; Toshiyasu Hirabayashi, and Hisao Suzuki, all of Tokyo, Japan, assignors to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,599
Claims priority, application Japan, Dec. 22, 1982, 57-224028
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—416 **8 Claims**

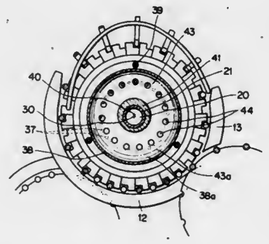
1. A cigarette reversing apparatus comprising

a transfer drum (**4**) rotating in a predetermined direction and having first and second axial ends, said transfer drum having an odd number of slots (**6**) axially extending in a periphery thereof with regular spacings therebetween, said slots each being divided substantially at respective middle points thereof into first and second sections to receive plural pairs of cigarettes in which cigarettes in each pair are aligned butt to butt, said transfer drum having a plurality of air holes (**35**) formed therewithin corresponding in number to the slots in the periphery thereof and having first openings (**33**) in said slots at said respective middle points thereof and second openings (**37**) in the first axial end, said second openings in the first axial end, being circularly arranged in said second axial end at regular spacings therebetween;

feed means for feeding plural pairs of cigarettes to said transfer drum each at an interval two times each of said regular spacings between the slots such that each pair is received in the first and second sections of every other slot in the transfer drum periphery;

take-up means provided downstream of said feed means for taking up cigarettes received in the second sections of the slots at a predetermined take-up position;

reversing means provided between upstream of said take-up means and downstream of said feed means for reversing cigarettes received in the first sections of the slots about said middle points to transfer said cigarettes into the second section;



a rotating disc member (**43**) slidably abutting against said first axial end and having a plurality of communication holes (**4**) axially extending therewithin, said communication holes being circularly arranged at regular angular spacings therebetween, each angular spacing between two adjacent communication holes being two times each angular spacing between two adjacent second openings (**37**) of the air holes (**35**) in the transfer drum, said rotating disc member rotating about a center eccentric from the center of the transfer drum to bring the communication holes into alignment with every other second opening only at an angular area where said reversing means extends, said every other second opening communicating with the slots in which the cigarettes are being reversed; and

vacuum source means for providing vacuum to said communication holes.

4,550,822

APPARATUS FOR TRANSPORTING FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS ARRIVING IN AN IMBRICATED FORMATION

Jacques Meier, Bäretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Feb. 28, 1983, Ser. No. 470,590
Claims priority, application Switzerland, Mar. 11, 1982, 1491/82
Int. Cl.⁴ B65G *47/31*
U.S. Cl. 198—461 **13 Claims**

1. An apparatus for transporting flat products, especially printed products, arriving in an imbricated product formation, comprising:

feeding means for infeeding the products at a predetermined feeding velocity in a predetermined product feeding direction and defining a product feeding path;

conveying means arranged upstream of said feeding means with respect to said predetermined product feeding direction and operated at a conveying velocity which is smaller than said predetermined feeding velocity of said feeding means, said feeding means and conveying means being substantially coplanar;

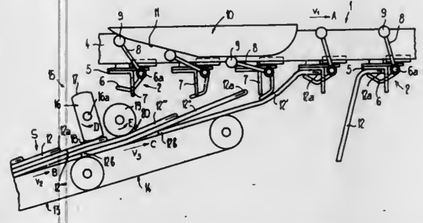
continuously driven accelerating means arranged to act periodically upon said products supported by said conveying means in order to accelerate said products;

transport means for transporting the products at a predetermined transporting velocity in a product transport direction;

said transport direction extending in the same general direction as said feeding direction;

said feeding means supplying said products to said transport means;

individually controllable gripper units arranged at said transport means in spaced relationship from each other and movable along a predetermined travel path;



each gripper unit serving to take-over the products supplied thereto and to engage at least one of said products supplied thereto at a leading edge thereof for further transport of such engaged product;

a product transfer region defined by said feeding means and by said transport means;

said feeding path of said products supplied by said feeding means forming an acute angle with said travel path of said gripper units; and

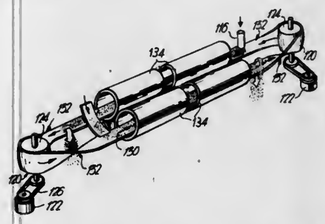
said feeding velocity of said feeding means being greater than said transporting velocity of said transport means.

4,550,823

AIR FILM SUPPORTED ENDLESS BELT CONVEYOR SYSTEM

Herbert E. Gladish, Ottawa, Canada, assignor to E. B. Eddy Forest Products, Ltd., Ottawa, Canada

Division of Ser. No. 947,435, Oct. 2, 1978, Pat. No. 4,489,825.
This application Oct. 10, 1984, Ser. No. 659,523
Claims priority, application Canada, Oct. 19, 1977, 288996
Int. Cl.⁴ B65G *15/60*
U.S. Cl. 198—805 **12 Claims**



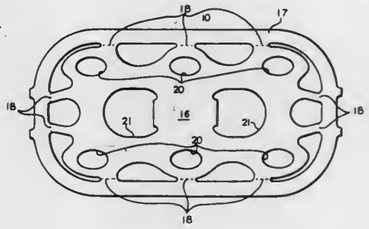
1. An endless belt conveyor system comprising at least one elongated conveyor air tube having means for projecting a thin film of supporting air into a lower portion of the interior thereof; an endless belt extending through said tube, said belt comprising a generally tubular outer member formed of a resilient, deformable material, a deformable metallic core extending generally axially within said member, and a resilient, flexible deformable filler material substantially filling the space between said core and said member, said belt being deformable upon load application to form upper and lower surfaces, the lower surface being convex and being complementary to said lower portion of said tube, said upper surface being concave and adapted to receive a load; and means for driving said belt in an endless loop.

4,550,824

BOTTLE CARRIER

Roger R. Rhoads, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 530,566, Sep. 9, 1983, abandoned. This application Nov. 1, 1984, Ser. No. 667,188
Int. Cl.⁴ B65D *71/02, 85/62*
U.S. Cl. 206—150 **15 Claims**



10. A bottle package comprising

a plurality of bottles having a body portion and a neck portion and a closure which is crimped around the neck of the bottle and forms a concave fillet at the juncture with the container,

a carrier comprising a generally flat blank formed of a material that is flexible and elastic,

said blank having a central portion with a plurality of openings receiving the neck of the containers and engaging the containers at the juncture of the closure fillet and the container,

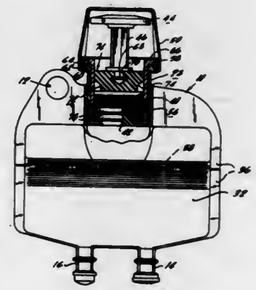
each said opening having a configuration of a substantially isometric 36° ellipse, the ratio of the major axis to the minor axis being between 0.5 and 0.65 and the ratio of the perimeter of the greatest side wall dimension of the closure to the perimeter of the opening ranging between 1.25 and 1.40.

4,550,825

MULTICOMPARTMENT MEDICAMENT CONTAINER

Caroll S. Sutryn, Montoursville, and Michael G. Maietta, Cogan Station, both of Pa., assignors to The West Company, Phoenixville, Pa.

Filed Jul. 27, 1983, Ser. No. 517,579
Int. Cl.⁴ B65D *3/04*
U.S. Cl. 206—222 **6 Claims**



1. A multicompartment medicament container comprising a dry medicament compartment and a liquid diluent compartment, said compartments being discrete and separately selec-

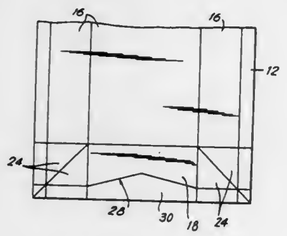
tively filled respectively with a dry medicament and a liquid diluent, said compartments being separately respectively inspectable for determining contents and conditions therein, said compartments being superposedly joined and thereby constituting a multicompartment container, said dry medicament compartment including a double open ended cylinder consisting of an inner glass material cylinder inert to said dry medicament and an outer plastic material cylinder, said plastic outer cylinder attached by sealing in an opening in said liquid diluent compartment and thereby forming said multicompartment medicament container assembly, a slidably removable bottom sealing and closure means in said inner glass cylinder, and plunger means operable for axial sliding movement therein from a first position adjacent one end of said inner cylinder to a second position at the opposite end of said inner cylinder directly communicating with said diluent compartment to expel said bottom sealing and closure means out through a bottom of said cylinder open end as an entity, for free displacement thereof into said diluent compartment, and complete discharge of the dry medicament through said bottom open end into said diluent for intermixing therewith.

4,550,826

SEMI-RIGID CONTAINER WITH A BOTTOM OF IMPROVED STABILITY

Mari Asanuma, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,356
Int. Cl.⁴ A24F *15/00*; B65D *85/10*
U.S. Cl. 206—259 **24 Claims**



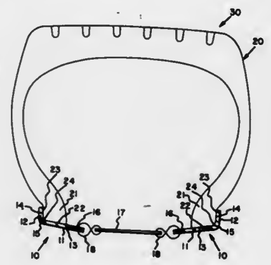
1. A laminate web of semi-rigid material, the web comprising a plurality of prescored regions, each of the prescored regions defining a blank for forming a container with a bottom of improved flatness and stability and comprising:
first, second and third adjacent side wall portions, the first side wall portion being joined to the second side wall portion along a crease line and the second side wall portion being joined to the third side wall portion along another crease line;
a bottom end wall panel joined to the second side wall portion along a third crease line; and
first and second corner panels each joined by respective crease lines to the bottom end wall panel and to a respective one of the first and third side wall portions;
the bottom end wall panel having a substantially V-shaped crease line which extends from a first point, adjacent to the first corner panel, toward the second side wall portion to a second point and from the second point away from the second side wall portion to a third point adjacent to the second corner panel.

4,550,827

TIRE PACKAGING

George T. Watts, North Canton, and Theron J. Thaden, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 487,431, Apr. 21, 1983, abandoned. This application Dec. 10, 1984, Ser. No. 680,222
Int. Cl.⁴ B65D *85/06*
U.S. Cl. 206—304 **4 Claims**



1. A tire package having an axis of rotation and comprising:
a. an uninflated tire having a pair of annular bead portions, each said bead portion having a radially inner surface of a predetermined axial width that is oriented at a predetermined angle of between about 5° and about 15° with respect to said axis, each said bead portion further comprising an axially outer surface extending in a generally radial direction, projections of the radially inner and axially outer surfaces of said bead portions intersecting one another at the sharp diameter of the bead portions;
b. a pair of annular plastic bead protectors, each of said bead protectors being slideably inserted inside a bead portion of said tire, each said bead protector comprising an annular bead seat with a generally radially extending flange located at the axially outermost end of the bead seat with respect to said tire package, the bead seat of each bead protector having a radially outer surface that is adjacent to the radially inner surface of a bead portion of said tire with the flange having an axially inner surface that is adjacent to the axially outer surface of the bead portion of the tire, the radially outer surface of the bead seat of each bead protector being oriented at substantially the same angle with respect to said axis as the radially inner surfaces of the bead portions of said tire, projections of the radially outer surfaces of said bead seats and axially inner surfaces of said flanges intersecting one another at a sharp diameter that is in the range of 0.0 to 3.75 millimeters less than the sharp diameter of the bead portions of said tire; and
c. a plurality of elastic tension members exerting an axially inwardly directed force on each of said bead protectors.

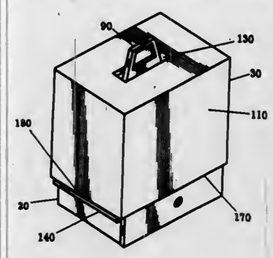
4,550,828

PORTABLE TOOL BOX

Arthur Baldwin, and Mark Baldwin, both of 105 Market St., Rockland, Mass. 02370

Filed Feb. 22, 1985, Ser. No. 704,541
Int. Cl.⁴ A43C *11/26*; B65D *5/38, 5/46, 5/48*
U.S. Cl. 206—349 **9 Claims**

1. A portable tool box comprising:
an open-top housing having a housing bottom wall connected to a pair of opposed housing sidewalls and a pair of opposed housing endwalls, one of said housing endwalls having an aperture for a drawer, and one or more of said housing walls including an outwardly projecting shelf;
a drawer slidably engageable within said aperture, said drawer including a face having a lip extending above the shelf;
means disposed above said drawer aperture having a plurality of apertures for holding tools in an upright position above said drawer;
an open-bottom cover having a cover top wall connected to a pair of opposed cover sidewalls and a pair of opposed cover endwalls, each of said pair of cover sidewalls and



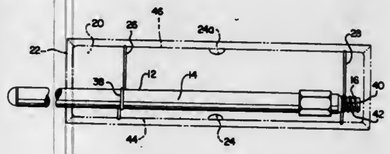
endwalls being spaced apart a distance sufficient for slidable engagement over said housing and into engagement with said shelf, said lip being covered by one of said cover endwalls when the cover is slidably engaged over the housing with the shelf, said shelf being disposed below the top of the lip.

4,550,829

SPRING CLIP FOR PUSH BROOM

Martin P. Strahs, Lawrenceville, N.J., assignor to Quickie Manufacturing Corporation, Cinnaminson, N.J.

Filed Dec. 23, 1983, Ser. No. 565,107
Int. Cl.⁴ B25G *3/12*
U.S. Cl. 206—361 **8 Claims**



1. A spring clip for a push broom of the type comprising a separable, elongate cylindrical handle and a brush head including a rigid base having a transverse width and a height and a longitudinal axis comprising
a unitary length of wire, the wire being bent to define a first web portion, a transversely aligned second web portion and an integral loop therebetween, the second web portion being of greater length than the first web portion, the loop being in frictional engagement with the handle;
a pair of first and second legs respectively extending from the first and second web portions and terminating in respective free ends, the free ends being normally spaced apart by a distance that is less than the width of the base, the legs terminating at their free ends in bent feet, the feet being adapted to engage bottom portions of the rigid base, and
the length of the legs being substantially equal to the height of the base;
whereby the handle can be secured in side-by-side relationship to the base in parallel offset relationship to the said longitudinal axis by inserting the handle through the loop and by engaging the base with the feet and legs of the clip.

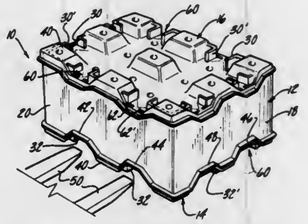
4. A storage assembly for a push broom of the type comprising a separable handle having an elongated, cylindrical body, the handle having a threaded end, and a brush head including a rigid base having a transverse width, a longitudinal axis and a fixed height comprising
a first bent wire clip means to releasably secure the handle to the said base in side-by-side relationship,
the first clip means having a first web and a first leg portion,
the first web including a first circular loop, the first loop having a diameter suitable to tightly engage the handle threaded end, the first loop encircling a portion of the threaded end and being threadedly engaged thereon,
the first leg portion being adapted to span the height of the base and to secure to the base; and
a second bent wire clip means to releasably secure the handle to the base in side by side relationship,
the second clip means having a second web and a second leg portion,
the second web including a second circular loop, the second loop having a diameter suitable to tightly engage the handle body, the second loop encircling a portion of the handle body and being frictionally engaged thereon,
the second leg portion being adapted to span the height of the base and to secure the base,
the first leg portion being secured to the base in longitudinal spaced relationship from the first leg portion;
whereby the handle is releasably secured to the base in two spaced locations.

4,550,830

PALLETIZED CONTAINER

Lyle Shuert, 817 N. Fieldstone, Rochester, Mich. 48063

Continuation of Ser. No. 442,350, Nov. 11, 1984. This application Oct. 19, 1984, Ser. No. 662,548
Int. Cl.⁴ B65D *19/18*
U.S. Cl. 206—386 **23 Claims**



1. A container (**10**) comprising:
a reusable pallet (**14**) having a plurality of slots (**62**) extending vertically through the pallet at spaced locations about its periphery with each slot opening at its upper end in the upper face of the pallet and opening at its lower end in a first portion of the lower face of the pallet; and a sleeve (**12**) having a plurality of tabs (**32**) formed at spaced locations along its lower edge foldable about vertical fold lines (**38**) and aligned with said slots (**62**) so that said tabs may be passed downwardly through the upper ends of said slots to a position in which the upper edges of the tabs are generally aligned with said lower face first portions whereafter the tabs may be folded inwardly underneath the pallet to juxtapose the upper edges of the tabs to said lower face first portions, with the tabs essentially perpendicular to the plane of the pallet, to thereby secure the sleeve to the pallet.

4,550,831

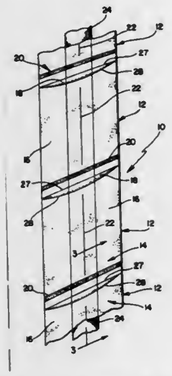
STRIP OF DETACHABLY CONNECTED BAGS FOR MEDICAL SUPPLIES

Alan Whitford, North Scituate, R.I., assignor to Superior Plastic Products Corp., Cumberland, R.I.

Filed Apr. 9, 1984, Ser. No. 598,181
Int. Cl.⁴ B65D *33/22*
U.S. Cl. 206—439 **2 Claims**

1. An elongated strip of connected bags for medical supplies

and the like comprising a plurality of substantially identical bags, each of said bags comprising a substantially flattened, two-sided seamless tubular wall portion made of a flexxible plastic material which is sealed at one end thereof and open at the opposite end thereof, the seal at the sealed end of each of said bags being formed between the two sides of said wall portion thereof without other layers of plastic material therebetween, said wall portion of each bag having a substantially longitudinally extending slit therein which extends along one side thereof from a point spaced from the open end thereof to a point spaced from the sealed end thereof and a longitudinally extending detachable strip which extends along the exterior of



said wall portion for covering said slit and which is sealingly secured to said wall portion adjacent said slit and adjacent the end of said slit closest to the sealed end of said wall portion, the slits in said bags all being on the same side of said strip of connected bags, said bags being detachably connected in end-to-end relation so that the sealed ends of the wall portions of said bags are detachably connected to the open ends of the wall portons of the next bags along only the sides of the wall portons of said bags through which said slits extend to permit access to the interiors of said bags through the open ends thereof while said bags are connected, said detachable strips on said bags also being detachably connected in end-to-end relation.

4,550,832

STACKABLE BOX WITH ADJUSTABLE COVER

Otfried Traumüller, and Gerd Weinberg, both of Oberstenfeld, Fed. Rep. of Germany, assignors to Furnier -u. Sperrholzwerk and J. F. Werz Jr. KG Werzalit-Pressholzwerk, both of Oberstenfeld, Fed. Rep. of Germany

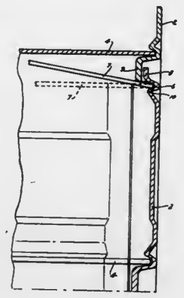
Filed Apr. 30, 1980, Ser. No. 145,057

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920431

Int. Cl.⁴ B65D *6/24, 21/02*

U.S. Cl. 206—509 **6 Claims**

1. A box, particularly a stackable box, comprising a frame of a substantially right-angled shape with four adjacent walls of non-flowable moldable material and each having an outwardly extending angular portion, the angular portions of adjacent walls being secured to each other, and forming outwardly extending corners of the box, said frame having a lower inwardly and downwardly extending portion and an upper portion; a cover, which may be inserted into said frame in either a substantially horizontal position or in a position inclined to the horizontal; and a horizontal base inserted into said frame at a lower edge thereof and located above said lower portion, at least two of said walls being formed with a groove provided at an upper portion of each of the two walls to receive said cover for closing an upper end of said box, said groove each having a depth which is suficient to engage said cover when the latter is in either of said positions, said upper portion having a web upwardly extending from said groove, said web being adapted to engage the lower portion of the frame of a successive upwardly positioned box in a stack to form a locking connection therewith.



4,550,833

VARIABLE-VOLUME RECEPTACLE, ESPECIALLY FOR USE AS A COMPENSATING RECEPTACLE IN BUILDING HEATING SYSTEMS

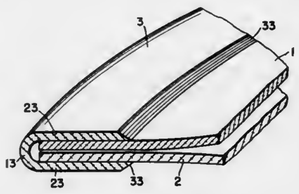
Peter Hoheisel, and Peter Bartholmei, both of Northeim, Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,507

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313853

Int. Cl.⁴ F22B *35/00;* **F28F** *27/00;* **B65D** *85/00*

U.S. Cl. 206—527 **4 Claims**



1. A variable-volume receptacle adapted for use as a compensating receptacle in building heating systems, in the form of a substantially flat bladder, said receptacle comprising:

two flexible sheets of elastomeric material, said sheets having the same surface area, and being disposed loosely against one another, with their peripheral edges being substantially flush, to form said bladder; said sheets, when disposed against one another, having respective outer surfaces which are directed away from one another; and

an edge strip of elastomeric material for continuously sealingly interconnecting said sheets along said peripheral edges thereof; said edge strip has an essentially U-shaped cross-section, with two parallel side pieces and a curved portion which interconnects said side pieces; said side pieces each have an inner surface directed toward one another and respectively adhesively connected to respective ones of said outer surfaces of said sheets to effect said continuous sealing interconnection thereof, the thickness of at least said side pieces of said edge strip being approximately the same as the thickness of said sheets; said curved portion of said edge strip being guided around and spaced from said peripheral edges of said sheets, which are movable relative to one another; the material of said edge strip being at least similar to, though harder than, that of said sheets.

4,550,834

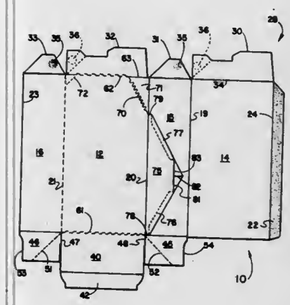
SELF-ERECTING END-LOAD TOP-DISPENSING CONTAINER

Richard J. Fletcher, Wilmington, Del., and Henry Wischusen, III, Lilburn, Ga., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del. and Rock-Tenn Co., Norcross, Ga.

Filed Dec. 5, 1983, Ser. No. 558,030

Int. Cl.⁴ B65D *17/28, 17/40*

U.S. Cl. 206—611 **9 Claims**



1. A cut and scored blank for a self-erecting, end-loading, top-dispensing container, said container being convertible from a substantially flattened configuration for shipping the empty containers into an erected box-like configuration for loading product into the container and for shipping loaded containers, said container being further convertible into a tray having an open top for dispensing product, comprising:

a substantially rectangular first panel member;

a first side wall member hingedly connected at a first transverse score line to one edge of said first panel member;

a second side wall member hingedly connected at a second transverse score line to the edge of said first panel member opposite said first side wall member;

a substantially rectangular second panel member hingedly connected at a third transverse score line to said first side wall member;

glue flap means hingedly connected at a fourth transverse score line to permit securing said second panel member to said second side wall member;

an end wall flap hingedly connected at a longitudinal score line to said first panel member and including a tuck flap for inserting into the assembled container to form an openable and closable product insertion end wall opening;

tear score means for removing a substantial portion of said first panel member to define an open-topped tray for dispensing product carried within the container;

first web connecting means joining said end wall flap to said first side wall member;

second web connecting means joining said end wall flap to said second side wall member;

each of said web connecting means including a score line extending outwardly from the intersection of said end wall flap and said side wall member for folding said web connecting means when said end wall flap in closed; and

interlocking flap means hingedly attached at a longitudinal score on the side of the blank opposite said end wall flap and defining an automatic end closure which assumes a disassembled flattened configuration when the container is in its flattened configuration and which automatically interlocks to form an assembled end wall for the container when the container is caused to assume its erected configuration.

4,550,835

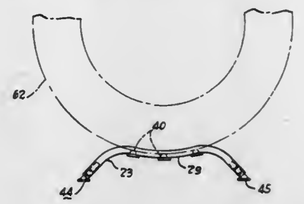
TIRE CHANGING RACK

India M. Lynch, 14170 Painesville-Warren Rd., Painesville, Ohio 44077

Filed Jul. 30, 1984, Ser. No. 635,712

Int. Cl.⁴ A47F *7/04*

U.S. Cl. 211—24 **5 Claims**



1. A tire changing rack including in combination first and second spaced and generally U-shaped bar brace members of tubular construction each having first and second end portions and an intermediate portion therebetween, said intermediate portion of each said bar brace member having a slight U-shape in a direction opposite to said generally U-shaped configuration of said bar brace members, a plurality of spaced bearing strips each having first and second end portions secured respectively to said first and second bar brace members at said intermediate portions, a plurality of caster ball bearings mounted on an upper surface of each of said bearing strips and located in a position to engage the surface of a tire to be handled by said rack, first and second leg brace members located respectively at said first and second end portions of said bar brace members, each said leg brace member comprising a flat plate member for flatly engaging the ground adjacent a vehicle tire to be changed and having first and second end portions, a tubular member secured to and extending upwardly and at an acute angle from said first and second end portions of each of said flat plate members, each said tubular member being of a size to fit within said tubular construction of said bar brace member and each having a laterally extending spring biased pin, a plurality of laterally extending and axially spaced openings in said first and second end portions of each of said bar brace members, said tubular members residing in respective ones of said end portions of said first and second bar brace members with a spring biased pin of said tubular members residing in a lateral opening in a said end portion of said bar brace member.

4,550,836

CLAMP ARRANGEMENTS

Stafford M. Ellis, West Sussex, England, assignor to Marconi Avionics Limited, England

Filed Mar. 20, 1984, Ser. No. 591,582

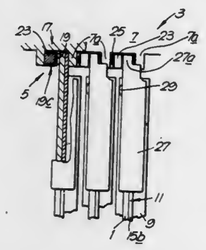
Claims priority, application United Kingdom, Apr. 5, 1983, 8309170

Int. Cl.⁴ H05K *7/14*

U.S. Cl. 211—41 **9 Claims**

1. A clamp arrangement comprising a board and a mechanism for clamping a marginal portion of the board adjacent an edge between two opposed substantially flat parallel walls, the mechanism being mounted on a major surface of the board adjacent said edge and being capable of expansion in a direction normal to said major surface and toward one of said flat parallel walls, said arrangement including: an elongate resilient element extending in the direction of its length along said marginal portion of said board and having corrugations transverse to its length, means for substantially non-slidably securing said resilient element to said board, said element by virtue of said corrugations spaced from and adjacent said major surface of the board adjacent said edge; and an elongate rigid cam having a longitudinal axis extending along the length of said resilient element and overlying said resilient element on

the side of said element opposite from the side facing said major surface of the board; said resilient element and said cam being arranged such that in operation of the mechanism contact between the resilient element and the cam causes said expansion of the element toward said one of said flat parallel walls, and on limitation of expansion, compression of the corrugations in the resilient element and resulting pressure by said resilient element against the marginal portion of the board to force the board against said one of said flat parallel walls; said cam including a plurality of cam surfaces along its length,



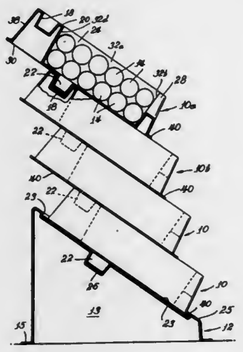
spaced apart by substantially the pitch of said corrugations in said resilient element; wherein the improvement includes means mounting said cam for sliding movement relative to said resilient element in the direction of the length of said resilient element between a position in which said cam surfaces are disaligned from those corrugations which are spaced from the board to a position wherein the cam surfaces engage the corrugations spaced from the major surface of the board in which latter position the cam surfaces effect the aforesaid expansion of said mechanism.

4,550,837

STACKABLE SHIPPING AND DISPLAY CONTAINER

Richard J. Simmons, Carol Stream, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.

Filed Aug. 2, 1982, Ser. No. 404,588
Int. Cl.[4] A47F *3/14*
U.S. Cl. 211—126 **10 Claims**



1. A container for nesting together with other similar containers when empty and adapted to be stackably tiered when used for dispensing articles contained therein, comprising:

a container having a plurality of sidewalls defining a compartment for containing said articles, each said sidewall having a draft angle for nesting with empty compartments of said similar containers, and an opening through which said articles can be dispensed;

first engaging stacking means integral with said container, being hollow and having peripherally enclosed sidewalls with a draft angle for nesting with hollow first engaging stacking means of said similar containers;

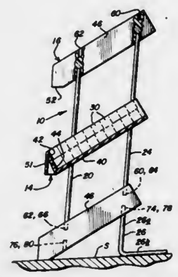
second engaging stacking means integral with said container, being hollow and having peripherally enclosed sidewalls with a draft angle for nesting with hollow second engaging stacking means of said similar containers, said first and second engaging stacking means are located so as to be removed from and independent of the sidewalls of said compartment, and wherein said second engaging stacking means of said container is engageable with a first engaging stacking means of said similar containers when said container is stackably tiered with said similar container.

4,550,838

MODULAR DISPLAY RACK

Walter Nathan, Glencoe, and Armand S. Zucker, Skokie, both of Ill., assignors to RTC Industries, Inc., Chicago, Ill.

Filed Mar. 5, 1984, Ser. No. 586,222
Int. Cl.[4] A47F *3/14*
U.S. Cl. 211—128 **14 Claims**



1. In a knock-down, multi-tiered article storage and display rack, wherein article storage and shipping trays are assembled into multi-tiered upright displays, the tiers being vertically separated by spacers, for placement on a horizontal support surface, the improvement comprising, in combination:

a plurality of said article storage and shipping trays disposed in inclined display positions for goods adapted to be packaged and shipped in said trays, said trays each including a substantially rectangular base and three adjacent upright retaining walls connected to and extending transversely above the base along the front and two side edges of the base, the height of said walls being selected to provide lateral restraint for packaged goods packed in and on the tray, each of said trays being adapted for being positioned in a horizontal storage position or an inclined display position;

each of said trays also including display panel means secured to an upper portion of the front one of the three upright walls, said display panel means being inclined outwardly and downwardly from said upright tray wall to a level spaced above a projection of the plane of the lowermost side of the base, forming with the front edge of the base, a front horizontal support means for the tray; and

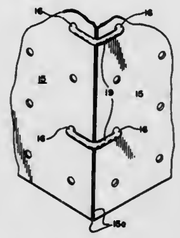
base means selectively connected to and operatively associated with a portion of the lowermost of said trays distally of said front horizontal support means for the tray for maintaining the tray at said inclined display position when the tray is positioned on a substantially horizontal support surface, and the front horizontal support means on said lowermost tray being coplanar with the lower extremity of said base means.

4,550,839

DISPLAY SYSTEM

Jack E. Good, Salt Lake County, Utah, assignor to Grant Larsen and Marian Larsen, both of Salt Lake City, Utah, a part interest to each

Filed Sep. 28, 1982, Ser. No. 426,123
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—189 **14 Claims**



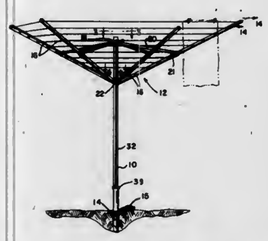
1. A display system comprising a plurality of triangular shaped display panels, said display panels to fit together in edge to edge configuration, a number of said display panels so fitted together to enclose an area forming a freestanding structure, each display panel including uniformly spaced-apart perforations formed therein; and clip means for maintaining said display panels in edge to edge engagement, each clip means consisting of a clip formed from a straight section of rigid material of an appropriate diameter at the ends to fit within the panel perforations and is formed into a U-shape to have essentially parallel legs that extend from a web that is bent at a normal angle to said legs to rest against the surfaces of the joined display panels, said leg ends to fit in said perforations in each of the aligned panels, the clip means to extend across the junction of said abutting panels.

4,550,840

CLOTHES DRYING DEVICE

Aad Van Deursen, 2400 E. Devon, Suite 260, Des Plaines, Ill. 60018

Filed Feb. 16, 1984, Ser. No. 580,651
Int. Cl.[4] A47F *5/04, 5/10*
U.S. Cl. 211—197 **10 Claims**



1. A portable household device which can be easily stored and carried by an individual when in a folded position, and, which is moveable to an unfolded, operable position for use as a clothes dryer and umbrella, the improvement comprising:

a ground mounted mast having a bottom in the ground and having a top and being adapted to be secured in an upright position;

a spider mechanism;

said spider mechanism including a top collar and a bottom collar, each collar being attached to said mast and spaced thereapart, each collar having adjustment and locking means for selectively securing and also varying the position of each collar on said mast;

a plurality of support arms extending from said bottom collar and having a pivotal attachment with the bottom collar for swinging motion between a substantially vertical position adjacent said mast when stored to an operational position;

cable means extending between and connecting said support arms;

said support arms having a plurality of openings with plastic ferrules providing smooth passageways for said cable means to thereby allow the cable to move easily therethrough

said plastic ferrules including a first insert portion having an integral head formed therein and having a hooked end spaced from the head;

a lock ring located about the hooked end adjacent the support arm to capture the ferrule in the associated opening of the support arm;

a plurality of connecting links having one end attached to and extending from the top collar and having a pivotal attachment connection with the top collar to provide swinging movement of said links between a first position adjacent the mast when the device is folded, to a second position away form the mast when the device is unfolded, said connecting links having a second end with a pivotal attachment with an associated support arm; and

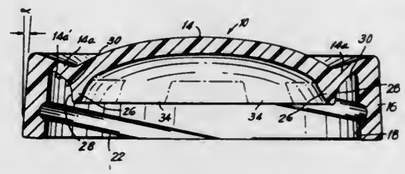
said top and bottom collars having mast gripping means being adjustable to unlock to allow movement of said collars on said mast for selectively positioning the spider mechanism and said mast whereby the spider may be positioned with said support arms extending upwardly and outwardly of said mast and thereby placing said connecting links in a state of tension, and said collars capable of being reversed on said mast whereby said support arms extend downwardly and outwardly of said mast and said connecting links are placed in a state of compression and the device can also be utilized with cover means as said umbrella and a clothes dryer.

4,550,841

CLOSURE HAVING INTEGRAL FORMED SEALING MEANS

Jeffrey Sandhaus, Rte. 9W, Snedens Landing, N.Y. 10964

Continuation-in-part of Ser. No. 441,546, Nov. 15, 1982, Pat. No. 4,479,585, which is a continuation-in-part of Ser. No. 399,237, Jul. 19, 1982, Pat. No. 4,442,945, which is a continuation-in-part of Ser. No. 335,216, Dec. 28, 1981, Pat. No. 4,413,742. This application Nov. 7, 1983, Ser. No. 549,477
Int. Cl.[4] B65D *55/02*
U.S. Cl. 215—211 **10 Claims**



1. In a closure adapted to be applied to an open end region of a container having a top wall and outer and inner sidewalls to close the same, the closure including a top and an integral skirt depending from a peripheral edge region of said top, said skirt having an inner sidewall adapted to fit over the outer sidewall of the container, the improvement comprising:

inner engagement sealing means integral with and extending from said closure top, said engagement sealing means having an outer sealing surface portion spaced radially inwardly from said skirt inner sidewall to at least partially define a space therebetween for receiving at least a portion of the open end region of the container;

means for outwardly expanding said engagement sealing means during application of the closure to the container to

urge said outer sealing surface portion thereof against the inner sidewall of the open end region of the container, said expanding means including a central non-planar region of said closure top having an outer periphery at which said central non-planar top region joins said engagement sealing means and an outer region of said closure top extending between said inner engagement sealing means and said closure skirt, said outer closure top region having a downwardly facing surface adapted to engage said container top wall during application of the closure to the container so as to be deformed upon such engagement,

said outer closure top region, inner engagement sealing means and central non-planar region of said closure top constituting a mechanism whereby engagement of said downwardly facing surface of said outer closure top region causes said central non-planar top region to flex towards a more planar configuration to thereby urge said outer sealing surface portion of said inner engagement sealing means against the inner sidewall of the open end region of the container,

whereby a hermetic sealing of the container by the closure is obtained.

4,550,842

FLEXIBLE PLASTIC STERILE CLOSURE SYSTEM FOR CONTAINERS

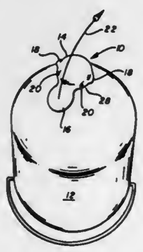
Robert Cummings, Richardson, Tex., assignor to U.S. Clinical Products, Inc., Richardson, Tex.

Continuation of Ser. No. 294,331, Aug. 19, 1981, Pat. No. 4,390,104. This application Dec. 27, 1982, Ser. No. 453,215

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.⁴ B65D *41/32, 51/20*

U.S. Cl. 215—232 **18 Claims**



1. A flexible plastic multilayered cover for resealing an intravenous solution container, comprising:

a first layer of flexible plastic material forming an upper surface of the cover, said first layer being formed from a material substantially impermeable to moisture and bacteria;

a second layer of flexible plastic material bonded to said first layer of plastic material, said second layer having an orientated plastic film with a tensile strength in the direction normal to the direction the cover is pulled in removing it from a container greater than the tensile strength parallel to the direction of removal;

an area of adhesive material bonded to the surface of said second layer for adhering to the top of an IV solution container to reseal the IV solution container; and

an adhesive free region of said second layer for aligning with the port of the container resealed by the cover, whereby the sterility of the covered portion of the IV solution container is retained by placing the sealing cover on the portion of the container top to be resealed and said second layer of material promotes separation of the cover upon its removal to leave a telltale mark that the sterile closure has been broken while fully exposing the port of the container.

4,550,843

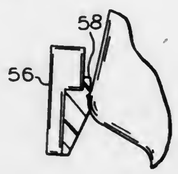
BOTTLE CAPS

Robert L. Nolan, New York, N.Y., assignor to Maxcap, Inc., New York, N.Y.

Filed Dec. 14, 1982, Ser. No. 449,783

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—252 **17 Claims**



1. A combination of a bottle and a molded plastic cap therefore,

said bottle having a neck carrying an outwardly extending thread and having an outwardly extending shoulder beneath said thread,

said cap comprising a top wall, an annular sidewall extending down from said top wall and having an inwardly extending thread for cooperation with said neck thread, and an integral antitamper skirt connected to said side wall,

said skirt having at least a lower portion which, when the cap is fully screwed onto said neck, is at a level below said shoulder, said skirt having also an integral inwardly projecting flap which is integrally hinged thereto and which as molded projects inwardly, the construction and arrangement being such that

(a) when, during the operation of screwing said cap onto said neck, said cap moves downward, said flap is engaged by said shoulder and pushed upward and outward thereby and then, on further downward movement of said cap during said operation, said flap is moved past said shoulder and

(b) when, during the operation of unscrewing said cap from said neck, said cap moves upward, said flap engages the lower part of said shoulder and is forced by said engagement downward and outward into abutting relationship with said lower portion of said skirt so that the presence of said flap decreases the effective internal diameter of said lower portion of said skirt so as to prevent said skirt, while intact, from passing up over said shoulder.

4,550,844

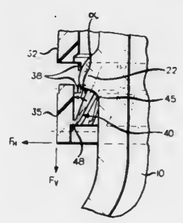
TAMPER RESISTANT CLOSURE WITH TEAR-OFF BAND

Michael A. Lininger, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 22, 1984, Ser. No. 623,659

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—252 **16 Claims**



1. A closure for a finish of a container having a neck ring, the closure comprising a cap and an annular tamper resistant band

member connected to the bottom of the cap with a series of frangible break-away bridges that attach the tamper resistant band member to the cap, the member comprising an annular band integral with the bridges and a lower wedge-shaped glass-finish contacting member that bends upwardly like a fishhook when the cap is applied to the finish, the outer end portion of the contacting member being wider and thicker than the portion nearer the band for greater contact of the end portion against the neck ring of the glass finish.

4,550,845

BOTTLE CLOSURE

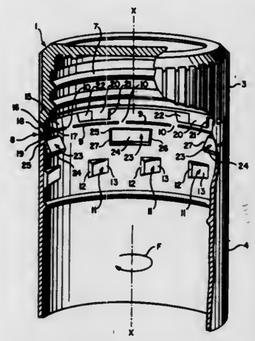
Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala S.p.A., Alessandria, Italy

Filed Feb. 22, 1985, Ser. No. 704,505

Claims priority, application Italy, Feb. 24, 1984, 19789 A/84

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—252 **3 Claims**



1. Bottle closure of the kind comprising an internally threaded cap, a collar extending coaxially with and in continuation of the cap and having internal axial teeth and an internal circumferential ridge, and means defining a line of weakness between the cap and the collar

wherein the improvement consists in:

the closure is made in a single piece,

the cap is formed internally, in proximity to the line of weakness, with a circumferential recess having a sawtooth cross-section and defining in the cap an annular portion of trapezoidal section, and

a plurality of tabs projecting internally from the collar arranged circumferentially in proximity to the line of weakness, said tabs engaging in said recess to serve as a bridge across the line of weakness.

4,550,846

NON-STICK STOPPER WITH EASY REMOVAL STRUCTURE

Edwin D. Phillips, 700 Cedar Ave., Middlesex, N.J. 08846

Filed Apr. 3, 1984, Ser. No. 596,383

Int. Cl.⁴ B65D *39/04*

U.S. Cl. 215—296 **9 Claims**

1. A stopper device comprising: a one-piece unit having means for efficient sealing with a bottle without danger of breaking same including an upper portion and a bottle neck engaging lower portion;

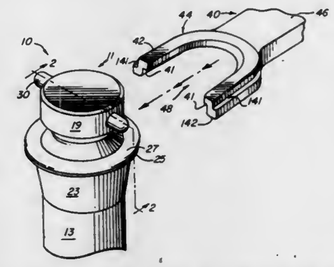
means with said lower portion for forming a flexible sealing surface of such a configuration that said sealing surface is not in substantial compression;

said flexible sealing surface being on a wall portion of substantially uniform thickness without any slits, slots, ribs, valleys, or the like; and

further means provided with said upper portion for permitting easy removal of the device from a bottle neck device when desired; and

further including a stopper removal tool having a substantially U-shaped engaging recess at one end thereof and a handle portion at the other end thereof for manipulation by a user, and said tool having means so it can be used with different styles of stoppers;

said means so the tool can be used with different styles of stoppers includes the U-shaped recess of the tool defining



two spaced tines with each tine in cross-section having double angles back to back to each other so that an inner portion of said U-shaped stopper engaging will have a recessed area completely therearound and each of the outer surfaces of the respective tines of the U-shaped portion will have complementary recesses extending longitudinally therealong.

4,550,847

STACKABLE BOX

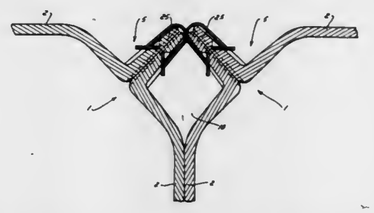
Otfried Traiimuller, and Gerd Weinberg, both of Oberstenfeld, Fed. Rep. of Germany, assignors to Furnier- u. Sperrholzwerk and J. F. Werz Jr. KG Werzalit-Pressholzwerk, both of Oberstenfeld, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,056

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920430

Int. Cl.⁴ B65D *6/24*

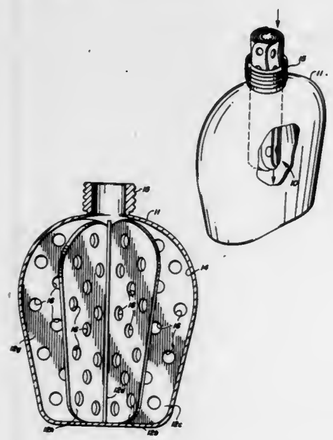
U.S. Cl. 220—4 F **7 Claims**



1. A stackable box, comprising a frame having four walls made from non-flowable moldable material and being of substantially right-angled shape, said walls having angularly extending portions which, upon assembling of two neighboring walls form a corner of said frame, a base inserted into a lower edge of said frame, and a cover inserted into an upper edge of said frame to close the box, said angularly extending portion of each wall forming with a remaining portion of said wall a rectangularly-shaped notch, said notch extending along the entire height of said box, said remaining portion of said wall being formed with at least one inwardly extending projection, each said wall being formed with a first longitudinal groove provided at a lower edge thereof and with a second longitudinal groove provided at an upper edge thereof, said base in assembly being positioned within the respective first longitudinal grooves of the assembled walls and said cover being positioned within the respective second longitudinal grooves of the assembled walls; and means to connect the attached ones of

said angularly extending portions of said walls to each other, each of said walls being further provided in the area of said inwardly extending projection with an opening so that the projections of two neighboring walls of two adjacent boxes placed in a horizontal row and said openings therein form ventilation channels for circulation fresh air through the boxes.

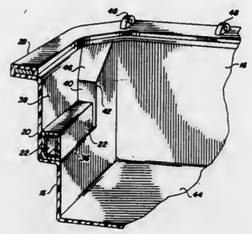
4,550,848
BAFFLE FOR CANTEENS TO PREVENT LIQUID SPLASHING SOUNDS
Edward Sucato, 3102 N. 24th St., Phoenix, Ariz. 85016
Filed May 11, 1984, Ser. No. 609,304
Int. Cl.[4] B65D *1/04, 5/48, 25/04*
U.S. Cl. 220—22 **4 Claims**



1. An elongated baffle for canteens to prevent liquid splashing sounds comprising:
- a plurality of damping members connected together to extend radially outwardly of the center of the baffle and all arranged longitudinal of its length,
- at least one of said damping members being provided with at least one aperture for providing liquid flow therethrough,
- said damping members being formed of a resilient plastic material which members may be coiled in the same direction around the center of the baffle so that the coiled baffle may be inserted through the neck of a canteen and into its interior wherein the damping members uncoil with their edges frictionally engaging the inside walls of the canteen in a spaced arrangement.

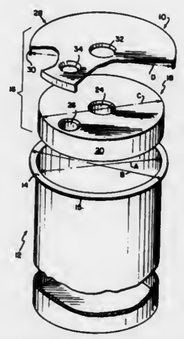
4,550,849
REFUSE CONTAINER
Gordon H. Adsit, Lake Wales, Fla., assignor to Industrial Refuse Sales, Inc., Lakeland, Fla.
Filed Apr. 15, 1985, Ser. No. 723,339
Int. Cl.[4] B65D *43/14*
U.S. Cl. 220—71 **18 Claims**

1. In a refuse container having a substantially rectangular shaped molded plastic body defined by first and second opposed end walls, a front wall, a rear wall and a bottom, the improvement comprising:
- an extension formed in each of said end walls, said extension forming a stepped indentation in each of said end walls protruding outwardly of said container;
- first and second metal sleeves, said sleeves being attached to a corresponding one of said end walls at said stepped indentation inside said container; and



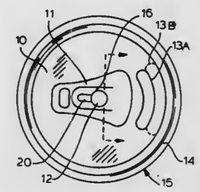
an opening formed in each of said extensions whereby said container may be lifted by arms inserted into said sleeves.

4,550,850
CANISTER ROLL SEAM
Dwight D. Smith, and Leonard J. Cranfill, both of Connersville, Ind., assignors to Stant Inc., Connersville, Ind.
Filed Sep. 29, 1982, Ser. No. 428,188
Int. Cl.[4] D06F *75/26*
U.S. Cl. 220—253 **8 Claims**



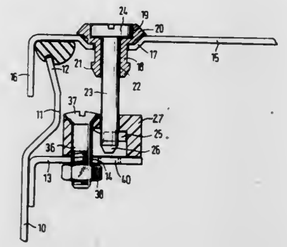
1. In a metal container having a generally continuous wall of fixed perimeter and at least one open end, an end plate for the open end comprising
- a stiffening means having sufficient strength to withstand a radially inwardly directed force exerted by a roller against the continuous wall during a seam-forming operation, the stiffening means having a perimetrical surface disposed conformably adjacent to and interiorly of the generally continuous wall,
- a cover portion disposed exteriorly of the stiffening means, the cover portion having a perimeter greater than the perimeter of the container,
- at least one opening in the cover portion,
- an outwardly disposed peripheral lip on the continuous wall, the peripheral lip having an outer perimeter less than the perimeter of the cover portion, and
- a rolled seam for coupling the peripheral lip to the cover portion.

4,550,851
CONTAINER TOP OPENING MEANS
Ernest R. Garrett, 17054 Chatsworth St., Granada Hills, Calif. 91344, and Charles A. Chambers, Burbank, Calif., assignors to Ernest R. Garrett, Granada Hills, Calif.
Filed Jan. 16, 1984, Ser. No. 570,974
Int. Cl.[4] B65D *17/42*
U.S. Cl. 220—277 **8 Claims**



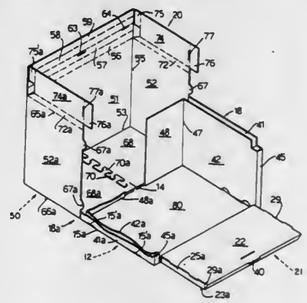
1. A container top and consumer removable seal for beverage containers comprising: a container top including an arcuate shaped opening in the peripheral region thereof between a pair of parallel arcuate edges defining a relatively uniform width beverage opening, said container top being in substantially permanent sealed relationship with the container; and
- removable means for closing said arcuate shaped opening;
- said arcuate shaped opening having a length of between ½ and 1¼ inch in length and in the order of 5 times the width thereof;
- whereby said arcuate shaped opening provides a thin sheet of beverage to the mouth and tongue of the person consuming a beverage from the container and provision for entrance of air into the container during drinking of the beverage; and
- wherein the tongue of the consumer is exposed to minimum temperature extremes from the beverage contained in the container thereby avoiding desensitizing the taste buds on the tongue.

4,550,852
SWITCH BOX AND CLOSURE THEREFOR
Jürgen Laudt, Herborn, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany
Filed Nov. 8, 1984, Ser. No. 669,646
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 8332164[U]
Int. Cl.[4] B65D *45/00*
U.S. Cl. 220—327 **18 Claims**



1. A switch box comprising a box-like lower compartment formed by walls **(10)** having a locking upper edge **(12)** and a cover **(15)** with downwardly turned edges **(16)** which fastens over the opening of said lower compartment, and is provided in the area of at least two of its corners with mounting flanges **(13)** for connecting screws **(36)** which can be screwed into threaded bores **(14)** on said mounting flanges positioned in the interior upper corners of said lower compartment, characterized by a locking element **(27)** with bore **(30)** for connector **(23)** having a locking means and fastened to said cover **(15)**, fastened on said flanges **(13)**, said locking means only insertable in and removable from said bore **(30)** in said locking element **(27)** in a single, predetermined angular position to retain said connector in an axially non-displaceable manner in said bore **(30)**.

4,550,853
BLANK ARTICLE FOR ASSEMBLING INTO A CONTAINER HAVING DOUBLE OR BOX-LIKE WALLS, AND AN OPENABLE HINGE WALL
Giorgio Grati, Milan, Italy, assignor to OGRAD s.r.l., Milan, Italy
Filed Jan. 13, 1983, Ser. No. 457,568
Claims priority, application Italy, Jan. 14, 1982, 20474/82[U]
Int. Cl.[4] B65D *5/22, 5/58*
U.S. Cl. 220—416 **7 Claims**

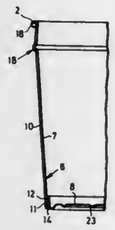


1. A blank article for forming a container, said blank article comprising a bottom panel, two side sections extending from said bottom panel, two side creaselines each being defined between said bottom panel and one of said two side sections, a front section extending from said bottom panel, a front creaseline defined between said front section and said bottom panel, a rear upper section extending from said bottom panel, a rear creaseline defined between said rear upper section and said bottom panel, each of said two side sections comprising a first side panel, a second side panel foldable in a box-like fashion on said first side panel, and a first spacing band located therebetween, said rear upper section comprising a rear panel bounded from the bottom panel by said rear creaseline, and an upper panel extending from said rear panel, an upper creaseline defined between said upper panel and said rear panel and extending parallel to the rear creaseline, said rear upper section further comprising two third side panels extending from the sides of the upper panel, two rear side creaselines defined between each third side panel and said upper panel, a plurality of second bands extending from the end of the upper panel located opposite to the upper creaseline, band creaselines bounding each of said plurality of second bands, said plurality of second bands being foldable in rib-like fashion along said band creaselines, said front section comprising successively from said front creaseline a first front panel, a third spacing band, a second front panel, said second front panel being foldable on said first front panel and being spaced apart by said third spacing band, a front box-like, door-like wall being formed by said first front panel, said third spacing band and said second front panel when the container is assembled, said bottom panel being separated from said wall by said front creaseline and said wall being hingedly pivotable about said front creaseline.

4,550,854
DEEP-DRAWN CONICAL PLASTIC CONTAINER AND METHOD OF MAKING

Walter Schellenberg, Diepoldsau, Switzerland, assignor to Sandherr Packungen AG, Switzerland

Filed Aug. 9, 1983, Ser. No. 521,599
Claims priority, application Switzerland, Aug. 10, 1982, 4792/82
Int. Cl.⁴ B65D *90/02, 3/22*
U.S. Cl. 220—468 **14 Claims**



1. A container, comprising:

a deep-drawn plastic cup having a bottom portion, a main wall portion and a radially protruding top rim, said main wall portion being generally frustoconical and tapering upwardly and outwardly, having a thickness less than half of the thickness of the other portions and having a frustoconical top wall part tapering upwardly and inwardly and terminating at said radially protruding top rim, said top wall part being separated by an annular ridge from the remainder of said main wall portion;

a generally frustoconical sleeve surrounding said cup and within which said plastic cup is deep-drawn, said sleeve being formed from a material different from and not readily weldable to the plastic of said cup, said sleeve being shaped and dimensioned to surround, tightly engage and reinforce said main wall portion, said sleeve including a frustoconical top section tapering upwardly and inwardly with said top wall part of said plastic cup, and a frustoconical lower section tapering downwardly and inwardly with said main wall portion below said top wall part; and

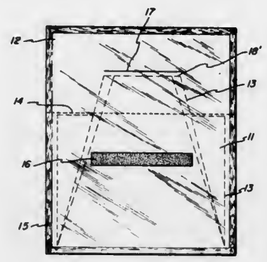
said cup further including a radial outward protrusion around said bottom portion so that said sleeve is axially confined between said radial protrusion and said top rim so that the axially facing edges of said sleeve are covered thereby.

4,550,855
MOIST TISSUE SOFT PACK DISPENSERS

Thomas S. Harrison, Deer Isle, Me., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sep. 14, 1983, Ser. No. 528,752
Int. Cl.⁴ B65H *1/00*
U.S. Cl. 221—63 **8 Claims**

1. A moist towelette dispenser package containing a supply of moist towelettes in a continuous zig-zag folded web and separated by perforations, wherein said package comprises an envelope having a towelette holding portion and a closure flap portion separated from one another by a transverse fold line, said envelope being formed from an upper and a lower sheet of flexible, moisture-impervious material, said sheets being of the same overall outer dimensions and sealed to one another around the outer edges thereof, said upper sheet having an adhesive area affixed thereto, said upper sheet being further provided with a dispensing opening positioned on said flap portion, said dispensing opening and adhesive area being located generally equidistant from said fold line so that when said flap portion is folded over said towelette holding portion along said fold line, said opening is completely sealed by said adhesive area against said towelette holding portion and wherein said perforations in said folded web serve to provide means for separation of each towelette from the supply thereof

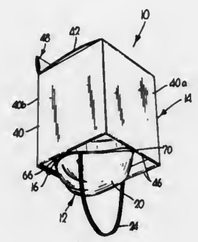


so that, on withdrawal and separation of each towelette, the end of the next towelette in said web is left entirely within said envelope package.

4,550,856
FACE MASK AND DISPENSER ASSEMBLY

Fred A. Ballmann, 12051 W. 100th St., Lenexa, Kans. 66215, and James M. Cooper, 6011 W. 61st Ter., Shawnee Mission, Kans. 66202

Filed Feb. 29, 1984, Ser. No. 584,742
Int. Cl.⁴ B65H *1/00*
U.S. Cl. 221—63 **12 Claims**



1. In combination:

a plurality of interfitted cuplike face masks, each mask having a certain cross-section presenting a generally parabolic nose-receiving region and a generally circular mouth-receiving region, and each mask including a strap secured adjacent opposite marginal edges of said mouth-receiving portion;

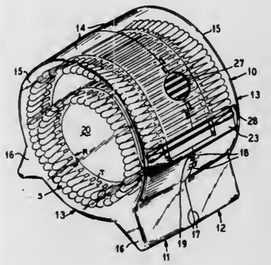
an elongated container for receiving said interfitted masks and comprising continuous sidewalls circumscribing said masks and defining a mask-receiving passageway; and

retaining means secured transversely across said passageway and including structure defining a mask-dispensing aperture of the same general cross-sectional configuration as said mask cross-section, said masks being disposed in said passageway adjacent said retaining means with the strap of the one mask adjoining said retaining means extending through said aperture such that said masks are serially dispensed by pulling on the strap of said one mask, said one mask being removed from said container with the remaining masks being retained in said container and the strap of the next mask exposed in said aperture.

4,550,857
COTTON SWAB VENDER

J. Fred Castner. Sr., P.O. Box 7156, San Diego, Calif. 92107, and John F. Castner, Jr., 7572 Volga Dr. #1, Huntington Beach, Calif. 92647

Filed Jan. 10, 1984, Ser. No. 569,771
Int. Cl.⁴ B65H *5/28*
U.S. Cl. 221—70 **10 Claims**

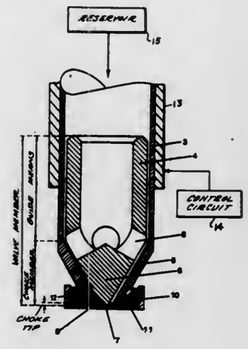


1. A refillable vender for cotton swabs releasably carried cross-wise on an elongated flexible tape wound about itself forming a roll with a leading end which comprises a casing composed of a plurality of mating components, means releasably securing said components together in mated relation to define a chamber with an arcuate top wall receiving said roll for rotation about a horizontal axis with a peripheral wall surrounding the roll and having an open ended arcuate chute with an outer wall defined by said arcuate top wall of the chamber and an inner wall in spaced parallel relation therewith receiving and supporting the leading end at the top of the roll at one end and discharging said leading end of the roll at a lower level at the other end, an exposed support lip extending downwardly and outwardly beyond the discharge end of the chute across the full width of the chute, a finger hole in the arcuate top wall providing for advancing the tape and swabs through the chute to the lip, and a cutting edge on the arcuate top wall above the lip for severing an exposed length of tape.

4,550,858
TIMED-DISPENSING METHOD AND APPARATUS

Pieter J. Noomen, Utrecht, Netherlands, assignor to Dowe Egberts Koninklijke Tabaksfabrier Koffiebranderijen Theehandel N.V., Utrecht, Netherlands

Filed Dec. 23, 1982, Ser. No. 452,861
Claims priority, application Netherlands, Dec. 31, 1981, 8105936
Int. Cl.⁴ B67D *5/42*
U.S. Cl. 222—1 **4 Claims**

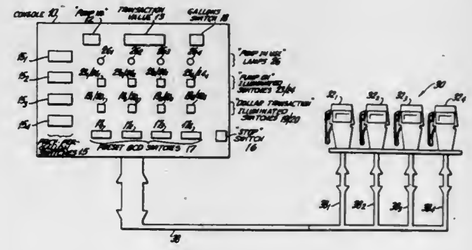


1. A method of dispensing a consumption unit of liquid beverage concentrate of high and variable viscosity and having a pre-determined volume in a beverage dispensing machine, in which, for each quantity dispensed, a valve is opened for a specific period of time and the beverage concentrate issues under a constant static pressure, characterized in that each consumption unit is dispensed in a pulsating manner at a frequency of at least five pulsations per second by opening and closing said valve a pre-determined number of times to dispense a volume of liquid which is substantially independent of variations in viscosity.

4,550,859
MICROPROCESSOR CONTROLLED FLUID DISPENSING SYSTEM

John Dow, Jr., Rumson; William A. Oetting, Green Brook, and Richard J. Yessian, Martinsville, all of N.J., assignors to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Jan. 29, 1979, Ser. No. 7,512
Int. Cl.⁴ B67D *5/06*
U.S. Cl. 222—26 **6 Claims**



1. In combination in a fluid dispensing system, a microprocessor including plural latched input-output ports, a program storing read only memory and a read and write variable memory connected to said microprocessor, plural pump means, plural interface circuit means and first bus means connecting each of said pump means with at least a first one of said microprocessor ports, console means, and further address and data bus means connecting said console means with further of said microprocessor input-output ports, each said pump means including reset switch means and dispensed fluid metering means communicating to said first one of said microprocessor input-output ports via an associated one of said interface circuit means and pump motor selective energizing means controlled by said microprocessor through said associated interface circuit means, said console means including plural pump enabling switch means and display means each connected by said further address and data bus means with said further input-output ports of said microprocessor.

4,550,860
PLANTER POPULATION REDUCTION DRIVE UNIT

Ralph E. Weeder, Box 83, Lindsay, Nebr. 68644

Filed Jul. 30, 1981, Ser. No. 288,642
Int. Cl.⁴ A01C *19/00*
U.S. Cl. 222—615 **4 Claims**

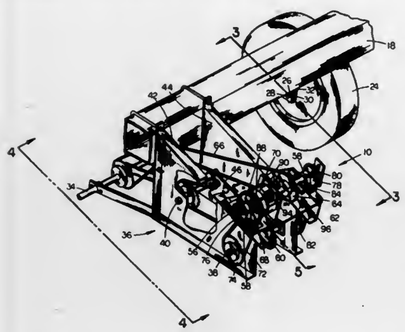
1. In an agricultural planter implement having an elongated tool bar and a plurality of individual planter units and a plurality of ground wheels connected to the tool bar, a population reduction drive system comprising,

first and second shafts rotatably mounted on the implement in spaced-apart relation,

means operatively connecting said second shaft to the planter units for operating said units in response to rotation of the second shaft,

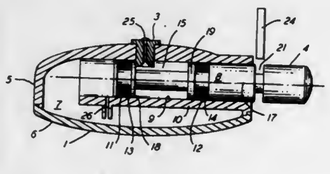
a plurality of sprockets of various sizes carried on said first and second shafts for rotation therewith,

a chain trained about a selected pair of said sprockets for setting the population rate corresponding to that pair,
a third shaft rotatably mounted on the implement and having a fixed sprocket secured thereon,
chain drive means operatively connected to said fixed sprocket and ground wheels for rotating said third shaft in response to rotation of said ground wheels,
a primary chain drive connection between said third and first shafts including
a remotely actuated wrap spring clutch mounted on said third shaft,
a primary drive sprocket connected to said wrap spring clutch for rotation with said third shaft when said wrap spring clutch is engaged,
a primary driven sprocket on said first shaft, and



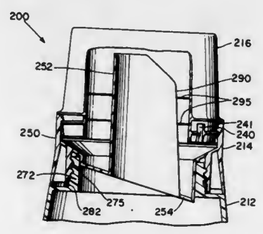
a chain trained around said primary drive sprocket and primary driven sprocket, and
a secondary chain drive connection between said third and first shafts including,
an over running clutch mounted on said third shaft, a secondary drive sprocket connected to said over running clutch for rotating said third shaft when said wrap spring clutch is disengaged,
a secondary driven sprocket on said first shaft, and
a chain trained about said secondary drive sprocket and secondary driven sprocket,
said wrap spring clutch including a solenoid operatively connected thereto for disengaging said wrap spring clutch in response to actuation of said solenoid and for engaging said wrap spring clutch in response to deactuation of said solenoid.

4,550,861
LACHRYMATOR/DYE DISPENSER
James P. Fay, Sr., and James P. Fay, Jr., both of Keene, N.H., assignors to Pro-Tex Limited Partnership, Keene, N.H.
Filed Sep. 2, 1983, Ser. No. 529,321
Int. Cl.[4] B67B *7/24*
U.S. Cl. 222—78 **7 Claims**



1. A dispenser for dispensing a dye and a lachrymator, comprising a housing defining a closed cavity, an open ended bore extending from the cavity to the exterior of the housing, said bore having an orifice located in its sidewall in communication with said cavity, a spool valve defining a longitudinal axis, disposed in the bore and moveable between open and closed positions, a nozzle extending from the bore to the exterior of the housing, said spool valve with said bore defining a chamber with which said nozzle communicates, said spool valve sealingly engaging said bore, when in the closed position, on both sides of said chamber, to exclude communication between said chamber and the cavity and, when in the open position, said orifice permitting communication of said chamber with the cavity whereby when a lachrymator under pressure is present in the interior of the housing, said lachrymator will pass through said chamber to and through said nozzle, and means for opening said spool valve from the exterior of the housing, differential pressure when present between the inferior of the housing and the exterior of the housing serving to move said spool valve to its closed position.

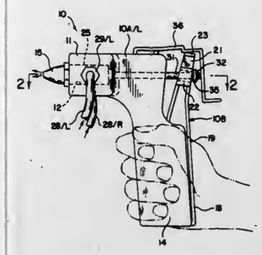
4,550,862
LIQUID PRODUCT POURING AND MEASURING PACKAGE WITH SELF DRAINING FEATURE
Dale E. Barker, Hamilton; Griscom Bettle, III, and Robert H. Van Coney, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 442,381, Nov. 17, 1982. This application Oct. 28, 1983, Ser. No. 545,579
Int. Cl.[4] B67D *1/16*
U.S. Cl. 222—109 **11 Claims**



1. An improved package for liquids comprising:
(a) a container for housing a liquid and having an upwardly extending finish provided with a dispensing orifice;
(b) a transition collar mounted on the exterior of said container finish, said collar having an outwardly projecting pouring spout, a circumscribing wall with fastening means formed on its interior surface, said spout extending above and being spaced from said circumscribing wall to insure maximum dispensing and mess control and drain means for returning spilled liquid to said container; and
(c) a measuring cup adapted to serve as a closure, said measuring cup having an open mouth terminating in an anti-drip lip and having fastening means formed on its external surface surrounding said mouth, said external fastening means being adapted to cooperate with the fastening means on said transition collar to attach the measuring cup on the interior of said transition collar with the measuring cup in inverted condition.

4,550,863
FOAM GUN FOR MIXING AND DISPENSING TWO REACTANTS
Merlyn F. Farrey, Akron, Ohio, assignor to Fomo Products, Inc., Akron, Ohio
Filed Jun. 27, 1983, Ser. No. 507,973
Int. Cl.[4] B67D *5/60*
U.S. Cl. 222—145 **1 Claim**

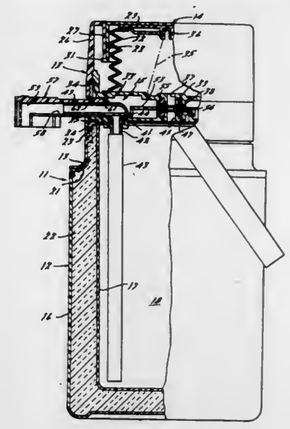
1. A dispensing gun adapted to be connected to separate pressurized fluid components for the supply of foam reactants, comprising: a body component having an upper barrel with a longitudinal bore and a pistol grip below the barrel, said barrel having a rear wall with an opening coaxial with said bore, said barrel further having an upper rear portion carrying a rearwardly directed resilient lock member, said pistol grip having opposed rearwardly directed flanges defining a vertical slot for housing a squeezable trigger; a trigger component having a rearwardly projecting lower portion, a medial portion pivotally mounted at the upper end of said pistol grip vertical slot and an upper portion alignable with said rear wall of the barrel said upper portion having a safety lock flange; a reactant supply and mixing component positioned adjacent the front end of said barrel bore and having a sleeve with a plurality of ports for the supply of foam reactants, each said supply port extending through a coupling stud for connection thereof to length of



flexible tubing extending to a remote container for a foam reactant; a reciprocating valve rod component positioned coaxially within said opening in said rear wall of the barrel for connection to said upper portion of the trigger component, the front end of said rod carrying an elongate valve element having an outer diameter coincident with the inner diameter of said sleeve so as to open or close said supply ports and to purge said sleeve of foam reactants; there further being bias means to urge said valve element into said sleeve to normally close said supply ports while purging said sleeve and to move said lower trigger portion rearwardly of said pistol grip, said lock member on said barrel being normally positioned to engage said safety lock flange on said trigger component when said valve element is positioned to close said supply ports.

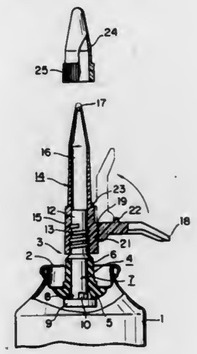
4,550,864
LEAK-PROOF DISPENSING CONTAINER
R. A. Tarozzi, Gales Ferry, and C. Formhals, Ledyard, both of Conn., assignors to King-Seeley Thermos Co., Norwich, Conn.
Filed Aug. 27, 1980, Ser. No. 181,730
Int. Cl.[4] B67D *5/42*
U.S. Cl. 222—209 **8 Claims**

1. In a dispensing container having a body portion defining a cavity for containing a liquid, pump means carried by said body portion, said pump means having an outlet port in communication with said cavity for generating a pressure upon the liquid therein upon operation of said pump means, dispensing means for delivering liquid from said cavity upon actuation of said pump means, valve means movable between a closed position, an intermediate position and an opened position, a releasable stop means for releasably and positively restraining said valve means in its intermediate position, said valve means being effective to close communication of said outlet port with said cavity and prevent liquid passage through said dispensing means when said valve means is in its closed position, and venting means for venting the area over the liquid in said container to the atmosphere at a restricted rate when said valve means is in its intermediate position for precluding accidental



leakage of fluid due to pressure build-up when said valve means is moved to its open position.

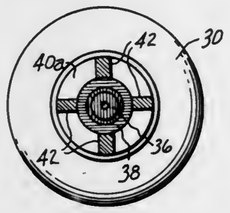
4,550,865
OBLIQUELY-HANDLING NOZZLE FOR AEROSOL
Katsumi Hirao, Osaka, and Akira Sasaki, Nara, both of Japan, assignors to Toyo Aerosol Industry Co., Ltd., Tokyo and Kanpe Katei Toryoo Kabushiki Kaisha, Osaka, both of, Japan
PCT No. PCT/JP82/00478, § 371 Date Aug. 25, 1983, § 102(e) Date Aug. 25, 1983
PCT Filed Dec. 24, 1982, Ser. No. 530,589
Claims priority, application Japan, Dec. 25, 1981, 56-193841[U]
Int. Cl.[4] B05B *9/04*
U.S. Cl. 222—402.21 **3 Claims**



1. A discharge nozzle for an aerosol container having a discharge opening with a closure including a stem, the closure operable upon tilting of the stem relative to the discharge opening to provide a discharge path from the interior of the container to the closure, said nozzle comprising:
(a) an elongated nozzle body including means to removably secure said body to said closure, said body being generally tubular to provide a product discharge path, the outer surface of said tubular body including an engagement portion;
(b) an elongated finger piece extending laterally outwardly from said tubular body and secured thereto by a thin

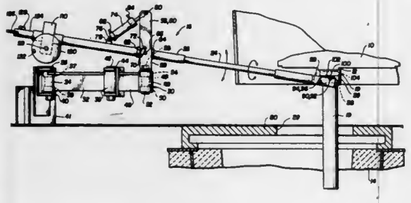
foldable web that defines a hinge, said finger piece including engagement means spaced outwardly from said web and engageable with said engagement portion of said nozzle body when said finger piece is pivoted about said web to bring said elongated finger piece adjacent to the outer surface of said nozzle body to retain said finger piece along said nozzle body when the nozzle is not in use, said finger piece also including an abutting surface adapted to abut the outer surface of said nozzle body when said finger piece is in laterally outwardly extending relationship with said nozzle body to define an operating position, whereby finger pressure on said finger piece in a direction toward the aerosol container when the finger piece is in the operating position causes tilting of the closure to permit the dispensing of product through the nozzle body.

4,550,866
OCULAR DISPENSER
Lawrence F. Moore, 501 Lake Shore Dr., Lake Park, Fla. 33403
Filed Sep. 6, 1983, Ser. No. 529,395
Int. Cl.[4] B05B *11/04*
U.S. Cl. 222—420 **4 Claims**



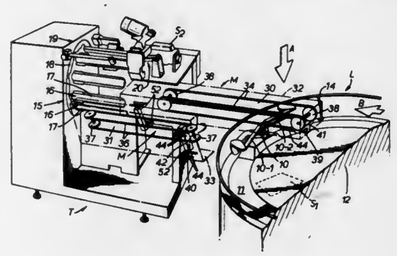
1. In combination with a container containing medicine, a closure therefor comprising a body having a fluid passageway therethrough in communication with the interior of the container, said body including:
(a) a lower portion adapted to be partially received with said container;
(b) a nozzle portion being generally circular in cross-section at any point and comprising a first upper portion of a first color different from the color of the container and a second lower portion of a second color different from the color of the container; and
(c) an intermediate flange portion having a planar surface of a third color and a plurality of radially outwardly extending ridges protruding upwardly from said planar surface, said ridges being of a fourth color.

4,550,867
SHROUD TUBE MANIPULATING AND SUPPORTING APPARATUS
John R. Bell, Edwardsville; Robert E. Scoville, and Joade Whitt, both of Granite City, all of Ill., assignors to National Steel Corporation, Pittsburgh, Pa.
Filed Oct. 14, 1983, Ser. No. 541,931
Int. Cl.[4] B22D *41/08*
U.S. Cl. 222—607 **5 Claims**



1. In an apparatus for positioning and supporting a shroud tube for use in a metal teeming operation in which molten metal is poured from a bottom opening of a teeming vessel into a receiving vessel positioned beneath the bottom opening, the apparatus including a boom assembly having one end mounted on a rigid structure for pivotal movement about a vertical axis and being articulated intermediate its end to permit universal movement of its other end in a horizontal plane, an elongated shroud tube support arm, and means mounting the support arm intermediate its ends on the universally movable end of the boom assembly for movement therewith, for limited pivotal movement about a horizontal axis, and for limited rotational movement about its longitudinal axis, a bifurcated yoke at one end of the support arm for engaging and supporting a shroud tube, and drive means at the other end of said support arm for rotating the support arm about its longitudinal axis, the improvement comprising
power means operably associated with said boom assembly and said shroud tube mounting means for pivoting said support arm about said horizontal axis,
control means for controlling operation of said power means to rotate said support arm about said horizontal axis to raise and lower a shroud tube supported on said yoke means, said control means being manually operable to selectively raise and lower the shroud tube for positioning relative to the bottom opening in the teeming vessel and to urge the shroud tube into engagement with the teeming vessel outlet valve during use of the shroud tube,
said means mounting said support arm comprising a bracket pivotally mounted on and projecting upwardly from the universally movable end portion of said boom assembly for movement therewith and for free pivotal movement about a vertical axis, said bracket including means journaling said support arm for pivotal movement about a horizontal axis spaced above said boom, and
said means mounting said support arm for rotation about its longitudinal axis comprising an elongated sleeve telescopingly receiving one end portion of said support arm, said sleeve including trunnion means engaging said bracket for supporting said sleeve and said support arm for said pivotal movement about said horizontal axis.

4,550,868
METHOD AND APPARATUS FOR TRANSFERRING HOSIERY BETWEEN HOSIERY MANUFACTURING MACHINES
Michael J. Hodges, and Malcolm K. Scanes, both of High Wycombe, England, assignors to Detexomat Machinery Ltd., Buckinghamshire, England
Filed Feb. 3, 1984, Ser. No. 576,548
Claims priority, application United Kingdom, Feb. 4, 1983, 8303159
Int. Cl.[4] D05B *33/00*; D06G *3/04*
U.S. Cl. 223—43 **26 Claims**



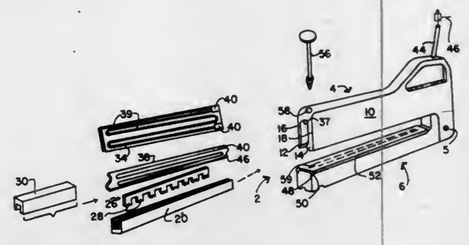
1. Hosiery manufacturing equipment including first and second spaced apart hose support means aligned with respect to each other, and a transfer means which strips hose from said first support means, carries same to said second support means and loads said hose thereon, said transfer means including endless conveyor means located between said first and second hose support means, said endless conveyor means having at least one hose holding means secured thereto and being movable therewith, said hose holding means including a set of hose gripping fingers, a portion of said conveyor means being positioned adjacent said first support means so that said fingers make engagement with the welt end of hose supported thereat and strip said hose from said support, after which said transfer means deliver said hose to said second support means and places said welt end of said hose in an encircling relationship on said second support means in a predetermined attitude with respect thereto.

4,550,869
DOUBLY ELASTIC CUSHIONED CARRYING STRAP
Joyce E. Johnson, 631 E. Washington, Pontiac, Ill. 61764
Filed Feb. 8, 1984, Ser. No. 578,017
Int. Cl.[4] A61F *5/40*
U.S. Cl. 224—202 **2 Claims**



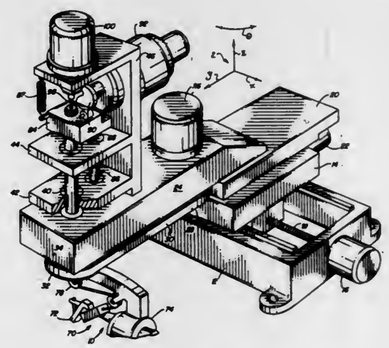
1. A cushioned carrying strap having a user-contacting, load bearing portion intermediate the ends thereof which is cushioned and elastic primarily in a longitudinal direction, said load-bearing portion comprising:
a plurality of individual elastic blocks of elastic cushioning material linearly disposed in a closely-adjacent, nearly abutting relationship;
a tube of non-stretchable, flexible material snugly enclosing said blocks;
said tube being disposed intermediate the ends of the hand and subject to tension applied at opposite ends of the band and to transverse loads when tensioned about a user's shoulder;
said tube having laterally extending accordion-like pleats between adjacent blocks, the tube normally having a bulge extending laterally outward of the tube in opposite directions at each location of a pleat, the bulges each containing a continuation of the pleat; and
connecting means drawing opposite sides of said tube together at each end of each elastic block to maintain the accordion-like pleats between adjacent blocks and hold the blocks in discrete, closely adjacent positions lengthwise of the tube thereby enabling two-way elasticity resulting from substantial elastic stretch of the tube by unfolding said pleats concurrently with elastic deformation transverse to the tube in response to tension applied to the ends of the tube.

4,550,870
STAPLING DEVICE
John F. Krumme, Woodside, and Darel E. Hodgson, Palo Alto, both of Calif., assignors to Alchemia Ltd. Partnership, Palo Alto, Calif.
Filed Oct. 13, 1983, Ser. No. 541,546
Int. Cl.[4] A61B *17/04*
U.S. Cl. 227—19 **21 Claims**



1. A stapling device including
a first member having staple receiving means for carrying staples therein,
means for driving the staples for causing them to pierce material to be stapled,
said means for driving comprising a driving member deformed into a partially collapsed shape and upon application of heat being recoverable to an expanded shape,
said means for driving being located in said first member between said staples and an opposing inner surface of said first member and further comprising means for heating said deformed member.

4,550,871
FOUR-MOTION WIRE BONDER
Lo K. Chan; Yui K. Tang, and Jui Chang, all of Hong Kong, Hong Kong, assignors to ASM Assembly Automation Ltd., Hong Kong, Hong Kong
Filed Aug. 24, 1982, Ser. No. 410,943
Int. Cl.[4] B23K *37/02*; H01L *21/607*
U.S. Cl. 228—4.5 **4 Claims**



1. An apparatus for wire bonding supported on a base, comprising:
a wire bonding head;
X-motion means operably coupled to said wire bonding head for imparting X-directional movement to said wire bonding head, said X-motion means including an X-motion table slidably mounted on said base, X-screw means operably coupled to said X-motion table for moving said X-motion table in the X-direction, and X-motion means operably coupled to said X-screw means for driving said X-

screw means and causing said X-motion table and said wire bonding head to move in the X-direction;

Y-motion means operably coupled to said wire bonding head for imparting Y-directional movement to said wire bonding head, said Y-motion means including a Y-motion table slidably mounted on said X-motion table, a cantilevered sub-frame operably mounted on said Y-motion table, Y-screw means operably coupled to said Y-motion table for moving said Y-motion table in the Y-direction, and Y-motor means operably coupled to said Y-screw means for driving said Y-screw means and causing said Y-motion table and said wire bonding head to move in the Y-direction;

theta-motion means operably coupled to said wire bonding head for imparting theta-directional rotational movement to said wire bonding head, said theta-motion means being operably mounted on said Y-motion means;

Z-motion means operably coupled to said wire bonding head for imparting Z-directional movement to said wire bonding head, said Z-motion means being operably mounted on said Y-motion means, said Z-motion means including:

(a) a vertical support rigidly fastened to said cantilevered sub-frame, said vertical support having a first horizontal arm at an upper end and at least one other horizontal arm, said at least one other horizontal arm having two apertures therethrough,

(b) an alignment collar having an aperture therethrough, an alignment shaft rigidly fastened to said collar and at least one spring biasing said collar toward said first horizontal arm, said alignment shaft slidably engaging one of said apertures in said at least one other horizontal arm and a first cylindrical bore in said cantilevered sub-frame,

(c) a cylindrical shaft slidably engaging said aperture in said alignment collar, one of said apertures in said at least one other horizontal arm, a second cylindrical bore in said cantilevered sub-frame and said theta-motion means, said cylindrical shaft having a longitudinal cylindrical bore passing therethrough and a mounting plate fastened thereto, said mounting plate being operably coupled to said wire bonding head and having a plurality of lugs slidably engaging said theta-motion means, and

(d) Z-motor means operably coupled to said vertical support and operably engaging said alignment collar for causing said alignment collar, said alignment shaft, said cylindrical shaft and said wire bonding head to move in the Z-direction; and

wire feed means for delivering a length of bonding wire to said wire bonding head, said wire feed means being coupled to said vertical support.

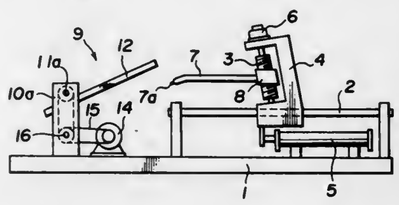
4,550,872
FILLET-WELDING EQUIPMENT FOR PIPE MATERIALS
Yutaka Ohnishi, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1983, Ser. No. 558,527
Claims priority, application Japan, Dec. 9, 1982, 57-186304[U]
Int. Cl.⁴ B23K *31/06, 37/02, 37/04*
U.S. Cl. 228—48 **4 Claims**

1. A fillet welding equipment for welding pipe materials, the fillet welding equipment comprising:

(a) a movable member adapted to be movable longitudinally of a base body of said welding equipment;

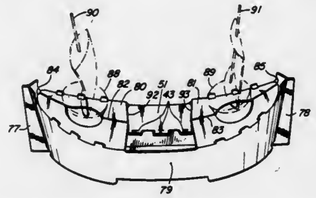
(b) a threaded shaft inclined forwardly and mounted rotatably to said movable member;

(c) a welding torch threadedly connected with said threaded shaft to be movable upwardly or downwardly in a direction of inclination of said threaded shaft; and,



(d) a jig positioned in front of said welding torch to carry members to be welded rotatably mounted on said base body of said welding equipment.

4,550,873
FAST FOOD SERVING TRAY
James W. Fleming, Vancouver, Canada, assignor to Lawson & Jones Limited, Mississauga, Canada
Continuation-in-part of Ser. No. 569,770, Jan. 10, 1984, Pat. No. 4,512,512. This application Apr. 18, 1985, Ser. No. 724,762
Int. Cl.⁴ B65D *5/36*
U.S. Cl. 229—30 **22 Claims**



15. A serving tray for fast food or the like, comprising, in combination,

(a) a pair of generally upright, outwardly convexly curved side walls connected with each other at connection tabs integral with the respective side walls at end sections thereof;

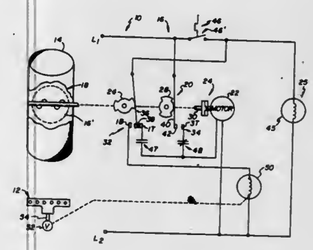
(b) said side walls being further integral with a pair of transverse top walls, each top wall having a parabolic contour in plan, said top walls being disposed one at each end of the tray;

(c) each top wall having a generally circular cutout formed centrally thereof, said generally circular cutouts being of the size adapted to removably receive a frustoconical container such as a plastic coffee cup;

(d) said top walls having inside end edges defining two opposed ends of a generally rectangular central opening adapted to receive a rectangular container such as a hamburger or fish tray, the two remaining opposed sides of said central opening being formed by adjacent sections of the side walls;

(e) a bottom wall formed of two bottom wall sections secured to each other along a longitudinal line, each bottom wall section being integral with the adjacent side wall at a line of weakness extending along a lowermost edge of the respective side wall.

4,550,874
MEANS CONTROLLING A FLUE DAMPER
Michael T. Clouser, Indianapolis, and Robert S. Coulter, Plainfield, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.
Continuation of Ser. No. 369,250, Apr. 16, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,797
Int. Cl.⁴ F23N *3/00*
U.S. Cl. 236—1 G **2 Claims**



1. In a heating system wherein heat is supplied from an electrically operable fuel supply source through a conduit;

a flue damper plate rotatably mounted for rotation within said conduit to regulate heat flow through said conduit and a controller controlling the position of said flue damper plate comprising:

(a) a temperature demand means response to a request for heat connected between a junction of a movable contact of a double throw switch and of a relay, and a movable contact of a single pole switch, said single pole switch closed when said flue damper plate is open, and open when said flue damper plate is closed, a first side of said double pole switch closed when said flue damper plate is closed and open when said flue damper plate is open, a second side of said double throw switch open when said flue damper plate is closed and closed when said flue damper plate is open,

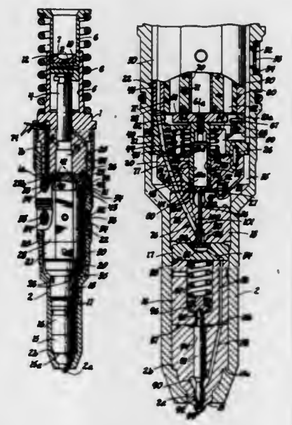
(b) said relay including a coil electrically connected between a second side of a power source, and through said temperature demand means to a first side of said power source,

(c) a drive motor coupled to said flue damper plate and electrically connected between said second side of said power source and through a normally closed contact of said relay and through said single pole switch to said first side of said power source, and further connected between said second side of said power source and through a normally open contact of said relay, through a side of said double throw switch, and through said temperature demand means to said first side of said power source, and

(d) said electrically operable fuel supply source connected between said second side of said power source and through a side of said double throw switch and said temperature demand means to said first side of said power source.

4,550,875
ELECTROMAGNETIC UNIT FUEL INJECTOR WITH PISTON ASSIST SOLENOID ACTUATED CONTROL VALVE
Richard F. Teerman, Wyoming; Russell H. Bosch, Grandville, and Ricky C. Wirth, Alto, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 6, 1984, Ser. No. 638,274
Int. Cl.⁴ F02M *47/00*
U.S. Cl. 239—88 **5 Claims**

1. An electromagnetic unit fuel injector includes a housing means having a fuel passage means connectable to a source of fuel for the ingress or egress of fuel at a suitable supply pressure, a supply/drain chamber in flow communication with said fuel passage means, a valve stem guide bore in said housing means with a conical valve seat encircling said guide bore at the supply/drain chamber end thereof; a pump cylinder means in said housing means; an externally actuated plunger reciprocable in said cylinder means to define therewith a pump chamber open at one end for the discharge of fuel during a pump stroke and for fuel intake during a suction stroke of said plunger; a valve controlled injection nozzle means operatively positioned in one end of said housing means; a discharge passage means connecting said pump chamber to said injection nozzle means; a solenoid actuated, poppet valve controlled passage means for effecting flow communication between said pump chamber and said supply/drain chamber and including a solenoid actuated poppet valve having a head with a stem extending therefrom journaled in said valve guide bore for



reciprocable movement whereby said head is movable between an open position and a closed position relative to said valve seat, said stem having a reduced diameter stem portion next adjacent to said head which defines with said valve stem guide bore an annulus portion of said valve controlled passage means; a solenoid means operatively positioned in said housing means, said solenoid means including an armature operatively connected to said poppet valve, a spring means operatively positioned to normally bias said poppet valve to said open position; and a piston slidably journaled in said housing means concentric to said poppet valve with one end of said piston positioned to abut against said head of said poppet valve, the opposite end of said piston being in flow communication with said discharge passage means whereby said piston is operative to assist in holding said poppet valve in said closed position.

4,550,876
SPRINKLER TOY
Ralph J. Kulesza, Chicago; Donald A. Rosenwinkel, Oak Park, and Harry Disko, So. Barrington, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 12, 1982, Ser. No. 440,978
Int. Cl.⁴ A63H *23/10*
U.S. Cl. 239—211 **14 Claims**

1. A sprinkler toy comprising:

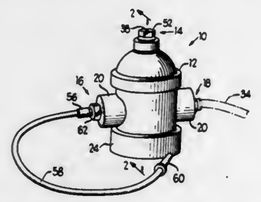
a portable, generally upright cylindrical housing having a top and a bottom;

connector means on said housing for connecting said housing to a garden hose;

upwardly directed diffusing nozzle means, mounted in the top of said housing and capable of fluid communication with said connector means, for spraying liquid outwardly in a diffuse spray from said housing; and

a flexible hose having a connected end and a free exit end

mounted on said housing only at said connected end intermediate said top and bottom and being extendable by the



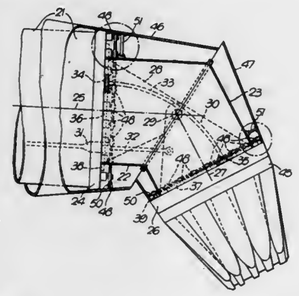
user away from said housing, said hose capable of fluid communication with said connector means.

4,550,877

STREAMLINED NOZZLE FOR TURBOMACHINES

Gary F. Szuminski, Marietta, Ga., assignor to Rolls-Royce Inc., New York, N.Y.

Filed Aug. 3, 1982, Ser. No. 404,905
Int. Cl.[4] F02K *1/78*
U.S. Cl. 239—265.35 **5 Claims**



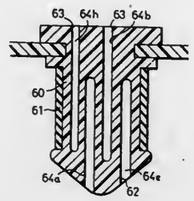
1. A vectorable nozzle for a turbomachine comprising; a first duct; a second duct mounted in a first bearing for rotation relative to the first duct about a longitudinal axis of the second duct, the second duct terminating at a downstream end thereof in a plane inclined relative to a plane normal to said longitudinal axis of said second duct; a third duct mounted in a second bearing and having a longitudinal axis, said third duct being rotatable about said longitudinal axis of said third duct relative to the second duct, the third duct terminating at an upstream end thereof in a plane substantially parallel to the downstream end of the second duct, said downstream end of said second duct and said upstream end of said third duct defining a scarf joint therebetween drive means operable to rotate each the second and third ducts in opposite directions about their respective axes of rotation and operable to cause the second bearing to swing bodily about an axis transverse to the length of the second duct; a first outer fairing encompassing the second duct, the first fairing being mounted relative to the second duct at its upstream end and terminating at its downstream end in a plane substantially parallel to the joint between the second and third ducts; a first constraining means operable to constrain the first fairing against axial movement relative to the second duct; a first connector means interconnecting the first fairing and the second duct whereby rotational movement of the second duct is transmitted to the first fairing to rotate it with the second duct; a second outer fairing encompassing the third duct, the second fairing being mounted relative to the third duct at its downstream end and terminating at its upstream end in a plane substantially parallel to the downstream end of the first fairing; a second constraining means operable to constrain the second fairing against axial movement relative to the third duct; and a second connector means interconnecting the second fairing to the third duct whereby rotational movement of the third duct relative to the second duct is transmitted to the second fairing to rotate it with the third duct.

4,550,878

DRIP IRRIGATOR WITH PRESSURE RESPONSIVE FLOW REGULATOR

Peretz Rosenberg, and Avner Rosenberg, both of Moshav Beit Shearim, Israel

Filed Dec. 6, 1983, Ser. No. 558,432
Claims priority, application Israel, Jan. 7, 1983, 67635
Int. Cl.[4] B05B *15/00*; E02B *13/00*
U.S. Cl. 239—542 **17 Claims**



1. A flow regulator, comprising: a body member formed with an inlet opening from an edge thereof, an outlet opening from an opposite edge thereof, and a flow passageway interconneeting said openings to produce a flow in a predetermined direction between said openings; and a flexible member overlying said flow passageway so as to meter the flow therethrough in response to the dynamic pressure of the fluid flowing therethrough; the improvement wherein: said flow passageway is defined by at least two grooves formed in spaced parallel relation in said body member, which grooves are separated by a separator wall for a major portion of their length, one of said grooves being an inlet groove leading from said inlet opening at its respective edge of the body member and terminating short of the opposite edge, said inlet groove having a length transverse to said fluid flow direction which is substantially greater than its width parallel to said fluid flow direction; the other of said grooves being an outlet groove leading from said outlet opening at its respective edge of the body member and terminating short of the opposite edge, said outlet groove being parallel to said inlet groove and also having a length transverse to said fluid flow direction which is substantially greater than its width parallel to said fluid flow direction; said flexible member overlying the two grooves and said separator wall so as to meter the flow between the inlet groove and outlet groove, and substantially the complete length of said separator wall and grooves in response to the dynamic pressure of the fluid flowing between the flexible member and the separator wall of the body member.

4,550,879

VERTICAL TYPE PULVERIZING AND CLASSIFYING APPARATUS

Akio Tanaka, Hirakata, and Yasuo Kamo, Sakura, both of Japan, assignors to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan

Filed Feb. 10, 1984, Ser. No. 578,976
Claims priority, application Japan, Feb. 10, 1983, 58-21911
Int. Cl.[4] B02C *23/32*
U.S. Cl. 241—52 **6 Claims**

1. A vertical type pulverizing and classifying apparatus comprising:

a pulverizing chamber provided with a pulverizing rotor disposed within a housing having upper, medial and lower portions,

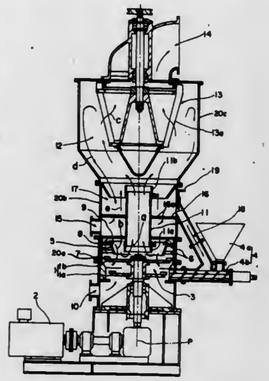
a guide ring stationarily disposed above and coaxially with the pulverizing rotor, the guide ring defining inwardly thereof a descending gas stream passage for primary classification of material pulverized in the pulverizing chamber,

a classifying blade rotor disposed above and coaxially with the guide ring and driven so as to rotate within an upper housing portion, the blade rotor and the upper housing portion serving to define a classifying chamber therebetween for secondary classification of material fed from the guide ring,

a collecting passage disposed above the blade rotor into which fine particles from the classifying chamber flow is fed by gas streams,

a first material carrying gas feed duct disposed below the pulverizing rotor,

a plate member provided with pores disposed between the descending gas stream passage and the classifying chamber and arranged to serve as a partition therebetween,



a conduit having extremities axially disposed such that one extremity terminates within a zone defined by the guide ring and the opposite extremity extends through the plate member so as to terminate within the classifying chamber,

a second gas feed duct disposed below the plate member and arranged to supply a flow of gas to the pores of said plate member,

a coarse material floating chamber disposed within said medial housing portion above the plate member, said chamber being defined by said medial housing portion and the upper extremity of the conduit, and

return passage means disposed exteriorly of said housing and extending from coarse material floating chamber to said lower housing portion and into said pulverizing chamber, whereby coarser particles are separated from finer particles and recylced for further pulverizing.

4,550,880

METHOD AND APPARATUS FOR DETECTING THE POSITION OF A TAKE-UP PACKAGE DURING AN AUTOMATIC DOFFING AND DONNING CYCLE

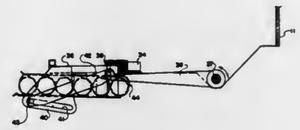
Kurt W. Niederer, Charlotte, N.C., assignor to Belmont Textile Machinery Company, Belmont, N.C.

Filed Apr. 6, 1984, Ser. No. 597,318
Int. Cl.[4] B65H *54/42, 63/00, 67/04*
U.S. Cl. 242—18 DD **16 Claims**

1. In a strand processing machine having a strand supply source, a yoke for holding a take-up package and means for rotating the take-up package to wind the strand thereon, the improvement which comprises an apparatus for detecting the position of the take-up package during an automatic doffing and donning cycle between winding cycles, said apparatus comprising:

(a) a chuck carried by the yoke and having two opposing chuck arms for clamping the take-up package for rotation therebetween, said chuck arms mounted for relative movement among three positions, a first position wherein the chuck arms are further apart than the length of the take-up package in order for the take-up package to be placed therebetween for donning, a second position with the take-up package properly donned on the chuck arm for winding, and a third position wherein the chuck arms are closer together than the length of the take-up package;

(b) means for moving said chuck arms among said first,



second and third positions during the doffing and donning cycle;

(c) detecting means for detecting that the chuck arms are in said third position; and,

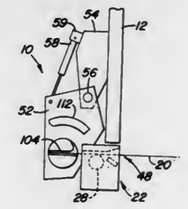
(d) alarm means cooperating with said detecting means for indicating that said chuck arms have assumed the third position and that a take-up package is not properly donned onto the chuck arms.

4,550,881

SCRAP SCROLLER FOR A SHEAR DISCHARGE CONVEYING SYSTEM

Peter W. Boardman, St. Catharines, Canada, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1983, Ser. No. 555,767
Int. Cl.[4] B65H *19/20*
U.S. Cl. 242—56 R **32 Claims**



1. In a conveying system for a shear having an elongated shear blade and a conveyor for moving cut metal in a preselected direction from the shear, a scrap scroller for moving strips of scrap metal cut from the shear away from the conveyor and compacting the strips, the scroller comprising:

a scroller frame located adjacent the shear;

a spindle rotatably mounted in the frame adjacent and offset to one side of the shear blade for rotation about an axis generally transverse to the shear blade and parallel to the preselected conveying direction, said spindle including a strip-receiving portion;

means for moving the strip parallel and adjacent to the shear blade;

guide means for directing one end of the metal strip into the receiving portion;

means for rotating the spindle to wind the strip in a compact scroll onto the spindle; and

means providing relative axial movement between the scroll of metal and the spindle for removing the scroll from the spindle.

4,550,882

REEL CUTTING AND WINDING MACHINE

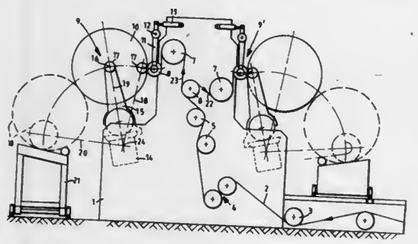
Armin S. P. Hutzenlaub, and Dieter Düppengiesser, both of Wiehl, Fed. Rep. of Germany, assignors to Erwin Kampf GmbH & Co. Maschinenfabrik, Fed. Rep. of Germany

Filed Mar. 7, 1984, Ser. No. 586,964

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308059

Int. Cl.⁴ B65H *35/04*

U.S. Cl. 242—56.6 **12 Claims**



1. A reel cutting and winding machine for longitudinally cutting a sheet into strips and for winding up the strips into separate wound packages, comprising:

(a) stationary mounting plates at either side of said machine,

(b) a cross-member pivotally mounted between said plates, said cross-member being pivotable into a winding position, a wound package sealing position, and a package depositing position,

(c) winding core means on which said strips can be wound,

(d) pivotably mounted swing arms carrying a pressure roller for engaging the periphery of the wound strip,

(e) lever means operatively connected to said cross-member and carrying said winding core means,

(f) carrier lever means pivotably mounted between said plates for movement between a waiting position during the winding process and a second, operating position,

(g) adjusting lever means pivotably mounted on said carrier lever means, and means to pivot said adjusting level means independently of said carrier lever means between a first strip cutting position and a second strip joining position,

(h) a vacuum table carried by said adjusting lever means, said carrier lever means and said adjusting lever means cooperating to pivot said vacuum table into a strip cutting position, said vacuum table holding by suction the strips while being cut and prior to mounting the leading end of said cut strip onto another winding core means, and

(i) cutting means for cutting said strip when retained by said vacuum table.

4,550,883

APPARATUS FOR STORING OR DISPENSING PAPER SHEETS OR THE LIKE

Heinz Boss, Strengelbach, Switzerland, assignor to Grapha Holding AG, Hergiswil, Switzerland

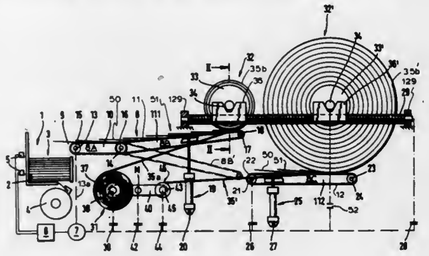
Filed Jun. 6, 1983, Ser. No. 501,271

Claims priority, application Switzerland, Jun. 9, 1982, 3548/82

Int. Cl.⁴ B65H *29/66, 5/24, 5/28*

U.S. Cl. 242—59 **13 Claims**

1. Apparatus for storing the sheets of a stream of successive sheets between the convolutions of bands which are paid out by reels and are wound onto rotary cores to form therewith rolls for temporary storage of sheets and for evacuating stored sheets from such rolls, comprising a transporting unit defining for the sheets an elongated path; carrier means for movably mounting the cores of rolls at a level above said path, said carrier means extending in the longitudinal direction of said path and being arranged to simultaneously support a core and a roll; and support means for for movement in said direction wherein said transporting unit includes means for maintaining a portion of said path in a position in which such portion is at least substantially tangential to a core for winding and to a roll for unwinding on said carrier means irrespective of the position of the core for winding and the roll for unwinding with reference to the carrier means rotatably mounting a plurality of reels at a level below said path so that a band which extends between a core on said carrier means and a reel on said support means intersects said path.



4,550,884

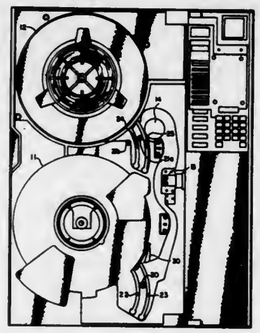
TAPE DRIVE HAVING SWING ARM BUFFERS AND AUTOMATIC THREADING

Ronald Permut; Robert Cope; James Apple; August P. Epina, and Frederick G. Munro, all of Boulder County, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 22, 1983, Ser. No. 554,428

Int. Cl.⁴ G11B *15/66, 15/32;* **B65H** *59/38*

U.S. Cl. 242—189 **4 Claims**



1. A magnetic tape drive of the type in which magnetic tape is driven past a magnetic read/write head between a machine reel and a file reel by a capstan comprising:

a base casting;

hubs for said machine and file reels mounted on said base casting one above the other;

buffers mounted on said base casting between said reels and said capstan for decoupling the inertia of tape on said reels from said capstan, said read/write head, capstan, and buffers defining a substantially vertical tape path beside said file and machine reels and between them;

a pneumatic trough formed by said base casting, said trough extending from said file reel to said machine reel and following said tape path;

a vacuum motor applying a vacuum to the hub of said machine reel and drawing air through said trough during threading;

an opening in the bottom of said base casting below said trough and said tape path so that air flows through said opening to engage tape from said file reel to thread it past said read/write head and said capstan to said machine reel;

said buffers including a swing arm biased away from said file reel and having a roller engaging said tape in said tape path to decouple the inertia of tape on said file reel from said capstan, said swing arm being pivoted at the rear of said base casting, said roller extending through a slot in said base casting to engage said tape;

means for retracting said swing arm to a position in which said roller is out of said tape path during threading; and

a sliding seal moved by said swing arm when it is retracted to move said seal to close said slot during threading.

4,550,885

SELF-BRAKING RIBBON TRANSPORT APPARATUS

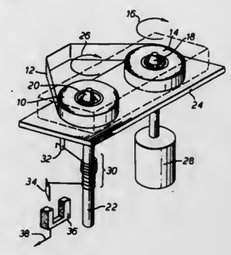
John F. Graham, Colinton, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 28, 1984, Ser. No. 645,131

Claims priority, application United Kingdom, Dec. 1, 1983, 8332064; Dec. 1, 1983, 8332062

Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—204 **29 Claims**



16. A ribbon transport apparatus for transporting a ribbon from a payout reel to a takeup reel, said apparatus comprising: a motor for rotating said takeup reel for drawing off the ribbon onto said takeup reel; a shaft for supporting said payout reel, said shaft being passively rotatable in a first direction by the movement of the ribbon from said payout reel onto said takeup reel; a friction brake on said shaft for opposing the rotation of said shaft with a predetermined amount of opposing torque; and an elastic energy store coupled to said friction brake for opposing the rotation of said friction brake with said shaft, where, the drawing of the ribbon onto said takeup reel is operative to cause said elastic energy store to store the energy imparted thereby to said shaft until said friction brake begins to slide on said shaft, where, thereafter said shaft is rotatable opposed by said predetermined opposing torque for maintaining tension in the ribbon between said payout reel and said takeup reel, and where, thereafter, upon cessation of said drawing of the ribbon onto said takeup reel, said elastic energy store is operable to deliver up a portion of said energy coupled to said friction brake to rotate said shaft in a second direction opposite to said first direction to take onto said payout reel any slack ribbon between said payout reel and said takeup reel and to maintain tension therein.

4,550,886

YARN END SUCKING AND HOLDING DEVICE IN WINDER

Michiaki Fujiwara, Kameoka, and Toshiharu Ikeda, Kusatsu, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed May 3, 1984, Ser. No. 606,764

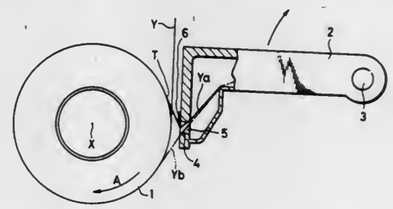
Claims priority, application Japan, May 4, 1983, 58-67104[U]

Int. Cl.⁴ B65H *54/22*

U.S. Cl. 242—35.6 E **9 Claims**

1. A yarn end sucking and holding device for a package rotatably mounted on a winder, the package being rotatable about an axis passing through the center of the package, characterized in that said device includes:

a generally L-shaped body having two legs, one leg being tangential to the package and the other leg being perpendicular to said one leg and extending away from said package, the free end portion of said one leg having a suction slit formed thereon parallel with the direction of the axis of the package and facing to a layer of yarn on the package; and



a yarn engagement member in the form of a blade having a tapered end, the blade member being fixedly attached to the outside of said one leg so that its tapered end part is projected downwardly into the slit, the edge of the tapered end being sufficiently blunt so that when a yarn end is pressed against the end, the yarn end remains uncut.

4,550,887

APPARATUS FOR THE SEPARATE WINDING OF SLIT WEBS

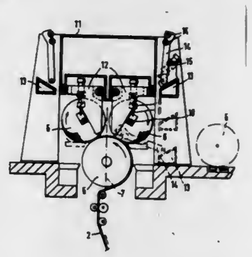
Herbert Schonmeier, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 343,127, Jan. 27, 1982, abandoned. This application May 3, 1984, Ser. No. 606,445

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102894

Int. Cl.⁴ B65H *19/20, 17/00, 35/02*

U.S. Cl. 242—56.3 **1 Claim**



1. In an apparatus for the separate winding of longitudinally slit webs having a single support roll and at least two web rolls for winding the slit webs, which web rolls have shafts and ride on the support roll, the improvement comprising: means for positioning the web rolls on the upper half of the circumference of the support roll on alternate sides of a vertical plane passing through the axis of said support roll; a cross-bar extending parallel to the axis of the support roll; a plurality of web-roll carriages carried by said cross-bar for displacement along the cross-bar parallel to the axis of the support roll positioned in pairs corresponding to the width of the web strips to be wound and thereby to be aligned with the slits; load-reducing means disposed on the web-roll carriages and operatively connected with the web-roll shafts for reducing the web-roll load as a function of the instantaneous diameter of the web roll; vertically displaceable support bars disposed at the sides of and parallel to the cross-bars; a pair of press rolls for each of the web rolls; pivot levers pivotally connecting each

pair of press rolls to the support bars for vertical displacement with the support bars and to enable the press rolls to contact the circumference of a web roll; and means for urging the pivot levers to press the press rolls against the circumference of the web rolls.

4,550,888

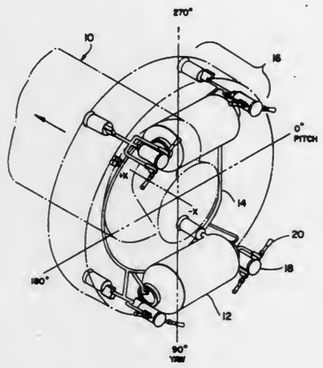
DUAL PRESSURE SOLID PROPELLANT CONTROL SYSTEM

Randle Douglass, 724 Glen Coe Ct., Sunnyvale, Calif. 94087; H. George Jacquin, 11220 Palos Verdes Ct., Cupertino, Calif. 95014; Paul M. Chewey, 1085 Golden Way, Los Altos, Calif. 94022; Paul A. Galvan, 1141 Corvallis Dr., San Jose, Calif. 95120, and Richard S. Naragon, 1127 S. Genevieve La., San Jose, Calif. 95128

Continuation of Ser. No. 840,941, Oct. 11, 1977, abandoned. This application Jun. 28, 1982, Ser. No. 392,830

Int. Cl.⁴ F41G *7/00*

U.S. Cl. 244—3.22 **1 Claim**



1. A method for controlling the attitude and velocity of an aerospace platform having a post boost control system of the type including (1) a solid propellant gas generator for providing a hot gas output, the burn rate of said propellant being related directly to the pressure of said gas output so that the rate of said gas output is directly related to the gas pressure of said gas output, (2) valve clusters disposed symmetrically around the platform, each said valve cluster having a first high thrust nozzle oriented to produce thrust in a first direction relative to the platform and a second high thrust nozzle oriented to produce thrust in a direction 180 degrees from the first direction, each valve cluster having a first low thrust nozzle oriented to produce thrust in a direction 90 degrees from the direction of the thrust of said high thrust nozzles and a second low thrust nozzle oriented to produce thrust in a direction 180 degrees from the direction of thrust of said first low thrust nozzle, each said valve cluster having means for individually opening or closing the thrust nozzles associated therewith upon command, and (3) means for coupling the hot gas from said generator to an inlet part of each said valve cluster, said method for controlling the attitude and velocity of the aerospace platform providing a first pressure at the gas generator during velocity adjustments and a second, lower pressure during attitude adjustments to conserve propellant during attitude adjustments, during velocity adjustment said method comprising:

(a) closing all of said low thrust nozzles;

(b) closing all of said high thrust nozzles oriented opposite to the desired direction of thrust; and

(c) operating the high thrust nozzles oriented in the desired direction of thrust in a pulse duration mode, the ratio of time open to the time closed being selected to provide an effective nozzle throat area to provide a first selected pressure at said gas generator, whereby a first burn rate of said propellant is produced; and during said attitude adjustment, said method comprising:

(a) operating said high thrust nozzles in a pulse duration mode so that one half of the high thrust nozzles are open at any one time and no net acceleration is provided parallel to the velocity vector of said platform; and

(b) operating said low thrust nozzles in a pulse duration mode so that one half of the low thrust nozzles are open at any one time and to provide appropriate accelerations for the desired attitude adjustment, the effective area of the nozzle throat being greater than in said velocity adjustment, whereby the gas pressure in said gas generator is less than said first gas pressure to provide a propellant burn rate less than said first burn rate.

4,550,889

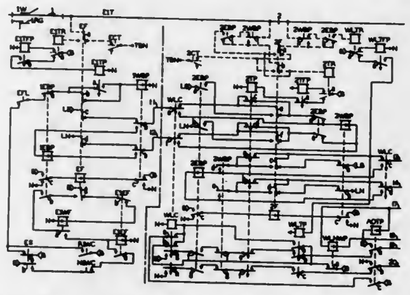
TRAFFIC CONTROL SYSTEM FOR SINGLE TRACK RAILROAD

David G. Emmel, Upper St. Clair Township, Allegheny County, Pa., assignor to American Standard Inc., Pittsburgh, Pa.

Filed Jul. 12, 1982, Ser. No. 397,383

Int. Cl.⁴ B61L *21/00*

U.S. Cl. 246—28 R **8 Claims**



1. A traffic control system for a stretch of railroad track, over which trains may move in either direction, having a first and a second end location provided with train movement request apparatus and a plurality of intermediate junction locations dividing said track stretch into sections, comprising,

(a) a reversible traffic line circuit between each pair of adjacent locations,

(b) a source of line circuit energy at each location,

(c) a traffic control means at each location operable to a first and a second position for establishing a first or a second traffic direction, respectively, through said stretch,

(d) a traffic direction registry means at each location operable to a first and a second position,

(e) said traffic direction registry means at each junction location coupled to first and second line circuits extending to adjacent junction or end locations and operable to said first and second positions for registering the reception of line energy from the adjacent location in said first or second traffic direction, respectively,

(f) said traffic direction registry means at each end location controlled by the corresponding movement request apparatus and coupled to the associated line circuit to the adjacent junction location for at times transmitting line energy from the associated source when that location is a traffic exit end and responsive at other times to the reception of energy from the adjacent location for establishing that location as a traffic entrance end,

(g) each traffic control means controlled by the associated traffic direction registry means for operating to said first or second position as that registry means occupies its first or second position, respectively,

(h) said traffic control means and said traffic direction registry means at each junction location jointly controlling the associated line circuits for transmitting energy from the associated source into the approach section line circuit for the desired traffic direction only when occupying corresponding positions,

(i) transmission of line energy in the same direction through each line circuit section between said end locations holding the established traffic direction to enable movement of a train in that direction,

(j) said registry means at each junction location comprises a first and a second register relay associated with a first and second line circuit terminating network, respectively, each relay energized for registering said first or second traffic direction, respectively, and both deenergized when line energy is absent from each line circuit during a traffic direction reversal,

(k) said traffic control means is a magnetic stick relay,

(l) a train detection track circuit means including an indication relay and a source of detection energy, reversibly coupled to the adjacent sections by first and second position contacts of said magnetic stick traffic relay,

(1) said indication relay energized to register an unoccupied condition of the track section to which coupled,

(m) each line circuit terminating network comprises,

(1) a first circuit path including energized position contacts of one register relay and corresponding position contacts of said magnetic stick relay for connecting said line energy source to the approach line circuit for the traffic direction established by the position of said magnetic stick relay,

(2) a second circuit path including energized position contacts of said track indication relay and deenergized position contacts of said one register relay for connecting the other register relay to the same line circuit to receive line energy from the adjacent location when the opposite traffic direction is being established, and

(3) a third circuit path including contacts of said magnetic stick relay corresponding to the direction registered by said other register relay for bypassing said track indication relay contacts in said second circuit path when said magnetic stick relay is repositioned to establish the opposite traffic direction, and

(n) the control circuit for said magnetic stick relay is controlled by contacts of said register relays for operating said magnetic stick relay to its first and second positions to establish first and second traffic directions as said first or second register relay is energized and the other deenergized, respectively.

4,550,890

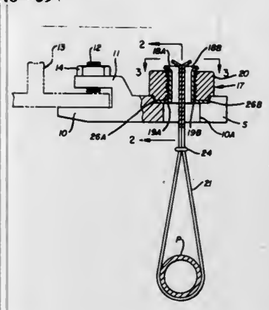
PIPE HANGER

James Redman, 847 Cleveland Ave., Amherst, Ohio 44001, and Joseph E. Ellison, Vermillion, Ohio, assignors to James Redman, Amherst, Ohio

Filed Sep. 23, 1982, Ser. No. 422,157

Int. Cl.⁴ F16L *3/00*

U.S. Cl. 248—59 **1 Claim**



1. An improvement in a pipe hanger, said pipe hanger having a clamp with horizontally disposed vertically spaced members, one of which has a threaded opening for receiving a threaded bolt that extends toward the other member, the improvement comprising means in said clamp supporting the free ends of a strap adapted to encompass a pipe and holding said strap in non-rotating relation to said clamp, teeth on the edges of said strap, said free ends of said strap touching one another, said clamp having a vertically disposed aperture therein in spaced relation to said vertically spaced members, said means supporting said strap and holding said strap in non-rotating relation to said clamp including forming said vertically disposed aperture in upper and lower portions with a horizontally disposed shoulder therebetween, said upper portion having a larger diameter than said lower portion, the walls of said upper portion being tapered upwardly and outwardly, a nut, a pair of half sleeves positioned vertically through said nut, said half sleeves having oppositely disposed horizontally spaced vertical edges, outturned flanges on the lower ends of said half sleeves, said outturned flanges defining a greater diameter than said shoulder, said teeth on said free ends of said strap engaging the threads in said nut so that elevating and rotating said nut moves said strap and said pipe vertically and releasing said nut wedges said outturned flanges on said tapered walls of said upper portion of said verticaly disposed aperture in said clamp.

4,550,891

PLASTIC PIPE CLIP

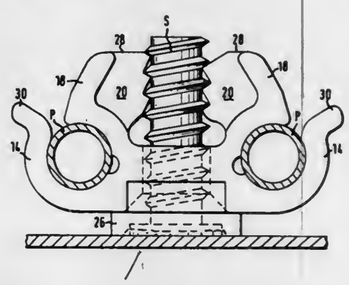
Harald Schäty, Wetzlar, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Oct. 6, 1983, Ser. No. 539,645

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238345; Oct. 15, 1982, 8229029[U]

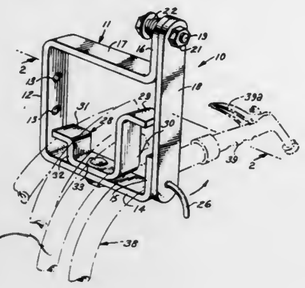
Int. Cl.⁴ F16L *3/22*

U.S. Cl. 248—68.1 **4 Claims**



1. A plastic clip for securing one or more pipes to a threaded stud projecting from a surface, comprising, a body portion having a pair of pipe receiving portions extending upwardly therefrom each adapted for receiving a pipe and lying parallel to one another at either side of a stud receiving hole formed through a body portion of said clip, the axis of said hole lying in a direction transverse to that of a pipe when received in said pipe-receiving portion, said pipe receiving portions each providing an arcuate wall positioned to embrace a pipe when received in said pipe-receiving portion, part of said wall being movable between an open position to admit a pipe and a closed position to retain a pipe, said movable part of said wall of each pipe-receiving portion being comprised of an element integral with and rockable relative to said body portion of said clip, a rear side of each said element opposite to said wall overlapping said stud receiving hole and having teeth provided thereon for engagement with a thread configuration on the stud, and said body portion further having resilient feet extending downwardly therefrom to engage the surface from which the stud extends to accommodate registration of said teeth with a flank portion of said stud thread whereby a threaded stud when projecting through said hole behind said element holds said arcuate wall in its closed position with said teeth in engagement with the stud thread.

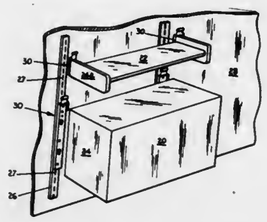
4,550,892
HOSE HOLDING DEVICE
Ray D. Whitley, 6021 Boulder Hwy., Las Vegas, Nev. 89122
Filed Apr. 18, 1984, Ser. No. 601,688
Int. Cl.[4] B05B *15/06*
U.S. Cl. 248—90 **1 Claim**



1. A hose holding device, comprising, in combination, a first bracket, a second bracket and a bar lever; said first bracket comprising a generally "C"-shaped, flat bar having a vertical leg between parallel horizontal arms, opposite ends of said bar being upwardly bent and forming parallel, aligned, vertical lips, said second bracket comprising a generally "J"-shaped, flat bar, opposite ends of said "J"-shaped bar being bent in outwardly opposite directions and forming horizontal lips, said second bracket being located inside said first bracket, a single bolt fastener securing a lower portion of said second bracket to a lower portion of said first bracket, both said brackets being in the same flat plain, a space between an upper side of said second bracket and an upper of said arms of said first bracket for receiving a plurality of turns of a hose coiled therethrough, a space between a lower of said second bracket lips and a lower of said first bracket arms for receiving a coupling end of said hose, a space between an upper of said second bracket lips and said first bracket lower arms for receiving a nozzle end of said hose, said bar lever bridging across an entry to said hose coil turn space and an entry to said hose nozzle end space, a bolt fastener through said first bracket upper arm lip pivotally supporting one end of said bar lever, an opening through said first bracket lower arm lip for receiving a projection on an opposite end of said bar lever, spring means to disengage said projection from said lip, and mounting means on said first bracket for attachment to a rear of a concrete mixer truck.

4,550,893
HANGER CLIP FOR RETAINING A COMPONENT TO A SLOTTED UPRIGHT
Delbert Wiersema, Zeeland, and John A. Szmadzinski, Grand Rapids, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Apr. 30, 1982, Ser. No. 373,425
Int. Cl.[4] A47G *55/00*
U.S. Cl. 248—222.4 **16 Claims**

1. In a hanger clip for releasably securing a component to an upright including a plurality of vertically spaced slots in a wall having exterior and interior sides, said hanger clip having front and rear webs; hook means including depending flanges projecting outwardly from said rear web for receipt in said vertically spaced slots with said depending flanges adapted to abut the interior sides of said upright wall so as to mount said clip to said upright; and means adapted to connect said front web of said clip to said component;
the improvement which comprises:
biasing means acting between said clip and said upright for urging said hook means against said interior side of said upright;
said hook means including a projection on a bottom portion of said depending flange and extending at substantially right angles thereto in the direction of the interior wall of said upright, said hook means adapted to seat within a slot



for preventing upward movement of said clip with respect to said upright;
whereby said biasing means prevents accidental dislodgement of said clip from said upright.

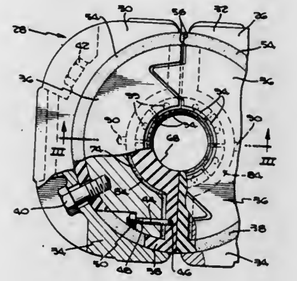
4,550,894
TRIVET
John J. Barlics, 7 Denver Blvd., North Edison, N.J. 08820
Filed Nov. 5, 1982, Ser. No. 439,589
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—346 **3 Claims**

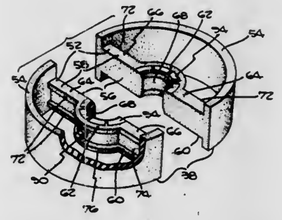


1. A trivet, comprising a plurality of coaxially arranged bodies made from heat-resistant material, each body being ring-shaped and including an opening extending therethrough and a continuous sidewall completely surrounding said opening, said sidewall having an upper sealing surface of a first width for forming a substantially air-tight seal with a hot object supported by said sidewall, a lower sealing surface of a second width, which is greater than said first width, for forming a substantially air-tight seal with a support structure on which said sidewall rests, and a trapezoidal cross-sectional shape and said sidewall being substantially non-collapsible, whereby said upper and lower sealing surfaces cooperate with said sidewalls and said openings to create dead air spaces between the hot object and the support structure.

4,550,895
RAM CONSTRUCTION FOR OIL WELL BLOW OUT PREVENTER APPARATUS
Donald U. Shaffer, 2850 E. Coronado St., Anaheim, Calif. 92806
Filed Sep. 24, 1984, Ser. No. 654,162
Int. Cl.[4] E21B *33/06*
U.S. Cl. 251—1.3 **16 Claims**

1. A ram seal element for use in the ram assembly of a blow out preventer, said ram seal element being adapted to provide sealing of variable diameter drill strings to prevent blow out of well pressure when said drill strings are in use within said well, said ram assembly including a ram block for biasing said ram seal element against said drill string and a ram block holder for mounting said ram block within said blow out preventer, said ram seal element comprising:
a semi-circular elastomer having a diametrical portion and a circumferential portion, said diametrical portion having an inner side sealing surface, top and bottom surfaces and an outer side surface, said diametrical portion further including an elastomer central collar section and two elastomer side sections, said collar section having an inner surface defining an arcuate recess in the sealing surface of said diametrical portion for sealing contact with a drill string, wherein the outer side surface of said diametrical portion is adapted for contact with said ram block, said ram block being movable toward said drill string to bias said diametrical portion against said drill string, said outer surface including a longitudinal channel therein extending substantially the entire length of both said central collar section and side sections of said diametrical portion and being sealed off from said well pressure, said channel

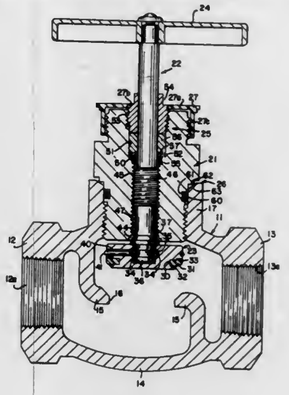


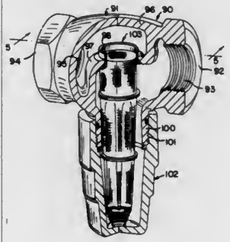


defining an expansion zone between said diametrical portion and said ram block when said ram seal element is in sealing portion in said ram assembly, wherein said expansion zone has a sufficient volume to allow uniform expansion of said diametrical portion into said expansion zone when said seal is used to seal drill strings of increasing diameter, said seal element thereby being useful to provide sealing of variable diameter drill strings to prevent blow out of well pressure when said drill strings are in use within said well.

4,550,896
VALVE-STRAINER HOUSINGS AND ASSEMBLIES
Charles C. Hansen, III, 1410 Brooke Dr., Downers Grove, Ill. 60515
Filed Apr. 4, 1984, Ser. No. 596,653
Int. Cl.[4] F16K *25/00;* **B01D** *21/24*
U.S. Cl. 251—84 **10 Claims**

1. In a housing adaptable for use in a globe valve or a check valve, said housing including an inlet passageway, an outlet passageway, and a central chamber portion positioned therebetween, said central chamber portion including a curved chamber dividing wall which bifurcates said housing into inlet and outlet portions, respectively, said curved dividing wall including a mediate portion having a generally circular aperture therethrough defining a zone for fluid flow between said inlet and said outlet portions, an annular flange extending from an outer wall of said central chamber portion in a direction coaxial and in spatial relation with said circular aperture through said dividing wall, and closure means engageable with said annular flange for sealing said flange against liquid flow outwardly therefrom,
an improvement wherein said closure means include a cover which is sealingly engageable with said annular flange,
said housing is adaptable for receiving a filter member therein for functioning as a strainer housing; and
said filter element includes a generally cylindrical body having a foraminous side wall, an annular top portion which is adapted for being retained on said dividing wall generally circular aperture, and means adjacent at least one of the bottoms of said closing means for biasing said element upwardly with said top portion biased against said circular aperture.





8. In a generally cylindrical valve disc adapted for use in a valve assembly, said valve disc including an annular recess extending radially inwardly adjacent a bottom of said disc for receiving and retaining an annular sealing seat member thereon,
an improvement wherein said recess is generally rectangular in radial cross-section and includes a radially extending lip at a bottom end thereof for retaining said annular sealing seat once same is stretched thereover, and at least one of the remaining surfaces of said annular recess includes an annular discontinuity of a size sufficient to create a sealing engagement by deforming an adjacent surface of said annular sealing seat contiguous therewith.

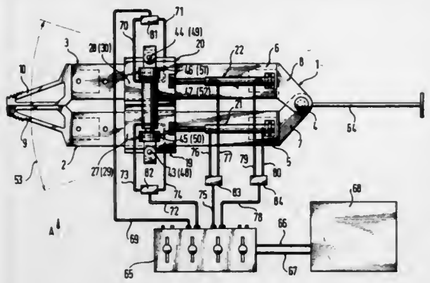
4,550,897
TRACK CLEARING DEVICE FOR PUSHING APART RAIL VEHICLES
Bruno Raffenberg, Ahornweg 10, Dortmund 1, Fed. Rep. of Germany 4600
Filed Feb. 21, 1984, Ser. No. 581,971
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 8309463[U]
Int. Cl.[4] B66F *3/00*
U.S. Cl. 254—93 R **5 Claims**

1. An apparatus for pushing apart railway vehicles, comprising:

an expander means having two expander arms, each expander arm comprising a re-railing bridge, a pivot arm coupled to one end of the re-railing bridge, and a grab claw mounted to the other end of the re-railing bridge, wherein the expander arms are pivotally coupled to one another by a pivot pin;

two guide means having upper and lower guide members, each guide means is slidably mounted on a different expander arm;

two lifting means are transversely mounted across the expander arms by the guide means for opening and closing the pivotable expander arms of the expander means;



two displacement cylinders, each displacement cylinder having one end that is mounted to one of the guide means and another end that is mounted to one of the expander arm, wherein the displacement cylinders are used to longitudinally position the guide means and therefore the lifting means along the expander means; and

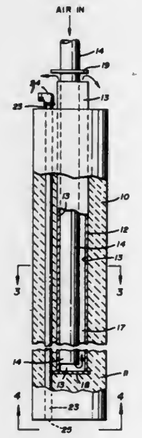
a source of fluid under pressure having a pump that is fluidically coupled to the lifting means and the displacement cylinders through a control panel and hoses for controlling the operating of the lifting means and the displacement cylinders.

4,550,898

AIR COOLED REFRACTORY LANCE

Michael D. LaBate, II, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Jun. 4, 1984, Ser. No. 617,253
Int. Cl.⁴ C21C *5/32*
U.S. Cl. 266—220 **10 Claims**



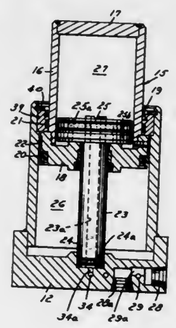
1. A fluid cooled lance for use in treating a bath of molten metal comprising an elongated tubular refractory body, a pair of tubular metal members arranged coaxially in said elongated refractory body, one of said tubular metal members having a plurality of transversely flat wall sections engaging the inner surface of said elongated tubular refractory body, the other of said tubular metal members disposed within said first mentioned tubular metal member shaped to form a plurality of separate longitudinally extending passageways, said tubular metal members extending outwardly of one end of said elongated tubular refractory body and forming means for introducing a coolant fluid into said lance and directing said coolant fluid therefrom, a secondary tubular member in said elongated tubular refractory body communicating with the opposite ends thereof and means for introducing, stirring and refining gas into said secondary tubular member for delivery by said lance to said molten metal bath and means in communication with one of said pair of tubular metal members for introducing a coolant fluid thereinto, one of said pair of tubular metal members extending outwardly of said elongated tubular refractory body to a greater extent than the other so as to form a handling and supporting means.

4,550,899

PNEUMATIC SPRING

David M. Holley, Whitmore Lake, Mich., assignor to Power Components Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 180,133, Aug. 21, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,727
Int. Cl.⁴ F16F *9/02, 9/34*
U.S. Cl. 267—119 **3 Claims**



1. A pneumatic spring for absorbing an external force by compressing a gaseous fluid trapped therein comprising

an outer housing comprising a base wall and a side wall defining a first cylinder having an open end,

a second cylinder slidingly and sealingly positioned in the first cylinder,

seal means between said cylinders,

said second cylinder having a cylindrical side wall and inner and outer end walls,

a rod extending from the base wall of the first cylinder through the inner end wall of the second cylinder,

a piston fixed on the rod within the second cylinder,

thereby defining a first chamber between the base wall of the first cylinder and the inner end wall of the second cylinder and a second chamber between the piston on the rod and the outer end wall of the second cylinder,

said chambers being isolated from one another and being normally charged with gaseous fluid such that fluid will not flow between said chambers during operation,

said base wall having a single inlet and passages selectively connected to said inlet for supplying fluid under pressure to each of said chambers,

a valve in each passage entirely within said base wall providing gaseous fluid under pressure to each passage such that the chambers remain isolated from one another whereby

when a force is applied to move the second cylinder axially inwardly of the first cylinder, the pressures in the two chambers are built up independently of one another,

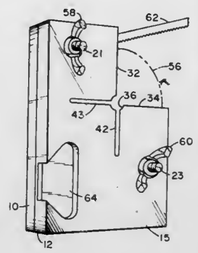
each said valve including check valve means and pressure relief valve means for relieving the pressure in its respective chamber.

4,550,900

HOLDING DEVICE FOR SEGMENTING A WORKPIECE

William H. Retsch, Castle Shannon, and Stanley F. Zdziarski, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 426,532, Sep. 29, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 575,428
Int. Cl.⁴ B25B *1/00*
U.S. Cl. 269—87 **8 Claims**



1. A device for holding a workpiece to permit radial cutting of the workpiece into two or more segments, comprising:

a. a first block with an inner and outer face and peripheral sides and wedge-shaped opening extending from the inner face to the outer face and formed by intersecting sides extending into the block from two contiguous peripheral sides of the block,

b. a depression in the inner face of the first block beginning on each intersecting side that forms the wedge-shaped opening of the first block at a point on said intersecting sides equidistant from the contiguous peripheral sides of the block and extending laterally into the center of the first block where said depression has peripheral side walls, and where said depression begins on the inner face and extends into the block a distance to form a surface substantially parallel to the inner face, and where the intersecting sides forming the wedge-shaped opening extend to the center of the depression,

c. a second block with an inner and outer face and peripheral sides and wedge-shaped opening similar to that of the first block extending from the inner face to the outer face formed by intersecting sides extending into the block from two contiguous peripheral sides of the second block,

d. a depression in the inner face of the second block similar to that of the first block beginning on each intersecting side that forms the wedge-shaped opening of the second block at a point on said intersecting sides equidistant from the contiguous peripheral sides of the second block and extending laterally into the center of the second block where said depression has one or more peripheral side walls, and where said depression begins on the interface and extends into the block a distance to form a surface parallel to the inner face and where the intersecting sides forming the wedge-shaped opening extend to the center of the depression,

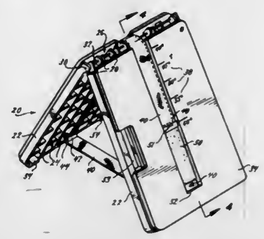
e. an attachment means to attach the first block to the second block so that the wedge-shaped openings match and the depressions of each block match to form a cavity, whereby an uncontained portion of a workpiece can protrude into the matched, wedge-shaped openings of the first and second blocks from the cavity to allow for two straight radial cuts to be made through the workpiece by guiding a cutting device along the intersecting sides of the attached holding blocks that form the opening.

4,550,901

PORTABLE ADJUSTABLE BODY TILT BOARD

Thomas P. Muchisky, 784 Hawthicket La., Des Peres, Mo. 63131, and James V. Young, 35 Benton Pl., St. Louis, Mo. 63104

Filed Apr. 4, 1983, Ser. No. 481,840
Int. Cl.⁴ A47C *21/00*
U.S. Cl. 269—328 **12 Claims**



1. A portable, adjustable tilt board to at least partially support and position a human body for therapy, comprising:

a pair of panels;

hinge means joining said panels along an edge thereof;

means to selectively fix the angular separation between said panels so that said tilt board may be propped open on a supporting surface with the panels oriented at the selected angle as an aid in supporting and positioning a human body for therapy, said panel fixing means including at least one strap extending between said panels, said strap wrapping at least partially around both of said panels;

means for securing one end of said strap to one of said panels;

means for securing the other end of said strap, said other end strap securing means including means to secure said other end to a medial portion of said strap; and

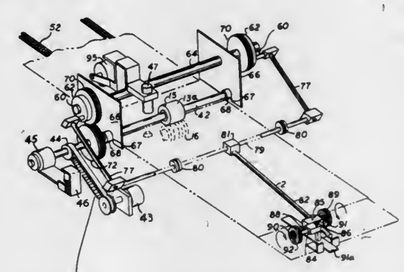
a scale associated with said panel fixing means to indicate the angle formed by each panel with the supporting surface.

4,550,902

STOCK FEEDING MACHINE

Edward S. Godlewski, 129 Spruce St., Wooddale, Ill. 60191

Filed Jul. 27, 1983, Ser. No. 517,621
Int. Cl.⁴ B65H *3/32*
U.S. Cl. 271—10 **13 Claims**



1. A feeding mechanism having a stack support means for supporting a stack of paper sheets having leading and trailing ends,

register means at one end of said stack support means for engagement with the trailing ends of said sheets,

and means for peeling the sheets of paper in the stack one by

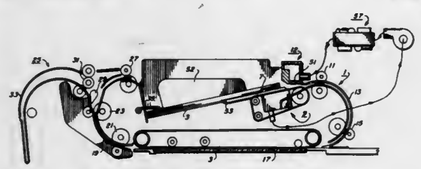
one from the top by sliding the top sheet into abutment with its trailing end against said register means and then sliding the same top sheet in the direction of its leading end into associated mechanism, and said peeling means comprising a pair of elastomeric wheels one rotatable in one direction toward the leading end of the sheet and the other in the reverse direction on the top sheet and operative as swabs.

4,550,903

SHEET FEEDING APPARATUS AND VALVE THEREFOR

Kenneth P. Moore, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 13, 1983, Ser. No. 513,484
Int. Cl.[4] B65H *3/14*
U.S. Cl. 271—98 **4 Claims**



1. A bottom sheet separator/feeder for separating and forwarding sheets seriatim having a stack tray adapted for supporting a stack of sheets and means for determining the stack size being fed, comprising:

air injection means adapted to provide a layer of air between the tray and the bottom sheet in the stack in between the bottom sheet and the remainder of the sheets in the stack,

blower means associated with said air injection means to provide positive air pressure for said air injection means,

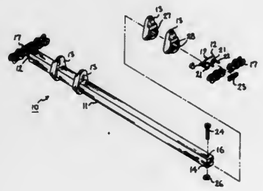
valve means associated with said air injection means being adapted to control the flow of air thereto from said blower means and having a plurality of adjusting devices each being arranged to provide a different air flow to said injection means in accordance with different stack sizes.

4,550,904

PAPER SUPPORT BAR WITH ROTATION RESISTANT SUPPORT FINGERS

Elias J. Union, Blair, Nebr., assignor to J. C. & D Enterprises, Inc., Omaha, Nebr.

Filed Apr. 27, 1984, Ser. No. 604,360
Int. Cl.[4] B65G *29/00*; B41F *21/08*
U.S. Cl. 271—198 **1 Claim**





1. In a paper support bar for use in a chain driven printing press having at least two substantially parallel disposed drive chains, the paper support bar including an elongated generally rectangular bar having a first end and a second end and a plurality of paper support fingers movably disposed on said bar, an improvement comprising:

a first connecting link affixed to said first end of said bar for attaching said first end to one of said drive chains;

a second connecting link affixed to said second end of said bar for attaching said second end to another of said drive chains; and

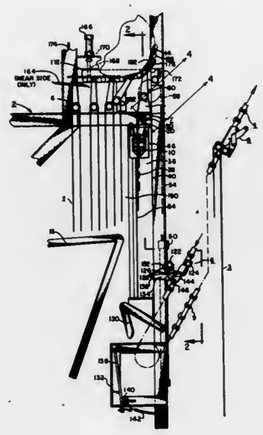
an inclined edge formed on the reduced distal end of each of the said plurality of paper support fingers such that only a narrow edge serves as a paper contacting surface, wherein each of said fingers is further provided with a generally square shaped hole formed therethrough as defined by four substantially planar surfaces, which closely conforms to the cross-sectional dimensions of the elongated bar to allow axial translation of the said fingers along the said bar, while preventing relative rotation of the said fingers on said bar, wherein said four substantially planar surfaces are each provided with one raised ridge parallel to said support bar and located at the center of each planar surface formed thereon to contact said bar and aid in snugly retaining said fingers on said bar.

4,550,905

HIDE TRANSFER APPARATUS

Wolfgang K. Heiland, Trevose, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,272
Int. Cl.[4] B65H *31/00*
U.S. Cl. 271—202 **6 Claims**



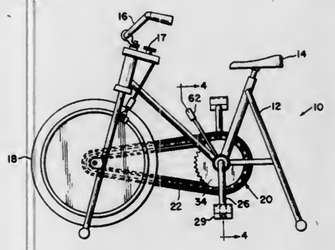
1. An apparatus for transferring hides from one conveyor on which each hide is draped over a carrier bar at about the center of its lengthwise dimension to a second, faster moving conveyor on which the hides are held at one end only, comprising, in combination, means for spreading apart the halves of a hide draped over a carrier bar, means for guiding and positioning a spread-apart hide-half for transfer of the hide to the second conveyor, means for gripping the leading edge of the foregoing guided and positioned hide-half to pull the hide off the carrier bar, and means for clamping the leading edge of the hide to transfer the hide to the second conveyor.

4,550,906

BICYCLE TYPE EXERCISE APPARATUS WITH INDEXING PEDAL CRANKS

Darryl Im, 3041 Via Mondo, Compton, Calif. 90221

Filed Feb. 16, 1983, Ser. No. 466,882
Int. Cl.[4] A63B *21/22, 23/04*
U.S. Cl. 272—73 **4 Claims**



1. Exercise apparatus which comprises:

a frame,

apparatus for pedalling carried on said frame,

said apparatus for pedalling including a first pedal carried on a first crank arm fixed to a first shaft, means rotatably mounting said first shaft on said frame, a second pedal mounted on a second crank arm fixed to a second shaft, means rotatably mounting said second shaft on the frame, said first and second shafts having a common axis, means for selective angular indexing of said first crank arm relative to said second crank arm between at least a first position wherein said first and second crank arms are disposed in the same angular orientation and a second position wherein said first and second crank arms respectively extend in substantially opposite directions from said common axis,

said means for indexing comprises a clutch mechanism having mutually engageable confronting jaw elements, each jaw element being associated with one of said shafts, and each of the confronting jaw elements having at least one face oblique to said common axis.

4,550,907

EXERCISING APPLIANCE

Anthony Melillo, 90 Boulderwood Dr., Bernardsville, N.J. 07924, and Louis Gabriele, 39 Windgate Dr., Livingston, N.J. 07039

Filed Aug. 15, 1983, Ser. No. 523,326
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.[4] A63B *23/02*
U.S. Cl. 272—93 **31 Claims**

1. An exercising appliance comprising a first portion and a second portion, said first and second portions being pivotally connected to one another at a pivot axis located at respective ends of said portions, said first portion including:

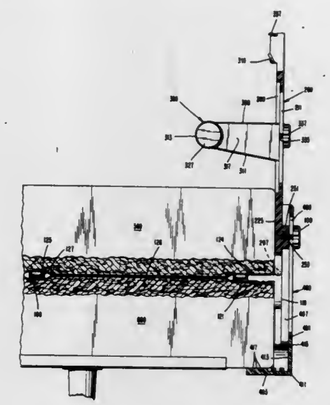
(a) first means including corrigation adapted to frictionally retain said first portion in a substantially fixed position when said first portion is placed in a confined space; and

(b) second means adjacent said pivotally connected end for limiting the movement of said first portion into said confined space to a pre-determined distance;

said second portion including guide means substantially centrally located thereon and

(c) bar means mounted on said second portion including:

(i) third means interengaging with said guide means to allow slidable movement of said bar means with respect to said guide means; and



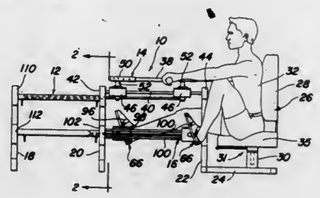
(ii) fourth means adapted to interengage with said spaced third means to lock said bar means into pre-determined positions.

4,550,908

PHYSICAL-REHABILITATION AND EXERCISING APPARATUS

Voris F. Dixon, 1937 E. Blair Ave., Santa Ana, Calif. 92705

Filed Jan. 16, 1984, Ser. No. 570,889
Int. Cl.[4] A61H *1/02*
U.S. Cl. 272—130 **8 Claims**



1. A physical-rehabilitation and exercising apparatus for the handicapped and disabled individual, wherein the active limb members of the user assist in rehabilitating and exercising the inactive limb members, said apparatus comprising:

a frame structure;

a chair-support means mounted to said frame structure and adapted to support the user thereof while operating said apparatus;

arm-control means slidably mounted to said frame structure for reciprocal horizontal movement along said frame;

leg-control means slidably mounted to said frame structure for reciprocal horizontal movement along said frame, said leg-control means being positioned below said arm-control means; and

wherein said arm-control means and said leg-control means are adapted to be reciprocally actuated in an individual selective manner in accordance with the user's requirements;

means for selectively controlling the reciprocating action of said arm and leg control means.

4,550,909

TENNIS RACKET FRAME

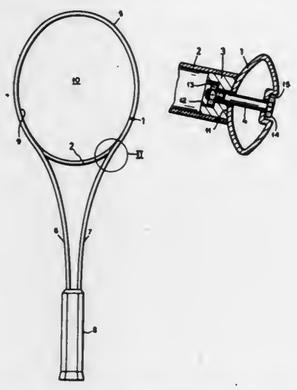
Reinhold Sommer, Helgolandring 68, 4300 Essen 1, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,978

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024234

Int. Cl.⁴ A63B *49/02*

U.S. Cl. 273—73 G **7 Claims**



1. A tennis racket frame comprising a tubular frame-forming member having an oval-forming portion adapted to be spanned by racket stringing, and a pair of shanks reaching away from said oval-forming portion toward a handle, respective connecting members mounted upon inner flanks of each of said shanks at the bottom of said oval-forming portion, a curved tubular bridge piece extending along and completing the bottom of the oval formed by said portion and interfitting with said connecting members, said connecting members being projections plugged into said bridge piece and have outer configurations complementary to the inner configuration of said bridge piece, and bolt means releasably interconnecting each of said connecting members upon the respective flanks of said shanks.

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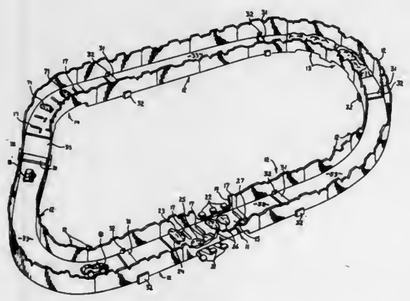
TOY TRACK PRESENTING INTERFERENCE TO PASSAGE OF TOY VEHICLES THEREON

Adolph E. Goldfarb, 1432 S. East Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

Filed Feb. 10, 1984, Ser. No. 578,860

Int. Cl.⁴ A63F *9/14*; **A63H** *18/08*

U.S. Cl. 273—86 B **12 Claims**



7. A toy track for use on a supporting surface, and for use with a self-propelled toy vehicle that has a plurality of front wheel means and that is adapted to operate on the track and that depends exclusively upon interaction between the track and the vehicle wheels for guidance and depends exclusively upon the user of the toy track and vehicle for starting-and-stopping control; and comprising:

an elongated track having a floor and having a wall at each side of the floor, said floor defining a plurality of holes and being at least in part spaced above such supporting surface; at least some portions of the track being curved horizontally so that such vehicle when operating on the track must negotiate curves;

a plurality of levers, each adapted to be pivotally mounted to the track and having a handle extending laterally for manipulation by a user, and each lever when so mounted extending into the region between the floor and such supporting surface, and each lever when so mounted being exposed at a corresponding one of the holes;

an irregular bump fixed to or formed in each lever when that lever is so mounted, and generally vertically movable by that lever through the said corresponding hole when that lever is so mounted to vary the height of the bump above the floor at that hole in such a way as to erratically interfere with the wheels and chassis of such vehicle and to erractically perturb the progress of such a vehicle along the track to an extent which varies in dependence upon such manipulation of the corresponding lever handle by such a user; and

means for redirecting such vehicle at certain curved portions of the track by selectively impeding the inside wheel means so that such vehicle tends to negotiate those certain curved portions of the track without striking the wall at the outside of those curved portions;

the redirecting means including transversely extended bumps on the floor of those certain curved portions of the track, and the bumps being discrete components, positionable by the user of the toy track at any of the positions where holes are defined in the floor of the track, except those positions where the levers when so mounted are exposed, the holes being adapted to receive and secure the bump components; and

whereby the user of the toy track may arbitrarily choose such selectable positions for the bumps, from among any of the multiplicity of positions where there are holes defined in the floor of the track.

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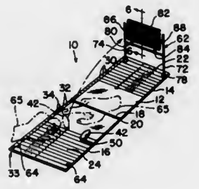
SCOOT BALL GAME APPARATUS

James A. Daley, 121½ N. Wabash, Glendora, Calif. 91740

Filed Aug. 29, 1983, Ser. No. 527,239

Int. Cl.⁴ A63F *7/06, 7/30*

U.S. Cl. 273—94 **19 Claims**



10. A game apparatus including:

a playing board having a longitudinal direction and first and second side edges, and having:

a surface with predetermined frictional characteristics,

a plurality of bands extending transversely of the playing board and including:

first gain indicating bands,

first loss indicating bands, said first gain indicating bands and said first loss indicating bands being nested adjacent said first end,

second gain indicating bands,

second loss indicating bands, said second gain indicating bands and said second loss indicating bands being nested adjacent said second end,

a slider member having:

a first end defining a pointer,

a second end opposite said first end,

a slider surface adapted to slide on said surface of said playing board with predetermined frictional characteristics,

said pointer defined on the slider member being smaller in size than the widths of the respective bands to provide positive indication of which band the pointer overlies to register a gain or loss,

a scale extending from said first end to said second end along said first side edge, said scale including:

an odd number of spaces, said apparatus further including a marker member sized to be used in association with said odd number of spaces to indicate on said scale the accumulation of losses and gains of players using said apparatus, and

goal post structure having:

first and second uprights with inwardly extending stops thereon,

a crossbar connected to said first and second uprights, and

a panel hingedly mounted to said crossbar and adapted to two stable positions, the first in contact with said stops generally between said first and second uprights above said crossbar and a second below said crossbar, and

means to removably support said first and second uprights of said goal post structure on the playing board.

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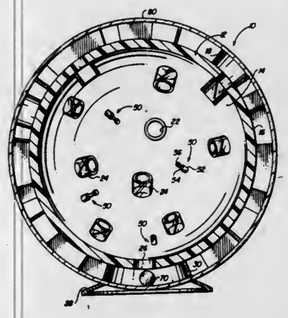
SPHERICAL MAZE GAME APPARATUS

David L. Allen, 447 W. Sunset Cir., Mesa, Ariz. 85201

Filed Nov. 14, 1983, Ser. No. 551,420

Int. Cl.⁴ A63B *67/14*

U.S. Cl. 273—113 **6 Claims**



1. Three dimensional maze apparatus, comprising, in combination:

first spherical means, including

a first spherical surface having an outer periphery and an inner periphery, and

maze barriers disposed on the first spherical surface defining a plurality of false paths and a single preferred path;

second spherical means disposed concentrically about and secured to the first spherical means and defining a transparent covering for the first spherical means and adapted to be held by a user to move the first spherical means in three dimensions to control the movement of the rolling element on the outer periphery of the first spherical means;

base means secured to both the first spherical means and the second spherical means and defining a stand for supporting the maze apparatus when it is not being used;

a rolling element disposed on the outer periphery and adapted to be moved on the outer periphery by a user moving the first spherical means in three dimensions to control the movement of the rolling element; and

aperture means extending through the first spherical means for communicating between the outer periphery and the inner periphery, including a plurality of apertures spaced apart along the false paths through which the rolling element may fall into the interior of the first spherical means, including a base aperture through which the rolling element may fall into the base means from the first spherical means.

4,550,913

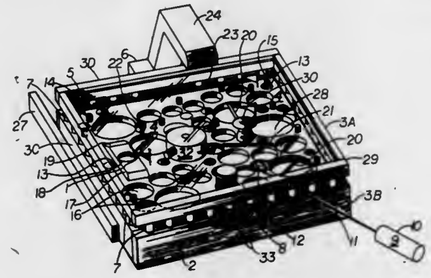
COIN CROSSING GAME DEVICE

William J. Price, 5731 Kingsgate Dr., Apartment C, Orlando, Fla. 32808

Filed Sep. 24, 1984, Ser. No. 653,843

Int. Cl.⁴ A63F *7/06*

U.S. Cl. 273—126 R **2 Claims**



1. A game device for use with a coin comprising;

a square-shaped horizontal lower portion, said lower portion being a square-shaped, planar transparent member and having side members extending upwards and along each side of said transparent member to form a tray-like configuration; each of said side members having spaced apart dowel elements extending upwardly therefrom, a support element being attached to said device at the intersections of said side members; a planar game board supported on said support elements, said game board having numerous holes cut therethrough and numerous obstacles attached to the top surface thereof; said game device further comprising an upper portion having a configuration substantially similar to said lower portion and having a transparent planar surface; said upper portion having four sides, each side having recesses in the underside thereof; said recesses being positioned to receive a respective one of said dowels whereby said top portion is supported over said game board and lower portion in substantially parallel spaced relationship; and at least one hand-held game tool having a cylindrical handle thereon, said tool having a shape similar to a knitting needle and being provided to maneuver a coin across said game board.

4,550,914

GOLF CLUB HEAD WITH VISUAL SWING-DIRECTING CUES

John McCallister, 3941 Fairbreeze Cir., Westlake Village, Calif. 91361

Filed Sep. 6, 1984, Ser. No. 648,762

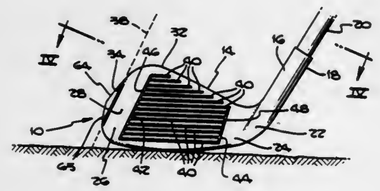
Int. Cl.⁴ A63B *69/36*

U.S. Cl. 273—183 D **12 Claims**

1. A golf club head adapted to provide a visual cue to a golfer which promotes an inside-outside forward swing of the club head by the golfer when the club head is positioned on a playing surface, said club head comprising:

a club head body having a heel portion, a toe portion, a front face, a bottom and a top edge, said toe portion having an outer edge which slants towards the golfer when said club

head body bottom is positioned on said playing surface, said front face including a plurality of spaced horizontal face lines which are visible to the golfer and substantially horizontal when said club head body is positioned on said playing surface and wherein each of said face lines includes a toe end and a heel end, said face lines being of selected lengths and positioned on said front face to provide a face line toe edge defined by said face line toe ends which is substantially parallel to the outer edge of said toe portion, said selected lengths and positioning of said face



lines further providing a face line heel edge defined by said face line heel ends which is substantially parallel to the outer edge of said toe portion and said face line toe edge, wherein the combination of said toe portion outer edge, said face line toe edge and said face line heel edge provides a visual cue to said golfer which promotes said inside-outside swing; and

a hosel having a shaft portion including means for connection to a golf club shaft and a club body portion which is integrally connected to said club head body heel portion.

4,550,915

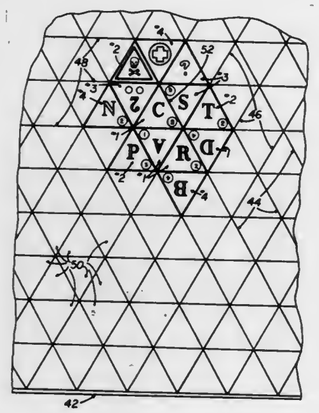
GAME WITH TRIANGULAR SHAPED PLAYING ELEMENTS

William D. Meyer, 2816 Sutton Blvd., St. Louis, Mo. 63143

Continuation of Ser. No. 557,258, Dec. 2, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,478

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—272 **8 Claims**



1. A game played by forming words from adjacent triangular shaped playing pieces played in sequential turns by game players wherein one or more words are formed by letters appearing on playing pieces placed adjacent to one another in side by side relationship on a playing surface whereby words can be formed by combinations of letters appearing on adjacent playing pieces comprising a playing surface and a plurality of playing pieces each having the same size and triangular shape to be placed by players in sequence on the playing surface, one triangular shaped surface of each playing piece being marked with a symbol, the symbols on selected ones of said playing pieces being letters of the alphabet and point values associated therewith, the symbols on selected other playing pieces including distinctive indicia used to control the game strategy, said distinctive indicia including first indicia on some of the playing pieces to increase a players point score for a word formed, second indicia to be used as a substitute letter for any letter of the alphabet as an aid to forming a word, and third distinctive indicia to award the player playing that piece an option in the order of plays by the game players as by allowing manipulation of a player's turn.

4,550,916

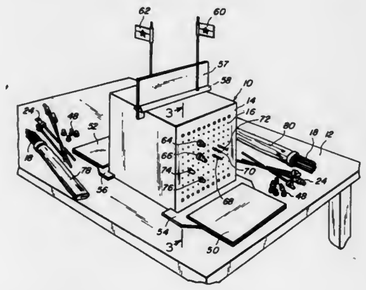
CUBE GAME OF SKILL AND CHANCE

Ralph O. Ortiz, 100 Beekman St., Apt. 8-D, New York, N.Y. 10038

Filed Jun. 21, 1984, Ser. No. 623,141

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—239 **8 Claims**



1. Cube game of skill and chance, comprising in combination:

(a) a hollow cube two of whose opposite surfaces comprise identical playing surfaces comprising grids of a multiplicity of correspondingly identical apertures;

(b) flexible tubing connecting each aperture on one of said playing surfaces with the corresponding identical aperture on the opposite playing surface, said flexible tubing being of sufficient length to droop thereby preventing passage of light from one playing surface to the other while sufficiently flexing to receive a horizontal rod extending therein, thereby preventing a player adjacent one playing surface from detecting the insertion of rods in specific apertures on the other playing surface by an opposing player;

(c) rod shaped members for insertion through said apertures into said tubing, said rod shaped members formed into two groups including a first group of simple rods having a length greater than the distance between said opposite surfaces, whereby when inserted both players may view the ends of the simple rods, and a second group of playing piece rods having a length less than the distance between said opposite playing surfaces, whereby when inserted only the player inserting said playing piece rods can view the rod; and

(d) marker pieces made of a ferromagnetic material, ferromagnetic material also located at least centrally between each grouping of four apertures on each of said playing surfaces on the inside playing surface of said hollow cube, whereby when said marker pieces are placed upon the outside playing surface of said hollow cube, and centrally between four of said apertures, said markers will adhere thereto due to attractive forces of magnetism.

4,550,917

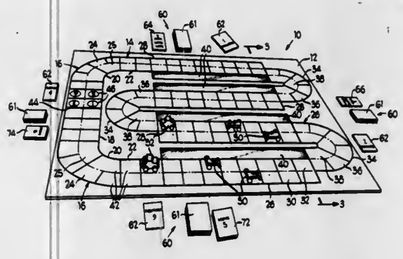
BOARD RACING GAME

Michael J. Ferris, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chcago, Ill.

Filed Sep. 27, 1983, Ser. No. 536,376

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—246 **16 Claims**



1. A board racing game comprising:

a game board having a track first, second, and third segments;

the first and third segments being offset with respect to each other;

the second segment being intermediate the first and third segments with one end of the second segment adjacent the first segment and the other end adjacent the third segment;

the second segment being shiftable between a first position in which the one end is aligned with the first segment and a second position in which the other end is aligned with the third segment;

player tokens positionable on the segments for movement along the track; and

means for determining the movement of the player tokens.

4,550,918

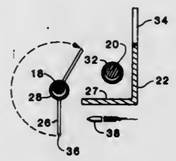
TARGET ARRAY

Harold F. Motsenbocker, 15600 Morro Rd., Atascadero, Calif. 93422

Filed Jun. 18, 1984, Ser. No. 621,264

Int. Cl.⁴ F41J *7/04*

U.S. Cl. 273—385 **7 Claims**



7. In a target apparatus that includes a target that is pendulously mounted for rotation about a laterally-extending axis the improvement comprising:

tube means; and,

shaft means extending laterally and through said tube means, said shaft means having a cross section appreciably smaller than the inside diameter of said tube means, whereby said tube means is pendulously supported by said shaft means;

said shaft means spaced far enough from the axis about which the target rotates that the target must push said tube means aside to rotate past said tube means, thereby transferring energy from the target to said tube means.

4,550,919

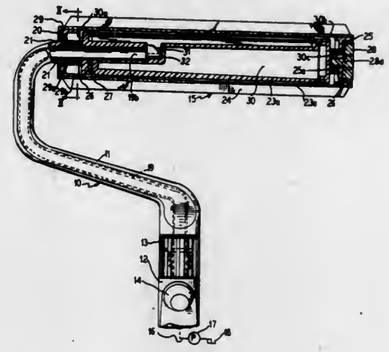
SEAL FOR A POWER FED ROLLER

Mark Snetting, Eden Prairie; Dan West, Crystal, and John R. Hacker, Burnsville, all of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Sep. 14, 1984, Ser. No. 650,898

Int. Cl.⁴ F16J *15/34*

U.S. Cl. 277—23 **11 Claims**



1. A seal for use with a rotatable part and a stationary part engaged therewith defining a volume therebetween filled with pigment-containing fluid, said rotatable part having an opening, said seal being disposed between said parts and adjacent said opening and consisting of resilient porous material having a selected porosity for simultaneously filtering said fluid by preventing passage of said pigment through said seal, substantially preventing leakage of unfiltered fluid through said opening, and having a selected resiliency and surface friction for permitting substantially unimpeded rotation of said rotatable part relative to said stationary part.

4,550,920

OIL SEAL WITH MAIN LIP, SUBSIDIARY LIP AND DUST LIP

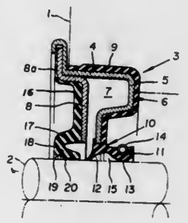
Noboru Matsushima, Fukushima, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 648,661

Claims priority, application Japan, May 17, 1984, 59-73683[U]

Int. Cl.⁴ F16J *15/32*

U.S. Cl. 277—134 **14 Claims**



1. An oil seal which is disposed between a housing and a rotating shaft received in the hollow inside of said housing so as to prevent a liquid in said housing from leaking to the outside, said oil seal comprising:

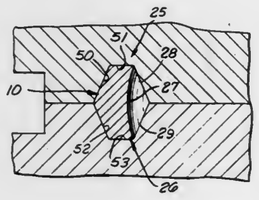
a first metal ring which is secured at the outer peripheral portion thereof to said housing and is provided at the inner peripheral portion thereof with an annular seal lip which is in slide contact with the outer peripheral surface of said

rotating shaft thereby to seal said liquid in said housing; and

a second metal ring which is connected at the outer peripheral portion thereof to the outer peripheral portion of said first metal ring and is separated at the inner peripheral portion thereof from the inner peripheral portion of said first metal ring in the axial direction of said rotating shaft so as to form an annular space in cooperation with said first metal ring, said second metal ring further having a dust lip which is in slide contact with the outer peripheral surface of said rotating shaft,

wherein said seal lip is constituted by a main lip located on the side thereof which is closer to said liquid to be sealed and a subsidiary lip located on the side thereof which is closer to said dust lip, and said dust lip is provided in its slide contact surface for slide contact with said rotating shaft with a circumferentially continuous groove.

4,550,921
RING JOINT GASKET
Arnold M. Smith, 13023 Liggett St., Norwalk, Calif. 90650
Filed Mar. 12, 1984, Ser. No. 588,372
Int. Cl.[4] F16L *23/00*
U.S. Cl. 277—167.5 **7 Claims**



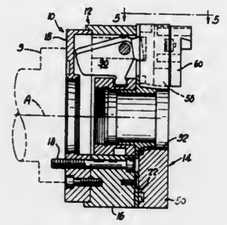
1. A ring joint gasket and flange assembly for sealing the joint between two flanges comprising:

a lower flange having a planar face with a groove formed therein, said groove having a flat inner surface, a flat bottom and a flat outer surface, said inner and outer surfaces being formed at an angle of about 23 degrees with respect to the vertical and the bottom surface being about parallel to the face of the flange;

an upper flange having a planar face abutting the planar face of the lower flange and having a groove formed therein, said groove being adjacent the groove in the lower flange and having a flat inner surface, a flat bottom and a flat outer surface, said inner and outer surfaces being formed at an angle of about 23 degrees with respect to the vertical and the bottom surface being about parallel to the face of the flange; and

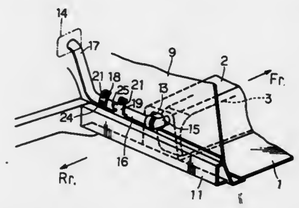
a metallic ring joint gasket wedged in said groove of said lower flange and said groove of said upper flange, said ring joint gasket having two angled outer faces which faces are formed at an angle slightly less than that of the outer surfaces of the grooves when said ring joint gasket is in a relaxed configuration and said ring joint gasket having flat top and bottom surfaces which top and bottom surfaces abut said bottom surfaces of the grooves in the upper and lower flanges when the face of the upper flange abuts the face of the lower flange, and said gasket having a generally flat and generally vertical inner surface which inner surface is deflected in a slight concave manner by the force of the grooves which hold the gasket in place.

4,550,922
WORKHOLDER
William E. Hall, Solon; Edward D. Gailey, Mentor, and George J. Ovanin, Euclid, all of Ohio, assignors to The S-P Manufacturing Corporation, Cleveland, Ohio
Filed Aug. 23, 1982, Ser. No. 410,258
Int. Cl.[4] B23B *31/12*
U.S. Cl. 279—119 **15 Claims**



1. A power operated workholder assembly comprising a power subassembly and a workholding subassembly separable to permit removal of the workholding subassembly as a unit from the power subassembly without disassembly of either; the power subassembly comprising a first body and power actuable means movable relative to said first body for exerting a force when actuated; the workholding subassembly comprising a second body and work gripping means carried by the second body movable relative to the second body; said power-actuable means and said work gripping means being releasably interengaged to transmit force between the two and disengageable through relative movement of the first and second bodies to allow separation; and means integral with each body to separably retain the first and second bodies tightly together in response to relative movement of the two bodies.

4,550,923
FUEL SUPPLYING MEANS INSTALLED ON A LATERAL CROSS MEMBER OF A VEHICLE
Hisashi Ogawa, Okazaki; Yasushi Tanaka, and Yoshimitsu Sato, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Feb. 8, 1984, Ser. No. 578,119
Claims priority, application Japan, Feb. 28, 1983, 58-028498
Int. Cl.[4] B60K *15/04*
U.S. Cl. 280—5 A **18 Claims**



1. A vehicle body, having a floor tunnel longitudinally extending in the vehicle, a cross member laterally extending across the vehicle at a position under the floor tunnel, a means for supplying fuel into a fuel tank provided underneath and within the floor tunnel, and article means for filtering fuel and absorbing evaporated fuel, said vehicle body comprising:

an inner filler pipe having a first end and a second end, the first end connected to the fuel tank and the pipe extending toward the rear of the vehicle to a position which is vertically above the lateral cross member;

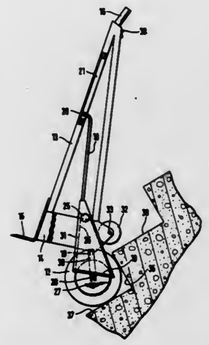
an outer filler pipe having a first end and a second end, the first end comprising an inlet port for accepting fuel therein and the second end of said inner filler pipe, the outer filler pipe extending substantially along the laterally extending cross member and substantially above said lateral cross member;

means for connecting the second end of the inner filler pipe with the second end of the outer filler pipe;

means for fastening the outer filler pipe to the vehicle body, said outer filler pipe located between the vehicle body and said fastening means; and

an engagement device mounted on said fastening means, said engagement device holding said article means on said fastening means.

4,550,924
HAND-OPERATED CART
Ulrich Alber, 7470 Albstadt, 16-Laufen, Fed. Rep. of Germany
Filed Jul. 14, 1983, Ser. No. 513,980
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226294
Int. Cl.[4] B62B *5/02*
U.S. Cl. 280—5.28 **11 Claims**

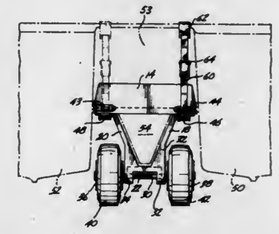


1. A uniaxial hand-operated cart, comprising a traveling body including a platform and two coaxial running wheels; a load-carrying portion connected to said traveling body and including grips, a board to receive a load being transported, two opposite side walls and two coaxial supporting wheels rotatably supported on the respective side walls, and means for adjusting the cart to be moved along a staircase in upward and downward direction, said means being driven by an electric motor switchable in two opposite directions of rotation and mounted on said platform and including a battery electrically connected to said motor, a transmission gearing connected to said motor and a crank drive mounted on the traveling body and coupled to said transmission gearing, said crank drive including two crank pins engaging said side walls, respectively so as to permit an adjustment of a relative position of the traveling body and the load-carrying portion to each other and thus to permit the rest position of the cart and the movement of the cart along the staircase.

4,550,925
BOAT DOLLY
Stephen L. McDonough, 12242 Dayton Ave. N., Seattle, Wash. 98133
Filed Nov. 2, 1983, Ser. No. 547,862
Int. Cl.[4] B62B *1/14*
U.S. Cl. 280—47.13 B **14 Claims**

1. A boat dolly for use in conjunction with a boat of multihull construction, said boat including a right hull portion, a left hull portion, and a center hull portion joining said right and left hull portions, to define a tunnel between said right and left hull portions, a transom at the rear of said hull portions of said boat, and said boat further including a longitudinally extending center skeg, depending downwardly from said center hull portion within said tunnel, said right, left, and center hull portions and said skeg cooperating to define right and left channels on either side of said skeg, each channel having an upper surface defined by a bottom surface of said center hull portion, said dolly comprising:

elongate first and second arms substantially parallel to one another and constructed and arranged such that each arm is of a size to form an interference fit within an associated one of said right and left channels, each of said first and second arms including an upper surface shaped to conform to the upper surface of its associated channel such that the boat is firmly but releasably held on said dolly by the interference fit beteen said arms and said channels;

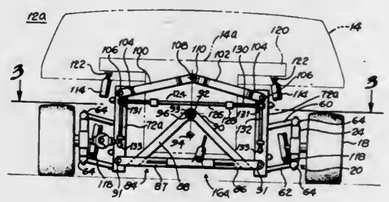


a backplate affixed to a first end of each of said first and second arms in orthogonal relation to said arms, said backplate constructed and arranged to abut the transom of said boat when said boat is on said dolly;

a first support yoke depending from said first and second arms, said first support yoke being shaped correspondingly to the shape of said skeg and adapted to closely receive said skeg; and

a pair of wheels rotatably mounted on said support yoke.

4,550,926
VEHICLE SUSPENSION SYSTEM
William L. MacIsaac, 7911 40th Ave. West, Everett, Wash. 98203
Filed Mar. 28, 1984, Ser. No. 594,329
Int. Cl.[4] B62D *9/02*
U.S. Cl. 280—112 A **31 Claims**



1. A suspension system for a vehicle having a body, comprising:

(A) vehicle support means on opposite sides of the body;

(B) spring means to nominally carry substantially all of the weight of the body on said vehicle support means; and

(C) tie assembly means interposed between said vehicle support means and the body, said tie assembly means having:

first means for pivotally interconnecting said tie assembly means and the body about along a longitudinal roll axis disposed at an effective elevation above the reaction center whereby as the vehicle negotiates a curve, the resulting centrifugal force acting on the vehicle tilts the

body toward the center of the curve relative to said tie assembly means and

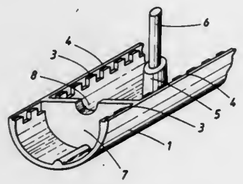
second means for interconnecting said tie assembly means to said vehicle support means to permit the roll axis defined by said first interconnection means to shift laterally outwardly relative to said vehicle support means in the direction away from the center of the curve that the vehicle is negotiating thereby precluding the roll axis from serving as the reaction center of the vehicle.

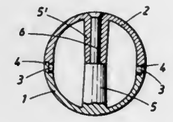
4,550,927

FRAME FOR TWO-WHEELED VEHICLES

Peter Resele, Graz, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Aug. 23, 1983, Ser. No. 525,633
Claims priority, application Austria, Sep. 1, 1982, 3274/82
Int. Cl.⁴ B62K *3/02*
U.S. Cl. 280—281 R **15 Claims**





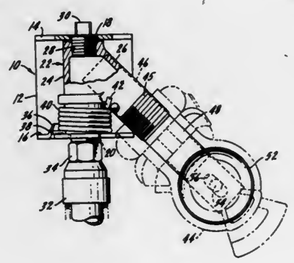
1. A frame for a two-wheeled vehicle, comprising a pair of semimonocoques consisting of light metal diecastings and having adhesively joined adjoining edges, the semimonocoques having longitudinally profiled, interengaging portions along said adjoining edges, each of the semimonocoques is integrally formed with an internal boss having an end face abutting the end face of a corresponding boss of the other semimonocoque, the abutting internal bosses extending diametrically through the joined semimonocoques, and an elongated fastening element attached to one of the bosses and passing through the other boss for connecting the semimonocoques.

4,550,928

FRONT AIR SWINGAWAY

Arthur A. Berg, Northbrook, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Jun. 15, 1984, Ser. No. 621,214
Int. Cl.⁴ B60D *7/04*
U.S. Cl. 280—421 **10 Claims**



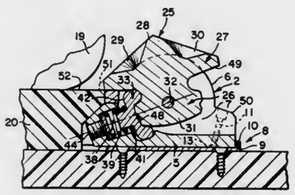
1. In a front air swingaway for connecting an air supply to the front of a trailer in a tractor-trailer combination, a bracket constructed and arranged to be mounted on the front of the trailer, a body member pivotally mounted on the bracket about a vertical axis and having two connections, one for connection to the source of air supply on the trailer, and the other for connection to the trailer's air system, the other connection extending beyond the periphery of the bracket and being movable when the body member is pivoted on the bracket, and a spring on the bracket for biasing the body member about its pivot so that the other connection extending beyond the periphery of the bracket will be releasably urged against the front of the trailer when it is not in use.

4,550,929

SKI BOOT HEEL BINDING

G. Theodore Buel, 30 Market Sq., Knoxville, Tenn. 37902

Filed Aug. 10, 1983, Ser. No. 521,838
Int. Cl.⁴ A63C *9/084*
U.S. Cl. 280—614 **11 Claims**



1. A binding carried by a ski and adapted to cooperate with a ski boot heel including, a binding main body having a base affixed atop a ski and provided with a forward nose section, a pivot member mounted above said base displacable between locked and unlocked positions, said pivot member having an upper actuating section and a lower cam section, wedge-shaped means adjacent the rear of the boot heel adapted to receive said forward nose section, said lower cam section including a cam face having locking means thereon, a rigid latch member, a spring engaging said rigid latch member to provide a biasing force to urge said latch member against said cam face, adjusting means manipulatable to alter the biasing force as provided by said spring, said spring and adjusting means disposed in said forward nose section, and a forward retainer shoulder on said pivot member upper actuating section adapted to overlie said heel wedge-shaped means when said pivot member is displaced to said locked position whereby, said latch member engages said locking means to maintain said locked position.

4,550,930

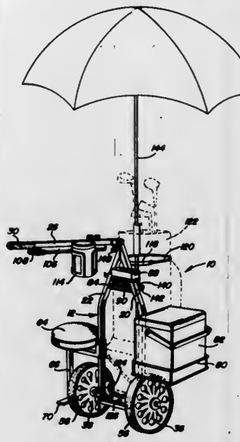
GOLF CADDY

John D. Proffit, Rte. 12, Box 150, Clarksville, Tenn. 37040

Filed Oct. 28, 1983, Ser. No. 546,298
Int. Cl.⁴ B62B *1/04*
U.S. Cl. 280—655 **12 Claims**

1. A golf cart including an upstanding frame having front and rear facing sides and laterally spaced generally parallel opposite side portions, opposite side ground engageable support wheel means, journal means journalling said wheel means from the lower ends of said opposite portions, an upper portion of said frame including a mount, and an elongated handle arm including base and handle defining ends, pivot means pivotally attaching said base end to said mount for swinging of said arm through a vertical plane between a depending retracted position generally closely paralleling said frame and a forwardly and upwardly incilned position projecting forwardly of said frame, means supported from said frame rearward of the latter for supporting a plurality of upstading golf clubs therefrom, each of said opposite side portions including a horizontally

elongated support member, means mounting said support members from said side portions for vertical swinging about horizontal front-to-rear extending axes between operative horizontally outwardly projecting positions and raised inoperative positions projecting upward along said side portions, said support members, when in said operative positions, projecting horizontally outwardly beyond the corresponding wheel means, one of said horizontally elongated support members defining a table upon which a cooler may be placed and the other support member defining a seat, said other support mem-



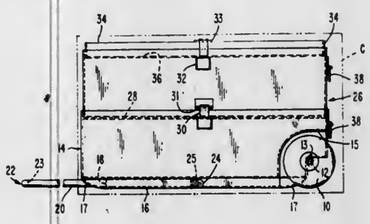
ber including a vertically swingable depending support leg mounted from its outer end, said support leg being swingable to a retracted position closely underlying said other support member, said leg, when said other member is in the operative position, including a lower end spaced considerably outward of and horizontally registered with the lower periphery of the adjacent wheel means, said journal means including means operative to adjustably axially shift said adjacent wheel means relative to said frame outwardly toward the lower end of said leg.

4,550,931

WHEELED CONTAINER, ESPECIALLY FOR USE BY FIRE-FIGHTING AND RESCUE SQUADS

Theodore Ziaylek, Jr., 140 Riverview Dr., Yardley, Pa. 19067

Filed Sep. 26, 1983, Ser. No. 536,131
Int. Cl.⁴ B62B *1/12*
U.S. Cl. 280—655 **6 Claims**



1. A wheeled container, especially for use by fire-fighting and rescue squads and intended for compact storage when not in use in a compartment of a fire-fighting or rescue vehicle, comprising:

(a) a base container including

(1) a box-like receptacle adapted to hold a quantity of articles used in fire-fighting and rescue operations,

(2) a pair of ground wheels mounted in recessed positions on said receptacle at one end thereof, and

(3) handle means mounted on the receptacle for movement between recessed and extended positions; and

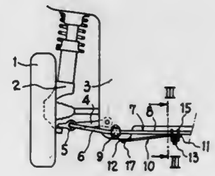
(b) a cover removably supported upon and adapted to close said receptacle, said receptacle, cover, wheels, and handle means forming a generally rectangular assembly adapted to be disposed, when not in use, in a correspondingly shaped storage compartment of a fire-fighting or rescue vehicle, the handle means being in the form of a U-shaped member having side rails, the base container including a pair of tubes telescopically, slidably receiving the respective side rails, the base container further including a pair of skids mounted on the underside of the base container receptacle, the skids being in side-by-side relation to the side rails of the handle means, the base container including plungers mounted in the skids and adapted to releasably maintain the handle means in its extended position.

4,550,932

DEVICE FOR TRANSVERSELY MAINTAINING AN ANTI-ROLL BAR

Claude Vilain, Montbeliard, and Gapp Noël, Dorans, both of France, assignors to Societe Anonyme Automobiles Peugeot, Paris and Societe Anonyme Automobiles Citroen, Neuilly-sur-Seine, both of, France

Filed Sep. 21, 1983, Ser. No. 534,277
Claims priority, application France, Sep. 23, 1982, 82 16041
Int. Cl.⁴ B60G *21/00*
U.S. Cl. 280—689 **15 Claims**



1. A device for maintaining a transverse anti-roll bar for a vehicle having a body structure, wheels and a suspension for the wheels which includes a transverse anti-roll bar, said device comprising two bearings for securing said roll bar to said structure of a vehicle, at least one tie for orienting roughly transversely of the vehicle, said tie being resiliently deformable in torsion and having a first end portion and a second end portion, means for securing the first end portion to the bar and means for securing the second end portion to said structure.

4,550,933

ADJUSTABLE ANCHORAGE

Michael Patterson, Carlisle, England, assignor to ASE (UK) Limited, Carlisle, England

Filed Apr. 5, 1983, Ser. No. 482,293
Claims priority, application United Kingdom, Apr. 8, 1982, 8210494; May 24, 1982, 8215103
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—808 **16 Claims**

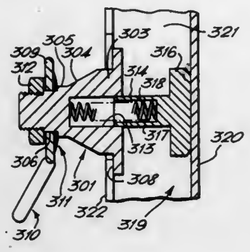
1. Adjustable anchorage means, comprising:

first means having a slot, said slot having at least one narrow slot portion joining spaced wider slot portions;

second means extending through said slot, said second means having a base portion which is wider than said wider slot portions, an intermediate portion receivable in said wider slot portions but not receivable in said narrow slot portion, an outer portion receivable in said narrow slot portion and a portion between said intermediate and outer portions which tapers inwardly in the outward direction from a width greater than the width of said narrow slot portion to the width of said outer portion; and

biassing means acting to said bias said second means into a

position in which said intermediate portion is received in a said wider slot portion but to allow movement of said second means against said bias to a position in which said



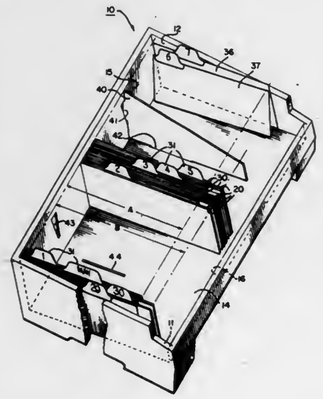
outer portion is received in said slot, whereby said second means is movable along said slot relative to said first means for adjustment of said anchorage means.

4,550,934

TICKLER SYSTEM WHEREIN AN ITEM OF DATA IN CARD FILE IS READILY ACCESSIBLE BY EITHER OF TWO CRITERIA, SUCH AS DATE AND SUBJECT MATTER

Levi H. Goossen, 224 E. 7th St., Newton, Kans. 67114

Filed Jun. 2, 1983, Ser. No. 500,354
Int. Cl.⁴ B42F *17/00, 21/00;* A47B *63/00*
U.S. Cl. 283—37 **5 Claims**



1. In combination, an open top tray of generally rectangular configuration; having bottom, sides and ends:

means for supporting said tray on and above a horizontal surface with the tray slanted sideways with respect to said horizontal surface;

a series of rectangular index cards of a given height and given width standing edgewise on the bottom of said open top tray;

a tab arising from the top edge of each index card;

a series of rectangular data slips of nominally the same height as said index cards and of width greater than said given width by a given margin width, said data slips also standing edgewise on the bottom of said open top tray;

said index cards and said data slips being intercalated;

the amount of said sideways slant being sufficient to urge index cards and data slips to individually settle, while standing edgewise on said bottom, against the lower slanted side of said open top tray;

the interior distance between the said side walls being greater than the width of the data slips by a given clearance distance;

whereby the lower side edges of said index cards and data slips tend to be in alignment with each other and with said lower side; and

whereby the upper side edges of said data slips tend to be aligned and to project beyond the upper side edges of said index cards by the said given margin width;

whereby the said upstanding tabs provide means to search said data slips in accordance with one system of classification in accordance with indicia on said tabs and

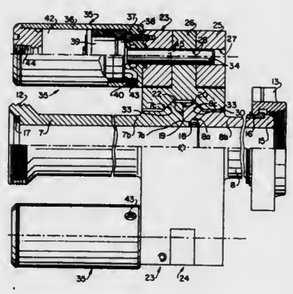
whereby the portions of said data slips which project beyond the index cards and the presence of said given clearance distance provide means to readily riffle the said upper side edges of said data slips to locate items classified in accordance with another system of classification, in accordance with data on the projecting upper side edges of said data slips.

4,550,935

QUICK-RELEASE COUPLING

Lloyd B. Marshall, Sorbiers, and Faycal Ghebrid, Saint-Etienne, both of France, assignors to Etudes et Fabrication Dowell Schlumberger, France

Filed Dec. 21, 1982, Ser. No. 451,538
Claims priority, application France, Dec. 23, 1981, 81 24461
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—18 **6 Claims**



1. A quick-release coupling, comprising:

(A) mating male and female tubular members, the male tubular member being for fitting tightly into the female tubular member in a joining area and each tubular member having, on a respective side of said joining area, a respective truncated face; and

(B) a locking member for releasably locking said tubular members together, said locking member including:

(1) first and second transverse jaws located primarily on opposite sides of a junction, each said jaw being provided at its ends with engaging means which cooperate with complementary engaging means on the other said jaw when said jaws are placed together into operative engagement with one another, each said jaw including a semi-circular recess having truncated side faces adapted to come into abutment with the truncated faces of said tubular members so as to prevent said tubular members from separating from one another along the longitudinal axis of said tubular members when said jaws are in operative engagement with one another, openings formed in said jaws which define first and second longitudinal openings extending parallel to said longitudinal axis, each said opening including a portion associated with said first jaw and a portion associated with said second jaw;

(2) first and second movable locking fingers extending through said first and second openings, respectively, for locking said jaws in operative engagement with one another; and

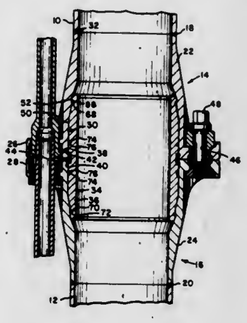
(3) control means for moving said fingers between a locking position wherein said jaws are locked together and a disconnecting position wherein said jaws are free to release from one another.

4,550,936

MARINE RISER COUPLING ASSEMBLY

John A. Haeber, Fillmore; John K. Rains, Ventura; Brad D. Beitler, Ojai, and George S. Kukuchek, Ventura, all of Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Apr. 26, 1983, Ser. No. 488,836
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—26 **19 Claims**



1. A coupling assembly, for a marine riser subject to high tension and bending loads comprising:

a first coupling having a tubular portion welded to a riser pipe section, and a flange portion integral with the tubular portion;

a second coupling having a tubular portion welded to a riser pipe section, and a flange portion integral with the tubular portion;

the tubular portions of each coupling having a portion of the inside diameter greater than that of the riser section;

the tubular portion of at least one of said couplings having a box retaining groove around the inner periphery of the tubular portion;

fastening means for fastening said flange portions together in mutually contacting relationship;

a tubular pin insert, having the outside of each end substantially conforming to the inside shape of a corresponding tubular portion, and locatable entirely within the tubular portions;

at least one sealing means for radially sealing between said pin insert and a corresponding tubular portion on each end of said insert;

a pin retaining groove located on the outside periphery of said pin insert; and

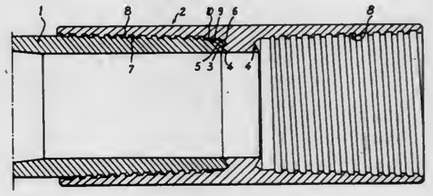
a retaining ring located in said pin retaining groove and movable outwardly partially into said box retaining groove when said pin insert is located within a coupling, whereby said pin insert is loosely retained within one of said couplings.

4,550,937

JOINT FOR STEEL TUBES

Jean Duret, Aulnoye-Aymeries, France, assignor to Vallourec S.A., Paris, France

Continuation of Ser. No. 881,259, Feb. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 583,831, Jun. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 370,146, Jun. 14, 1973, abandoned. This application Dec. 10, 1979, Ser. No. 102,135
Int. Cl.⁴ F16L *25/00*
U.S. Cl. 285—334 **16 Claims**



1. An oil well pipe joint resistant to embrittlement by corrosive oil well fluids comprising a male pipe member and a female pipe member having mating threads of trapezoidal section adapted to be repeatedly assembled and disassembled, said female member having an internal shoulder and an external surface, said male member having a tip and a seal being formed between said shoulder and said tip, said shoulder defining an annular recess having a radially inner side in the shape of a truncated cone the largest diameter of which is at the bottom of the recess, and an outer side having the shape of a truncated cone the smallest diameter of which is at the bottom of said recess, the tip of said male member terminating in surfaces having substantially the same conicity as the inner and outer sides of said recess, and mating frusto-conical threaded sections inside the end of said female member and on the outside of the end of said male member, the nominal radial dimensions of the threads on said sections being such that when said joint is fully made up there is a nominal radial clearance between each threaded part of the male member and the corresponding threaded part of the female member, the said nominal radial dimensions being chosen such that with the applicable tolerances the maximum clearance between the threads on the male member and the corresponding threads on the female member is 0.3 mm per 100 mm of pipe diameter and the instances of interference are sufficiently minimal to avoid substantial hoop stresses in the female member, whereby said external surface of said female member and said internal surface of said male member are highly resistant to corrosion embrittlement in use in an oil well.

4,550,938

FISHING LINE KNOT

Hitoshi Nakanishi, Hyogo, and Hiroyuki Ogura, Kyoto, both of Japan, assignors to Yotsuami Limited, Hyogo, Japan

Filed Jul. 12, 1984, Ser. No. 630,225
Claims priority, application Japan, Jul. 25, 1983, 58-116001[U]
Int. Cl.⁴ D04G *5/00;* B05G *1/18*
U.S. Cl. 289—1.2 **6 Claims**

1. A method of forming a fishing line connection comprising inserting one end of a first fishing line and one end of a second fishing line respectively into one and the other ends of a tubular line and forming a connection between said one end of each fishing line and each end of said tubular line, therein character-

ized that said connection is provided by forming each end of said tubular line into a single knot to correspondingly form said



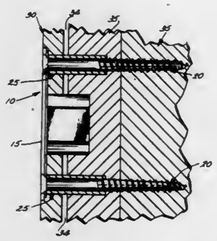
one end of one of said first and second fishing lines into a single knot within said knot of said tubular line.

4,550,939

SECURITY STRIKE ASSEMBLY

John H. Babb, Jr., Grand Rapids, Mich., and Robert A. Marotto, Auburn, Ala., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Jun. 13, 1983, Ser. No. 503,819
Int. Cl.[4] E05C *21/02*
U.S. Cl. 292—340 **8 Claims**



1. A forced entry inhibiting strike plate assembly in combination with a door jamb and door support framing comprising:
- a strike plate having an enlarged opening to receive a lock bolt, and smaller openings to receive fastener screws;
- elongated fastener screws for mounting said strike plate;
- mounting apertures extending into said framing a predetermined distance to form shoulders at the bottoms of said mounting apertures;
- elongated rigid bushings extending from said strike plate through the door jamb, and being closely received in the mounting apertures in said door support framing, with the ends of said bushings abutting the shoulders of said mounting apertures;
- and said screws extending through said bushings and threaded into said door support framing.

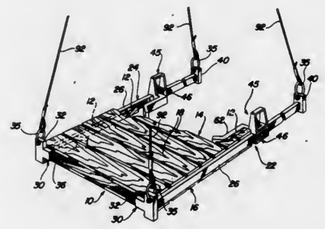
4,550,940

PALLET-BAR LIFT AND SUPPORT APPARATUS

Glen E. Schweikert, 29327 Edgewood Rd., San Juan Capistrano, Calif. 92675

Filed Jan. 27, 1984, Ser. No. 574,469
Int. Cl.[4] B66C *1/22*
U.S. Cl. 294—67.4 **7 Claims**

1. A bar-lift and support apparatus for cargoe pallets including a pair of allochirally arranged lift-support units, each of said units comprising:
- an elongated stabilizer bar adapted to be mounted along the oppositely disposed side-frame members of a pallet;
- a first keeper means fixedly secured to one end of said stabilizer bar so as to be mounted about one end of each of said side-frame members;
- a second keeper means slidably mounted for adjustable movement along said stabilizer bar and adapted to be mounted about the opposite end of each of said side-frame



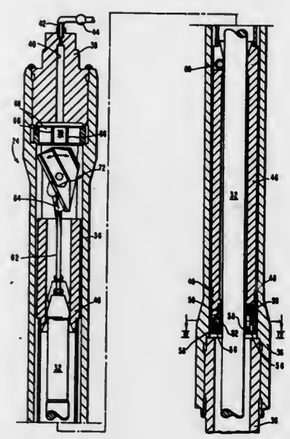
members, whereby said pallet is secured between said first and second keeper means of each lift-support unit; and
- means attached to said second keeper means for latching said second keeper means along said stabilizer bar; and
- a shoulder plate affixed to the end of said stabilizer bar, and oppositely-disposed from said fixed keeper means.

4,550,941

HYDRAULIC DRIVE MECHANISM

Luciano Veronesi, O'Hara Township, Allegheny County, and Donald G. Sherwood, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1980, Ser. No. 217,055
Int. Cl.[4] G21C *7/16*
U.S. Cl. 294—86.4 **9 Claims**



1. An hydraulic drive mechanism comprising:
- a substantially elongated cylindrical drive housing;
- a pivotable member pivotably attached to said drive housing and having a first slot, a first bore, and a second slot therein with each extending from the top to the bottom ends of said pivotable member with said first slot being defined along one edge of said pivotable member and extending into said first bore, with said first bore being defined adjacent to and substantially parallel with but not in colinear alignment with said first slot and having a ledge therein, and with said second slot being defined along the length of said first bore;
- biasing means attached to said pivotable member for pivoting said pivotable member relative to said drive housing;

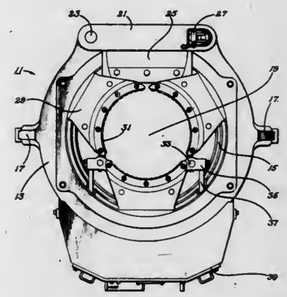
- a contact member having a head on one end thereof with said head being capable of passing into said first bore and not being capable of passing through said first slot and said second slot, with said contact member being capable of being inserted through said first slot, said first bore, and said second slot and with said head being capable of being captured by said ledge in said first bore;
- a drive shaft attached to said contact member and disposed within said drive housing for moving said head into contact with said pivotable member thereby pivoting said pivoting member relative to said drive housing thereby allowing said head to be inserted in said first bore while said contact member passes through said first slot thus latching said contact member to said pivotable member;
- bearing means mounted on a substantially elongated cylindrical bearing housing and removably disposed within said drive housing and around said drive shaft for maintaining alignment of said drive shaft in said drive housing;
- seal means removably attached to said bearing means and disposed in contact with said drive shaft for limiting the flow of an hydraulic fluid between said seal means and said drive shaft; and
- an hydraulic fluid source for providing said hydraulic fluid and connected to said drive housing for providing hydraulic pressure for moving said drive shaft relative to said drive housing, said bearing housing, said bearing means, and said seal means.

4,550,942

ELEVATOR/SPIDER WITH COUNTERBALANCE

Gunnar H. Berg, Austin, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Mar. 12, 1984, Ser. No. 588,188
Int. Cl.[4] E21B *19/10*
U.S. Cl. 294—102.2 **3 Claims**



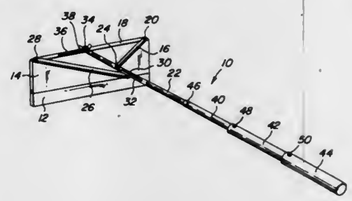
1. An improved elevator/spider, comprising:
- a body having a tapered bowl;
- a series of slips, in the tapered bowl, reciprocally mounted to move between an upper, retracted position and a lower, gripping position;
- a yoke, pivotally mounted to the body, and having a pivot point between a slip end and a spring end, wherein the slip end of the yoke is attached to the slips to raise and lower the slips;
- a torsional spring, mounted on the body away from the pivot point of the yoke, to counterbalance the weight of the slips; and
- connector means for connecting the spring end of the yoke to the torsional spring.

4,550,943

SNOW REMOVER FOR AUTOMOBILES AND THE LIKE

Nicholas Mirto, 29 Cambridge Ave., Staten Island, N.Y. 10314

Filed Jul. 23, 1984, Ser. No. 633,517
Int. Cl.[4] E01H *5/02*
U.S. Cl. 294—54.5 **8 Claims**



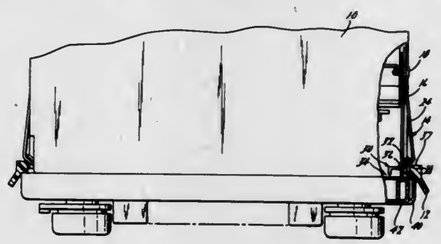
1. A snow remover for automobiles and the like, comprising in combination:
- (a) a rectangular solid one piece rigid base to which is attached a rubber scraper;
- (b) a pivoting bar pivoted by a fastener to one end of the top surface of said rigid solid base the other end of which is pivoted by a fastener to one place at the end of a collapsible handle;
- (c) a sliding bar one end of which is pivoted to the opposite end of said top surface of said rigid solid base from said pivoted bar, the other end of which is slidably connected by a fastener to a lengthwise slot in said collapsible handle; and,
- (d) a collapsible handle one end of which is slidably connected by a fastener to a lengthwise slot on said top surface of said rigid solid base; whereby when said collapsible handle is displaced in a direction away from said lengthwise slot on said top surface of said rigid solid base said collapsible handle folds against said rigid solid base.

4,550,944

RETAINER FOR RADIO RECEIVER

Frederick A. Simon, Ann Arbor, and Thomas H. Forcey, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1984, Ser. No. 585,684
Int. Cl.[4] B60K *35/00*
U.S. Cl. 296—70 **6 Claims**



1. A retainer system for securing a radio receiver in an automobile instrument panel having a generally rectangular aperture formed therethrough and for permitting withdrawing of the receiver from the aperture through engagement with a hand tool, the retainer system comprising:
- A. means defining a plurality of access apertures sized to receive the hand tool through the instrument panel adjacent the lateral edges of the aperture; and
- B. a plurality of unitary clip spring members, each including:
  - (1) a flat mounting portion secured to a side surface of the receiver;
  - (2) a spring arm portion bent outwardly from the fastening portion to define a normal position extending from the receiver beyond the width of the aperture and being

compressible to allow insertion through the aperture; and

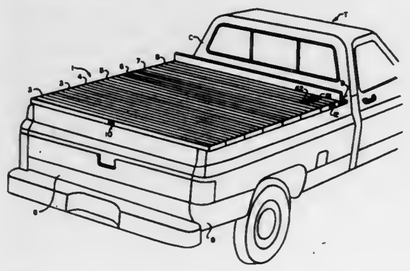
(3) a panel abutting portion canted generally inwardly from the free end of the spring arm portion in registration with the access apertures to define an angled surface for abuttingly engaging the inner terminus of the aperture upon certain insertion of the receiver thereinto to a retaining position to prevent removal of the receiver.

4,550,945

TRUCK BED CLOSURE

Paul Englehardt, Hawthorne, N.J., assignor to PEI, Inc., Hawthorne, N.J.

Filed Jul. 26, 1982, Ser. No. 401,818
Int. Cl.[4] B60P *7/02;* **E05C** *1/02;* **B60R** *25/00*
U.S. Cl. 296—100 **22 Claims**



1. A closure for a load container having a rectangular opening formed by side walls, the closure comprising: a plurality of elongated panels each configured to extend greater than the width of the rectangular opening to rest on two opposite side walls of a load container; means hingedly connecting the panels together side-by-side at longitudinal edges thereof for movement between an unfolded position wherein the panels lie in a single plane and completely close the opening and a fan-folded position wherein the panels lie substantially parallel to each other in a single stack superposed on one end panel; means for fastening said one end panel at a third side wall forming the rectangular opening of the load container; means disposed at the ends of each panel and depending therefrom when the panels are in the unfolded position, said last-named means being spaced just inboard of the associated side wall and engageable with the inner surfaces of the respective two side walls for limiting lateral movement of the panels when in the unfolded position.

4,550,946

VAN LAYOUT

Jacobus N. Hanemaayer, 75 Ardelt Pl., Kitchener, Ontario, Canada

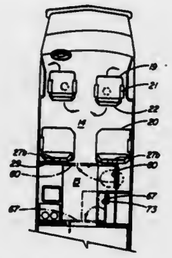
Continuation-in-part of Ser. No. 348,695, Feb. 16, 1982, abandoned. This application Aug. 19, 1982, Ser. No. 409,549
Claims priority, application Canada, May 26, 1982, 403776
Int. Cl.[4] B60P *3/36, 3/38;* **B60R** *15/00;* **A47B** *61/00*
U.S. Cl. 296—156 **26 Claims**

1. A mobile van having a van body comprising:

(A) a plurality of main sections serially arranged in the lengthwise direction of the body and in close relation to one another;

(B) one of said sections having at least a substantial portion of a kitchen facility mounted adjacent one side-wall of the van body, a toilet region being defined adjacent the opposing side wall of the van body within said one section and a passageway aligned with the lengthwise dimension of the van and defined between the toilet region and kitchen facility, said passageway providing for communication between said one section and each other main section which is adjacent thereto;

(C) partition means associated with said one section and movable between (a) a first position clear of said passageway providing open communication between said one section and at least one other main section adjacent thereto whereby the combined spaces defined by said passageway, kitchen facility, and said at least one other section are available for communal use and (b) a second extended position across said passageway and separating said one section from said at least one other main section thereby forming separated compartments and converting



said one section into a segregated compartment to enable said toilet region to be used in privacy, and

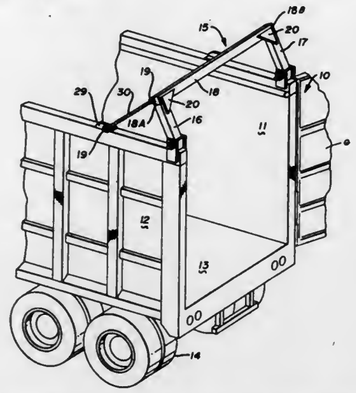
(D) said partition means being adapted to at least partially cover and conceal said toilet region from view and block the use thereof when in said first position to enable the kitchen facility to be used while the toilet region is at least partly concealed, and said partition means further adapted to expose said toilet region for use within the thus converted compartment when in said second extended position so that a free open space defined at least in part by said toilet region and said passageway becomes accessible for use within the thus converted and segregated privacy compartment.

4,550,947

MOVABLE REAR CROSS BAR

Howard Booher, P.O. Box 277, Randolph, Ohio 44265

Filed Mar. 21, 1984, Ser. No. 591,931
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—181 **4 Claims**



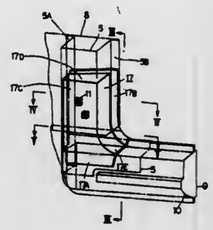
1. A movable cross bar for holding the side walls of a horizontal discharge trailer in vertical position and providing increased clearance for material discharged comprising a pair of spaced members having a cross member secured therebetween, each of said spaced members being pivotally secured to one of said side walls of said trailer, restraint means on said cross member restricting the arcuate movement of said spaced members, means for reinforcing said cross member and said spaced members to one another.

4,550,948

REINFORCED SIDE DOOR SUPPORT STRUCTURE

Makoto Hamada, Toyota; Junji Hasegawa, and Kuniaki Oosaka, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 12, 1983, Ser. No. 531,253
Int. Cl.[4] B62D *27/02*
U.S. Cl. 296—202 **7 Claims**



1. A vehicle body and pillar-rocker panel reinforcement structure comprising:

a pillar having an inner pillar panel and an outer pillar panel, said outer pillar panel having inner edges which are fixed to the inner pillar panel;

a rocker panel including an inner rocker panel and an outer rocker panel, said outer rocker panel having inner edges which are fixed to the inner rocker panel and said inner rocker panel is fixed to said inner pillar panel and said outer rocker panel is fixed to said outer pillar panel;

a reinforcement member for reinforcing the pillar, said reinforcement member being located within a lower portion of said pillar and including a main wall fixed on an inner surface of said outer pillar panel, a skirt portion of said main wall fixed to the outer rocker panel, and an end wall fixed to the main wall at one end thereof and fixed to said inner pillar panel at another end thereof, thereby defining a substantially closed chamber within said lower portion of the pillar between the main wall of said reinforcement member, the end wall of said reinforcement member, the outer rocker panel, the outer pillar panel and the inner pillar panel; and

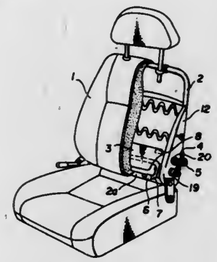
a side door supported swingably on said lower portion of said pillar.

4,550,949

LUMBAR SUPPORT DEVICE

Takao Sakamoto, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Japan

Filed Sep. 30, 1983, Ser. No. 537,714
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—284 **7 Claims**



1. A lumbar support device, comprising:

(a) a plate-shaped lumbar support member provided in the lower portion of a back frame;

(b) a swing frame pivotally mounting said lumbar support member such that said lumbar support member is free to pivot forwardly and rearwardly relative to said back frame;

(c) cam means for variably adjusting the angle of inclination of said swing frame relative to said back frame in a fore-and-aft direction; and,

(d) adjustment means for adjusting the inclination of said lumbar support member relative to said swing frame, wherein

said cam means includes (i) a cam shaft and a pinion shaft each projecting outwardly of said seat back, (ii) a cam fixed to said camshaft and being abutted against said swing frame, (iii) a pinion gear fixed to said pinion shaft, and (iv) a doglegged arm having one end coupled to said lumbar support member and another end integrally provided with a sector gear which is meshed with said pinion gear.

4,550,950

PORTABLE FURNITURE

Gregg Fleishman, Los Angeles, Calif.

Division of Ser. No. 123,903, Feb. 22, 1980, , which is a continuation-in-part of Ser. No. 866,837, Jan. 4, 1978, abandoned. This application Dec. 28, 1981, Ser. No. 335,064
Int. Cl.[4] A47C *7/00*
U.S. Cl. 297—440 **1 Claim**



1. Portable furniture including furniture member means and a generally planar support member,

said furniture member means disposed generally horizontally and said support member disposed generally vertically,

said support member comprising integral main, tab and arm portions adapted to be resiliently disposed in angular relation,

said support member having upwardly facing portions supporting said furniture member means,

said furniture member means having separate interlocking means releasably engaging said main portion, said tab portion, and said arm portion for maintaining said angular relation,

said furniture member means and support member being selectively separable for portability by disengaging said interlocking means,

wherein both said tab portion and said lower arm portions are comprised to be relatively more flexible than the other portions,

wherein said furniture member is a chair seat,

wherein the outline of said support member is substantially rectangular and said main portion comprises the perimeter element of said rectangularly shaped support member providing support to the front of the chair,

said main portion shaped with a broad relatively more flexible upper area connecting to said arm portions at the bottom end,

said broad upper area allowing the tab portion to deflect resiliently rearwardly from the plane of the main portion providing resilient back support for the occupant seated therein,

said tab portion also having an upwardly facing notch at the

bottom of the broad area to support the rear of the seat member,

the lower area of said tab portion providing support to the rear of the chair and connecting to the arm portions as already said,

the arm portions having a broader relatively more flexible lower area allowing it to bend angularly forward and a narrower linear upper area the length of said upper area such that when bent forward in its assembled mode it crosses over the main portion and continues on to support the front of the seat,

said upper area of said arm portions also having two sets of notches,

the lower of the two said notches located on the outer edge of said arms connecting to the prior mentioned notches on the inner edges of said main portions whereas, the location of said notches is such that when interlocked they serve to maintain the support member in its bifurcated mode,

the upper of said notches at the ends of the arm portions connects to the sides of the seat at its front edge, and

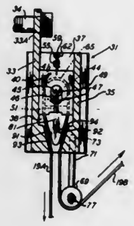
said seat of said furniture is also shaped substantially rectangularly with notches at the front of the sides edges for connection to the arm portions, wings at the rear of the side edges to hook behind the main portion and be supported on the ledges, and ears at the rear which interlock with the tab portion.

4,550,951

MOMENTUM RESPONSIVE VEHICLE SHOULDER HARNESS LATCH

Edward W. Apri, 998 Lehigh St., Altadena, Calif. 91001

Filed Feb. 18, 1983, Ser. No. 467,512
Int. Cl.⁴ A62B *35/02*; B60R *21/10*
U.S. Cl. 297—480 **5 Claims**



1. In a momentum responsive shoulder harness apparatus for use in securing a passenger with respect to a seat in a vehicle having side walls and a floor to which the seat is secured and having a lap belt fixed at one end to the vehicle and releasably secured to a lap belt portion extending from a first belt take-up reel fixed to the vehicle and a shoulder harness belt secured at one end to said lap belt and at its other end to a second take-up reel fixed to the vehicle, the combination comprising a belt arresting latch, a latch housing securable to a wall of the vehicle at a point

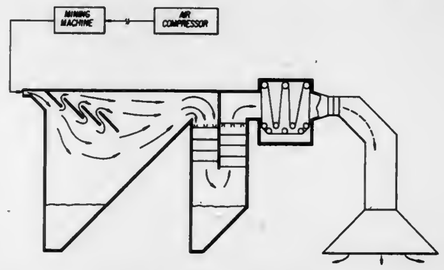
displaced from the passenger seat, said latch housing having a back wall adapted ti be fixed to a vehicle side wall, a front wall spaced from the back wall away from the vehicle wall, latch housing end walls spaced from each other and at right angles to the back and front housing walls, said front, back and end walls defining a housing volume adapted to contain a bight of the shoulder harness belt between the lap belt and the second take-up reel, a roller over which said bight passes within said housing, a roller cradle in the housing volume supporting the roller, first resilient means in the cradle journalling said roller, a slanting back wall portion a slanting front wall portion, said slanting wall portions tending to converge at the bottom of said housing, a wedge fixed to said cradle and diminishing toward the bottom of the housing, portions of the harness bight passing on opposite sides of the wedge between the wedge and the back and front wall slanting portions such that downward displacement of the wedge between said slanting wall portions imposes a binding force upon said shoulder harness belt within the latch housing, second resilient means suspending said cradle and wedge within the housing volume, the resistance to force of said first and second resilient means being of different degree, whereby to provide free adjustment of the belt at low forces and controlled movement of the belt at higher forces and substantially no movement of the belt at substantial force levels.

4,550,952

MINING MACHINE WITH ADJUSTABLE HOOD-SCOOP ASSEMBLY

Harvey Hall, 2680 Spring Valley Rd., Huntington, W. Va. 25704

Filed Aug. 31, 1983, Ser. No. 528,061
Int. Cl.⁴ E21C *27/24*
U.S. Cl. 299—64 **19 Claims**



1. A pneumatic coal mining machine which comprises:

(a) a longitudinal mobile chassis having a pressurized air inlet means and a vacuum outlet means at one extreme of said chassis;

(b) pneumatic coal removal and pulverization means at opposite extreme of said chassis to remove coal from a face of coal;

(c) an adjustable hood-scoop situated surrounding the substantially complete perimeter in juxtaposition with respect to said removal and pulverization means said scoop comprising four separate plates, each of which has its position individually changed with respect to the perimeter of the seam of said coal being mined; and

(d) a vacuum conveyor means for extraction of substantially all of said coal removed from said face and for removal of indigenous gases created by said coal removal.

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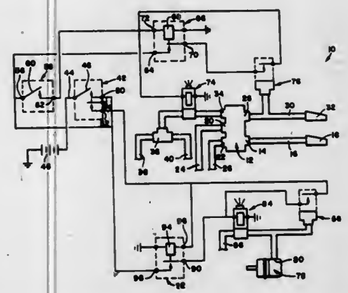
ELECTRO-PNEUMATIC CONTROL FOR A VEHICLE FLUID PRESSURE BRAKING SYSTEM

Roy E. Bartholomew, Elyria, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Dec. 16, 1983, Ser. No. 562,321
Int. Cl.⁴ B60T *13/22*
U.S. Cl. 303—15 **18 Claims**

1. Electro-pneumatic control for a fluid pressure braking system having a source of fluid pressure and a fluid pressure device, said electro-pneumatic control comprising electrically actuated valve means controlling communication to said fluid pressure device from said fluid pressure source, switch means for controlling said electrically actuated valve means, and a pressure-responsive switching means responsive to the fluid pressure level at said fluid pressure device for maintaining

actuation of said electrically actuated valve means as long as the pressure level at said fluid pressure device is above a predetermined level after the pressure level at said fluid pressure device initially attains said predetermined level.

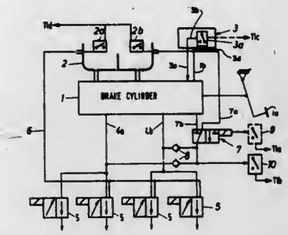


4,550,954

HYDRAULIC VEHICLE BRAKE SYSTEM

Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,237
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3243019
Int. Cl.⁴ B60T *17/18*
U.S. Cl. 303—92 **15 Claims**



1. A hydraulic vehicle brake system including a pressure source, at least one static brake circuit having a main brake cylinder, a piston actuated by a brake pedal, at least one brake pressure anti-skid control valve between said main brake cylinder and at least one wheel brake cylinder responsive to wheel locking for initiating pressure regulation, a return-flow line into a supply container for the pressure medium discharged by said at least one brake pressure anti-skid control valve, an external energy supply system, and a valve assembly responsive to regulation of the brake pressure effecting a switchover position for connecting said external energy supply system to said at least one brake pressure anti-skid control valve, the improvement comprising

a monitoring device responsive to actuation of said valve assembly for generating a signal when said valve assembly effects said switchover position, and

a blocking circuit included in a triggering means for said at least one brake pressure anti-skid control valve, said blocking circuit being connected with said monitoring device, whereby upon a tendency to skidding by at least one wheel, said blocking circuit, via said triggering means directs a signal to an associated brake pressure anti-skid control valve which actuates

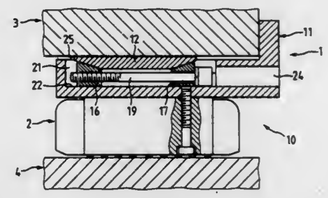
said at least one brake pressure control valve into a brake pressure decreasing position for pressure reduction only whenever said monitoring device indicates that said valve assembly has switched over into a second switching position, via which said at least one brake pressure anti-skid control valve is supplied with pressure mediums from said pressure source.

4,550,955

PRETENSIONING ELEMENT FOR CIRCULATION TRACK BEARING MEMBER FOR LINEAR BEARINGS

Erich Grabher, Dietlikon; Max Müller, Zürich; Horst Wetzel, Wettingen, and Robert Schultschik, Uster, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Oct. 26, 1984, Ser. No. 665,294
Claims priority, application Switzerland, Nov. 4, 1983, 5954/83
Int. Cl.⁴ F16C *29/06, 23/06*
U.S. Cl. 308—6 C **5 Claims**



1. A pretensioning arrangement for a circulation track bearing member of a linear bearing translatably guiding a movable member of a machine in relation to lengthwise guide means of the machine, comprising:

a housing having means for securing the circulating track bearing member to said housing and means for mounting said housing to the movable member of the machine between the movable member and the lengthwise guide means of the machine for forming a circulating unit of the linear bearing;

said housing containing:

at least two guide tracks each extending in a lengthwise direction substantially parallel to the lengthwise guide means;

a first wedge member and a related second wedge member guided in each guide track of said at least two guide tracks for mutual displacement in said lengthwise direction;

each wedge member of said first and said second wedge members defining a respective therewith associated first wedge surface;

a tightening device arranged in each said guide track;

each said tightening device operatively engaging said first wedge member and said second wedge member for effecting a relative displacement therebetween;

at least one support plate for supporting said circulating unit on the movable machine member;

said at least one support plate defining two second wedge surfaces arranged to confront said first wedge surfaces of said first and second wedge members; and

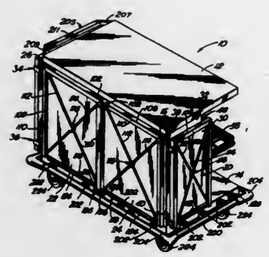
said first wedge surfaces cooperating with said tightening means and with said second wedge surfaces for positionally adjustably supporting said housing and conjointly therewith the circulating track bearing member in relation to said support plate.

4,550,956

SURGICAL CASE CART

Robert J. Cohn, Dallas, Pa.; Frank C. Olsson, East Lyme, Conn.; James W. Holzman, New Tripoli, and Paul Santarelli, Hudson, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Mar. 4, 1982, Ser. No. 354,762
Int. Cl.[4] A47B *31/00*
U.S. Cl. 312—250 15 Claims



1. A cart comprising:

a container having a base, a top wall, a rear wall, opposing first and second side walls and a front wall;

said front wall including at least one front door panel having opposing first and second side edge portions;

said first side wall being divided to define a forward side door panel and a rearward fixed side panel, said forward side door panel having opposing first and second side edge portions, and said rearward fixed side panel having opposing first and second side edge portions;

said first side edge portion of said rearward fixed side panel being fixed to an adjacent side edge portion of said rear wall;

first hinge means hingedly coupling said first side edge portion of said forward side door panel to said second side edge portion of said rearward fixed side panel, said first hinge means permitting approximately 180 degrees of rotation for permitting movement of said forward side door panel between a first position in generally coplanar relation with said rearward fixed side panel and a second position overlying and in generally congruent mutally parallel relation with said rearward fixed side panel; and

second hinge means hingedly coupling said first side edge portion of said one front door panel to said second side edge portion of said forward side door panel, said second hinge means permitting approximately 270 degrees of rotation for permitting movement of said one front door panel among a first attitude constituting at least a portion of said front wall of said cart when said forward side door panel is in said first position, a second attitude overlying and in generally mutually parallel relation to said rearward fixed side panel and said forward side door panel when said forward side door panel is in said first position, and a third attitude overlying and in generally mutually parallel relation to at least a portion of said rear wall when said forward side door panel is in said second position;

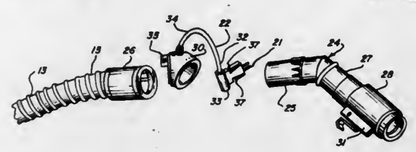
whereby said container can be placed in a first open condition with said one front door panel in said second attitude rotated about said second hinge means toward said forward side door panel in said first position to provide access to an interior of said container, and whereby said container can be placed in a second open condition with said forward side door panel in said said second position rotated about said first hinge means toward said rearward fixed side panel and said one front door panel in said third attitude rotated about said second hinge means toward said rear wall to provide both visibility and access to said interior of said container.

4,550,957

ELECTRICAL HOSE SWIVEL CONNECTOR FOR CANISTER VACUUM CLEANER

James W. Keane, White Bear Lake, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 17, 1984, Ser. No. 651,101
Int. Cl.[4] H01R *39/00*
U.S. Cl. 339—5 R 20 Claims



1. In a vacuum cleaner having a canister housing defining a suction inlet and an electrical power connector adjacent said inlet, and a hose for conducting dirt-laden air to said suction inlet and provided with electrical power conducting means, the improvement comprising:

a swivel connector having a first portion secured to said hose end, and a second portion adapted to be removably secured to said housing in said suction inlet, said first portion being swivelly connected to said second portion;

an electrical power plug mounted to said swivel connector second portion;

catch means associated with said housing adjacent said suction inlet;

a flexible electrically conductive pigtail having a first end electrically connected to said power plug and a second end electrically connected to said electrical power conducting means of said hose, said pigtail having a length preselected to permit swiveling of said swivel connector first portion relative to said second portion up to a maximum preselected angle;

latch means on said swivel connector disposed to releasably engage said catch means when the swivel connector second portion is received in said suction inlet to connect said hose end to said suction inlet, said power plug being disposed to have electrically connected association with said electrical power connector as an incident of said swivel connector second portion being so received in said suction inlet.

4,550,958

ELECTRICAL HOSE SWIVEL CONNECTOR FOR CANISTER VACUUM CLEANER

Orbert S. Smith, Baldwin Township, Sherburn County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 17, 1984, Ser. No. 651,102
Int. Cl.[4] H01R *39/00*
U.S. Cl. 339—5 R 19 Claims

1. In a vacuum cleaner having a canister defining a housing wall portion, and a suction hose having an end provided with a hose end and a power plug, the improvement comprising a swivel connector for removably connecting said hose end connection to said canister, said swivel connector comprising:

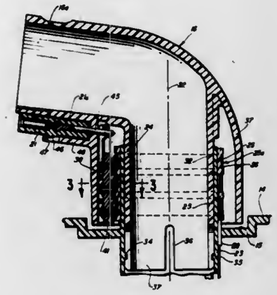
a tubular suction inlet fixedly mounted to the canister and having a distal portion projecting outwardly from said housing wall portion and defining a swivel axis;

a plurality of longitudinally spaced electrically conductive commutator rings coaxially on said distal portion of the suction inlet, each ring having an electrically conductive connecting portion extending therefrom inwardly through said housing top wall portion into said canister for providing an electrical power connection therein;

a swivel member having a tubular insert portion coaxially rotatably retained in said tubular suction inlet, and a turned tubular outer end portion extending angularly to said insert portion for swinging 360° about said swivel axis as an incident of rotation of said insert portion in said tubular inlet;

a plurality of electrical slide connectors on said tubular insert portion of the swivel member biased into sliding electrical contact one each with said commutator rings;

electrical power transfer means on said swivel member for



removably electrically connecting a hose power plug thereto;

means electrically connecting said electrical power transfer means to said slide connectors; and

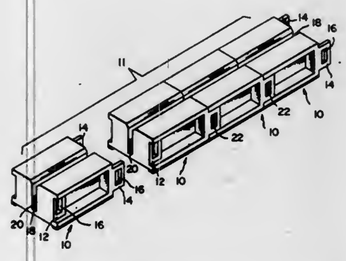
means on said outer end portion of the swivel member for removably connecting a suction hose end connector thereto.

4,550,959

SURFACE MOUNTABLE COEFFICIENT OF EXPANSION MATCHING CONNECTOR

Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 484,651, Apr. 13, 1983, abandoned.
This application Nov. 20, 1984, Ser. No. 673,222
Int. Cl.[4] H05K *1/00;* H01R *13/504, 9/09*
U.S. Cl. 339—9 E 13 Claims



1. An electrical connector housing for moving relatively with the expansion or contraction of the substrate upon which it is mounted, comprising:

at least two modular connector housing means having electrical contacts contained therein, said housing means joined to each other at one end thereof, and being disposed on a substrate or the like;

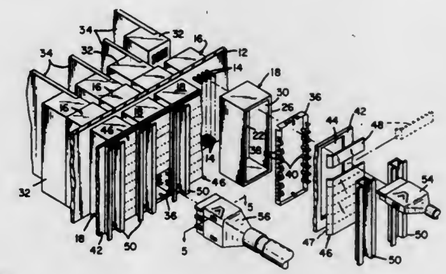
meltable filler material means inserted in an opening where said housing means are joined so as to secure said housing means to each other thereby forming a connector housing assemblage, characterized in that said meltable filler material means is meltable at a temperature substantially less than that of the modular connector housing means.

4,550,960

SHIELDED BACKPLANE ASSEMBLY

John C. Asick, Harrisburg; George H. Douty, Mifflintown; John M. Landis, Camp Hill; Clair W. Snyder, Jr., York, and James S. Staron, Dillsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 24, 1984, Ser. No. 643,942
Int. Cl.[4] H01R *13/648*
U.S. Cl. 339—14 R 6 Claims



1. A totally shielded backplane assembly for receiving at least one connector comprises:

a backplane having a plurality of pins extending from one surface thereof in at least one array,

at least one shroud fixed against said one surface of said backplane, each shroud having sidewalls surrounding a respective pin array, said sidewalls forming a connector-receiving cavity having said pin array therein,

a metal gasket mounted on each shroud, each gasket having means for providing electrical continuity between a shielded connector received in said cavity and a conductive chassis panel,

a conductive chassis panel against said metal gasket, said panel having at least one aperture, each apertrue being aligned with a respective connector-receiving cavity,

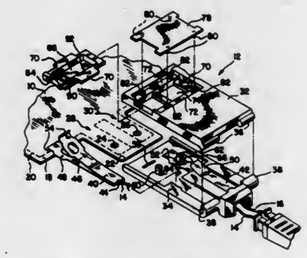
a cover assembly on said panel over each pin array, each said assembly having a series of removable sections, said sections being selectively removable to expose pin terminals as desired for engaging said at least one connector.

4,550,961

ELECTROSURGICAL ELECTRODE CONNECTOR

Frederick T. Aicher, Miamisburg; James R. Martin, Sr., Waynesville, and William T. Flanagan, Kettering, all of Ohio, assignors to NDM Corporation, Dayton, Ohio

Filed Jul. 26, 1984, Ser. No. 634,857
Int. Cl.[4] H01R *13/639*
U.S. Cl. 339—14 R 10 Claims



1. A connector for connecting an electrical lead to a ground electrode of the type used with an electrosurgical generator, said electrode having a connection tab extending from the periphery thereof and defining an electrically conductive sur-

face on at least one side of said tab and further defining a connector engagement opening extending through said tab, comprising:

an upper connector plate formed of an electrically nonconductive material,

a lower connector plate formed of an electrically nonconductive material, said upper and lower plates each defining hinge connection means at first ends thereof for connecting said upper and lower plates together,

leaf spring contact means connected to said electrical lead and including first and second contact legs, said first contact leg engaging said upper connector plate and said second contact leg engaging said lower connector plate, said first and second contact legs being joined together adjacent said hinge connection means, whereby said upper and lower connector plates are spring biased apart,

a connector post mounted on the side of said lower plate facing said upper plate, said post defining an engagement notch, said connector post being sized such that said connection tab may be inserted between said upper connector plate and said lower connector plate and said connector engagement opening pressed over said connector post, and

spring biased latch means, slidably mounted on said upper connector plate, for engaging said connector post engagement notch when said upper and lower connector plates are pressed together, such that said upper and lower connector plates are held together, pressing said first and second contact legs against a connection tab held therebetween whereby said lead and said ground electrode are electrically connected.

4,550,962

SOLDERLESS ELECTRICAL CONNECTOR ASSEMBLY

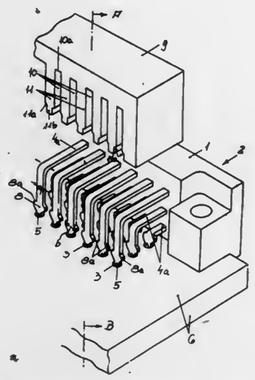
Franz Czeschka, Rechberghausen, Fed. Rep. of Germany, assignor to ERNI Elektroapparate GmbH, Adelberg, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,382

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318135

Int. Cl.⁴ H05K *13/04;* **H01R** *9/09*

U.S. Cl. 339—17 LC **1 Claim**



1. A solderless connector assembly for a multiple plug device having contact pins and a printed circuit board particularly useful in microelectronic connector assemblies comprising:

an insulating housing having a plurality of contact pins mounted therein, said contact pins being arranged in at least one parallel row;

connection posts on each of said contact pins having connection ends adapted to be, by movement in an inserting direction, inserted into printed circuit board holes and projecting freely from said housing;

a base portion on each of said contact pins extending perpendicularly to said connection posts;

an insertion tool adapted to engage said contact pins for inserting said contact pins into a printed circuit board and capable of being removed from engagement with said contact pins after completion of said insertion process;

said insertion tool comprising

a base area having parallel pockets consisting of inserting slots on one side thereof adapted to enable said contact pins to be introduced into said parallel pockets by movement of said insertion tool in said inserting direction, and

a plurality of guide ducts included in one of the sides of each of said parallel pockets opposite said one side, said guide ducts being accessible from said inserting slots and being shaped to receive therein contact pins located within each of said inserting slots upon movement of said insertion tool laterally of said inserting direction;

said guide ducts being configured to receive therein respective ones of said connection posts of said contact pins during an insertion process and to include portions arranged to be placed in abutment with said base portions of said contact pins in order to apply against said base portions a force inserting said connection ends into said printed circuit board holes when said insertion tool is moved in said inserting direction of said pins, said tool being adapted to be disengaged from said contact pins by lateral movement thereof in a direction opposite to the lateral direction of movement when receiving said contact pins in said guide ducts to bring said contact pins out of said guide ducts and back into said inserting slots.

4,550,963

ELECTRICAL CONNECTOR

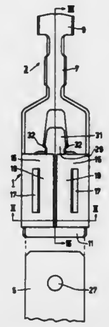
Johannes H. Moors, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,550

Claims priority, application Netherlands, Jul. 2, 1982, 8202668

Int. Cl.⁴ H01R *13/20, 13/11*

U.S. Cl. 339—31 R **3 Claims**



1. An electrical connector including a receptacle portion formed from sheet material for receiving an electrical terminal, said receptacle portion comprising a base, a pair of upstanding side walls terminating in end portions turned inwardly toward the base for engaging said terminal, and a resilient tongue rising from the base toward said end portions and extending rearwardly from a front portion of the connector into which the terminal is received, said tongue including an upwardly extending projection for cooperating with an opening in the terminal for securing said terminal in the connector,

wherein the improvement comprises a first pair of removable tags forced out of the base below the tongue, each tag extending upwardly between the tongue and a respective one of the side walls, said tags being substantially parallel to the side walls, being spaced apart by a first distance approximately equal to the width of a first size terminal to be received in the connector, and extending to a height sufficient to prevent insertion of a terminal wider than said first distance, and said side walls being spaced apart by a distance approximately equal to the width of a second size terminal to be received in the connector.

4,550,964

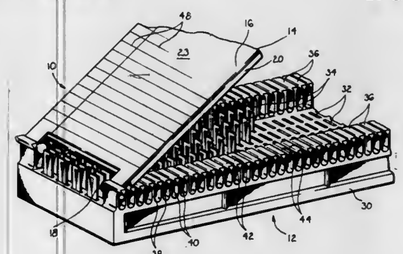
HINGED COVER AND LABEL ASSEMBLY FOR CONNECTOR BLOCK

Norman Donais, Oakville, and Ronald Nitowski, Naugatuck, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Filed Jul. 23, 1984, Ser. No. 633,403

Int. Cl.⁴ H01R *13/447*

U.S. Cl. 339—44 M **20 Claims**



1. A connector block cover assembly, the connector block having a body portion with two fanning strips disposed along the longitudinal sides thereof, the fanning strips comprising a plurality of arms defining spaces therebetween, the arms each having an overhanging flat lip thereon, the lips spaced apart by slots, the cover assembly including:

lid means, said lid means having flat planar inner and outer surfaces to cover a least a portion of said connector block; and

strapped hinge means attached to said lid means, said hinge means positioned between oppositely disposed spaces in each of said fanning strips wherein said cover freely pivots about said hinge means between open and closed positions.

4,550,965

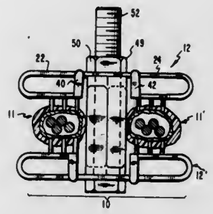
CONNECTOR ASSEMBLY FOR INSULATED CABLE

Hyman Izraeli, West Caldwell, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Apr. 25, 1983, Ser. No. 488,305

Int. Cl.⁴ H01R *4/24, 4/44*

U.S. Cl. 339—47 R **8 Claims**



1. A connector for electrical cable having a conductive sheath surrounded by an insulative jacket, said connector comprising:

a base for supporting said cable;

a conductive member movably secured to said base, said conductive member including a support surface; a cantilevered spring supported by said support surface including a first cantilevered portion extending from said support surface of said conductive member and a second cantilevered portion extending from an unsecured end of said first cantilevered portion back toward said support surface; a contact portion on said second cantilevered portion movably supported relative to said support surface; and contact portion including an insulation piercing contact for contacting said cable upon movement of said conductive member; said cantilevered spring formed to provide a predetermined force by said insulation piercing contact on said cable upon moving said conductive member towards said base, said predetermined force being greater than the resistance of said insulative jacket and less than the resistance of said conductive sheath; and

clamping means for moving said conductive member toward said base.

4,550,966

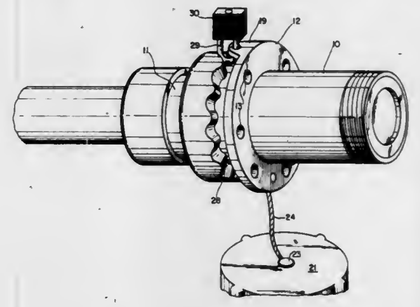
ELECTRICAL CABLE CONNECTORS

Roy C. Riley, North Tazewell, Va., assignor to J & R Manufacturing, Inc.

Filed Jan. 24, 1984, Ser. No. 573,371

Int. Cl.⁴ H01R *13/639*

U.S. Cl. 339—84 **2 Claims**



1. An electrical cable connector for safe use with electric motor driven mine equipment in coal mines in which gassy conditions normally create great danger of explosion caused by incendive arcing or sparking, comprising,

a receptacle component having a cylindrical casing and an open end,

a plug component adapted to be partially inserted in the open end of the receptacle component,

means for securing and locking said components in joined operative position,

said means comprising a compression lock ring securely mounted on the outer exposed surface of said plug component and having locking threads thereon, and a mounting flange mounted on the outer surface of said receptacle component,

said mounting flange having a mounting sleeve with a threaded portion adapted to engage the locking threads on said compression lock ring, said mounting flange having a locking ear thereon,

said compression lock ring having a means adapted to be engaged by a leg of a padlock passed through the locking ear of the mounting flange whereby the components may be prevented from accidental uncoupling,

said sleeve having a series of radial bores therein, a series of set screws adapted to be received in said bores, whereby if the locking ear on the mounting flange becomes damaged,

the mounting flange may be replaced without the necessity of replacing the entire receptacle component.

4,550,967

ELECTRICAL CONNECTOR MEMBER

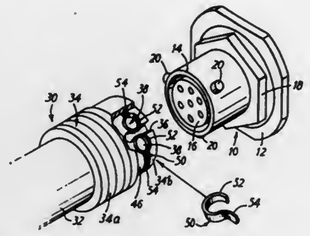
Arthur J. Riches, Herne Bay, and Brian Mitchell, Canterbury, both of England, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 8, 1982, Ser. No. 447,739

Claims priority, application United Kingdom, Dec. 14, 1981, 8137686

Int. Cl.⁴ H01R *13/62*

U.S. Cl. 339—88 R **12 Claims**



1. An electrical connector member comprising a generally cylindrical shell member forming a housing for one or more electrical contacts and being provided with means for retaining the connector member on a mating connector member which carries generally radial bayonet pins, the said means including an axial passage for receiving each bayonet pin, and being such that the connector member can be coupled to and uncoupled from a mating connector member carrying bayonet pins by a sufficient axial force but is retained in the coupled condition against a weak force in the uncoupling direction, characterised in that the said means includes a plurality of resilient members each having a plurality of at least partially circular portions, each said circular portion being accommodated in a respective recess and each recess intersecting with the associated passage such that the said portions extend partially into the passage.

4,550,968

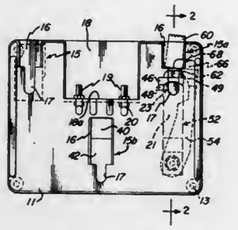
BATTERY PACK CONNECTION

John J. Corrigan, Washington, Conn., assignor to Anton/Bauer, Inc., Shelton, Conn.

Filed Oct. 12, 1984, Ser. No. 660,083

Int. Cl.⁴ H01R *13/639*

U.S. Cl. 339—91 R **10 Claims**



1. A releasable connection for a battery pack or the like comprising a relatively flat male plate and a relatively flat female plate, said plates being adapted to be releasably locked together in connected position; said female plate including a plurality of keyholes with each having an opening and a depending slot, and at least one elongate terminal, said terminal and keyhole slots being elongate in the same direction; said male plate including a plurality of spaced headed projections with there being one for each keyhole and with each projection having head and leg portions, and at least one elongated mating terminal; said male plate being positioned abutting the female plate with the legs of the projections being located in the slots of the associated keyholes and with the one terminal within the mating terminal; ramp means associated with and behind at least one of said keyhole slots for guiding at least one of said headed projections into and out of the depending portion on said keyhole slot; said ramp means including an inclined portion sloping from a front portion of said female plate towards a rear portion thereof connected to a vertical guide-plate portion extending downwardly and terminating behind and spaced from said one keyhole slot; and releasable locking means on one of said plates for engaging means on the other of said plates to lock said plates in connected position by preventing relative movement between said plates in the direction of said keyhole slots until said locking means is released.

4,550,969

WIRE CONNECTOR WITH CUTTING EDGE

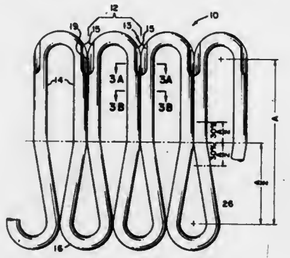
Karl-Heinz Pohl, Buffalo, Minn., assignor to The Siemon Company, Watertown, Conn.

Continuation-in-part of Ser. No. 271,603, Jun. 8, 1981, Pat. No. 4,440,466. This application Sep. 29, 1983, Ser. No. 537,071

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.⁴ H01R *9/08*

U.S. Cl. 339—98 **9 Claims**



1. A multiple terminal solderless electrical connector comprising:

a discrete number of interconnected loops, said loops being formed from a continuous piece of conductive resilient material, said loops being arranged in a co-planar relationship between two end loops, said loops each having two straight parallel side portions connected by a semi-circular portion, said straight side portions of adjacent said loops being in an abutting relationship, each of said straight side portions having incorporated therein a cutting edge, at least all of those loops intermediate the end loops having nonparallel extensions of said straight side portions, said extensions each having an arcuate section which connects with an arcuate section of an extension of an adjacent loop whereby said extensions interconnect the abutting side portions of adjacent loops through open loops between each pair of said extensions, the length of each of said extensions being greater than the radius of said connected arcuate sections.

4,550,970

ELECTRIC TERMINAL

Satoru Ogino, Kitamoto, Japan, assignor to Kobishi Electric Co., Ltd., Japan

Filed Sep. 7, 1983, Ser. No. 529,950

Int. Cl.⁴ H01R *4/02*

U.S. Cl. 339—97 P **14 Claims**

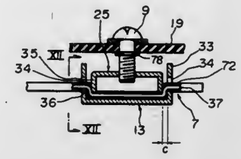
1. An electric terminal for electrically connecting a conductor, comprising:

(a) a non-conducting casing having a support surface;

(b) a stationary member made of an electrically conductive material and attached to the casing, the stationary member including a channel-shaped portion with a pair of flanges defining a recess therein which is open in the direction toward the support surface of the casing;

(c) an electrically conductive movable member having a portion adapted to be inserted into the recess of the stationary member; and

(d) an electrically conductive screw member threadedly engaging with the movable member and making electrical



contact with the conductive movable member without contacting the stationary member, said screw member being rotatably supported by the casing support surface so that the movable member moves towards and away from the recess in said stationary member by the rotation of said screw member, whereby one end portion of a conductor located between the stationary member and the movable member in the region of the recess is clamped between the stationary member and the movable member by the flanges of the stationary member and at least part of the movable member received by the recess of the stationary member.

4,550,971

CONNECTOR

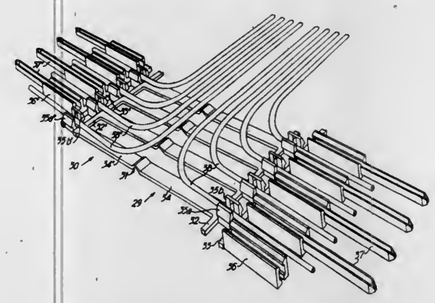
Alain Gentric, Lotissement Keranroux Ploubezre, F-22300 Lannion, France

Filed Dec. 16, 1982, Ser. No. 450,363

Claims priority, application France, Dec. 29, 1981, 81 24643

Int. Cl.⁴ H01R *4/02*

U.S. Cl. 339—99 R **2 Claims**



1. A coupling connector having self-stripping connection-making plugs for separately clamping insulated conductors, the connector comprising a housing with two half-shells joined by a hinge, at least one of the half-shells including a row of self-stripping plug supports, said one half-shell bearing the row of self-stripping plug supports also including a row of holes behind said self-stripping plug supports, at least the rear part of each of said self-stripping plug supports lying in a plane and having a U-shaped cross section, the other half-shell including a row of wire clamping U-shaped groove means, wherein each of the U-shaped groove means includes a pair of spears which are symmetrical with respect to the longitudinal axis of the groove means, the U-shaped groove means and the self-stripping plug supports having longitudinal axes which are parallel to each other, said U-shaped groove means having a face lying in a plane which is transverse to the U-shaped groove means, said plane of said U-shaped groove means being located behind the plane of the rear faces of the self-stripping plug supports and each wire clamping U-shaped groove means being aligned with a self-stripping plug support when the two hinged half-shells are closed one on the other, the spear pairs of the other half-shell hooking into individually associated ones of said holes when the two half-shells are closed one on the other.

4,550,972

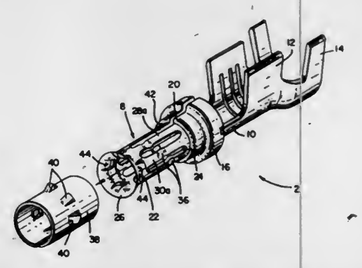
CYLINDRICAL SOCKET CONTACT

Paul E. Romak, Langen, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 9, 1984, Ser. No. 598,127

Int. Cl.⁴ H01R *13/11*

U.S. Cl. 339—256 R **3 Claims**



1. A cylindrical stamped and formed contact socket which is intended to receive a contact pin, the socket having an open pin-receiving end and an inner end, the inside diameter of the socket being substantially equal to, and greater than, the diameter of the pin, the socket being characterized in that:

the socket has a first circumferentially continuous ring at the pin-receiving end, a second circumferentially continuous ring at the inner end, and an axially extending seam which extends from the pin-receiving end to the inner end,

an intermediate portion of the socket which is between the first and second rings comprises an even number plurality of at least four substantially identical beams which have ends that are integral with the first and second rings, the beams being at equally spaced angular intervals around the axis of the socket so that a plurality of pairs of diametrically opposed beams are provided,

each of the beams having a contact boss which projects inwardly towards the axis of the socket, the bosses on each pair of opposed beams being aligned with respect to the axis of the socket, the minimum distance between the surfaces of the bosses being substantially equal to, and less than, the diameter of the contact pin,

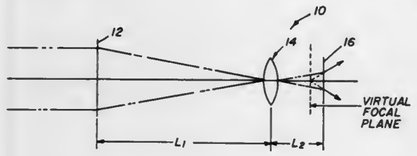
the associated pairs of beams having their bosses spaced from the first ring at increasing distances,

the pin-receiving end being outwardly flared and a cylindrical supporting sleeve is mounted on the socket in surrounding relationship thereto, the supporting sleeve being between the pin-receiving end and the inner end whereby, during insertion of the pin into the socket, the bosses on the associated pairs of beams are sequentially encountered by the pin and the beams are sequentially deflected, and after the pin is fully inserted it will be in contact with the socket at a plurality of equally spaced intervals along its axis and around its circumference.

4,550,973
ACHROMATIC HOLOGRAPHIC OPTICAL SYSTEM

Robert E. Hufnagel, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 14, 1983, Ser. No. 475,285
Int. Cl.[4] G02B 5/32
U.S. Cl. 350—3.72 20 Claims



1. An optical imaging system achromatic over a wide band comprising:
- a first diffractive optical element, said first element comprising a hologram, said first element comprising the system primary element, said first element having a comparatively large aperture and a focal length $1/\phi_1$;
- an optical axis defined by a line bisecting and perpendicular to said first diffractive optical element;
- a second diffractive optical element, said second element comprising a hologram, said second element being spacially displaced from said first element; and
- a third optical element positioned intermediate said first and second elements in the direction of travel of light, said third element being achromatic.

4,550,974
LOW LOSS FUSED BICONICAL TAPER OPTIC COUPLER

Kent A. Murphy, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 529,819, Sep. 6, 1983, abandoned, which is a division of Ser. No. 484,343, Apr. 12, 1983, Pat. No. 4,426,215, which is a continuation of Ser. No. 309,360, Oct. 7, 1981, abandoned. This application Apr. 4, 1985, Ser. No. 719,634
Int. Cl.[4] G02B 5/172
U.S. Cl. 350—96.15 4 Claims



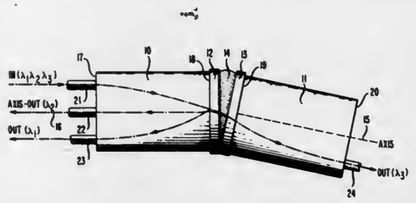
1. A low loss fused biconical taper fiber optic coupler comprising:
- a plurality of optical fibers each having a core and a cladding surrounding the core, said fibers being fused together in a unitary biconical tapered region including a first tapered region, a second tapered region and a deformed region therebetween, the cores in said deformed region being scrambled.

4,550,975
OPTICAL COUPLING DEVICES

Frank H. Levinson, Bethlehem, and Rudolph C. Schweizer, South Whitehall Township, Lehigh County, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 29, 1982, Ser. No. 373,135
Int. Cl.[4] G02B 5/14
U.S. Cl. 350—96.18 15 Claims

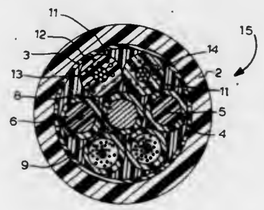
1. An optical device for diverting light from one transmission element to another comprising:
- first and second light focusing elements each having two surfaces, with one surface of each element positioned in a spaced relationship;
- first and second partially reflecting elements positioned in the space between the focusing elements and having their optical axes at an angle other than 180° to each other; and
- a plurality of light transmission elements coupled to a surface of the first light focusing element opposite to said reflecting elements and at least one transmission element coupled to a surface of the second light focusing element opposite to said reflecting elements, the position of the transmission elements, and the angle of the reflecting elements being such that light incident on each reflecting element is coupled between different transmission elements while at least a portion of the light is transmitted from a transmission element on the surface of the first focusing element to a transmission element on the opposite surface of the second focusing element.



4,550,976
FIBER OPTIC CABLE WITH FOAMED PLASTIC DUMMY MEMBERS

Stephen M. Cooper, Hickory, and Saeed K. Sooudi, Charlotte, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Sep. 10, 1984, Ser. No. 648,668
Int. Cl.[4] G02B 5/16
U.S. Cl. 350—96.23 6 Claims

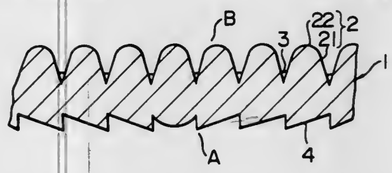


1. A fiber optic cable comprising:
- (a) an elongated core member;
- (b) at least one elongated tubular member and at least one optical fiber, said optical fiber disposed in the tubular member and said tubular member disposed on the periphery of said core member;
- (c) at least one "dummy" elongated member disposed coextensive with said elongated tubular member on the periphery of said core member, said "dummy" elongated member including a central elongated member having a diameter less than the diameter of said elongated tubular member and a jacket, circumscribing said central elongated member, composed of foamed plastic material containing a multiplicity of void spaces therein;
- (d) a jacket member circumscribing said "dummy" elongated and tubular members.

4,550,977
REAR PROJECTION SCREEN

Masao Inoue, and Shingo Suzuki, both of Tokyo, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,966
Claims priority, application Japan, Jun. 13, 1983, 58-105341
Int. Cl.[4] G03B 21/60
U.S. Cl. 350—128 4 Claims

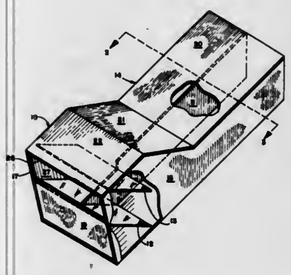


1. A rear projection screen having a viewer's side and a projection side, said rear projection screen comprising: a lenticular lens formed on said viewer's side and including a multiplicity of vertically extending lens units each being provided at its both sides with total reflection surfaces, said lenticular lens further including in the troughs between adjacent lens units a multiplicity of refraction elements which diffuse the light in the vertical direction.

4,550,978
THREE-DIMENSIONAL VIEWING DEVICE

Alvin A. Friedle, 5579 S. 2700 West, Roy, Utah 84067

Filed May 7, 1984, Ser. No. 607,804
Int. Cl.[4] G02B 7/18, 27/22
U.S. Cl. 350—138 4 Claims

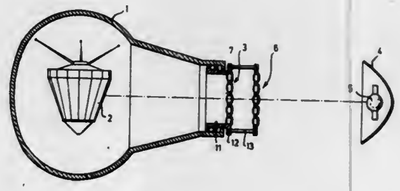


1. A viewing device for creating a stereoscopic effect comprising:
- (a) an elongated housing of generally rectangular cross-sectional contour having a partially open eye-directed extremity and fully open subject-directed extremity, upper and lower surfaces and opposed side panels, and a plane of symmetry that extends in the direction of elongation and perpendicularly bisects said upper and lower surfaces,
- (b) a divider panel positioned within said housing and perpendicularly disposed between upper and lower surfaces within said plane of symmetry in a manner to form two separate and identical viewing channels of rectangular cross-sectional configuration,
- (c) first flat reflector means mounted at that extremity of each of said viewing channels which is closest to the eye-directed extremity of the housing, said reflector means being perpendicularly disposed between said panels and forming an upwardly opening angle of about 135° with respect to the center axis of elongation of each viewing channel, and
- (d) second flat reflector means mounted directly above said first reflector means and parallel thereto, and adapted to receive light from said first reflector means and re-direct said light out of the eye-directed extremity of said housing on a path parallel to the axes of said channels.

4,550,979
TESTING APPARATUS INCLUDING A VACUUM-TIGHT RADIATION WINDOW

Hans-Jürgen Meier, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,187
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325581
Int. Cl.[4] G02B 7/00, 27/00
U.S. Cl. 350—321 6 Claims



1. In a testing apparatus equipped with a container wherein a device such as a satellite can be tested under outer-space conditions by subjecting the apparatus to radiation from a radiation source, the container having an opening for admitting the radiation into the interior thereof and the radiation source including a collector comprising: a vacuum-tight radiation window mounted on said container to conduct the radiation through said opening, said radiation window including frame means mounted on said container; and, a plurality of lens elements mounted in said frame means so as to be disposed one next to the other.

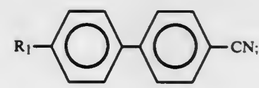
4,550,980
LIQUID CRYSTAL COMPOSITION AND DISPLAY ELEMENT INCLUDING SAME

Hiroshi Shingu, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

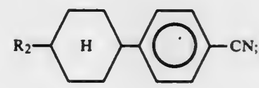
Filed Nov. 24, 1982, Ser. No. 444,285
Claims priority, application Japan, Dec. 4, 1981, 56-195152
Int. Cl.[4] G02F 1/13; C09K 3/34
U.S. Cl. 350—349 17 Claims

1. A liquid crystal composition for a guest-host type liquid crystal display, comprising at least one of each of compounds (1), (2) and (5) represented by the following general formulas:

(1)



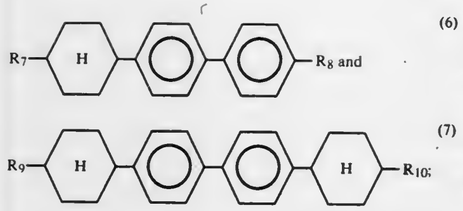
(2)



(5)



including at least one of each compound of the formulas (6) and (7) represented as follows:



(6)

(7)

and a mixture of an anthraquinone dye and an azo dye wherein R_1 represents a straight-chain alkyl group having from 2 to 8 carbon atoms, R_2 represents a straight-chain alkyl group having from 2 to 7 carbon atoms, R_5 represents a straight-chain alkyl group having 3 carbon atoms, R_6 represents a straight-chain alkyl group having 2 or 4 carbon atoms, R_7 represents a straight-chain alkyl group having 5 carbon atoms, R_8 represents a straight-chain alkyl group having 2 carbon atoms, R_9 represents a straight-chain alkyl group having 5 carbon atoms and R_{10} represents a straight-chain alkyl group having 3 carbon atoms, the compound represented by formula (1) being present between about 10 to 29 percent by weight, the compound represented by formula (2) being present between about 10 to 50 percent by weight, the compound represented by formula (5) being present between about 10 to 30 percent by weight, the compound represented by formula (6) being present between about 10 to 30 percent by weight and the compound represented by formula (7) being present between about 5 to 20 percent by weight, the compounds represented by formulas (1) and (2) being present collectively between about 20 to 70 percent by weight and the compounds represented by the formulas (6) and (7) being present collectively between about 10 to 40 percent by weight, said composition having a positive dielectric anisotropy.

4,550,981

LIQUID CRYSTALLINE ESTERS AND MIXTURES

Martin Petrzilka, Kaiseraugst; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

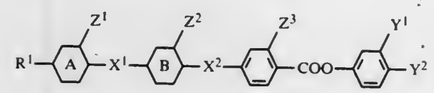
Filed Sep. 9, 1983, Ser. No. 530,830

Claims priority, application Switzerland, Sep. 30, 1982, 5757/82; Nov. 10, 1982, 6546/82; Jun. 27, 1983, 3499/83

Int. Cl.⁴ G02F *1/13;* **C09K** *3/34;* **C07C** *121/52, 54/70, 69/90, 79/26*

U.S. Cl. 350—350 R **25 Claims**

1. A compound of the formula:



I

wherein X^2 is —COO—; X^1 is p—C_6H_4—, p—C_6H_4—CH_2CH_2—, —CH_2CH_2—p—C_6H_4—, p—C_6H_4—COO— or —COO—p—C_6H_4—; ring A is a benzene ring or trans-1,4-cyclohexylene; ring B is a benzene ring; Z^1 and Z^2 individually are hydrogen or when positioned on a benzene ring which is not linked directly with a further ring via a single covalent bond, Z^1 and Z^2 also can be halogen, cyano or methyl; Z^3 is hydrogen, halogen, cyano or methyl; Y^2 is cyano, nitro, 2,2-dicyanovinyl or when Y^1 is hydrogen Y^2 also can be 2,2-dicyano-1-methylvinyl; Y^1 is halogen, cyano, C_1–C_3-alkyl or hydrogen; and R^1 is C_1–C_{12}-alkyl or when positioned on a benzene ring R^1 also can be C_1–C_{12}-alkoxy.

4,550,982

ALL-SOLID-STATE DISPLAY INCLUDING AN ORGANIC ELECTROCHROMIC LAYER WITH ION DONOR/ACCEPTOR

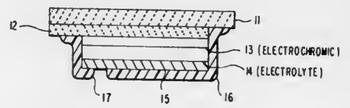
Yoshihiko Hirai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,465

Claims priority, application Japan, Nov. 9, 1981, 56-179311; Mar. 24, 1982, 57-46907; May 24, 1982, 57-87488; May 27, 1982, 57-90109; May 27, 1982, 57-90110; May 27, 1982, 57-90111

Int. Cl.⁴ G02F *1/17*

U.S. Cl. 350—357 **76 Claims**



1. An all-solid-state electrochromic display device comprising a substantially transparent electrode, a counter electrode, and an electrochromic layer between said transparent and said counter electrodes, wherein said electrochromic layer consists essentially of a polymer electrochromic film comprising at least one organic electrochromic material and at least one ionic material.

4,550,983

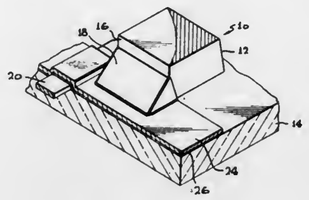
MAGNETO-OPTIC DEVICE FOR THE CONTROL OF ELECTROMAGNETIC RADIATION

William E. Ross, Woodland Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 9, 1983, Ser. No. 492,584

Int. Cl.⁴ G02F *1/09*

U.S. Cl. 350—376 **12 Claims**



1. A magnetic domain device comprising:
(a) a non-magnetic substrate transparent to electromagnetic radiation,
(b) a magnetic layer on said substrate,
(c) a mesa formed in said magnetic layer,
(d) a sloping sidewall extending outwardly from said mesa adjoining said substrate,
(e) a first electrical conductor positioned along a sidewall of said mesa adjoining said sloping sidewall,
(f) an electrical insulator on said first electrical conductor and at least said sloping sidewall, and
(g) a second electrical conductor positioned along said mesa at least on said sloping sidewall.

4,550,984

HEAD-MOUNTED OR HELMET-MOUNTED SIGHTING DEVICE

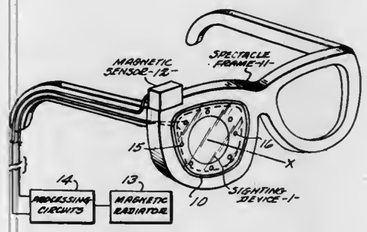
Jean C. Reymond, Paris, France, assignor to Thomson CSF, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,599

Claims priority, application France, Feb. 26, 1982, 82 03261

Int. Cl.⁴ G02F *1/21;* **G01C** *9/06;* **F21Q** *3/00*

U.S. Cl. 350—404 **7 Claims**



1. A sighting device comprising:
means for simultaneous visual display of the landscape and of an image which is projected to infinity on an optical line of sight, said visual display means utilizing an assembly of crystal plates in which a birefringent plate having parallel faces is placed between two plates having the function of optical polarizing filters consisting respectively of a polarizer and an analyzer to produce said image in the form of interference fringes localized at infinity and which are generated from the incident light emitted by the landscape under observation, said optical line of sight corresponding to the crystal axis of the birefringent plate which is cut at right angles to this direction;
means for indicating the direction of said line of sight with respect to a reference direction; and
means for visual display of preliminary information relating to orientation of the sighting direction including a set of electroluminescent diodes placed outside the field of view of the interference fringes, and auxiliary computing means for automatically initiating turn-on and winking operation of the diodes at a frequency which is variable as a function of the relative angular displacement of the optical line of sight with respect to a given sighting direction, and auxiliary detection means for determining said given sighting direction and for transmitting the corresponding information to said computing means.

4,550,985

LIGHT DEFLECTOR

Kiyoshi Hayashi, Takatsuki, Japan, assignor to Mita Industrial Co., Ltd., Japan

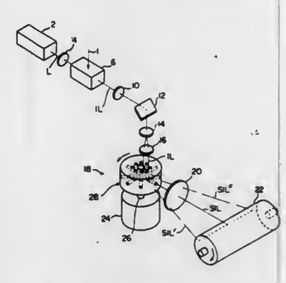
Filed Jun. 2, 1982, Ser. No. 384,316

Claims priority, application Japan, Jun. 17, 1981, 56-92353

Int. Cl.⁴ G02B *27/17;* **G03C** *1/10*

U.S. Cl. 350—6.3 **5 Claims**

1. A light deflector comprising a two-stage cylindrical rotating member having a small diameter portion and a large diameter portion and including at least one light transmitting member, each light transmitting member having an input terminal located on the peripheral side surface of said small diameter portion and a corresponding output terminal located on the peripheral side surface of said large diameter portion such that when said rotating member rotates, a light beam, entering an input terminal exits from the corresponding output terminal,



and is rotatingly scanned about the rotating axis of the rotating member.

4,550,986

LAYERED MIRRORS INCLUDING A COMPRESSIBLE LAYER AND A POLYURETHANE SKIN

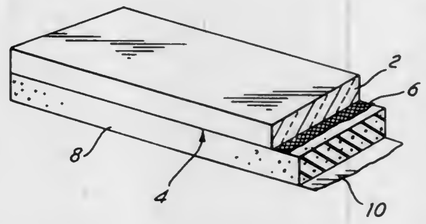
Roger J. Leach, 12 Tufton Gardens, Hurst Park, East Molesey, Surrey, England

Filed Jul. 12, 1983, Ser. No. 513,076

Claims priority, application United Kingdom, Jul. 14, 1982, 8220430; European Pat. Off., Dec. 8, 1982, 82306542.0

Int. Cl.⁴ G02B *5/08;* **B32B** *9/00*

U.S. Cl. 350—641 **7 Claims**



1. In a mirror structure comprising a transparent facing lamina backed by a layer of reflecting material and wherein said layer of reflecting material is bonded to a flexible and resiliently compressible layer of polymeric foam, the improvement wherein a flexible and substantially impermeable polyurethane skin is heat bonded to the face of the foam layer opposite that to which said layer of reflecting material is bonded.

4,550,987

SMALL SIZE TELEPHOTO LENS

Satoru Tachihara, Tokyo, Japan, assignor to Asahi Optical Co., Ltd., Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,379

Claims priority, application Japan, May 13, 1982, 57-80799

Int. Cl.⁴ G02B *13/02*

U.S. Cl. 350—454 **6 Claims**

1. A six-element telephoto lens sytem comprising, in order from an object, a first positive lens, a second negative lens, third and fourth positive-meniscus lenses having convex surfaces directed toward the object, a fifth negative lens, and a sixth positive lens, said lens system being arranged to meet the following conditions

(1) $0.4f < f_{1,2,3} < 0.75f$
(2) $0.35f < f_{1,2,3,4} < 0.6f$
(3) $0.65f < f_1 < 0.8f$
(4) $d_2 < 0.02f$
(5) $0.2f < |f_{5,6}| < 0.45f$, $f_{5,6} < 0$

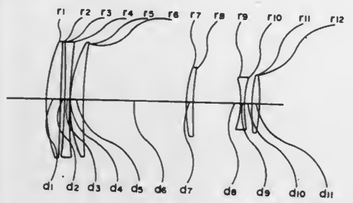
(6) $0.05 < n_5 - n_6$

where

f is the focal length of the overall lens system,

$f_{1, 2, 3}$ is the combined focal length of the first through third lenses,

$f_{1, 2, 3, 4}$ is the combined focal length of the first through fourth lenses,



f_1 is the focal length of the first lens,

d_2 is the distance between the first and second lenses,

$f_{5, 6}$ is the combined focal length of the fifth and sixth lenses,

n_5 is the refractive index of the fifth lens, and

n_6 is the refractive index of the sixth lens.

4,550,988

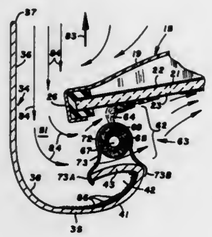
SIDE REAR VIEW MIRROR CLEANING SYSTEM

Benjamin P. Harder, 141 Shadywood La., Delano, Minn. 55328, and Willard J. Harder, 8556 Hiawatha Ave., Eden Prairie, Minn. 55344

Filed Sep. 1, 1983, Ser. No. 528,620

Int. Cl.[4] G02B *5/08*

U.S. Cl. 350—584 **35 Claims**



1. An apparatus for clearing foreign material from the viewing mirror surface of a rear view mirror adapted to be mounted on the side of a vehicle, said mirror having opposite side edges, comprising:

air deflector means for directing air across the mirror surface, means for mounting the air deflector means adjacent one side edge of the mirror, said air deflector means having a generally upright first section extended generally in the direction of forward movement of the vehicle, a curved second section joined to the first section to direct air around said one side edge of the mirror, and a third section joined to the second section to direct air toward the mirror surface, said third section having a curved end portion, said end portion having an inwardly turned lip providing a generally upright pocket for collecting particles separated from the air moving to the mirror surface, said air moving across the mirror surface, and means located adjacent said third section operable to discharge fluid onto the mirror surface, said fluid and air moving across the mirror surface to clear the mirror surface of foriegn material and fluid thereon.

4,550,989

RIMLESS SPECTACLES

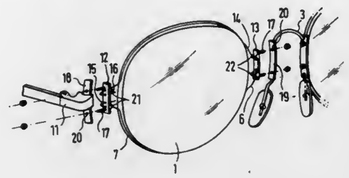
Klaus Hafner, Knappenweg 7, Stuttgart, Fed. Rep. of Germany

Filed Dec. 3, 1982, Ser. No. 446,672

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1981, 3148166; Oct. 27, 1982, 3239700

Int. Cl.[4] G02C *1/08, 1/04, 5/00*

U.S. Cl. 351—103 **4 Claims**



1. Rimless spectacles comprising:

a pair of lenses each having a rim and opposite faces;

a bridge piece connected between said lenses, said bridge piece having at least one fixed projection on either side thereof, each fixed projection extending over a portion of one face of each lens adjacent the rim of each lens, said bridge piece having at least one bendable clamping projection spaced from at least one fixed projection and bent into clamping engagement with another face of each lens adjacent the rim of each lens so that said bridge piece is clamped to each lens;

an end-piece connection to each lens on a side of each lens substantially opposite said bridge piece, each end piece having at least one fixed projection for engagement over one face of one of said lenses and at least one bendable clamping projection engaged with an opposite face of each lens and bent into clamping engagement with each lens for clampingly connecting each end-piece to each lens respectively;

a thread engaged completely around the rim of each lens and fixed to said bridge piece and one end-piece for holding said lenses to said bridge piece and end-pieces;

each end-piece including four holes, end portions of each thread extending into said holes of a respective end-piece to form a pair of loops, said bridge piece including at least two holes on each side thereof adjacent each lens respectively for receiving each thread respectively to form at least one loop, said loops being increaseable in size to tighten the connection between said end-pieces, said bridge piece and said lenses, and reducible in size to loosen the connection for permittng repositioning of said bridge piece and end-pieces.

4,550,990

ARRANGEMENT FOR THE CARRYING OUT OF EYE EXAMINATION

Stephan Trispel, and Günter Rau, both of Aachen, Fed. Rep. of Germany, assignors to Forschungsgesellschaft für Biomedizinische Technik e.V., Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,255

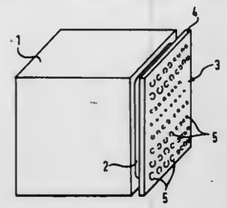
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133608

Int. Cl.[4] A61B *3/02*

U.S. Cl. 351—243 **9 Claims**

1. An arrangement for the carrying out of eye examinations by means of a transparent optotype mask carrying a variety of optotypes illuminated from the rear, characterized by the fact that the optotype mask is arranged in front of a display device whose brightness, color, contrast and partial or complete surface illumination can be controlled for the carrying out of different eye tests, and on which additional static or moving structures can be generated and shown in the field of view of the optotype mask for the carrying out of the eye tests; and that

a display control device for the controlling of the brightness, color, contrast or the partial or complete surface illumination and the generation of additional static or moving structures is connected to the display device; and a programmable control device, particularly one or more microprocessors for the pro-



grammable operation of the display control device and of the exchange and/or position control device, by which, for the partial or complete automating of the eye test, both the changing and/or positioning of the optotype masks and the control of the display surface and/or of the display presentation can be programmed.

4,550,991

DEVICE FOR DETECTING CODE ON FILM CARTRIDGE

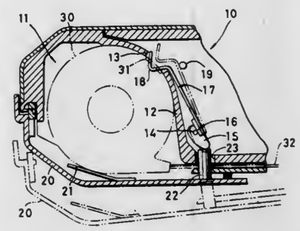
Sunao Ishizaka, and Osamu Maida, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,310

Claims priority, application Japan, Dec. 2, 1983, 58-186808[U]

Int. Cl.[4] G03B *7/24*

U.S. Cl. 354—21 **2 Claims**



1. In a camera of the type capable of using a film cartridge having a code indicia including a plurality of electrically conductive contacts representative of one or more features of a film encased in said film cartridge, a code indicia detecting device comprising:

(a) wall members which define a film chamber for receiving therein said film cartridge and which are formed with openings which are in opposed relationship with said code indicia on said film cartridge;

(b) detection means which has electrical contact means which in turn can be moved between first positions at which said electrical contact means are extended into said film chamber through said openings of said wall members and second positions at which said electrical contact means are retracted away from said film chamber, said detection means being capable of deriving an electrical signal from said code indicia through said electrical contact means;

(c) a back member which opens or closes said film chamber; and

(d) means for operatively connecting said detection means to said back member in such a way that when said back member closes said film chamber, said electrical contact means are forced into their first positions.

4,550,992

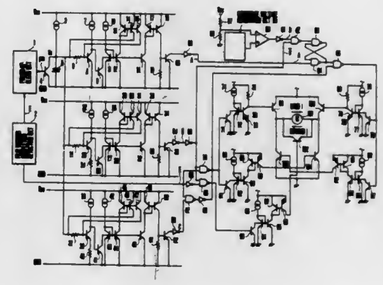
MOTOR DRIVE CONTROL CIRCUIT

Masanori Ohtsuka, Kanagawa, and Ryuji Tokuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 678,668

Int. Cl.[4] G03B *1/18*

U.S. Cl. 354—173.11 **7 Claims**



1. A motor drive control circuit for a camera, comprising:

a motor for feeding a film;

a timer for time counting for a predetermined period of time from a certain point of time after commencement of a driving operation of the motor;

comparison means for comparing a power supply voltage with a reference voltage during the time counting process of said timer, said comparison means being arranged to generate an operation signal when said power supply voltage is above said reference voltage and to generate an inhibiting signal when the power supply voltage is below the reference voltage; and

holding means for holding the output signal produced from said comparison means, said holding means being arranged to permit a further operation of the camera when it holds said operation signal and to inhibit the further operation of the camera when it holds said inhibiting signal.

4,550,993

DEVICE FOR PROVIDING A CAMERA SYSTEM WITH AN INFORMATION FOR A FOCUS ADJUSTMENT

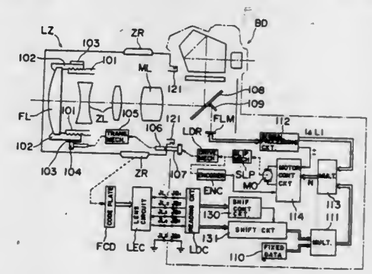
Nobuyuki Taniguchi, Tondabayashi; Norio Ishikawa, Osaka; Yasuaki Akada, Sakai; Takeshi Egawa, Sennan, and Kunio Kawamura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1984, Ser. No. 575,681

Claims priority, application Japan, Feb. 1, 1983, 58-15860; Jul. 6, 1983, 58-123993

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—402 **8 Claims**



8. A device for processing light information comprising:

means for receiving light including a plurality of photosensitive elements each capable of accumulating electric

charges generated in response to light falling on each of the photosensitive elements, respectively;

means for taking out the electric charges accumulated in each of the photosensitive elements to serially produce electric signals corresponding thereto;

first means for causing the taking out of the electric charges by the taking out means at a lapse of a variable time after an initiation of accumulating the electric charges, the variable time being prolonged with a greater degree for the lower light level to be received by the receiving means;

second means for causing the taking out of the electric charges by the taking out means at a lapse of a predetermined constant time after the initiation of accumulating the electric charges on a condition that the lapse of the variable time is not completed prior to the lapse of the predetermined constant time; and

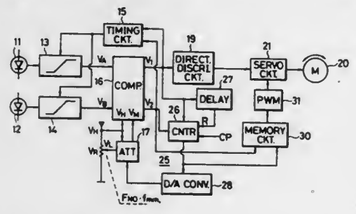
means for amplifying the electric signals produced by the taking out means with the taking out of the electric charges caused by the second causing means.

4,550,994

FOCUSING CONTROL DEVICE

Takashi Maruyama, Suwa, Japan, assignor to Chinon Kabushiki Kaisha, Nagano, Japan

Filed Jul. 10, 1981, Ser. No. 282,142
Claims priority, application Japan, Aug. 6, 1980, 55-107899
Int. Cl.⁴ G03B *3/10*
U.S. Cl. 354—402 **4 Claims**



1. In a lens focusing device of the type having first and second range finding elements for generating first and second signals, first and second integrator circuits respectively receiving said first and second signals and providing outputs relative to one another according to the state of focus, the output of said first integrator circuit being larger than the output of said second integrator circuit in the case of a front focusing condition and the output of said second integrator circuit being larger than the output of said first integrator circuit in the case of a rear focusing condition, and a direction discriminating means, responsive to the outputs of said first and second integrator circuits, for determining the direction of rotation of a lens drive motor, the improvement comprising the combination of

shift range detecting means, responsive to said direction discriminating means, for detecting a difference (VH−Vx) between a first predetermined threshold value (VH) first reached by the larger of the outputs of said first and second integrator circuits and the smaller value (Vx) of the outputs of said first and second integrator circuits; and

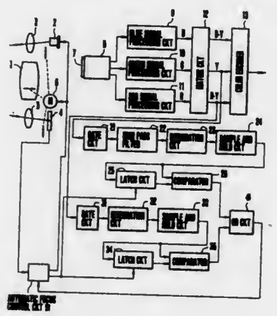
pulse width determining means, responsive to said shift range detecting means, for determining a pulse width utilized for energizing said lens drive motor in the ratio of said difference (VH−Vx) to a difference (VH−VL) between said threshold value (VH) and a second threshold value (VL).

4,550,995

AUTOMATIC FOCUS ADJUSTING DEVICE

Masamichi Toyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,336
Claims priority, application Japan, Dec. 2, 1983, 58-228682
Int. Cl.⁴ G03B *3/00*; H04N *5/38*
U.S. Cl. 354—403 **4 Claims**



1. An automatic focus adjusting device comprising:

(a) first detecting means for detecting that an image of an object has gone out of focus;

(b) second detecting means for detecting that an image of an object has moved; and

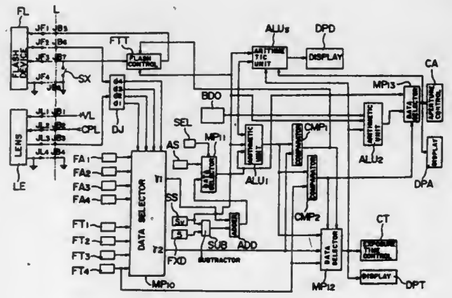
(c) signal producing means receptive of signals from said first and said second detecting means for producing a signal contributing to a focusing action.

4,550,996

FLASH PHOTOGRAPHY SYSTEM

Nobuyuki Taniguchi, Tondabayashi; Masaaki Nakai, Nara; Takanobu Omaki, Sennan; Hiroshi Hosomizu, Nara; Masatake Niwa, Sakai; Toru Inoue, Toyonaka, and Minoru Sekida, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1983, Ser. No. 544,871
Claims priority, application Japan, Oct. 22, 1982, 57-186640; Oct. 29, 1982, 57-190996; Nov. 16, 1982, 57-201382; Nov. 29, 1982, 57-209844; Dec. 16, 1982, 57-221510
Int. Cl.⁴ G03B *7/00, 15/03*
U.S. Cl. 354—416 **27 Claims**



1. A flash photography system, comprising:

(a) first light measuring means for measuring ambient light;

(b) film sensitivity output means for producing a signal representing the sensitivity of the photographic film used in the camera;

(c) exposure time output means for producing exposure time data for flash light photography;

(d) first aperture value output means for calculating a desired first diaphragm aperture value for flash light photograpny based on the data obtained by said first iight measuring means, said film sensitivity output means and said exposure time output means;

(e) second aperture value output means for producing a second aperture value independent of the light value of the ambient light;

(f) data selecting means for outputting said first diaphragm aperture value or said second aperture value;

(g) shutter control means for controlling the camera shutter based on the exposure data of said exposure time output means;

(h) aperture control means for controlling the actual diaphragm aperture size based on the output of said data selecting means;

(i) means for effecting flash light emission;

(j) second light measuring means for measuring the flash light emitted to, and reflected from, a photographic object;

(k) means for integrating the output of said second light measuring means; and

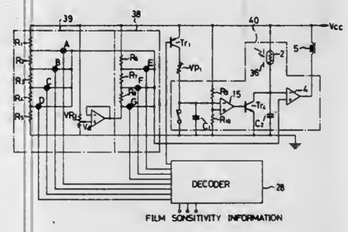
(l) means for producing a signal to stop the emission of the flash light when the output of said integrating means reaches a predetermined value.

4,550,997

AUTOMATIC EXPOSURE CONTROL CIRCUIT

Kohichi Nishi, Yokohama, and Akira Takahashi, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Nov. 16, 1984, Ser. No. 672,344
Claims priority, application Japan, Nov. 18, 1983, 58-217575
Int. Cl.⁴ G03B *7/083*
U.S. Cl. 354—459 **1 Claim**



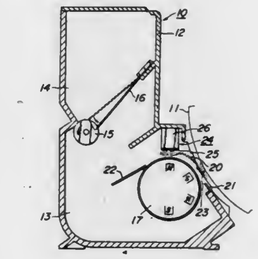
1. An automatic exposure control circuit of a photographing camera including an electromagnet for closing a shutter blade thereof when energized, a time constant circuit having a light receiving element and a capacitor for charging said capacitor upon an opening operation of said shutter and a driving circuit having inputs supplied with a charge voltage of said capacitor and a predetermined reference voltage for actuating said electromagnet to close said shutter blade when said charge voltage becomes equal to said reference voltage, comprising a film sensitivity information detector for electrically detecting the film sensitivity information to provide an output signal corresponding to the film sensitivity information detected, a film sensitivity switching means responsive to said output signal from said film sensitivity information detector for changing said reference voltage to be applied to said driving circuit and a γ value correcting means responsive to a γ value of said light receiving element for correcting a voltage to be applied to said film sensitivity switching means and hence said reference voltage to be applied to said driving circuit.

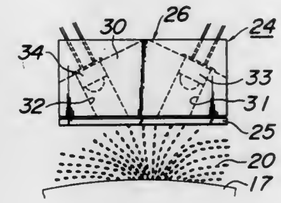
4,550,998

TONER CONCENTRATION DETECTING DEVICE

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,084
Claims priority, application Japan, Apr. 16, 1981, 56-57633
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **18 Claims**





1. A device for detecting toner concentration of a dry-type, two-component, magnetic developer consisting of magnetic carrier powders and toner powders contained in a housing of a developing apparatus having magnetic roll means including a plurality of magnetic poles of successively different polarities to form a plurality of independent ear-ups of the developer which correspond to the magnetic poles and are brought in contact with a member to be developed, said device comprising:

transparent plate-like means arranged to be brought in contact with the ear-ups of the developer which are held and carried by said magnetic roll means and have a lower developer concentration as compared with other portions of the developer than the ear-ups, wherein the surface of the transparent plate-like means is cleaned by the contact thereof with the ear-ups of the developer;

means for projecting light toward the ear-ups of the developer through the transparent plate-like means;

means for receiving light reflected by the ear-ups of the developer through the transparent plate-like means to produce a photoelectrically converted signal representing the toner concentration of the developer; and

means for optically separating from each other an optical path from the light projecting means to the transparent plate-like means and an optical path from the transparent plate-like means to the light receiving means.

4,550,999

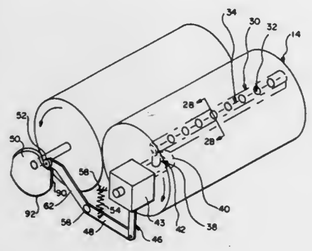
ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING TRANSFER HOLD-DOWN PUMP

Carl P. Anderson, Menlo Park, Calif., assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,026
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 TR **14 Claims**

1. In an electrophotographic copying apparatus in which

electrically charged toner of one polarity is transferred from an oppositely electrically charged surface of a photoconductive drum to the front side of a blank sheet for transforming said front side of the blank sheet into an intended copy as the back side of the blank sheet engages the surface of a transfer drum positioned adjacent said photoconductive drum, the transfer of toner occurring within a transfer nip defned by said photoconductive drum and said transfer drum, the improvement comprising



a cam rotating in a timed sequence relative to said transfer drum,

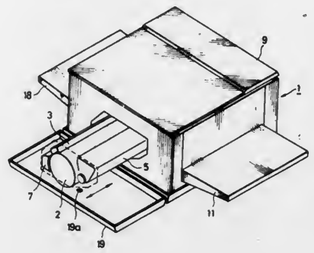
a vacuum pump located adjacent said transfer drum and actuated by said cam and in communication with the surface of said transfer drum to create a vacuum at said back side of the blank sheet, whereby said paper is held to the surface of said transfer drum by ambient air pressure and said vacuum, overcoming the electrostatic attraction of the blank sheet to said photoconductive drum.

4,551,000
PROCESS KIT AND AN IMAGE FORMING APPARATUS USING THE SAME
Shinji Kanemitsu, Ichikawa; Shigeyoshi Onoda, Kawasaki; Fumio Nishino, Tokyo; Akihiro Nomura; Morikazu Mizutani, both of Kawasaki, and Hiroshi Nitanda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 22, 1982, Ser. No. 360,686
Claims priority, application Japan, Apr. 1, 1981, 56-48915
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **21 Claims**

2. An image forming apparatus, comprising:

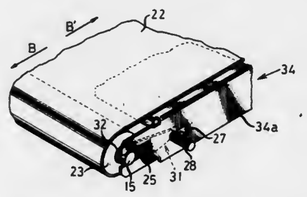
a process kit including process means provided in said process kit, said process means comprising an image bearing member and means actable thereon for repetitive image formation, and supporting means for supporting said process means as a unit, and means for memorizing an amount of use of said process kit;

a main assembly for cooperating with said process kit to form an image, said main assembly including means for forming a space for receiving said process kit and a guide for mounting said process kit into said main assembly and demounting said process kit from said main assembly; and



means for providing information relating to the amount of use of said process kit in accordance with the content of said memory means.

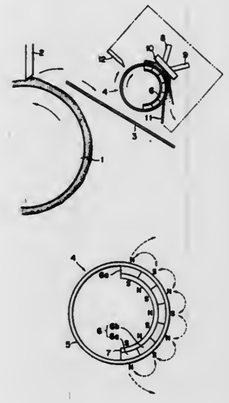
4,551,001
RECORDING APPARATUS USING A RECORDING MEMBER IN ENDLESS BELT FORM
Takashi Yokota, No. 29-19, Tamazutsumi 1-chome, Setagaya-ku, Tokyo, Japan
Filed Jul. 19, 1983, Ser. No. 515,357
Claims priority, application Japan, Jul. 20, 1982, 57-125133
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 BE **2 Claims**



1. In a recording apparatus including a housing, a recording member unit in the form of an endless photoconductive belt, a plurality of rollers supported releasably in said housing and on which said belt is entrained and guided, biasing means for biasing at least one roller away from the others to tension said belt, tension releasing means in the form of a manually actuable grip for releasing the biasing means,

the improvement wherein said housing includes a stopper portion which engages said manual grip when it is attempted to insert said recording member unit in said housing in a condition where the biasing means is released, whereby the recording member unit is prevented from being inserted into said housing in said condition.

4,551,002
DEVELOPER DENSITY DETECTING APPARATUS
Matsuyuki Aoki, and Shuji Tanaka, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jun. 1, 1984, Ser. No. 616,354
Claims priority, application Japan, Oct. 4, 1983, 58-184382
Int. Cl.⁴ G03G *15/06*
U.S. Cl. 355—3 DD **3 Claims**



1. An apparatus for detecting developer density in a copying machine employing a developing roll, comprising:

a plate for receiving scraped off developer from said developing roll;

a detector roll assembly rotatably supported adjacent to said developing roll and above said plate, said detector roll assembly comprising a sleeve and a plurality of transversely extending magnets attached to the inner peripheral surface of said sleeve, said magnets being arranged to have different polarity alternately and terminating in the same polarity at both peripheral ends, magnets positioned at both peripheral ends having a greater magnetic flux density than that of other magnets;

a conductive glass for receiving toners from said detector roll assembly; and

means for photoelectrically detecting developer density from the toners adhered to said conductive glass.

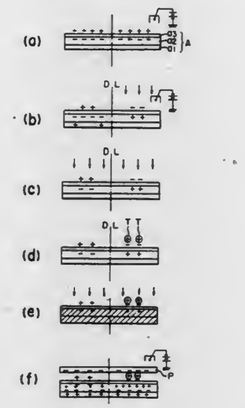
4,551,003
ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS THEREFOR
Michio Ito, Kawasaki; Nobuo Kitajima, Toride; Masanao Kasai, Tokyo, and Shunichi Ishihara, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 270,587, Jun. 4, 1981, abandoned, which is a division of Ser. No. 31,592, Apr. 19, 1979, Pat. No. 4,286,032. This application Aug. 5, 1983, Ser. No. 520,580
Claims priority, application Japan, Apr. 27, 1978, 53-50629; Jan. 31, 1979, 54-10178
Int. Cl.⁴ G03G *15/00, 15/02*
U.S. Cl. 355—3 R **15 Claims**

1. An electrophotographic apparatus including a movable photosensitive member for use in making repeated image formations, wherein the photosensitive member essentially comprises a conductive layer, an insulating surface layer, and a photoconductive layer of a particular polarity type material interposed between said conductive layer and said insulating surface layer, said apparatus comprising:

means for forming an electrostatic latent image on the photosensitive member;

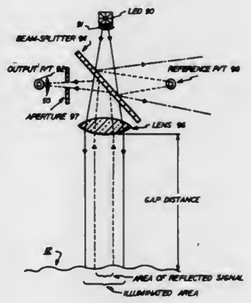
means for applying a developer to the latent image bearing photosensitive member;

corona discharging means, disposed downstream of said developer applying means with respect to movement of said photosensitive member, for applying a corona discharge to said photosensitive member bearing said developed image, said discharge having a polarity which is the same as the polarity type of the photoconductive layer, to form an electric field across the photoconductive layer of said photosensitive member; and



means, disposed downstream of said corona discharging means with respect to movement of said photosensitive member, for exposing the photosensitive member to light to eliminate said electric field across the photoconductive layer whereby the lowering of the image contrast is substantially prevented.

4,551,004
TONER CONCENTRATION SENSOR
Demetris E. Paraskevopoulos, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 198,993, Oct. 21, 1980, abandoned. This application Aug. 24, 1984, Ser. No. 644,147
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **9 Claims**



1. Apparatus for monitoring toner concentration including

a. a light emitting diode (LED)

b. a first phototransistor,

c. a photoreceptor surface,

d. a beam splitter in communication with the LED and the phototransistor,

e. a first lens disposed between the beam splitter and the photoreceptor surface for collimating the light from the LED, a portion of the light from the LED transmitted through the beam splitter and the lens to the photoreceptor surface, a portion of the collimated light reflected from

the photoreceptor surface being transmitted back through the first lens and reflected from the beam splitter to the phototransistor to compensate for variable distance between the first lens and the photoreceptor surface.

4,551,005

METHOD OF FORMING IMAGES OF SENSOR PATTERNS IN EFFECTING IMAGE DENSITY CONTROL OF ELECTROPHOTOGRAPHIC COPYING APPARATUS

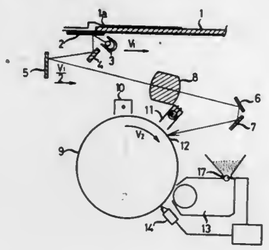
Yasushi Koichi, Yamato, Japan, assignor to Ricoh Company Ltd., Japan

Filed Apr. 14, 1983, Ser. No. 485,015

Claims priority, application Japan, Apr. 16, 1982, 57-62592; Apr. 20, 1982, 57-64639; Jun. 24, 1982, 57-107525; Jun. 28, 1982, 57-109820

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—8 **4 Claims**



1. A method of forming a visible image of a sensor pattern on a photosensitive member of an electrophotographic copying apparatus having a variable magnification or reduction rate suitable for use in conjunction with a method of controlling image density of copies produced by the copying apparatus, comprising the steps of:

placing the sensor pattern of a reference density substantially flush with a surface on which a document to be copies is placed;

exposing the surface of the photosensitive member that has been electrically charged by means of a charger to an optical image of said sensor pattern by exposing means to form a latent image of the sensor pattern in a region of the photosensitive member outside a document image forming region; and

developing said latent image of the sensor pattern by developing means to obtain a visible image of the sensor pattern;

said visible image of the sensor pattern being used in said method of controlling image density in such a manner that the density of said visible image of the sensor pattern is sensed by means of a photoelectric element which produces an electric signal used for controlling the density of an image of a copy of the document;

wherein said method of forming a visible image of a sensor pattern is characterized by further comprising the step of:

erasing an electric charge from the surface of the photosensitive member excepting the document image forming region and the region of the latent image of the sensor pattern in an erasing step in which the electric charge is removed by irradiation of the region with light beams performed between the step of electrically charging the surface of the photosensitive member and the step of developing the latent image of the sensor pattern, to thereby restrict the region of said latent image of the sensor pattern to a region located within a region of the surface of the photosensitive member on which an image of the sensor pattern would be formed when copying is performed at a minimum rate of reduction of the electrophotographic copying apparatus.

4,551,006

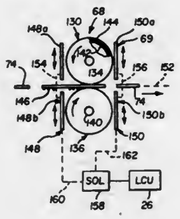
THERMAL CONSERVATION APPARATUS

Warren G. Elvin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,652

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 355—14 FU **10 Claims**



1. In reproduction apparatus in which copy sheets carrying unfused images are moved successively along a path through a heated fuser, thermal conservation apparatus comprising:

a selectively moveable gate assembly located adjacent to said heated fuser in said copy sheet path; and

control means, coupled to said gate assembly, for opening said assembly to pass a copy sheet and for closing said gate assembly when a copy sheet is not passing to minimize the loss of thermal energy from said fuser along said copy sheet path.

4,551,007

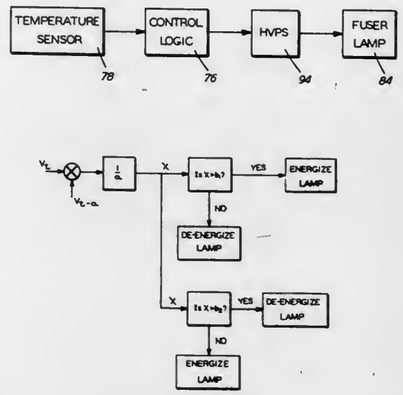
CONTROLLER FOR A FUSING DEVICE OF AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Michael R. Elter, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 11, 1984, Ser. No. 609,179

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—14 FU **14 Claims**



8. An electrophotographic printing machine of the type having a fusing apparatus for fusing toner powder images transferred to copy sheets during a copy run of the printing machine, wherein the improved fusing apparatus includes:

means for applying heat to at least the toner powder images on successive copy sheets advanced, in seriatum, thereto for substantially permanently fixing the toner powder images to the copy sheets;

means for detecting the temperature of said heat applying means and transmitting a signal indicative thereof; and

means for controlling said heat applying means, said controlling means comparing the time derivative of the signal received from said detecting means at initialization of the copy run to a first constant and energizing said heat applying means when the first constant is less than the time derivative of the signal, said controlling means comparing the time derivative of the signal received from said detecting means after the completion of the copy run to a second constant and de-energizing said heat applying means when the second constant is less than the time derivative of the signal, and, after the time derivative of the signal is less than the first constant, said controlling means comparing the signal received from said detecting means during the copy run to a third constant and generating an error signal indicative of the difference therebetween to control said heat applying means.

4,551,008

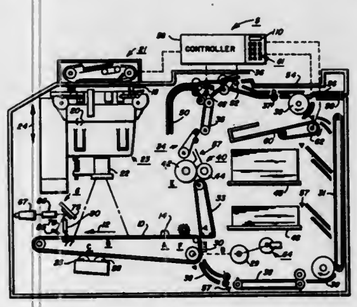
IMAGE ANNOTATOR FOR USE WITH PRINTING AND COPYING MACHINES

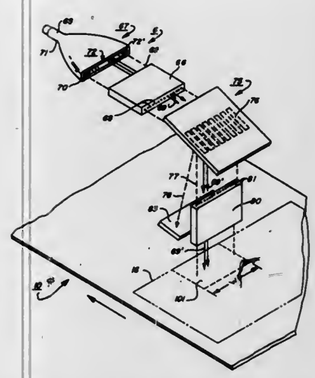
Martin E. Banton, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1983, Ser. No. 564,256

Int. Cl.⁴ G03G *15/04*

U.S. Cl. 355—14 E **9 Claims**





1. An annotator for use with a copying or printing machine of the type having a recording member such as a photoreceptor; charging means for uniformly charging the recording member in preparation for imaging; means for exposing the recording member to produce a latent electrostatic copy image on the recording member; developing means for developing images on the recording member; and transfer means for transferring developed images to a copy sheet, comprising:

(a) an array of flexible reflective fingers, said fingers being selectively movable between a deflected and an undeflected position;

(b) a light source, said light source being arranged to impinge light across said array of fingers, said fingers reflecting said light in one of said deflected and undeflected positions onto said recording member;

(c) means to apply a deflection potential to discrete ones of said fingers in response to an image signal representing the annotated image to thereby move said discrete ones of said flexible fingers to said deflected position whereby said array produces a light pattern corresponding to said image signal for exposing said recording member and creating an annotated image thereon; and

(d) means for synchronizing input of the image signals with the position of said copy image on said recording member whereby to create said annotated image within the borders of said copy image.

4,551,009

ELECTROSTATIC COPYING APPARATUS

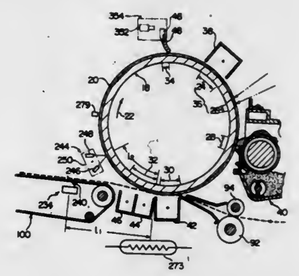
Yutaka Shigemura, Takarazuka; Hiroshi Kimura, Habikino; Masahiko Hisajima, Osaka; Isao Yada, Neyagawa; Shinobu Satonaka, Toyonaka, and Seiji Kaminaga, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Dec. 20, 1982, Ser. No. 451,184

Claims priority, application Japan, Dec. 21, 1981, 56-207562; Dec. 28, 1981, 56-212707; Dec. 28, 1981, 56-198684[U]; Dec. 29, 1981, 56-210298; Dec. 29, 1981, 56-210299; Jan. 13, 1982, 57-4216; Jan. 18, 1982, 57-6657; Jan. 19, 1982, 57-7090

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—15 **6 Claims**



1. An electrostatic copying apparatus comprising

an endless photosensitive member to be rotated sequentially through a latent electrostatic image-forming zone, a developing zone, a transfer zone and a cleaning zone,

a latent electrostatic image-forming means for forming a latent electrostatic image on said photosensitive member in said electrostatic image-forming zone,

a developing means of the magnetic brush type for applying a toner to said latent electrostatic image on said photosensitive member in said developing zone to develop it into a toner image,

a copying paper conveying means for conveying a copying paper through said transfer zone, said conveying means being adapted to convey selectively at least a short copying paper having a length smaller than the total length of said photosensitive member and a long copying paper having a length greater than the total length of said photosensitive member,

a transfer means for transferring said toner image on said photosensitive member to the copying paper in said transfer zone, and

a cleaning blade to be selectively held in said cleaning zone between an operating position at which it is kept in contact with the surface of said photosensitive member and a non-operating position at which it is isolated from said photosensitive member; characterized in that said apparatus further comprises

a detecting means for detecting the copying paper to determine whether it is the short or long copying paper, and

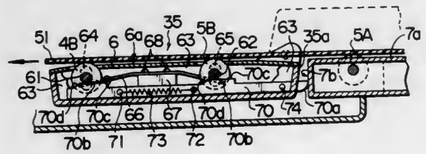
a cleaning control means which, when said copying paper conveyed by said paper conveying means is the long one, holds said cleaning blade at said operating position for a predetermined period of time so that after the transfer, the toner remaining on said photosensitive member is removed by said cleaning blade in said cleaning zone, and when said copying paper conveyed by said paper conveying means is the short one, holds said cleaning blade at said non-operating position and maintains said photosensitive member in rotation for a predetermined period of time while said latent electrostatic image-forming means is out of operation, so that after the transfer, the toner remaining on said photosensitive member is removed by said developing means of the magnetic brush type in said developing zone.

4,551,010

ORIGINAL CONVEYING APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

Kiyoshi Miyashita, Hachioji; Fumitaka Ozeki, Inagi, and Hiroshi Tsuda, Mitaka, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,262
Claims priority, application Japan, Oct. 23, 1979, 54-136733
Int. Cl.⁴ G03B *27/32, 27/52*
U.S. Cl. 355—25 **8 Claims**



1. An original conveying apparatus for an electrophotographic copying machine of an original travelling type, comprising;

a drive roller unit;

a follower roller unit including an original guide surface for guiding an original being conveyed, which surface is adapted to be swingably moved between a first position cooperating with said drive roller unit for conveying a single sheet-shaped original therebetween and a second position for conveying an original having substantial thickness where the original guide surface is being deployed to provide an extension of an original conveying path on the upper surface of the copying machine, said follower roller unit including follower rollers which are movable below said guide surface and are resiliently cooperable with associated drive rollers of the drive roller unit which is provided on the copying machine, to convey the single sheet-shaped original in the first position and which are resiliently urged to partly project through said original guide surface;

a holding member slidably disposed within the follower roller unit to be displaceable between first and second positions in interlocked relationship with the movement of the follower roller unit for allowing the movement of the follower rollers when in the first position, and preventing said follower rollers from moving below said guide surface when in the second position, to forcibly maintain them in a non-resilient manner in said second position partly projecting above the guide surface for rollingly supporting an original having substantial thickness delivered to the follower roller unit by said drive roller unit;

said follower unit further including resilient bias means normally urging said holding member toward its first position; and

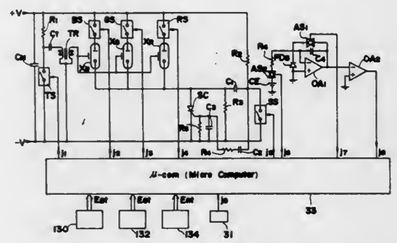
a stationary surface for urging said holding member to its second position when said follower roller unit is moved to its second position.

4,551,011

LIGHT SOURCE FOR EXPOSURE

Yoshio Yuasa, Osaka; Hidetoshi Yasumoto, Tondabayashi; Nobukazu Kawagoe, Sakai; Kazuhiko Naruse, Nabari, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP82/00462, § 371 Date Aug. 9, 1983, § 102(e) Date Aug. 9, 1983, PCT Pub. No. WO83/02171, PCT Pub. Date Jun. 23, 1983
PCT Filed Dec. 9, 1982, Ser. No. 527,515
Claims priority, application Japan, Dec. 11, 1981, 56-200496
Int. Cl.⁴ G03B *27/72;* H05B *37/00*
U.S. Cl. 355—35 **10 Claims**



1. An improved flash illumination system having a microprocessor-based control circuit for controlling the amount of exposure light, comprising:

means for emitting a plurality of pulses of light;

means for providing an exposure signal representative of the value of the total amount of desired light exposure;

calculating means for dividing a light exposure value into a plurality of identical light pulses of a fixed duration and quantity of light;

a detector unit for monitoring the emitted pulses of light and producing a representative signal of the total value of light measured;

means for activating the calculating means to calculate from the exposure signal a first set of identical light pulses of a fixed duration and quantity of light, and causing the means for emitting pulses of light to produce the first set of pulses; and

means for comparing the exposure signal with a measured representative signal of the first set of pulses and producing a difference signal, the calculating means then providing a second set of identical light pulses of a lesser quantity of light based on the difference signal whereby the second set of pulses are emitted by the means for emitting pulses of light.

4,551,012

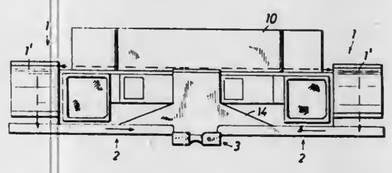
MICROFILM CAMERA FOR FILMING PUNCH CARDS

Josef Schaut, Freiher von Stein Strasse 8, 6367 Karben 1, and Peter Rüppel, Söderweg 39, Bad Nauheim, both of Fed. Rep. of Germany

Filed Aug. 16, 1984, Ser. No. 642,061
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329804; Aug. 18, 1983, 3320806
Int. Cl.⁴ G03B *27/48, 27/50, 27/32, 27/52*
U.S. Cl. 355—50 **12 Claims**

1. A microfilm camera for filming punch cards, consisting of a camera box containing the exposing and processing facilities and with punch card-conveying elements and at least one lateral discharge slot and a punch card collector disposed following said slot, whereby a punch card-reversing facility is

designed and arranged downstream of the at least one slot and in the feeding direction upstream of the collector in a way such



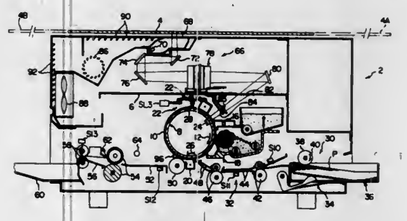
that the punch cards arrive in the collector with their inscribed surface facing down.

4,551,013

ELECTROSTATIC COPYING PROCESS

Masahiro Yoshioka, Matsubara; Masahiro Murakami, Shijonawate; Yoichiro Irie, Suita; Tsugio Nakanishi, Osaka; Eiji Tsutsui, Amagasaki; Noriyuki Iwao, Kobe; Junichi Hirobe, Osaka, and Takahiro Wakikaido, Yao, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Sep. 27, 1982, Ser. No. 424,943
Claims priority, application Japan, Nov. 30, 1981, 56-192395
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—55 **4 Claims**



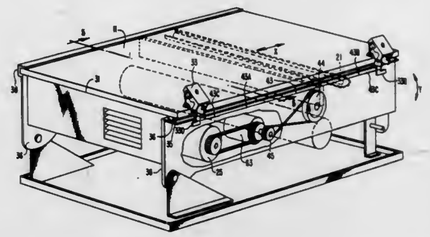
1. In a process for electrostatic copying at variable ratios, including projecting the image of an original document at a variable ratio onto a supporting base having a photosensitive member disposed on the surface thereof and having a paper-separating nonimage area formed outwardly of one side edge of the photosensitive member, to form on the photosensitive member a latent electrostatic image of the original document or a toner image obtained by developing such latent electrostatic image, while leaving as an uncopied portion one side edge portion of the original document projected onto the nonimage area; contacting a copying paper with the photosensitive member, with one side edge portion of the copying paper extending beyond the one side edge of the photosensitive member by a predetermined non-copying width to overlie the non-image area; and transferring the latent electrostatic image or toner image to the copying paper to form thereon a copy of the original document as projected onto the supporting base; the improvement comprising maintaining the size of the uncopied portion constant irrespective of the ratio of copying.

4,551,014

ORIGINAL CARRIER FOR USE WITH AN IMAGE FORMING DEVICE

Yoshisugu Nakatomi, Yokohama; Kohachi Uchida, Sagamihara, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 550,999, Nov. 15, 1983, abandoned, which is a continuation of Ser. No. 302,598, Sep. 15, 1981, abandoned. This application Jan. 24, 1985, Ser. No. 694,482
Claims priority, application Japan, Oct. 28, 1980, 55-151270
Int. Cl.⁴ G03B *27/62*
U.S. Cl. 355—75 **9 Claims**



1. In an image forming device having a reciprocating original carrier and a body frame, said original carrier comprising: (a) a glass plate having an upper surface for receiving said original and a lower surface, said glass plate having at least one hole arranged along a longitudinal edge of said glass plate, (b) a first and second guide member each mounted on opposite sides of said body frame for slidably receiving said glass plate to permit its reciprocal movement, (c) cover means hingedly attached to said glass plate for permitting access to said upper surface of said glass, and (d) means for driving said glass plate to cause such reciprocal movement, the improvement comprising: said first and second guide members and said driving means being mounted substantially within the boundaries of said lower surface of said glass plate, wherein at least one of said guide members is mounted directly below said lower surface and has an upper guide element attached along said longitudinal edge of a lower surface of said plate by a fastener through said hole and a lower guide element attached to said body frame, wherein said upper guide element is slidably mounted with respect to said lower guide element and at least one support member being mounted along said longitudinal edge of said glass plate by said fastener, said support member including means for hingedly attaching said cover means to said glass plate.

4,551,015

OVERLAY DEVICES

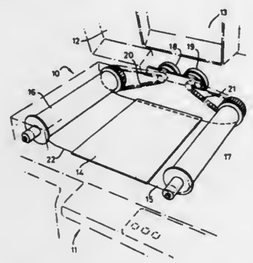
Hermanus I. Goemans, Blerick, Netherlands, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1983, Ser. No. 534,032
Claims priority, application United Kingdom, Sep. 20, 1982, 8226792
Int. Cl.⁴ G03B *27/62*
U.S. Cl. 355—75 **17 Claims**

1. An automatic overlay device, comprising:

a web carrying a multiplicity of overlays, mounting means for mounting the web such that individual overlays can be extended over a photocopying area, web transport means for moving the web sequentially between a home position where a first overlay is exposed and an end position in which a last overlay is exposed including through a web learning cycle, means for counting the number of overlays during said web learning cycle, information storage means responsive to a signal from the counting means for storing information concerning the number of overlays counted during said web learning cycle, and control means for

allowing a user to select a desired overlay, the arrangement being such that the transport means moves the web to expose the desired overlay in response to a signal from

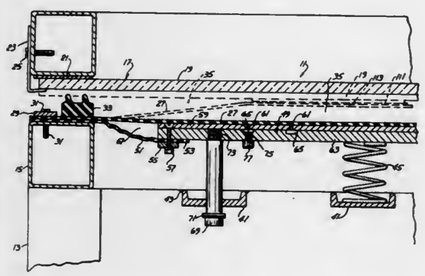


the control means and comparison of the signal from the control means with the information stored in the information storage means.

4,551,016
VACUUM PRINTER

Robert J. Maher, Auburn Heights, and Ronald Tooson, Inkster, both of Mich., assignors to Douthitt Corporation, Detroit, Mich.

Filed Sep. 26, 1984, Ser. No. 654,419
Int. Cl.⁴ G03B *27/20*
U.S. Cl. 355—91 **20 Claims**



1. In a vacuum printer for the graphic arts, having a bed, a blanket frame upon said bed including a flexible impervious blanket having a peripheral sealing bead, a glass frame including a glass juxtaposed with the blanket frame and with said glass in snug flexing and sealing registry with said bead, defining a contact printing chamber, means movably mounting the glass frame for opening and closing movements relative to said blanket frame, a vacuum source having a first vacuum conduit communicating with said printing chamber for evacuating said printing chamber; the improvement comprising:

a support mounted upon and underlying said blanket frame;

a non-metallic base plate yieldably positioned within and peripherally spaced from said blanket frame, supportably underlying said blanket;

a plurality of uniformly spaced spring means interposed between said support and said base plate, uniformly supporting said base plate;

a continuous centrally apertured skirt of flexible imperforate material along its outer periphery sealed upon said blanket frame, and along its inner periphery sealed against peripheral portions of said base plate;

said skirt and base plate defining with said blanket a vacuum chamber;

a second vacuum conduit interconnecting said first vacuum conduit and said vacuum chamber initially retaining said blanket upon said base plate; and

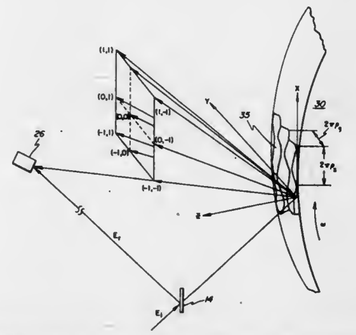
a control means connected to said second conduit for simultaneously evacuating said vacuum chamber and regulating its vacuum level with respect to the vacuum level in said printing chamber, and after a preset period cutting off vacuum from said vacuum chamber;

said base plate and blanket thereon adapted for uniform upward movement relative to said glass under the combined action of atmospheric air pressure and said spring means, said blanket then disengaging from the base plate and supportably engaging the glass.

4,551,017
LASER DOPPLER VELOCIMETER FOR MEASURING TORSIONAL VIBRATION

Seetha R. Mannava, Latham; John F. McDonald, Clifton Park, and Henry A. Scarton, Troy, all of N.Y., assignors to General Electric Co., Schenectady and Rensselaer Polytechnic Institute, Troy, both of, N.Y.

Continuation-in-part of Ser. No. 239,704, Mar. 2, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,400
Int. Cl.⁴ G01P *3/36;* **G01B** *9/02;* **G01N** *21/41, 29/04*
U.S. Cl. 356—28.5 **9 Claims**



1. An apparatus for measuring velocity of a moving surface, comprising:

a grating-like structure on said surface;

means for directing at least one beam of a substantially monochromatic light onto said grating-like structure;

first and second periodicities, said first and second periodicities being at first and second different angles; and

at least one detection means including at least one photo-detector positioned at a predetermined angle with respect to at least one of said beam and said surface to receive light diffracted by said grating-like structure and effective to produce a first oscillating electrical signal with a first frequency related to a first velocity of said surface in a first direction transverse to said first angle, and to produce a second oscillating electrical signal with a second frequency related to a second velocity of said surface in a second direction transverse to said second angle.

4,551,018
ACOUSTIC EMISSION ANALYZER

Seetha R. Mannava, Latham; John F. McDonald, Clifton Park, and Henry A. Scarton, Troy, all of N.Y., assignors to General Electric Co., Schenectady and Rensselaer Polytechnic Institute, Troy, both of, N.Y.

Continuation-in-part of Ser. No. 426,400, Sep. 29, 1982, which is a continuation-in-part of Ser. No. 239,704, Mar. 2, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,900
Int. Cl.⁴ G01P *3/36;* **G01B** *9/02;* **G01N** *21/41, 29/04*
U.S. Cl. 356—28.5 **18 Claims**

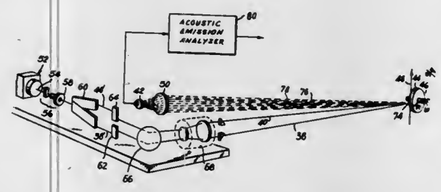
15. A method for measuring an acoustic emission event resulting in surface motion of a body, comprising:

disposing a periodic grating-like structure on said surface,

said grating-like structure being effective to provide a plurality of Bragg diffraction orders in response to an incident light beam;

impinging a first beam of monochormatic light on said grating-like structure to produce said plurality of Bragg diffraction orders;

said Bragg diffraction orders;



deriving a reference beam from said first beam;

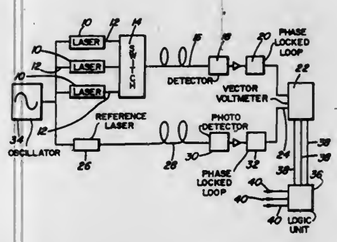
heterodyning the intercepted Bragg diffraction order with said reference beam to produce a Doppler signal responsive to said surface motion produced by said acoustic emission event; and

measuring said surface motion in response to said Doppler signal produced by said acoustic emission event.

4,551,019
MEASURING CHROMATIC DISPERSION OF FIBERS

Paul J. Vella, Kanata; Philip M. Garel-Jones, Ottawa, and Richard S. Lowe, Kanata, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 8, 1983, Ser. No. 521,003
Claims priority, application Canada, Jun. 6, 1983, 429,734
Int. Cl.⁴ G01N *21/84*
U.S. Cl. 356—73.1 **12 Claims**



1. A method for identifying the approximate minimum chromatic dispersion wavelength of an optical fiber comprising:

selecting three test laser diodes having output wavelengths different from one another but located close to a region of low chromatic dispersion (m) of the fiber, in which region m is an approximately parabolic function of wavelength (λ);

identically modulating the test laser diodes and launching output signals therefrom into the test fiber;

detecting light from the test fiber at a remote end thereof and generating corresponding test electrical signals;

from the test electrical signals deriving the difference in propagation time t_1-t_2 of the first and second laser signal propagating along said fiber at respective wavelengths λ_1 and λ_2 and assigning a value of chromatic dispersion $m_{12}=t_1-t_2/\lambda_1-\lambda_2$ at an intermediate wavelength $(\lambda_1+\lambda_2)/2$, deriving the difference in propagation time t_2-t_3 of the second and third laser signals propagating along said fiber at respective wavelengths λ_2 and λ_3 and assigning a chromatic dispersion value $m_{23}=t_2-t_3/\lambda_2-\lambda_3$ at an intermediate wavelength $(\lambda_2+\lambda_3)/2$;

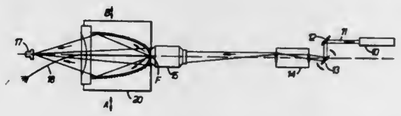
using the values m_{12} and m_{23}, generating a linear function of m in terms of λ corresponding to a differential function of said parabolic region; and

from said linear function deriving the value of λ at which m is 0, such value being the approximate minimum chromatic dispersion wavelength of the optical fiber.

4,551,020
OPTICAL APPARATUS FOR DETERMINING THE INDEX PROFILE OF AN OPTICAL FIBRE

Douglas C. J. Reid, Rugby, and William J. Stewart, Fritwell, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed May 6, 1982, Ser. No. 375,662
Claims priority, application United Kingdom, May 7, 1981, 8113896
Int. Cl.⁴ G01N *21/41, 21/84*
U.S. Cl. 356—73.1 **6 Claims**

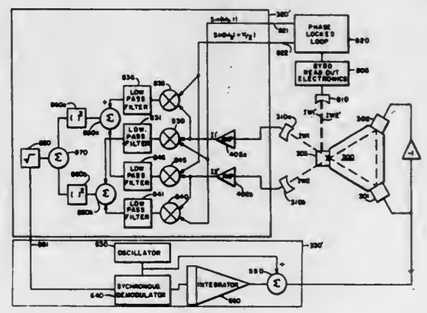


1. Optical apparatus for determning the index profile of an optical fibre, said optical apparatus comprising an elliptical reflector, means for holding an optical fibre, the index profile of which is to be determined in a position along the major axis of the ellipse, with the end of the fibre being positioned at one of the foci of said elliptical reflector, means for scanning a beam of light across the surface of said end of said fibre and means located at another focus of said elliptical reflector for detecting said beam of light reflected by said elliptical reflector.

4,551,021
DISCRIMINANT APPARATUS FOR LASER GYROS

Stephen P. Callaghan; Timothy J. Callaghan; Harry A. Gustafson, all of Minneapolis, Minn., and Wah L. Lim, Anaheim, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1982, Ser. No. 353,713
Int. Cl.⁴ G01C *19/64*
U.S. Cl. 356—350 **32 Claims**



1. A signalling apparatus for producing an output signal descriptive of a function of the variations in the intensity of a first wave of a first frequency propagating along a wave guide means, and coexisting with a second wave of a second frequency, wherein said intensity variations are due to coupling of energy from one wave into the other along said wave guide means, said signalling apparatus comprising:

intensity detection means, responsive to said first wave, for

producing at least a first intensity signal indicative of the instantaneous intensity of said first wave;

frequency signal means, responsive to said first and second waves, for producing first and second reference signals in phase quadrature with each other and having a frequency value which is a function of substantially the instantaneous value of the frequency difference between said first and second waves;

first means for generating

(i) a first product signal representative of the product of said first intensity signal and said first reference signal, and

(ii) a second product signal representative of the product of said first intensity signal and said second reference signal; and

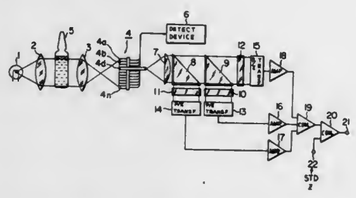
second means for operating on said first and second product signals and producing an output signal representative of said intensity variations of said first wave.

4,551,022

TESTING METHOD BY A SPECTROSCOPIC PHOTOMETRY USING THREE WAVELENGTHS OF LIGHT AND A DEVICE FOR SAID METHOD

Ryosaku Tagaya, Gunma, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,106
Claims priority, application Japan, Jun. 3, 1982, 57-094011
Int. Cl.⁴ G01J *3/50*
U.S. Cl. 356—406 **6 Claims**



1. A testing method using a spectrophotometry of three wavelength values for optically detecting a leak in a transparent or semitransparent vessel by a dye bath method, comprising the steps of: passing a light through said vessel; dividing into three parts the light which has passed through the vessel, said parts being (1) a light having the characteristic wavelength of the dye bath liquid, (2) a light having a wavelength shorter than the characteristic wavelength of dye bath liquid by a prescribed wavelength, and (3) a light having a wavelength longer than the characteristic wavelength of the dye bath liquid by a prescribed wavelength; and measuring the value of the light transmitted through the vessel at each of these three wavelengths; obtaining a transmittance curve from the transmittance values at these three wavelengths; comparing the curvature of said transmittance curve with a prescribed value; and judging whether the vessel is good or inferior from the comparison.

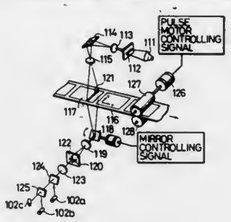
4,551,023

SYSTEM FOR RECORDING INFORMATION ON PHOTOGRAPHIC IMAGE DENSITY AND PROCESS

Kenji Nakauchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1983, Ser. No. 539,244
Claims priority, application Japan, Oct. 6, 1982, 57-175942; Nov. 1, 1982, 57-190783
Int. Cl.⁴ G01N *21/00*
U.S. Cl. 356—444 **16 Claims**

1. In a system for recording information on the densities of various points of a photographic image such as a negative film by means of photoelectric conversion, the improvement comprising means for eliminating that information on densities



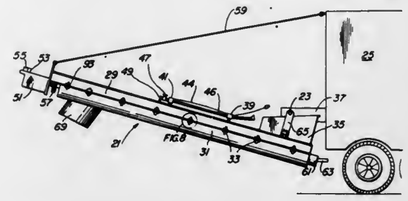
which change by small degrees as the image area is scanned from its periphery toward the center.

4,551,024

MIXING APPARATUS FOR CEMENTITIOUS MATERIALS

Thomas R. Clapp, P.O. Box 2529, Midland, Mich. 48640

Filed Apr. 24, 1981, Ser. No. 257,162
Int. Cl.⁴ B28C *5/14*
U.S. Cl. 366—40 **11 Claims**



1. Apparatus mounted on a vehicle for mixing a cementitious material in which a volatile liquid is employed comprising:

an enclosed mixing chamber sealed to prevent the escape of the volatile liquid and any potentially dangerous fumes;

a solid frame forming the top of said mixing chamber and having an inlet end thereof pivotably mounted on the vehicle;

an easily removable elastomeric trough forming the bottom of said mixing chamber, the elastomeric material selected to be compatible with the materials being mixed;

an auger having a central shaft and mounted in said frame to convey materials through said mixing chamber;

mixing paddles mounted on the shaft of said auger;

a drive motor for said auger mounted on said frame;

a releasable flexible coupling between the aligned shafts of said motor and said auger to permit removal of said auger from said frame;

an inlet hopper to introduce substantially dry material into said mixing chamber;

liquid injection means to introduce a liquid into said mixing chamber at a distance removed from said inlet hopper to have said substantially dry material form a plug to prevent the liquid and any fumes from backing up said inlet hopper; and

a discharge opening formed in said elastomeric trough.

4,551,025

APPARATUS FOR MANUFACTURING SOFT ICE CREAM AND THE LIKE

Theodore Ames, and Vernon E. Brown, Jr., both of Portland, Oreg., assignors to Glacier Products, Portland, Oreg.

Filed Aug. 2, 1984, Ser. No. 637,382
Int. Cl.⁴ A23G *9/00*
U.S. Cl. 366—144 **17 Claims**

1. In an apparatus for manufacturing soft ice cream and the like from prepared liquid mixes, said apparatus having a reservoir, temperature sensor freezing chamber, compressor, mixer and auger, and dispenser means, said reservoir releasing said prepared mixes into said freezing chamber as needed, said compressor, and said mixer and auger being actuated when said temperature sensor detects a temperature T2 or warmer in said soft ice cream, and being deactuated when said temperature sensor detects a temperature T1 a preset amount cooler than said T2, said apparatus having a start-up and normal mode of operation, a serve mode of operation, and a standby mode of operation, the improvement comprising:

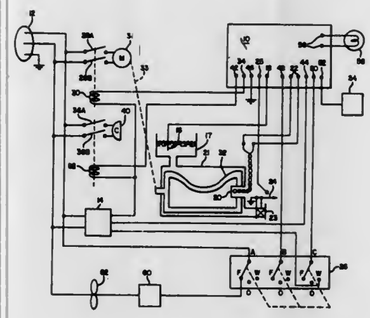
a. controller means responsive to said temperature sensor, and said dispenser means, and controlling said compressor, said mixer and auger;

b. in said start-up and normal mode, said controller means:

1. actuates said compressor, and said mixer and auger whenever said temperature sensor detects a temperature warmer than said temperature T2;

2. turns off said compressor, and said mixer and auger whenever said temperature sensor detects a temperature equal to or cooler than said temperature T1;

3. goes into said serve mode of operation whenever said dispenser means is actuated.



4. goes into said standby mode of operation whenever said dispenser means has not been actuated for a preset period of time;

c. in said serve mode of operation, said controller means:

1. actuates said compressor, and said mixer and auger, whenever said dispenser means is actuated;

2. disables said compressor when said temperature sensor detects a temperature T4 a selectable amount cooler than temperature T1, and enables said compressor when said temperature sensor detects a temperature wrmer than said T4;

3. turns off said mixer and auger, and said compressor when said dispenser means is deactuated, and goes into said start-up and normal mode of operation;

d. in said standby mode of operation, said controller means cyclically:

1. actuates said compressor, and said mixer and auger whenever said temperature sensor detects a temperature warmer than said temperature T3;

2. disables said compressor whenever said temperature sensor detects a temperature cooler than said temperature T4;

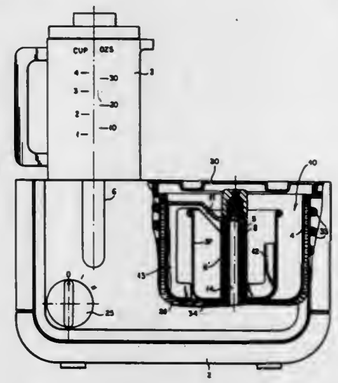
3. goes into serve mode of operation whenever said dispenser means is actuated.

4,551,026

HOUSEHOLD APPLIANCE FOR MAKING ICE CREAM

Guido Cristante, Omegna, Italy, assignor to I.P.E. Nuova Bialetti S.p.A., Crusinallo di Omegna, Italy

Filed Feb. 6, 1984, Ser. No. 577,152
Claims priority, application Italy, Feb. 4, 1983, 20690/83[U]
Int. Cl.⁴ A23G *9/00*
U.S. Cl. 366—149 **4 Claims**



1. A device for making ice cream, comprising:

a housing provided with internal cooling means, said housing forming a recessed compartment open at the top and bounded by a peripheral wall in contact with said cooling means;

a drive shaft rising through a mount at the bottom of said compartment, said mount forming a tubular boss surrounding part of said drive shaft;

a freezing vessel provided with a central hub removably fitting onto said boss while leaving a tip of said drive shaft projecting therefrom, said freezing vessel adjoining said peripheral wall with an intervening annular clearance to be filled with brine;

a stirrer removably carried on said tip and provided with paddle means extending into the interior of said freezing vessel for agitating the contents thereof; and

a source of motive power coupled to said drive shaft for rotating same together with said stirrer, said freezing vessel comprising an outer cup and a smaller inner cup separably nested in said outer cup, said paddle means including a lower paddle sweeping the interior of said inner cup and an upper paddle reaching around a rim of said inner cup for sweeping the interior of said outer cup whereby two different types of ice cream can be prepared within said inner cup and between said inner and outer cups respectively.

4,551,027

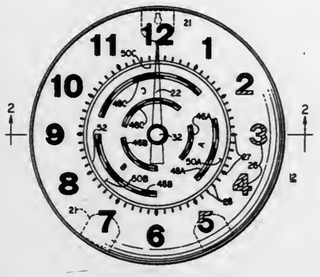
DEVICE FOR DETERMINING TIME OF SUNRISE AND SUNSET

George T. Spruck, 5819 Monfort Hills Ave., Cincinnati, Ohio 45239

Filed Jan. 11, 1982, Ser. No. 338,313
Int. Cl.⁴ G04B *19/26*
U.S. Cl. 368—15 **8 Claims**

1. A device for determining the time of solar passage of the horizon which comprises a clock face having hour and minute indications arranged circumferentially thereof, a disc rotatably mounted in overlying relation with the clock face and at a center thereof, solar passage information on the disc, and an alignment indicator on the disc in association with the solar passage information and alignable with a selected position on the hour and minute indications corresponding to a selected longitude so that a line from the center of the disc through a

selected portion of the solar passage information intercepts the hour and minute indications at a time of solar passage for the

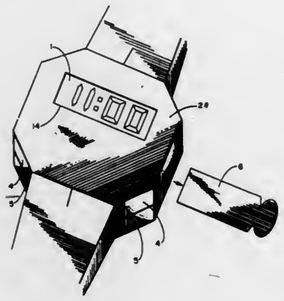


selected portion of the solar passage information at the selected longitude.

4,551,028
DISPOSABLE ELECTRONIC WATCH

John B. Rowen, 20 Summer St., #2, Northboro, Mass. 01532; Christopher M. Rowen, 91 Mechanic St., Marlboro, Mass. 01752, and Charles Janusis, 20 Summer St., #2, Marlboro, Mass. 01532

Filed Dec. 19, 1983, Ser. No. 563,048
Int. Cl.[4] G04B *1/00, 37/00*
U.S. Cl. 368—204 **7 Claims**

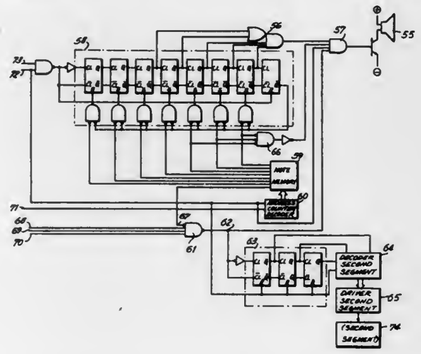


1. A disposable electronic watch comprising:
a case with a plurality of sides and having an upper section with an opening at the top and a lower section containing a plurality of cavities;
a wafer substrate of non-conducting material sandwiched between the said upper and lower sections of said case and having a top side and a bottom side;
a display unit attached to the top side of said wafer substrate and positioned at the said opening of the said upper section of the said case;
an electronic circuit chip for providing timing signals to the said display unit attached to the said bottom side of the said wafer substrate and fitting into one said cavity in the said lower section of the said case;
a battery unit with a top side and a bottom side, seated in one said cavity of the said lower section of the said case and having its said top side positioned against the said bottom side of the said wafer substrate;
a plurality of electrical leads on and through the said wafer substrate operatively connecting said display unit, said elctronic chip and said battery unit; and
a means for blocking activation of said battery prior to operation of said watch.

4,551,029
ELECTRONIC TIMEPIECE WITH A SOUND GENERATOR

Hitomi Aizawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 277,292, Jun. 25, 1981, abandoned. This application Sep. 7, 1984, Ser. No. 648,208
Claims priority, application Japan, Jun. 26, 1980, 55-87057; Jun. 27, 1980, 55-87482
Int. Cl.[4] G04B *21/00*; G10H *1/00*
U.S. Cl. 368—273 **14 Claims**



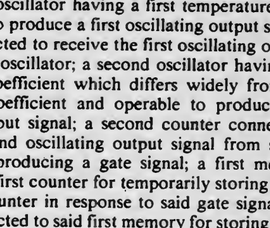
1. A sound generator comprising:
a note generating circuit for outputting a sequence of note signals of the same or different frequencies, each frequency corresponding to an audible note;
an acoustic transducer having said note signals as an input and having audible notes as an output;
memory means for storing data characterizing a note signal along with data characterizing an associated inhibit signal, said stored note data being read out to said note generating circuit in a regular sequence for generating said sequence of the note signals;
inhibit means responsive to at least one inhibit signal for selectively blocking passage of note signals from said note generating circuit to said acoustic transducer; and
means responsive to inhibit signal data, read from said memory means at the same time as the corresponding note data, for transmittal of an inhibit signal to said inhibit means to block passage of a terminal portion of the note signal to the transducer means,
whereby the sound of a second audible note is made distinguishable from a first audible note by the termination of the first audible note.

4,551,030
PROCEDURE AND MEANS FOR EXAMINING THE SURFACE QUALITY OF MATERIALS IN SOLID STATE

Mauri Luukkala, Haukilahdenranta 23 B 5, 02170 Espoo 17, and Ari Lehto, Raekuja 3, 00700 Helsinki 70, both of Finland

PCT No. PCT/FI83/00023, § 371 Date Nov. 3, 1983, § 102(e) Date Nov. 3, 1983, PCT Pub. No. WO83/03303, PCT Pub. Date Sep. 29, 1983
PCT Filed Mar. 14, 1983, Ser. No. 557,174
Claims priority, application Finland, Mar. 15, 1982, 820884
Int. Cl.[4] G01N *25/72*
U.S. Cl. 374—5 **15 Claims**

1. A procedure for measuring thermal diffusivity of solid materials, such as metals, coatings and surface layers and thickness and other characteristics of a surface hardening layer, said procedure comprising the steps of
illuminating a surface of a body under examination by an intensity-modulated light beam at a desired frequency to produce a continuous, progressing thermal wave having a phase angle;
measuring the phase angle of said wave in the direction of said surface at a distance from a spot at which said light beam illuminates said surface of said specimen; and

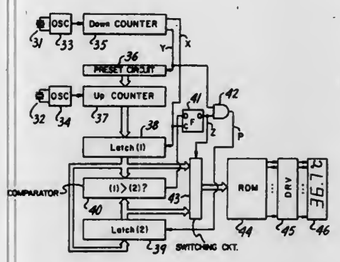


comparing the measured phase angle with a fixed phase reference signal to produce an output signal determined by said phase angle and thereby indicative of the thickness of the surface hardened layer of said specimen.

4,551,031
ELECTRONIC CLINICAL THERMOMETER

Takehiro Ishikawa; Akira Yamazawa, and Yasuo Kusumoto, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 25, 1983, Ser. No. 498,130
Claims priority, application Japan, May 27, 1982, 57-90283
Int. Cl.[4] G01K *11/22*; H03B *25/00*
U.S. Cl. 374—117 **15 Claims**

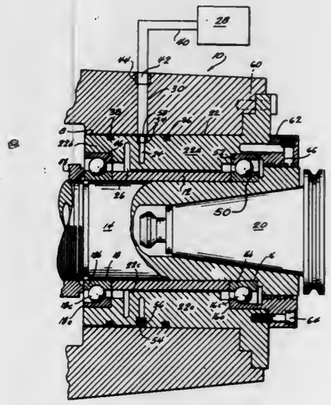


1. An electronic clinical thermometer comprising in combination: a first oscillator having a first temperature coefficient and operable to produce a first oscillating output signal; a first counter connected to receive the first oscillating output signal from said first oscillator; a second oscillator having a second temperature coefficient which differs widely from said first temperature coefficient and operable to produce a second oscillating output signal; a second counter connected to receive the second oscillating output signal from said second oscillator for producing a gate signal; a first memory connected to said first counter for temporarily storing the content of said first counter in response to said gate signal; a second memory connected to said first memory for storing the content of said first memory; a digital magnitude comparator for comparing the content of said first memory with the content of said second memory; means for effecting the transfer of the content of said first memory to said second memory when said comparator judges that the content of said first memory is greater than that of said second memory; switching circuit means for receiving the content of said first memory and the content of said second memory and for selectively producing as an output the content of said first memory when the content of said first memory is greater than that of said second memory, and the content of said second memory when the content of said second memory is greater than that of said first memory; a ROM connected to receive the output of said switching circuit means; a driving circuit connected to the ROM; and indicating means connected to the driving circuit for visually indicating a maximum measurement value.

4,551,032
MECHANISM FOR PRE-LOADING BEARINGS

Frank R. Mottershead, Birmingham, Mich., assignor to The Cross Company, Fraser, Mich.

Filed Jul. 16, 1984, Ser. No. 631,194
Int. Cl.[4] F16C *33/58, 43/04*
U.S. Cl. 384—517 **10 Claims**



1. A mechanism of a type comprising a bearing (**18**) for rotatably mounting a first machine tool member (**14**) and means (**22,28**) for pre-loading the bearing (**18**) and supporting the bearing (**18**) and first machine tool member (**14**) with respect to a second machine tool member (**10**), said means characterized by:
a sleeve (**22**) having a first portion (**22*a***) held in immovable relationship by said second member (**10**), a second portion (**22*b***) carrying said bearing (**18**) and displaceable along the axis of said sleeve, and a portion (**22*c***) interconnecting said first and second sleeve portions and displaceable along the axis of said sleeve; and
means (**28**) for controllably urging said interconnecting portion (**22*c***), said second portion (**22*b***) and said bearing (**18**) away from said first portion (**22*a***) to selectively increase the pre-load applied to said bearing (**18**).

4,551,033
SERIAL ELECTRIC PRINTER USING SINGLE UNIDIRECTIONAL MOTOR

Hiroshi Koike; Shuhei Takeuchi, both of Morioka, and Mikio Miyajima, Iwate, all of Japan, assignors to Alps Electric Co., Ltd., Japan

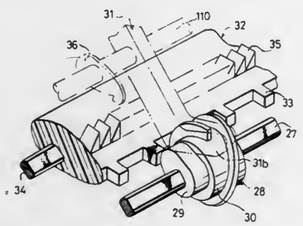
Division of Ser. No. 299,551, Sep. 4, 1981, Pat. No. 4,410,189. This application Apr. 25, 1983, Ser. No. 487,959
Claims priority, application Japan, Sep. 5, 1980, 55-123040
Int. Cl.[4] B41J *19/20, 19/62*
U.S. Cl. 400—308 **3 Claims**

1. A serial printer comprising:
(a) a carriage adapted to be shifted from a starting position along a line to be printed;
(b) a print head mounted on said carriage;
(c) a rack having first and second engagement portions angularly spaced from each other and extending over the shifting region of said carriage;
(d) a reset spring biasing said carriage toward the starting position;

(e) means including a body rotatably mounted on said carriage and having a spiralling tooth portion extending outwardly and adapted to engage said first engagement portion of said rack;

(f) a rotatable shaft splined to said body and extending over the shifting region of said carriage and transmitting rotation to said body to shift said body and carriage along said rack for forward motion by overcoming the force of said reset spring;

(g) rack rotating means for controlling the state of engagement between said rack and said tooth portion of said body and for rotating said rack from said state of engagement to either a carriage return rotative position or a back spacing rotative position; and

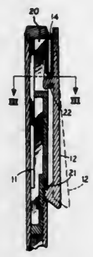


(h) engaging means mounted on said carriage for engaging said second engagement portion of said rack to prevent said carriage from being returned to said starting position during the back spacing of said carriage towards said starting position by a predetermined distance by said reset spring when said rack takes said back spacing rotative position, wherein when said rack takes said carriage return rotative position, said engaging means does not engage with said rack thereby permitting said carriage to be returned to said starting position by the force of said reset spring.

4,551,034
CLIP MOUNT INSERT

Nathan A. Zepell, Santa Barbara, Calif., assignor to June R. G. Zepell, Santa Barbara, Calif.

Filed Jul. 21, 1981, Ser. No. 285,449
Int. Cl.⁴ B43K *7/12, 24/02, 25/00*
U.S. Cl. 401—104 **3 Claims**



1. In a writing instrument having a hollow body and an extendable writing cartridge normally held within the body and having means for holding the writing cartridge selectively in an extended position, an insert assembly for said body, comprising:

(a) an elongated insert having an outer side and an integral transverse hinge bar on said outer side and having a pocket in said outer side;

(b) a clip having an inner side and an outer side and two ends and having a snap-on hinge socket on the inner side open toward one end to snap on over the hinge bar;

(c) a spring disposed in the insert pocket and engaging the insert and the clip to bias the clip about the hinge bar to a gripping position.

4,551,035
MARKING INSTRUMENT

Hugh W. B. Baker, Beaconsfield, and Robert White, Cholsey, both of England, assignors to The Gillette Company, Boston, Mass.

Filed Dec. 6, 1983, Ser. No. 558,658
Int. Cl.⁴ B43K *22/04*
U.S. Cl. 401—104 **8 Claims**

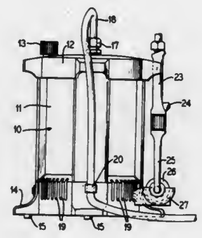


1. A marking instrument comprising a body having a longitudinal bore, a marking element accommodated in the bore, a member received in the bore for moving the tip of the marking element from a retracted position to an extended position relative to the body, detent means on the member and body engageable under a spring bias for locking the member releasably in an extended position in the bore and a projection on the member protruding through the slot and providing means external to the slot for disengaging the detent means and for adjusting the member from a retracted position to an extended position, characterized in that the member is a slide member including a first and a second part, said first part including means to receive the rear end of the marking member so that the marking and slide members are adapted to move together and a plurality of collars in close sliding fit with the bore at positions spaced apart along the first part so that the slide member is guided for movement axially along the bore and so that the first part provides firm lateral support for the writing element, said second part operationally communicating with and projecting longitudinally from the first part and including a resiliently flexible, rearwardly extending arm which is a cantilever spring providing the spring bias for the detent means and carrying said projection for disengaging the detent means.

4,551,036
PAINT DISPENSING SYSTEM INCLUDING ROLLER WITH DRIP TROUGH

Rudolf R. Karliner, Minnetonka, and Samuel R. Carlin, St. Michael, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Apr. 19, 1984, Ser. No. 602,208
Int. Cl.⁴ B05C *17/02*
U.S. Cl. 401—131 **8 Claims**

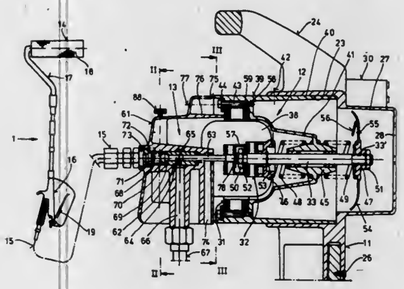


1. A paint dispensing system comprising a pressure-tight container for holding paint under pressure, said container having spaced vents along a base portion thereof, resilient securing means on said container, a trough having a pair of spaced tabs extending therefrom and proportioned to be received in said vents to hold said trough in a generally horizontal position, a handle, and a paint roller detachably secured to said handle, said handle being insertable into said resilient securing means to hold said paint roller suspended above said trough.

4,551,037
DEVICE FOR APPLYING PAINT WITH RECIPROCATING LINEAR MOTOR

Ewald Kille, Friedrichshafen, Fed. Rep. of Germany, and Rudolf Karliner, Minnetonka, Minn., assignors to J. Wagner GmbH, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,253
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222595
Int. Cl.⁴ B05C *17/02;* **H02K** *41/02*
U.S. Cl. 401—146 **17 Claims**



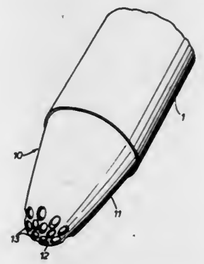
1. A paint applying apparatus which comprises a portable frame having a base adapted to rest on the ground and defining a support for removably receiving a paint reservoir in upright position, an upstanding leg on said base adjacent said support, a housing on top of said leg defining a laterally extending recess opening toward said support, a handle on top of said housing above said recess, casing means having one end projected into said recess and supported by said housing and an opposite end projecting beyond the housing overlying the support at a level to accommodate the reservoir freely thereunder, a motor in said casing means, a paint pump driven by said motor in said casing means, a paint intake tube depending from said pump to extend to the bottom of the paint reservoir mounted on the support, a drain from said pump adapted to communicate with the reservoir on the support for draining paint from the pump to the reservoir, a discharge hose extending from said pump, a paint applicator coupled to said hose, and a manually actuated valve controlling paint flow from the hose to the applicator whereby the frame with the paint reservoir on the support of the base is conventiently carried by the handle, placed on the floor adjacent the area to be painted, the motor energized to drive the pump for drawing paint from the reservoir through the intake tube for delivery through the hose to the applicator under control of the valve, and unused paint is drained back to the reservoir.

4,551,038
WRITING INSTRUMENT TIP

Hugh W. B. Baker, Beaconsfield, and Graham J. Whiting, Stanford-in-the Vale, both of England, assignors to The Gillette Company, Boston, Mass.

Filed Apr. 25, 1984, Ser. No. 603,633
Claims priority, application United Kingdom, May 6, 1983, 8312584
Int. Cl. B43K *1/00, 1/06*
U.S. Cl. 401—265 **15 Claims**

1. A writing tip for a reservoir pen comprising a hollow, rigid, thin-walled element including a convex wall portion defining an external writing surface carrying more than eight substantially circular or elliptical perforations for conducting ink directly to the writing surface from the interior of the writing tip, said perforations having diameters between about

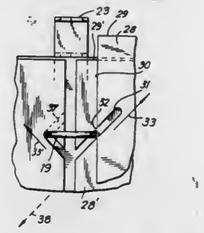


60 to about 80 microns and having transverse dimensions in the range of 50 to 200 microns and tapering smoothly inwardly from the writing surface and where the edges at the outer ends of the perforations are smoothly radiussed to thereby preclude snagging at the writing surface.

4,551,039
BINDER ASSEMBLY WITH RANDOMLY REMOVABLE LEAVES

Mark T. Basseches, 420 Lexington Ave., New York, N.Y. 10017

Filed Sep. 24, 1984, Ser. No. 653,459
Int. Cl.⁴ B42F *3/04, 13/16*
U.S. Cl. 402—60 **12 Claims**

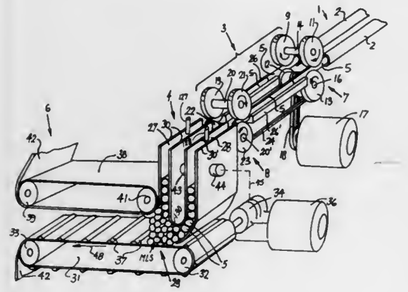


1. A binder device actuatable to enable the random extraction of leaves mounted to said device comprising an elongate spine, at least one generally U-shaped left holder member projecting upwardly from said spine in a plane normal to the longitudinal axis thereof and defining with said spine a closed loop, a blocker member movably mounted to said spine in spaced relation to said holder member, said blocker member being shiftable between a leaf blocking position whereat said blocker member is positioned to prevent movement of leaves mounted on said holder member in the direction of the axis of said spine, and a leaf releasing position whereat leaves mounted on said holder are shiftable in the direction of said axis.

4,551,040
APPARATUS FOR TRANSPORTING ROD-SHAPED ARTICLES BETWEEN THE DISCHARGE ENDS OF PNEUMATIC CONVEYOR PIPES AND A PROCESSING MACHINE

Alois Kasparek, Hamburg, and Jürgen Burger, Marschacht, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. Kg., Hamburg, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,289
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926792
Int. Cl.⁴ B65G *53/66, 51/02*
U.S. Cl. 406—28 **9 Claims**

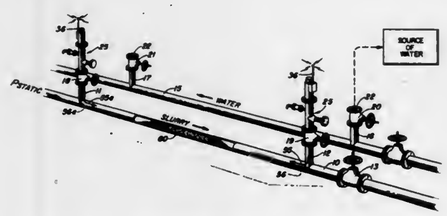


1. Apparatus for delivering rod-shaped articles, particularly filter rod sections, which constitute or form part of smokers' products to a processing machine which the articles enter by moving sideways, comprising a pneumatic transporting unit including several pneumatic conveyor pipes for moving rod-shaped articles axially and having discharge ends for such articles; means for deflecting successive articles which are delivered by said discharge ends so as to cause the deflected articles to move sideways by gravity, said deflecting means comprising a plurality of upright ducts, one for each pipe of said transporting unit; means defining a junction zone for reception of the thus deflected articles, said ducts having lower ends with openings for admission of articles directly into said junction zone and said junction zone being disposed immediately below said ducts and including means for accumulating a multi-layer stream of articles whose articles move sideways; and a conveyor system for sidewise transport of the multi-layer stream from said junction zone to the processing machine.

4,551,041
VIBRATION METHOD FOR UNPLUGGING A SLURRY PIPELINE

Julian B. Coon, Ponca City, Okla., and Eston F. Petry, Barrackville, W. Va., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 11, 1984, Ser. No. 619,744
Int. Cl.⁴ B65G *53/66*
U.S. Cl. 406—85 **4 Claims**

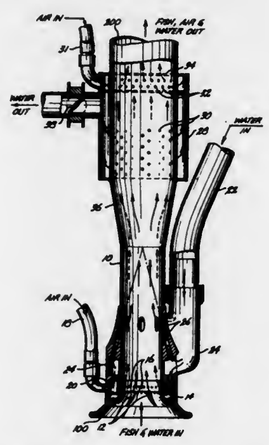


1. A method for unplugging a pipeline containing a plugged portion filled with fluids and solid material comprising:
a. injecting pressure pulses into said pipeline upstream and downstream of said plugged portion and against the plugged portion;
b. controlling the frequency and phase of said injected pulses; and
c. forcing fluids under pressure against said plugged portion, whereby said pressure pulses will fluidize said plugged portion and said forced fluid will cause the removal of said plugged portion.

4,551,042
TRANSFER SYSTEM FOR FISH AND SIMILAR ARTICLES

Stanley R. Hagedorn, Lynnwood, and Stewart W. Roach, Seattle, both of Wash., assignors to Marco Seattle, Inc., Seattle, Wash.

Filed May 17, 1984, Ser. No. 611,179
Int. Cl.⁴ B65G *53/40*
U.S. Cl. 406—93 **10 Claims**

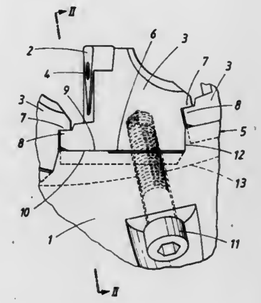


1. Apparatus to elevate fish and similar articles undamaged in a transfer conduit, comprising conduit means with a lower end open to receive the articles, air injection pump means overlying said lower end and water injection pump means overlying the air injection pump means and the lower end, the two pump means configured and cooperating together to create relative flow pressures and velocities which transfer the articles in a partially airborne state upwardly in the conduit means substantially free of damage to elevations materially above water level, said conduit means further having:
flow diffuser means overlying said water injection pump means operable to decrease water flow velocity;
water vent ejection means overlying said water injection pump means supplied through openwork in the conduit means wall for withdrawing upwardly flowing water while preventing passage of articles and permitting continued advancement of water upwardly with residual air buoying the articles upwardly in the conduit means;
second air injection pump means adjacent and overlying said water vent ejection means operable at airflow rates buoying the water-borne articles further upwardly in said conduit means; and
means to discharge such articles from said conduit means above said second air injection pump means.

4,551,043
INSERTED TOOTH CUTTER

Peter Kirchberger, Haag, Austria, assignor to GFM Gesellschaft Für Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Jun. 13, 1984, Ser. No. 620,144
Claims priority, application European Pat. Off., Jul. 5, 1983, 83 89 0109.8
Int. Cl.⁴ B26D *1/00*
U.S. Cl. 407—43 **9 Claims**



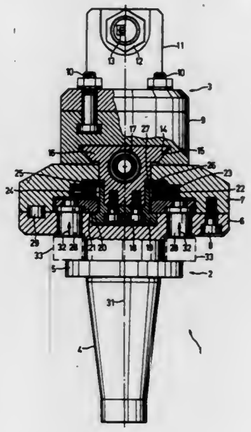
1. In an inserted tooth cutter comprising
a disc-shaped cutter body having an annular peripheral surface,
an annular series of tooth holders provided on said annular peripheral surface and adapted to hold a plurality of plate-like cutting teeth,
a plurality of fixing elements, which are secured to said cutter body and each of which forces one of said tooth holders against said cutter body,
the improvement residing in that
each of said fixing elements forces one of said tooth holders against said cutter body in a generally radial direction,
said cutter body is formed adjacent to said annular peripheral surface with a plurality of generally radially facing backing surfaces, each of which faces one of said tooth holders, and
each of said tooth holders extends generally in the peripheral direction of said cutter body and is formed near one end with a generally radially facing bearing surface portion engaging one of said backing surface portions, and with a first longitudinal extension, and is formed at its other end with a second longitudinal extension, which forms a shoulder that radially faces said cutter body and peripherally overlaps and radially engages said first longitudinal extension of an adjacent tooth holder on the side thereof which is radially opposite to said cutter body.

4,551,044
RADIALLY ADJUSTABLE TOOL HEAD OF A CUTTING MACHINE

Robert Schultschik, Uster, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Apr. 25, 1983, Ser. No. 488,534
Claims priority, application Switzerland, May 3, 1982, 2697/82
Int. Cl.⁴ B23B *29/034*
U.S. Cl. 408—185 **13 Claims**

1. A radially adjustable tool head for a cutting machine, comprising:
a spindle insert defining a spindle axis;
a radially adjustable slide supported by said spindle insert and provided with guiding surfaces, with means for mounting a cutting tool and with means for radially adjusting said radially adjustable slide in relation to said spindle axis;
a guiding element arranged between said spindle insert and said radially adjustable slide for axial movement substantially parallel to said spindle axis and containing guiding surfaces upon which slide associated ones of said guiding surfaces provided at said radially adjustable slide;
spring means loaded with a pre-bias between said guiding element and said spindle insert and arranged to press said guiding surfaces of said guiding element against said guiding surfaces at said radially adjustable slide; and

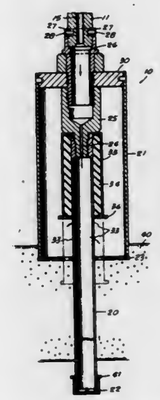


means movable substantially parallel to said spindle axis for interrupting the transmission of said spring pre-bias to said guiding surfaces in order to enable a motion of said guiding element substantially parallel to said spindle axis which is prerequisite for radial adjustment of said radially adjustable slide by said means for radially adjusting said radially adjustable slide.

4,551,045
COUNTERSINK CORE DRILL ASSEMBLY AND METHOD OF UTILIZING SAME

Joseph Bossler, 421 S. Baldwin Ave., Arcadia, Calif. 90016

Filed Mar. 12, 1984, Ser. No. 588,229
Int. Cl.⁴ B23B *51/04*
U.S. Cl. 408—206 **9 Claims**



1. A countersink core drill for use in drilling a stepped bore in a concrete slab, wall or the like comprising:
concentric inner and outer core drills including a relatively

long smaller diameter inner core drill having its forward end projecting substantially beyond the forward end of said larger diameter outer core drill;

a cutting ring attached to the forward end of each of said core drills;

means for detachably securing the rear ends of said inner and outer drills as a unit to the rotary shank of a power unit;

the main body of said inner drill having outlet openings in the wall thereof for a chip flushing fluid positioned rearwardly of the forward end of said outer drill; and

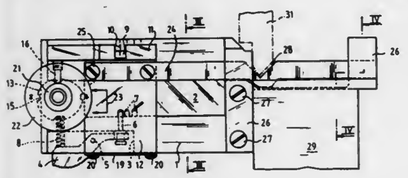
closure means for said outlet openings movably supported between the ends of said outer drill and movable between positions to control flow from said openings.

4,551,046

DEVICE FOR REPRODUCING CODED KEYS

Henry Kinas, Neuilly S/Seine, France, assignor to Societe Anonyme H.K. France, Paris, France

Filed Aug. 9, 1983, Ser. No. 521,553
Claims priority, application France, Aug. 12, 1982, 82 14243
Int. Cl.⁴ B23C *1/16*
U.S. Cl. 409—82 **2 Claims**



1. Device for reproducing coded keys adapted to machines for reproducing keys by scanning and comprising a rotary cutter and a follower adapted to be displaced simultaneously in two orthogonal directions, wherein said device comprises a support, a first carriage mounted to move with respect to the support, a second carriage mobile with respect to the first and bearing a bar provided with a single notch whose shape is that of the notches of the key to be reproduced, the two carriages being mobile respectively in the longitudinal direction of the bar and in the direction of the depth of the notch thereof, means for immobilising one of the carriages in one of several marked positions each corresponding to one of the possible locations for the notches of the key to be reproduced, and means for immobilising the other carriage in one of several marked positions each corresponding to one of the possible depths for these notches.

4,551,047

ROUTER DEVICE

Dalby L. Price, 2650 SW. Mitchell, Portland, Oreg. 97201

Continuation-in-part of Ser. No. 302,174, Sep. 14, 1981, abandoned. This application Dec. 30, 1983, Ser. No. 567,392
Int. Cl.⁴ B23C *1/20*
U.S. Cl. 409—182 **1 Claim**

1. A router device for processing a workpiece comprising

a portable housing adapted to be moved over the workpiece being processed having wall structure defining at the base thereof a compartment which opens to the base of the housing,

workpiece-engaging support structure mounted on the outside of said housing defining the contact plane of the router device and first adjustable means enabling pivoting of the housing relative to said contact plane,

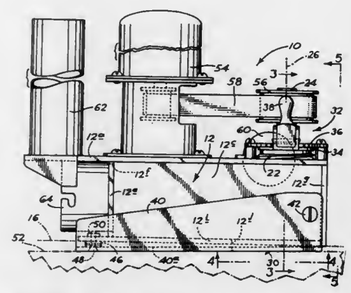
a cutter shaft and means mounting said shaft with the axis thereof substantially upright relative to said contact plane but inclined from perpendicularity to said contact plane, said cutter shaft having a bottom end within said compartment and extending upwardly from said compartment to an upper end above said housing structure,

a bearing mounted in said housing structure above said compartment rotatably supporting said shaft,

second adjustable means for shifting said bearing and the shaft that it supports in a direction extending axially of the shaft,

means disposed above said housing for producing shifting of said bearing and locking of said bearing in a given adjusted position;

a motor mount on the top of said housing and power transmitting means connecting said motor and said cutter shaft above said housing,



a cutter mounted on the bottom end of said shaft and disposed within said compartment moving on rotation of the shaft in a cutting plane which is disposed normal to the axis of the shaft and obliquely intersecting said contact plane,

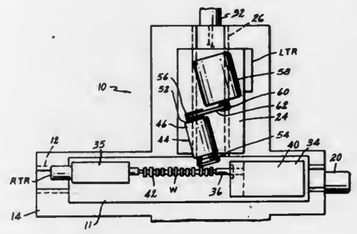
axial shifting of said bearing and the shaft it supports serving to vary the location of the intersection of said cutting plane with said contact plane and adjustment of said first adjustable means serving to vary the angularity of the intersection of the cutter plane with said support plane.

4,551,048

MILLING MACHINE

James D. Phillips, Posen, and Robert L. Sheets, Troy, both of Mich., assignors to J. D. Phillips Corporation, Alpena, Mich.

Filed Jun. 27, 1983, Ser. No. 508,084
Int. Cl.⁴ B23C *3/04*
U.S. Cl. 409—197 **8 Claims**



1. A machine for milling an eccentric cam on a cam shaft, comprising means for supporting and rotating the cam shaft about its longitudinal axis, a milling cutter comprising a rotatable milling head, said head having a front face adjacent to the cam shaft, a plurality of cutting elements having cutting edges and mounted on an annular portion of said front face of said head in a circular array about the axis of rotation of said head such that, when said head is rotated about its axis of rotation, said cutting edges move in a path which defines the surface of a frustum of a cone concentric with the axis of rotation of said head, means for supporting said head with its front face in confronting relation to the cam shaft and with its axis of rotation at an acute angle to the longitudinal axis of the cam shaft

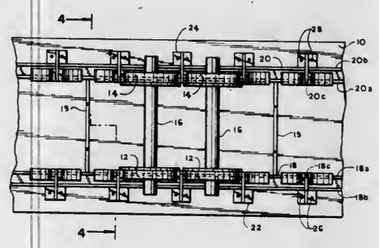
such that when said head is rotated the path of said cutting edges lies in a plane which forms and acute angle with the longitudinal axis of the cam shaft and such that the cutting elements successively engage the cam on the cam shaft, power means for feeding said milling head toward and away from the cam shaft in a path at right angles to said longitudinal axis of the cam shaft in accordance with the contour to be milled on the eccentric cam, and means for rotating said head, said cutting elements each taking a progressive cut beginning at a point on one side edge of said cam which has a substantial force vector component axially of the cam shaft and ending in a line across the full width of the cam having a force vector substantially perpendicular to the cam shaft and in which the cutting element edge is substantially parallel to the longitudinal axis of the cam shaft.

4,551,049

APPARATUS FOR TRANSPORTING WHEEL AND AXLE ASSEMBLIES

Lawrence Klosk, 3977 Sedgwick Ave., Bronx, N.Y. 10463

Filed Nov. 19, 1982, Ser. No. 442,909
Int. Cl.⁴ B60P *7/12*
U.S. Cl. 410—42 **4 Claims**



1. A rack for transporting railroad car wheel and axle assemblies on the flatbed of a vehicle, the assemblies being of the type where each wheel includes an outwardly extending flange, the rack comprising first and second substantially parallel elongated parts, means extending in a first direction generally parallel to the axles of the assemblies for spacing said parts a distance sufficient to receive the flanges therebetween, so as to prevent relative movement between the assemblies and said parts in said first direction, means for fastening said spacing means to the vehicle bed, each of said parts comprising first and second spaced members, each of said members comprising a base, a rigidity enhancing member mounted to said base, and extending in said first direction, and an upstanding element mounted on and extending from said rigidity enhancing member, in a second direction substantially perpendicular to said first direction, said element comprising a surface contoured in accordance with the curve of the wheel, said elements on adjacent members being oppositely oriented along said second direction and cooperating to form a wheel receiving recess therebetween so as to prevent relative movement between the assemblies and said elements in said second direction.

4,551,050

THREADED ENGAGEMENT MEANS

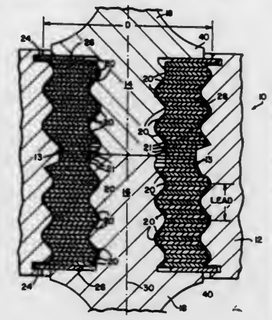
Robert W. Hughes, and James F. Cantrel, both of Northampton, Pa., assignors to Ingersoll-Rand Company, Woodcliff, N.J.

Filed Jul. 11, 1983, Ser. No. 512,215
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.⁴ F16B *37/12;* **E21B** *17/042*
U.S. Cl. 411—436 **18 Claims**

1. An improved threaded engagement means, having a body with a central axis, said body comprising means defining a first wall which is substantially smoothly threaded, and of a given pitch diameter, and which circumscribes said axis, wherein the improvement comprises:

means engaging and lining said first wall defining a second, threaded wall, having a pitch diameter which differs from said given diameter, which also circumscribes said axis; wherein

said second wall has an exposed surfacing which, on a radial plane drawn outwardly from said axis, is defined by a plurality of juxtaposed, rigid surfaces; and



the axial median of any one of said rigid surfaces, of a plurality thereof, measured along said radial plane, is disposed at a given distance from said axis; and

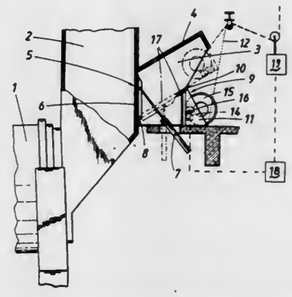
the axial median of another such surface immediately adjacent to said one surface, measured along said plane, is disposed at a radial distance from said axis other than said given distance.

4,551,051

APPARATUS FOR CHARGING A ROTARY KILN WITH PNEUMATIC TIRES

Edwin Hofbauer, Sulz; Peter Lechner, and Heribert Exler, both of Kaltenleutgeben, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 19, 1983, Ser. No. 533,308
Claims priority, application Austria, Oct. 15, 1982, 3792/82
Int. Cl.⁴ F23K *3/00;* **G01G** *13/00*
U.S. Cl. 414—21 **5 Claims**



1. In apparatus for charging pneumatic tires up to a predetermined maximum diameter to a rotary kiln having an end inlet, comprising

a lock chamber structure having a kiln end adapted to be connected to said end inlet and a receiving end opposite to said kiln end, said lock chamber structure comprising a kiln end gate and a receiving end gate at said kiln end and said receiving end, respectively, and

gate-actuating means for opening said kiln end gate and said receiving end gate in alternation,

the improvement residing in that

said lock chamber structure has a runway which has a rear end disposed in the interior of said lock chamber structure adjacent to said receiving end and is downwardly inclined in the direction from said rear end to said kiln end when said kiln end gate is open and said receiving end gate is closed has a length which is at least twice said maximum diameter,

said receiving end gate carries a tire holder which is arranged to be disposed in the interior of said lock chamber structure when said receiving end gate is closed,

said tire holder comprises a gripping device for holding a tire at said rear end of said runway in a position for rolling on said runway,

said gripping device comprises two gripping jaws, which are mounted to be movable in a direction which is parallel to said runway and transverse to the longitudinal direction of said runway, and

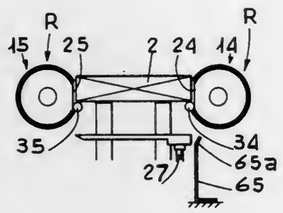
tire holder actuating means are provided for moving said gripping jaws in mutually opposite directions into and out of engagement with the side walls of a tire disposed between said gripping jaws.

4,551,052

DEVICE FOR FORMING, FROM THE TOP DOWNWARDS, ARTICLES INTO A STACK OF ORDERLY LAYERS

Domenico Pattarozzi, Bologna, Italy, assignor to B.S.P. Packaging Systems di Pattarozzi D. & C.s.a.s., Bologna, Italy

Filed Sep. 13, 1983, Ser. No. 531,662
Claims priority, application Italy, Sep. 16, 1982, 3533 A/82
Int. Cl.[4] B65G *57/06*
U.S. Cl. 414—81 **11 Claims**



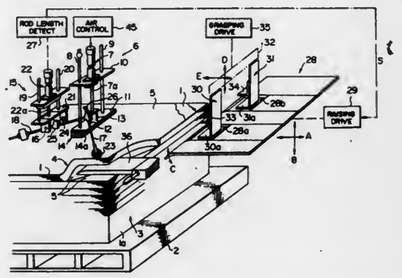
1. Device for forming, from the top downwards, articles into a stack of orderly layers, comprising a longitudinal line for infeeding oriented identical articles; a support base for said infeeding lines, a horizontal plate movable vertically between two extreme positions, both extreme positions being beneath the horizontal support base of the said line; a first station means, placed downstream of the said line to receive from the line the said articles without varying the elevation or the orientation thereof; a second station means that cooperates with the aforementioned plate downstream of the first station, said second station means forming with the articles forthcoming from the first station means, one longitudinal layer of articles placed transversely above the upper extreme position of the said plate, and means to transfer the said layer either onto the plate or onto the topmost layer of the stack under formation thereon, without altering the orientation or the horizontal arrangement of the said transferred layer, said second station means comprises two identical side by side rollers that extend, commencing at the first station means, longitudinally of the line at the same elevation in such a way as to be positioned with the facing surfaces thereof away from one another at a distance no less than the transverse dimension of the said articles, said rollers having operative and non-operative positions; said transfer means intermittently driving, at the same instantaneous speeds, the said rollers in counter-rotating directions between identical stationary non-operative positions, each of which is reached from the preceding one through one revolution of the said rollers, the operative position being when the rollers are driven between the non-operative positions to transfer said layer either onto the plate or onto the topmost layer of the stack under formation thereon; two longitudinal sustaining strips, each locked externally to a corresponding roller and having one extremity in the region of the first station, the said sustaining strips defining, with the rollers in the non-operative position, a horizontal channel for receiving the articles coming from the first station means and for supporting the lower longitudinal edges of the articles at an elevation coplanar with the support base of the first station means; a first sensor means for detecting the formation of one layer in the said channel and for subsequently setting the said transfer drive means in operation; a second sensor means for detecting the non-operative position of the said rollers following the transfer of one layer of articles to be supported by said plate; movable position locator means situated in proximity of the vertical separation plane of the said first station means and of the said second station means, subjected to the said rollers and able to adopt two characteristic positions of non-interception and of interception of the first article in the row of articles present in the first station means, respectively, in corresponding synchrony with the non-operative and the operative position of the said rollers; means for regulating the longitudinal extension of the layer under formation in the said channel; means for regulating the distance the said rollers are apart; means for guiding vertically the transverse sides of the stack under formation on the said plate; means for aligning and/or guiding vertically the longitudinal sides of the said stack; and sensor devices for operating the vertical drive means of the said plate interdependently connected to the drive means of the said rollers.

4,551,053

SHEET SUB-STACK SEPARATING AND FEEDING APPARATUS

Teruhiko Ishibashi, Yoshida, Japan, assignor to Fuji Photo Film Co. Ltd., Tokyo, Japan

Filed May 29, 1984, Ser. No. 614,987
Int. Cl.[4] B65H *33/02*
U.S. Cl. 414—114 **12 Claims**



1. An apparatus for separating and feeding sheet sub-stacks which comprises:

(i) a sheet sub-stack holding-down means for holding a stack of sheets, which are independently laid one upon the other, from above said stack at a position spaced inwardly from a side end face of said stack,

(ii) a level detecting means for detecting the level of a sheet in a predetermined position as numbered consecutively from the uppermost sheet of said stack,

(iii) a sheet sub-stack raising member positioned in face-to-face relation to said side end face of said stack for movement in an approximately horizontal direction between an intervening position where it intervenes in said stack and a retracted position away from said stack and for movement in the vertical direction,

(iv) a sheet sub-stack grasping means for grasping a predetermined number of said sheets as one sub-stack from the side of said side end face of said stack, said sheet sub-stack grasping means being capable of moving in the vertical direction and in an approximately horizontal direction,

(v) a raising member driving device for adjusting the level of said sheet sub-stack raising member in said retracted position so that said sheet sub-stack raising member stands face to face with a space between said sheet in said predetermined position as numbered consecutively from the uppermost sheet of said stack, which is detected by said sheet level detecting means, and the sheet under said sheet in said predetermined position, for feeding said sheet sub-stack raising member in an approximately horizontal direction up to said intervening position, for lifting up said sheet sub-stack raising member by a predetermined distance in said intervening position, and for then moving down said sheet sub-stack raising member to a position for holding down the sheet under said sheet in said predetermined position,

(vi) a grasping means driving device for moving said sheet sub-stack grasping means to a position for grasping a side end portion of the sheet sub-stack comprising the predetermined number of said sheets, said side end portion being raised by said sheet sub-stack raising member on the side of said side end face of said stack, for causing said sheet sub-stack grasping means to grasp said side end portion of said sheet sub-stack, and for then moving said sheet sub-stack grasping means in an approximately horizontal direction to separate said sheet sub-stack from the upper section of said stack, and

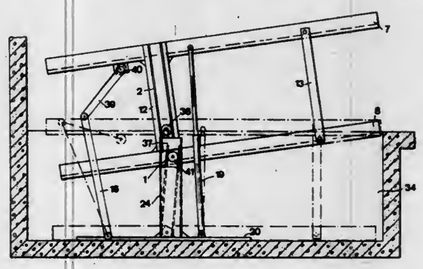
(vii) a sheet sub-stack holding-down means controlling device for adjusting said sheet sub-stack holding-down means to a stack holding-down position at least as long as said sheet sub-stack raising member is moved in contact with said stack.

4,551,054

DEVICE FOR THE PARKING OF AUTOMOBILE VEHICLES

Kaspar Klaus, Dr.-Berndl-Str. 5, 8940 Memmingen, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,676
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309100
Int. Cl.[4] E04H *6/06*
U.S. Cl. 414—229 **7 Claims**



1. A device for parking automobile vehicles comprising:

an upper and a lower platform;

means to support said platforms in vertical spaced relationship;

means to raise and lower both of said platforms between a lower, horizontal position and an upper, tilted position;

a pair of substantially rectilinear coordinated trackways disposed laterally at each side of said platforms and extending substantially alongside each other when said platforms are in a lowered position to define an acute angle therebetween when viewed from the side, said pair of trackways on each side of the platform extend beneath said upper platform in both the raised and lowered positions;

a first one of each pair of coordinated trackways being fixed;

a second one of each pair of coordinated trackways being connected to said platforms and movable therewith; and

guide elements cooperatively engaging said trackways;

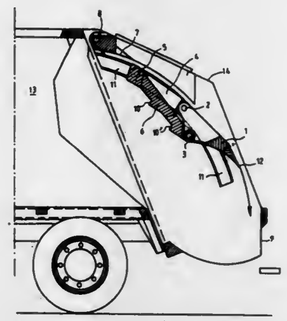
one of said guide elements being a fixed guide element cooperatively engaging each second trackway.

4,551,055

APPARATUS FOR CHARGING SOLIDS UNDER COMPRESSION INTO A RECEPTACLE

Claude Demenais, Rochefort, France, assignor to Societe Industrielle de Transports Automobiles "SITA" , France

Filed Jul. 20, 1983, Ser. No. 515,560
Claims priority, application France, Jul. 23, 1982, 82 12876
Int. Cl.[4] B65F *3/20*
U.S. Cl. 414—293 **13 Claims**



1. Apparatus for charging material under compression into receptacle (13) from a hopper (9); said apparatus comprising at least first and second compression elements (1, 6), an elongated guide means (11) for guiding the movement of said first and second compression elements (1, 6), and first and second drive means (4, 7); said first and second compression elements (1, 6) having respective spaced first and second pivotal connection regions; a first pivotal connection means (3) pivotally connecting together said first connection regions of said first and second compression elements (1, 6); second and third pivotal connection means (2, 5) connected to said second pivotal connection regions of said first and second compression elements (1, 6) respectively; said second and third pivotal connection means (2, 5) being slidably guided by said guide means (11) and movable along respective paths defined by said guide means; said first and second drive means (4, 7) each having first and second connection regions respectively which are operable to be variably spaced apart; said first connection region of said first drive means (4) connected to said third pivotal connection means (5); said first connection region of said second drive means (7) connected to a fixed pivot (8); said second connection region of each of said first and second drive means (4, 7) connected to said second pivotal connection means (2).

4,551,056

AUTOMATIC HANDRAIL FOR PLATFORM LIFT

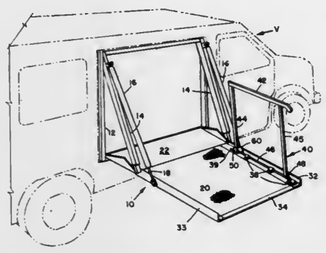
Melvin G. Risner, Carey, Ohio, assignor to REB Manufacturing, Inc., Carey, Ohio

Filed Sep. 1, 1983, Ser. No. 528,393
Int. Cl.[4] B60P *1/46*
U.S. Cl. 414—539 **12 Claims**

1. An automatic handrail for a foldable lift platform comprising:

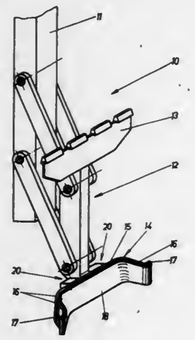
(A) a lift platform hinged along one side thereof for oscillatable movement from a vertical inoperative position to a horizontal operative position, and vice versa;

(B) reciprocal motor means having its operative means pivotally journalled to said platform along an axis parallel to the axis of said hinge for oscillating said platform;
(C) a cam arm attached to said pivotally journalled motor operative means for oscillation with the movement of said platform;
(D) a handrail means in a plane having a shaft along its lower side journalled to said platform along an axis orthogonal to the axis of said hinge for said platform for oscillating movement from an inoperative position in a plane parallel to the plane of said platform when said platform is in its



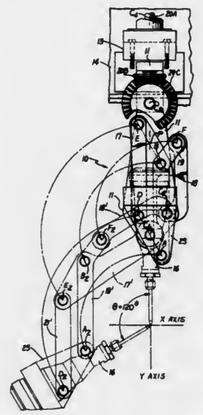
vertical inoperative position to an operative horizontal position in a plane orthogonal to the plane of said platform when said platform is in its horizontal operative position, and vice versa;
(E) resilient means normally urging said handrail means into its inoperative position parallel to the plane of said platform, and
(F) cam plate means on said handrail means for engagement by said cam arm for moving said handrail means into its vertical operative position against the action of said resilient means when said platform is moved into its horizontal operative position.

4,551,057
DEVICE FOR EMPTYING CONTAINERS INTO A COLLECTOR
Jakob Naab, Mainz-Laubenheim, Fed. Rep. of Germany, assignor to Zoller-Kipper GmbH, Mainz-Laubenheim, Fed. Rep. of Germany
Filed Mar. 16, 1983, Ser. No. 475,843
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 8207261[U]; Mar. 16, 1982, 8207262[U]
Int. Cl.⁴ B65F *3/04*
U.S. Cl. 414—420 **26 Claims**



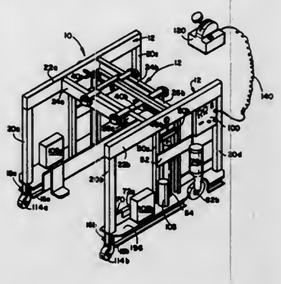
19. In a device for emptying dustbins to a dust car wherein a lifting and tilting frame is attached to the lower region of the swivel arm of a tipping device, said lifting and tilting frame being provided with a dustbin lifting member at an upper portion thereof and a contact element at a lower portion thereof engageable with the body of the dustbin, the improvement wherein in combination:
said contact element is a bow-shaped bar having outward ends;
said bow-shaped bar is provided with at least one yieldable buffer and dumping device extending along the length of said bar at least between said ends for engaging a container to be emptied, upon the lifting of said container by said member; and
an impact protective safety device is provided at said outward ends of said bow-shaped bar and is formed by elastic shock absorber elements made of rubber or a resilient plastics material, each one of said elastic shock absorber elements being mounted to each one of said outward ends of said bow-shaped bar.

4,551,058
LOW COST ARTICULATING/ARTICULATING AND ROTATING WRIST MECHANISM FOR AUTOMATIC MACHINE TOOL AND AUTOMATIC MACHINE TOOL EMPLOYING THE SAME
Ralph S. Mosher, Clifton Park, N.Y., assignor to Robotics, Inc., Ballston Spa, N.Y.
Filed Jul. 20, 1983, Ser. No. 515,467
Int. Cl.⁴ B25J *17/02*
U.S. Cl. 414—735 **24 Claims**



1. An articulating wrist for an automatic machine tool having an automatically driven tool positioning member for automatically positioning and manipulating a working tool at a desired point in space, said wrist comprising tool holding means for holding an end effector tool, articulating means pivotally supporting said tool holding means at one end thereof for rotating the end effector tool through an arcuate path lying within an x-y plane of tool rotation at a point displaced from the axis of rotation of the articulating means, a base member, reversible drive shaft means rotatably supported on said base member, restraining means pivotally coupled to said articulating means and fixed to and driven by said reversible drive shaft means for kinematically rotating the articulating means in either direction from a neutral starting position about its axis of rotation along an arcuate path extending up to plus or minus 150 degrees from the starting position to thereby cause the end effector tool to reproduce about the displaced axis an extended arcuate path of rotation similar to that of the articulating means about its own axis of rotation, and said articulating means and restraining means being proportioned and arranged relative to each other to permit freedom of movement of the wrist mechanism in either direction from its neutral starting position.

4,551,059
MULTI-DIRECTIONAL STRADDLE-LIFT CARRIER
Salvatore R. Petoia, Brick Town, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 2, 1983, Ser. No. 548,047
Int. Cl.⁴ B60P *1/00*
U.S. Cl. 414—459 **3 Claims**



1. A multi-directional straddle-lift carrier comprising:
(A) a frame having a generally inverted U-shaped cross-section and formed for straddling a load;
(B) adjustment means disposed between the sides of said frame for adjusting the space between the sides of said frame, said adjustment means comprising:
(1) telescoping means connected between the sides of the frame for moving the sides of the frame toward or away from each other, said telescoping means comprising:
(a) a first pair of channeled members parallely spaced and extending horizontally from the top of one side of the frame,
(b) a second pair of channeled members parallely spaced and extending horizontally from the top of the other side of the frame, said second pair of channeled members sharing a common plane with and spaced such that they fit between said first pair of channeled members,
(c) a first cross-member fastened between the free ends of said first pair of channeled members,
(d) a second cross-member fastened between the free ends of said second pairs of channeled members, and
(e) a plurality of guide-rollers fastened to said second pair of channeled members for engaging with said first pair of channeled members such that said first and second pairs of channeled members may slide relative to each other, and
(2) actuator means for adjusting the length of said telescoping means whereby the width of the frame may be adjusted, said actuator means comprising:
(a) first threaded bearing means affixed to the first cross-member between the first pair of channeled members,
(b) first bearing means affixed to the top of one side of the frame between the second pair of channeled members for supporting a first threaded shaft formed to be rotated therein and having an unthreaded section at one end, said first threaded shaft being threaded through said first threaded bearing means and having its unthreaded end supported by said first bearing means,
(c) stop means for prohibiting longitudinal movement of said first threaded shaft relative to said first bearing means, and
(d) means for rotating said first threaded shaft whereby the width of the carrier frame may be adjusted;
(C) means for moving the first and second pairs of channel members relative to each other and comprising:
(1) second threaded bearing means affixed to the second cross-member between the second pair of channeled members,
(2) second bearing means affixed to the top of the other side of the carrier frame between the first pair of channeled members for supporting a second threaded shaft formed to be rotated therein and having an unthreaded section at one end, said second threaded shaft being threaded through said second threaded bearing means and having its unthreaded end supported by said second bearing means,
(3) stop means for prohibiting longitudinal movement of said second threaded shaft relative to said second bearing means, and
(4) means for rotating said second threaded shaft with said first threaded shaft whereby the width of the carrier frame may be adjusted;
(D) steering and traction means mounted on the frame for moving and turning said straddle-lift carrier, said steering and traction means comprising:
(1) two steering and traction units, each unit comprising:
(a) a traction wheel rotatably mounted on the carrier frame,
(b) first propulsion means for applying traction to said traction wheel and comprising:
(i) a first electric motor, and
(ii) first transmission means for transmitting torque from said electric motor to the traction wheel, and
(c) second propulsion means for rotating said traction wheel about its vertical axis, whereby the straddle-lift carrier may be driven and steered in a desired direction, said second propulsion means comprising:
(i) a second electric motor, and
(ii) second transmission means for translating rotation of said second electric motor into rotation of traction wheel about its vertical axis, whereby the direction of travel of the straddle-lift carrier may be varied;
(E) control means for controlling said steering and traction means whereby said straddle-lift carrier may be moved in a desired lateral direction, said control means comprising:
(1) a remote control unit comprising:
(a) housing means for containing the control unit circuit components,
(b) a cover for enclosing said housing means, said cover having an arched ridge and a longitudinal slot along the top of said arched ridge,
(c) a control handle protruding through said longitudinal slot, said control handle being adapted for motion along said longitudinal slot for generating forward and reverse drive control signals, said control handle also being adapted for rotation about its own axis for generating steering and turning control signals,
(d) a mode selection switch, and
(e) means for transmitting electrical control signals to the straddle-lift carrier, whereby said carrier may be remotely operated; and
(F) lifting means disposed on either side of the frame for engaging and elevating a load when the load has been straddled by said carrier, said lifting means comprising:
(1) a pair of hydraulically actuated unit disposed interior to and on either side of the carrier, each unit comprising:
(a) a first pair of vertical members parallely disposed on the side of the carrier,
(b) a hydraulic cylinder rigidly mounted to said vertical members, said hydraulic cylinder being disposed to operate in a vertical direction, and
(c) forklift means for engaging and supporting a load, said forklift means operatively connected to said hydraulic cylinder such that operation of said hydraulic cylinder will be translated into raising and lowering of said forklift means which further comprises:
(i) a horizontal beam,
(ii) two lifting tines adjustably disposed at either end of said horizontal beam for engaging the load,
(iii) a second pair of vertical members fixedly attached to said horizontal beam and disposed for slidably engaging with the first pair of vertical members, and
(iv) tension means operatively connected between said second pair of vertical members and the hydraulic cylinder such that vertical motion of the hydraulic cylinder will cause vertical motion of said second pair

of vertical member whereby the forklift means may be raised and lowered.

4,551,060

DEVICE FOR RAISING VARIOUS LOADS, PARTICULARLY TROLLEYS FOR HANDICAPPED PERSONS, ON VEHICLES

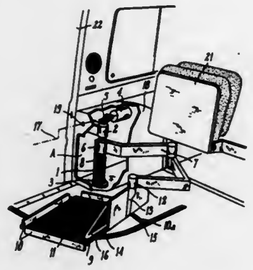
Alexandre P. L. Quercy, Boulogne, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Nov. 9, 1982, Ser. No. 440,439

Claims priority, application France, Nov. 13, 1981, 81 21351; Sep. 21, 1982, 82 15848

Int. Cl.⁴ B66B *9/20*

U.S. Cl. 414—541 **21 Claims**



1. A lift assembly for a vehicle having a vehicle floor and a vehicle body with a door opening, comprising jack means mounted within the vehicle body in vicinity of the door opening, an articulated support parallel to the vehicle floor, said articulated support comprising two bent arms pivotally mounted together and having one end and a free end, with said one end being operatively connected to said jack means and adapted to be driven thereby, said free end of the articulated support pivotally supporting a platform, curved rail means being provided in the vehicle floor for arcuately guiding the platform in the vehicle.

4,551,061

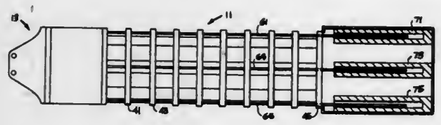
FLEXIBLE, EXTENSIBLE ROBOT ARM

Ralph W. Olenick, 7948 McClellan Rd. #4, Cupertino, Calif. 95014

Filed Apr. 18, 1983, Ser. No. 485,654

Int. Cl.⁴ B66C *1/10*

U.S. Cl. 414—735 **2 Claims**



1. A flexible robot arm comprising,
a tubular sleeve having an elongated dimension,
a plurality of spaced, generally parallel ribs within said sleeve providing support therefor transverse to said elongated dimension, said ribs having at least two apertures defined in each rib, said apertures being linearly aligned from rib to rib, forming passageways through the sleeve,
an elastomeric tube extending the length of the sleeve seated in each passageway, said tube having a fluid inflow and outflow port,
fluid supply means for supplying varying amounts of fluid to each tube, and
a plurality of flexible rods are disposed through said ribs, parallel to said tubes, said flexible rods being anchored at one end and connected to a transducer at another end, said transducer adapted to convert rod displacement due to flexing or extension into an electrical signal corresponding to said displacement.

4,551,062

DEVICE FOR PASSING A FLUID FLOW THROUGH A BARRIER

Alan P. Geary, Bristol, England, assignor to Rolls-Royce Limited, London, England

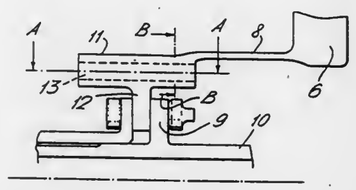
Continuation of Ser. No. 486,078, Apr. 18, 1983, Pat. No. 4,469,470. This application Aug. 31, 1984, Ser. No. 646,298

Claims priority, application United Kingdom, Apr. 21, 1982, 8211492

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.⁴ F01D *5/08, 5/18*

U.S. Cl. 415—115 **9 Claims**



1. A device for allowing passage of a fluid flow through a barrier in a turbine engine where there is relative rotation between the barrier and the fluid flow, comprising
a receiver connected to the barrier in the turbine engine and having an annular cross section about a longitudinal axis and having a plurality of circumferentially spaced slots passing therethrough,
each slot having an opening at each opposite axial end of said slot and having a helical longitudinal axis which is inclined relative to the longitudinal axis of the receiver at an angle substantially equal to an angle of a relative approach velocity vector of the fluid approaching the receiver.

4,551,063

MEDIUM-PRESSURE STEAM TURBINE

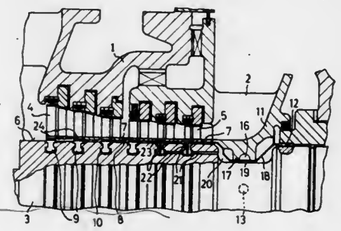
Klaus Raschke, and Gerhard Exner, both of Berlin, Fed. Rep. of Germany, assignors to Kraftwerke Union AG, Mulheim am Rhein, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,262

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3310396

Int. Cl.⁴ F01D *5/18*

U.S. Cl. 415—115 **6 Claims**



1. In a medium-pressure steam turbine of the single-flow type for use in a high-temperature steam turbine installation having a reheater and vapor transport means for feeding cooling steam to said medium-pressure steam turbine, said medium-pressure steam turbine having an output end and an input end,

an inflow part with a housing and a flow wall, a multiplicity of rotor blades arranged in a plurality of rows, a multiplicity of guide vanes arranged in rows alternating in an axial direction with said rows of rotor blades, a rotor with an outer surface, a baffle extending radially above said rotor and defining with said outer surface thereof a first annular space, said guide vanes being provided with shaft seals in the form of axial extensions juxtaposed to said outer surface of said rotor and defining therewith respective second annular spaces, said rotor blades having bases and said rotor having recesses, said bases being inserted in said recesses, said baffle extending from a stuffing gland on one side to the shaft seal of a first row of said guide vanes on the other side, the rotor blades in at least a plurality of consecutive rows at said input end of said medium-pressure turbine being provided with axial canals disposed above said outer surface of said rotor for interconnecting consecutive ones of said second annular spaces, the improvement wherein:
(a) the flow wall of the inflow part extends to the shaft seal of the first row of guide vanes at the input end of the turbine;
(b) said flow wall has an inner surface facing the outer surface of the rotor and carrying the baffle;
(c) said rotor has a plurality of axial cooling ducts extending from the first annular space to recesses containing the bases of rotor blades in at least the first row of rotor blades at said input end of the turbine; and
(d) the bases of the rotor blades in at least said first row of rotor blades are formed with radial connecting canals communicating with the axial canals of the respective rotor blades.

4,551,064

TURBINE SHROUD AND TURBINE SHROUD ASSEMBLY

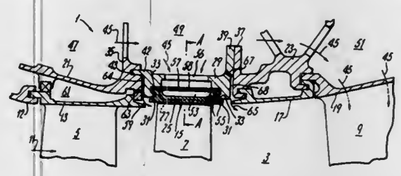
George Pask, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 464,145, Feb. 7, 1983, abandoned. This application May 24, 1985, Ser. No. 737,900

Claims priority, application United Kingdom, Mar. 5, 1982, 8206620

Int. Cl.⁴ F02C *7/18*

U.S. Cl. 415—116 **9 Claims**



1. A turbine shroud assembly for a gas turbine rotor stage, comprising
a shroud ring comprising a plurality of shroud segments consisting of a metallic alloy,
supporting structure circumferentially surrounding said shroud ring and to which said shroud segments are retained, at least said supporting structure consisting of a metallic alloy which retains its high strength at elevated temperatures, the supporting structure having a high strength at its normal operating temperature and the shroud segments having a substantially lower strength than the supporting structure at their normal operating temperature,
retaining means provided on said supporting structure and said shroud segments for retaining said shroud segments to said supporting structure,
means defining shroud chamber means between said shroud segments and said supporting structure,
means for supplying cooling air to pressurise said shroud chamber means, and
means for exhausting said cooling air from said shroud chamber means to a location downstream of said rotor stage;
said means for supplying cooling air to said shroud chamber means being adapted for metering said cooling air during operation of said turbine such that the total pressure forces acting outwardly on said shroud segments due to turbine gas pressure are substantially greater than the total pressure forces acting inwardly on said shroud segments due to cooling air pressure in said shroud chamber means, said shroud segments thereby experiencing an outward thrust, said shroud segments having means defining a plurality of load paths in addition to said retaining means distributed over said shroud segments so as to transfer said outward thrust to said supporting structure without overstressing said shroud segments.

4,551,065

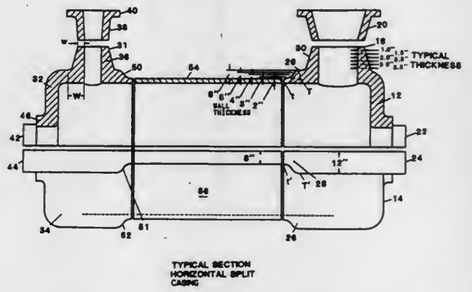
COMPOSITE HORIZONTALLY OR VERTICALLY SPLIT CASING WITH VARIABLE CASING ENDS

John H. Becker, 500 Meilleur St., Sherbrooke, Quebec J1H 3X4, Canada

Filed Dec. 13, 1982, Ser. No. 449,505

Int. Cl.⁴ F01D *25/24*

U.S. Cl. 415—219 R **3 Claims**



TYPICAL SECTION HORIZONTAL SPLIT CASING

1. A method of fabricating a casing which comprises:
forming an inlet section and an outlet section, each section having a one end and another end, the other end of one of the sections having an extension which diminishes from a maximum thickness T to a minimum thickness t, the extension when viewed in section being a trapezoidal-like section;
forming a shell section having outwardly facing surfaces of a given thickness;
trimming back the extension of the outer end of the one section until the extension terminates in an inwardly facing flat surface which is equal in thickness to the thickness to the inwardly facing surface of the shell section;
abutting the outwardly facing surfaces;
welding said surfaces together; and
joining the other of said sections to the shell casing to form a composite casing.

4,551,066

SUBMERGED WATER WHEEL

James O. Frisz, 921 Pear St., Brea, Calif. 92621

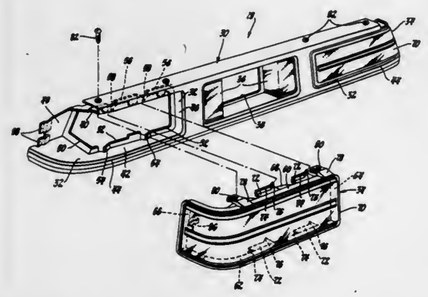
Filed Mar. 7, 1983, Ser. No. 473,001

Int. Cl.⁴ F03D *7/06*; F03B *7/00*

U.S. Cl. 416—119 **1 Claim**

1. Turbine apparatus within a large moving stream of water such as an ocean current for extracting energy from the moving stream, comprising:
a rotating frame member including a ballast chamber;
means supporting the rotating frame member for rotation about an axis;

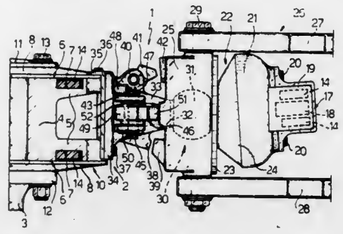
a plurality of vanes with included ballast chambers;
means rotatably mounting the vanes on the frames at angularly spaced intervals around the axis of rotation of the frame member, each vane rotating about an axis parallel to the axis of rotation of the frame member with said vanes being laterally supported along their full respective axes of rotation;
each vane further having elongated closely spaced major outer surfaces extending parallel to and lengthwise of the axis of rotation of the vane, the major surfaces of each vane being curved slightly and intersecting in leading and trailing edges that are parallel to the axis of rotation of the vanes, said vanes also having a cross-sectional foil shape with the maximum width being closer to said leading edge, with the axis of rotation of each vane being positioned at the widest part of the foil and at a point approximately one-third from the leading edge of the vane to its trailing edge;
stop means limiting the rotation of the respective vanes between first and second angular positions, the vanes in the first position having the plane defined by the leading



and trailing edges extending radially from the axis of rotation of the shaft with the trailing edge nearest said axis of rotation; and
means controlling the rate of rotation of the vanes about their own axis of rotation in the one direction going from the second position to the first position, said means controlling the rate of rotation including a piston and cylinder connected between each vane and the frame member, the movement of the piston in the cylinder displacing a fluid to restrict the movement of the piston, said controlling means including means for adjusting the rate of rotation in said one direction to approximately half the rate of rotation of the rotating frame member, whereby each vane rotates the 135 degrees between the second position and first position about its axis of rotation in the same time that the frame member rotates through 270 degrees;
said means for adjusting the rate of rotation of the vanes including a flow meter for sensing changes in the velocity of the stream, means for rotating the flow meter with changes in direction of the stream of water, and means responsive to the flow meter for adjusting the restriction to fluid flow out of the cylinder by the piston.

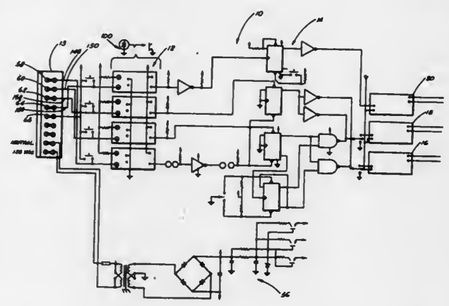
4,551,067
HELICOPTER ROTOR
Vittorio Caramaschi, Gallarate, and Pier Luigi Castelli, Busto Arsizio, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy
Filed Mar. 2, 1983, Ser. No. 471,342
Claims priority, application Italy, Mar. 11, 1982, 67304 A/82
Int. Cl.⁴ B64C *27/38*
U.S. Cl. 416—140 **7 Claims**

1. A helicopter rotor including a central hub rotatable about its axis having a plurality of blades affixed thereto, the blades extending radially outwardly of the hub, a coupling means which connects the blades to the hub and permits the blades to oscillate with respect to the hub in a plane perpendicular to said axis wherein each blade further comprises:
a surface (**52**) positioned substantially perpendicular to said plane and rigidly connected to the blade for limiting oscillations of the blade in said plane;
an abutment means (**46**) supported by the hub (**2**) and cooperating with the surface (**52**) to limit oscillation in said plane within variable limits in a predetermined range as a direct function of the angular velocity of the hub (**2**) itself wherein the abutment means (**46**) is movable with respect to the hub (**2**) in said plane by the effect of centrifugal



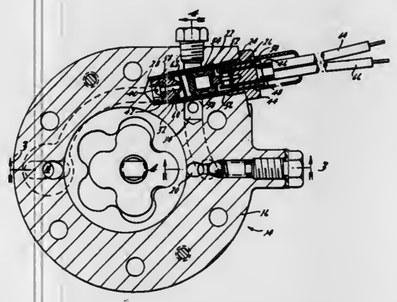
force wherein the abutment means further comprises two rockers rotatably mounted about axes which are substantially parallel to the axis of rotation of the hub (**2**), the rockers rotatable between a first position in which one of the arms (**51**) of each said rocker (**46**) is disposed facing surface (**52**) at a predetermined distance therefrom, and a second position in which said arm is rotated so that it is no longer facing surface (**52**) and is outside the path followed by surface (**52**);
a resilient means (**50**) which is in elastic communication with the abutment means (**46**) and which acts on the abutment means in a direction against the direction of centrifugal force.

4,551,068
DUPLEX PUMP CONTROLLER
Ronald J. Boudreaux, P.O. Box 722, Station 2, Houma, La. 70360
Continuation-in-part of Ser. No. 316,503, Oct. 29, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 517,186
Int. Cl.⁴ G08B *19/00;* **E03F** *7/00;* **F04B** *49/10, 49/06*
U.S. Cl. 417—8 **16 Claims**



1. A duplex pump controller adapted for use in wet wells having a flammable gas environment, comprising:
a. means responsive to varying fluid levels within said well for providing signals in response thereto;
b. a terminal block connected to said means for providing a barrier between said response means and said controller;
c. a plurality of optically coupled interface units connected to said terminal block for providing spark free intercoupling to said controller;
d. precise current limiting means connected in series to each of said interface units for providing safe current levels thereto;
e. a power source connected to said current limiting means for providing power to said controller and said current limiting means; and
f. solid state relay latching means and logic control circuitry connected to said interface units for activating said pump controller.

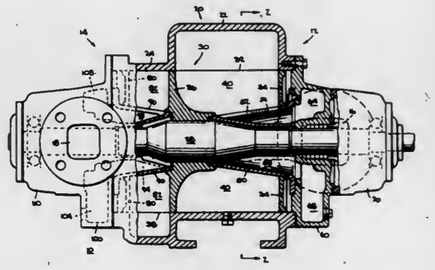
4,551,069
INTEGRAL OIL PRESSURE SENSOR
Mark R. Gilmore, Troy, Ohio, assignor to Copeland Corporation, Sidney, Ohio
Filed Mar. 14, 1984, Ser. No. 589,325
Int. Cl.⁴ F04B *49/02, 49/10, 49/06*
U.S. Cl. 417—13 **4 Claims**



1. A pressure lubrication system for a refrigeration compressor comprising:
a compressor housing;
compressor means within said housing;
motor means within said housing and drivingly connected to said compressor means;
lubricant pump means drivenly connected to said motor means, said pump means being operative to supply lubricant to said compressor means and including a housing having an inlet and an outlet, said inlet communicating with a fluid reservoir which is subject to wide pressure differentials; and
self-contained sensor means removably positioned within said pump housing and passage means within said pump housing for placing said sensor means in communication with said inlet and said outlet, said sensor means being operative to de-energize said motor in response to a sensed differential condition between said inlet and outlet outside of a predetermined range.

4,551,070
NOISE CONTROL FOR CONICALLY PORTED LIQUID RING PUMPS
Ole B. Olsen, Newtown; Charles W. Bilik, Norwalk; Herbert H. Johnson, Georgetown, and Charles M. Jozepaitis, Bridgeport, all of Conn., assignors to The Nash Engineering Company, Norwalk, Conn.
Continuation-in-part of Ser. No. 564,881, Dec. 23, 1983,. This application Dec. 21, 1984, Ser. No. 685,236
Int. Cl.⁴ F04C *19/00*
U.S. Cl. 417—68 **5 Claims**

1. A liquid ring pump comprising:
an annular housing;
a rotor rotatably mounted in the housing and having a frusto-conical bore concentric with the rotor axis;
a frusto-conical port member disposed in the bore and fixedly mounted relative to the housing, the port member including (1) a gas intake port, (2) a first gas discharge port located beyond the intake port in the direction of rotor rotation and having a closing edge including a segment which is inclined in the direction of rotor rotation from a first relatively large diameter circumference portion of the port member to a second relatively small diameter circumference portion of the port member, the first and second circumference portions being axially spaced from one another along the rotor axis, and (3) a second gas discharge port spaced from the first discharge port and located beyond the inclined closing edge segment but before the intake port in the direction of rotor rotation, the second gas discharge port including a plurality of apertures spaced from one another along at least a major portion of the length of the inclined closing edge segment.
5. A liquid ring pump comprising:
an annular housing;
a rotor rotatably mounted in the housing and having a frusto-conical bore concentric with the rotor axis;



a frusto-conical port member disposed in the bore and fixedly mounted relative to the housing, the port member including (1) a gas intake port, (2) a first gas discharge port located beyond the intake port in the direction of rotor rotation and having a closing edge including a segment which is inclined in the direction of rotor rotation from a first relatively large diameter circumference portion of the port member to a second relatively small diameter circumference portion of the port member, the first and second circumference portions being axially spaced from one another along the rotor axis, and (3) a second gas discharge port spaced from the first discharge port and located beyond the inclined closing edge segment but before the intake port in the direction of rotor rotation, the second gas discharge port having (a) an opening edge which is substantially parallel to the inclined closing edge segment, and (b) a closing edge having (i) a mid-portion spaced from the opening edge, and (ii) end portions on each side of the mid-portion which are inclined toward respective opposite ends of the opening edge.

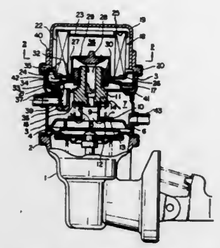
4,551,071
DIAPHRAGM-TYPE FUEL PUMP
Kichio Ohgaki, and Kazuhiro Ohshima, both of Ibaragi, Japan, assignors to Kyosan Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1984, Ser. No. 616,459
Claims priority, application Japan, Jun. 2, 1983, 58-96975; Jun. 2, 1983, 58-96977; Jun. 2, 1983. 58-96979; Jun. 2, 1983, 58-96980
Int. Cl.⁴ F04B *39/16, 39/14, 43/14*
U.S. Cl. 417—313 **8 Claims**

1. A diaphragm-type fuel pump, comprising:
an outer chamber housing made of a metal plate and having therein a fuel outlet chamber, a pump chamber, and pump means for pumping fuel from said pump chamber into said fuel outlet chamber, said pump means including a reciprocally movably diaphragm, said outer chamber housing having an upper wall and a side wall;
a fuel filter unit supported on an upper surface of said upper wall and said outer chamber housing and means for detachably securing said fuel filter unit to said outer cham-

ber housing, said fuel filter unit having a fuel inlet chamber therein, a filter disposed in said fuel inlet chamber, and substantially centrally located fuel inlet valve means for allowing fuel to pass through said filter, said inlet valve means including a valve member made of rubber;

a connector disposed in said outer chamber housing, having an end attached to said upper wall thereof, and having a hole therein which communicates with an opening provided through said upper wall of said outer chamber housing;

a fuel inlet pipe extending from said connector through said side wall of said outer chamber housing and having a passageway therein which communicates with said hole in said connector; wherein said fuel filter unit includes a lower casing having an annular drain groove along an outer peripheral edge thereof and having a plurality of ports therethrough, fuel from said inlet pipe flowing through said connector, through said opening in said upper wall, through said ports in said lower casing, into said fuel inlet chamber, and through said filter in said fuel



inlet chamber, said ports in said lower casing being located vertically higher than said annular drain groove; and wherein said means for detachably securing said filter unit to said outer chamber housing includes a nut fixedly and substantially centrally supported on said fuel filter unit and a bolt supported on said outer chamber housing and extending substantially centrally through said upper wall thereof, said nut being threaded over said bolt, said bolt extending into said fuel filter unit, and said bolt having a hole therethrough which provides fluid communication between said fuel inlet chamber and said pump chamber; and

a substantially tubular fuel holder fixed to said outer chamber housing and projecting upwardly past said upper wall thereof, said upper wall of said outer chamber housing and said fuel holder together defining a substantially cup-shaped fuel reservoir below said fuel filter unit, said cup-shaped fuel reservoir receiving fuel which drops from said fuel filter unit when said fuel filter unit is detachable from said outer chamber housing.

4,551,072

FLUID PRESSURE OPERATED ACTUATOR

Heinz Barall, Don Mills, Canada, assignor to Hibar Systems Limited, Thornhill, Canada

Filed Feb. 15, 1984, Ser. No. 580,498

Int. Cl.⁴ F04B *21/02*

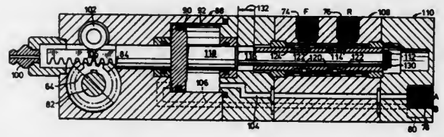
U.S. Cl. 417—318 **7 Claims**

2. A fluid pressure operated actuator for cyclically actuating first and second devices in synchronism, comprising:

a piston/cylinder unit including a piston carried by a piston rod and reciprocable in a cylinder under the effect of pressure from a fluid pressure source;

means for coupling the piston rod to said first device so that said device is actuated at each cycle of the piston;

valve means for controlling supply of a pressurized fluid to said second device in synchronism with and after the first said device at each said cycle, independent of the supply of pressurized fluid to the piston/cylinder unit, said valve means comprising: a housing having a pressure port adapted to be coupled to a fluid pressure source, an exhaust port, and at least one fluid transfer port adapted to be coupled to said second device; a valve member in said housing, said valve member defining fluid passageways for providing communication between said ports and being movable in said housing between two spaced positions in one of which said pressure port communicates with said fluid transfer port, and in the other of which said



fluid transfer port communicates said exhaust port; and means coupling said valve member and said piston of the piston/cylinder unit so that reciprocation of the piston causes movement of the valve member between its said positions; said coupling means being adapted to allow limited lost motion between the piston rod and valve member at each end of the stroke of the piston for assuring actuation of said first device before said second device at each cycle.

4,551,073

PUMP FOR LIQUID AND GASEOUS FLUIDS, ESPECIALLY BLOOD

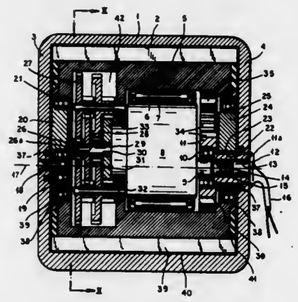
Walter Schwab, Kahlsperg 694, A-5411 Oberalm, Austria

Filed May 11, 1983, Ser. No. 493,693

Claims priority, application Austria, May 12, 1982, 1857/82; Sep. 9, 1982, 3364/82

Int. Cl.⁴ F04B *35/04*; F04C *1/02*

U.S. Cl. 417—352 **20 Claims**



1. A pump for gas or liquid fluids, especially blood, comprising:

a housing having a peripheral wall formed with a trochoidal surface having at least one lobe;

a rotor formed as a rotary piston body in said housing having at least two edges defining respective seals with said surface;

an eccentric in said rotor and rotatable relative thereto define a trochoidal movement for said rotor edges along said surface whereby said fluid is displaced by said rotor;

an inlet port and an outlet port formed in said housing for delivering said fluid to and discharging said fluid from said housing; and

drive means including an electric motor disposed within said rotor and planetary gear transmission means operatively connected to said rotor and to said motor whereby said rotor is driven to cause said trochoidal movement of said edges along said surface and eccentric rotation of said rotor in said housing, said drive means having an eccentric shaft extending toward a lateral wall of said housing, and journaled for rotation relative thereto, said eccentric shaft being offset from a shaft of said motor, and defining an eccentric axis for said rotor at said lateral wall of said housing, and rotating contact means cooperating with said eccentric shaft at said lateral wall for energizing said electric motor.

4,551,074

AIR PUMP APPARATUS

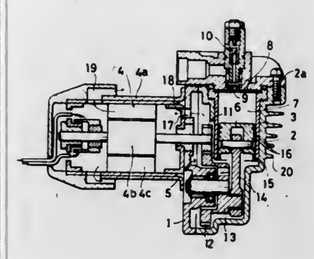
Urataro Asaka, Kamifukuoka; Shigeo Kanai, Miyazaki; Yasuhiro Tanaka, Miyazaki, and Kazuya Iwamoto, Miyazaki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Honda Rokku, Kiyazaki, both of, Japan

Filed Sep. 30, 1982, Ser. No. 428,795

Claims priority, application Japan, Oct. 1, 1981, 56-154745; Oct. 1, 1981, 56-154746; Oct. 1, 1981, 56-144981; Oct. 1, 1981, 56-144982[U]

Int. Cl.⁴ F04B *35/04*; F01B *31/10*

U.S. Cl. 417—366 **6 Claims**



1. An air pump apparatus having a cylinder means extending from a pump casing, said cylinder means comprising a cylinder liner positioned within the walls of the cylinder means and having a front portion, a piston having a front and being mounted for reciprocating movement within said cylinder liner, a pump chamber being formed between the front of the piston and the front portion of the cylinder liner, an annular gap formed between said piston and an inner wall of said cylinder liner; said piston having a plurality of annular grooves formed on an outer circumferencial surface thereof, the annular gap and annular grooves forming a labyrinth path extending from said pump chamber; to the interior of the pump casing and said pump casing being provided with an air discharge opening for discharging air in the casing to the exterior.

4,551,075

WELL PUMP

Carlos R. Canalizo, 10511 Allegheny Dr., Dallas, Tex. 75229

Continuation-in-part of Ser. No. 317,449, Nov. 2, 1981, abandoned. This application Apr. 21, 1983, Ser. No. 487,005

Int. Cl.⁴ F04B *47/08*

U.S. Cl. 417—383 **5 Claims**

1. A hydraulic pump comprising,

a body,

a power cylinder in said body,

a power piston in said power cylinder,

a production cylinder in said body,

a production piston in said production cylinder,

a connecting rod rigidly interconnecting said pistons,

a production fluid inlet to the head end of the production cylinder,

a standing valve in said production fluid inlet,

a traveling valve in said production piston,

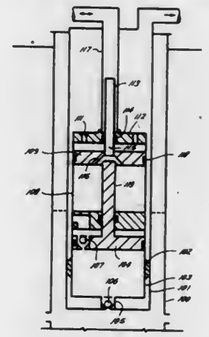
a power fluid inlet to the rod end of said power cylinder,

a production fluid outlet in the body connected to the head end of the power cylinder and to the rod end of the production cylinder,

seal means about the exterior of the body, and support means on the body:

in combination with;

a landing nipple having support means for engagement with said pump support means and supporting said pump,



a polish bore section for receiving said seal means, and

a by-pass passageway extending from a point above the pump to a first point to provide fluid communication with the rod end of the production cylinder,

said nipple having a port establishing fluid communication with the rod end of the power cylinder.

4,551,076

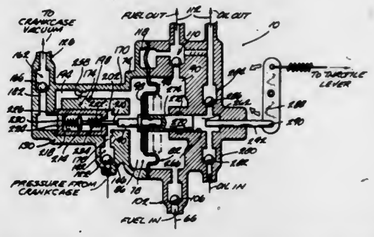
FLUID DRIVEN PUMP WITH ONE-WAY VALVE IN FLUID INLET

Chester G. DuBois, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 7, 1983, Ser. No. 540,045

Int. Cl.⁴ F02B *33/06*

U.S. Cl. 417—395 **21 Claims**



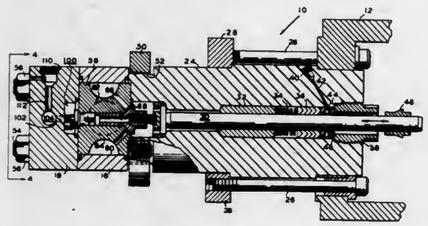
1. A fluid driven pump comprising a pump housing defining a recess including therein a moveable wall which divides said recess into a variable volume driving chamber and a variable volume pumping chamber, a pressure inlet communicable with said driving chamber and adapted to communicate with a source of pressure which oscillates between an operating pressure and a pressure different from the operating pressure, said pressure inlet including one-way valve means for permitting fluid under the operating pressure to communicate with said driving chamber and thereby to move said moveable wall in one direction when said driving chamber is in communication with said pressure inlet, a vent communicable with said driving chamber and adapted to be in communication with a source of pressure different from said operating pressure, a spring in said pumping chamber and extending between said moveable wall and said pump housing, and means for selectively controlling communication of said driving chamber with said pressure inlet and said vent.

4,551,077

HIGH PRESSURE PUMP

Amos Pacht, Houston, Tex., assignor to Butterworth Inc., Florham Park, N.J.

Filed Mar. 22, 1984, Ser. No. 592,395
Int. Cl.[4] F04B *21/02, 21/08;* **F16J** *15/18*
U.S. Cl. 417—454 **14 Claims**



1. In a high pressure in-line valve liquid reciprocating pump including a pump drive housing and a reciprocating plunger, the improvement comprising, a cylinder and stuffing box means surrounding said plunger, first independent securing means fixedly attaching a first end of said cylinder and stuffing box means to said drive housing, said cylinder and stuffing box means having a second end including a threaded portion about the outer end periphery thereof, mounting adapter ring means threadably secured to said threaded portion, suction manifold means having a first face in contact with said second end and a second face in a plane parallel to said first face, discharge manifold means in contact with said second face; suction and discharge valve assembly means disposed within an interior cavity of said suction manifold means and including a suction valve adjacent said second end and axially aligned with the axis of said plunger and a discharge valve adjacent said discharge manifold means and axially aligned with the axis of said plunger, and second independent securing means fixedly attaching said suction and discharge manifold means and valve assembly means as a unit to said mounting adapter ring means, whereby either the manifold end of said pump or the cylinder and stuffing box end of said pump may be disassembled independently of the other end for easy field maintenance thereof.

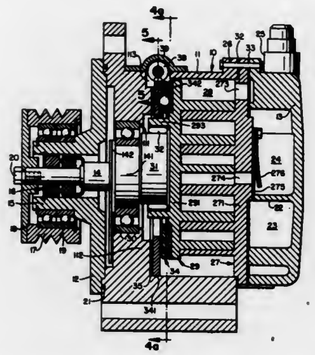
4,551,078

SCROLL-TYPE FLUID DISPLACEMENT APPARATUS WITH ANGULAR OFFSET VARYING MEANS

Masaharu Hiraga, Honjyo, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Oct. 9, 1981, Ser. No. 310,312
Claims priority, application Japan, Oct. 9, 1980, 55-141666
Int. Cl.[4] F01C *1/04, 21/16*
U.S. Cl. 418—16 **6 Claims**

1. In a scroll type fluid displacement apparatus including a housing having a fluid inlet and a fluid outlet, a fixed scroll member fixedly disposed relative to said housing and having an end surface from which a first wrap means extends into the interior of said bushing, an orbiting scroll member having an end plate means from which a second wrap extends, said first and second wrap means interfitting at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, drive means operatively connected to said orbiting scroll member to effect orbital motion of said orbiting scroll member, and rotation preventing means for preventing rotation of said orbiting scroll member during orbital motion thereof, whereby said fluid pockets change volume by the orbital motion of said orbiting scroll member; the improvement comprising turning means operatively coupled to said orbiting scroll member through said rotation preventing means for varying the angular offset of said first and second wrap means independently of the operation of said drive means, said turning means being operable from the outside of said housing.

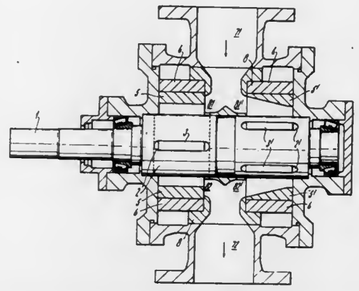


4,551,079

ROTARY VANE PUMP WITH TWO AXIALLY SPACED SETS OF VANES

Alexander S. Kain, Minety, England, assignor to Plenty Limited, England

PCT No. PCT/GB83/00243, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01408, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 28, 1983, Ser. No. 611,003
Claims priority, application United Kingdom, Sep. 28, 1982, 8227630
Int. Cl.[4] F04C *11/00, 15/04*
U.S. Cl. 418—26 **10 Claims**



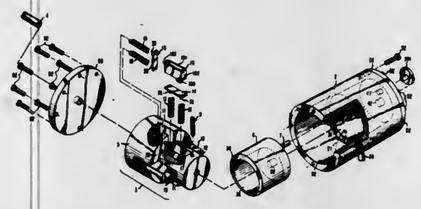
1. A sliding vane type rotary pump comprising
two sets of vanes slidably mounted to a rotor shaft, said vane sets being located at spaced longitudinal positions along the shaft's axis,
a rotor surrounding each of said vane sets, each rotor having flats on its inner surface contacted by the outer ends of the vanes associated therewith, said vanes of each set and said rotor shaft cooperating to define two sets of chambers located at spaced longitudinal positions along the shaft's axis, the inlets and outlets to one set of chambers being through one side face thereof, and the inlets and outlets to the other set of chambers being through the adjacent side face of said other set, so that the inlets and outlets of said two chamber sets face one another,
a stator within which said rotors and rotor shaft are positioned, and
a common pump inlet and a common pump outlet at least partially defined by said stator, said inlet and outlet being located between said longitudinally spaced chambers, the fluid inflow to and fluid outflow from said two chamber sets thereby being generally parallel to the shaft's axis as fluid passes through said pump from said common inlet to said common outlet.

4,551,080

VARIABLE DISPLACEMENT SLIDING VANE PUMP/HYDRAULIC MOTOR

Cletus M. Geiger, 3 E. High St., Bound Brook, N.J. 08805

Filed Oct. 19, 1983, Ser. No. 543,465
Int. Cl.[4] F04C *15/04*
U.S. Cl. 418—28 **9 Claims**



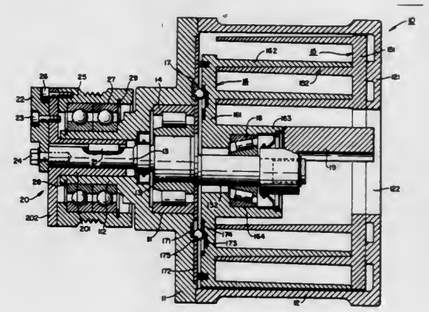
1. A variable displacement sliding vane pump/hydraulic motor comprising:
a. a housing which forms an eccentric chamber and a contiguous concentric chamber and contains a fluid inlet port and a fluid outlet port,
b. a sliding wall which sits slideably inside said eccentric chamber and which contains a rotor chamber which is concentric with said concentric chamber,
c. a rotor assembly comprising a hub which fits rotatably inside said concentric chamber and a rotor which fits rotatably inside said rotor chamber, and which contains a plurality of radial slots,
d. a shaft which is attached concentrically to said rotor assembly,
e. a plurality of sliding vanes which slideably fit into said radial slots in said rotor assembly,
f. tensioning means which impress said sliding vanes outward in radial direction,
g. lateral tensioning means which impress said sliding vanes in a direction parallel to the center line of said rotor assembly,
h. end plates which enclose the ends of said housing to prevent fluid loss therefrom, and
i. a means to slideably position said sliding wall within said eccentric chamber.

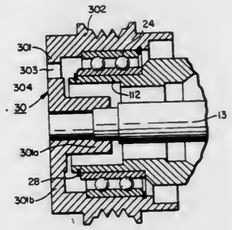
4,551,081

PULLEY MECHANISM FOR FLUID DISPLACEMENT APPARATUS

Tadashi Sato, Maebashi, and Masaharu Hiraga, Honjo, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 433,795, Oct. 12, 1982, abandoned. This application Oct. 26, 1984, Ser. No. 665,087
Claims priority, application Japan, Oct. 12, 1981, 56-162212
Int. Cl.[4] F04C *18/02;* **F01C** *1/02*
U.S. Cl. 418—55 **3 Claims**





1. In an orbiting piston type fluid displacement apparatus including a housing having a front end plate, a fixed member fixedly disposed relative to said housing, an orbiting piston member disposed within said housing and interfitting with said fixed member to make a plurality of line contacts to define a sealed off fluid pocket, and a drive shaft penetrating said front end plate and being rotatably supported by said front end plate, the drive shaft being connected to said orbiting piston member to effect orbital motion of said orbiting piston member, the improvement comprising said front end plate being formed with an annular sleeve extending from a front end surface of said front end plate for surrounding said drive shaft, a first bearing carried by said front end plate for rotatably supporting said drive shaft, a rotor member including a pulley element, a tubular element and a radial flange element, and a second bearing carried on the outer surface of said sleeve and within the inner surface of said pulley element for rotatably supporting said drive shaft, said pulley element extending over and being rotatably supported by said second bearing, said tubular element being fixed on the outer end of said drive shaft, and said radial flange element radially projecting from an axial end of said tubular element and connected to said pulley element at its outer peripheral end surface, said rotor member being held in axial position by a first snap ring connected to an outer surface of said sleeve, a second snap ring connected to an inner surface of said pulley element, a first shoulder formed on the outer surface of said sleeve, and a second shoulder formed on the inner surface of said pulley element, said pulley, tubular and radial flange elements of said rotor member being formed integral with one another, and combined unbalance and access means for both unbalancing said rotor member and for providing access through said rotor member to one of said snap rings to accomplish the fitting operation of said last-mentioned snap ring, said combined unbalance and access means being an arc shaped hole formed completely through said radial flange element into the area between the outer surface of said sleeve and the inner surface of said pulley element, and extending over only a portion of said radial flange element to make said rotor member unbalanced.

4,551,082

BEARING DEVICE OF SEALED TYPE SCROLL COMPRESSOR

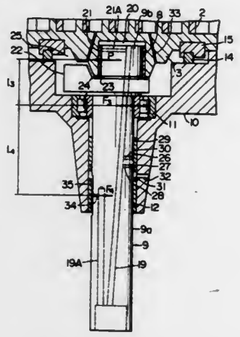
Eiichi Hazaki, Ibaraki; Hiroaki Kuno, Shimizu; Naoshi Uchikawa, Shimizu; Takahiro Tamura, Shimizu; Akira Murayama, Shimizu, and Takao Mizuno, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 563,040

Claims priority, application Japan, Dec. 22, 1982, 57-223770

Int. Cl.⁴ F04C *18/04, 29/02*

U.S. Cl. 418—55 **7 Claims**



1. In a sealed type scroll compressor comprising:
a sealed chamber;
a compressor section including a fixed scroll member and an orbiting scroll member located in an upper portion of said sealed chamber;
an electric motor section located in a lower portion of said sealed chamber;
a crankshaft including a crank section connected to said orbiting scroll member and a shaft section supported by a frame; and
an intermediate pressure chamber defined between the orbiting scroll member and the frame and having a pressure intermediate a discharge pressure and a suction pressure;
a bearing device comprising:
a roller bearing located on the frame in a position close to the crank section of the crankshaft for supporting the shaft section thereof; and
a plain bearing located on the frame in a position remote from the crank section for supporting the shaft section and wherein an oil feeding section is provided on the frame between the ball-and-roller bearing and the plain bearing for feeding to the ball-and-roller bearing oil drawn through an eccentric feed oil passage formed in the crankshaft.

4,551,083

DUAL ROTOR GEAR ASSEMBLY FOR TROCHOIDAL ROTARY DEVICE

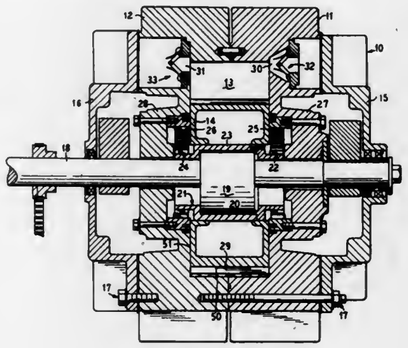
Ralph M. Hoffmann, Eden Prairie, Minn., assignor to Trochoid Power Corporation, Eden Prairie, Minn.

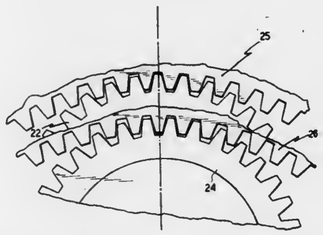
Filed May 21, 1984, Ser. No. 612,419

Int. Cl.⁴ F01C *1/22, 17/02*

U.S. Cl. 418—61 A **8 Claims**

1. A trochoidal rotary device comprising a rotor disposed for planetating movement on a shaft, said rotor having a symmetrical peripheral profile surface, a housing having a peripheral wall surface defining a cavity for containing said rotor, an eccentric mounted on said shaft and supporting said rotor for movement in said cavity on said shaft, and working chambers defined in said cavity between said rotor peripheral profile surface and said housing peripheral wall surface, the improvement comprising that the rotor movement is substantially free of lateral wobble in that said rotor is disposed for movement in said cavity on said shaft by a like pair of timing gear systems engaged with said rotor and disposed on opposed lateral sides of said rotor, each said timing gear system comprising a pinion gear and a ring gear, said pair of timing gear systems being





equally loaded at all times during movement of said rotor and circumferentially offset relative to one another so as to not be in radial alignment with one another.

4,551,084

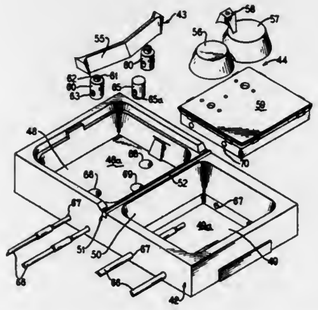
CONVERTIBLE MOLD

Connie Lake, Tinley Park, Ill., assignor to Creative Industries, Inc., Bridgeview, Ill.

Filed May 25, 1983, Ser. No. 497,843

Int. Cl.⁴ B29C *1/00*

U.S. Cl. 425—185 **19 Claims**



1. A plastic molding apparatus for forming three dimensional containers from a single sheet of synthetic plastic material, each container comprising side-by-side generally dish-shaped container members which are hinged together, said dish-shaped members having different interior configurations with respect to one another, and which apparatus comprises opposed relatively movable base means, opposed relatively movable pairs of male and female mold members carried by said base means, at least one of said male and female mold members of each pair of said male and female mold members having peripheral product forming surfaces defining the outer boundaries of a container to be molded by said pair of said male and female mold members, a first plurality of different inserts having different projecting configurations for selective attachment to a first member of each of said pair of male and female mold members, a second plurality of different inserts having different projection configurations for selective attachment to a second member of each of said pair of mold members having surfaces complimentary to the first plurality of inserts to establish a male/female mold relationship between said first and second plurality of inserts, quick change means for individually detachably securing the plurality of first and second inserts to an associated mold member and thus enabling the molds to produce containers having selected variable predetermined physical characteristics determined by said plurality of inserts without change of said first and second members or said base means, means on said male and female mold members for producing a hinge between the dish-shaped members, said quick change means comprising locking rod means carried by said mold members, said inserts having opening means cooperating with said rod means for locking said inserts into assembly with said associated mold member.

4,551,085

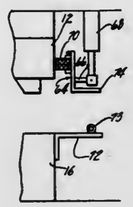
COMPRESSION MOLDING APPARATUS HAVING VACUUM CHAMBER

Joseph N. Epel, Southfield, and Robert E. Wilkinson, Birmingham, both of Mich., assignors to The Budd Company, Troy, Mich.

Continuation of Ser. No. 488,494, Apr. 28, 1983, Pat. No. 4,488,862. This application Dec. 14, 1984, Ser. No. 681,567

Int. Cl.⁴ B29G *1/00*

U.S. Cl. 425—405 R **8 Claims**



1. Apparatus for compression molding a part from a charge having a curable resin therein, said apparatus comprising:
upper and lower die members defining a mold cavity therebetween generally corresponding to the shape of the desired part when the dies are closed;
means for moving the die members relative to each other, said means being operative to move the die member to an open position where the die members are spaced apart of sufficient distance to permit the charge to be placed on the lower mold, said means being further operative to move the die members to a partially closed position where the mold cavity is essentially defined but the upper die remains spaced from the charge, and said means being subsequently operative to move the die members to a fully closed position where the upper die member contacts the charge;
a fixed member providing a first horizontally extending surface surrounding the lower die and connected thereto in a fluid-tight manner;
a vertically movable ring member surrounding, yet spaced from, the upper die, which provides a second horizontal surface substantially aligned with the firs horizontal surface;
means independent from said means for moving, for moving said ring relative to said die members;
sealing means extending between the ring and upper die providing a seal therebetween while permitting relative movement therebetween;
said first and second surfaces being arranged so as to cooperate to provide an air seal therebetween when the die members are moved to the partially closed position thereby defining a sealed vacuum chamber surrounding the mold cavity;
vacuum means for evacuating the sealed chamber; and
said means for moving the die members being operable to move the upper die to the fully closed position after the vacuum chamber has been evacuated whereby the resin in the mold cavity can cure to form the finished part.

4,551,086

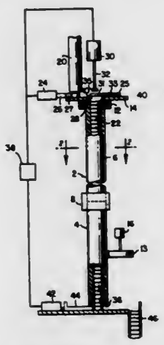
DEVICE FOR CENTRIFUGALLY CASTING ARTICLES

David L. Rawlings, Bayville, N.Y., assignor to International Hydron Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,814

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 425—425 **15 Claims**



1. An improvement in a device for the centrifugal casting symmetrical or asymmetrical contact lenses said device having a rotatable polymerization column adapted for accommodating a plurality of molds within said polymerization column; advancing means for positioning a mold containing a polymerizable or curable composition into alignment with the inlet end of said polymerization column; displacement means for feeding said advanced mold into said inlet end of said polymerization column; and control and motor means for operating said advancing means and displacement means and for rotating said column, the improvement wherein said advancing means include pusher means for advancing said mold into alignment with the inlet end of said column, said pusher means being adapted to accommodate a portion of said mold, and jaw means cooperating with said pusher means to envelope said mold in a manner such as to prevent horizontal angular displacement of said mold when said mold is in alignment with said inlet end and wherein said displacement means for feeding said advanced mold into said inlet includes an end portion adapted to be inserted into sad mold for directing said mold into said inlet portion of said column.

4,551,087

EXTRUSION APPARATUS

Ali Pan, Storrington Township, and Karl S. Cohrs, Kingston, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 11, 1984, Ser. No. 619,043

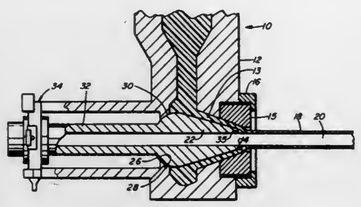
Int. Cl.⁴ B29F *3/04*

U.S. Cl. 425—466 **16 Claims**

1. Extrusion apparatus comprising an extrusion head having

a passage for material to be extruded, an extrusion die and a die insert which between them define a die orifice of endless form, the die insert extending upstream along a die passage from the die orifice, mounted in the head in a universal mounting and having a portion extending from the head in the direction opposite to the die orifice, and means to effect arcs of movement of the die insert about its mounting along two different and crossing paths and, in respect of movement along each path;

said means comprises two opposing thrust means spaced-apart one at each side of said insert portion, the thrust means operable interconnected to be movable together alternatively in one directional sense or in the opposite directional sense and operable, one by movement in each



directional sense, to apply thrust to cause movement of the insert portion in one direction or the other along said path, the thrust produced by each thrust means during its operational movement being at an angle to the movement in the directional sense while the operable interconnection between the thrust means ensures that the insert portion maintains continuous operable engagement with both thrust means during movement in either directional sense to enable a thrust means to apply thrust immediately upon change in the directional sense of movement; and

during movement of the die insert in either direction along one path, the two opposing thrust means associated with movement along the other path are operably connected to the die insert to act as guides to hold it on said one path.

4,551,088

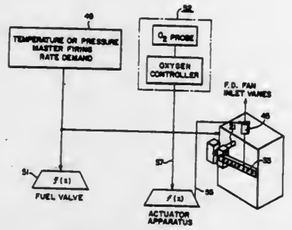
COMBUSTION CONTROL SYSTEM

Donald M. Stough, Jackson, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 392,978, Jun. 28, 1982, Pat. No. 4,479,774. This application Aug. 22, 1984, Ser. No. 643,126

Int. Cl.⁴ F23N *5/00*

U.S. Cl. 431—76 **9 Claims**



1. A combustion control system for a combustion apparatus supplied with fuel which is mixed with an intake of a combustive agent, including oxygen, said combustion apparatus being a two point parallel positioning system in which the amount of fuel supplied is directly controlled by a master positioner and the amount of combustive agent supplied is controlled by a master controller which actuates a master member movably mounted about a first axis, a slave member movably mounted about a second axis for regulating the amount of combustive agent intake and an intermediate linkage strut having a fixed longitudinal dimension connected between said master member and said slave member for establishing a masterslave relationship for travel through relative predetermined arcs of travel which provides a fixed combustive agent to fuel ratio, said combustion control system comprising:

a linkage strut adjustor apparatus, longitundinally expandable and contractable, in mechanical communication with said intermediate linkage strut to modify the longitudinal dimension thereof such that said master-slave relationship is a function of said adjustor apparatus;

actuator means for effecting said longitudinal expansion and contraction of said linkage strut adjustor apparatus, remotely disposed relative to said linkage strut adjustor apparatus and in mechanical communication therewith, wherein the actuator means is in mechanical communication with the adjustor apparatus by means of a cable means whereby said remotely disposed actuator means effects the modification of the longitudinal dimension of the adjustor apparatus by said cable means.

4,551,089

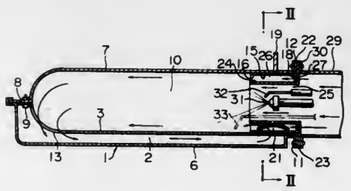
EVAPORATION BURNER

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Company, Ltd., Tokyo, Japan

Filed Jul. 30, 1984, Ser. No. 635,582

Int. Cl.⁴ F23D *11/44*

U.S. Cl. 431—116 **2 Claims**



1. An evaporation burner comprising a burning unit having a hollow gas chamber therein and burning plates on its surface, a gas generating chamber through which a preheat burning flame may flow, said gas generating chamber being located adjacent to said burning unit and substantially along the center-line of said burning unit, an inlet window through which the preheat burning flame within said gas generating-chamber may flow into said burning unit, and recirculation windows through which a part of the preheat burning flame entering into said burning unit may be recirculated back to said gas generating chamber, wherein said burning unit and said gas generating chamber are communicated to each other.

4,551,090

BURNER

Klaus Leikert; Gerhard Büttner, and Sigfrid Michelfelder, all of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Continuation of Ser. No. 180,706, Aug. 25, 1980, abandoned. This application Dec. 19, 1983, Ser. No. 562,848

Int. Cl.⁴ F23M *9/00*

U.S. Cl. 431—188 **4 Claims**

1. A burner for combustion of fuel which contains nitrogen and for which purpose, said burner comprises in combination therewith:

a main air supply conduit;

a core-air tube which is in communication with said main air conduit;

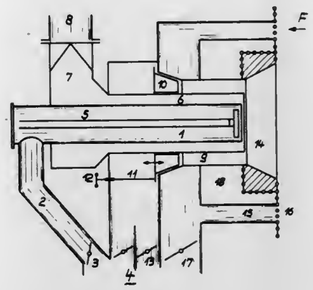
an oil atomizing lance centrally arranged in said core-air tube;

a dust tube which surrounds at least a part of said core-air tube;

a mantle-air tube which surrounds at least a part of said dust tube and is provided with an air inlet which is in communication with said main air supply conduit, said mantle-air tube being connected to and in communication with a burner opening which widens conically from said mantle-air tube toward a combustion chamber;

an axially shiftable twist blade ring arranged in said air inlet of said mantle-air tube and arranged as a twist producer essentially only for the mantle-air although adjustable axially;

at least two and up to a maximum of only six air nozzles concentrically arranged around said burner opening, said two to six air nozzles being in communication with said main air supply conduit, said two to six air nozzles being



arranged in a divided circle having a diameter in a range between minimum 1.5 and maximum 3 times the diameter of said mantle-air tube so that air flow supplied therewith is axially parallel and subdivided into a mantle-air flow and a stepped-air flow as supplied therewith; and

a flap for regulating the air flow through said two to only six air nozzles such that tertiary air is added axially parallel to the axis of the main flame and such that subdividing of tertiary air is kept from being too great because otherwise impulse, which in remaining or tertiary air divided into too great a number of partial flows, is insufficient in order to bring remaining or tertiary air sufficiently far into the combustion chamber, which means accordingly to bring oxygen to a location where oxygen is needed to attain an influence upon NO_x-reduction.

4,551,091

METHOD FOR REDUCING THE VOLUME OF ATMOSPHERE NEEDED TO INHIBIT INGRESS OF AMBIENT OXYGEN INTO THE FURNACE CHAMBER OF A CONTINUOUS HEAT TREATMENT FURNACE

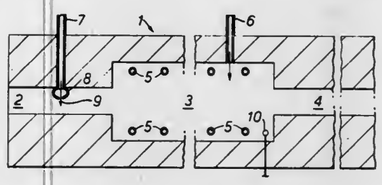
Alan J. F. Paterson, Crewe, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 30, 1984, Ser. No. 605,318

Claims priority, application United Kingdom, May 4, 1983, 8312167

Int. Cl.⁴ F27B *9/04, 5/04;* **F27D** *7/00*

U.S. Cl. 432—23 **4 Claims**



1. A method for reducing the volume of atmosphere needed to inhibit ingress of ambient oxygen into the furnace chamber of a continuous heat treatment furnace having an entrance section, a furnace chamber, and an exit section, which method comprises the step of introducing an atmosphere containing less than 1,000 ppm of free oxygen into the furnace chamber to establish a working atmosphere within the furnace chamber, characterized in that said method further comprises the step of introducing into the upper portion of the entrance section and/or exit section of the furnace chamber a stream of gas containing free oxygen; and/or passing a stream of gas containing free oxygen across the mouth of said entrance section and/or exit section of said furnace chamber; whereby said stream creates a dynamic pressure or momentum force which deflects the working atmosphere exiting the furnace in a downward direction.

4,551,092

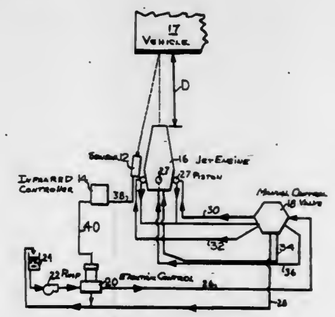
JET ENGINE DECONTAMINATION SYSTEM

William M. Sayler, Bradshaw, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1983, Ser. No. 550,855

Int. Cl.⁴ F23J *3/00;* **F27B** *21/00*

U.S. Cl. 432—32 **5 Claims**



1. A system for decontaminating a vehicle contaminated by contact with toxic substances by burning said substances off the surface of said vehicle, said system comprising:

a. movable heating means for providing a universally movable source of high temperature heat for directing heat at a spot on said vehicle;

b. infrared temperature detector means directed toward said spot on said vehicle currently being heated, responsive to infrared radiation therefrom for generating an output signal proportionate to the instantaneous temperature of said spot;

c. transducer means, electrically connected to said detector means for activating controlling fluidic flow in response to attainment by the said spot of a predetermined temperature level;

d. controlling means, fluidically connected to said transducer means for generating fluidic control signals to a means for moving said heating means to aim said heat to another spot; and

e. said means for moving being fluidically coupled to said controlling means for causing said high temperature heat of said heating means to be moved to different spots on said vehicle for heating.

4,551,093

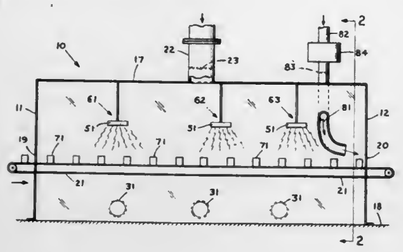
PRODUCTION OF A SOLID STICK IN A CONTAINER

Frederick P. Sisbarro, Wayne, N.J., assignor to Carter-Wallace Inc., New York, N.Y.

Continuation of Ser. No. 424,317, Sep. 27, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 647,254

Int. Cl.⁴ F27B *9/28*

U.S. Cl. 432—59 **8 Claims**



1. An apparatus for treating a solid antiperspirant or deodorant stick composition in a container, comprising:

a protective tunnel having an inlet and an outlet; carrier means in said tunnel for moving a container including the solid stick composition through said tunnel between said inlet and said outlet; cooling means to maintain the tunnel at a temperature below the temperature of the solid stick composition for cooling the solid stick composition in the protective tunnel to effect solidification thereof, said cooling means comprising air inlet means for introducing air into the tunnel, a plurality of air outlet means vertically spaced from the air inlet means along the length of the tunnel for withdrawing air at a plurality of longitudinally spaced points in the tunnel between said inlet and said outlet, an air moving means for circulating air through the tunnel between the air inlet means and said plurality of air outlet means; and at least two longitudinally spaced heating station means within said tunnel for controlled localized heating of a portion of the solid stick composition in a container on said carrier means to a temperature above the melting temperature of the stick composition only at said heating station means to remelt a portion of the stick composition, said at least two heating station means being spaced by a distance within the tunnel whereby a liquid portion of the stick composition in a container is cooled by air circulating between the at least two heating station means to solidify the liquid portion prior to said controlled localized heating by the at least two heating station means.

4,551,094

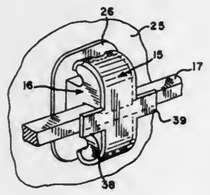
EDGEWISE BRACKET WIRE RETAINING CLIP

Peter C. Kesling, 611 W. 250 S., LaPorte, Ind. 46350

Filed Jan. 31, 1985, Ser. No. 696,783

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—8 **14 Claims**



1. In combination with an orthodontic bracket having a base adapted to be secured to a bracket pad or a tooth band and a body extending buccally from the base, said body having a buccal surface, a horizontally opening archwire slot along the buccal surface to receive an archwire, and a pair of tie wings on opposite sides of said slot, the improvement in a removable cap receivable on said body to retain the archwire in the slot and to enhance rotational control, said cap having a body of substantially the same width as that of the bracket, upper and lower retention hooks for engaging over the tie wings, and mesial and distal extensions generally coplanar with the body for engaging the buccal surface of the archwire to enhance rotational control.

4,551,095

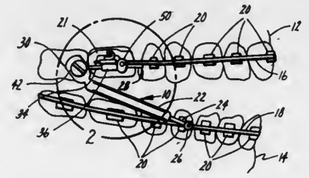
ATTACHMENT OF HERBST MECHANISM TO MAXILLARY ARCH

Charles W. Mason, 295 Kirby La., Bigfork, Mont. 59910

Filed Jan. 30, 1985, Ser. No. 696,556

Int. Cl.⁴ A61C *3/00*

U.S. Cl. 433—19 **18 Claims**



1. In an orthodontic appliance of the type having corrective means for cooperative association between maxillary and mandibular arches for translating natural closure of the arches into an anatomically anterior corrective force on the mandibular arch, the improvement for attaching the corrective means to the maxillary arch which comprises fixation means including a tube for affixation to the maxillary arch with the length of the tube disposed mesial-distally, a shaft of a length greater than that of the tube passing completely through the tube so as to project both mesially and distally from the tube and to be mesial-distally displaceable with a sliding fit through the tube, connection of said corrective means to that portion of the shaft which projects distally from the tube, and a stop on said shaft mesial of said tube which forcefully bears against said fixation means with a distally directed force when corrective force is being developed on the mandibular arch by the corrective means and which is selectively positionable on the shaft to set the amount of distal extension of said connection from said tube at which said stop forcefully bears against said fixation means.

4,551,096

ORTHODONTIC APPARATUS AND METHOD FOR TREATING MALOCCLUSION

Eugene L. Dellinger, 4606A E. State St., Fort Wayne, Ind. 46805

Continuation-in-part of Ser. No. 562,858, Dec. 19, 1983,. This application Oct. 19, 1984, Ser. No. 662,727

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—24 **20 Claims**

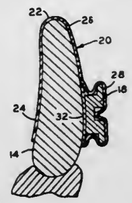
1. The method of fabricating an orthodontic device for re-positioning a patient's teeth, comprising the steps of:

forming a model of the patient's teeth in the shape of a dental arch with the replicas of the teeth ideally located,

releaseably mounting brackets on selected replicas in preselected locations,

forming a fixture over the dental arch in intimate conformity with the respective replica crowns, lingual and labial surfaces and onto said brackets in securing engagement with the latter, said fixture being formed of a material which after being formed is relatively rigid and in that state not readily removable from said brackets but can be subsequently altered as to its physical properties to facilitate removal from said brackets,

dividing replica portions of said fixture into units, one for each selected replica, the units corresponding to said selected replicas having brackets secured therein, making a maloccluded model of the patient's teeth, fitting the bracket-bearing units over the corresponding replicas of the maloccluded model and then forming a secondary fixture-retaining and transferring appliance over the



maloccluded model in intimate conformity therewith and in securing engagement with said bracket-bearing units, removing the secondary appliance and secured bracket-bearing units as an integrated assembly from the maloccluded model, applying said integrated appliance to the patient's teeth to locate and secure the brackets to the teeth, and removing the appliance and fixture units from the teeth including altering the physical properties of the units while in the patient's mouth for removal from the teeth.

4,551,097

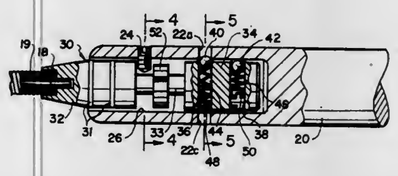
DUAL-TORQUE WINDING AND TIGHTENING TOOL

Harry J. Lazarus, 36 Knox La., Englishtown, N.J. 07726

Filed Feb. 19, 1985, Ser. No. 702,496

Int. Cl.⁴ A61C *5/04*

U.S. Cl. 433—39 **16 Claims**



1. A dual-torque winding tool for winding a coil of a retainerless dental matrix, comprising:

a handle adapted to be held and rotated in a hand;

a barrel over which said handle is rotatably mounted;

first torque transmitting means engageable between said handle and said barrel for transmitting rotation of said handle to said barrel up to a first selected torque;

second torque transmitting means engageable between said handle and said barrel for transmitting rotation of said handle to said barrel up to a second selected torque which is different from said first selected torque;

angled shaft assembly means connected to said barrel, and angled shaft means having a first end connected to said barrel and a second end remote from said barrel, said first and second ends of said angled shaft means being rotatable with rotation of said barrel; and

a winding head connected to said second end of said angled shaft assembly means adapted for engaging and winding a coil of a retainerless dental matrix.

4,551,098

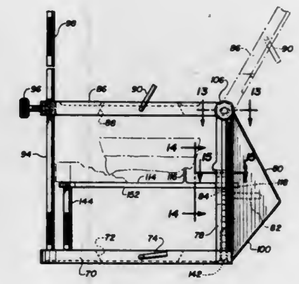
METHOD AND APPARATUS TO PRODUCE ARTIFICIAL DENTURES

John J. Blair, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jul. 1, 1983, Ser. No. 510,404

Int. Cl.⁴ A61C *13/22*

U.S. Cl. 433—171 **16 Claims**



1. A method of forming a set of upper and lower artificial dentures having full arch sets of upper and lower artificial teeth comprising the steps of:

a. using negative impressions of a patient's upper and lower jaws to make therefrom upper and lower models of said jaws,

b. positioning a mounting table having thereon hamular notch positioning means in an articulator,

c. removably connecting said upper model to an upper member of said articulator which said model is in registry with said hamular notch positioning means,

d. removing said mounting table from operative position in said articulator,

e. removably connecting said lower model to a lower member of said articulator,

f. positioning an occlusal plane table means in said articulator,

g. placing the occlusal surface of said full arch set of upper teeth upon the upper surface of said occlusal plane table means,

h. attaching said full arch set of upper teeth to said upper model,

i. placing a full arch set of lower teeth in occlusion with the upper full arch set of teeth,

j. attaching said lower set of teeth to said lower model,

k. contouring moldable material to said models to resemble the shape of natural gums, and

l. removing said attached sets of teeth and moldable material from said models and processing the same into finished dentures.

11. A method for forming a full upper artificial dental prosthesis comprising positioning a model of a patient's upper jaw in space by supporting the model anteriorly and posteriorly with relating means comprising support means respectively engageable by right and left hamular notches of said upper model and also including graduated step means having increments of heights selectively engageable with the incisive papilla of said upper model.

4,551,099

CERAMIC DENTAL RESTORATIVE

Carlino Panzera, Belle Mead, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Continuation-in-part of Ser. No. 473,469, Mar. 9, 1983, Pat. No. 4,481,036. This application Jul. 18, 1984, Ser. No. 632,100

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.[4] C09K *3/00*

U.S. Cl. 433—212.1 **1 Claim**

1. An all-ceramic dental restoration comprising a ceramic core and a translucent glaze, said glaze having a maturing temperature of from about 1700° to about 1900° F., and a coefficient of thermal expansion of from about 4 to about 9×10^{-6} in./in./°C., and consisting essentially of, on a weight basis, the following components:

Component	Proportion, %
SiO_2	71–74
Al_2O_3	10–12
K_2O	4–5
Na_2O	4–5
CaO	2–4.5
B_2O_3	3.5–5.5.

4,551,100

METHOD OF PREPARING GINGIVAL AREA FOR DENTAL CROWNS

Dan E. Fischer, Salt Lake City, Utah, assignor to Ultradent, Inc., Salt Lake City, Utah

Continuation of Ser. No. 386,103, Jun. 7, 1982, abandoned. This application May 22, 1984, Ser. No. 613,044

Int. Cl.[4] A61K *5/00*

U.S. Cl. 433—218 **4 Claims**

1. A method for halting bleeding in gingival tissue preparatory to the taking of dental impressions, comprising the steps of:

providing an applicator device capable of applying a hemostatic solution of aqueous ferric sulfate ($Fe_2(SO_4)_3$) having a concentration in the range of about 6 percent to about 20 percent under pressure to an area of bleeding gingival tissue, said applicator device having a padded porous tip through which hemostatic solution may be applied;

inserting the tip of the applicator into a bleeding wound site;

placing the tip of the applicator device against bleeding tissue;

dispensing the hemostatic agent from the tip of the applicator device under pressure onto bleeding tissue; and

burnishing the bleeding tissue while simultaneously dispensing the hemostatic agent under pressure so as to halt bleeding of such tissue.

4,551,101

SIMULATOR FOR TRAINING AIRPLANE PILOTS

Jacques Neumann, Forest, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC)-Societe Anonyme, Brussels, Belgium

Filed Sep. 19, 1984, Ser. No. 652,019

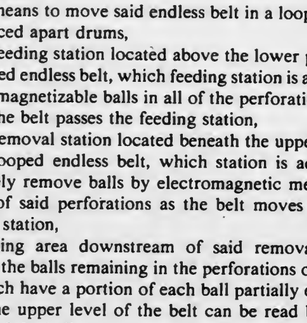
Claims priority, application European Pat. Off., Sep. 20, 1983, 83201347.8

Int. Cl.[4] G09B *9/08*

U.S. Cl. 434—55 **6 Claims**

1. A simulator for training airplane pilots comprising a base positioned on the ground (**24**), a basket supporting an airplane equipment station, the interior of which reproduces the interior of a real cockpit (**17**) and an assembly of jacks (**15**) and scissors (**16**) arranged between the base (**24**) and the basket and actuated by means of a hydraulic control apparatus,

characterized in that the basket comprises a cross-braced, self-supporting structure (**18**), the bottom of which coincides with the bottom of the simulated cockpit (**17**) and the upper edge of which is located approximately at the height of the lower edges of the windows of the simulated cockpit (**17**), and wherein said jacks (**15**) and said scissors (**16**) connecting said base to said structure (**18**) are fixed in



at least three places in proximity to the upper edge of said structure (**18**) and are directed toward the base (**24**) positioned on the ground and spaced laterally from said structure.

4,551,102

METHOD AND DEVICE FOR DISPLAYING GRAPHIC INFORMATION, IN PARTICULAR FOR BRAILLE READING

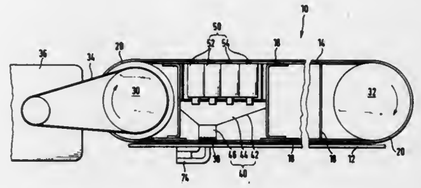
Karl Meinzer, an den Brunnenröhren 21, D-3550 Marburg, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,167

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314645

Int. Cl.[4] G09B *21/00*

U.S. Cl. 434—114 **11 Claims**



1. A device for displaying patterns of small balls for braille reading purposes comprising in combination

(a) an endless belt containing a plurality of parallel rows of perforations,

(b) drive means to move said endless belt in a loop between two spaced apart drums,

(c) a ball feeding station located above the lower portion of the looped endless belt, which feeding station is adapted to deposit magnetizable balls in all of the perforations in the belt as the belt passes the feeding station,

(d) a ball removal station located beneath the upper portion of the looped endless belt, which station is adapted to selectively remove balls by electromagnetic means from certain of said perforations as the belt moves past said removal station,

(e) a reading area downstream of said removal station wherein the balls remaining in the perforations of the belt and which have a portion of each ball partially extending above the upper level of the belt can be read by tactile sensing of the balls,

(f) said ball removal station including a plurality of spaced apart electromagnetic means which are adapted to cause the withdrawal of selected balls from said perforations with a force greater than gravitational force, and

(g) electronic control means for controlling the said electromagnetic means so that the selective removal of balls from the perforations of said endless belt will result in a pattern of balls that will convey information to a person in the reading area.

4,551,103

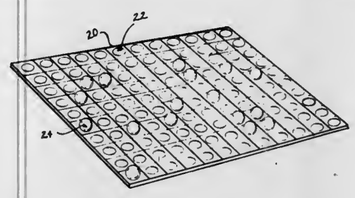
FARM PRODUCTS AGRICULTURAL GAME

Vincent J. Vitale, Detroit, Mich., assignor to Mickey Green, Detroit, Mich.

Filed Nov. 15, 1984, Ser. No. 671,885

Int. Cl.[4] G09B *19/00;* **A63H** *33/42*

U.S. Cl. 434—225 **6 Claims**



1. A watermelon agriculture educational toy, comprising:

a board with spaced indentations for simulating a melon growing field;

a plurality of marbles placed in some of said indentations for simulating melons;

a set-up for manual removal of said marbles from said indentations; said set-up including a field truck model;

a second set-up for receiving of said marbles from said field trucks including a packing shed;

a belt conveyor positioned in said packing shed for removing said marbles from said field truck;

an over the road truck model parked alongside the said packing shed for receiving said marbles from said conveyor;

a commission house at a distant point for receiving said marbles from said over the road truck;

a plurality of bins positioned in said commission house for holding said marbles;

a city truck model parked next to said commission house; and

means for moving said bus into said city truck for delivery to retail stores.

4,551,104

TILT LOCK MECHANISM FOR MARINE PROPULSION DEVICE

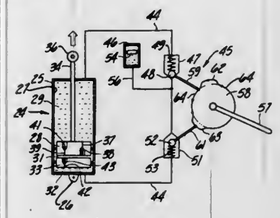
Takashi Iwashita; Shinya Atsumi, both of Hamakita, and Ryoji Nakahama, Iwata, all of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Feb. 21, 1984, Ser. No. 582,186

Claims priority, application Japan, Feb. 22, 1983, 58-26994

Int. Cl.[4] B63H *5/12*

U.S. Cl. 440—56 **8 Claims**



1. In a tilt locking and shock absorbing arrangement for a marine outboard drive comprising a drive member supported for tilting movement relative to a hull of an associated watercraft about a substantially horizontally disposeed tilt axis, a hydraulic assembly comprising a cylinder and a first piston slidably supported in said cylinder and defining first and second chambers, means for operatively interposing said hydraulic assembly between said hull and said drive member for relative movement of said first piston and said cylinder upon tilting movement of said drive member about said tilt axis, damping means for permitting flow from said first chamber to said second chamber upon the application of a predetermined force tending to cause said drive member to tilt up about said tilt axis and for permitting flow said second chamber to said first chamber upon the exertion of a predetermined force to effect tilt down of said drive member, and a second piston supported for movement in said cylinder within said second chamber and dividing said chamber into first and second parts, the position of said second piston being effective to control the normal trim position of the drive unit by restricing the movement of said first piston relative to said cylinder in one direction, passage means extending between said first chamber and the second part of said second chamber, first check valve means in said passage means for permitting flow from said first chamber to said second part of said second chamber and for precluding flow from said second part of said second chamber to said first chamber, and second check valve means in said passage means for permitting flow from said second part of said second chamber to said first chamber and for precluding flow from said first chamber to said second part of said second chamber, the improvement comprising the portion of the passage means extending between the first and second check valve means being substantially unrestricted so that opening of either of the check valve means causes the pressure in said passage means portion to act directly on the other of said check valve means, and control means for selectively opening one of said check valve means so that the other of said check valve means control the flow through said passage means or for closing both of said check valve means for precluding any flow through said passage means.

4,551,105

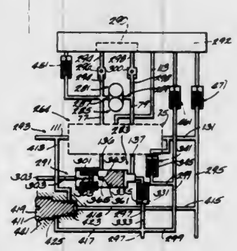
MARINE PROPULSION DEVICE WITH TILT AND TRIM MEANS WITH FLUID FILTERING

Charles B. Hall, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 19, 1983, Ser. No. 562,979

Int. Cl.[4] B63H *5/12*

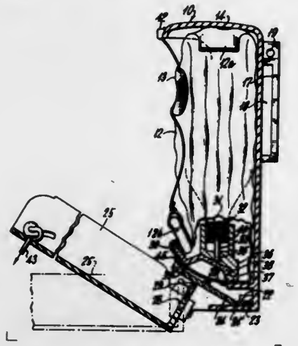
U.S. Cl. 440—61 **17 Claims**



1. A marine propulsion device including a member adapted to be connected to a boat hull, a propulsion assembly pivotally connected to said member for vertical swinging movement when said member is attached to the boat hull, a plurality of hydraulic cylinder assemblies, each of said hydraulic cylinder assemblies including a hydraulic cylinder and a piston rod slidably received in said cylinder, and said hydraulic cylinder assemblies being mounted between said member and said propulsion assembly to effect said vertical swinging movement of

said propulsion assembly in response to movement of said piston rods in one direction relative to said cylinders and in the opposite direction relative to said cylinders, selectively rotatable pump means including first and second ports, said first port being pressurized in response to pump means rotation in one direction, and said second port being pressurized in response to pump means rotation in the other direction, and conduit means communicating between said first and second ports and said hydraulic cylinder assemblies for moving said piston rods in one direction relative to said cylinders in response to pump means rotation in one direction, and for moving said piston rods in the opposite direction relative to said cylinders in response to pump means rotation in the other direction, said conduit means also including a filter, and control means communicating with said filter for requiring substantially all of the fluid flowing from said hydraulic cylinder assemblies to said pump means to pass through said filter.

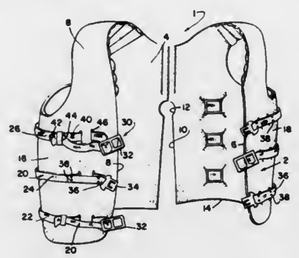
4,551,106
LIFE PRESERVING EQUIPMENT
Irwin D. Prager, 34 Malone Ave., Staten Island, N.Y. 10306
Filed Mar. 21, 1984, Ser. No. 591,856
Int. Cl.⁴ B63C *9/16, 9/24*
U.S. Cl. 441—94 **7 Claims**



1. Life preserving equipment comprising an open sided housing to be carried by the user including a cover therefor, said housing containing an inflatable member tethered to the housing, said inflatable member enclosing a compressed gas cartridge including a diaphragm and a puncture mechanism therefor including a puncturing element and an actuating arm pivotally supported relative to said cartridge, engaging said puncturing element and extending outwardly therefrom, first lever means pivotally carried by said housing externally of said inflatable member and underlying said pivotally supported arm and second lever means carried by said cover and movably upwardly upon displacement of said cover, said second lever means engaging and displacing said first lever means upwardly upon displacement of said cover relative to said housing to apply pressure to said pivotally supported actuating arm at a point spaced outwardly from said puncturing element to effect release of said gas and inflate said member.

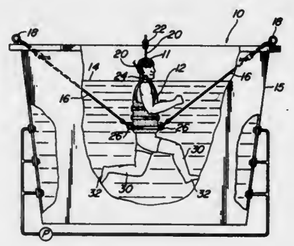
4,551,107
FLOTATION GARMENT
Robert S. Scheurer, and Stephen M. Scheurer, both of P.O. Drawer 539, Wichita Falls, Tex. 76307
Filed Feb. 1, 1983, Ser. No. 462,844
Int. Cl.⁴ B63C *9/10*
U.S. Cl. 441—112 **17 Claims**

1. A flotation garment comprising a body-encircling portion constructed of polymeric foam material, the foam material being provided with parallel slits, thereby forming belt-loop means between the parallel slits for receiving body-encircling straps surrounding the garment, the flotation garment apparatus further comprising shoulder overlying portions connected to the body-encircling portion and wherein the shoulder overlying portion has rounded creases extending inward into the shoulder portions from surfaces of the shoulder portions, wherein the creases extend across the shoulder of a wearer



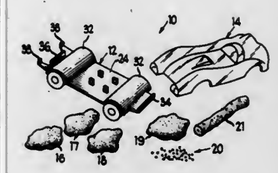
from outsides of the shoulder overlying portions to insides of the shoulder overlying portions, and wherein the creases are closely spaced adjacent outer portions of the shoulder overlying portions and are widely spaced adjacent inner portions of the shoulder overlying portions.

4,551,108
EXERCISE DEVICE FOR USE IN TANK CONTAINING WATER
Eric Bass, 10 Walton Ave., Doylestown, Pa. 18901
Filed Jan. 19, 1984, Ser. No. 572,264
Int. Cl.⁴ A63B *23/00*
U.S. Cl. 441—116 **3 Claims**



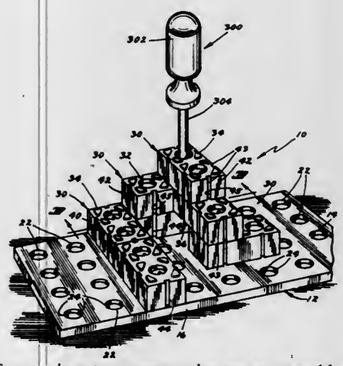
1. A leg and body exercise device comprising a buoyant vest and a tank of water having sides and a bottom, said vest being made of a buoyant material and being adapted to be worn by a person in a upright running position in said tank, said vest having first vest loops attached adjacent the waist thereof, said tank having anchoring loops whereby adjustable security lines can be attached between said vest loops and said anchoring loops, said tank being of sufficient depth and being filled with sufficient water such that the exercising feet of the person do not touch the bottom of the tank.

4,551,109
MALLEABLE MATERIAL VEHICLE PLAYSET
Steven P. Hanson, Winnetka, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 22, 1985, Ser. No. 693,385
Int. Cl.⁴ A63H *17/00*
U.S. Cl. 446—95 **5 Claims**



1. A children's activity playset comprising in combination:
a supply of malleable materials;
a chassis carrying free wheeling axle and wheel assemblies on the underside; and
a transparent body shell fitting over the chassis.

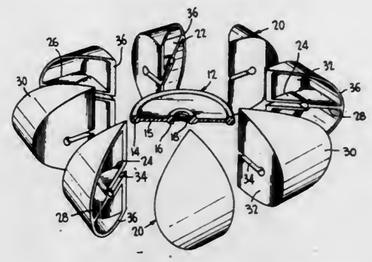
4,551,110
ROTATABLE CAM FOR USE IN A TOY CONSTRUCTION SET
Craig C. Selvage, Warwick, R.I., and Frank D. Ventura, Newburyport, Mass., assignors to CPG Products Corp., Minneapolis, Minn.
Filed May 24, 1984, Ser. No. 613,842
Int. Cl.⁴ A63H *33/12, 33/04, 33/06*
U.S. Cl. 446—118 **23 Claims**



20. For use in a toy construction set, a rotatable cam comprising a body portion having a slot extending from one end thereof toward the other end thereof, said body portion having a pair of oppositely directed flanges at said one end, each of said flanges having a cam surface on the side thereof facing toward said other end of the body portion, said body portion having a second pair of oppositely directed flange at its said other end, said second flanges being generally perpendicular to said first flanges.

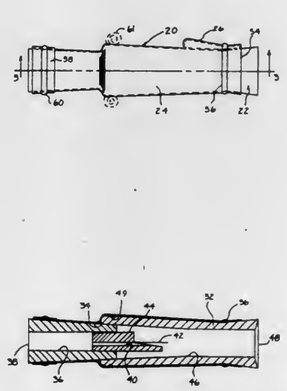
4,551,111
BALL-LIKE CONSTRUCTION FOR A TOY OR THE LIKE
Benjamin F. Sherman, Jr., 6329 Mori St., McLean, Va. 22101
Filed Aug. 25, 1983, Ser. No. 526,282
Int. Cl.⁴ A63H *33/06*
U.S. Cl. 446—120 **25 Claims**

1. A ball-like construction for a toy or the like comprising a plurality of hollow wedge elements, each wedge element having an arcuate wall and an end wall, an interior wall in each wedge element integral with said arcuate wall and said end wall and extending therebetween to strengthen each wedge element,



a disc member centrally located within said plurality of hollow wedge elements, and
interconnecting means between said disc member and the interior wall of each wedge element to retain said plurality of hollow wedge elements on said disc member as a unit.

4,551,112
PROTECTIVE COVER FOR WATERFOWL CALLERS
William E. Johnson, 3107 State Rd., #227 N, Richmond, Ind. 47374
Filed Dec. 22, 1983, Ser. No. 564,287
Int. Cl.⁴ A63H *5/00*
U.S. Cl. 446—207 **9 Claims**



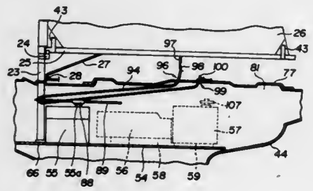
1. In a waterfowl caller having a generally tubular barrel supporting an adjustable reed and a generally tubular mouthpiece interfitting with said barrel in removable relation thereto, the improvement comprising an elastic tubular protective cover of rubber or the like supported in an expanded encircling position upon said waterfowl caller extending from a mouthpiece end of said caller to a barrel end of the caller over an interfitting junction of the mouthpiece and the barrel, said cover being held in tight frictional engagement upon both the mouthpiece and barrel of the caller to resist any tendency of the mouthpiece to be removed from the barrel, said cover having a mouthpiece end provided with a cap member connected by a fold portion to a main body section of the cover, said cap member being expandable to fit over and close an open end of the mountpiece of the caller in protective relation

thereto when the caller is not in use and being foldable back against the mouhtpiece when the caller is in use.

4,551,113
RADIO CONTROLLED YACHT AND SAIL FOR THE LATTER

Hironobu Sugihara, Hyogo, Japan, assignor to Kabushiki Kaisha AG, Osaka, Japan

Filed Nov. 25, 1983, Ser. No. 555,109
Claims priority, application Japan, Aug. 5, 1983, 58-143156; Aug. 5, 1983, 58-122131[U]
Int. Cl.⁴ A64H *23/04*
U.S. Cl. 446—154 **15 Claims**

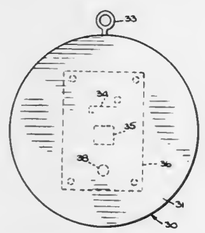


1. In a radio controlled yacht of the type including a hull having an interior and an exterior, a sail having a sheet attached thereto for controlling the placement of said sail relative to the centerline of said yacht, a control unit which comprises a receiver, a sail servo having a rotatable output shaft, a rudder servo and a battery so that lengthening and shortening of said sheet attached to said sail are controlled by means of said sail servo and the turning angle of a rudder is controlled by means of said rudder servo, the improvement comprising an eyelet fastened to said yacht near said centerlines, a sail trimmer arm fixedly secured to said output shaft so that said trimmer arm rotates under control of said sail servo, said sail trimmer arm being formed with a sheet insert hole at one end, said sheet extending from said sail through said eyelet, through said sheet insert hole and being anchored at a predetermined position located on the yacht.

4,551,114
IMPACT-ACTIVATED TOY

Gregory E. Hyman, 12 Chester Pl., Bronxville, N.Y. 10708, and Lawrence J. Greenberg, 43 Wilputte Pl., New Rochelle, N.Y. 10804

Filed Feb. 4, 1983, Ser. No. 463,844
Int. Cl.⁴ A63H *5/00*
U.S. Cl. 446—397 **5 Claims**

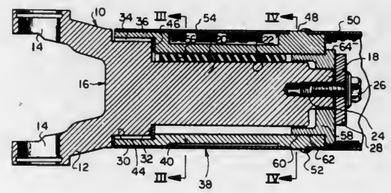


1. An impact-activated toy comprising:
a housing which in its entirety is freely displaceable by an external impact thereon;
an impact-responsive momentary switch mounted in said housing and adapted to be actuated in response to displacement of said housing in its entirely by such impact;
electronic sound generating means responsive to actuation of said switch for generating a sequence of musical melodies appealing to a child in response to successive momentary actuations of said switch caused by successive external impacts on, and displacement of, said housing spaced by less than a predetermined interval from the termination of a preceding melody.

4,551,115
DRIVESHAFT COUPLING WITH ELASTOMER DAMPER

Robert J. Ferguson, Marshall, Mich., assignor to Simpson Industries, Inc., Litchfield, Mich.

Filed May 23, 1984, Ser. No. 613,197
Int. Cl.⁴ F16D *3/10*
U.S. Cl. 464—83 **2 Claims**

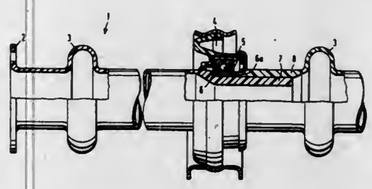


1. A driveshaft coupling characterized by its vibration damping characteristics comprising, in combination, an elongated drive member having an axis of rotation, an outer end, an inner end, and an elongated central stem, a universal joint receiving yoke defined upon said outer end, said stem having four first flat surfaces extending the length thereof defining a rectangular transverse cross section and each surface having a width and length, an elongated tubular driven member surrounding said stem having an internal bore, an outer end and an inner end located adjacent said drive member inner end, said driven member internal bore comprising four second flat surfaces extending the length of said stem defining a rectangular transverse cross section complementary to said drive member transverse cross section, each first flat surface being in opposed radially spaced substantially parallel relationship to a second flat surface, an elastomer pad interposed between opposed flat surfaces each having a width, length and normal non-compressed radial thickness, the width of said pads being slightly less than the width of said first flat surfaces and said opposed first and second surfaces being radially spaced from each other a distance less than said normal pad radial thickness whereby said pads are under compression, a propeller shaft concentrically affixed to said driven member, a radially disposed thrust bearing interposed between said outer ends of said drive and driven members, a metal insert mounted upon said drive member inner end and maintained thereon by fastening means, said insert engaging said driven member inner end axially forcing said driven member toward said thrust bearing, said insert including means for preventing axial displacement of said driven member relative to said drive member and an axially extending tubular portion having flat outer surfaces complemental to and closely engaging said second surfaces preventing relative rotation between said insert and said driven member, said tubular portion further having rectangularly related inner surfaces in opposed radially spaced relation with said first surfaces, the radial spacing between opposed inner surfaces and said first surfaces being less than the radial spacing between said first and second surfaces whereby said first and inner surfaces are engageable upon a predetermined relative rotational movement between said drive and driven members to establish a direct torsional driving relationship between said drive and driven members.

4,551,116
DRIVE SHAFT ASSEMBLY

Werner Krude, Siegburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,443
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1983, 3320760
Int. Cl.⁴ F16C *3/02;* B60K *17/24*
U.S. Cl. 464—97 **6 Claims**



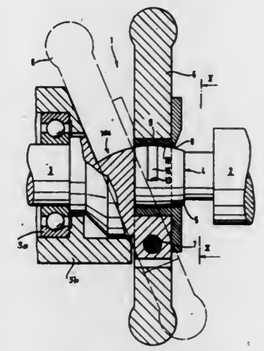
1. A drive shaft assembly for transmitting torque between two relatively movable drive and driven members, particularly suitable for use in a motor vehicle between a transmission and a differential, comprising, in combination:
a first tubular shaft part and a second tubular shaft part, each of said shaft parts consisting essentially of the same fiber reinforced plastics material arranged coaxially relative to each other and permanently secured together;
a circumferentially radially outwardly extending fold formation formed in at least one of said first and second shaft parts providing for articulation of said shaft assembly;
an integrally formed flange arranged at the opposed ends of said drive assembly, one on each of said shaft parts for enabling said shaft assembly to be connected for torque transmission; and
an intermediate support bearing carried on said drive shaft assembly between said opposed ends at least approximately adjacent the connection between said first and said second shaft parts;
said intermediate support bearing including an inner bearing ring, said first and second shaft parts each having surfaces defining a stepped formation receiving said inner bearing ring.

4,551,117
DEVICE FOR TRANSMITTING TORQUE TO A REEL OR THE LIKE

Wolfgang Kunz, Lörrach-Hauingen, Fed. Rep. of Germany, assignor to Kunz Maschinen- und Apparatebau GmbH, Lörrach-Hauingen, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,211
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228739
Int. Cl.⁴ F16D *3/00;* F16B *1/04*
U.S. Cl. 464—106 **18 Claims**

1. A separable torque transmitting connection between at least substantially coaxial driving and driven rotary members, such as between a shaft and the core of a reel, comprising a substantially round male coupling element coaxial and rigid with one of said driving and driven members, provided with a lateral flat and having a predetermined thickness as considered in a Plane including the axis of said coupling element and extending at right angles to the flat; a female coupling element coaxial and rigid with the other of said driving and driven members and defining a socket complementary to said male coupling element and having a lateral opening communicating with said socket and having a width at least matching said thickness so that said male coupling element is insertable into and withdrawable from said socket via said opening on movement of at least one of said coupling elements to an angular position in which said flat is out of register with said opening so that the latter permits the male coupling element to pass therethrough, said coupling elements being movable to angular positions in which said flat extends across said opening; and means for releasably holding said coupling elements in such angular positions, said holding means comprising a blocking member mounted on said female coupling element for pivotal movement about an axis which is normal to the axis of said

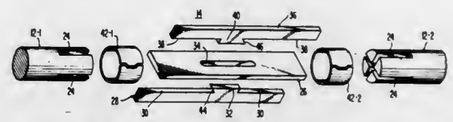


female coupling element, said blocking member having a surface which is at least substantially complementary to said flat and being pivotable to and from a position in which said surface thereof overlies said flat while said flat extends across said opening.

4,551,118
COUPLED DRIVE SHAFT

Albert S. Spisz, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 5, 1984, Ser. No. 586,281
Int. Cl.⁴ F16B *2/06*
U.S. Cl. 464—182 **23 Claims**



1. An apparatus for coupling together two sections of shaft, two longitudinal slots passing through the periphery of one end of each of said two shaft sections, said apparatus comprising:
joining means, engageable with said two longitudinal slots in the end of each shaft section, for transmitting a force applied to one of said shaft sections to the other of said shaft sections; and
clip means, securable over the slotted end of each of said shaft sections, for maintaining said joining means in engagement with said two longitudinal slots in the end of each shaft section.

4,551,119
HYDRAULIC APPARATUS FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Masami Sugaya, Susono; Daisaku Sawada, Gotenba, and Susumu Okawa, Numazu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 14, 1984, Ser. No. 579,969
Int. Cl.⁴ F16H *11/04*
U.S. Cl. 474—28 **14 Claims**

1. A hydraulic apparatus for a continuously variable transmission for motor vehicles having a driving pulley with a first fixed memeber and a first movable member, the movable mem-

ber being actuated by a first hydraulic cylinder to form a V-shaped opening between the fixed and movable first members, a driven pulley with a second fixed member and a second movable member, said second movable member being similarly actuated by a second hydraulic cylinder to form a similar V-shaped opening between said second fixed member and said second movable member, and a belt member spanning said pulleys, said hydraulic apparatus comprising:

a hydraulic fluid reservoir containing hydraulic fluid;

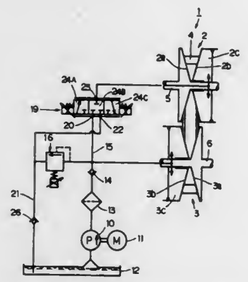
a hydraulic fluid pump for pumping the hydraulic fluid from the reservoir;

a first oil passage having a first pressure and connecting said pump to said second hydraulic cylinder;

a second oil passage communicating with said reservoir and having a port communicating with said first oil passage;

a regulator valve means located between said first and second passages for controlling the pressure of the hydraulic fluid pumped by the hydraulic fluid pump to the second hydraulic cylinder for generating the first pressure which is constantly supplied to the second hydraulic cylinder of the driven pulley;

said regulator valve means including a first oil chamber



having an inlet communicating with a second oil chamber within said regulator valve means and an outlet communicating with said second oil passage, said second oil chamber communicating with said first oil passage through an orifice, a first valve member located at the inlet of the first oil chamber for controlling a second pressure of hydraulic fluid in said second oil chamber, and a second valve member located at the port of the second oil passage for controlling a first pressure of hydraulic fluid in said first oil passage, the outlet of the first oil chamber being defined within the second valve member, said second valve member being biased to open the port of the second oil passage by the first pressure and being biased in an opposite direction by the second pressure;

a first electric control means connected with the regulator valve means, for varying the value of the first pressure;

hydraulic fluid flow control means for controlling the volume of hydraulic fluid supplied to or drained from the hydraulic cylinder of the driving pulley; and

a second electric control means connected with the hydraulic fluid control means, for varying the volume of hydraulic fluid supplied to or drained from the hydraulic cylinder of the driving pulley.

4,551,120
BELT TENSIONER
Henry W. Thomey, Windsor, Canada, assignor to Dyneer Corporation, Westport, Conn.
Filed Apr. 10, 1984, Ser. No. 598,837
Int. Cl.⁴ F16H *7/12*
U.S. Cl. 474—135 **12 Claims**

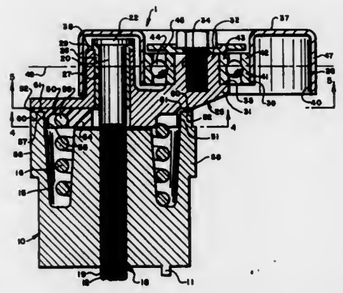
1. A belt tensioner construction for automatically tensioning an endless drive belt of the drive system for vehicle accessories, said tensioner construction including:

(a) a bracket adapted to be mounted on a vehicle engine adjacent the drive belt;

(b) a shaft mounted on the bracket;

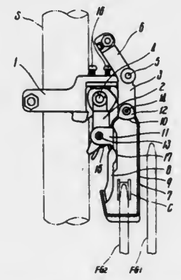
(c) lever means pivotally mounted on the shaft and extending generally radially outwardly from the shaft for pivotal movement toward and away from the drive belt;

(d) spring means biasing the lever means in the belt tensioning direction; and



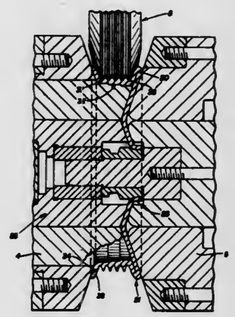
(e) pulley rotatably mounted on the lever means and engageable with the drive belt for applying a tensioning force on said belt when the lever means is biased by the spring means in a belt tensioning direction toward the drive belt, with an outer end of the shaft lying within the periphery of the pulley.

4,551,121
FRONT DERAILLEUR FOR A BICYCLE
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Apr. 2, 1984, Ser. No. 595,680
Claims priority, application Japan, Apr. 1, 1983, 58-58338
Int. Cl.⁴ F16H *7/22, 11/08, 7/18*
U.S. Cl. 474—140 **9 Claims**



1. A front derailleur for a bicycle, which shifts a driving chain from one to another of at least two front chain gears comprising a larger diameter chain gear and a smaller diameter chain gear, said derailleur comprising a chain guide comprising an inner plate, an outer plate, and a connecting member connecting said inner and outer plates substantially parallel to each other and spaced at an interval larger than a width of said chain, said inner plate having a swollen portion expanded toward said outer plate for pushing out said chain toward said larger diameter chain gear, said swollen portion being disposed between a first chain traversing position where said chain, while being shifted from said smaller diameter chain gear to said larger diameter chain gear, traverses said chain guide at an initial raising stage in which said chain is initially raised relative to said chain gears by contact with said larger diameter chain gear and a second chain traversing position where said chain traverses said chain guide at a final raising stage in which said chain is maintained in a raised position relative to said chain gears before completion of shifting of said chain to said larger diameter chain gear.

4,551,122
MANUFACTURE OF POLY-V SHEET METAL PULLEYS AND PRODUCT
Derald H. Kraft, Canton, and Gary L. Hitchcock, Massillon, both of Ohio, assignors to Dyneer Corporation, Canton, Ohio
Filed Feb. 22, 1983, Ser. No. 468,654
Int. Cl.⁴ F16H *55/44;* **B21D** *53/26*
U.S. Cl. 474—170 **13 Claims**



1. In a poly-V grooved pulley of the type having a V-grooved body wall formed from a sheet metal pulley blank in which the body wall has an annular radially thickened portion located between out-turned single and double walled flanges connected to axial end portions of said body wall, in which said out-turned flanges extend angularly axially outward from V-grooves in said body wall connecting said out-turned flanges with the radially thickened body wall portion, and in which a pulley web wall is joined to said double walled flange; wherein the improvement comprises:

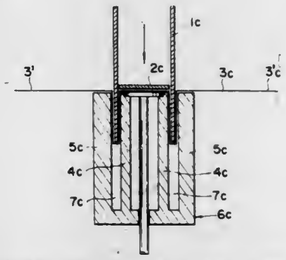
(a) an inner surface of said body wall having a stepped contour in cross section extending between said body wall axial ends said V-grooves in said body wall each including a V-groove valley and V-groove peaks, the valley being located closer to said inner surface stepped contour than said peaks;

(b) the stepped contour being defined by a series of cylindrical portions increasing in diameter from the axial end of the body wall connected to the double walled flange to the axial end of the body wall connected to the single walled flange;

(c) the radial thickness of the thickened body wall metal at the valley of the V-groove adjacent said single walled flange being thinner than the radial thickness of the thickened body wall metal at the valley of the poly-V groove adjacent said double walled flange; and

(d) said stepped contour being substantially equivalent to a tapered surface such that the body wall in cross section acts as a cantilever beam to provide substantially uniform torque transmitting strength for said thickened poly-V grooved body wall from the axial end of said body wall connected to said double walled flange to the axial end of said body wall connected to said single walled flange.

4,551,123
WATER-PROOF PAPER CONTAINER AND ITS MANUFACTURING METHOD
Hiromichi Inagaki, 1-143, Aza Maedaomote Inuyama-shi, Aichi, Japan
Filed Oct. 19, 1983, Ser. No. 543,319
Int. Cl.⁴ B31B *1/90*
U.S. Cl. 493—108 **7 Claims**



1. A method of manufacturing a container comprising:

covering a paper base member with a heat-shrinkable plastic film having a pair of walls with a space therebetween, the paper base member being positioned between the walls and in the space;

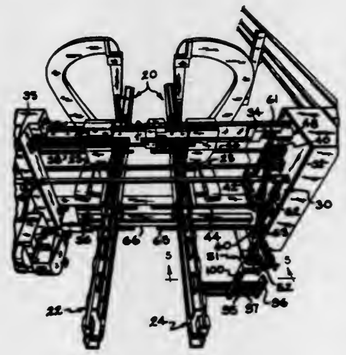
removing air from the space between the walls to pull the walls of plastic film against the paper base member;

sealing at least a portion of the plastic film to close the space in an air tight manner after removing air from the space;

forming the base member into a container shape having at least one open end; and

covering the at least one open end with a cover to close the at least one open end of the container shape.

4,551,124
CORRUGATED BOX MACHINE GLUE APPARATUS
Donald E. Mowry, Norwalk, Ohio, assignor to Don Mowry Flexo Parts, Inc., Norwalk, Ohio
Filed Feb. 3, 1983, Ser. No. 463,570
Int. Cl.⁴ B31B *1/62, 3/60*
U.S. Cl. 493—128 **7 Claims**



1. A gluing apparatus for an adjustable machine for manufacturing corrugated boxes of a plurality of sizes comprising: a first conveyor belt means and a second conveyor or belt means, said first and second conveyor belt means being adjustably spaced from one another to convey varying sizes of boxes, adjustment means operatively connected to said first and second conveyor belt means for adjusting the space between said first and second conveyor belt means, a glue dispensing means adjacent said second conveyor belt means for applying glue to

the edge of corrugated board stock during the manufacture of a corrugated box and positioning means operatively connecting said glue dispensing means to said adjustment means for automatically re-indexing said glue dispensing means adjacent the edge of the corrugated board stock, when said adjustment means is activated, to accommodate different size corrugated board stock.

4,551,125

APPARATUS FOR MAKING MULTI-WALLED PLASTIC BAGS

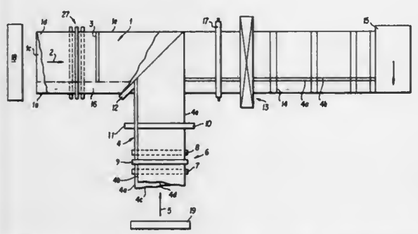
Francesco Pezzana, Pregnana Milanese, and Cesare Quacquarella, Milan, both of Italy, assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation of Ser. No. 449,915, Dec. 15, 1982, abandoned, which is a continuation of Ser. No. 185,833, Sep. 11, 1980, abandoned, which is a division of Ser. No. 52,171, Jun. 26, 1979, Pat. No. 4,273,549. This application Mar. 16, 1984, Ser. No. 589,855

Claims priority, application United Kingdom, Jun. 26, 1978, 7827884/78

Int. Cl.⁴ B31B *1/10, 39/02*

U.S. Cl. 493—217 **7 Claims**



1. Apparatus for forming a multi-walled bag comprising:
- means for supplying, from a first direction, a first flexible film folded about a first fold line and having inwardly and outwardly facing surfaces;
- means for partially unfolding said first flexible film;
- means for treating part of both of the inwardly facing surfaces of said first folded flexible film;
- means for supplying, from a second direction substantially coplaner and inclined with respect to said first direction, a second flexible film folded about a second fold line and having inwardly and outwardly facing surfaces;
- means for treating the entirety of both of the outwardly facing surfaces of said second folded flexible film;
- diverter guide means supported in cantilevered fashion and adapted to guide the second flexible film into said partially unfolded first flexible film whereby said second fold line of said second flexible film is brought into substantial register with the first fold line of said first flexible film;
- pressing means for contacting the treated part of the inwardly facing surfaces of said first flexible film with the treated outer surfaces of said second flexible film whereby the films are bonded together in a non-releasable manner; and
- sealing means for transversely sealing said flexible films to form a bag.

4,551,126

METHOD OF CARTON FLAP RELAXING

A. David Johnson, Jr.; Joseph L. Bachman, Jr., both of Wayne; George E. Ginther, Sr., King of Prussia; Charles E. Zimmermann, Elverson, and Albert D. Johnson, Sr., St. Davids, all of Pa., assignors to Wayne Automation Corp., Norristown, Pa.

Filed Nov. 9, 1983, Ser. No. 550,136

Int. Cl.⁴ B31B *1/48*

U.S. Cl. 493—453 **9 Claims**



1. The method of relaxing at least a pair of opposite end flaps on a four panel, corrugated carton comprising the steps of:
- providing a four panel corrugated carton with a first pair of opposite end flaps and a second pair of opposite end flaps on at least one side of the carton;
- applying water on at least the outside of the carton to at least the material of the outer liner comprising at least the score lines respectively of one pair of end flaps in sufficient quantity that said material is wet at least through the outer liner; and
- while said wet condition remains and while both said first and second end flaps are in substantially closed position, raising the temperature of said wet material sufficiently to cause the material to become substantially dry and then terminate said raising of the temperature whereby each of said one pair of end flaps assumes a substantially closed position subsequent to said termination.

4,551,127

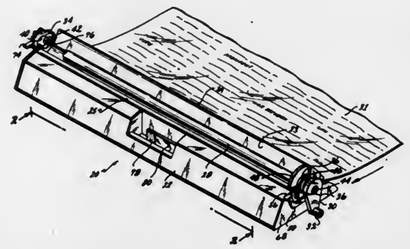
TOY STRUCTURAL MEMBER ROLLER

Hubert A. Rich, Westminster; Gary M. Saffer, Torrance, and William F. Sestito, Lakewood, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 1, 1982, Ser. No. 438,092

Int. Cl.⁴ B31C *1/00*

U.S. Cl. 493—462 **6 Claims**



1. Apparatus adapted to form tubular structural members by rolling flexible sheets of material;
- said apparatus comprising a base; first and second bearing members held within said base;
- a tube assembly having two ends rotatably supported at its ends in said bearing members, and including a pair of elongated, hollow inner and outer tubes having slots formed therein and means limiting the relative rotation of said inner and outer tubes;
- a crank connected to one of said elongated hollow tubes for rotation of said tube assembly;
- ratchet means connected to said other of said elongated hollow tubes for rotation therewith;
- a pusher element slidably mounted on said elongated hollow outer tube;
- a ratchet spring pivotedly mounted on said base and including stop means coacting with a slot formed in said ratchet means for limiting rotation of said crank in one direction while allowing said crank to be freely rotatable in the outer direction;
- a tension bar pivotably mounted on said base and coacting therewith so as to provide pressure against flexible material passing over said base and being wound around said outer tube upon turning of said crank in said other direction; and
- said bearing member holding the end of said outer tube distant from said crank being moveably mounted on said base whereby said bearing member may be moved to align an enlarged opening formed therein with a tubular structural member formed on said tube assembly to enable said formed tubular structural member to be removed therefrom by action of said pusher sliding along the length of said outer tube from a position adjacent to said crank toward said opening in said pivotable bearing member.

6. Apparatus to form tubular structural members from flexible material, comprising in combination:
- a base;
- first and second bearing members held within said base;
- a tube assembly having two ends rotatably supported at its ends in said bearing members, and including a pair of elongated, hollow inner and outer tubes having slots formed therein and means limiting the relative rotation of said inner and outer tubes;
- a crank connected to said elongated, hollow inner tube for rotation of said elongated, hollow inner tube, and said tube assembly;
- a ratchet connected to said elongated, hollow outer tube for rotation therewith;
- a pusher element slidably mounted on said elongated, hollow outer tube;
- a ratchet spring means pivotedly mounted on said base and cooperating with said ratchet for limiting rotation of said tube assembly in one direction while allowing said tube assembly to be freely rotatable in the other direction; and
- a tension means mounted on said base to coact with said flexible material as it is passing over said base and being wound around said outer tube.

4,551,128

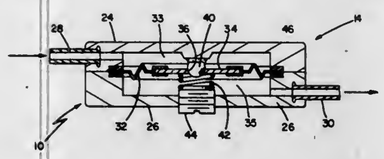
CEREBROSPINAL FLUID SHUNT VALVE

Salomon Hakim, Carrera 13, N. 48-26, Bogota, Colombia, and Carlos A. Hakim, 3400 Galt Ocean Dr., Apt. 1702 S., Fort Lauderdale, Fla. 33308

Filed May 11, 1983, Ser. No. 493,748

Int. Cl.⁴ A61M *27/00*

U.S. Cl. 604—9 **31 Claims**



1. A surgically-implantable shunt valve for venting cerebrospinal fluid in the treatment of hydrocephalus and for shunting other body fluids, said valve comprising
- a housing constructed of a surgically-implantable, non-metallic material,
- a diaphragm support consisting of a single flexible diaphragm mounted within said housing,
- a plate mounted on said flexible diaphragm, said plate being provided with a circular larger than and said diaphragm having an opening aligned with said aperture.
- said diaphragm being generally coplanar with said plate,
- said diaphragm and plate dividing said housing into an inlet and an outlet chamber that communicate through said aperture,
- said inlet and outlet chambers being generally free of blind cavities so as to inhibit collection of debris,
- a valve element of diameter larger than said aperture, said valve element residing on the inlet side of said aperture,
- means for biasing said valve element signal the circular periphery of said aperture so as to keep said aperture closed until the cerebrospinal fluid pressure in said inlet chamber exceeds a preselected popping pressure and so as to open said aperture when said popping pressure is exceeded so as to vent cerebrospinal fluid through said aperture into said outlet chamber,
- said popping pressure being on the order of cerebrospinal fluid pressures (i.e, less than 300 mm H_2O,)
- said housing including inlet and outlet ports communicating with said inlet and outlet chambers respectively for connecting said inlet and outlet chambers to external catheters or other fluid conduits, and
- screw means for making external adjustments to said preselected popping pressure.

4,551,129

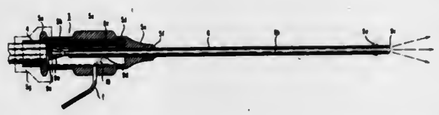
TECHNIQUE AND APPARATUS FOR INTRAOCULAR AND MICROSURGERY INCLUDING LIGHTER-IRRIGATOR HYPODERMIC TUBE

D. Jackson Coleman, 515 E. 71st St., New York, N.Y. 10021; Donald E. Orcutt, 3 Honeyman Dr., Succasunna, N.J. 07876, and Herbert Berkowitz, 50 Lenox Ter., West Orange, N.J. 07052

Filed Apr. 8, 1983, Ser. No. 483,279

Int. Cl.⁴ A61B *17/36, 5/02*

U.S. Cl. 604—21 **20 Claims**



1. A system including, in an operation area, a lighter-irrigator for intraocular and other microsurgery which comprises in combination:
- a source of light having a preselected focal area;
- a cannula having a hub portion with a relatively wide opening on one end in a plane transverse to and substantially centered on the major axis of the hub of the cannula, said hub opening being disposed in a proximal direction within said focal area of said source of light, at least a portion of said light is directed in the general direction of said major axis, said hub being connected in a distal direction along said axis to a frustoconical member decreasing in internal diameter to a relatively small opening;
- a thin-walled elongated hypodermic tube being accommodated in said small opening and extending in a proximal direction internally into the hub of said cannula, and extending for a substantial length axially in a distal direction from said small opening;
- a light guide comprising an elongated body of light transmitting material interposed into said cannula extending axially along the interior of said cannula and axially along the length of said hypodermic tube, said light guide terminat-

ing at its proximal end in a light funnel of frustoconical shape which laterally seals against and projects beyond the proximal end of said hypodermic tube, said light guide terminating in a light-projecting lens which seals the end of said tube;

a source of liquid for infusion into the said eye during surgery;

a liquid intake pipe for connection to said source of liquid connected into the hub of said cannula;

said hypodermic tube having at least one liquid intake opening near its proximal end in said cannula hub and at least one liquid exhaust opening near its distal end;

an annular space between the light guide and the hypodermic tube forming a channel for transmitting said liquid in a direction substantially parallel to said light guide from said at least one intake opening to said at least one exhaust opening;

a longitudinal fiber optic light pipe for the transmission and dispersion of light which extends from a source substantially spaced-apart from one end of said cannula to a plane adjacent to a relatively larger opening of said cannula, the light from said optic light pipe being substantially focused on said light funnel for concentration on the light transmitting light guide enclosed in said hypodermic tube;

said fiber light pipe comprises in combination:

a flexible core of light transmitting material;

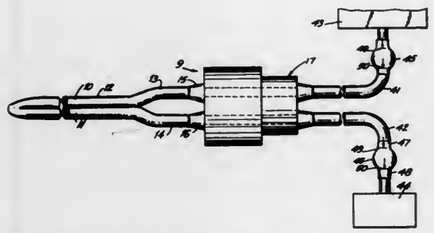
a sleeve of transparent or translucent material tightly surrounding said core in a manner to substantially eliminate air from the interface between said core and said sleeve, said sleeve and said core being constructed and arranged to laterally diffuse, disperse or refract through the sidewall of said sleeve a substantial component of the light transversing said core longitudinally.

4,551,130

SURGICAL DRAINAGE AND IRRIGATION APPARATUS FOR POST OPERATIVE PATIENT CARE

William B. Herbert, RD #2, Box 448, Pine Bush, N.Y. 12566, and Rohit A. Patel, 39 Gregory Dr., Goshen, N.Y. 10924

Filed May 8, 1984, Ser. No. 608,244
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—32 **8 Claims**



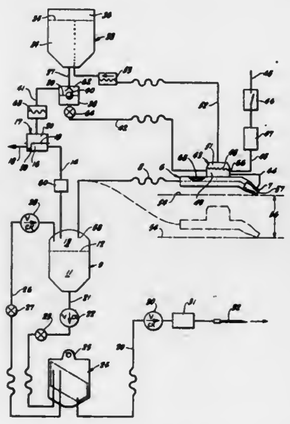
1. A post-operative drainage and irrigation apparatus comprising a control valve, a substantially cylindrical core member in said valve having a longitudinal axis, a distributor rotatably secured to the core member and overlying at least a portion of said core, a first and a second spaced bore longitudinally traversing the valve core parallel to but spaced from the said longitudinal axis, a third and a fourth spaced bore in the distributor parallel to but spaced from the longitudinal axis, said first and second bores and third and forth bores being spaced from each other a distance which will bring them into alignment within the control valve in at least two rotation modes of the valve core with respect to the distributor, a first and a second port on the valve core in communication with the first and second bores in said core, a third and fourth port on the distributor in communication with the third and fourth bore in the distributor, stop means carried by the valve core and the distributor to limit the rotation of said core and distributor with respect to each other, a catheter for attachment to the control valve, a first and a second lumen formed within the catheter, said catheter having a proximal end for insertion within a body cavity and a distal end for attachment to the ports of the control valve distributor, a source of irrigation solution, a first flexible tube interconnecting the solution source with one of the ports on the valve core, normally open squeeze bulb valve means incorporated into the said tube between the solution source and control valve, a second flexible tube connected at one end to the other port of the valve core and adopted to discharge liquid coming out of said port, a second normally open squeeze bulb valve means incorporated into said second tube and means carried within the control valve to prevent liquid passing through the valve bores from escaping from between the valve core and distributor at all modes of valve operation.

4,551,131

AUTOTRANSFUSION SYSTEM WITH ANTICOAGULANT DELIVERY SYSTEM

Clive Miles, Oakland, and Gary Schneiderman, Walnut Creek, both of Calif., assignors to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed May 2, 1983, Ser. No. 490,673
Int. Cl.⁴ A61M *1/00, 5/00*
U.S. Cl. 604—31 **34 Claims**



1. An autotransfusion system with an anticoagulant delivery system comprising a wand having a flow passageway therethrough, said passageway having an inlet and an outlet, said wand adapted to be raised and lowered between different predetermined elevations above and below a reference elevation, means for continuously sensing the elevation level of said wand, means for moving liquid from said inlet to said outlet, means responsive to said sensing means for controlling said liquid moving means in accordance with the different elevations of said wand to afford a substantially predetermined movement of said liquid from said inlet to said outlet at said raised and lowered positions of said wand.

4,551,132

PHARMACEUTICALLY ACCEPTABLE SILICON RUBBER AND THERAPEUTICAL SET AND THE USE THEREOF FOR SURGICAL EMBOLIZATION

Emil Pásztor, 4, Rákóczi-u, Budapest, Hungary (1072); László Lázár, 4, Rózsahegy-u, Budapest, Hungary (1024); József Nagy, 46/b, Törökbálinti-u, Budapest, Hungary (1122), and Katalin Pállosy née Becker, 31, Vincellûr-u, Budapest, Hungary (1113)

Division of Ser. No. 235,084, Feb. 17, 1981, Pat. No. 4,429,062.
This application Dec. 1, 1982, Ser. No. 445,690
Claims priority, application Hungary, Feb. 18, 1980, 369/80
Int. Cl.⁴ A61B *17/12*
U.S. Cl. 604—52 **1 Claim**

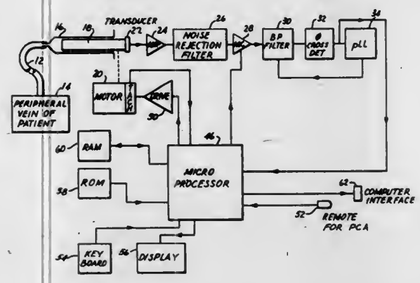
1. In a method of embolization wherein an occlusion is formed in the vascular system by the vulcanization of an embolization agent in situ the improvement comprising said embolization agent being a silicone rubber component having reactive functional groups selected from the groups consisting of hydroxyl, acyloxyl, alkoxyl, and amino; a cyclic dialkylpolysiloxane and a pharmaceutically acceptable iodo-containing organosilicium or non-metallic organic X-ray contrast material, and a component B comprising an effective amount of a therapeutically acceptable cross-linking catalyst.

4,551,133

PATIENT CONTROLLED MEDICATION INFUSION SYSTEM

Rene H. Zegers de Beyl, Glendale, and Stephen J. Coble, Sunland, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 16, 1984, Ser. No. 600,663
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—66 **18 Claims**



1. A medication infusion system comprising:

an infusion line for introducing medication to a peripheral vein of a patient;

pump means along the infusion line for delivering medication through the infusion to the peripheral vein of the patient;

pressure transducer means in fluid wave communication with medication in the infusion line for converting sensed fluid pressure waves to electrical signals;

amplifier means electrically connected to the pressure transducer means for increasing the strength of the electrical signal;

gain controlled amplifier means electrically connected to the amplifier means for maintaining the electrical signal at a predetermined amplitude regardless of the input amplitude variations of the electrical signal;

tracking filter means electrically connected to the gain controlled amplifier means for filtering the electrical signal provided by the pressure transducer means through the gain controlled amplifier means to provide an electrical signal representative of the patient's respiration rate over a preselected full clinical respiration rate range;

a computer means operatively connected to the tracking filter means for deriving from the electrical signal a control signal for controlling the operation of the pump means which is operatively connected to the computer means, the computer means comprising:

means for determining the presence of an electrical signal representative of the patient's respiration rate;

clock means for converting the electrical signal to a rate signal representative of the patient's respiration rate;

first comparing means for comparing the rate signal with a preselected respiration rate;

storage means for storing each rate signal; and

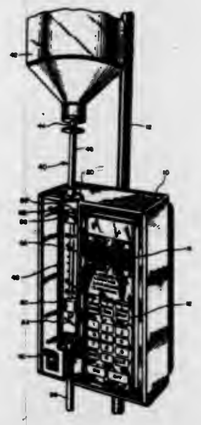
incremental motor control means for providing a signal to the pump means for actuating the pump means in preselected increments when the rate signal is present and is greater than the preselected respiration rate and for providing a signal to the pump means to stop such pump means when no electrical signal is detected.

4,551,134

INTRAVENOUS SET

William H. Slavik, Palos Hills, and William B. Huber, Oak Park, both of Ill., assignors to Nuvatec, Inc., Downer's Grove, Ill.

Filed Aug. 6, 1982, Ser. No. 406,117
Int. Cl.⁴ A61M *5/16*
U.S. Cl. 604—67 **23 Claims**



1. In an intravenous set comprising an input port, first means for connecting the input port to a container, a tube, and second means for connecting the tube to an insertion device adapted to introduce fluids into a living subject, the improvement comprising:

a drip chamber comprising means for forming fluid into drops, said drip chamber comprising means at a first location for accomodating remote detection of the rate at which drops are formed by the forming means;

a volumetric chamber mounted upstream of the drip chamber such that fluids passing from the volumetric chamber flow to the drip chamber, a portion of said volumetric chamber having a precalibrated volume between a second and a third location spaced along the volumetric chamber and both separated from the first location, said portion comprising means for accomodating remote detection of the fluid level inside the volumetric chamber at said second and third locations of said volumetric chamber to indicate when said precalibrated volume has been emptied from the volumetric chamber;

means for connecting the drip chamber to the tube such that the tube receives fluid which has flowed from the drip chamber; and

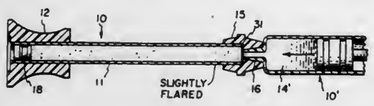
means for connecting the volumetric chamber to the input port such that the volumetric chamber receives fluid

which has flowed from the input port, said means for connecting the volumetric chamber to the input port comprising externally actuated means for selectively and reversably interrupting fluid flow from the input port to the volumetric chamber.

4,551,135
SYRINGE FOR EXTRUSION OF SEMI-PLASTIC MATERIAL

William G. Gorman, East Greenbush, and David A. Byron, Bethlehem, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 275,861, Jun. 22, 1981, abandoned. This application May 19, 1982, Ser. No. 379,779
Int. Cl.⁴ A61B *5/10*; B43K *5/06*
U.S. Cl. 604—82 **35 Claims**

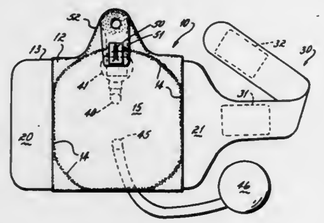


1. A mixing/dispensing syringe for use in the extrusion of a wetted, semi-plastic mass which comprises in combination:
A. a barrel of generally uniform wall thickness which is closed at its upper end by
B. a flexible piston slidable within the bore of said barrel and providing a seal therebetween and the inside wall of the barrel along its entire length, and
C. a plunger rod removably attached to said piston, wherein the bore of said barrel is slightly flared from its upper to its lower end.

4,551,136
PRESSURE INFUSOR

Joseph P. Mandl, Lancaster, Ohio, assignor to Medex, Inc., Hilliard, Ohio

Filed Apr. 11, 1983, Ser. No. 483,767
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—141 **2 Claims**



1. A pressure infusor comprising,
a transparent polyurethane outer sheet approximately 0.035 inch thick,
a transparent polyurethane inner sheet approximately 0.035 inch thick and overlying said outer sheet with approximately a 2.5 inch margin of said outer sheet projecting beyond said inner sheet at opposed edges thereof,
a continuous seal around the coextensive portions of said sheets to form a closed pressure bladder,
said 2.5 inch margins extending along said entire edges of said bladder,
one of said margins at least partially overlying the other margin when said outer sheet is wrapped around a fluid-containing plastic bag, said polyurethane margins having a high coefficient of friction when in said overlying relation, thereby resisting opening said outer sheet,
an elongated narrow strap projecting approximately 17 inches from one of the margins,
said strap totally surrounding said pressure bladder and fluid-containing bag and overlying said margins when said outer sheet is wrapped around a plastic fluid-containing bag,
said strap having cooperating Velcro fastening strips secured thereto to fasten said strap around said bag,
means for applying fluid under pressure to said bladder and means for measuring said pressure.

4,551,137
FLEXIBLE SHEATH ASSEMBLY FOR AN INDWELLING CATHETER

Thomas A. Osborne, Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Filed Oct. 7, 1982, Ser. No. 433,256
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—171 **8 Claims**



1. A catheter assembly comprising:
a catheter;
a catheter introducer; and
a flexible sheath assembly including front and rear hubs each having a passageway therethrough, said hub passageways sized to permit passage of said catheter therethrough, and a flexible sheath sealingly secured to said front and rear hubs and capable of longitudinally expanding from a collapsed position wherein said sheath forms a series of tightly packed folds contracted on an axis parallel to the length of said catheter, said sheath in its collapsed position defining a central passageway aligned with said front and rear hub passageways for receiving and guiding said catheter through said sheath during assembling of said catheter assembly, said flexible sheath having a rigidifying set biasing it into said collapsed position.

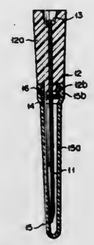
4,551,138
CANNULA DEVICE AND MEDICAL BAG HAVING THE SAME

Shuichi Shinohara, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 422,942, Sep. 24, 1982, abandoned. This application Mar. 20, 1985, Ser. No. 714,342
Claims priority, application Japan, Mar. 12, 1982, 57-39244
Int. Cl.⁴ A61M *5/14*
U.S. Cl. 604—262 **40 Claims**

1. An autoclave-sterilized cannula device, comprising:
a hollow needle;

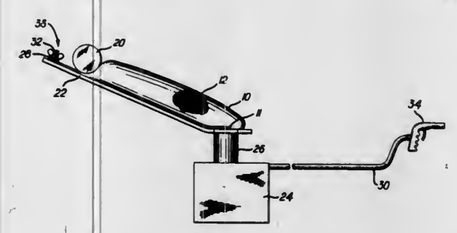
a hub which supports said hollow needle at a proximal end portion of said hollow needle and which is made of a hard plastic;
a protector comprising a hollow body whose distal end portion is closed and whose proximal end portion is open and which is made of a hard plastic, said protector being detachably mounted on said hub such that said hollow body houses said hollow needle therein, and said proximal end portion of said hollow body covers a distal end portion of said hub; and
a resilient layer which is formed between an inner circumferential surface of said proximal end portion of said hollow body and an outer circumferential surface of said distal end portion of said hub, wherein said resilient layer has a hardness in the range of 30 to 80 and a compression set of 20–80% after heating at 100° C. for 22 hours;
wherein said resilient layer is operative to maintain a hermetic seal between said hub and said protector both before and after being subjected to an autoclave sterilization environment, and wherein said resilient layer is operative to also maintain a liquid-tight seal between said hub and said protector after being subjected to said autoclave sterilization environment.



4,551,139
METHOD AND APPARATUS FOR BURN WOUND TREATMENT

Jon R. Plaas, Lee's Summit, Mo.; Keith E. Parker, Olathe; James D. Keiser, Leewood, both of Kans., and Elmer C. Johnson, Jr., Raytown, Mo., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed Feb. 8, 1982, Ser. No. 346,920
Int. Cl.⁴ A61M *11/00*
U.S. Cl. 604—290 **7 Claims**

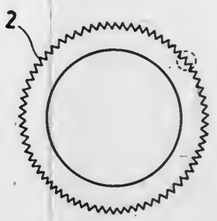


1. A method for spray application of a burn treating agent comprising:
(a) delivering a viscous cream or ointment burn treating agent to an outlet in a flexible container of the treating agent without interruption;
(b) pressurizing a flow of the treating agent from the outlet to a spray nozzle in a conduit flow course;
(c) reducing the pressure of the pressurized flow in the nozzle to provide an atomized spray of agent; and
(d) delivering said low pressure atomized spray of agent from the nozzle against a burn wound surface.

4,551,140
TUBE FOR MEDICAL INSTRUMENTS AND MEDICAL BAG DEVICE HAVING THE SAME

Shuichi Shinohara, Fujl, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,245
Claims priority, application Japan, Apr. 1, 1982, 57-54714
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—262 **21 Claims**





8. A heat-sterilizable medical bag device, comprising:
a flexible bag for holding a medical solution therein and made of a resin which exhibits a blocking or adhesive characteristic under elevated temperatures corresponding to an autoclave sterilization, and
an elongated tube for fluid connection at one end thereof with said bag and also made of said resin which exhibits said blocking or adhesive characteristics at said elevated temperatures corresponding to an autoclave sterilization,
said tube having a multiplicity of ribs extending substantially in the axial direction on the outer peripheral surface of said tube, said ribs being arranged around the periphery of said tube, said ribs each having a base side adjacent said tube and a crest radially outwardly of said tube, the cross-section of each rib having a length along the base side ranging between 0.15 and 0.26 mm, and a height ranging between 0.007 and 0.04 mm as measured from the base side to the crest of each of said ribs, whereby sticking together of mutually contacting portions of said ribbed tube during said autoclave sterilization is substantially prevented.

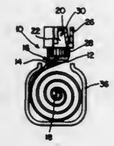
4,551,141
METHOD AND APPARATUS FOR REMOVING LIQUIDS FROM A DRAINAGE DEVICE

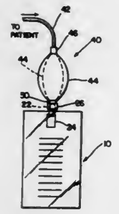
Charles B. McNeil, Edina, Minn., assignor to Surgidyne Inc., Buford, Ga.

Filed Aug. 2, 1983, Ser. No. 519,723
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—317 **12 Claims**

1. A method for removing collected liquid from a portable closed wound suction drainage device which reduces contamination of the drainage device and cross infection from the use of the drainage device comprising the steps of;
providing a catheter and collapsible suction reservoir having a one way valve at the inlet and having a single outlet,

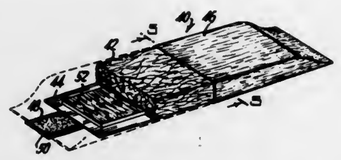
providing a rolled up collapsible collection bag having an inlet with a one way valve therein and retaining means to hold the bag in a rolled up condition,
attaching the inlet of the collection bag to the outlet of the collapsible suction reservoir to provide fluid communication between the suction reservoir and the collection bag when the one way valve in the collection bag is open,
removing the retainer means from the collapsed rolled up collection bag,





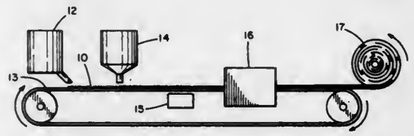
collapsing the suction reservoir to close the one way valve at the inlet of the suction reservoir and to open the one way valve in the collection bag to force liquid from the suction reservoir into the collection bag,
removing the filled collection bag and attaching another rolled up collapsible collection bag to the outlet of the suction reservoir and
releasing the suction reservoir to create a suction within the reservoir and to open the one way valve at the inlet of the suction reservoir and to maintain the one way valve in the collection chamber closed.

4,551,142
FLEXIBLE ABSORBENT BOARDS
Steven L. Kopolow, Plainsboro, N.J., assignor to Personal Products Company, Milltown, N.J.
Continuation of Ser. No. 407,221, Aug. 11, 1982, abandoned, which is a division of Ser. No. 82,400, Oct. 5, 1979, Pat. No. 4,354,901. This application Jun. 6, 1984, Ser. No. 617,786
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—368 **17 Claims**



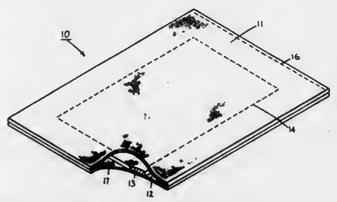
1. A product made by the process comprising:
forming a slurry of water is no more than about 0.1% by weight solids, said solids comprising cellulosic fibers and particulate hydrocolloidal material in a ratio of at least 0.01 grams of hydrocolloidal material per gram of cellulose fibers;
forming a wet web from said slurry;
drying said web to a water content of less than 10.0% by weight to form an undensified dry web;
and increasing the density of said dry web by at least 10%;
whereby said densified dry web has a high tensile strength and low stiffness relative to said undensified dry web, said densified web having a tensile of at least 10 kg/cm^2, a Gurley Stiffness of less than 40 grams, and a thickness of more than 0.3 mm.

4,551,143
NONWOVEN FIBROUS PRODUCT AND METHOD OF MAKING SAME
John R. Cook, Downers Grove, and William A. James, Tinley Park, both of Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Continuation of Ser. No. 366,509, Apr. 8, 1982, abandoned, which is a division of Ser. No. 194,511, Oct. 6, 1980, Pat. No. 4,391,869. This application Jun. 21, 1984, Ser. No. 622,399
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—371 **6 Claims**



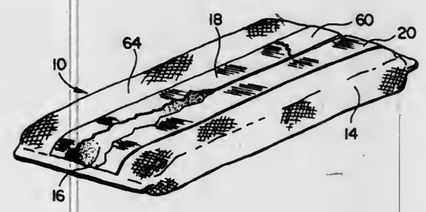
1. A disposable diaper comprising: a moisture-impervious backing sheet; an absorbent batt positioned in superposed relationship with respect to the backing sheet, the batt being smaller than the backing sheet and spaced inwardly from the longitudinal sides thereof; and a moisture pervious facing fabric positioned in superposed relationship with respect to the batt on the side opposite the backing sheet, the facing being larger than the batt and having longitudinal side margins thereof secured to the backing sheet, said facing fabric consisting essentially of a low density, resin-bonded, nonwoven fabric of resilient, synthetic, staple fibers selected from the group consisting of polyethylene, polyester, polypropylene, nylon and acrylic fibers and having a density less than about 0.06 gm/cc at 0.16 lb/sq. in. load, and a weight less than about 3 oz/sq. yd., said fabric during formation having been impregnated with a binder to provide a solution pickup of less than about 180 percent and a dry-solids-add-on from about 30 percent to about 50 percent.

4,551,144
INCONTINENT CARE PAD METHOD AND APPARATUS
Helen E. Graber, Rte. 1, Box 14, Montrose, Minn. 55363
Filed May 25, 1983, Ser. No. 497,952
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—378 **4 Claims**



1. An incontinent care pad comprising:
a top layer of soft liquid permeable non-abrasive material;
a bottom layer of liquid repellant material secured about a substantial portion of the periphery thereof to said top layer;
an inner layer of soft absorbent material having smaller lateral and longitudinal dimensions than said top layer, said inner layer being disposed directly between said top and bottom layers and attached to said top layer but not to said bottom layer whereby the inner layer can slide with respect to the bottom layer but not with respect to said top layer.

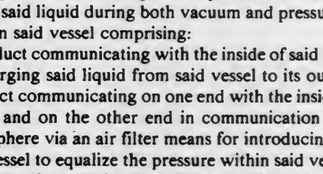
4,551,145
SANITARY NAPKIN
Lizabeth L. Ryan, Music Vale Rd., Salem, Conn. 06415
Filed May 14, 1984, Ser. No. 609,591
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—389 **25 Claims**



1. A sanitary napkin comprising,
an elongated wad of absorbent material having an upper surface and a lower surface with said lower surface adapted to face away from a wearer's body,
a sheet member of substantially moisture-impervious flexible material of sufficient dimensional size to form an enclosure of said wad for disposal and being folded in a first configuration to form a moisture shield covering the lower surface of said wad and being invertible into a second configuration to form a enclosure for said wad with said enclosure having a sealable opening,
said sheet member being disposed adjoining said lower surface of said wad and having first and second opposing side portions facing away from said lower surface of said wad in said first configuration, said side portions defining said sealable opening when said sheet is inverted into said second configuration to form an enclosure for said wad, and
pressure adhesive means disposed on at least one of said first and second side portions of the sheet member for attaching said wad to a supporting garment for wearing in said first configuration and for sealing closed said sealable opening of said enclosure when said sheet member is inverted into said second configuration for disposal.

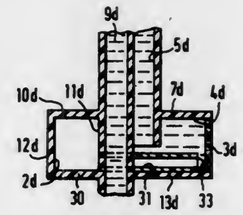
4,551,146
CONNECTOR FOR AMBULATORY DIALYSIS SYSTEM
Phillip P. Rogers, Rolling Hills Estates, Calif., assignor to Phillip P. Rogers & Faye Rogers Living Trust, Rolling Hills Estates, Calif. and Uatar DTD., Rolling Hills Estates, Calif., Phillip P. Rogers & Faye Rogers, co-trustees
Continuation-in-part of Ser. No. 157,268, Jun. 9, 1980, Pat. No. 4,354,490. This application Sep. 30, 1982, Ser. No. 431,333
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.
Int. Cl.[4] A61J *7/00*
U.S. Cl. 604—403 **14 Claims**

1. A peritoneal dialysis fluid connecting device comprising;
enclosure means;
an absorbent packing material in said enclosure means;
said absorbent packing material being substantially saturated with a disinfectant solution;
a first tube connecting end for supplying a peritoneal dialysis fluid;
a second tube connecting end adapted to telescopically mate with and connect to said first tube connecting end;



means allowing said first and second tube connecting ends to be telescopically mated inside said enclosure means so that the connecting ends are bathed in said disinfectant solution when the connection is being made and throughout use.

4,551,147
APPARATUS FOR RUNNING OFF LIQUIDS FROM SEALED VESSELS
Bernd Mathieu, and Wolfram Weber, both of Spiesen, Fed. Rep. of Germany, assignors to Fresenius AG, Hamburg, Fed. Rep. of Germany
Filed Jan. 31, 1983, Ser. No. 462,442
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203954
Int. Cl.[4] A61M *5/14*
U.S. Cl. 604—405 **17 Claims**



1. An apparatus for running off a liquid from a sealed vessel containing said liquid during both vacuum and pressure conditions within said vessel comprising:
a liquid duct communicating with the inside of said vessel for discharging said liquid from said vessel to its outside;
an air duct communicating on one end with the inside of said vessel and on the other end in communication with the atmosphere via an air filter means for introducing air into said vessel to equalize the pressure within said vessel with the atmosphere during the discharge of liquid from said vessel; wherein
a space is disposed in said air duct in a location adjacent said air filter means being characterized in that said space is arranged as an air storage chamber or air trap which retains a body of air adjacent said air filter means even during pressurized conditions within said vessel when liquid is forced to said air duct by pressure within said sealed vessel and retained therein by said air filter means and wherein said body of air decreases the vacuum necessary to initiate air flow through said air filter means by expanding to contact said air filter means upon creation of vacuum conditions within said vessel.

4,551,148

VAGINAL DELIVERY SYSTEMS AND THEIR METHODS OF PREPARATION AND USE

Thomas C. Riley, Jr., Manchester, Mo.; Charles P. Tharp, Belleville, Ill., and Galen G. Lapka, St. Louis, Mo., assignors to KV Pharmaceutical Company, St. Louis, Mo.

Continuation of Ser. No. 415,675, Sep. 7, 1982, abandoned, which is a division of Ser. No. 263,026, May 12, 1981, abandoned. This application Oct. 11, 1984, Ser. No. 663,145

Int. Cl.⁴ A61F *5/46, 13/00*

U.S. Cl. 604—890 **9 Claims**

1. Vaginal delivery systems which are bioadherent to the vaginal surfaces and which release an active agent in a controlled manner for at least three hours to a receptor site, site of action, site of absorption, or site of use consisting essentially of liquid or semi-solid adjacent unit cells having common lipoidal external phases, nonlipoidal internal phases and emulsifiers.

4,551,149

PROSTHETIC VISION SYSTEM

Michael J. Sciarra, 59 Far Pond Rd., Southampton, N.Y. 11968, assignor to Michael Sciarra, Southampton, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,179

Int. Cl.⁴ A61F *1/16, 1/24;* **A61N** *1/04*

U.S. Cl. 623—4 **15 Claims**



1. A prosthetic vision system for a vision-impaired user, comprising:
(a) lens means for receiving and sensing optic conditions;
(b) electrode array means adapted to be implanted on the visual cortex of the user's brain for stimulating the visual cortex of the user in response to the sensed optical conditions; and
(c) fiberoptic conductor means for transferring the sensed optic conditions from said lens means directly to said electrode array means on the visual cortex.

4,551,150

METHOD FOR DYEING CELLULOSE FIBER MATERIAL USING FIBER-REACTIVE DISAZO DYE AND FINISHING THE SAME

Katsumasa Otake, Nara; Takashi Ikeda, Yao; Takashi Omura, Ashiya, and Kunihiko Imada, Sakai, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

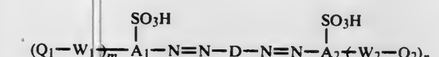
Filed Jun. 4, 1984, Ser. No. 617,032

Claims priority, application Japan, Jun. 7, 1983, 58-102208

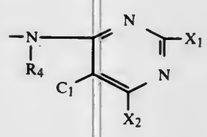
Int. Cl.⁴ D06M *15/16;* **D06P** *3/66, 1/38*

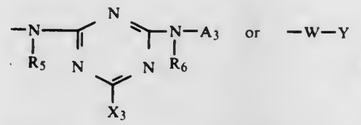
U.S. Cl. 8—496 **7 Claims**

1. A method for producing dyed and finished products of cellulose fiber materials, which comprises dyeing cellulose fiber materials with a dye represented by a free acid of the following formula (I),



wherein each of the groups, $—W_1—Q_1$ and $—W_2—Q_2$ in the formula (I) is independently a group represented by the following formula,





wherein R_4, R_5 and R_6 are independently a hydrogen atom or a lower alkyl group, X_1 is a fluorine or chlorine atom or a methylsulfonyl group, X_2 is a fluorine or chlorine atom or a methyl group, X_3 is a fluorine or chlorine atom, W is a direct linkage, a methylene group or a group of



(in which R_4 is as defined above), Y is a group $—SO_2CH=CH_2$ or $—SO_2CH_2CH_2Z$ (in which Z is a group capable of being split by the action of an alkali), A_3 is a hydrogen atom, an alkyl, phenyl or naphthyl group unsubstituted or substituted, or group of $—A_4—Y$ (in which Y is as defined above and A_4 is a phenylene or naphthylene group unsubstituted or substituted), A_1 and A_2 are independently a phenylene or naphthylene group unsubstituted or substituted, D is a residue of 1-amino-8-naphthol mono- or di-sulfonic acid, m and n are independently 0, 1 or 2, provided that they satisfy the formula, $0<m+n\leqq 2$, and each sulfo group appended to A_1 and A_2 is located at the carbon atom adjacent to the azo group, and then finishing the dyed fiber materials with a finishing agent capable of bonding with cellulose through a bridge formation wherein the finishing agent is at least one member selected from the group consisting of N-methylol compounds, aldehyde compounds of the formula, R—CHO, in which R is a hydrogen atom or an alkyl, cycloalkyl or haloalkyl group, acetal compounds of the formula, $R'—CH(OR'')_2$, in which R' is a hydrogen atom or an alkyl, cycloalkyl or haloalkyl group, and R'' is a hydrogen atom or an alkyl group, epoxy compounds, vinyl compounds, aziridinyl compounds, polycarboxylic acid compounds, acylhalide compounds, isocyanate compounds and quaternary ammonium compounds.

4,551,151

DYESTUFF COMPOSITION: DISPERSE OR VAT DYE AND LIGNIN SULPHONATE

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 601,049

Int. Cl.⁴ D06P *67/02*

U.S. Cl. 8—524 **20 Claims**

1. An improved dyestuff composition comprising a dye cake, selected from the group consisting of disperse and vat dyes, and a dispersant comprised of a sulfonated lignin prepared by reacting lignin material with an aldehyde and a sulfite, selected from the group of water soluble sulfites and bisulfites, wherein the improvement comprises the steps of
(a) selectively isolating the lignin material from alkaline black liquor by reducing the black liquor pH such that all but a negligible amount of the lignins having a molecular weight of 5,000 or less remain in solution with the black liquor,
(b) acidifying the lignin material to a pH of from about 1.5 to about 5.0 by washing with sulfuric acid followed by adding water to the lignin material to form a slurry of about 25% solids,
(c) adding to the lignin slurry the sulfite and the aldehyde in a sulfite to aldehyde mole ratio of from about 1.1:0.1 to about 2.5:1.0, which addition produces an initial reaction pH of from about 8.0 to about 9.2, and
(d) the temperature of reaction is raised from ambient to from about 130° C. to about 175° C. for from about 0.5 to about 12 hours.

4,551,152

ALCOHOL FUEL ANTI-WEAR ADDITIVE

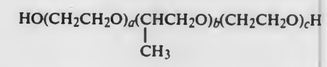
Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,580

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—78 **20 Claims**

1. A fuel composition for an internal combustion engine comprising:
(a) a major portion of a fuel containing (i) a C_1–C_2 alcohol and (ii) 0–50 volumes of gasoline per volume of alcohol; and
(b) a minor wear-inhibiting amount of, as a wear-inhibiting additive, a condensate product of the process comprising:
(i) reacting a polyol



wherein a+c is 1–20 and b is 5–50, with a hydroxy aromatic carboxylic acid, thereby forming an ester; and
(ii) reacting said ester with an aldehyde and an N-alkyl-alkylene diamine, thereby forming a condensate product; and
(iii) recovering said condensate product.

4,551,153

FUEL VAPOR GENERATOR

Vann Y. Won, 6697 Gloria Dr., Sacramento, Calif. 95831

Filed Mar. 7, 1984, Ser. No. 586,956

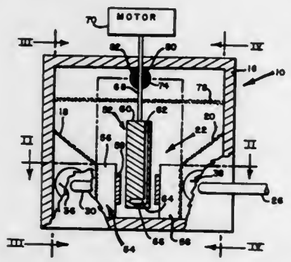
Int. Cl.³ F02M *17/16*

U.S. Cl. 48—102 R **18 Claims**

1. A vapor generator comprising:
a housing, said housing having a chamber at the bottom thereof, and a screen wall, said screen wall defining and being included as part of said chamber;
means attached to said housing for introducing a liquid into said chamber from a liquid source;
means attached to said housing for permitting the removal of

excess liquid from said chamber and for returning sdid excess liquid into said chamber;

means situated within said chamber for regulating the level of said liquid within said chamber, said liquid level regulating means including a pair of floats, each of said floats having an arm pivotally mounted to said housing and connected at one end thereof to said float and the other end thereof having a stopper thereon in communication with said means for introducing liquid into said chamber and said means for permitting the removal of excess liquid from said chamber, respectively, whereby said level of



liquid within said chamber may be maintained within a preselected range;

means positioned within said chamber and bounded by a portion of said screen wall for atomizing said liquid, said atomizing means spraying said liquid in mist form into the upper portion of said housing for vaporization thereof; and

means located at said upper portion of said housing for permitting said vaporized liquid to be withdrawn from said housing;

wherein any unvaporized liquid falls back into said chamber for further atomization.

4,551,154

GAS TRACER COMPOSITION AND METHOD

Norman D. Malcosky, and Greg Koziar, both of Columbus, Ohio, assignors to Columbia Gas System Service Corporation, Columbus, Ohio

Filed Mar. 2, 1983, Ser. No. 471,278

Int. Cl.⁴ E21F *17/00;* **B65G** *5/00;* **F17D** *3/04;* **G01N** *33/22*

U.S. Cl. 48—193 **12 Claims**

1. A method for tagging methane during underground storage of methane, said method comprising adding to said methane a tracer compound, said tracer compound having the properties of (1) not occurring in natural supplies of methane, (2) diffusing through any underground methane storage field in a manner very similar to methane, and (3) substantially insoluble in petroleum distillates, said compound being selected from the group consisting of sulfur hexafluoride and chloropentafluoroethane, and thereafter passing said methane in gaseous form into an underground gas storage field having petroleum distillates therein,

the amount of tracer compound passage into the field being great enough that said tracer may be detected after said tracer is uniformly disbursed throughout the field.

4,551,155

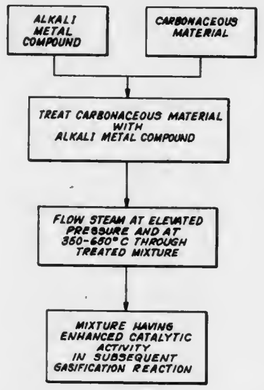
IN SITU FORMATION OF COAL GASIFICATION CATALYSTS FROM LOW COST ALKALI METAL SALTS

Bernard J. Wood, Santa Clara; Robert D. Brittain, Cupertino, and Kenneth M. Sancier, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jul. 7, 1983, Ser. No. 511,767

Int. Cl.⁴ C10J *3/06*

U.S. Cl. 48—197 R **15 Claims**



1. A process for the in situ formation of a gasification catalyst in a carbonaceous material which comprises:

(a) mixing an alkali metal halide with said carbonaceous material;

(b) thereafter treating said mixture in a stream containing steam at a temperature of 350° to 650° C. for a sufficient time period to hydrolyze at least 25 mole% of said alkali metal to form a hydrolyzed product in the substantial absence of any gasification to enhance the catalytic activity of the resultant mixture in subsequent gasification of said mixture;

(c) utilizing high pressure steam at a high space velocity to remove the HCl gas as it is formed in said hydrolysis reaction; and

(d) passing the resultant gasification catalyst product to a gasification zone.

4,551,156

PERMSELECTIVE MEMBRANE COMPOSITIONS FOR GAS SEPARATIONS AND PROCESS FOR THE SEPARATION OF GASES THEREWITH

George S. Li, Macedonia, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Jan. 16, 1984, Ser. No. 570,816

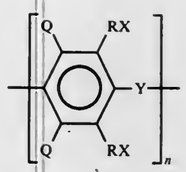
Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **33 Claims**

15. A process for the separation of gases from a mixture containing at least two gases comprising the step of:

passing said mixture over a permselective membrane composition wherein said membrane composition is formed by a polymer membrane having

from about 25 to 100 parts by weight of a polyarylene having the formula



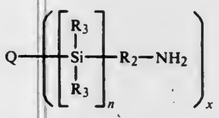
wherein R is a C_1 to C_8 aliphatic radical, a C_5 to C_7 cycloaliphatic radical, a C_1 to C_8 alkoxy radical, a C_6 to C_{12} aryl radical, an aralkyl radical or an alkaryl radical, each radical being free of a tertiary alpha-carbon atom; X is H, Cl or Br; Y is a divalent oxygen or sulfur atom or a sulfonyl or carbonate group; Q is H, Cl, Br, or a sulfonyl radical of the formula



where R_1 is a C_1 to C_{20} linear or branched hydrocarbon or a nonpolymeric aryl radical; and n is an integer of from about 75 to 10,000;

from about 0 to 75 parts by weight of a crosslinkable copolymer, the copolymer being present at least when the polyarylene component is devoid of crosslinkable cites; and

from about one to 50 parts by weight, based upon the total weight of said polyarylene and crosslinkable copolymer, of a silicon-containing aminetterminated compound selected from the group consisting of the siloxanes having the formula



wherein R_2 is a C_1 to C_{12} aliphatic radical or a C_1 to C_{12} aliphatic radical containing a primary or secondary amine, R_3 is a C_1 to C_{12} aliphatic radical or a C_6 to C_{12} aryl radical, n is an integer of from about two to 2000 and x is 1 or 2, and silanes having the formula

$$H_2N—R_2—[Si—O—R_4]_3$$

wherein R_4 is a C_1 to C_{12} aliphatic radical.

4,551,157

METHOD FOR SEPARATING LIGHT ADDITIVE GAS IN SEPARATING NOZZLE CASCADES

Erwin Becker; Wolfgang Ehrfeld; Wolfgang Fritz, all of Karlsruhe; Harald Steinhaus, Datteln, and Peter Bley, Eggenstein-Leopoldshafen, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,287

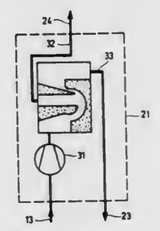
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206821

Int. Cl.⁴ B01D *59/18*

U.S. Cl. 55—17 **10 Claims**

1. Process for separating light additive gas at the end of and/or at the location of the change of stage sizes in a separating nozzle cascade operating with a mixture of gaseous or vaporous substances to be separated and a light additive gas, with the separation of the light additive gas being effected by utilizing at least one separating nozzle stage, comprising employing a double deflection separating nozzle stage as the separating nozzle stage for the separation of the light additive gas, wherein the mixture of substances to be separated in the separation of the light additive gas is taken at least at one change of stage size location in the separating nozzle cascade, is separated by the double deflection nozzle into a first partial stream deriched in the light additive gas and a second partial stream enriched in the light additive gas, and the first partial stream is fed into a product side of a section of the separating nozzle cascade at that point where the composition in the first partial stream with respect to the substances to be separated in the separating nozzle cascade and the composition in the separating nozzle cascade section substantially coincide after combination.

6. In a process having an isotope separating cascade for separating a mixture of isotopes and employing light additive gas, and wherein the light additive gas is separated at the end of the isotope separating cascade and/or at the location of the



change of stage sizes in the isotope separating cascade, the isotope separating cascade operating with a mixture of gaseous or vaporous isotope substances to be separated and a light additive gas, with the separation of the light additive gas being effected by utilizing at least one separating nozzle stage, comprising employing a double deflection separating nozzle stage as the separating nozzle stage for the separation of the light additive gas, wherein the mixture of substances to be separated in the separation of the light additive gas is taken at least at one change of stage size location in the isotope separating cascade, is separated by the double deflection apparatus into a first partial stream deriched in the light additive gas and a second partial stream enriched in the light additive gas, and the first partial stream is fed into a product side of a section of the isotope separating cascade at that point where the composition of the mixture of isotopes in the first partial stream and in the isotope separating nozzle cascade section substantially coincide after combination.

4,551,158

REMOVAL OF CO_2 AND/OR H_2S FROM GASES

Eckhart Wagner, Ludwigshafen; Klaus Volkamer, Frankenthal; Werner Hefner, Lampertheim, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,867

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308088

Int. Cl.⁴ B01D *47/00*

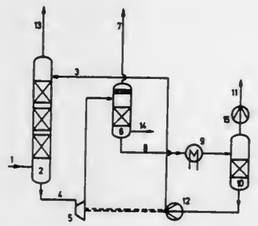
U.S. Cl. 55—46 **4 Claims**

1. A process for removing CO_2 and/or H_2S from a gas containing CO_2 and/or H_2S, which comprises

(a) treating said gas in an absorption stage at from 40° to 100° C. and at a pressure of from 10 to 110 bar with an aqueous absorption liquid containing from 20 to 70% by weight of methyldiethanolamine by feeding in the gas at the bottom and the aqueous absorption liquid at the top of the absorption stage, CO_2 and/or H_2S being washed out by a countercurrent procedure;

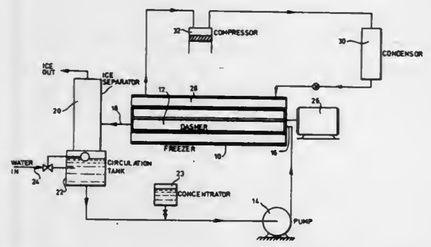
(b) taking off the treated gas at the top of the absorption stage;

(c) taking off the aqueous absorption liquid laden with CO_2 and/or H_2S at the bottom of the absorption stage;
(d) regenerating the laden aqueous absorption liquid without the use of a stripping column by flashing it in two or more



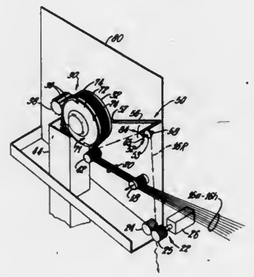
flash stages, operating the final flash stage under a pressure of from 0.5 to about 1 bar; and
(e) recycling the regenerated absorption liquid to the absorption stage.

4,551,159
ICE MAKING MACHINE AND METHOD
Vladimir Goldstein, 18 Killaloe Rd., Unit 4, Concord, Ontario, Canada (L4K 1C8)
Continuation-in-part of Ser. No. 26,561, Apr. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 197,553, Oct. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 419,548, Sep. 17, 1982, abandoned. This application Dec. 31, 1984, Ser. No. 687,764
Int. Cl.⁴ B01D *9/04*; C02F *1/22*
U.S. Cl. 62—541 **15 Claims**



1. A continuous method for making ice in a container having a wall and means for continuously cooling said wall of the container comprising the steps of:
making a solution wherein the solvent is water, the solute is nontoxic and the initial concentration is less than the eutectic concentration;
containing the solution within said container, the solution beingin heat exchange relation with the said wall of the container;
continuously cooling the wall of the container to cool the layer of solution immediately adjacent the side wall below its freezing point with a refrigerant;
continuously moving a blade across and in contact with the wall of the container to carry the cooled layer of mixture at said wall towards the centre of the container;
the rate of movement of the blade across the wall of the container being fast enough to carry the cooled layer of solution at the wall towards the centre of the container as aforesaid before the cooled layer is crystalized into a layer of ice whereby to maintain the temperature of the mixture substantially uniformly throughout the container below its freezing point and form water ice crystals of harvestable size suspended throughout the body of the mixture in the container;
harvesting formed ice crystals from suspension in said solution; and
continuously replenishing said solution in said chamber as said water ice crystals are removed.

4,551,160
METHOD AND APPARATUS FOR FORMING GLASS FILAMENTS
Richard C. Frailey, and Alex P. Symborski, both of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Oct. 22, 1984, Ser. No. 663,288
Int. Cl.⁴ C03B *37/02*; D01G *1/04*
U.S. Cl. 65—2 **13 Claims**

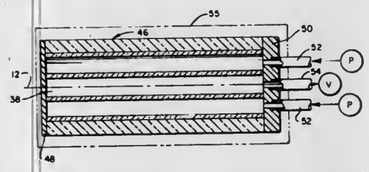


11. A method of producing discrete segments of strands of glass filaments comprising:
supply a plurality of streams of molten glass;
drawing some of said streams into a body of continuous filaments at a first attenuation means;
gathering said body filaments into a plurality of strands;
severing said plurality of strands into discrete segments;
drawing other of said streams into group of continuous filaments at a second attenuation means spaced from said first attenuation means;
gathering said group of filaments into a strand;
positioning said strand associated with said second attenuation means adjacent said first attenuation means;
while maintaining the advancement of said strand by said second advancement means, moving a portion of such strand into contact with said first attenuation means to initiate advancement thereof by the first attenuation means; and
severing said strand associated with the second attenuation means and in contact with the first attenuation means to transfer the attenuation of such strand to the first attenuation means concommittantly with said plurality of strands in the absence of changing the speed of the first attenuation means.

4,551,161
ORGANIC WETTING OF GLASS BATCH
Edward P. Savolskis, North Middleton Township, Cumberland County, and John F. Krumwiede, Indiana Township, Indiana County, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jun. 27, 1984, Ser. No. 624,879
Int. Cl.⁴ C03C *1/00*; C03B *1/00*
U.S. Cl. 65—27 **20 Claims**

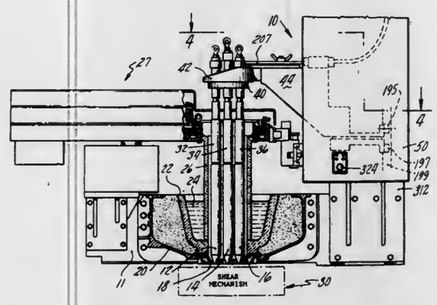
1. A method of melting glass wherein finely divided glass batch materials are wetted with a liquid in sufficient amount to regard dusting of the batch and then fed while in a wetted condition to a melting furnace where the batch is heated until the batch materials become molten, the improvement comprising wetting the batch prior to being fed to the melting furnace with a wetting agent comprised of an organic liquid.

4,551,162
HOLLOW TUBE METHOD FOR FORMING AN OPTICAL FIBER
John W. Hicks, Jr., Northboro, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 1, 1984, Ser. No. 656,260
Int. Cl.⁴ C03B *37/14*
U.S. Cl. 65—4.2 **11 Claims**



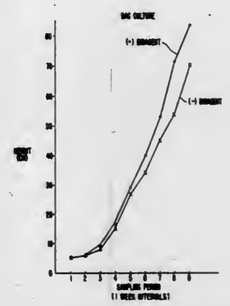
1. A method for forming an optical fiber comprising the steps of:
aligning a plurality of hollow elongated starter tubes of optical fiber glass about an axis with each tube engaging adjoining tubes along respective lines of contact;
positioning the aligned starter tubes within the interior of a jacketing tube;
establishing a pressure within the interior of the starter tubes;
plasticizing the starter tubes to cause their tube walls to reform by moving toward and joining to one another and at least portions of the interior of the jacketing tube so as to form a core region along the axis with supporting webs between the core region and the jacketing tube; and
drawing the reformed assembly into an optical fiber.

4,551,163
ELECTRONIC GLASS FEEDER PLUNGER OPERATING MECHANISM
Robert J. Duga, Enfield; Constantine W. Kulig, Windsor; Robert L. Doughty, West Hartford; Robert J. Douglas, North Granby, and Robert P. Andersen, Monroe, all of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.
Filed Jun. 4, 1984, Ser. No. 616,638
Int. Cl.⁴ C03B *7/08*
U.S. Cl. 65—129 **11 Claims**



1. In a feeder plunger operating mechanism for use with at least one feeder plunger, said feeder plunger attached to a support for being vertically reciprocated relative to a frame, the improvement comprising:
at least one air cylinder attached to said frame, said air cylinder provided with a piston;
a piston rod, one end of said rod being attached to said piston, the other of said rod attached to said support;
means for supplying to said cylinder a predetermined amount of air pressure to urge said piston upwardly with a predetermined counterbalancing force.
2. In a feeder plunger operating mechanism comprising:
a reversible electric motor operatively connected to positively drive at least one plunger in a cyclically reciprocating manner; and
programmable control means operatively connected to said electric motor to cause its output shaft to oscillate between predetermined limits and according to a predetermined cyclical motion profile thereby causing it to move said at least one plunger in a predetermined manner;
a method for starting plunger operation comprising the steps of:
producing a position signal representative of the actual position of said plunger;
producing a varying first position command signal;
comparing said first position command signal to said position signal;
latching said first position command signal to said motor upon a positive comparison between said first position command signal and said position signal;
ramping said first position command signal to a value representative of a predetermined first height in order to move said plunger to said first height;
holding said first position command signal at said value representative of said predetermined first height;
reading from memory a value corresponding to a second height associated with a second position command signal, said second position command signal representative said predetermined cyclical motion profile;
comparing said second height to said first position command signal value representative of said predetermined first height and upon a positive comparison;
communicating said second position command signal to said motor to drive said plunger according to said predetermined cyclical motion profile.

4,551,164
MICROBIAL PLANT GROWTH PROMOTER
Abraham I. Tenzer, Longwood, Fla., assignor to Bio-Organics, Inc., New York, N.Y.
Filed Oct. 4, 1983, Ser. No. 538,985
Int. Cl.⁴ C05F *11/08*
U.S. Cl. 71—6 **18 Claims**



1. A method for preparing a microbial plant growth promoting composition which comprises growing a bacterial culture in a first nutrient medium under growth conditions to a cell density of from about 2×10^6 to about 10×10^6 cells/ml; growing an algal culture in a second nutrient medium under growth conditions to a cell density of from about 10×10^6 to about 20×10^6 cells/ml, and then mixing the bacterial and algal cultures together and incubating the mixture in a third nutrient medium under growth conditions at a temperature of from about 10° C. to about 40° C. to produce the final product; said

growth conditions including a physiologically acceptable pH and temperature.

4,551,165
MYCORRHIZAL SEED PELLETS

Anne Warner, Harpenden, England, assignor to National Research Development Corporation, England

Filed Apr. 18, 1983, Ser. No. 486,192
Claims priority, application United Kingdom, Apr. 22, 1982, 8211678; Jul. 26, 1982, 8221584
Int. Cl.⁴ C05F *11/02*
U.S. Cl. 71—24 **10 Claims**

1. A composition comprising a mixture of vesicular-arbuscular mycorrhizal fungal inoculum, peat adjusted to a pH compatible with growth of the fungus from the inoculum, at least one seed of a plant which is a host for the fungus, and a binder, said composition being in compacted form, and divided into units suitable for sowing.

10. A method of growing a plant from seed, which comprises sowing units of a composition according to claim 1, in a plant growth medium in which the plants can grow under conditions in which they benefit from VA mycorrhizal fungal infection of their root system.

4,551,166
NITROGEN FERTILIZER AND PROCESS FOR ITS MANUFACTURE

Horst Behnke, Obing; Horst Michaud, Trostberg; Joseph Seeholzer, Trostberg, and Svatoplug Solansky, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,264
Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319345
Int. Cl.⁴ C05C *9/02;* C05G *3/08*
U.S. Cl. 71—30 **12 Claims**

1. Stable aqueous nitrogen fertilizer composition having a long-term action comprising a suspension of a condensate of a molar excess of urea per mol of formaldehyde, a sufficient amount of dicyandiamide to provide from about 5% to 35% by weight of dicyandiamide-nitrogen, based upon the nitrogen content of the urea, and from 0.001% to 0.5% by weight of a stabilizer comprising a water-soluble polymer selected from the group consisting of polymers of vinyl alcohol and polymers of aldehyde-carboxylic acids, based upon the weight of the suspension, said dicyandiamide being present in said composition in monomeric form and functioning as a nitrification inhibitor.

4,551,167
METHOD OF SOIL NITRIFICATION INHIBITION BY APPLICATION OF A STABILIZED FUMIGANT COMPOSITION

Donald C. Young, Fullerton, and James A. Green, II, Chino, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 20, 1984, Ser. No. 633,014
Int. Cl.⁴ C05G *3/08*
U.S. Cl. 71—64.1 **17 Claims**

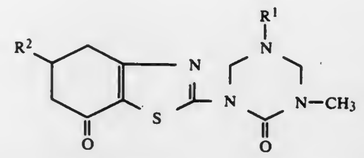
1. A method for inhibiting nitrification in soil, which comprises applying to the soil a composition comprising an aqueous solution containing a solute which comprises ammonia, hydrogen sulfide, and carbon disulfide, wherein the molarity of hydrogen sulfide is greater than the molarity of carbon disulfide, and is about one-half the molarity of ammonia.

4,551,168
HERBICIDAL 2-(1,3,5-1H-TRIAZIN-2-ONE)-TETRAHYDROBENZOTHIAZOLE DERIVATIVES, AND COMPOSITIONS THEREFOR

Katsumichi Aoki; Takafumi Shida; Satoru Kumazawa; Susumu Shimizu; Yohichi Kanda; Keigo Satake; Shiro Yamazaki; Hiroyasu Shinkawa; Tsuneaki Chida; Hideo Arabori, and Takeo Watanabe, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 596,928
Claims priority, application Japan, Apr. 8, 1983, 58-61927
Int. Cl.⁴ C07D *417/04;* A01N *43/64, 43/78*
U.S. Cl. 71—90 **6 Claims**

1. A tetrahydrobenzothiazole represented by the formula (I):



(I)

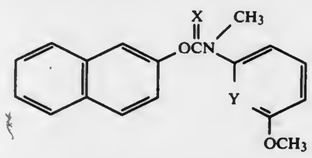
wherein R^1 and R^2 represent respectively a straight-chain alkyl group having 1 to 6 carbon atoms or a branched-chain alkyl group having from 3 up to and including 6 carbon atoms.

4,551,169
METAMETHOXY ARYL CARBAMATE DERIVATIVES AND HERBICIDES

Tetsuo Takematsu; Makoto Konnai; Hideo Morinaka, all of Utsunomiya; Yunji Nonaka, and Akira Nakanishi, both of Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Company, Limited, Shinnanoyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,313
Claims priority, application Japan, Mar. 17, 1982, 57-40759; Jul. 16, 1982, 57-122921; Sep. 7, 1982, 57-154596
Int. Cl.⁴ C07D *213/75;* C07C *125/067;* A01N *47/20, 47/22*
U.S. Cl. 71—94 **4 Claims**

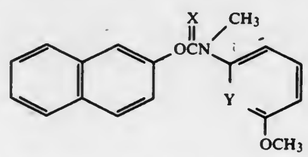
1. Carbamate derivatives represented by the formula (I);



(I)

wherein X represents an oxygen atom or a sulfur atom and Y represents CH group or a nitrogen atom.

4. A herbicidal composition comprising an effective amount of one or more compounds of the formula (I):



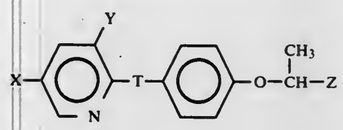
wherein X represents an oxygen atom or sulfur atom and Y represents a —CH— group or nitrogen atom.

4,551,170
HERBICIDAL TRIFLUOROMETHYL PYRIDINYLOXYPHENOXY AND PYRIDINYLTHIOPHENOXY PROPANOLS AND DERIVATIVES THEREOF

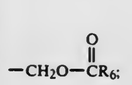
Howard Johnston, Walnut Creek, and Lillian H. Troxell, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 409,791, Aug. 20, 1982, abandoned, which is a division of Ser. No. 918,550, Jun. 23, 1978, , which is a continuation-in-part of Ser. No. 817,943, Jul. 22, 1977, abandoned. This application Dec. 10, 1984, Ser. No. 679,976
Int. Cl.⁴ A01N *43/40;* C07D *213/64*
U.S. Cl. 71—94 **12 Claims**

9. The method of controlling undesired plant growth which comprises applying to the locus of said plants a herbicidally effective amount of a compound of the formula



wherein:
T is oxygen or sulfur;
X is Cl, Br or CF_3;
Y is H, Cl, Br or CF_3, provided at least one of X and Y is CF_3;
Z is $—CH_2OR_5$ or



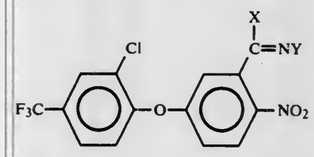
R_5 is H; and
R_6 is C_1—C_7 alkyl.

4,551,171
2-NITRO-5-(SUBSTITUTED-PHENOXY) PHENYLALKANONE OXIME AND IMINE DERIVATIVES AS HERBICIDES

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-Poulenc, Inc., Monmouth Junction, N.J.

Filed Feb. 1, 1980, Ser. No. 117,731
Int. Cl.⁴ A01N *9/20;* C07C *121/75*
U.S. Cl. 71—121 **8 Claims**

1. Herbicidal compounds of the formula:



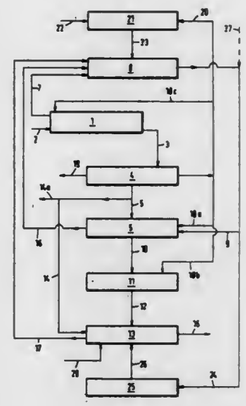
wherein:
X is selected from the group consisting of hydrogen, alkoxy of 1 to 6 carbons, alkyl of 1 to 6 carbons;
Y is selected from the group consisting of hydroxy, alkali metal oxide selected from the group consisting of —ONa and —OK, alkyl of 1 to 6 carbons.

8. A method for combating undesirable herbs which comprises contacting them with a herbicidally effective amount of a compound defined in claim 1.

4,551,172
PROCESS OF PRODUCING LIQUID CARBON-CONTAINING IRON

Lothar Formanek, Frankfurt am Main; Martin Hirsch, Friedrichsdorf; Harry Serbent, Hanau am Main; Wolfram Schnabel, Idstein; Klaus-Dietrich Fritzsche, Oberhausen; Heribert Koenig, Duisburg, and Gero Rath, Mülheim, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt and Mannesmann Aktiengesellschaft, Dusseldorf, both of, Fed. Rep. of Germany

Filed Aug. 8, 1984, Ser. No. 638,912
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, 3330625; Sep. 22, 1983, 3334221
Int. Cl.⁴ C21C *5/52*
U.S. Cl. 75—11 **8 Claims**



1. In a process of producing liquid carbon-containing iron wherein iron oxide-containing materials are directly reduced with solid carbonaceous reducing agents to form sponge iron, and sponge iron is thereafter melted in an electric reducing furnace, the improvement comprising:
(a) separating the material discharged from the direct reduction by magnetic separation into sponge iron and non-magnetic material containing surplus carbon,
(b) producing electrical energy by afterburning the exhaust gas of the direct reduction,
(c) producing additional electrical energy from hot combustion gases produced in a combustion aggregate,
(d) charging at least part of carbon-containing non-magnetic material obtained according to step (a) into the combustion aggregate according to step (c),
(e) wherein the sponge iron obtained according to step (a) is charged into and melted in the electric reducing furnace into liquid carbon-containing iron and,
(f) wherein the sum of the rate of produced electrical energy according to steps (b) and (c) equals at least the rate of electrical energy necessary for melting the sponge iron to liquid carbon-containing iron according to step (e) and wherein the necessary rate of electrical energy is applied to the electrical reducing furnace.

4,551,173

METHOD FOR ADJUSTING COMPOSITION OF MOLTEN STEEL IN ARC PROCESS

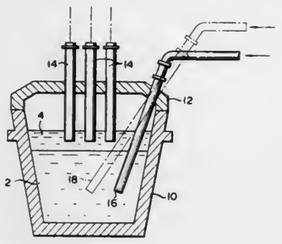
Hirohisa Nakashima; Yoshimi Komatsu; Masafumi Ikeda, and Tsuneo Kondö, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,947

Claims priority, application Japan, Sep. 28, 1984, 59-145887[U]; Sep. 28, 1984, 59-203640; Oct. 11, 1984, 59-213094; Oct. 12, 1984, 59-213334

Int. Cl.[3] **C21C** *5/52*

U.S. Cl. 75—12 **18 Claims**



1. A method of adjusting the composition of molten steel, comprising the steps of:

pouring molten steel obtained by converter steelmaking into a ladle while adding an additive containing a component to be added to the molten steel as needed;

calculating the amount of the additive to be added to the molten steel in the ladel from the composition of the component to be added, a composition analysis value of the molten steel in the converter, and the amount, if any, of the additive added to the molten steel when the molten steel is poured from the converter;

adding the additive of the amount calculated in said calculating step to the molten steel in the ladle;

submerging electrodes in a slag layer on the molten steel;

supplying power to the electrodes submerged in the slag layer on the molten steel so as to generate an electric arc between the electrodes and the molten steel when the adding of the additive to the molten steel is completed, thereby arc-heating the molten steel; and

introducing a gas in the molten steel through a lance submerged therein, thereby stirring the molten steel.

4,551,174

METHOD OF REFINING MOLTEN STEEL BY ARC PROCESS

Hirohisa Nakashima; Yoshimi Komatsu; Masafumi Ikeda, and Tsuneo Kondo, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,566

Claims priority, application Japan, Sep. 3, 1984, 59-184155; Sep. 28, 1984, 59-1471118[U]; Sep. 28, 1984, 59-203636; Sep. 28, 1984, 59-203637; Sep. 28, 1984, 59-203638

Int. Cl.[4] **C21C** *5/52*

U.S. Cl. 75—12 **17 Claims**

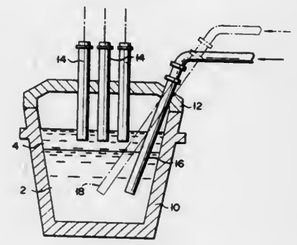
1. A method of refining molten steel by an arc process, comprising the steps of:

flowing molten steel refined by oxidation and having a certain oxygen and carbon content into a ladle at a temperature not higher than 1,650° C.;

submerging an electrode in slag on the nondeoxidized molten steel;

generating an arc between the electrode and the molten steel to arc-heat the molten steel;

introducing a gas which does not react with the molten steel through a lance submerged therein during said arc-heating step, thereby stirring the molten steel and accelerating a chemical reaction between the oxygen and carbon contained in the molten steel; and



avoiding contact between the molten steel and the electrode by controlling the flow of gas through and out of the lance.

4,551,175

METHOD FOR CONTROLLING SLAG CHEMISTRY IN A REFINING VESSEL

Balkishan Agrawal, Ossining, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 17, 1984, Ser. No. 601,286

Int. Cl.[4] **C21C** *7/00*

U.S. Cl. 75—513 **32 Claims**

1. A process for controlling the slag composition of a metal bath in a refractory lined vessel during the process of refining the bath by the injection of oxygen gas during a period of oxidation and by the injection of nonoxidizing gas or gases during a period of reduction and melt specification adjustment such that the slag at the completion of the refining process will have a composition consisting essentially of A% alumina (Al_2O_3), B% silica (SiO_2), C% CaO and D% MgO and a ratio of alumina to silica equal to a value A/B, said process comprising the steps of:

(1) adding aluminum and silicon to the bath as fuel components in a combined proportion of from 0 to 100% Al remainder Si to cause the bath to rise in temperature to a predetermined level upon completion of the period of oxidation and to provide a ratio of alumina to silica which is substantially equal to the value A/B;

(2) establishing the weight of alumina and silica present in the slag at the completion of step 1 from the stoichiometric relationships between aluminum and alumina and between silicon and silica respectively and from the weights of aluminum, alumina, silicon and silica present before the addition;

(3) adding aluminum and silicon to the bath as reductants in a combined proportion of from 0% to 100% aluminum and remainder silicon to cause a substantially complete reduction of the melt and to provide a ratio of alumina to silica which is substantially equal to the ratio A/B;

(4) establishing the weight of alumina and silica present in the slag at the completion of reduction of the bath from the stoichiometric relationships between aluminum and alumina and between silicon and silica respectively and from the weights of alumina and silica established in step (2);

(5) establishing the amount of specification silicon to be added to meet the desired melt specification at the completion of the refining process by multiplying the weight of the metal in the bath by the desired percentage of silicon in the bath at the completion of the refining process;

(6) if the ratio of alumina to silica is equal to the value A/B at the completion of reduction, then adding the amount of silicon established in step (5) to the metal;

(7) if the ratio of alumina to silica from the weights established in step (4) is less than the value A/B at the completion of reduction, then calculating the proportion of aluminum from 0 to 100% and remainder silicon needed to both meet the silicon specification and attain the ratio of A/B in accordance with the following reaction:

$$4Al + 3SiO_2 \rightarrow 2Al_2O_3 + 3Si$$

(8) adding the aluminum and silicon as required in accordance with step (7) simultaneous with or subsequent to step (3);

(9) establishing the weights of alumina and silica present in the slag at the completion of step (6) or (8) from their stoichiometric relationships with aluminum and silicon; and

(10) adding CaO and MgO to the bath such that the following equations are satisfied:

$$CaO = \frac{C}{A+B} \times (AP_4 + SP_4) - CP$$

$$MgO = \frac{D}{A+B} D \times (AP_4 + SP_4) - MP$$

where AP_4 is the weight of alumina from step (9), SP_4 is the weight of silica from step (9), CP and MP are the weights of CaO and MgO respectively, already in the slag, CaO and MgO are the respective weights of CaO and MgO added in this step and A, B, C and D are the preselected percentages.

4,551,176

RAPIDLY BINDING HIGH-STRENGTH CEMENT BINDING AGENT AND A METHOD OF ITS PREPARATION

Frantisek Skvara, No. 18 Jireckova, Praha 7; Karel Kolar, No. 38 Yostrovska, Praha 6; Zdenek Zadak, No. 733 Na Magistrale, Kolin; Zdenek Friml, No. 543 Rybalkova, Jaromer, and Jaroslav Novotry, No. 13 Nad Sarkou, Praha 6, all of Czechoslovakia

Filed Jun. 16, 1983, Ser. No. 505,238

Int. Cl.[4] **C04B** *7/35*

U.S. Cl. 106—90 **8 Claims**

8. Method for production of a rapidly binding high-strength cement binding agent which comprises (1) grinding, in the absence of gypsum, a clinker of a portland cement to the specific surface area 150 to 3000 m^2/kg and to the percent fraction of particles smaller than 5 μm ranging from 5 to 95 weight %, said cement having a dry weight, (2) dissolving (a) from 0.1 to 5 weight % of a water-soluble salt of a sulfomethylated condensation product of phenols to which formaldehyde has been added, wherein said salt includes up to 70% of a trivalent cation selected from the grouup consisting of iron, aluminum and chromium, said condensation product being transferred at least partly into a quinolic form by the action of at least 0.5 weight percent of oxygen based upon 1 weight percent of phenols, and (b) from 0.1 to 10 weight % of a compound selected from the group consisting of an alkaline hydroxide, carbonate, hydrogencarbonate, silicate, hydrogensilicate, hydrogensulfite and oxalate, in formation water, and (3) mixing the ground cement with at least 20 weight % of said formation water, all abovesaid percentages being based on the dry weight of ground cement.

4,551,177

COMPRESSIBLE STARCHES AS BINDERS FOR TABLETS OR CAPSULES

Paolo C. Trubiano, and James J. Kasica, both of Somerville, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Apr. 23, 1984, Ser. No. 603,021

Int. Cl.[4] **C08B** *31/00;* **C08L** *3/00*

U.S. Cl. 106—210 **20 Claims**



1. A starch, useful as a binder for tablets prepared by direct compression or dry granulation or as a binder-diluent for capsules, which consists essentially of a free-flowing, compressible starch powder derived from a cold-water-insoluble, granular starch base by treatment with an acid, and/or alpha-amylase enzyme, the treatment of the starch base and recovery of the free-flowing, compressible starch powder being carried out at a temperature below the gelatinization temperature of the starch; the treated starch being characterized by altered, weakened non-gelatinized granules with a less dense interior and disrupted surface; the compressible starch powder being capable of forming, under direct compression, a tablet having a hardness of at least 5 kg.

4,551,178

ADDITIVES FOR HOT MIX ASPHALT

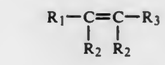
Anthony V. Grossi; Louis T. Hahn, and Alfred Marzocchi, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 7, 1984, Ser. No. 607,892

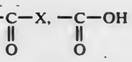
Int. Cl.[4] **C08L** *95/00*

U.S. Cl. 106—273 N **8 Claims**

1. A method of reclaiming asphalt which comprises mixing reclaimable asphalt with a chemically modified asphalt consisting of a reaction product of unused asphalt, a polymerizable vinyl monomer having the general formula:



wherein R_1 is an aromatic group containing 6 to 12 carbon atoms selected from the group consisting of a phenyl group, a substituted phenyl group wherein the substituent is any one of an amino group, a cyano group, a halogen, a C_1 to C_3 alkoxy group, a C_1 to C_3 alkyl group, a hydroxy group, a nitro group, R_2 is hydrogen or lower alkyl group, and R_3 is hydrogen, a lower alkyl, $—CH_2OH$, —CHO,



or $—CH_2—CH$ and wherein X is a halogen and an alkenyl azabenzene, said chemically-modified asphalt consist of 85–94.5 percent asphalt, 0.5–5 percent azabenzene and 5–10 percent of the vinyl monomer.

4,551,179

COAL-AQUEOUS MIXTURES

Seymour Mark, Northampton, Pa., assignor to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 416,606, Sep. 10, 1982, Pat. No. 4,441,889, which is a continuation-in-part of Ser. No. 230,062, Jan. 29, 1981, Pat. No. 4,358,293. This application Oct. 11, 1983, Ser. No. 540,823

Int. Cl.⁴ C08L *95/00*

U.S. Cl. 106—277 **2 Claims**

1. A stabilized, high solids content coal-aqueous mixture resulting from the process comprising the steps of:

(i) admixing a polyalkyleneoxide nonionic surfactant having a hydrophobic portion and a hydrophilic portion, said hydrophilic portion being comprised of at least about 100 units of ethylene oxide, with water, under low speed agitation conditions;

(ii) admixing particulate coal with the admixture resulting from step (i) under medium speed agitation conditions; and

(iii) agitating the resultant coal containing mixture of step (ii) under high speed agitation.

4,551,180

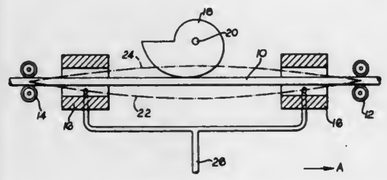
CLEANING ELONGATE STRIP BY DIE IMPACTION

Peter R. Gough, 3 Hopstone Gardens, Penn, Wolverhampton, West Midlands, England

Filed Apr. 11, 1984, Ser. No. 599,001

Int. Cl.⁴ B08B *7/02*

U.S. Cl. 134—9 **4 Claims**



1. A method of cleaning an elongate strip while passing the strip through a die which surrounds and is spaced from the strip, by producing repeated lateral impacts between the strip and the surrounding die, comprising the steps of holding the strip under tension on both sides of the die while causing relative lateral vibration of the strip and the die, the amplitude of the vibration being sufficient to produce repeated lateral impacts between the strip and the surrounding die, and displacing material removed by such impacts, by passing a fluid through the die.

4,551,181

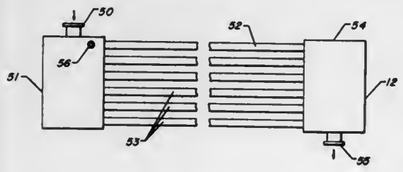
CORROSION PREVENTION AND CLEANING OF AIR-COOLED HEAT EXCHANGERS

William L. Stearman, Jenks, Okla., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 1, 1983, Ser. No. 528,379

Int. Cl.⁴ B08B *9/02*

U.S. Cl. 134—22.11 **4 Claims**



1. A method of retarding corrosion in a fin-fan heat exchanger used in cooling vapors comprising hydrocarbons, said exchanger being comprised of a tube-side inlet vapor distribution chamber having at least one inlet nozzle, an outlet header box having at least one outlet nozzle, a plurality of heat exchange tubes having inlet ends in communication with said inlet vapor distribution chamber and having outlet ends in communication with the outlet header box, where said tubes are arranged in a plurality of horizontal rows, each row being located on one of a series of horizontal planes parallel to one another, said exchanger being further comprised of at least one spray conduit for practice of said method having a plurality of treating liquid discharge nozzles, which spray conduit is located perpendicular to said tubes and on a plane parallel to said series of horizontal planes, said method comprising discharging treating liquid from said treating discharge nozzles at a plurality of discharge points inside the inlet vapor distribution chamber, wherein said treating liquid becomes dispersed in droplets in said vapors comprising hydrocarbons which are flowing toward said tube inlet ends, where said discharge points are located no lower than the lowest row of tubes to be treated by said method and are further located adjacent to said tube inlet ends such that paths of vapor flow between said discharge points and said tube inlet ends do not include an abrupt change of direction; thereby permitting said droplets to flow into said tube inlet ends.

4,551,182

PROCESS FOR PRODUCING DEEP-DRAWING COLD ROLLED STEEL SHEETS AND STRIPS

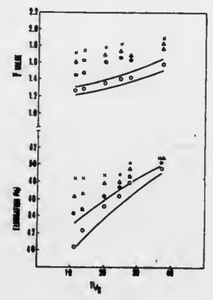
Osamu Akisue; Teruaki Yamada; Shigeru Ueda, all of Hyogo; Yoshikuni Tokunaga, and Masato Yamada, both of Aichi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 418,544, Sep. 15, 1982, abandoned. This application Oct. 27, 1982, Ser. No. 437,027

Claims priority, application Japan, Sep. 18, 1981, 56-147592

Int. Cl.⁴ C21D *8/04*

U.S. Cl. 148—12 C **5 Claims**



1. A process for producing deep-drawing cold rolled steel strips, comprising:

hot rolling a steel consisting essentially of 0.0014–0.0031% carbon, 0.010–0.100% aluminum and titanium in amounts not less than 4 times the carbon content, but within a range of from 0.019–0.052%, 0.0019–0.0038% nitrogen with the balance being iron and unavoidable impurities;

coiling the hot rolled strip thus obtained at a temperature not lower than 700° C.; and

subjecting the coiled strip to cold rolling and then continuous annealing including a soaking step in a temperature range of from 700° to 900° C. for 20 seconds to 2 minutes.

4,551,183

METHOD FOR IMPROVING THE STRAIGHTNESS OF ROLLED STEEL

Franz Tamm, Hennigsdorf; Bernhard Höricke, Falkensee; Kurt Welfle; Michael Seidel, both of Hennigsdorf; Wolfgang Tettke, Falkensee, and Karl-Heinz Luckfiel, Hennigsdorf, all of German Democratic Rep., assignors to VEB Stahl-und Walzwerk "Wilhelm Florin", Hennigsdorf, German Democratic Rep.

Continuation-in-part of Ser. No. 538,865, Oct. 4, 1983, abandoned. This application Jul. 31, 1984, Ser. No. 635,963

Claims priority, application German Democratic Rep., Nov. 24, 1982, 2451783

Int. Cl.⁴ C21D *7/14*

U.S. Cl. 148—12 R **8 Claims**

1. Method for improving the straightness of rolled steel during cooling in one or more steps, prior or subsequent to the finished degree of cooling or prior or subsequent to the last forming process, characterized in that the γ/α-conversion is accelerated or retarded by measured pressure water cooling as compared to the normal process on the cooling bed, depending on the chemical composition of the steel and that in this manner a conversion-related length increase on the cooling bed is prevented in the processed rolling stock.

4,551,184

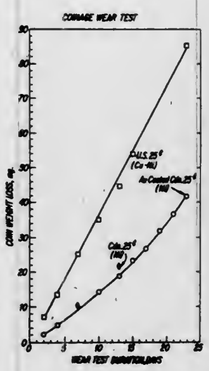
PROCESS FOR OBTAINING A COMPOSITE MATERIAL AND COMPOSITE MATERIAL OBTAINED BY SAID PROCESS

James A. E. Bell; Bruce R. Conard, both of Oakville, and Douglas A. Hope, Mississauga, all of Canada, assignors to Inco Limited, Toronto, Canada

Division of Ser. No. 503,679, Jun. 13, 1983, Pat. No. 4,505,060. This application Nov. 13, 1984, Ser. No. 670,768

Int. Cl.⁴ C22F *1/14*

U.S. Cl. 148—127 **16 Claims**



1. A process for providing a composite coin comprising providing a base having at least a surface of nickel, depositing on said surface of said base a layer of gold at least about 0.1 μm thick and thereafter interdiffusing said gold and said nickel to form a metallurgical bond therebetween and introduce into said gold layer an amount of nickel from said base sufficient to increase the hardness of said gold layer but insufficient to significantly destroy the distinctive color of said gold layer.

4,551,185

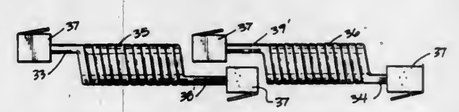
METHODS OF AND APPARATUS FOR MAKING RETRACTILE CORDS

Robert P. Loesch, Omaha, Nebr., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 15, 1983, Ser. No. 466,743

Int. Cl.⁴ C21D *1/32*

U.S. Cl. 148—150 **4 Claims**



1. A method of making retractile cords, said method comprising the steps of:

winding a length of cordage helically in a plurality of convolutions onto a workholder, the wound cordage having leading and trailing end portions which are secured to cause the leading and trailing end portions to be maintained straight and to cause the convolutions to be held on the workholder;

heating and cooling the wound cordage to cause the leading and trailing end portions to be set in a straight configuration;

removing the wound cordage in a manner to reverse the direction of the helices of the convolutions;

severing the length of cordage, which has been wound helically in the plurality of convolutions and which has been heat set in a coiled configuration along its entire length between a straight leading end portion and a straight trailing end portion, said step of severing being accomplished at a predetermined location along the length to form a first retractile cord having the straight leading end portion and a newly formed trailing end portion, and a second retractile cord having the straight trailing end portion and a newly formed leading end portion;

holding the newly formed trailing and leading end portions of the first and second cords in a straight configuration; and

annealing the newly formed trailing end portion of the first cord and the newly formed leading end portion of the second cord to cause each of the newly formed end portions to be retained in a straight configuration which is suitable for termination with a modular plug.

4,551,186

METHOD OF MAKING GAINASP LAYERS FOR PHOTODETECTORS

Gerald Schemmel, Asperg, and Richard Linnebach, Erdmannhausen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 23, 1983, Ser. No. 525,769

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232115

Int. Cl.⁴ H01L *21/208*

U.S. Cl. 148—171 **5 Claims**

1. Method of making $Ga_xIn_{1-x}As_yP_{1-y}$ layers for photodetectors wherein the Ga and As components are chosen so that, during the growth of the layer on an InP substrate, the crystal lattices at the layer-substrate junction match, and the energy gap lies in the range between 0.905 eV and 0.875 eV, characterized by,

contacting a melt consisting of a ternary solution of GaAs and InAs in indium and having the proper percentages of Ga and As with a first InP substrate at a first temperature for a few hours and then separating the melt from the substrate to obtain the proper quaternary composition of the starting material,

growing the layer by contacting a second InP substrate with the quaternary melt at a second temperature,

the first temperature being a constant temperature lying slightly above the temperature at which the layer is grown, and the second temperature being a temperature lying clearly above 640° C.

4,551,187

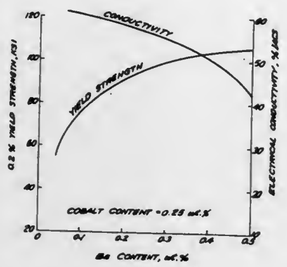
COPPER ALLOY

Nathan L. Church, Chagrin Falls; W. Raymond Cribb, Mentor, and John C. Harkness, Lakewood, all of Ohio, assignors to Brush Wellman Inc., Cleveland, Ohio

Filed Jun. 8, 1984, Ser. No. 618,528

Int. Cl.[4] C22C *9/06*; C22F *1/08*

U.S. Cl. 148—411 **2 Claims**



1. A copper-beryllium alloy consisting essentially of about 0.2% to about 0.5% beryllium, about 0.2% to about 0.5% cobalt and the balance essentially copper which has been solution treated at a temperature not exceeding about 1750° F., then cold worked at least about 70% and aged in the temperature range of about 700° F. to about 800° F. for about 1 to about 5 hours and which has a Percent Remaining Stress of at least about 85% after 1000 hours of stress relaxation testing at 300° F. at an initial stress of 75% of the 0.2% offset yield strength, a formability not exceeding 1.25 in the longitudinal bend test, a tensile strength of about 95 to about 125 ksi (655 to 860 MPa), 0.2% offset yield strength of about 85 to about 120 ksi (580 to **825** MPa), elongations of about 5% to about b **15%** and conductivity of about 40% to about 65% I.A.C.S. and by a microstructure, in the condition resulting from an anneal at 1650° F. followed by an age at 950° F., exhibiting a particle density of the principal hardening precipitates of about 2.3×10^9 precipitates per square millimeter in a transmission electron microscope thin foil, and only about 240 cobalt-beryllium intermetallic particles of at least 2.5 microns diameter per square millimeter in an optical metallograph.

4,551,188

DEVICE FOR LIFTING THE FLAPS OF LETTERS OR ENVELOPES

Wolfgang Schulze, Berlin, Fed. Rep. of Germany, assignor to Francotyp-Postalia GmbH, Berlin, Fed. Rep. of Germany

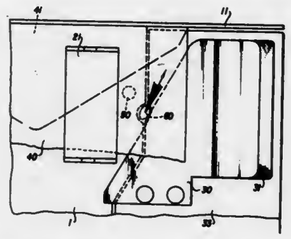
Filed Oct. 15, 1984, Ser. No. 661,244

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1983, 3337488

Int. Cl.[4] B65B *9/08*

U.S. Cl. 156—441.5 **5 Claims**

1. An envelope or letter closing device of a postal article processing machine, comprising a moistening device having a holding plate, a feeder mechanism disposed upstream of said moistening device in travel direction of the letters or envelopes for feeding the letters or envelopes to said moistening device, and a device for lifting the flaps of the envelopes or letters, said lifting device including a compressed air issuing device with an outlet opening, and a sensing device disposed in said feeder mechanism and connected to said compressed air issuing device, said sensing device causing said compressed air issuing device to issue an air stream from said outlet opening upon sensing letters or envelopes passing by for lifting the flaps of



unsealed envelopes or letters and conducting the flaps below said holding plate for moistening.

4,551,189

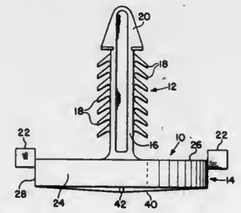
FRICTION WELDED FASTENER SYSTEM

Francis C. Peterson, Woodbury, Conn., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 12, 1984, Ser. No. 681,040

Int. Cl.[4] B29C *27/08*

U.S. Cl. 156—73.5 **3 Claims**



1. A friction welding fastener system for fusing to a substrate by heat of friction induced by the application of rotative and axial forces applied to the fastener, comprising a base member of a thermoplastic material having an insufficient bonding affinity to said substrate to produce adequate adhesion between the bottom surface of said base and said substrate, a cavity formed inwardly of said bottom surface, an integral wall of thermoplastic material dividing said cavity into at least two compartments, a heat activated uncured polymeric resin material layer contained in one of said at least two compartments and a heat activated curing agent layer contained in the other of said at least two compartments, the thickness of said polymeric resin material layer and said curing agent layer being selected to permit contact with said substrate as said fastener is rotated, and means for driving said fastener to provide rotative and axial forces on said base to cause the melting of a portion of said integral wall sufficient to permit mixing of said polymeric resin material and said curing agent, the resulting cured polymeric resin being selected to have a bonding affinity for both said base member material and said substrate material.

4,551,190

ALIGNING MEANS FOR TAPE SPLICER

Robert I. Farrow, and Richard L. Clark, both of Burlington, N.C., assignors to American Multimedia, Inc., Burlington, N.C.

Continuation of Ser. No. 540,071, Oct. 7, 1983, Pat. No. 4,475,970. This application Jul. 6, 1984, Ser. No. 628,441

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.[4] B31F *5/00*; B65H *19/00*; B32B *31/00*; B65C *9/08*

U.S. Cl. 156—159 **12 Claims**

1. An apparatus for feeding and applying splicing tape to two adjacent tape ends positioned on a splice bed, comprising:

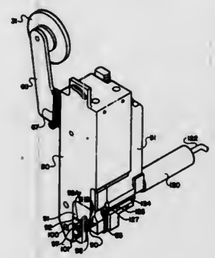
(a) a splicing tape applicator wheel mounted for rotation and having a plurality of peripheral faces, each face defining a splicing tape carrying surface;

(b) a source of splicing tape for being applied to successive tape carrying surfaces;

(c) movement means for moving a tape carrying surface of said applicator wheel into and out of contact with the two tape ends to be spliced and applying a length of splicing tape thereto;

(d) motion converting means cooperating with said movement means and said applicator wheel for converting movement of said applicator wheel into unison rotation of said applicator wheel thereby moving a next successive tape carrying surface into position for application of the splicing tape during the next movement;

(e) aligning means cooperating with said applicator wheel



and said motion converting means for aligning successive surfaces of said applicator wheel in proper alignment with the splice bed after each application of splicing tape and before the next, said alignment means including stop means cooperating with said motion converting means to stop the rotational movement of said applicator wheel and a stop means engagement member mounted for unison movement with said applicator wheel and positioned to engage said stop means at the termination of each upward movement of said applicator wheel to reposition successive sides of said applicator wheel in preparation of the next downward movement thereof into tape-applying position, and wherein said stop means engagement member comprises a body having a plurality of discreet outwardly projecting shoulders, at least one of said shoulders adapted to engage said stop means and thereby align said applicator wheel.

4,551,191

METHOD FOR UNIFORMLY DISTRIBUTING DISCRETE PARTICLES ON A MOVING POROUS WEB

Ronald W. Kock, and John A. Esposito, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1984, Ser. No. 625,932

Int. Cl.[4] B29F *3/00*

U.S. Cl. 156—276 **50 Claims**

1. A method for substantially uniformly distributing a layer of discrete particles along a predetermined portion of the uppermost surface of a moving porous web traveling at a first velocity so that said particles occupy less than 100% of said predetermined portion of the uppermost surface of said moving web, said method comprising the steps of:

(a) entraining said particles in a moving gaseous stream;

(b) passing said gaseous stream through a conduit having a nozzle exit positioned adjacent the uppermost surface of and oriented so as to discharge said gaseous stream containing said entrained particles in a direction substantially parallel to the direction of travel of said moving porous web;

(c) mixing said particles entrained in said gaseous stream inside said conduit to provide a substantially uniform distribution of said particles, as measured across the width of said nozzle exit of said conduit in a direction perpendicular to the direction of travel of said moving porous web;

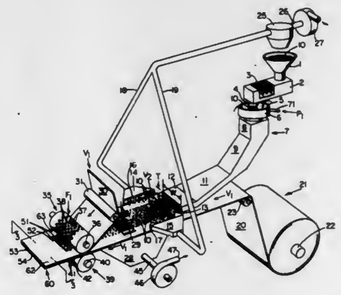
(d) discharging said gaseous stream containing said uniformly distributed entrained particles from said conduit adjacent said predetermined portion of the uppermost surface of said moving porous web at a second velocity; and

(e) maintaining the fluid pressure adjacent the lowermost surface of said moving porous web at a level below the fluid pressure adjacent the uppermost surface of said moving porous web in an area coinciding in width to said predetermined portion of said web and located near the nozzle exit of said conduit, whereby the uniformly distributed particles entrained in said discharged gaseous stream are substantially uniformly deposited on said predetermined portion of the uppermost surface of said moving porous web as the bulk of the gas in said gaseous stream is drawn from the uppermost to the lowermost surface of said web.

41. An apparatus for substantially uniformly distributing a layer of discrete particles along a predetermined portion of the uppermost surface of a moving porous web traveling at a first velocity so that said particles occupy less than 100% of said predetermined portion of the uppermost surface of said moving web, said apparatus comprising:

(a) means for feeding said particles in a substantially uniform stream to the inlet of a gas eductor;

(b) means for entraining said particles in a moving gaseous stream;



(c) conduit means for passing said gaseous stream through a nozzle exit positioned adjacent the uppermost surface of and oriented so as to discharge said gaseous stream containing said entrained particles in a direction substantially parallel to the direction of travel of said moving porous web;

(d) means for mixing said particles entrained in said gaseous stream inside said conduit to provide a substantially uniform distribution of said particles, as measured across the width of said nozzle exit of said conduit in a direction perpendicular to the direction of travel of said moving porous web;

(e) nozzle exit means at the discharge end of said conduit means for discharging said gaseous stream containing said uniformly distributed entrained particles from said conduit adjacent said predetermined portion of the uppermost surface of said moving porous web at a second velocity which is greater than said first velocity; and

(f) means for maintaining the fluid pressure adjacent the lowermost surface of said moving porous web at a level below the fluid pressure adjacent the uppermost surface of said moving porous web in an area coinciding in width to said predetermined portion of said web and located near the nozzle exit of said conduit, whereby the uniformly distributed particles entrained in said discharged gaseous stream are substantially uniformly deposited on said pre-

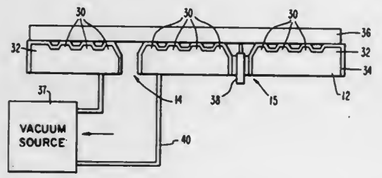
determined portion of the uppermost surface of said moving porous web as the bulk of the gas in said gaseous stream is drawn from the uppermost to the lowermost surface of said web.

4,551,192

ELECTROSTATIC OR VACUUM PINCHUCK FORMED WITH MICROCIRCUIT LITHOGRAPHY

Vincent Di Milia, Pleasantville; Juan R. Maldonado, Chappaqua; James L. Speldell, Carmel, all of N.Y., and John M. Warlaumont, Ridgewood, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,738
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—345 **30 Claims**



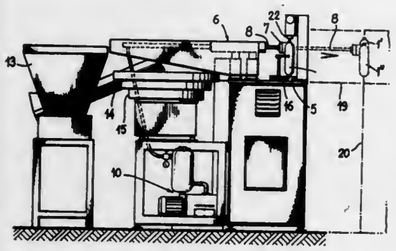
1. In a pinchuck of the type wherein pins extend from and are supported by a base, said pins having flat top surfaces all lying in a common plane, the improvement wherein said base and pins are of unitary construction formed by etching from a single block of material having a flat surface.

4,551,193

APPARATUS FOR APPLYING REINFORCEMENT BOTTOMS TO PLASTIC BOTTLES

Manuel I. Cano, Barcelona, Spain, assignor to Ensamblaje y Manipulacion Industrial, S.A. (EMINSA), Barcelona, Spain

Filed Nov. 10, 1983, Ser. No. 550,695
Claims priority, application Spain, Jan. 27, 1983, 519328
Int. Cl.⁴ B29D *3/00*
U.S. Cl. 156—423 **5 Claims**



1. An apparatus for applying bottom cups to blow molded, hollow plastic containers having injection molded necks comprising

means for transferring a plurality of the containers substantially simultaneously from a molding device to a first station, said means for transferring including suction means for individually engaging the exterior or each container and holding each container in a predetermined orientation at said first station,

means for applying adhesive to bottom cups and means for feeding a plurality of said cups to said first station with each cup aligned with a container so as to receive the bottom of a container therein,

means for moving a plurality of the aligned cups toward the bottoms of the containers and to press a respective cup against a respective bottom of a container, and means for supplying a gas under pressure to the interior of each container while the cups are being pressed against the container bottoms,

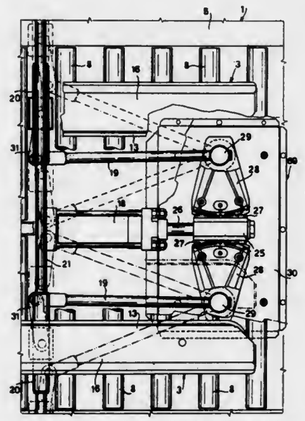
said means for transferring being operative to then release the containers whereby the containers are transferred to said means for feeding which operates to discharge the containers from said apparatus.

4,551,194

TAPING MACHINE FOR CARTONS OF VARIABLE WIDTH

Augusto Marchetti, Piazza Sicilia, 7 - 20146 Milano, Italy

Filed Jan. 24, 1985, Ser. No. 694,630
Claims priority, application Italy, Jan. 26, 1984, 19326 A/84
Int. Cl.⁴ B65B *7/16*
U.S. Cl. 156—468 **4 Claims**



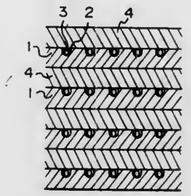
1. Taping machine for cartons of variable width, comprising a carton support base and a pair of driven-belt conveying units mounted on said support base and mutually approachable from opposite sides to perform a conveying engagement with the carton sides, characterized in that said conveying units are mounted on said support base at their outlet ends and at portions advanced with respect to their inlet ends, said outlet ends being rotatably mounted on respective belt driving shafts, which vertically project from conical groups for motion transmission, which are slidingly mounted on a horizontal driving shaft extending transversally with respect to said support base, and said advanced portions being fixed to respective support sleeves slidingly mounted on at least one transversal guiding bar, and there is provided a displacing device for the conveying units, which is arranged at the inlet ends of said units and comprises a slidable body with horizontal axis and rack-shaped opposite sides, control means for the sliding of said body, a pair of toothed sectors rotatable about vertical axes and engaged with said rack-shaped sides of said body to transform the horizontal sliding of the latter into corresponding rotations of said toothed sectors, and kinematic connecting means which extend horizontally along said support base to connect kinematically said toothed sectors to said sliding sleeves in order to convert said opposite rotations of said toothed sectors into a corresponding movement of mutual approach or moving away of said conveying units.

4,551,195

METHOD FOR GROWING BORON NITRIDE CRYSTALS OF CUBIC SYSTEM

Eiichi Iizuka; Tomoji Sando; Shinji Kashima, and Masakazu Maki, all of Shiojiri, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1984, Ser. No. 654,293
Int. Cl.⁴ C30B *29/38*
U.S. Cl. 156—603 **7 Claims**



1. An improvement in a method for growing boron nitride crystals of the cubic system which comprises subjecting reaction materials of low pressure phase boron nitride, a solvent material, and cubic boron nitride particles as the seeds, to pressure and temperature conditions in the cubic boron nitride-stable region, wherein the reaction materials are in the form of a pair of a superimposed solvent material plate and a low pressure phase boron nitride plate or a pile made of a plurality of said pairs of the superimposed solvent material plate and low pressure phase boron nitride plate, a plurality of the seed particles being disposed on either one or each of the confronting surfaces of the pair of the superimposed solvent material plate and low pressure phase boron nitride plate; or the reaction materials are in the form of a plate made of a mixture of the solvent material and the low pressure phase boron nitride or a pile made of a plurality of the solvent material/low pressure phase boron nitride mixture plates, a plurality of the seed particles being disposed on a surface of each solvent material/low pressure phase boron nitride mixture plate,

said improvement comprising regularly disposing the seed particles having a particle size of not larger than 150 μm in such a manner that the seed particles are located at a substantially equal distance and the distance between the peripheries of every two adjacent grown cubic boron nitride crystal particles is in the range of 20 to 200 μm; and allowing the cubic boron nitride crystals to grow until their sizes reach at least 1.5 times the size of the seed particles.

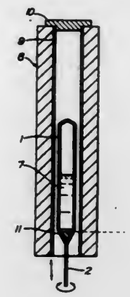
4,551,196

METHOD OF GROWING CRYSTALLINE CADMIUM MERCURY TELLURIDE AND CRYSTALLINE CADMIUM MERCURY TELLURIDE GROWN BY THE METHOD

Peter Capper, and John J. Gosney, both of Southampton, England, assignors to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/GB82/00148, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/04073, PCT Pub. Date Nov. 25, 1982
PCT Filed May 14, 1982, Ser. No. 433,131
Claims priority, application United Kingdom, May 15, 1981, 8114911
Int. Cl.⁴ C30B *21/02*
U.S. Cl. 156—616 R **4 Claims**

1. A method of growing crystalline cadmium mercury telluride, the method comprising the steps of preparing a melt of cadmium mercury telluride in a sealed ampule and growing the crystalline cadmium mercury telluride from the melt by a vertical Bridgman process, characterized in that the crystalline cadmium mercury telluride is grown at the rate of from 0.1 to 2 mm per hour, and that during growing of the cadmium mercury telluride crystal said ampule is subjected to the following accelerated ampule rotation program:



Direction	Acceln. period	Constant 10–100 rmp	Deceln. period
Clockwise	1 to 20 s	1 to 360 s	1 to 20 s
Stop		1 to 45 s	
Anti-Clockwise	1 to 20 s	1 to 360 s	1 to 20 s
Stop		1 to 45 s	

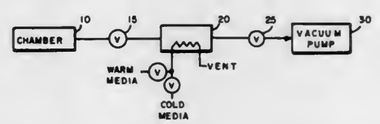
the rotation of said ampule being around its longitudinal axis.

4,551,197

METHOD AND APPARATUS FOR THE RECOVERY AND RECYCLING OF CONDENSABLE GAS REACTANTS

Joseph G. Guilmette, 38 Rice Rd., and Robert C. Wright, 307 Main St., both of Hingham, Mass. 02043

Filed Jul. 26, 1984, Ser. No. 634,635
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—642 **20 Claims**



1. A method for the recovery and recycling of noble gas halides comprising:

reacting a noble gas halide with a substrate in a reaction chamber;

condensing unreacted noble gas halide on a cold surface;

pumping away the remaining reaction products;

warming the cold surface; and

readmitting the noble gas halide obtained from the cold surface into the reaction chamber.

4,551,198

METHOD OF FLASHING BLACK LIQUOR

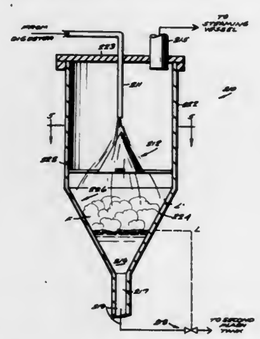
William E. Wiley, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Division of Ser. No. 363,522, Mar. 30, 1982,. This application Mar. 22, 1984, Ser. No. 592,062
Int. Cl.⁴ B01D *1/16*
U.S. Cl. 159—47.3 **9 Claims**

1. A method of flashing steam in a vertically disposed flash tank having a black liquor from a pulping process inlet at a central portion of the flash tank, a steam outlet, and a liquid outlet, and sidewalls, comprising the steps of:

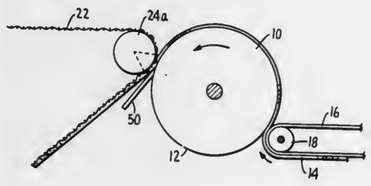
(a) continuously feeding black liquor from a pulping process

under pressure downwardly into the flash tank through the centrally located inlet;
(b) in the flash tank, reducing the pressure acting on the downwardly directed black liquor so that steam and liquid are generated thereby;
(c) removing the generated steam through the steam outlet;
(d) removing the liquid through the liquid outlet;



(e) maintaining a seal adjacent the liquid outlet so that steam passes through the liquid outlet with the liquid; and
(f) deflecting the downwardly directed central feed of black liquor interiorly of the flash tank so that it hits the sidewalls of the tank and has minimum momentum loss due to deflecting action so that the density of foam formed in the flash tank is maximized.

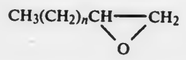
4,551,199
APPARATUS AND PROCESS FOR TREATING WEB MATERIAL
Scott B. Weldon, San Mateo, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Jul. 1, 1982, Ser. No. 394,208
Int. Cl.[4] D21H *5/24*
U.S. Cl. 162—109 **14 Claims**



1. A process of treating fibrous web material comprising the steps of:
applying said web to the outer, cylindrically-shaped generally smooth transport surface of a rotating member at a predetermined first location;
positioning an open mesh fabric pick-up member including web locking fabric filaments defining voids at a predetermined second location whereat a surface of said open mesh fabric pick-up member is closely adjacent to said transport surface;
transporting said web on said transport surface between said first and second locations at a predetermined transport surface speed;
driving said open mesh fabric pick-up member so that it has a relative velocity differing from that of said transport surface whereby a differential relative velocity nip is defined thereby at said predetermined second location;
passing said web between said open mesh fabric pick-up member and said transport surface through said differential relative velocity nip;
at said nip, bringing said web into engagement with said fabric filaments;
decelerating said web and moving said web on and relative to said generally smooth transport surface with said fabric filaments thereby causing said web to accumulate and bulk at said nip;
transferring said accumulated and bulked web to said open mesh fabric pick-up member substantially simultaneously with passage of said web between the open mesh fabric pick-up member and transport surface by pressing said transport surface against said web and impressing a portion of said web into said voids;
retaining said web on said open mesh fabric pick-up member in locking engagement with said fabric filaments after the web has passed between the open mesh fabric pick-up member and transport surface; and
transporting said bulked web on said open mesh fabric pick-up member away from said transport surface with the web in locking engagement with said fabric filaments.

4,551,200
PAPER SIZING COMPOSITION AND METHOD
Gordon G. Cash, Asheville, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.
Filed Jul. 10, 1984, Ser. No. 629,517
Int. Cl.[4] D21H *1/34*
U.S. Cl. 162—135 **18 Claims**

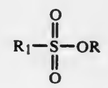
1. A method for sizing cellulosic fiber-containing paper comprising reacting said paper at a pH of from about 11 to about 14 in the presence of tetrabutylammonium hydroxide with an amount of a sizing agent at a temperature of at least about 100° C. and for a time sufficient to impart hydrophobicity to said paper, said tetrabutylammonium hydroxide being present in an amount sufficient to promote said reaction, said sizing agent having the formula:



or a hydrophobic substituted derivative thereof wherein n is an integer from 12 to 24.

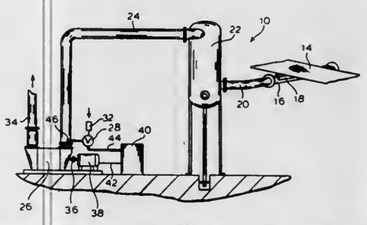
4,551,201
PAPER SIZING COMPOSITION AND METHOD
Gordon G. Cash, Asheville, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.
Filed Jul. 10, 1984, Ser. No. 629,516
Int. Cl.[4] D21H *3/16*
U.S. Cl. 162—158 **21 Claims**

1. A method for sizing cellulose fibers or cellulose fiber-containing material comprising reacting said cellulose fibers with an amount of a sizing agent and for a time sufficient to render said cellulose fibers hydrophobic, said sizing agent having the formula:



wherein:
R_1 is an alkyl group having from 1 to 5 carbon atoms, and
R is an alkyl group having from 12 to 24 carbon atoms.

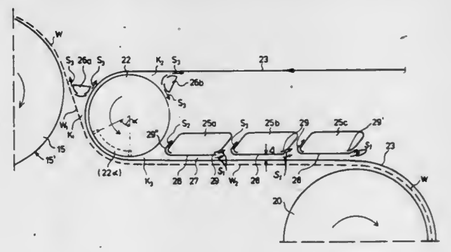
4,551,202
VACUUM CONTROL SYSTEM AND METHOD FOR DEWATERING FABRICS
Joseph A. Bolton, Queensbury, and David J. Salls, Glens Falls, both of N.Y., assignors to Albany International Corporation, Menands, N.Y.
Filed Jan. 31, 1984, Ser. No. 575,447
Int. Cl.[4] D21F *1/48*
U.S. Cl. 162—198 **13 Claims**



1. In a vacuum control system for dewatering a press fabric on a papermaking machine including a suction pipe, a centrifugal exhauster connected to the suction pipe to provide a desired vacuum level to the fabric passing over a slot in the suction pipe so that suction applied therethrough will dewater the fabric, the improvement comprising: control means which includes a variable speed drive means connected to the centrifugal exhauster coupled to the suction pipe, said control means being responsive to a change in the air flow in the suction pipe as fabric permeability decreases and air flow demand decreases to correspondingly raise the speed of the variable speed drive means and accordingly the centrifugal exhauster while the drive load of the drive means remains substantially the same so as to increase vacuum level in the suction pipe as a function of the decrease in fabric permeability and air flow demand.
8. A method of controlling vacuum conditions in a papermaking machine at the suction box section thereof which includes a centrifugal exhauster connected to a suction pipe to supply a desired vacuum level in the suction pipe so that suction applied therethrough will dewater a fabric passing over the suction pipe, the improvement steps comprising: driving the centrifugal exhauster by a variable speed drive motor; adjusting the speed of the centrifugal exhauster through a controller connected to the drive motor which is automatically responsive to a change in the air flow in the suction pipe as fabric permeability decreases and air flow demand decreases to correspondingly raise the speed of the drive motor and according the centrifugal exhauster while the drive load of the drive motor remains substantially the same and increase the vacuum level in the suction pipe as a function of the decrease in fabric permeability and air flow demand.

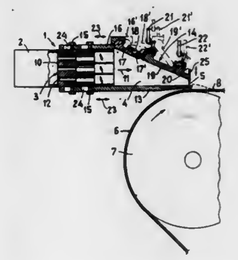
4,551,203
METHOD AND ARRANGEMENT FOR GUIDING A PAPER WEB FROM THE PRESS SECTION TO THE DRYING SECTION
Pekka Eskelinen, Turku, Finland, assignor to Valmet Oy, Finland
Filed Apr. 2, 1984, Ser. No. 595,969
Int. Cl.[4] D21F *11/00, 3/00, 5/00*
U.S. Cl. 162—202 **18 Claims**

1. Apparatus for guiding a fibrous web from a press section to a drying section, comprising
a guide roll adapted to guide the web passing from the press section onto a drying wire from the drying section passing about said guide roll, and
means for urging the web and drying wire against one another as the web is passed to the drying section, said urging means disposed between said guide roll and the drying section in a running direction of the web and wire,
said guide roll constituting means for passing the web in an open draw from the press section onto the drying wire, and
said urging means comprising means for generating a negative pressure in a space adjacent a side of the drying wire opposite a side contacting the web, to urge the web and drying wire against each other, and
said negative pressure generating means comprising at least one blowing box having gas discharge means extending substantially over an entire width of the web, said blowing box directing a gas stream through said gas discharge means in a direction substantially parallel to the running direction of the web and supporting drying wire, and at a speed greater than a running speed of the drying wire, to create negative pressure between the blowing box and the



drying wire to thereby urge the web and drying wire against one another.
13. A method for guiding a fibrous web from a press section to a drying section, comprising the steps of
passing the web from the press section in an open draw onto a drying wire passing about a guide roll, and
urging the web and drying wire against each other as the drying wire passes from the guide roll to the drying section by ejecting gas out of blowing means on a side of the drying wire opposite a side supporting the web in a direction substantially parallel to a running direction of the drying wire and web and at a speed greater than a running speed of the drying wire in order to generate negative pressure in a space between the blowing means and the drying wire.

4,551,204
HEADBOX FOR A PAPERMAKING MACHINE
Herbert Holik, Ravensburg, and Rüdiger Kurtz, Immenstaad, both of Fed. Rep. of Germany, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Jun. 4, 1984, Ser. No. 617,180
Claims priority, application Switzerland, Jun. 9, 1983, 3157/83
Int. Cl.[4] D21F *1/00*
U.S. Cl. 162—336 **12 Claims**



1. A headbox for a papermaking machine having a predetermined operating width, comprising:

an infeed means for a fiber stock suspension;
said fiber stock suspension having a predetermined direction of flow;
a stock distributor device rheologically connected to said infeed means;
a nozzle channel rheologically connected subsequent to said stock distributor device as viewed in said predetermined direction of flow;
a first lip member and a second lip member conjointly delimiting a slice opening extending over said predetermined operating width;
said nozzle channel being formed between said first lip member and said second lip member;
at least said first lip member comprising at least two hingedly interconnected lip portions arranged successively in said predetermined direction of flow;
said second lip member defining an oppositely situated lip member confronting said first lip member;
means for adjustably fixing said at least two hingedly interconnected lip portions relative to one another in a predetermined operative position thereof in relation to at least one of said oppositely situated lip member and said stock distributor device;
at least said first lip member defining an adjustable lip member;
said adjustable lip member comprising at least one lip portion of said at least two hingedly interconnected lip portions which is displaceably connected to said stock distributor device in correspondence with said predetermined direction of flow;
said adjustable lip member comprising at least one further lip portion of said at least two hingedly interconnected lip portions which at least partially delimits said slice opening;
said at least one further lip portion having a downstream end;
said at least one further lip portion being provided at said downstream end thereof with a diaphragm adjustable in relation to said oppositely situated lip member in a direction substantially transverse to said predetermined direction of flow and adapted to form a substantially planar free jet of said fiber stock suspension;
at least one lip portion of said at least two hingedly interconnected lip portions defining an upstream lip portion situated adjacent said at least one further lip portion in an upstream direction as viewed in said predetermined direction of flow;
said at least one further lip portion and said upstream lip portion mutually defining a hinged connecting location;
said hinged connecting location being arranged in immediate proximity to said diaphragm;
adjustment means for pivotably adjusting said diaphragm about said hinged connecting location through an angle of inclination in relation to said oppositely situated lip member which is predetermined independently of the momentary position of said upstream lip portion; and
said adjustment means further permitting adjusting said upstream lip portion independently of the momentary position of said diaphragm in relation to said stock distributor device.

4,551,205

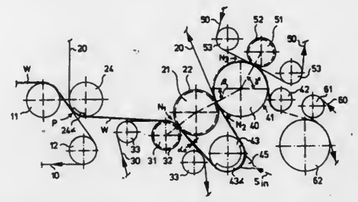
PRESS SECTION WITHOUT PRESS SUCTION ROLLERS IN A PAPER MACHINE

Jorma Laapotti, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Aug. 17, 1983, Ser. No. 523,974
Claims priority, application Finland, Aug. 24, 1982, 822933
Int. Cl.⁴ D21F *3/04, 3/08*
U.S. Cl. 162—360.1 **14 Claims**

1. In a press section of a paper machine, said press section having a pick-up roller for conducting a paper web coming from a wire section to said press section, a first two-fabric press nip, and a first topside fabric supporting the paper web at least through said first two-fabric press nip and serving as a pick-up fabric in conjunction with said pick-up roller, and

said press section having at least three press rollers in closed roll combination defining press nips with each other, a first two of said press rollers in the direction of travel of the web having solid recessed surfaces, a third one of said press rollers being a smooth-surface central roller of said press section, said first and second press rollers defining said first press nip, a second press nip defined by said second press roller and by said third press roller, a second fabric serving as a press fabric at least in said first press nip,



the web being conducted to said second press nip through said first press nip interposed between said first and second fabrics and through said second nip while being supported by one of said first and second fabrics, the improvement comprising

a return roller separate from said second press roller and located between said first and second press nips; and

means in conjunction with said return roller for maintaining the web in contact with the fabric supporting the web on a sector of said return roller lapped by one of said first and second fabrics and the web thereby supported, wherein

said press section having the closed roll combination defining the press nips is devoid of press nips formed with rollers of the suction type.

4,551,206

APPARATUS WITH MOVING BED PRESSURE LETDOWN STAGE FOR RECOVERING RETORTED OIL SHALE

Roland F. Deering, Brea, and John H. Duir, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 451,597, Dec. 20, 1982, Pat. No. 4,435,271, and a continuation-in-part of Ser. No. 400,273, Jul. 22, 1982, Pat. No. 4,461,673. This application Jan. 4, 1984, Ser. No. 568,108
Int. Cl.⁴ C10B *33/00*
U.S. Cl. 202—99 **8 Claims**

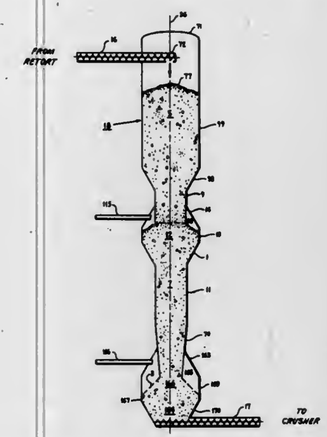
1. An apparatus for depressurizing a gravitating bed of retorted hydrocarbon-bearing shale particulates produced from an oil shale retort, said apparatus comprising in fluid-tight arrangement:

(a) means defining a surge chamber connected to said retort to receive a gravitating bed of shale particles from said retort, the lower portion of said surge chamber means being a downwardly converging truncated cone;

(b) means defining a gas injection chamber located below and connected to said surge chamber means to receive said gravitating particle bed from said surge chamber means and to inject gas into the body of said particle bed as said particle bed gravitates through said gas injection chamber means, said gas injection chamber means comprising (1) a first substantially cylindrical conduit fluid-tightly joined at its upper end to the lower end of said converging truncated cone, and its lower end terminating in an opening allowing for the gravitating particle bed to assume a free surface lying at its natural angle of repose from said opening, (2) a downwardly diverging truncated cone, the smaller, upper end of said diverging truncated cone being fluid-tightly mated to the exterior of said first cylindrical conduit at a distance above the lower end of said cylinder, (3) a second substantially cylindrical conduit fluid-tightly joined at its top to the lower end of said diverging truncated cone and extending below the point at which the surface of the gravitating particle bed, lying at its natural angle of repose and extending from said opening of said first cylindrical conduit, meets the inside surface of said second cylindrical conduit;

(c) means for delivering a controlled flow of gas to said gravitating particle bed within said gas injection chamber means;

(d) pressure control means operably connected to the upper region of said surge chamber means and to said gas injection chamber means for maintaining said surge chamber means at a pressure greater than the pressure of said retort;



(e) means defining a seal leg chamber of a length to cross sectional area ratio of at least about three feet per square foot located below and connected to said gas injection chamber means to receive said gravitating particle bed from said gas injection chamber means, the configuration of said seal leg chamber means being such as to provide a resistance to downwardly directed gas flow through said particle bed as said particle bed gravitates through said seal leg chamber means, and

(f) means defining a gas disengaging chamber located below and connected to said seal leg chamber means to receive said gravitating particle bed from said seal leg chamber means and to separate gas from said particle bed as said particle bed gravitates through said gas disengaging chamber means.

4,551,207

SEPARATION OF ISOPROPYL ETHER FROM ACETONE BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Division of Ser. No. 456,321, Jan. 6, 1983, Pat. No. 4,459,179. This application Feb. 3, 1984, Ser. No. 576,545
Int. Cl.⁴ B01D *3/40;* **C07C** *41/42, 45/83*
U.S. Cl. 203—56 **3 Claims**

1. A method for recovering isopropyl ether from a mixture of isopropyl ether and acetone which comprises distilling a mixture of isopropyl ether and acetone in a rectification column in the presence of an effective amount of an extractive agent, recovering essentially pure isopropyl ether as overhead product and obtaining the extractive agent and acetone from the stillpot or reboiler, the extractive agent comprises at least adiponitrile.

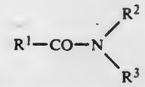
4,551,208

RECOVERY OF FORMIC ACID BY DISTILLATION

Kaspar Bott, Wachenheim; Gerd Kaibel, Lampertheim; Horst Hartmann, Boehl-Iggelheim; Rudolf Irnich, Bobenheim, and Horst Buelow, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,280
Claims priority, application Fed. Rep. of Germany, May 31, 1983, 3319651
Int. Cl.⁴ B01D *3/34*
U.S. Cl. 203—60 **10 Claims**

1. In a process for the recovery of formic acid, by distillation from its mixture with a solvent of the formula



I

where R^1 is hydrogen, methyl, ethyl or vinyl and R^2 and R^3 are each alkyl, cycloalkyl, aryl or aralkyl, or R^2 and R^3 together form a 1,4- or 1,5-alkylene group, in each case of not more than 8 carbon atoms, with the proviso that the sum of the number of carbon atoms in R^2 and R^3 is 7 to 14 and that only one of these radicals is aryl, the improvement which comprises:

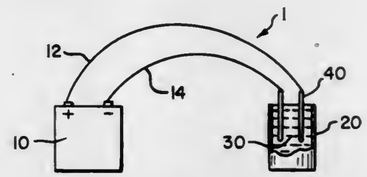
carrying out the distillation in the presence of a carboxamide II which is selected from the group consisting of formamide, acetamide, propionamide and the same compounds substituted by N-methyl or N,N-dimethyl, and which has a boiling point lower than that of the solvent I.

4,551,209

METHOD OF CALIBRATING CONDUCTIVE METAL OXIDE ELECTRODES

Imants R. Lauks, Sewell, N.J., assignor to Integrated Ionics, Inc., Princeton, N.J.

Filed Jan. 19, 1984, Ser. No. 572,200
Int. Cl.⁴ G01N *27/00*
U.S. Cl. 204—1 T **2 Claims**



1. A method for calibrating conductive metal oxide electrodes wherein the oxide is an oxide of a metal selected from the group consisting of platinum and rhenium group metals comprising the steps of:

immersing said metal oxide electrode into a solution of known pH;

immersing a reference electrode into said solution, and

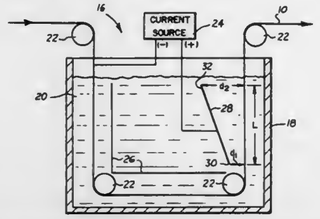
applying across said metal oxide electrode and said reference electrode a potential equal to approximately the steady state potential that is observed for a second electrode having substantially the same chemical composition as said metal oxide electrode when said second second electrode is immersed in a solution of the same pH and is allowed to stabliize slowly in open circuit conditions.

4,551,210

DENDRITIC TREATMENT OF METALLIC SURFACES FOR IMPROVING ADHESIVE BONDING

Arvind Parthasarathi, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1984, Ser. No. 670,238
Int. Cl.[4] C25D *5/34, 5/48, 17/00*
U.S. Cl. 204—28 **21 Claims**



1. An apparatus for improving the adhesive properties of a metal or metal alloy material, said apparatus comprising:

a cell containing an electrolyte solution, said metal or metal alloy material being at least partially immersed in said solution; and

means for applying a continuously decreasing current density to said material, said current density applying means comprising an anode positioned at an angle with respect to said material for applying an initial current density to said material in excess of the limiting current density of said solution to form a plurality of dendrites thereon and for applying a final current density below the limiting current density to said material to bond said dendrites to said material.

4,551,211

AQUEOUS ANODIZING SOLUTION AND PROCESS FOR COLORING ARTICLE OF MAGNESIUM OR MAGNESIUM-BASE ALLOY

Waichi Kobayashi, and Satoru Takahata, both of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Jul. 17, 1984, Ser. No. 631,577
Claims priority, application Japan, Jul. 19, 1983, 58-131690; Aug. 12, 1983, 58-148495
Int. Cl.[4] C25D *5/50*
U.S. Cl. 204—37.6 **9 Claims**

1. An aqueous anodizing solution for anodizing an article of magnesium or magnesium-base alloy which contains, per one liter volume thereof, 20–300 g. of an aluminate, 1–8 moles of an alkali hydroxide per one mole of the aluminate, and at least one kind selected from the group consisting of 20–200 g. of a boron compound, 2–50 ml. of a phenol, 2–50 g. of a sulfate, and 5–70 g. of an iodine compound.

4,551,212

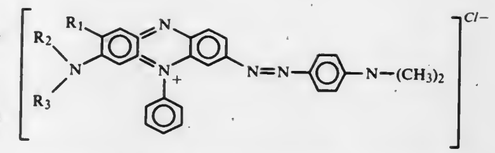
BATH AND PROCESS FOR THE ELECTRODEPOSITION OF MICROMACHINABLE COPPER AND ADDITIVE FOR SAID BATH

Srinivas T. Rao, Kendall Park, and Louis Trager, Raritan, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 11, 1985, Ser. No. 710,290
Int. Cl.[4] C25D *3/38*
U.S. Cl. 204—52 R **13 Claims**

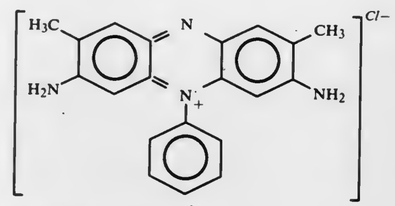
1. An additive for use in an electrodeposition bath comprised of an aqueous acidic solution of copper sulfate, said additive being comprised of a mixture of phenazine dyestuffs in the combination of:

(a) from about 30 to about 40 percent by weight of one or more Janus Green B type dyestuffs of the formula



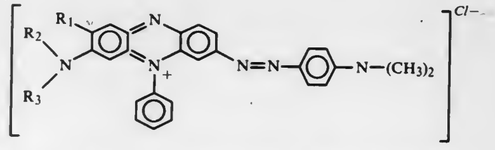
wherein R_1 is hydrogen or methyl, and R_2 and R_3 are the same or different and are methyl or ethyl; and

(b) from about 70 to about 60 percent by weight of Safranine T of the formula



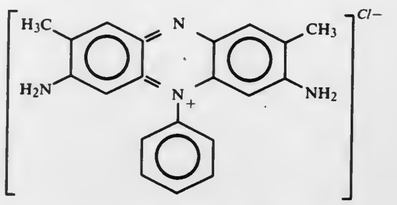
3. A bath for electrodepositing copper comprising an aqueous acidic solution of copper sulfate having dissolved therein an additive comprised of a mixture of phenazine class dyestuffs in the combination of:

(a) from about 30 to about 40 percent by weight of one or more Janus Green B type dyestuffs of the formula



wherein R_1 is hydrogen or methyl, R_2 and R_3 are the same or different and are methyl or ethyl; and

(b) from about 70 to about 60 percent by weight of Safranine T represented by the formula



in an amount sufficient to cause said copper to have a grain size of about 200 to about 500 Angstroms and a hardness of about 250 to about 320 on the Knoop hardness scale.

4,551,213

RECOVERY OF GOLD

Alex T. Wilson, Tucson, Ariz., assignor to Duval Corporation, Houston, Tex.

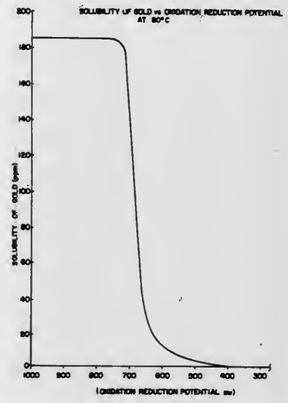
Filed May 7, 1984, Ser. No. 607,713
Int. Cl.[4] C25R *1/20*
U.S. Cl. 204—111 **16 Claims**

1. A method for the recovery of gold values from ore mixtures thereof which contain gold in admixture with sulfur, which method comprises the following steps:

(a) forming an aqueous suspension of the ore mixture containing the gold and sulfur values;

(b) raising the chloride concentration of the suspension by the addition of a member selected from the group consisting of an alkali metal chloride, an alkali earth metal chloride, and mixtures thereof, so that the suspension contains about 12 to 47 weight percent of chloride;

(c) adding an oxidizing agent to the suspension in sufficient amounts to raise the oxidization reduction potential of the suspension to the range of about 650–750 millivolts, said oxidation reduction potential (ORP) being measured as the electrical potential in millivolts between a platinum electrode and a silver/silver chloride electrode, said oxidation reduction potential being insufficient to attack sulfur contained in the suspension;



(d) maintaining the acidity (pHE) of the mixture in the range of from 400 to 550 millivolts, measured as the electrical potential in millivolts between a glass electrode and a silver/silver chloride electrode, said acidity being a pH of below 0;

(e) adding 3.5 to 27 weight percent of cupric chloride or ferric chloride to said suspension to oxidize the gold and cause the gold contained in the ore mixture to dissolve into the solution separated from the sulfur; and

(f) recovering the gold from the solution.

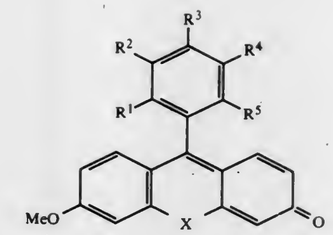
4,551,214

PHOTOCHEMICAL PREPARATION OF PREVITAMIN D

Hans-Jürgen Hansen, Riehen, and Karlheinz Pfoertner, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 14, 1984, Ser. No. 620,418
Claims priority, application Switzerland, Jul. 1, 1983, 3637/83
Int. Cl.[4] B01J *19/12*
U.S. Cl. 204—159 **5 Claims**

1. A process for the preparation of previtamin D which is substantially free from tachysterol, which process comprises irradiating a mixture of previtamin D and tachysterol with light of a wavelength of about 400 nm to about 600 nm in the presence of a compound of the formula



(I)

wherein R^1–R^4, independently, are hydrogen or chlorine, R^5 is —COOMe or —SO_3Me, Me is an alkali metal cation and X is oxygen, sulfur or selenium.

4,551,215

CURABLE RESIN COMPOSITION

Junichi Sakamoto, Otsu; Hiroshi Fujimoto, Shiga, and Hideo Miyake, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

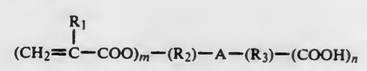
Filed Aug. 30, 1983, Ser. No. 527,934
Claims priority, application Japan, Sep. 2, 1982, 57-152936
Int. Cl.[4] C08J *3/28;* **C08L** *33/00, 63/00*
U.S. Cl. 204—159.23 **3 Claims**

1. A curable resin composition which comprises

(I) an epoxy compound having at least two epoxy groups, said epoxy compound being a member selected from the group consisting of polyglycidyl ethers of di- or more polyhydric phenol, polyglycidyl ethers of di- or more polyhydric alcohol, polyglycidyl esters of di- or more polyvalent carboxylic acid, polyglycidyl ethers which are obtained by substituting an active hydrogen combined to a nitrogen atom of aniline or isocyanuric acid, alicyclic polyepoxy compound, and aminopolyepoxy compound,

(II) a component selected from the group consisting of a photopolymerizable compound having from one to three carboxyl groups in the molecule, and a mixture of not less than 10% by weight of said photopolymerizable compound and at least one other photopolymerizable compound,

said photopolymerizable compound having from one to three carboxyl groups in the molecule being a compound of the formula:



in which R_1 is hydrogen or methyl group, R_2 and R_3 are each aliphatic, aromatic or alicyclic hydrocarbon residues A is on ester bond, m and n are each a positive integer of 1 to 3, and

(III) a photosensitizer,

said epoxy compound (I) and component (II) being incorporated in a weight ratio range of 10:90 to 90:10 and in an equivalent ratio range of epoxy group: carboxyl group of 1:3 to 33:1,

said photosensitizer being incorporated into the resin mixture in an amount of 0.05 to 20% by weight, based on the total weight of the epoxy compound and the photopolymerisable compound,

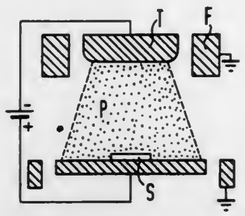
said composition being adapted to be subjected to active beam irradiation to polymerize component (II) to form a carboxyl group-containing polymer and thereafter to be subjected to heating to effect reaction of a carboxyl group in the resultant carboxyl group-containing polymer with an epoxy group in the epoxy compound (I) to effect complete curing.

4,551,216

LAYER CONTAINING CARBON AND A METHOD AND APPARATUS FOR PRODUCING SUCH A LAYER

Wilhelm Argyo, Osterwarngau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,476
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335623
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 C 32 Claims



1. In a method for producing a carbon-containing layer on a substrate by means of sputtering, wherein the improvement comprises:

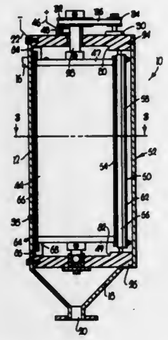
incorporating at least one of the materials selected from the group consisting of hydrocarbon molecules and parts of hydrocarbon molecules into the carbon-containing layer during the sputtering by providing an inert gas/hydrocarbon atmosphere between a target and said substrate.

4,551,217

LIQUID TREATER HAVING HINGE-ACTION CLEANING BRUSHES

Arthur S. King, 8021 Cherokee, Leawood, Kans. 66206

Filed Aug. 27, 1984, Ser. No. 644,390
Int. Cl.[4] B05C *5/02*
U.S. Cl. 204—212 12 Claims



1. In a liquid treater having electrode means therein for creating an electric field, said electrode means including an elongated electrode, means for cleaning adhering particles from said electrode comprising:

a support adjacent said electrode;

a scrubber;

hinge means swingably mounting said scrubber on the support;

means for yieldably biasing said scrubber about said hinge means into engagement with the electrode; and

means for providing relative rotational movement between said electrode and the support for wiping the surface of said electrode with said scrubber during said relative rotation,

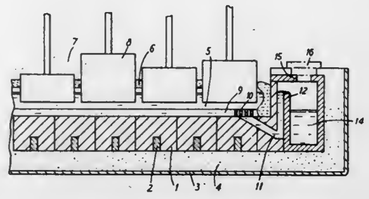
said support comprising a second electrode of said electrode means, each of said electrodes having a scrubber hingedly mounted thereon and yieldably biased into engagement with the opposite electrode.

4,551,218

ELECTROLYTIC REDUCTION CELLS

Adam J. Gesing; John McIntyre; Meine Vandermeulen, all of Kingston, Canada; Edward L. Cambridge, Tucson, Ariz., and Charles J. Rogers, Whitebridge, Australia, assignors to Alcan International Limited, Montreal, Canada

Filed Jun. 23, 1983, Ser. No. 391,410
Claims priority, application United Kingdom, Jun. 25, 1981, 8119589
Int. Cl.[4] C25B *3/08*
U.S. Cl. 204—240 8 Claims



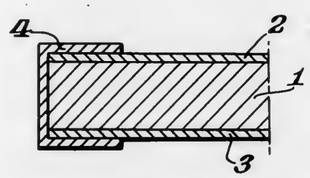
1. In an electrolytic reduction cell of the type in which a molten product metal is produced by electrolysis of a fused electrolyte which is less dense than the molten product metal the improvement which comprises a filter located in a product metal accumulation region over the floor of the cell, said filter being formed of a material which is resistant to attack by both the molten product metal and the fused electrolyte and which is wettable by the molten product metal and is non-wettable by said electrolyte, said filter having at least one passage therethrough sized to permit flow of molten metal therethrough, but to restrain flow of molten electrolyte under the maximum driving force acting on the electrolyte at the filter, means being provided for maintaining a back pressure of molten metal at the outlet side of the filter.

4,551,219

FLUSH EDGE PROTECTED METAL LAMINATES

Gary D. Flick, Pittsburgh, and John H. Reinshagen, North Huntingdon, both of Pa., assignors to Pfizer Inc., New York, N.Y.

Filed May 21, 1984, Ser. No. 612,157
Int. Cl.[4] C25B *11/00*
U.S. Cl. 204—290 R 11 Claims



1. A process for producing a flush edge protected laminate adapted to be used as a substrate for an electrode in an electrolytic cell and comprising an inner sheet of a corrodable metal sandwiched between outer sheets of a protective metal, which comprises forming a C-shaped channel of the protective metal having an inside dimension substantially equal to the thickness of the laminate to be protected, placing said C-shaped channel over the edge to be protected and attaching at to the upper and lower surfaces of the laminate and rolling the laminate with the attached channel at a temperature from room temperature to 1000° F. (538° C.) in a rolling mill set to the gauge of the laminate, thereby deforming the channel and underlying portion of the laminate to result in a protective edge whose overlapping sides are flush with the upper and lower surfaces of the laminate.

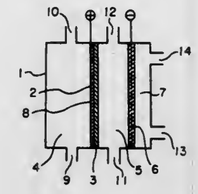
7. A bimetallic laminate having one or more of its edges protected by a protective edge produced by a process according to claim 1.

4,551,220

GAS DIFFUSION ELECTRODE MATERIAL

Yoshio Oda, and Takeshi Morimoto, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 517,957
Claims priority, application Japan, Aug. 3, 1982, 57-134768; Aug. 3, 1982, 57-134769
Int. Cl.[4] C25B *11/12*
U.S. Cl. 204—294 7 Claims



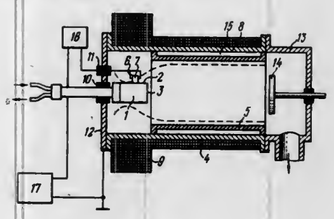
1. A gas diffusion electrode material which comprises a continuously micro-porous electrically insulating material and partially graphitized carbon black powder uniformly incorporated in the insulating material, said continuously microporous electrically insulating material comprising numerous fine nodes of polytetrafluoroethylene and fine fibers of a polytetrafluoroethylene extending from the nodes and three dimensionally connecting the nodes to one another, the nodes being partially in contact or connected with one another, said partially graphitized carbon black powder being carbon black which has been graphitized to a graphitization ratio of from 10% to 90% by subjecting the carbon black to a treatment at a temperature of from 1,200° C. to 2,500° C. for 5 to 60 minutes.

4,551,221

VACUUM-ARC PLASMA APPARATUS

Ivan I. Axenov, ulitsa Valtera, 21-a, kv. 45; Viktor G. Bren, ulitsa Sumskaya, 124, kv. 3; Valentin G. Padalka, ulitsa Danilevskogo 10, kv. 122; Leonid P. Sablev, ulitsa P.Morozova, 3, kv. 3; Rimma I. Stupak, ulitsa Valtera, 12, kv. 32, and Vladimir M. Khoroshikh, prospekt 50-letiya VLKSM, 42, kv. 128, all of Kharkov, U.S.S.R.

PCT No. PCT/SU81/00022, § 371 Date Feb. 23, 1982, § 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00075, PCT Pub. Date Jan. 7, 1982
Continuation of Ser. No. 355,577, Feb. 23, 1982, abandoned.
This PCT application Mar. 2, 1981, Ser. No. 640,554
Claims priority, application U.S.S.R., Jun. 25, 1980, 2933851
Int. Cl.[4] C23C *13/08*
U.S. Cl. 204—298 2 Claims



1. A vacuum-arc plasma apparatus comprising:

a cylindrical body;

a consumable cathode mounted within said cylindrical body at a first axial end thereof, said consumable electrode being part of means for generating plasma;

means for supporting a substrate to be treated by said plasma located at a second axial end of said cylindrical body;

a working end face being part of said consumable cathode and facing said second axial end of said cylindrical body;

an igniting electrode means for starting an arc discharge in combination with said consumable cathode and said working end face, said igniting electrode disposed alongside of said consumable cathode;

means for generating a longitudinally continuous symmetric magnetic field throughout the interior of said cylindrical body including:

a tubular anode;

a solenoid coaxially disposed with respect to said cylindrical body and encircling said tubular anode and said consumable cathode, said solenoid extending axially beyond said igniting electrode at the side opposite to the working end face of the consumable cathode by a length exceeding half the length of the portion of said solenoid disposed around said consumable electrode, the number of turns per unit length of said portion of said solenoid around said consumable electrode being greater than the number of turns per unit length in the remaining portion of said solenoid;

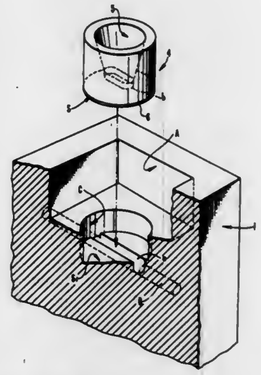
said magnetic field provides in the presence of the plasma a radial constituent electric field along the entire length of said tubular anode to prevent the plasma from deviating towards the walls of said anode.

4,551,222

FLOW THROUGH SYSTEM LIQUID MEMBRANE TYPE ELECTRODE

Hiroaki Uematsu, and Junji Aoki, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Jun. 19, 1984, Ser. No. 622,262
Claims priority, application Japan, Jun. 25, 1983, 58-99728[U]
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—417 6 Claims



1. An electrode, comprising:

a synthetic resin block having a liquid containing space formed therein;

an internal liquid contained in said liquid containing space;

an internal electrode contained in said liquid containing space immersed in said liquid;

a straight line sample passage extending entirely and straight through said block for carrying liquid therethrough, having a continuous straight boundary surface portion extending entirely through said block and consisting of two cylindrical first sections having uniform equal diameters and a second section between said two first sections;

a communicating space connecting said sample passage and said liquid containing space having a flat planar interior surface, said second section of said sample passage extending along said interior surface and having an outer periphery having a uniform, smooth, concavely arched cross section such that the furthest point in said cross section of said second portion from the plane of said planar interior surface is a distance from said plane equal to said diameter of said first sections;

a cylindrical membrane holding member fitted in said communicating space;

a liquid membrane member held between said sample passage and said communicating space such that said liquid membrane member faces said sample passage, blocking communication between said sample passage and said liquid; and

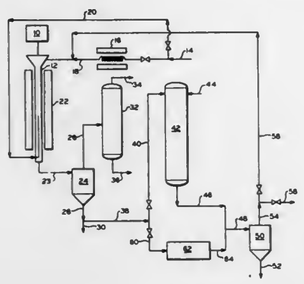
a lid covering said liquid containing space so that said lid and said block enclose said internal liquid.

4,551,223

THERMAL FLASHING OF CARBONACEOUS MATERIALS

Pasupati Sadhukhan, Katy, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 19, 1984, Ser. No. 590,827
Int. Cl.⁴ C10G *1/00*
U.S. Cl. 208—8 R **17 Claims**



1. A method for flashing liquids and gases from a particle-form, normally solid, carbonaceous material, comprising:

(a) introducing a carrier gas into a descending body of said carbonaceous materials in an amount and at a pressure sufficient to entrain said carbonaceous material and produce a descending body of the thus entrained carbonaceous material in an elongated flashing zone at a pressure of about atmospheric pressure;

(b) heating at least one of (1) said carrier gas prior to introduction into said carbonaceous material and (2) said descending body of entrained carbonaceous material to a temperature, between about 800° F. and about 1500° F., sufficient to flash a maximum amount of gases and liquids therefrom and minimize decomposition of the thus flashed gases and liquids; and

(c) maintaining said carbonaceous material in said flashing zone for a residence time, between about 40 and about 500 milliseconds, sufficient to thus maximize flashing of said gases and liquids and thus minimize decomposition of said flashed gases and liquids.

4,551,224

COAL LIQUEFACTION PROCESS

Erven J. Kuhlmann, Hopewell Jct., N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,323
Int. Cl.⁴ C10G *1/06, 1/00*
U.S. Cl. 208—10 **16 Claims**

1. A process for the liquefaction of ground coal or similar liquefiable carbonaceous solids which comprises:

(1) introducing a pumpable slurry of dried ground coal or liquefiable carbonaceous solids with a solvent mixture produced in (4) into a liquefaction reaction zone where a digestion reaction takes place while in the presence of about 1000 to 100,000 standard cubic feet of hydrogen-rich gas from (3) per barrel of slurry so that the hydrogen content of said solvent is maintained; wherein said solvent is a mixture comprising at least 78 wt. % decalin comprising cis-and trans-decalin and with the cis-decalin comprising at least 80 wt. % of the total weight of the decalin, about 0–2 wt. % of naphthalene and/or about 0–5 wt. % of constituent comprising the mono and/or dimethyl derivative of at least one of the other constituents in the solvent mixture, and the remainder of the solvent mixture comprising tetralin; and wherein said digestion reaction takes place at a temperature in the range of about 700° F. to 900° F., a pressure in the range of about 0 to 300 atmospheres, and a residence time in the range of about 2 to 75 minutes; and wherein said operating conditions are chosen so as to maintain said solvent mixture and the dissolved coal in substantially liquid phase;

(2) separating the effluent from (1) in a separating zone into (a) a gaseous mixture comprising hydrogen-containing gas, and hydrocarbonaceous and carbonaceous gases, (b) light hydrocarbon distillate having an atmospheric boiling point in the range of about 10° F. to 360° F., (c) middle hydrocarbon distillate having an atmospheric boiling point in the range of about 360° F. to 480° F., (d) heavy hydrocarbon distillate having an atmospheric boiling point in the range of about 480° F. to 1000° F., and (e) a bottoms product;

(3) producing a hydrogen-rich gas from the bottoms product with or without admixture with a portion of the heavy hydrocarbon distillate from (2) in a hydrogen-producing zone including free-flow partial oxidation, cooling, scrubbing, water-gas shifting, and purifying to produce said hydrogen-rich gas at the temperature and pressure for the liquefaction reaction zone in (1) and/or the solvent mixture hydrogenation zone in (4); and

(4) in a solvent mixture hydrogenation zone catalytically hydrogenating at a temperature in the range of about 40° F. to 850° F. and a pressure in the range about 0.1 to 204 atmospheres at least a portion of the middle distillate from (2) with a portion of the hydrogen-rich gas produced in (3) while in contact with a hydrogenation catalyst selected from the group consisting of finely divided pure metal ruthenium, rhodium, rhenium, irridium, platinum, and mixtures thereof; or the oxides or sulfides of a metal selected from the group consisting of ruthenium, rhodium, rhenium, and mixtures thereof so as to produce the solvent mixture that is reacted in (1).

4,551,225

HIGH ANISOTROPIC PITCH

Ghazi B. Dickakian, Kingwood, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 23, 1984, Ser. No. 613,205
Int. Cl.⁴ C10C *3/00, 3/06*
U.S. Cl. 208—43 **3 Claims**

1. In a process for preparing an essentially 100% mesophase pitch suitable for spinning into carbon fibers wherein a pitch feed material is heat-soaked at a temperature of from about 350° C. to 450° C.; the improvement which comprises passing an inert gas through said pitch feed at a rate of from 2.5 to 3.5 SCFH/lb of pitch feed during said heat-soaking treatment and while said pitch feed is agitated at a stirrer rate ranging from about 300 to 500 rpm to obtain mechanical agitation sufficient, in combination with the inert gas rate, to produce an essentially 100% mesophase pitch product at an inert gas rate of from 2.5 to 3.5 SCFH.

4,551,226

HEAT EXCHANGER ANTIFOULANT

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 26, 1982, Ser. No. 352,818
Int. Cl.⁴ C10G *9/16*
U.S. Cl. 208—48 AA **12 Claims**

1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an anti-fouling additive is added to said hydrocarbon stream, said additive consisting essentially of an organic hydroxylamine wherein said hydroxylamine is an N,N-dialkylhydroxylamine and wherein said stream is crude oil or a fraction thereof.

4,551,227

ANTIFOULANTS FOR THERMAL CRACKING PROCESSES

Randall A. Porter, and Larry E. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Barlesville, Okla.

Filed Apr. 16, 1984, Ser. No. 600,753
Int. Cl.⁴ C10G *9/00, 9/12, 9/16*
U.S. Cl. 208—48 AA **14 Claims**

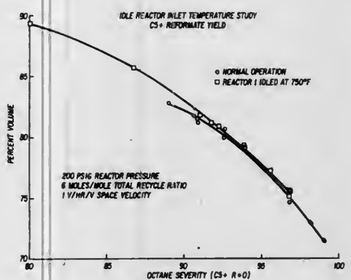
1. A method for reducing the formation of coke on the metals which are contacted with a gaseous stream containing hydrocarbons in a thermal cracking process comprising the step of contacting said metals with an antifoulant selected from the group consisting of a combination of tin and phosphorus, a combination of phosphorus and antimony and a combination of tin, antimony and phosphorus.

4,551,228

METHOD FOR IMPROVING REFORMER YIELD SELECTIVITY

Amilcare Ramella, Woodbury, and Hsin-Ju Wang, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 1, 1984, Ser. No. 605,741
Int. Cl.⁴ C10G *35/06*
U.S. Cl. 208—65 **14 Claims**



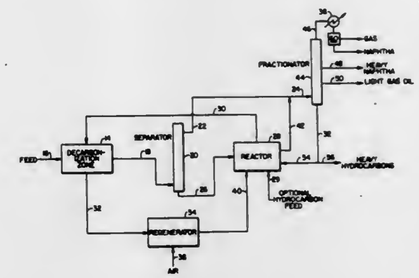
1. In a method for reforming naphtha boiling range hydrocarbon charge stocks with platinum group metal-containing reforming catalysts employing a plurality of catalyst bed reactors, the improvement whereby reformer C_5+ yield selectivity is enhanced which comprises operating at least one reactor at near-quenching conditions comprising inlet temperatures ranging from about 316° to 427° C. (600° to 800° F.) while operating at least one reactor under yield-selective reforming conditions conditions comprising inlet temperatures ranging from about 454° to 549° C. (850° to 1020° F.).

4,551,229

CRACKING OF HEAVY HYDROCARBONS WITH IMPROVED YIELDS OF VALUABLE LIQUID PRODUCTS

Theresa A. Pecoraro, Danville; Russell R. Krug, San Rafael, and Joanne Deady, Rodeo, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 19, 1984, Ser. No. 590,600
Int. Cl.⁴ C10G *51/02;* **C10B** *55/02*
U.S. Cl. 208—76 **25 Claims**



1. A process for catalytically cracking a hydrocarbon charge which comprises:

(a) contacting the hydrocarbon charge in a coked catalyst zone at a temperature of at least 800° F. with a coked cracking catalyst having significantly reduced cracking activity, whereby at least a portion of the hydrocarbon charge is vaporized;

(b) separating the hydrocarbon vapors into at least a high boiling fraction and a low boiling fraction;

(c) reducing the amount of coke on the coked catalyst of step (a) in a regeneration zone by contacting the coked catalyst with molecular oxygen for a sufficient residence time and at a suitable temperature to regenerate the cracking catalyst;

(d) cracking the high boiling fraction from step (b) in the absence of added free hydrogen in a cracking zone by contacting said high boiling fraction with the regenerated cracking catalyst, whereby a hydrocarbon product having a lower average molecular weight than the high boiling fraction is produced and coke is deposited on the cracking catalyst to significantly lower its cracking activity; and

(e) introducing the coked cracking catalyst of step (d) into the coked catalyst zone for the purpose of contacting additional hydrocarbon charge.

4,551,230

DEMETALLIZATION OF HYDROCARBON FEED STREAMS WITH NICKEL ARSENIDE

Simon G. Kukes, and Gerhard P. Nowack, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1984, Ser. No. 655,798
Int. Cl.⁴ C10G *45/00, 45/04, 45/08*
U.S. Cl. 208—89 **26 Claims**

1. A process for the demetallization of a hydrocarbon containing feed stream, which contains metals selected from the group consisting of vanadium and nickel, comprising the step of contacting said hydrocarbon containing feed stream under suitable demetallization conditions with hydrogen and a catalyst composition comprising (a) an alumina-containing support and (b) nickel arsenide, $NiAs_x$, wherein x ranges from about

0.33 to about 2.0, such as to produce a hydrocarbon containing stream having a reduced content of said metals.

4,551,231

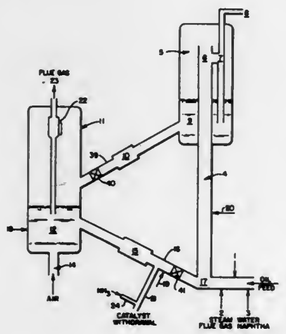
AMMONIA CONTACTING TO PASSIVATE METALS DEPOSITED ON A CRACKING CATALYST DURING REDUCED CRUDE PROCESSING

Stephen M. Kovach, Ashland, and James L. Palmer, Flatwoods, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 311,725, Oct. 13, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,503

Int. Cl.⁴ C10G *11/05, 11/18;* **B01J** *29/38*

U.S. Cl. 208—120 **14 Claims**



1. A process for passivating metal contaminants of an equilibrium zeolite fluid cracking catalyst containing vanadium and nickel contaminants which arise from use of said catalyst in continuous fluid catalytic cracking of a carbometallic heavy hydrocarbon oil feed, said process comprising contacting said catalyst, after regeneration thereof, with ammonia in an amount sufficient to convert at least a portion of said contaminant metals from an oxide form to nitrides and reusing the passivated catalyst in a continuous fluid catalytic cracking process.

5. A process for fluid catalytic cracking comprising the sequential steps of:

(a) cracking in a hydrocarbon conversion zone a hydrocarbon feed containing at least 5 ppm metals as nickel and vanadium and having a Conradson carbon of at least 2 wt.% in the presence of equilibrium zeolite cracking catalyst containing at least 1000 ppm vanadium and nickel contaminants,

(b) separting vaporous hydrocarbon conversion products to yield a coked catalyst,

(c) regenerating said coked catalyst in a regeneration zone at conditions sufficient to remove at least a portion of any carbonaceous deposits whereby the metal contaminants are converted to an oxide form to produce a regenerated catalyst,

(d) stripping said regenerated catalyst to remove occluded regeneration gases,

(e) contacting the stripped catalyst in a passivation zone with ammonia in an amount sufficient to convert vanadium pentoxide to vanadium nitride to form a passivated catalyst, and

(f) recycling said passivated catalyst to said hydrocarbon conversion zone.

12. A process for fluid catalytic cracking comprising the steps of:

(a) cracking in a hydrocarbon conversion zone a carbometallic hydrocarbon feed at a pressure of about 10–50 psia and at temperatures of about 925° F.–1050° F. in the presence of a zeolite catalyst contaminated with vanadium compounds,

(b) regenerating coked catalyst at conditions wherein vanadium pentoxides are produced,

(c) passing the regenerated catalyst to a stripping zone and stripping entrained oxygen containing gas from the catalyst,

(d) contacting the stripped catalyst with ammonia to convert vanadium pentoxides to vanadium nitride and thereby to passivate said catalyst,

(e) removing a minor portion of the passivated catalyst containing at least 1000 ppm vanadium from the cracking process for disposal in a landfill and

(f) recycling a major portion of the passivated catalyst to said hydrocarbon conversion zone.

4,551,232

PROCESS AND FACILITY FOR MAKING COKE SUITABLE FOR METALLURGICAL PURPOSES

Jose L. Calderon, Caracas, and Humberto Betancourt, Corralito Estado Miranda, both of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Feb. 9, 1983, Ser. No. 465,210

Int. Cl.⁴ C10G *7/00, 9/14*

U.S. Cl. 208—92 **13 Claims**

1. A process for the production of metallurgical coke from a heavy crude oil feedstock comprising:

(a) providing a crude oil feedstock inlet;

(b) feeding a crude oil feedstock to said crude oil inlet, said crude oil feedstock being characterized by the following composition and properties:

Gravity, °API	6–12
Viscosities:	
KV at 180° F., cst	400–2500
KV at 140° F., cst	2000–20000
KV at 122° F., cst	5000–40000
Metals Content:	
Iron, wt ppm	15–25
Vanadium, wt ppm	300–500
Nickel, wt ppm	60–120
Asphaltenes, % wt	6–12
Salt Content as NaCl, Lbs/1000 BBls.	35–1000
Pour Point, °F.	50–90
Sulfur, % wt	3.5–4.5
Water and Sediments, % Vol	0.2–10

(c) mixing said crude oil feedstock with a diluent in an amount equal to about 10 to 50% by volume, said diluent being characterized by a gravity of between 20 to 65 API and a boiling point range of between 150° F. and 800° F.;

(d) feeding the crude oil and diluent mixture to an atmospheric distillation unit wherein said crude oil and diluent mixture is subjected to distillation whereby gas products, a 500° F. minus liquid overheat hydrocarbon product and 500° F. plus residuum are produced;

(e) feeding the atmospheric distillation residuum to a combination tower comprising a heat transfer portion and a fractionator portion wherein said distillation residuum is subjected to fractionation so as to produce a reduced coker feed;

(f) withdrawing said reduced coker feed from the fractionator portion of said combination tower and passing said reduced coker feed to a delayed coking drum wherein the coker feed decomposes leaving a mass of metallurgical coke;

(g) recycling the coker effluent from said delayed coking drum directly to the fractionator portion of said combination tower;

(h) contacting said atmospheric distillation residuum with said coker effluent in the fractionator portion of said combination tower so as to produce a reduced coker feed mixed with recycle;

(i) withdrawing said coker feed mixed with recycle from the fractionator portion of said combination tower and passing said coker feed mixed with recycle to a delayed coking drum wherein the coker feed mixed with recycle decomposes leaving a mass of metallurgical coke; and

(j) recycling the coker effluent from said delayed coking drum directly to the fractionator portion of said combination tower wherein said incoming atmospheric distillation residuum is contacted with the coker effluent.

4,551,233

CONTINUOUS THERMAL CRACKING PROCESS

Petrus M. M. Blauwhoff, and Anton E. Cornelissen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 24, 1984, Ser. No. 643,897

Claims priority, application United Kingdom, Sep. 2, 1983, 8323635

Int. Cl.⁴ C10G *9/00*

U.S. Cl. 208—106 **1 Claim**

1. A process for the continuous thermal cracking of hydrocarbon oils in a horizontal soaker vessel having an upper end and a lower end, which comprises: heating a hydrocarbon oil feed containing said hydrocarbon oils; introducing said heated hydrocarbon oil feed into said soaker vessel having its interior divided into a plurality of consecutive compartments in fluid intercommunication by means of a plurality of substantially vertical extending separation means, each of said means consisting of a pair (2) of spaced apart separating walls defining a plurality of soaker compartments, wherein said wall of said pair closest to the feed inlet is in physical contact and is erected from the lower end of the soaker vessel and continues upright and terminates at a location proximate to, but not in contact with, the upper end of the soaker vessel to define a fluid passageway above the upper end of said wall and the upper end of said soaker vessel and to define a gas collecting space in the upper end of the soaker vessel in said respective soaker compartment and wherein said wall of said pair closest to the product outlet is in physical contact and is erected from the upper end of the soaker vessel and continues downward and terminates at a location proximate to, but not in connection with, said lower end of the soaker vessel to define a fluid passage below the lower end of said wall, said walls acting to form fluid passage from one compartment to the next adjacent compartment, and wherein the upwardly extending wall decreases in height with respect to the upwardly extending wall in said next adjacent compartment thereby forming a relative larger gas collecting space in the upper end of the soaker vessel in said next adjacent compartment; passing said heated hydrocarbon oils over and under said walls to cause said heated hydrocarbon oils to pass horizontally in a serpentine flow pattern through said soaker vessel; collecting the relative quantity of gas evolved from the heated soaking of said hydrocarbon oils in said respective gas collecting space situated at the upper part of each respective compartment; separately withdrawing said collected gas from each gas collection space contained within said consecutive compartments; and withdrawing thermally cracked hydrocarbon oils from the last of said pluralities of consecutive compartments.

4,551,234

RECLAIMING LUBE OIL IN MRS UNIT

William P. Hettinger, Jr., Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 3, 1984, Ser. No. 637,378

Int. Cl.⁴ C10M *11/00;* **C10G** *25/00, 25/09, 71/00*

U.S. Cl. 208—179 **3 Claims**

1. A process for disposing of contaminated used lube oil by converting it to useful product, comprising:

(a) contacting a particulate sorbent of low catalytic capability with a carbo-metallic oil feed containing 340° C.⁺ (650° F.⁺), essentially free of used lube oil in a first contactor to form purified products and contaminated sorbent formed from contact with said carbo-metallic oil feed;

(b) separating said purified products from said contaminated sorbent formed from contact with said carbo-metallic oil feed;

(c) regenerating said contaminated sorbent formed from contact with said carbo-metallic oil feed by heating said contaminated sorbent formed from contact with said carbo-metallic oil feed from about 533° C. to about 683° C. in the presence of oxygen-containing gases;

(d) withdrawing a lesser portion of the regenerated particulate sorbent to pass through a second, smaller contactor;

(e) contacting said regenerated particulate sorbent portion in said second contactor with said contaminated used lube oil for a period of time in a range of about 1 to 3 seconds at a temperature of about 350° C. to about 500° C. and converting said used lube oil to substantially decontaminated hydrocarbon product; and

(f) separating contaminated sorbent formed from contact with said used lube oil from the product formed in said second contactor; and

(g) returning said contaminated sorbent formed from contact with said used lube oil to said regenerator for regeneration and recycle to said first contactor.

4,551,235

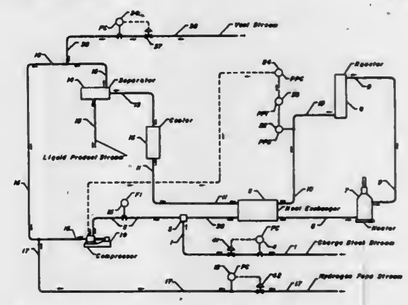
UTILITY CONSERVATION IN HYDROGEN RECYCLE CONVERSION PROCESSES

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 374,857, May 4, 1982, Pat. No. 4,477,413. This application Jun. 28, 1984, Ser. No. 625,415

Int. Cl.⁴ C10G *45/72, 47/36, 49/26, 35/24*

U.S. Cl. 208—100 **8 Claims**



1. A control method for reducing the flow of hydrogen in hydrocarbon conversion apparatus, thereby reducing heating load and compression load in said conversion apparatus, where said conversion apparatus comprises (1) an inlet conduit for transporting a charge stock stream, which inlet conduit is in interconnection with a conduit for transporting a vaporous hydrocarbon-hydrogen recycle stream; (2) a reaction zone for reacting hydrocarbonaceous materials comprising said charge stock stream to form a converted hydrocarbon effluent stream, which reaction zone is in communication with said vaporous hydrocarbon-hydrogen recycle stream conduit; (3) a reaction zone effluent conduit having a hydrogen partial pressure sensor therein, said effluent conduit containing said converted hydrocarbon effluent stream; (4) a cooling zone for cooling said converted hydrocarbon effluent stream to provide, via condensing, a liquid hydrocarbon product stream and at least a portion of said vaporous hydrocarbon-hydrogen recycle stream; (5) a cooling zone effluent conduit in communication with a gas-liquid separation zone, said gas-liquid separation zone effective to separate said liquid hydrocarbon product stream from said vaporous hydrocarbon-hydrogen recycle stream; and (6) a compressor means having variable output capability in communication with said separation zone via a separation zone vaporous effluent conduit and also in communication with said recycle stream conduit; said control method consisting of:

(a) sensing the partial pressure of hydrogen at a point down-

stream of said reaction zone in said reaction zone effluent conduit;

(b) comparing said partial pressure of hydrogen to a previously determined value and developing a signal correlating thereto;

(c) transmitting said signal to said variable output compressor; and

(d) controlling the quantity of vaporous hydrocarbon and hydrogen recycled to said reaction zone, via said recycle stream conduit, in accordance with said signal, such that when said partial pressure is higher than said previously determined value, the output of said compressor is decreased, and when said partial pressure is lower than said previously established value, the output of said compressor is increased.

6. A control method for reducing the flow of hydrogen in hydrocarbon conversion apparatus, thereby reducing heating load and compression load in said conversion apparatus, where said conversion apparatus comprises (1) an inlet conduit for transporting a charge stock stream, which charge stream inlet conduit is in interconnection with a conduit for transporting a vaporous hydrocarbon-hydrogen recycle stream; (2) a reaction zone inlet stream conduit in communication with said vaporous hydrocarbon-hydrogen recycle stream conduit and a reaction zone, said inlet stream conduit having a means to sense the partial pressure of hydrogen contained therein; (3) said reaction zone for reacting hydrocarbonaceous materials comprising said charge stock stream to form a converted hydrocarbon effluent stream; (4) a cooling zone in communication with said reaction zone, via a reaction zone effluent conduit, for cooling and condensing said converted hydrocarbon effluent from said reaction zone to form a liquid hydrocarbon product stream and at least a portion of said vaporous hydrocarbon-hydrogen recycle stream; (5) a gas-liquid separation zone in communication with said cooling zone, via a cooling zone effluent conduit, for separating said liquid hydrocarbon product stream from said vaporous hydrocarbon-hydrogen recycle stream; and (6) a compressor means having variable output capability in communication with said separation zone via a separation zone vaporous effluent conduit and also in communication with said reaction zone inlet conduit via said hydrocarbon-hydrogen recycle conduit, where said recycle conduit is connected at one end to said compressor means and at the other end to said reaction zone inlet conduit; said control method consisting of:

(a) sensing the partial pressure of hydrogen at a point within said reaction zone inlet stream conduit;

(b) comparing said partial pressure of hydrogen to a previously determined value and developing a signal correlating thereto;

(c) transmitting said signal to said variable output compressor; and

(d) controlling the quantity of vaporous hydrocarbon and hydrogen recycled to said reaction zone, via said recycle stream conduit, in accordance with said signal, such that when said partial pressure is higher than said previously determined value, the output of said compressor is decreased, and when said partial pressure is lower than said previously established value, the output of said compressor is increased.

4,551,236

CONVERSION PROCESSES WITH TITANIUM-CONTAINING MOLECULAR SIEVES

Brent M. T. Lok, New City; Bonita K. Marcus, Rye, and Edith M. Flanigen, White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 480,738, Mar. 31, 1983, Pat. No. 4,500,651. This application Jul. 3, 1984, Ser. No. 627,515

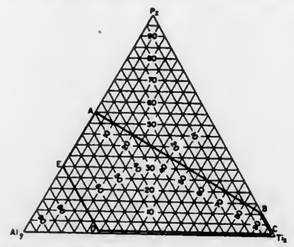
Int. Cl.⁴ C10G *11/04, 11/05, 45/12, 47/04*

U.S. Cl. 208—112 **27 Claims**

1. Process for converting a hydrocarbon which comprises contacting said hydrocarbon under effective process conditions, wherein the process is a cracking process with at least one crystalline molecular sieve selected from the group consisting of crystalline molecular sieves comprising pores having nominal diameters of greater than about 3 Angstroms and whose chemical composition in the as-synthesized and anhydrous form is represented by the unit empirical formula:

$$mR:(Ti_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the



moles of "R" present per mole of $(Ti_xAl_yP_z)O_2$ has a value of between zero and about 5.0; and "x", "y" and "z" represent the mole fractions of titanium, aluminum and phosphorus, respectively, present as tetrahederal oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings and points A, B, C, D and E representing the following values for "x", "y" and "z":

Point	Mole Fraction x	y	z
A	0.001	0.45	0.549
B	0.88	0.01	0.01
C	0.98	0.01	0.01
D	0.29	0.70	0.01
E	0.001	0.70	0.299

19. Process for converting a hydrocarbon which comprises contacting said hydrocarbon under effective process conditions, wherein the process is a hydrotreating process with at least one crystalline molecular sieve selected from the group consisting of crystalline molecular sieves comprising pores having nominal diameters of greater than about 3 Angstroms and whose chemical composition in the as-synthesized and anhydrous form is represented by the unit empirical formula:

$$mR:(Ti_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(Ti_xAl_yP_z)O_2$ has a value of between zero and about 5.0; and "x", "y" and "z" represent the mole fractions of titanium, aluminum and phosphorus, respectively, present as tetrahederal oxides, said mole.fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings and points A, B, C, D and E representing the following values for "x", "y" and "z":

Point	Mole Fraction x	y	z
A	0.001	0.45	0.549
B	0.88	0.01	0.01
C	0.98	0.01	0.01
D	0.29	0.70	0.01
E	0.001	0.70	0.299.

4,551,237

ARSENIC REMOVAL FROM SHALE OILS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 25, 1982, Ser. No. 392,161

Int. Cl.⁴ C10G *7/00*

U.S. Cl. 208—251 R **11 Claims**

1. A method for removing arsenic from shale oil which comprises contacting the oil with a sulfide material in the presence of water and separately recovering an aqueous fraction and an oil fraction of reduced arsenic content.

4,551,238

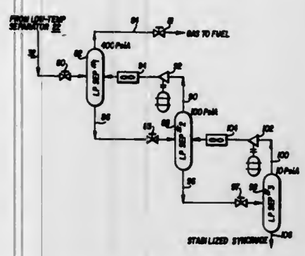
METHOD AND APPARATUS FOR PRESSURE-CASCADE SEPARATION AND STABILIZATION OF MIXED PHASE HYDROCARBONACEOUS PRODUCTS

Charles E. Marks, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 6, 1984, Ser. No. 668,788

Int. Cl.⁴ C10G *49/22*

U.S. Cl. 208—340 **4 Claims**



1. A method for separating and stabilizing a hydro-treater effluent, comprising the steps of:

expanding the effluent from a high pressure to an intermediate pressure in a first expansion drum, resulting in both gaseous and liquid phase hydrocarbon components;

drawing off said gaseous phase hydrocarbon components as a gas product;

expanding said liquid phase hydrocarbon components from said intermediate pressure to a lower intermediate pressure in a second expansion drum, evolving secondary gaseous and liquid phase hydrocarbon components;

compressing and cooling said secondary gaseous phase hydrocarbon components and returning the cooled components to said first expansion drum; and

withdrawing said secondary liquid phase hydrocarbon components.

4,551,239

WATER BASED DEMULSIFIER FORMULATION AND PROCESS FOR ITS USE IN DEWATERING AND DESALTING CRUDE HYDROCARBON OILS

Philip Merchant, Houston, and Sylvia M. Lacy, Pearland, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 558,614, Dec. 6, 1983, abandoned, which is a continuntion of Ser. No. 483,608, Apr. 11, 1983, abandoned. This application Jul. 18, 1984, Ser. No. 631,980

Int. Cl.⁴ C10G *33/02, 33/04*

U.S. Cl. 208—188 **20 Claims**

5. A process for desalting an oil characterized as conventional whole petroleum crudes, petroleum crude fractions and residua, which comprises

(a) dispersing from 1 ppm to about 1000 ppm of an aqueous admixture of at least one demulsifier and at least one deoiler within said oil, the demulsifier being a water-soluble alkylene oxide alkyl phenol-formaldehyde condensate having a Relative Solubility Number ranging from 13 to 30 and a deoiler having a formula

$$HO\left(CH_2-\underset{R}{CH}-O\right)_nH$$

wherein R is H or CH_3 and n is an integer ranging from 1 to 1000, and

(b) recovering a clean oil product containing less than 5 pounds of salt per thousand barrels of crude, said Relative Solubility Number being the amount of water in ml required to reach the cloudpoint at 25° C. of the solution of 1 gram of said demulsifier dissolved in 30 ml of a solvent system made up of 4% xylene in dioxane.

15. An aqueous formulation suitable for the desalting of petroleum crudes and residua comprising a water-soluble alkylene oxide alkyl phenol-formaldehyde condensate demulsifier having a Relative Solubility Number ranging from 13 to 30, said Relative Solubility Number being the amount of water in ml required to reach the cloudpoint at 25° C. of the solution of 1 gram of said demulsifier dissolved in 30 ml of a solvent system made up of 4% xylene in dioxane being combined with a deoiler having a formula

$$HO\left(CH_2-\underset{R}{CH}-O\right)_nH$$

wherein R is H or CH_3 and n is an integer of 1 to 1000, the weight ratio of deoiler to said demulsifier ranging from 1:20 to 20:1.

4,551,240

APPARATUS FOR CLASSIFYING PARTICULATE MATERIAL WITH AIR CURRENTS

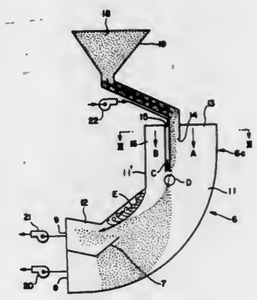
Masaru Beppu; Setsuo Agawa; Takeshi Hazeyama, and Toshiyuki Nashimoto, all of Tokyo, Japan, assignors to Nittetsu Mining Co., Ltd., Japan

Filed Jan. 30, 1984, Ser. No. 575,173

Claims priority, application Japan, Feb. 8, 1983, 58-18133

Int. Cl.⁴ B07B *7/086*

U.S. Cl. 209—143 **3 Claims**



1. An apparatus for classifying particulate material using air currents, comprising:

a curved conduit having an upper portion and a lower portion, and having an inner side wall and an outer side wall, said upper portion defining a main passage;

particulate material supply means having a particulate material supply port opening into said main passage of said upper portion for supplying particulate material into said upper portion;

a partition plate disposed in said lower portion of said conduit between said inner and outer side walls for dividing an interior of said lower portion into an outside first discharge port defined between said outer side wall and said partition plate and an inside second discharge port defined between said inner side wall and said partition plate;

said conduit including a primary air inlet in said upper portion thereof between said outer side wall and said material supply port, said conduit including a secondary air inlet port in said upper portion between said inner side wall and said material supply port;

air blower means in communication with said conduit for establishing a primary air current from said primary inlet port to said lower portion of said conduit and a secondary air current from said secondary air inlet port to said lower portion of said conduit;

means defining a tertiary air current inlet port in said upper portion of said conduit between said secondary air inlet port and said material supply port; and

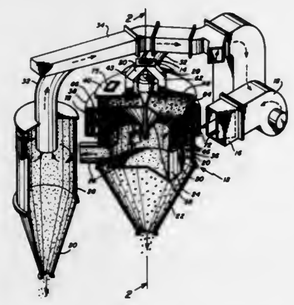
high velocity air current means in communication with said tertiary air current inlet port for supplying high velocity air through said tertiary air current inlet port and into said main passage directly adjacent said material supply port whereby said particulate material from said material supply port is drawn into a narrow zone immediately upsteam of the tertiary air current inlet port by a venturi effect within said main passage of said upper portion.

4,551,241

PARTICLE CLASSIFIER

Ronald R. Saverse, Boston, and Harold T. Jones, Weymouth, both of Mass., assignors to Sturtevant, Inc., Boston, Mass.

Filed Feb. 8, 1984, Ser. No. 578,268
Int. Cl.[4] B07B *9/02*
U.S. Cl. 209—148 **7 Claims**



1. A particle classifier comprising:

a cylindrical rejector cage mounted for rotation about its cylindrical axis having an open bottom and a disc-shaped top;

drive means located above said rejector cage for imparting rotation thereto;

feed material inlet means for directing feed material to the said top of said rejector cage for centrifugal dispersion;

means defining an annular separation zone immediately surrounding said cylindrical rejector cage;

air passage means for directing air around and radially inward through said separation zone toward said rejector cage so as to blow said feed material against said rejector cage;

coarse hopper means coaxially disposed below said separation zone for receiving course material rejected by said rejector cage;

a cylindrical stationary fines chamber coaxially disposed immediately below said rejector cage surrounded by said coarse hopper, said fines chamber having an open top a side wall and a closed bottom;

a plurality of outlet ports defined in the side wall of said fines chamber;

a plurality of corresponding openings in said coarse hopper;

a plurality of outlet ducts connected to said fines chamber side wall at said outlet ports and extending sealingly through said corresponding openings in said coarse hopper;

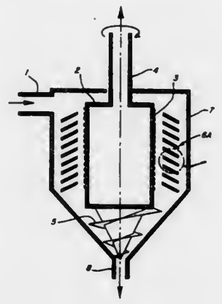
said fines chamber being supported primarily by said ducts so as to be suspended in said coarse hopper coaxially below said rejector cage.

4,551,242

APPARATUS FOR DYNAMIC CLASSIFICATION OF SUSPENSIONS OF SOLID BODIES IN LIQUIDS

Andrzej Mróz, and Stanislaw Wro ski, both of Warsaw, Poland, assignors to Politechnika Warszawska, Warsaw, Poland

Filed Oct. 11, 1984, Ser. No. 659,718
Claims priority, application Poland, Oct. 12, 1983, 244126
Int. Cl.[4] B03D *1/00*
U.S. Cl. 209—211 **1 Claim**



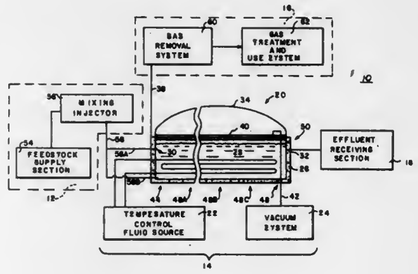
1. In an apparatus for dynamic classification of suspensions of solid bodies in liquids, consisting of a vertically arranged cylindrical body with a conical bottom terminated with an outlet stub pipe, said apparatus being provided with an inlet stub pipe situated tangentially and a rotatable vertically mounted cylindrical perforated element situated co-axially within said cylindrical body, said element being covered with a gauze mesh and mounted on a vertically arranged hollow drive shaft, said apparatus being characterized in that a cylindrical space is provided between the inner wall of the body and the gauze defining an agitation zone in which there are mounted a plurality of stationary annular baffles which do not contact either the body or the gauze, each said baffle having an outwardly and downwardly sloping profile between an inner circular edge and an outer circular edge, and are generally nested one beneath the other in a vertical arrangement and so spaced from one another that the outer edge of the upper annular baffle lies below the inner edge of the next lower annular baffle, and the rotatable cylindrical element has connected to its bottom a thickening means in the form of a worm screw rotatable within the conical bottom part of said body.

4,551,243

ANAEROBIC DIGESTER

John H. Martin, Gosport, Ind., assignor to Energy Cycle, Inc., Kansas City, Mo.

Filed Aug. 16, 1982, Ser. No. 408,073
Int. Cl.[4] B01D *35/18*
U.S. Cl. 210—180 **13 Claims**



1. Apparatus comprising:

walls forming a digester vessel closed to the atmosphere;

said digester vessel having an inlet side and an outlet side defining between them a flow path in a longitudinal direction along a longitudinal axis along which material to be digested flows and having transverse planes extending in a transverse direction perpendicular to the longitudinal axis;

means for removing gas from said digester vessel;

said digester vessel having dimensions in the transverse planes sufficiently large to permit a bulk flow of a slurry of material to be digested containing between ten and fifteen percent of solids between said inlet side and said outlet side along the flow path and having a horizontal zone containing substantially more of said solids than the remainder of the digester material;

means for causing mixing of said material in said digester vessel in the transverse direction without substantial mixing in the longitudinal direction;

means for injecting new slurry into said digester vessel at said inlet end through a plurality of openings spaced apart in the transverse direction across a transverse line at said inlet end;

the sum of the diameters of said openings being at least two percent of the transverse length in the transverse direction;

said openings being spaced no more than twenty feet apart along the transverse direction;

said transverse line being at the same vertical elevation as said zone so that at least ninety percent of said openings and said zone of solid material overlap, whereby said new material flows into said zone of solid material;

said means for injecting including means for injecting a slurry having between ten and fifteen percent solid material into it with a momentum per cubic foot of inlet slurry of at least 0.1 pound-foot per second, whereby the scum layer boundary within said digester vessel is reduced; and

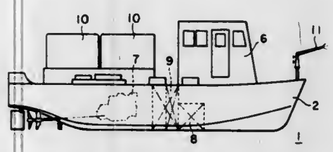
said means for causing mixing in the transverse direction including means for controlling the temperature of said slurry to maintain it between 95 degrees Fahrenheit and 140 degrees Fahrenheit.

4,551,244

SPILLED OIL PROCESSING CATAMARAN

Junichi Inoue, Yokosuka, Japan, assignor to Hikari Industry Co., Ltd, Japan

Filed Feb. 21, 1984, Ser. No. 582,199
Claims priority, application Japan, Feb. 25, 1983, 58-29378
Int. Cl.[4] C02F *1/40*
U.S. Cl. 210—198.1 **11 Claims**



1. A spilled oil collecting apparatus for collecting spilled oil drifting in the water surface, comprising:

a pair of floats arranged in parallel spaced apart relation over a predetermined distance;

a deck integrally provided with and extending between said pair of floats, said deck being provided with at least one opening;

a connection member extending between said pair of floats, said connection member being disposed at the front of said apparatus in a position to be submerged in the water when said apparatus is afloat;

an impeller rotatably supported between said pair of floats and disposed generally above said connection member, said impeller being dipped in the water partly at its bottom;

at least one cage supported to be movable up and down through said opening provided in said deck, said cage being capable of housing therein a one side-opened porous collection bag with its open side directed to the front of said apparatus;

advancing means for advancing said apparatus along the water surface; and

spraying means for spraying a gelling agent for causing oil to gel over the water surface in front of said apparatus.

4,551,245

ACYLATED POLYETHYLENIMINE BOUND CHROMATOGRAPHIC PACKING

Hugh E. Ramsden, Scotch Plains, N.J., and Michael Henry, Easton, Pa., assignors to J. T. Baker Chemical Co., Phillipsburg, N.J.

Filed Apr. 22, 1985, Ser. No. 725,807
Int. Cl.[4] C02F *1/68*
U.S. Cl. 210—198.2 **13 Claims**

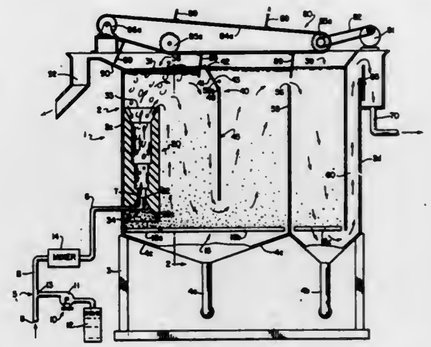
1. The N-acylated covalently bound, non-crosslinked polyethylenimine reaction product of particulate silica gel having an average particle diameter of from about 3 to about 70 microns and an average pore size of from about 50 to about 1000 Angstrom units, or particulate controlled pore glass having an average particle diameter of from about 37 to about 177 microns and an average pore size of from about 40 to about 1000 Angstrom units, with polyethyleniminopropyl trimethoxy silane having an average molecular weight of from about 400 to about 1800, wherein the N-acyl function has the formula: R—CO—, in which R is a member selected from the group consisting of C_{1-8} alkyl, phenyl, aralkyl and phenyl substituted with one or more substituents selected from the group consisting of C_{1-4} alkyl, C_{1-4} alkoxy, halo and nitro.

4,551,246

FLOTATION APPARATUS UTILIZING A NOVEL FLOC BARRIER AND CURRENT DIVERTING MEANS

Samuel F. Coffing, Miami, Fla., assignor to International Resources Management, Inc., Coral Gables, Fla.

Filed Sep. 30, 1982, Ser. No. 428,773
Int. Cl.[4] C02F *1/24*
U.S. Cl. 210—221.2 **8 Claims**



1. An improved flotation apparatus for treating an effluent by forming a separable buoyant floc out of particles of matter suspended in said effluent, wherein said apparatus is of the type which includes a treatment tank having an outlet on one side where treated effluent flows out of the tank, a floc collection region on an opposing side including a floc outlet where buoyant floc is collected and swept out of the tank, a mixing means for mixing incoming effluent and a stream of bubbles which generates fluid currents in the floc collection region which push the buoyant floc away from the floc collection region and toward the outlet, and a skimming means including at least one

blade for sweeping buoyant floc near the surface of the effluent in the tank into the floc collection region in said tank, wherein the improvement comprises

a floc barrier and current diverting means disposed between the outlet and the floc collection region including

(a) a top barrier wall having a substantially linear cross-section, and an upper edge in close proximity to the surface of the effluent for blocking buoyant floc from moving away from the floc collection region and toward said outlet region in response to said fluid currents, and a lower portion which is movably mounted in said tank for freely yielding to the passage of the blade of said skimming means, wherein said top barrier wall is biased at an incline toward the floc accumulation area in order that it may divert said fluid currents away from said outlet region and toward the bottom of the tank, and

(b) a bottom barrier wall having an upper edge which is adjacent the lower edge of the top barrier wall for further diverting said fluid currents away from the outlet and toward the bottom of the tank.

4,551,247

DEVICE FOR SEPARATING SOLID PARTICLES OF DIRT FROM COOLING WATER FOR POWER STATIONS

Werner Borchert, In den Blamüsen, 42, D-4000 Düsseldorf, and Klaus D. Nitsch, Dietrichstr. 26, D-4130 Moers, both of Fed. Rep. of Germany

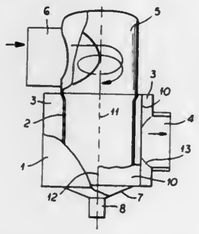
PCT No. PCT/EP83/00099, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/03780, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 26, 1983, Ser. No. 579,904

Claims priority, application European Pat. Off., Apr. 26, 1982, 82200496.6

Int. Cl.⁴ B01D *35/24*

U.S. Cl. 210—304 **5 Claims**



1. In a device for separating solid particles of dirt from the cooling water for steam power plants or other power stations, which device includes a screening drum having opposite ends and disposed statically in a cylindrical casing so as to form an annular chamber therebetween, a cooling water inlet spigot communicating with the interior of said screening drum at one of its ends and generally tangentially thereof for introduction of unfiltered incoming cooling water axially into said screening drum and so as to flow generally helically within said screening drum prior to being filtered and codirectionally generally helically within said annular chamber subsequent to being filtered, a cooling water outlet spigot communicating with said annular chamber generally tangentially of said cylindrical casing, and a dirt particle discharge spigot communicating with the interior of said screening drum at the other end thereof and provided with a valve;

the improvement comprising that a baffle is disposed in said annular chamber intermediate said cooling water outlet spigot and the portion of the outer periphery of said screening drum proximate thereto, said baffle extending generally circumferentially of said screening drum over a portion of the outer periphery of the same and having two circumferentially spaced edges, said baffle at one of said edges bearing coaxially against the outer surface of said screening drum and at the other of said edges being spaced from said surface, and the spacing between said baffle and said outer surface of said screening drum increasing as viewed in the direction of helical flow of the cooling water.

4,551,248

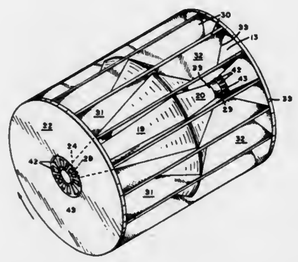
FILTER DRUM FOR ROTARY DRUM VACUUM FILTER

Nevio Lenac, Bridgeport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jun. 3, 1983, Ser. No. 500,640

Int. Cl.⁴ B01D *33/06*

U.S. Cl. 210—404 **1 Claim**



1. A rotary drum vacuum filter having a drum mounted for rotation in a slurry tank through a filtration cycle wherein filter cake is formed on the outer surface of the drum by applied vacuum and filtrate is passed through said drum for discharge through filtrate drainage compartments within said drum to a discharge valve assembly, said drum comprising:

(a) a pair of conical shaped support members having concentrically arranged interconnected peripheral base portions,

(b) a pair of spaced cylindrical end plates havng spaced trunnion housings attached to the outer walls thereof,

(c) shaft means in said trunnion housings concentric with said conical shaped support members and interconnecting said end plates to the apex portions of said conical support members,

(d) a plurality of filtrate outlets provided in said end plates about said shaft means,

(e) a plurality of spaced and parallel triangular shaped divider panels extending longitudinally of and attached to the outer surface of said conical support members in radial relationship thereon,

(f) a plurality of rectangular shaped filtration grid sectors each having transverse end portions connected to said opposite end plates and longitudinal side portions connected to a pair of said adjacent divider panels to provide a plurality of said filtrate drainage compartments about the periphery of said drum of said panels,

(g) said divider panels configurated to conform to the shape of said conical support member to provide sloped floors to said filtrate drainage compartments within said filter discharge outlets located at the lower end of said sloped floors adjacent the apexes of said support member, and

(h) filtrate discharge openings provided in said end plates at said trunnion housings in communication with said filtrate drainage compartments.

4,551,249

MODULAR LIQUID CHROMATOGRAPHY COLUMN APPARATUS

Carl L. Shackelford, San Pablo, and Kenneth Rainin, Piedmont, both of Calif., assignors to Rainin Instrument Co. Inc., Emeryville, Calif.

Filed Feb. 29, 1984, Ser. No. 584,611

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—198.2 **16 Claims**



1. A high pressure modular liquid chromatography column apparatus utilizing material for separating constituents comprising:

a. a tube filled with the material said tube having a first end portion and a second end portion;

b. means for plugging said first end portion of said tube, said plugging means including a passage therethrough, said plugging means fitting adjacent the material within said tube and being movable within said tube;

c. an end fitting having a portion placed within said tube adjacent said plugging means, said end fitting including a passage therethrough which communicates with said passage of said plugging means;

d. means for sealing a portion of the inside of said tube between said plugging means and said end fitting, portion within said tube, said sealing means extending along the circumference of said inside of said tube;

e. means for retaining said end fitting within said tube; and

f. means for enclosing said second end portion of said tube, said enclosing means including a passage therethrough from the exterior of said tube to the interior thereof.

4,551,250

PROCESS FOR THE ANAEROBIC BIOLOGICAL PURIFICATION OF WASTEWATER

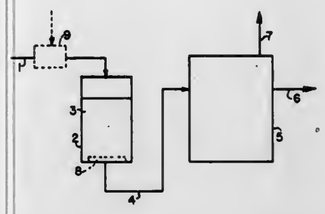
Manfred Morper, Gelting, and Uwe Fuchs, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,520

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326939

Int. Cl.⁴ C02F *3/28*

U.S. Cl. 210—603 **12 Claims**



1. In a process for the anaerobic biological purification of wastewater containing organic pollutants wherein the incoming wastewater stream to be purified is conducted through two series-connected reactors operated under anaerobic conditions, the improvement comprising retaining substantially only the pollutants contained in the incoming wastewater stream which are present partially in the undissolved, partially in the macromolecular state and are only gradually metabolizable under anaerobic conditions in the first reactor by means of a filtering medium arranged in the first reactor; transferring the pollutants which are initially present in the incoming wastewater stream in the dissolved state and are substantially rapidly degradable by anaerobic microorganisms directly through the first reactor and without substantial conversion, into the second reactor; retaining the only gradually metabolizable pollutants in the first reactor for a time sufficient to degrade the gradually metabolizable pollutants to low-molecular weight, dissolved fragments, said first reactor being operated at a pH of less than 7, and containing hydrolyzing and acidifying bacteria and substantially no methanogenic bacteria; and conducting the thus-degraded and dissolved low-molecular weight fragments to the second reactor together with the initially rapidly degradable pollutants for further degradation therein in the presence of methanogenic bacteria so as to produce methane, the entire reactor volume of the first and second reactors being just about sufficient to conduct the degradation in the first reactor and the methanization in the second reactor on a continuous basis, said entire reactor volume being less than the reactor volume required if the degradation and the methanization were conducted in a single reactor.

4,551,251

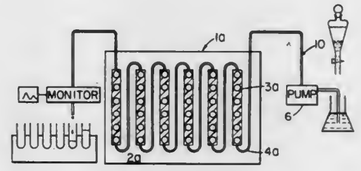
MONOLITHIC INTEGRATED FLOW CIRCUIT

Theodor Kolobow, Rockville, and Yoichiro Ito, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 6, 1984, Ser. No. 587,682

Int. Cl.⁴ B01N *15/08*

U.S. Cl. 210—635 **18 Claims**



16. A method for counter-current chromatography comprising separating a first liquid from a second liquid with which said first liquid is mixed by passing a mixture of said first and second liquid through a monolithic integrated flow circuit consisting essentially of a deformable matrix plate having a flow circuit formed therein, said deformable matrix plate being of formed plastic or metallic thin-gauge sheets, at least one of said sheets having a pattern formed by embossing thereon, said sheets being bonded together to form said flow pattern, said pattern defining a plurality of locules, each of said locules being joined to an adjacent locule by an integral transfer conduit and subjecting said mixture to counter-current chromatography in said column.

4,551,252

METHOD OF AND APPARATUS FOR MASS TRANSFER BETWEEN THREE LIQUID PHASES

Lyubomir A. Boyadjiev, Sofia, Bulgaria, assignor to Edinen Centar Po Chimia, Sofia, Bulgaria

Filed Dec. 20, 1982, Ser. No. 451,335

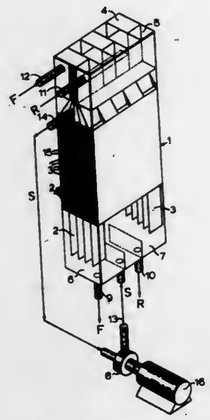
Claims priority, application Bulgaria, Dec. 18, 1981, 54604

Int. Cl.⁴ B01D *11/04, 13/00*

U.S. Cl. 210—638 **5 Claims**

1. Method for mass transfer between three liquid phases wherein two of such phases are miscible and the other one of said phases is immiscible with respect to the other two phases and serves as an intermediate phase, comprising flowing the

two miscible liquids down surfaces which are wettable by said immiscible liquids, said surfaces being separated by a space



occupied by the third, intermediate phase, said third phase being forcibly circulated.

4,551,253

METHOD FOR REMOVING OIL FROM WATER WITH AN ABSORBENT

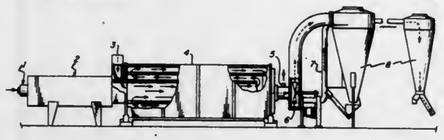
Bo Grenthe, Avesta, Sweden, assignor to N.Y. Patent Development Corp., New York, N.Y.

Continuation of Ser. No. 285,105, filed as PCT SE80/00299 Nov. 25, 1983, published as WO81/01575, Jun. 11, 1981, § 102(e) date Jul. 14, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,351

Claims priority, application Sweden, Nov. 26, 1979, 7909748-1

Int. Cl.⁴ C02F *1/28*

U.S. Cl. 210—680 **7 Claims**



1. A method for removing oil or other petroleum-based products contaminating a body of water, comprising dispersing over the contaminated water an amount of an absorbent material sufficient to substantially absorb the oil or petroleum-based products therefrom, said absorbent material comprising the fibrous product obtained by subjecting a moisture-containing fibrous starting material, consisting essentially of a member selected from the group consisting of sulphite reject from a paper mill process, and a combination of sulfite reject and sulphate reject from a paper mill process, to rapid forced heating at temperatures effective to gasify moisture in said starting material and to cause said starting material to expand or burst.

4,551,254

MACROPOROUS MANGANESE DIOXIDE WATER PURIFIER

Nobuyuki Imada, and Toshiteru Okada, both of Takehara, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,781

Claims priority, application Japan, Jun. 22, 1983, 58-111090

Int. Cl.⁴ C02F *1/28*

U.S. Cl. 210—688 **5 Claims**

5. The method of purifying raw water from impurities of manganese, iron and coloring matters which consists of passing the raw water through a water purifier which consists essentially of discrete particles of manganese dioxide having macroscopic pores through which water is able to pass, wherein said



manganese dioxide is (a) of beta form; (b) gamma and beta-mixed form and wherein said particles have needle-like or columnar crystals on the surfaces.

4,551,255

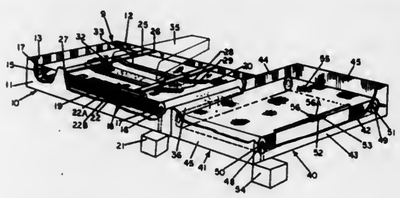
CONTINUOUS FILTER SCREEN SYSTEM FOR REMOVING PARTICLES FROM A LIQUID

R. Craig Miller, 12957 Glenda St., Cerritos, Calif. 90701, assignor to R. Craig Miller, Cerritos and Pro/Pak Industries, Inc., Fullerton, both of, Calif., a part interest

Filed Oct. 17, 1984, Ser. No. 661,609

Int. Cl.⁴ B01D *33/02*

U.S. Cl. 210—770 **20 Claims**



1. An apparatus for continously filtering debris from a carrier liquid, which comprises:

(a) a first liquid collecting tank, defining an elongate portion;

(b) an endless filter belt of woven polymeric fabric mesh, the filter belt defining upper and lower surfaces and being rotatable over the elongate portion of the tank and adapted to filter debris from the liquid;

(c) feed means for supplying liquid and debris to the filter belt along an upper surface, the liquid passing through the belt and collecting in the first collecting tank, and the debris collecting on the upper surface of the filter belt;

(d) means to remove the debris from the filter belt;

(e) a second liquid collecting tank defining an elongate portion;

(f) an endless collecting and discharge belt of woven plastic fabric mesh rotatable along the elongate portion of the second collecting tank, the discharge belt being adapted to collect debris removed from the filter belt and discharge the debris from the apparatus; and,

(g) liquid recycling means adapted to: i. remove liquid and debris from the second liquid collecting tank and feed the upper surface of the filter belt; ii. remove a portion of filtered liquid from the first collecting tank to flush debris from the lower surface of the filter belt; and, iii. reclaim liquid remaining in the first collecting tank.

12. A process for continuously filtering debris from a carrier liquid, which comprises:

(a) feeding liquid and debris to an endless filter belt of woven polymeric mesh fabric along an upper surface, the filter belt being rotatable over an elongate portion of a first collecting tank;

(b) passing the liquid through the belt, collecting the liquid in the first collecting tank, and collecting the debris on the upper surface of the filter belt;

(c) removing the debris from the filter belt onto an endless collecting and discharge belt of woven polymeric fabric mesh, the discharge belt being rotatable over an elongate portion of a second liquid collecting tank;

(d) passing liquid from the discharge belt into the second liquid collecting tank;

(e) drying the debris on the discharge belt;

(f) removing the debris from the discharge belt;

(g) recycling a portion of filtered liquid from the first collecting tank to flush debris from a lower surface of the filter belt; and,

(h) recycling filtered liquid remaining in the first collecting tank.

4,551,256

SLURRY EXCAVATING METHOD

Daizo Kita, Niiza; Tsutomu Nakamura, Sakai, and Takeshi Kawachi, Tokorozawa, all of Japan, assignors to Ohbayashi-Gumi, Ltd., Osaka and Kuraray Co., Ltd., Okayama, both of, Japan

Filed Jun. 2, 1982, Ser. No. 384,175

Claims priority, application Japan, Jun. 9, 1981, 56-89237; Nov. 9, 1981, 56-180467

Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.5 LC **7 Claims**

1. A slurry excavating method for excavating ground or drilling a hole by means comprising introducing onto the ground or into the hole a slurry containing a powder of a water absorbing resin which is capable of absorbing at least 10 times its own weight in water and retaining its shape without dissolving when swollen by water, said water absorbing resin being a crosslinked copolymer of an α-olefin and a maleic acid compound selected from the group consisting of maleic acid, maleic acid anhydride, maleinamic acid and maleinimide, whereby loss of water from said slurry employed in said slurry excavating method is prevented.

4,551,257

AMIDES FROM DIALKYLENETRIAMINES AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME

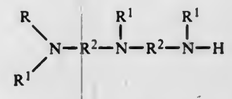
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,814

Int. Cl.⁴ C10M *1/36*

U.S. Cl. 252—32.7 E **31 Claims**

1. A compound of the formula



wherein R is a C_{10} to C_{30} hydrocarbyl group, R^1 is hydrogen or



group, at least one of R^1 being the latter group in which R^3 is hydrogen or a C_1 to C_4 hydrocarbyl group and R^2 is a C_2 to C_4 hydrocarbylene group.

4,551,258

GREASE COMPOSITION

Makoto Ikeda, and Akira Nakamura, both of Ichihara, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,498

Claims priority, application Japan, Aug. 26, 1983, 58-154924

Int. Cl.⁴ C10M *5/24, 5/28*

U.S. Cl. 252—32.7 E **17 Claims**

1. A grease composition which comprises:

(a) from 1 to 4 parts by weight of a zinc dithiophosphate;

(b) from 2 to 6 parts by weight of a phosphoric acid ester; and

(c) from 0.5 to 2 parts by weight of an organotin compound admixed in 100 parts by weight of a base grease.

4,551,259

PHENOLIC ANTIOXIDANTS AND LUBRICANTS CONTAINING SAME

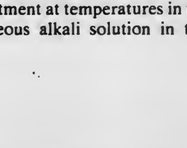
Milton Braid, deceased, late of Haddonfield, N.J. (by Gerassimos Frangatos, executor), assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,411

Int. Cl.⁴ C10M *1/38*

U.S. Cl. 252—48.2 **20 Claims**

1. A product of reaction made by reacting, under catalytic conditions, a hindered phenol of the formula



wherein R and R^1 are branched alkyl groups containing 3 to 16 carbon atoms, cycloalkyl groups containing 5 to 10 carbon atoms, aryl groups or alkyl-substituted aryl groups wherein the alkyl portion contains 1 to 16 carbon atoms, and the aryl portion contains 6 to 14 carbon atoms, R^2 is hydrogen or a R group and x is 0 or 1, with a thiaalkene of the formula

$$R^3(S)_yR^4$$

wherein R^3 and R^4 are individually unsaturated hydrocarbyl groups containing 3 to 20 carbon atoms and y is 1 or 2.

4,551,260

WET PROCESS OF PREPARING FINE PARTICLES OF FERRITE OF MAGNETOPLUMBITE STRUCTURE

Masanori Hayakawa; Noriaki Yamada, both of Ube; Hiromi Kawamoto, Onoda, and Satoshi Nishimura, Ube, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed Jul. 24, 1984, Ser. No. 634,023

Claims priority, application Japan, Jul. 28, 1983, 58-136812; Dec. 6, 1983, 58-229185

Int. Cl.⁴ C04B *35/26*

U.S. Cl. 252—62.59 **6 Claims**

1. A process of preparing fine particles of a ferrite having the magnetoplumbite structure, of the formula

$$AO_n(Fe_{2-(2x/6)^{3+}}M_{x/6^{2+}}Sn_{x/6^{4+}}O_3)$$

where A is Ba, Sr, and/or Pb, M is at least one of Fe, Cu, Zn, Co, Ni, Mn and Mg, n is between 4 and 6 and x is between 0.3 and 0.9 which comprises the steps of subjecting a powder of an iron oxide selected from the group consisting of γ-Fe_2O_3 and $(FeO)_x$·Fe_2O_3, where $0<x\leqq 1$, and at least one compound of a divalent metal selected from the group consisting of chlorides, nitrates, and hydroxides of Ba, Sr and Pb to hydrothermal treatment at temperatures in the range from 80° to 360° C. in an aqueous alkali solution in the presence of an oxidizer, the

atomic ratio of the total of Ba, Sr and Pb to Fe in the reaction system being in the range of from 1:8 to 1:12; and

introducing tetravalent tin ions and at least one kind of divalent metal ions selected from the group consisting of Fe^{2+}, Cu^{2+}, Zn^{2+}, Co^{2+}, Ni^{2+}, Mn^{2+}, and Mg^{2+} into the reaction system of the hydrothermal treatment such that the trivalent iron ions in the obtained ferrite having the magnetoplumbite structure are partly substituted by a combination of said divalent metal ions and tetravalent tin ions, the atomic ratio of Sn to Fe being in the range of 0.3:12 to 0.9:12 and the mole ratio of tetravalent tin ions to the total of said divalent metal ions in said reaction system being substantially 1:1.

4,551,261

DUST SUPPRESSION WITH ELASTOMER-CONTAINING FOAM

Mark W. Salihar, Berwyn, Ill., assignor to Dearborn Chemical Co., Lake Zurich, Ill.

Filed May 7, 1984, Ser. No. 607,826
Int. Cl.⁴ C09K *3/22*
U.S. Cl. 252—88 **11 Claims**

1. The method of suppressing dust generation by a solid particulate material comprising applying to the material a dust-suppressing amount of a foam comprising water, a foaming agent and an elastomeric water insoluble polymer, said foam having a weight ration of the foaming agent to the polymer of from about 5:95 to about 95:5.

4,551,262

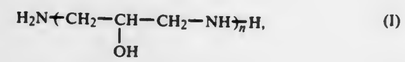
COMPOSITION FOR PREVENTING DEPOSITION OF INORGANIC SALTS

Rafail K. Samakaev, ulitsa Chkalova, 28, kv. 70, Orenburg; Alexandr I. Paguba, mikroraion 4, 55, kv. 96; Nikolai V. Smolnikov, mikroraion 2, 73, kv. 15, both of Shevchenko; Leonid T. Dytjuk, ulitsa Narodnaya, 13, kv. 51, Orenburg; Vladimir I. Gusev, ulitsa Ulyanovykh, 57/2, kv. 20, Kazan; Nina M. Dyatlova, 2-oi Samotechny pereulok, 4, korpus 1, kv. 4; Galina F. Yaroshenko, ulitsa Udal t sova, 14, kv. 120, both of Moscow; Anatoly V. Barsukov, ulitsa Orenburgskaya, 88, Orenburg; Ljudmila V. Krinitskaya, ulitsa Scherbakovskaya, 7, kv. 74, and Taisia M. Balashova, 15-ya Parkovaya, 42, korpus 3, kv. 49, both of Moscow, all of U.S.S.R.

Filed Oct. 5, 1983, Ser. No. 539,324
Int. Cl.⁴ C02F *5/10*
U.S. Cl. 252—181 **1 Claim**

1. A composition for preventing deposition of inorganic salts comprising:

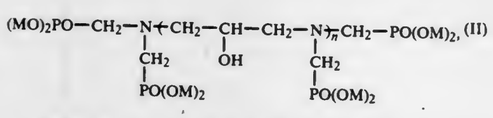
amines selected from group consisting of 1,3-diaminopropanol-2 a derivative of 1,3-diaminopropanol-2 of the general formula:



(I)

wherein n=2 to 20;

and the mixture of said amines, phosphonomethylated derivative of 1,3-diaminopropanol-2 in the form of a salt selected from the group consisting of a salt of an alkali metal, an ammonium salt and a mixture of said salts of the general formula:



(II)

wherein n=1 to 20, M is an alkali metal, NH_4;

chlorides selected from the group consisting of an alkali metal chloride, ammonium chloride and a mixture thereof;

water;

the components being present in the following proportions, percent by weight:

amines selected from group consisting of 1,3-diaminopropanol-2 derivative of 1.3-diaminopropanol-2 of the general formula (I)	0.1–4.5
phosphonomethylated derivative of 1,3-diaminopropanol-2 of the general formula (II)	5.0–50.0
chlorides	3.0–12.0
water	to 100%.

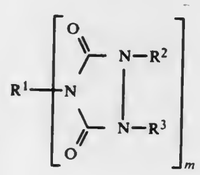
4,551,263

TRIAZOLIDINE-3,5-DIONES AS ACTIVATORS FOR PER-COMPOUNDS

Karl-Wolfgang Schellhammer, Berg.-Gladbach; Ludwig Rottmaier, Odenthal; Rudolf Merten, and Ulrich Schimmel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,722
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136808
Int. Cl.⁴ C11D *7/54, 3/38, 3/39*
U.S. Cl. 252—186.39 **40 Claims**

1. A composition comprising a per-compound and an activator, said activator being a compound of the formula

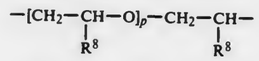


in which

R^1 is hydrogen, C_1–C_{20}-alkyl, C_3–C_7-cycloalkyl, phenyl, phenyl C_1–C_7-alkyl, C_{1-4}-alkylphenyl, halophenyl, the hydrocarbon moieties of which can be substituted by (C_1–C_4 alkoxy)-carbonyl, CN, or halogen, or

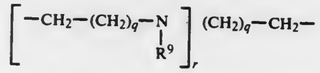
R^1 is as defined below for R^2 or is C_4H_9—O—$CH_2CH_2CH_2$— or a radical of the formulae

$-(CH_2)_m-$ with m = 2–12,

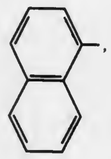


with R^8 = H or CH_3, and p = 1–9,

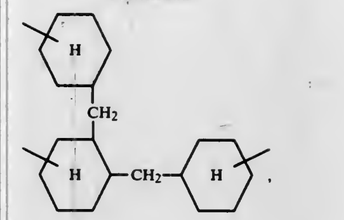
$-(CH_2)_3-O-(CH_2)_{2-4}-O-(CH_2)_3-$,

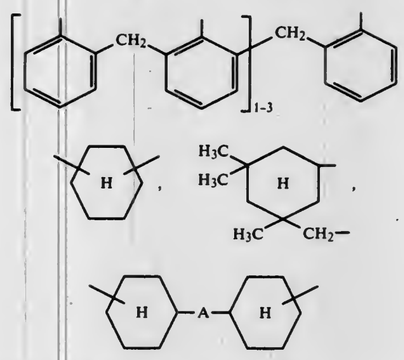


with R^9 = C_{1-4} alkyl, q = 1–2, r = 1–4,

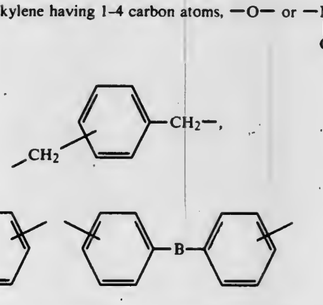


-continued





wherein A = Alkylene having 1–4 carbon atoms, —O— or —N(CH₃)—



wherein B = alkylene having 1–4 carbon atoms, —O— or —N(CH₃)—

R^2 and R^3 are unsubstituted or substituted C_1–C_8 alkyl carbonyl, benzoyl or phenyl C_1–C_4-alkylcarbonyl wherein the substituents are lower alkyl, C_1–C_4 alkoxy, halogen, nitro or cyano; and m is an integer equal to the indicated valence of R^1.

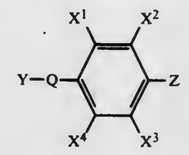
4,551,264

POLYHALOGENOAROMATIC COMPOUNDS FOR LIQUID CRYSTAL COMPOSITIONS

Rudolf Eidenschink, Dieburg; Michael Römer, Rodgau, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 474,862
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209178
Int. Cl.⁴ C09K *3/34*; C02F *1/13*; C07C *121/75, 79/12, 49/813, 87/60, 43/225, 69/157, 69/773*; C07D *319/06*
U.S. Cl. 252—299.62 **21 Claims**

1. A liquid-crystal dielectric useful in electrooptical display elements comprising at least two liquid-crystalline components, wherein at least one component is a polyhalogenoaromatic compound of the formula



wherein Y and Z are each independently alkyl, alkoxy or alkanoyl each of 1 to 12 C atoms, —$COOR^1$, —O—CO—R^1, CN, or NO_2; Q is one or two identical or different groups selected from Ph, Cy, or 1,4-bicyclo-[2,2,2]octylene; X^1 to X^4 are each independently H, F, Cl or Br; R^1 is alkyl of 1 to 4 C atoms, Ph—R^2 or Cy—R^2; R^2 is alkyl or alkoxy each of 1–12 C atoms, or CN; Ph is 1,4-phenylene; and Cy is 1,4-cyclohexylene; with the proviso that not more than one of X^1 and X^2 and not more than one of X^3 and X^4 is hydrogen.

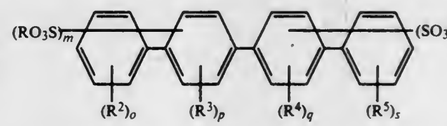
4,551,265

FLUORESCENT DYESTUFFS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS LASER DYESTUFFS

Wolfgang Brinkwerth, Berg.-Gladbach; Wolfgang Hüffer, Cologne; Roderich Raue, Leverkusen; Rudolf Schieder, Huerth, all of Fed. Rep. of Germany, and Helmut Telle, Toronto, Canada, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 184,695, Sep. 8, 1980, Pat. No. 4,338,258. This application Dec. 30, 1981, Ser. No. 335,986
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938132
Int. Cl.⁴ H01S *3/20*; C09K *3/00*
U.S. Cl. 252—301.17 **1 Claim**

1. Process for producing a coherent laser emission in a wavelength range from 360 to 430 nm, wherein a solution of the dyestuff of the general formula



is stimulated by an energy source which is capable of stimulating the dyestuff solution to produce a laser emission and wherein

R and R^1 independently of one another represent hydrogen, a salt-forming cation, an alkyl radical with 1 to 16 C atoms or an aryl or aralkyl radical which is optionally substituted by non-chromophoric groups,

R^2 to R^5 independently of one another represent hydrogen, alkyl, trifluoromethyl, alkoxy, aralkoxy, alkenoxy, aryloxy, halogen or a carboxyl, cyano, alkyl sulphone, aryl sulphone, aralkyl sulphone, carboxamide, sulphonamide or carboxylic acid ester group,

o,p, q and s independently of one another represent 1 or 2 and

m and n independently of one another denote 0, 1 or 2, the sum of m and n being 2 to 4.

4,551,266

TREATMENT OF SUBSTANTIALLY METALLIC ION FREE ACRYLAMIDE AND RELATED COMPOUNDS

George Gotthard, Short Hills, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 362,365, Mar. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 258,103, Apr. 27, 1981, abandoned. This application Jan. 4, 1984, Ser. No. 570,402

Int. Cl.[4] C09K *15/32*

U.S. Cl. 252—400 R 8 Claims

1. A composition comprising:

(a) a monomer of inferior polymerizability selected from acrylamide, acrylic acid and mixtures thereof, said monomer being in the form of a 5 to 20 weight percent aqueous solution having a pH above 8.0, substantially free of any metallic ion and containing only that amount of oxygen or other polymerization inhibitor which would inherently be present in said monomer; and

(b) a monomer-improving amount, insufficient to catalyze polymerization of said monomer of an alkali metal borohydride compound, said borohydride compound being present at about 100 parts per million to about 1000 parts per million based upon the monomer.

4,551,267

ELECTRICALLY CONDUCTIVE PLASTIC COMPLEX MATERIAL

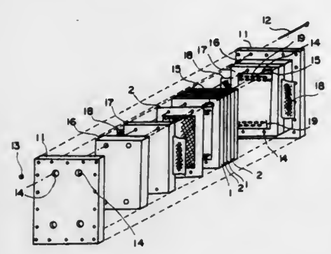
Kazuo Fushimi, Kawaguchi; Hirokazu Tsunakawa, Saitama, and Kunio Yonahara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jan. 26, 1984, Ser. No. 574,160

Claims priority, application Japan, Jan. 27, 1983, 58-10572

Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—511 4 Claims



1. An electrically conductive plastic complex material for use as a halogen battery electrode, said complex material comprising base resin polymer, carbon black and graphite, said base resin polymer being selected from the group consisting of polyethylene, polypropylene and ethylene-propylene copolymer, wherein said material comprises 50 weight percent of said base resin polymer and 20 weight percent of said carbon black, and wherein a part of said graphite is substituted by adsorptive active carbon in order to control halogen diffusion through the electrode, said adsorptive active carbon being in the range of 1 to 30 weight percent of said material.

4,551,268

VOLTAGE-DEPENDENT RESISTOR AND METHOD OF MAKING THE SAME

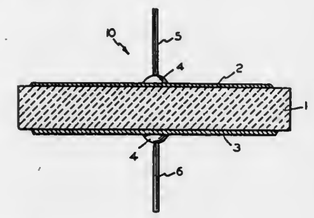
Kazuo Eda, Hirakata; Yasuharu Kikuchi, Moriguchi; Osamu Makino, Katano, and Michio Matsuoka, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 210,394, Nov. 25, 1980, Pat. No. 4,386,021. This application Feb. 10, 1983, Ser. No. 465,678

Claims priority, application Japan, Nov. 27, 1979, 54-154085; Nov. 27, 1979, 54-154086; Nov. 27, 1979, 54-154087

Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—519 2 Claims



1. A voltage-dependent resistor of bulk-type comprising a sintered body consisting essentially of, as a main constituent, zinc oxide (ZnO) and, as additives, 0.1 to 3.0 mole percent of bismuth oxide (Bi_2O_3), 0.1 to 3.0 mole percent of cobalt oxide (Co_2O_3), 0.1 to 3.0 mole percent of manganese oxide (MnO_2), 0.1 to 3.0 mole percent of antimony oxide (Sb_2O_3), 0.05 to 1.5 mole percent of chromium oxide (Cr_2O_3), 0.005 to 0.3 mole percent of boron oxide (B_2O_3), at least one member selected from the group of 0.0005 to 0.025 mole percent of aluminum oxide (Al_2O_3) and 0.0005 to 0.025 mole percent of gallium oxide (Ga_2O_3), and at least one member selected from the group of 0.1 to 3.0 mole percent of nickel oxide (NiO) and 0.1 to 10.0 mole percent of silicon oxide (SiO_2) with electrodes applied to opposite surfaces of said sintered body.

2. A voltage-dependent resistor of bulk-type comprising a sintered body consisting essentially of, as a main constituent, zinc oxide (ZnO) and, as additives, 0.1 to 3.0 mole percent of bismuth oxide (Bi_2O_3), 0.1 to 3.0 mole percent of cobalt oxide (Co_2O_3), 0.1 to 3.0 mole percent of manganese oxide (MnO_2), 0.1 to 3.0 mole percent of antimony oxide (Sb_2O_3), 0.05 to 1.5 mole percent of chromium oxide (Cr_2O_3), 0.0005 to 0.3 mole percent of boron oxide (B_2O_3), at least one member selected from the group of 0.0005 to 0.025 mole percent of aluminum oxide (Al_2O_3) and 0.0005 to 0.025 mole percent of gallium oxide (Ga_2O_3), and at least one member selected from the group of 0.1 to 3.0 mole percent of nickel oxide (NiO) and 0.1 to 10.0 mole percent of silicon oxide (SiO_2) and 0.0005 to 0.3 mole percent of silver oxide (Ag_2O), with electrodes applied to opposite surfaces of said sintered body.

4,551,269

NON-LINEAR RESISTOR AND METHOD OF MANUFACTURING THE SAME

Detlev Hennings; Axel Schnell, and Herbert Schreinemacher, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 382,909

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121290

Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—520 4 Claims

1. A non-linear resistor having a ceramic sintered body consisting of a polycrystalline alkaline metal titanate doped to N-type conductance with a metal oxide and which sintered body is provided with electrodes on opposite located surfaces thereof characterized in that said body has a Perowskite structure, consists of an alkaline earth metal titanate containing excess TiO_2, has a formula selected from the group consisting of $(Sr_{1-x}Ln_x)$ $TiO_3.yTiO_2$ and $Sr(Ti_{1-x}Me_x)O_3.yTiO_2$ wherein Ln is a rare earth metal, Me is a metal having a valence of at least 5, $0.0005 < x <$ solubility limit of the Ln in the Perowskite phase and $y = 0.001$ to 0.02 and which sintered body is provided on its grain boundaries with insulating layers produced by re-oxidation.

4,551,270

DNA FRAGMENTS CODING FOR POLYPEPTIDES CONTAINING AT LEAST ONE ANTIGENIC DETERMINANT OF THE PAPILLOMAVIRUS, PARTICULARLY OF THE HPV 1A TYPE AND CORRESPONDING POLYPEPTIDES

Olivier Danos, Paris; Michael Katinka, Saint Mande, and Moshe Yaniv, Paris, all of France, assignors to Institut Pasteur, Paris, France

PCT No. PCT/FR83/00063, § 371 Date Dec. 5, 1983, § 102(e) Date Dec. 5, 1983, PCT Pub. No. WO83/03623, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 1, 1983, Ser. No. 558,188

Claims priority, application France, Apr. 5, 1982, 82 05887

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R 5 Claims

1. A peptide sequence selected from the group consisting of

Leu-Asp-Gln-Phe-Pro-Leu-Gly-Arg-Lys-Phe-Leu,

Leu-Asp-Gln-Phe-Pro-Leu-Gly-Arg-Arg-Phe-Leu,

Ala-Lys-Arg-Arg-Arg-Lys,

and

Ala-Lys-Lys-Lys-Lys-Lys.

4,551,271

PURIFICATION OF INTERFERON BY METAL CHELATE CHROMATOGRAPHY

Erich Hochuli, Arisdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

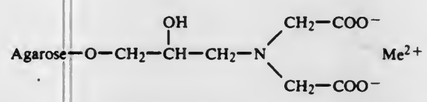
Filed Feb. 27, 1984, Ser. No. 584,286

Claims priority, application Switzerland, Mar. 3, 1983, 1151/83; Dec. 13, 1983, 6642/83

Int. Cl.[4] C07G *7/00;* A61K *45/02*

U.S. Cl. 260—112 R 8 Claims

1. A process for the purification of interferons, which process comprises bringing an interferon solution into contact with a metal chelate resin of the following structure



in which Me represents copper or nickel, and eluting the interferon in substantially pure form by treating the loaded resin with a washing liquid.

4,551,272

DERIVATIVES OF DIPEPTIDE AND THEIR USE IN DETERMINING THE ACTIVITY OF CARBOXYPEPTIDASE A

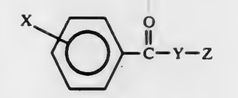
Masami Sugiyama; Hiroko Shibuya, and Yasushi Kasahara, all of Tokyo, Japan, assignors to Fujirebio Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,849

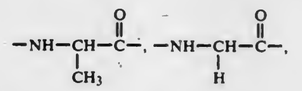
Int. Cl.[4] C07C *103/52*

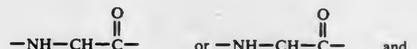
U.S. Cl. 260—112.5 R 6 Claims

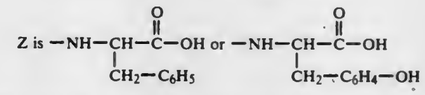
1. A dipeptide derivative having the general formula:



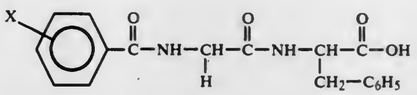
wherein X is OH in ortho or para position, or NH_2 or CH_3O in para position, Y is







excluding however dipeptide derivatives having the general formula:



wherein X is OH or CH_3O.

4,551,273

ANALGESIC PEPTIDE AND PROCESS FOR THE PREPARATION THEREOF

Shinro Tachibana, Kashiwa; Shizuko Ohya, Ushikumachi; Yoshihiro Arakawa, Sakuramura; Takahiro Nakazawa, Fujishiromachi; Takeru Kaneko, Yatabemachi; Masuhiro Ikeda, Toyosatomachi, and Kiyomi Yamatsu, Kamakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,804

Claims priority, application Japan, Feb. 1, 1983, 58-13785

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 E 1 Claim

1. A peptide having the primary structure: N-Me-Tyr-Gly-Gly-Phe-Leu-Arg-Arg-D.Ile-Arg-Pro-Lys-D.Leu-Lys-Trp-NH_2 in which D.Ile and D.Leu represent a D-Ile and a D-Leu residue respectively, other abbreviations of amino acids represent each an L-amino acid residue and Me represents a methyl group.

4,551,274

ELECTROLYTIC TREATMENT OF VEGETABLE PROTEIN

Jerome L. Shen, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 525,513, Aug. 22, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 679,099

Int. Cl.[4] A23J *1/14*

U.S. Cl. 260—123.5 32 Claims

1. A process for the treatment of a vegetable protein material to improve the whiteness thereof comprising:

(a) forming an aqueous slurry of the vegetable protein material having a pH of between about 4.5 and 8 and a proteinaceous solids level of between about 1 and 20% by weight,

(b) electrolytically reducing said slurry to thereby improve the whiteness of said protein material.

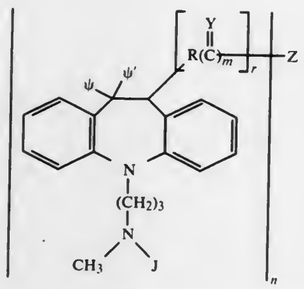
4,551,275

DESMETHYLIMIPRAMINE DERIVATIVES AND POLY(AMINO ACID) CONJUGATES

Marcel R. Pirio, San Jose, and Prithipal Singh, Sunnyvale, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 23, 1984, Ser. No. 592,492
Int. Cl.⁴ C07G *7/00*
U.S. Cl. 260—239 D **19 Claims**

1. A compound of the structure



wherein:

ψ and ψ' are hydrogen atoms or are taken together to form a double bond to an oxygen atom (oxo) when J is other than a hydrogen atom, being a hydrogen atom when Z is poly(amino acid);

Y is a chalcogen (oxygen or sulfur atom) or an imino group;

J is a hydrogen atom, or non-oxo-carbonyl, being non-oxo-carbonyl when ψ and ψ' are taken together to form oxo;

R is a bond or an aliphatic linking group of from 1 to 18 atoms other than hydrogen atoms comprising carbon, nitrogen, and chalcogen (oxygen and sulfur atoms);

Z is an amino group; thiol; thio substituted with alkyl of from 1 to 6 carbon atoms; or poly(amino acid); being a hydrogen atom when r is 0 and ψ and ψ' are taken together to form oxo;

m is 0 or 1;

r is 0 or 1, being 0 when ψ and ψ' are taken together to form oxo, and being otherwise 1;

n is 1 when Z is other than poly(amino aid) and is otherwise a number on the average between 1 and the molecular weight of Z divided by 500.

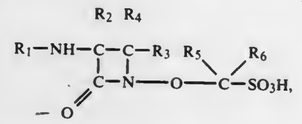
4,551,276

2-OXOAZETIDIN-1-YLOXYMETHYL SULFONIC ACID AND ANALOGS

William A. Slusarchyk, Belle Mead, N.J., and David Kronenthal, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 433,175, Oct. 6, 1982, abandoned. This application Jan. 23, 1984, Ser. No. 573,265
Int. Cl.⁴ C07D *205/08, 403/12, 401/12;* **A61K** *31/395*
U.S. Cl. 260—239 A **19 Claims**

1. A β-lactam having the formula



or a pharmaceutically acceptable salt thereof, wherein

R_1 is an acyl group derived from a carboxylic acid;

R_2 is hydrogen or methoxy;

R_3 and R_4 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered heterocycle, or one of R_3 and R_4 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl, $—CH_2—X_1$, $—S—X_2$, $—O—X_2$,

4,551,278

PREPARATION OF 20-KETO-Δ^{16}-STEROIDS

Albert M. van Leusen, Groningen, and Adriaan M. van Leusen, Winsum, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Apr. 27, 1984, Ser. No. 604,734

Claims priority, application European Pat. Off., Apr. 29, 1983, 83200617.5

Int. Cl.⁴ C07J *5/00*

U.S. Cl. 260—397.4 **19 Claims**

1. A process for the preparation of 20-keto-Δ^{16}-steroids comprising reacting a 17-(isocyanosulfonylmethylene)-steroid with an alkylating agent QR_4 wherein R_4 is an organic group and Q is a group or atom readily displaced with a nucleophile to form a 20-isocyano-20-sulfonyl-Δ^{16}-steroid followed by hydrolysis.

4,551,279

PROTEASE INHIBITORS

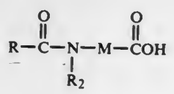
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jan. 9, 1984, Ser. No. 569,089

Int. Cl.⁴ C07C *103/46*

U.S. Cl. 260—404 **13 Claims**

1. Compounds of the formula:



wherein R is:
(a) alkyl of 15 to 19 carbon atoms, inclusive; being saturated, unsaturated or polyunsaturated;
wherein R_2 is: phenyl or phenyl methyl wherein the phenyl portion may optionally be substituted by Y and Z;
wherein Y and Z each being the same or different are:
(a) hydrogen;
(b) halogen;
(c) alkyl of 1 to 6 carbon atoms, inclusive;
(d) hydroxy;
(e) methoxy;
(f) acetoxy,
(g) carboxylic acid and its alkyl esters of 1 to 6 carbon atoms, inclusive;
(h) nitro; or
(i) phenyl;
wherein M is:
(a) phenyl substituted by X and W;
(b) methylene;
wherein W and X each being the same or different are:
(a) hydrogen;
(b) alkyl of from 1 to 6 carbon atoms, inclusive;
(c) hydroxy;
(d) methoxy;
(e) carboxylic acid and its alkyl esters of from 1 to 6 carbon atoms inclusive;
(f) halogen;
(g) $-NO_2$; or
(h) acetoxy;
wherein when W and X are contiguous they may be taken together to form a phenyl ring; and
wherein W and X may not both be hydrogen.

4,551,280

NEMATIC LIQUID CRYSTALLINE COMPOUNDS

Makoto Sasaki, Okegawa; Haruyoshi Sasaki, Kodaira, and Hisato Sato, Tokyo, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

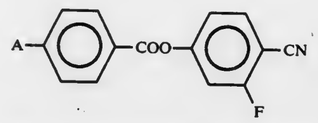
Filed Oct. 28, 1983, Ser. No. 546,534

Claims priority, application Japan, Oct. 30, 1982, 57-191063; Mar. 18, 1983, 58-44329; Mar. 18, 1983, 58-44330

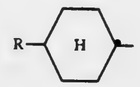
Int. Cl.⁴ C09K *3/34;* **C07C** *121/52, 121/75, 121/46*

U.S. Cl. 260—465 D **3 Claims**

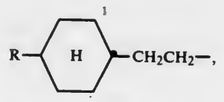
1. A compound of the general formula



wherein A denotes a substituted ring structure represented by the formula



or



the substituent R denotes a linear alkyl group having 1 to 9 carbon atoms, and the cyclohexane rings are both arranged in a trans(equatorial-equatorial)form.

4,551,281

PROCESS FOR THE PREPARATION OF CYCLOPROPANE CARBOXYLIC ACID ESTERS

John Crosby, Manchester, England, assignor to Imperial Chemical Industries PLC, London, England

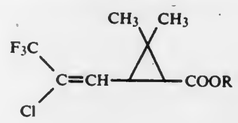
Continuation of Ser. No. 262,640, May 11, 1981, abandoned, which is a continuation of Ser. No. 81,056, Oct. 2, 1979, abandoned. This application Aug. 27, 1984, Ser. No. 644,230

Claims priority, application United Kingdom, Oct. 31, 1978, 42531/78

Int. Cl.⁴ C07C *67/317*

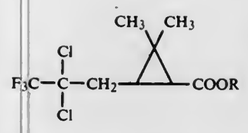
U.S. Cl. 260—465 D **7 Claims**

1. A process for the preparation of a cyclopropane carboxylic acid ester having the general formula:



Formula (I)

wherein R is a lower alkyl, m-phenoxybenzyl, α-cyano-m-phenoxybenzyl or α-ethynyl-m-phenoxybenzyl group, which comprises reacting a compound having the general formula:



Formula II

wherein R has the meanings stated above, with an alkali metal carbonate in a polar aprotic solvent, the alkali metal carbonate being selected from the group consisting of sodium carbonate and potassium carbonate.

4,551,282

TRIPHENYLENE DERIVATIVES

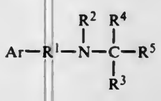
Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed May 31, 1983, Ser. No. 499,331

Int. Cl.⁴ C07C *157/09, 83/08, 91/16, 149/22*

U.S. Cl. 260—501.18 **9 Claims**

1. A compound of formula (I)



wherein Ar is a triphenylene or a triphenylene ring system substituted with halogen, C_{1-6} alkyl, C_{1-6} alkoxy, halo C_{1-6} alkyl, C_{1-6} alkylthio, hydroxy C_{1-6} alkyl, hydroxy C_{1-6} alkylthio, cyano, C_{1-6} alkylsulphinyl or C_{1-6} alkylsulphenyl; R^1 is a C_{1-3} alkylene moiety, R^2 is hydrogen or a C_{1-6} alkyl group; R^3 is a hydroxxy C_{1-6} alkyl group; and R^4 and R^5 are the same or different and are hydrogen, C_{1-6} alkyl groups or hydroxy C_{1-6} alkyl group, or a C_{1-6} alkyl carboxylic acid ester thereof.

4,551,283

PROCESS FOR ISOLATING 2-NAPHTHYLAMINE-3,6,8-TRISULFONIC ACID IN THE FORM OF THE MONOPOTASSIUM OR MONOAMMONIUM SALT

Rudolf Blattner, Rheinfelden, Fed. Rep. of Germany; assignor to Ciba Geigy AG, Basel, Switzerland

Filed Aug. 8, 1984, Ser. No. 638,845

Claims priority, application Switzerland, Aug. 17, 1983, 4486/83

Int. Cl.⁴ C07C *143/56*

U.S. Cl. 260—508 **8 Claims**

1. A process for isolating 2-naphthylamine-3,6,8-trisulfonic acid in the form of the monopotassium or monoammonium salt from the sulfonation mixture resulting from the sulfonation of the corresponding naphthylaminemonosulfonic or -disulfonic acid in oleum, which process comprises starting from a sulfonation mixture which contains the naphthylaminetrisulfonic acid in the form of the monopotassium or monoammonium salt, charging said mixture into water or dilute sulfuric acid such that the concentration of the sulfuric acid in the dilute solution or suspension of the sulfonation mixture is 30 to 77% by weight, simultaneously allowing the temperature to rise to 90° to 125° C., subsequently slowly cooling said solution or suspension to a temperature below 40° C., during said cooling adding at least 0.1% by weight, based on naphthylaminetrisulfonic acid, of a dispersant, and isolating the precipitated monopotassium or monoammonium salt of 2-naphthylamine-3,6,8-trisulfonic acid.

4,551,284

CARBURETOR WITH A SLIDABLE THROTTLE MEMBER CONTROLLING THE AIR INDUCTION PASSAGE

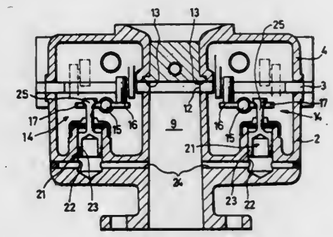
Dieter Stojek, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 9, 1984, Ser. No. 639,276

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1983, 3330235

Int. Cl.⁴ F02M *9/06*

U.S. Cl. 261—44 B **6 Claims**



1. In a carburetor having a slide type throttle member controlling flow through the induction passage, said slide being sealingly and slidably movable laterally on a planar surface extending substantially normal to the induction passage, the slide sealing surfaces being subjected to a vertical downward loading resulting from the pressure differential between a near atmospheric pressure acting on top of the slide and engine intake manifold vacuum acting beneath the slide, and an unloading mechanism responsive to changes in the vacuum below the slide for opposing the vertical downward loading exerted on the guide surface to enable lateral movement of the slide with minimum effort, the improvement comprising,

lifting rail means tiltably mounted for rotation about an axis parallel to the slide surface, roller means rotatably secured to the slide and engaged by one side portion of the lifting rail projecting laterally to one side of the axis for exerting a vertical upward force on the slide upon predetermined pivotal movements of the rail, a manifold vacuum actuated device secured to another portion of the lifting rail projecting laterally to the opposite side of the axis for tilting the rail with a force varying in response to the changes in manifold vacuum, and a further lever arrangement operably connected to the slide and pivotally mounted for an arcuate movement essentially horizontally for moving the slide in opening and closing directions.

4,551,285

FLOTATION MACHINE AND AERATION IMPELLER

Michael A. Jackson, Sacramento, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Feb. 9, 1984, Ser. No. 578,343

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—87 **23 Claims**

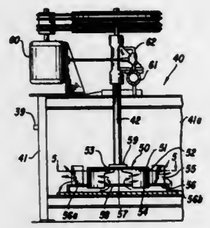
17. A rotatable impeller for a flotation machine, said impeller comprising:

a disc having a central aperture for receiving an air supply;

a series of radially extending and vertically depending blades affixed to bottom portions of said disc; and

wherein said blades include a first radially-inward vane for inducing air from said central aperture to an interblade region and a second radially-outward blade extending to a position adjacent the outer periphery of said disc for

pumping and distributing aerated pulp in a flotation machine, said first vane at its point of intersectin with the



second blade being significantly shorter than the second blade.

4,551,286

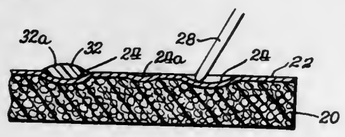
METHOD OF MAKING PICTURES

William A. Jones, Box 189, Everett, Wash. 98201

Continuation-in-part of Ser. No. 284,939, Jul. 20, 1981, Pat. No. 4,499,127. This application Sep. 29, 1982, Ser. No. 426,605

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—1.9 **15 Claims**



1. A method of making a picture comprising the steps, utilizing a sheet having a regular and uniform surface and of predetermined size to correspondingly determine the size of a picture to be made, and presenting said surface to be viewed to an observer, and

applying substances to said surface of the sheet in the form of individually dimensioned and proportioned particles and positioned relative to each other as to form a predetermined picture, and further form a picture independently of and separate from that portion of the sheet that is not covered by the substances and that constitutes a portion of said regular surface,

including the step of preselecting such substances that are transparent and the particles thereby reflect light from the surface thereof that is directed to the observer and reflect, from the opposite surface, light that passes through the first mentioned surface.

4,551,287

METHOD OF MAKING A HOLLOW-CHARGE INSERTS FOR ARMOR-PIERCING PROJECTILES

Karl W. Bethmann, Düsseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 23,530

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813588

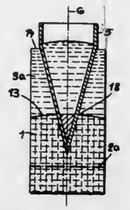
Int. Cl.⁴ C06B *21/00*

U.S. Cl. 269—3 R **12 Claims**

1. A method of making a charge insert for charge shaping in projectiles, comprising the steps of:

(a) disposing a body of an insert-forming metal along a growth axis and inserting therein a rotationally symmetrical shaping member which is generally conical such that the axis of said shaping member lies substantially along said growth axis and commencing at a point inwardly from one end of said body, said member converging toward said point;

(b) progressively melting said body from said one end thereof to said other end thereof and subjecting the melted portion to directional solidification with a directional solidification front progressively displaced along said growth axis from said one end of said body toward the other end thereof whereby said body is transformed into a monocrystalline structure having the shape of said insert; and



(c) removing said member from said body, said member being removed from the monocrystalline body by cooling same below the temperature of said monocrystalline body or by heating said monocrystalline body relative to said member.

4,551,288

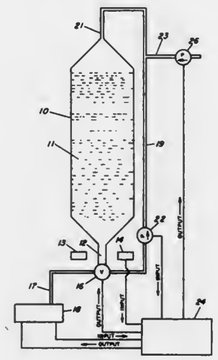
PROCESSES FOR THE PREPARATION OF LIPOSOME DRUG DELIVERY SYSTEMS

Lawrence A. Kelly, Morris Plains, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 408,188, Aug. 16, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,652

Int. Cl.⁴ B01J *13/02;* **A61K** *9/50*

U.S. Cl. 264—4.6 **18 Claims**



1. A process for the preparation of a liposome medicament delivery system which comprises applying an aqueous micellar medicament-detergent-aliphatic lipid-sterol composition to a gel filtration column, monitoring the column effluent to detect the liposome fraction eluted, and collecting the liposome fraction.

10. A continuous process for the preparation of a liposome medicament delivery system which comprises applying an aqueous micellar medicament-detergent-aliphatic lipid-sterol composition to a gel filtration column, monitoring the column effluent to detect the liposome fraction eluted, continuously recycling the non-liposome effluent from the column, while collecting the liposome fraction.

4,551,289

METHOD OF AND APPARATUS FOR MAINTAINING A CONSTANT WALL THICKNESS FOR AN EXTRUDED ARTICLE

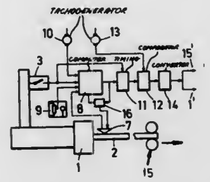
Erwin Schwab, Meinerzhagen; Graziano Parisi, Bad Oeynhausen, and Peter Pander, Düsseldorf, all of Fed. Rep. of Germany, assignors to Battenfeld Extrusionstechnik GmbH, Bad Oeynhausen, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,723

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304865

Int. Cl.⁴ B29D *7/22*

U.S. Cl. 264—23 **17 Claims**



1. A method of operating an extruder for producing a continuous synthetic resin strand having a wall thickness and a width transverse to a direction of extrusion and engaged by a device for drawing said strand from said extruder, said extruder being provided with a measuring cylinder at an upstream end thereof and with a unit for introducing synthetic resin granules into said cylinder, said method comprising the steps of:

(a) at an initial stage in the extrusion of said strand from said extruder, displacing a thickness measuring head trasverse to the direction of extrusion over the entire width of said strand to produce wall thickness measurement signals over this width;

(b) integrating the wall thickness measuring signals to produce a mean value of the wall thickness over said path of said strand;

(c) comparing said mean value with a set point value determined by a weight per unit length of the extruded strand measurement and a measurement of rate of extrusion of said strand to provide a correction value;

(d) continuing the extrusion of said strand from said extruder while measuring the wall thickness of said strand with said head; and

(e) controlling the operation of at least one of said extruder and said device in response to an actual value output of said head corrected by said correction value.

10. In an apparatus for the extrusion of a synthetic resin strand having an extruder from which said strand emerges at a downstream end, a measuring cylinder at an upstream end of said extruder, means for feeding synthetic resin granules into said measuring cylinder and a device engaging said strand for drawing said strand away from said extruder, the improvement which comprises:

a wall thickness measuring head disposed downstream of said extruder for measuring the wall thickness of the extruded strand;

means for displacing said head transverse of said strand for enabling said head to generate wall thickness measuring signals over the entire periphery of said strand;

integrating means for integrating said signals for producing a mean wall thickness value;

means forming a set point value from a measurement of extruded strand weight per unit length and rate of extrusion of the strand;

a comparator for comparing said mean value with said set point value to produce a correction value; and

means for controlling at least one of said extruder and said device continuously in response to an output from said head corrected by said correction value to maintain a minimum wall thickness of the extruded strand.

4,551,290

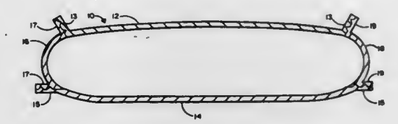
METHOD OF FABRICATING HOLLOW PLASTIC OBJECTS AND APPARATUS THEREFOR

James A. Mizell, 13311 Kelly St., Garden Grove, Calif. 92644

Filed Nov. 21, 1984, Ser. No. 673,570

Int. Cl.⁴ B29D *27/04*

U.S. Cl. 264—46.6 **7 Claims**



1. A process for fabricating a closed, generally flat, object such as a surfboard, said process comprising the following steps:

(a) providing a disassemblable mold having at least four parts comprising a bottom part, a top part and a pair of side rail parts, the interior surface of said mold having the desired shape of the exterior surface of said object;

(b) disassembling said mold and applying a clear gel coat to the interior surface of each said mold part;

(c) applying laminations of a resin and reinforcing material mixture to each of said mold parts;

(d) applying a layer of toluene diisocyanate to at least said top and bottom parts;

(e) subjecting said top and bottom parts to a vacuum until said layers of toluene diisocyanate are each firmly adhered to the respective laminations of said mixture;

(f) affixing the side rail parts to the bottom part and attaching an elongated mold to the side rail parts, said elongated mold having an L-shaped protrusion extending inwardly into the cavity of the mold parts, the bottom part of the "L" directed toward the center of the cavity;

(g) coating the interior of the cavity and the inwardly facing portion of the L-shaped portion of the elongated mold with a resin and reinforcing material mixture thereby forming an L-shaped step along the edge of the opening of said cavity;

(h) allowing the resin mixture to become structurally strong and removing the elongated mold thereby exposing an L-shaped step about the opening in said cavity;

(i) applying strips of resin and reinforcing material mixture to said L-shaped step and closing said cavity by connecting said top part to said rail parts; and

(j) allowing the resulting assembly to cure.

4,551,291

SURFACE IMPROVEMENT OF SEMICONDUCTORS IN HIGH SPEED CASTING

G. Felix Wakefield, Woodland Hills; David L. Bender, and Samuel N. Rea, both of Thousand Oaks, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

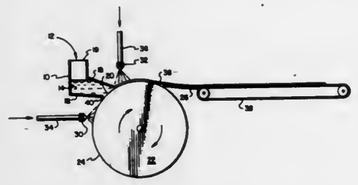
Continuation of Ser. No. 391,210, Jun. 23, 1982, abandoned. This application Oct. 11, 1983, Ser. No. 540,692

Int. Cl.⁴ B29D *7/00*

U.S. Cl. 264—104 **7 Claims**

1. In a method of producing semiconductor ribbon material in which a body of molten semiconductor material is brought

into contact with a moving chill surface in a substantially inert atmosphere;



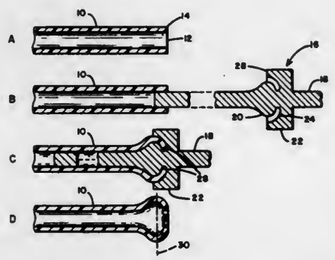
the improvement comprising injecting water vapor into said substantially inert atmosphere, whereby surface smoothness of produced ribbon is improved.

4,551,292

METHOD FOR MAKING A CATHETER WITH A SOFT, DEFORMABLE TIP

Bruce W. Fletcher, Plymouth; Mark A. Rydell, Excelsior, and Edward W. Reese, Maple Grove, all of Minn., assignors to Angiomedics, Inc., Plymouth, Minn.

Filed Apr. 5, 1984, Ser. No. 596,919
Int. Cl.⁴ B29C *17/02*
U.S. Cl. 264—139 **8 Claims**



1. A method of forming a soft, deformable tip on the distal end of a tubular thermoplastic or elastomeric catheter, comprising the steps of:

(a) providing a tubular, thermoplastic or elastomeric catheter;

(b) providing a forming tool having a cylindrical wire member of an outside diameter approximately equal to the diameter of the lumen of said tubular catheter and a protuberance of a predetermined shape symmetrically disposed on said wire member;

(c) inserting said forming tool into the lumen of said catheter at its distal end;

(d) advancing said forming tool into said lumen until said protuberance enters said lumen to expand the thermoplastic material about said protuberance;

(e) heating said distal end of said catheter containing said protuberance to the softening point of the thermoplastic employed to create a preferential fold-line in the expanded portion of said distal end of said catheter;

(f) cooling said distal end of said catheter below the softening point of the plastic; and

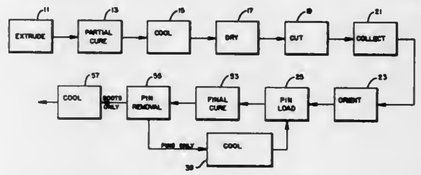
(g) extracting said forming tool from said lumen.

4,551,293

METHOD OF FORMING SPARK PLUG BOOTS

Larry F. Diehl, Jr., and Robert M. Gibbon, both of Fort Worth, Tex., assignors to Jamak, Inc., Weatherford, Tex.

Filed Mar. 5, 1984, Ser. No. 586,337
Int. Cl.⁴ B29H *5/01*
U.S. Cl. 264—150 **6 Claims**



1. A method of forming a tubular elastomeric member with at least one internal shoulder, comprising:

extruding a tube from a selected uncured elastomeric material; then

heating the tube to vulcanize it to a partially cured condition to increase the hardness of the tube sufficiently to enable it to be cut and stretched a selected amount;

cutting the tube into individual tubular members;

placing each piece of the tubular member into a bore of a carrier;

providing a pin with a base and a tip of smaller diameter than the base but with greater diameter than the inner diameter of the tubular member and at least one external shoulder, and providing the pin with a bleed off passage leading from the external shoulder to the exterior of the pin;

inserting the pin into the tubular member while simultaneously applying air pressure into the tubular member to expand and stretch the tubular member over the pin, allowing trapped air to bleed off through the bleed off passage, with the carrier limiting the expansion of the tubular member due to the air pressure; then

removing the pin from the bore of the carrier with the tubular member stretched thereon and heating the pin and tubular member to vulcanize the tubular member to a desired cure, retaining an internal shoulder in the tubular member at the point of the external shoulder of the pin; and

stripping the tubular member from the pin and cooling the tubular member.

4,551,294

MOLDING COMPOSITION BASED ON VINYL CHLORIDE POLYMERS, AND PROCESS FOR THE MANUFACTURE OF FILMS FROM THESE MOLDING COMPOSITIONS FOR THE PRODUCTION OF FORGERY-PROOF VALUABLE DOCUMENTS

Bernhard Wottka, Kastl, and Alfred Weindl, Altötting, both of Fed. Rep. of Germany, assignors to Heochst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,690
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 3336647
Int. Cl.⁴ B29D *7/14*; C08L *1/02, 27/06*
U.S. Cl. 264—175 **4 Claims**

1. A molding composition based on vinyl chloride polymers, for the manufacture of films for the production of forgery-proof valuable documents, consisting essentially of

A. 5 to 20% by weight of an impact strength modifier for vinyl chloride polymers, selected from the group comprising the acrylonitrile/butadiene/styrene polymers, methyl methacrylate/butadiene/styrene polymers, methyl methacrylate/acrylonitrile/butadiene/styrene polymers, each of said polymers having a butadiene content of at least about 35% by weight relative to the total polymer, and chlorinated ethylene polymer, said chlorinated ethylene polymer having a chlorine content of about 20 to 50% by weight relative to the chlorinated ethylene polymer and having a mean molecular weight of about 10,000 to 100,000 when calculated from the chlorine content and the molecular weight of the starting ethylene polymer as determined by gel chromotography;

B. 0.5 to 25% by weight of powdered pure cellulose which has a mean degree of polymerization of 300 to 1,000 and the particles of which have a maximum diameter of 0.09 mm;

C. 1 to 5% by weight of polymethyl methacrylate; and

D. vinyl chloride polymer having at least about 70% by weight polymerized vinyl chloride units relative to the weight of the polymer, in such a quantity that the sum of the weights of said components A, B, C and D gives 100% by weight; and additionally

E. about 0.1 to 2.5% by weight of lubricant and about 0.5 to 3% by weight of heat stabilizer for said vinyl chloride polymer, both relative to the quantity by weight of said component D.

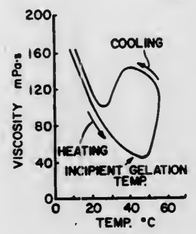
4. A process for the manufacture of calendered films from the molding compositions as claimed in claim 1, which comprises pre-gelling the molding composition at a temperature from 150° to 170° C., and calendering the pre-gelled material on a calender comprising four or five calender rolls at a temperature from 190° to 210° C. to give a film, the rolls being heated individually in such a way that the first and last rolls have approximately the same temperature and the intervening rolls have temperatures which are 5° to 10° C. higher than those of the other two rolls.

4,551,295

PROCESS FOR MIXING AND EXTRUDING CERAMIC MATERIALS

Robert W. Gardner, Big Flats; Donald L. Guile, Horseheads, and Merrill Lynn, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,374
Int. Cl.⁴ B29B *1/10*
U.S. Cl. 264—177 R **12 Claims**



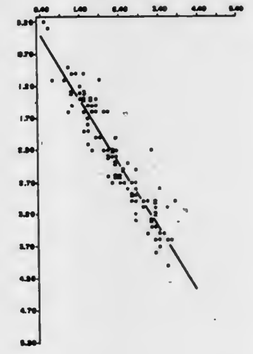
1. In the method for making ceramic articles of widely-differing profiles and shapes by providing a plastically-deformable batch comprising a mixture of particulate ceramic material, water, a binder/plasticizer, and, an extrusion aid, charging the batch into an extrusion apparatus to mix, de-air, convey, and force the batch through a die having a desired configuration, the improvement which comprises including a gel-type binder/plasticizer having a viscosity at 20° C. between 25,000–100,000 centipoises in said batch and utilizing a twin screw extrusion apparatus wherein the screws of said apparatus are self-cleaning, intermeshing, and co-rotating to mix, de-air, convey, and force the batch through a die at working temperatures greater than 35° C.

4,551,296

PRODUCING HIGH TENACITY, HIGH MODULUS CRYSTALLINE ARTICLE SUCH AS FIBER OR FILM

Sheldon Kavesh, Whippany, and Dusan C. Prevorsek, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 359,020, Mar. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 259,266, Apr. 30, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,607
Int. Cl.⁴ D01F *6/00*
U.S. Cl. 264—177 F **30 Claims**



1. A process for producing a high strength, high modulus shaped thermoplastic article of substantially indefinite length which comprises the steps:

(a) forming a solution of a thermoplastic crystalline polymer selected from the group consisting of polyethylene, polypropylene, polyoxymethylene, polybutene-1, poly(vinylidene fluoride) and poly(4-methylpentene-1) in a first, non-volatile solvent at a first concentration of about 2 to 15% by weight of polymer per unit weight of first solvent, said thermoplastic polymer having a weight average molecular length between about 7×10^4 and about 71×10^4 backbone atoms and the solubility of said thermoplastic polymer in said first solvent at a first temperature being at least said first concentration;

(b) extruding said solution through an aperture, said solution being at a temperature no less than said first temperature upstream of the aperture and being substantially at the first concentration both upstream and downstream of the aperture;

(c) cooling the solution adjacent to and downstream of the aperture to a second temperature below the temperature at which a gel is formed to form a gel containing first solvent of substantially indefinite length;

(d) extracting the gel containing first solvent with a second, volatile solvent for a sufficient contact time to form a gel containing second solvent which gel is substantially free of first solvent and is of substantially indefinite length;

(e) drying the gel containing second solvent to form a xerogel of substantially indefinite length free of first and second solvent; and,

(f) stretching at a sufficient temperature at least one of:

(i) the gel containing the first solvent,

(ii) the gel containing the second solvent and,

(iii) the xerogel

at a total stretch ratio:

(i) in the case of polyethylene which is sufficient to achieve a tenacity of at least about 20 g/denier and a modulus of at least about 600 g/denier,

(ii) in the case of polypropylene which is sufficient to achieve a tenacity of at least about 10 g/denier and a modulus of at least about 160 g/denier, and

(iii) in the case of polyoxymethylene, polybutene-1, poly(-

vinylidene fluoride) or poly(4-methylpentene-1) of at least about 10:1.

4,551,297

METHOD OF MAKING AN EMBOSSING CYLINDER

Hugo Bötcher, Hanover; Klaus Heimrich, Garbsen; Gustav Hildebrandt, Auetal; Heinrich Kracke, Lehrte, and Johannes Richter, Celle, all of Fed. Rep. of Germany, assignors to J. H. Benecke GmbH, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,126

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333179; Feb. 20, 1984, 3405985

Int. Cl.⁴ B29C *1/02*

U.S. Cl. 264—224 **11 Claims**

1. A method for making an embossing cylinder having a silicone rubber surface with a negative impression of grain design which comprises

(a) providing a sheet of natural leather having the desired grain design,

(b) pouring liquid vulcanizable silicone rubber on to the grained surface to form a uniformly thick coating,

(c) vulcanizing the silicone rubber to provide an embossing matrix having an accurate negative impression of said grain design,

(d) stripping said embossing matrix from said leather sheet,

(e) laying a thermoplastic film, having opposed parallel edges, on the grained surface of said matrix and subjecting the film to heat and pressure to form a positive impression on the surface,

(f) stripping the film from the matrix and forming it into a tube with the embossed surface on the outside and said parallel edges abutting,

(g) placing said embossing matrix over said abutting edges and the marginal area on either side thereof,

(h) subjecting the film beneath said matrix to heat and pressure to overemboss the previously embossed surface in said marginal areas,

(i) pouring vulcanized silicone rubber on the embossed surface to form a uniformly thick blanket,

(j) vulcanizing the silicone rubber blanket,

(k) stripping the blanket from the embossed surface, and

(l) adhering the blanket, embossed side out, to the surface of a cylinder.

4,551,298

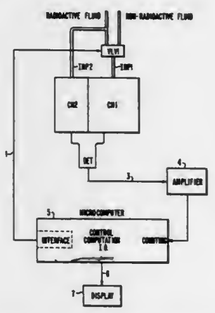
RADIATION MONITORING APPARATUS

Norman P. Goldstein, Murrysville, Pa., and Stephen A. Lane, Cockeysville, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 26, 1982, Ser. No. 382,434

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—245 **24 Claims**



1. A radiation monitor system comprising two chambers and radiation detector means adapted to be responsive to radioactive fluid present in said chambers and to existing radioactive background; means being provided for comparing the responses of said radiation detector means in a first mode of operation when radioactive fluid is contained in at least one of said chambers and in a second mode of operation when radioactive fluid is contained in the other of said chambers, whereby information free from said radioactive background is derived from said comparing means.

4,551,299

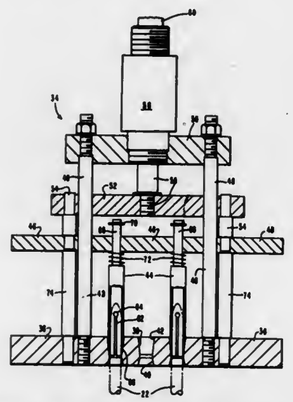
MULTIPLE FUEL ROD GRIPPER

Edward P. Shields, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1982, Ser. No. 418,141

Int. Cl.⁴ G21C *19/00*

U.S. Cl. 376—261 **11 Claims**



1. A multiple fuel rod gripper for extracting nuclear fuel rods from a nuclear fuel assembly comprising:

a locking plate having a plurality of tapered holes therein corresponding to the arrangement of fuel rods to be extracted from a fuel assembly;

a plurality of attachment rods connected to said locking plate;

a support plate connected to said attachment rods;

a top plate slidably disposed on said attachment rods between said support plate and said locking plate;

a plurality of shafts independently slidably disposed through said top plate;

a plurality of metallic flexible substantially cylindrical hollow collets having a closed end attached to one of said shafts and having an open end for accepting and gripping one of said fuel rods in said tapered holes;

a biasing means disposed around each of said shafts and between said collets and said top plate for urging said collets toward said locking plate; and

actuating means disposed on said support plate and connected to said top plate for selectively moving said top plate relative to said attachment rods thereby forcing said collets into said tapered holes for gripping said fuel rods.

4,551,300

NUCLEAR REACTOR FUEL ASSEMBLY END FITTING

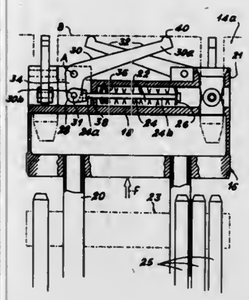
Claude Feutrel, Vauhallan, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 10, 1983, Ser. No. 456,739

Int. Cl.⁴ G21C *3/30*

U.S. Cl. 376—364 **7 Claims**

1. A nuclear reactor fuel assembly end fitting comprising a frame having sides, a closed recess provided in each side of said frame, elastic means contained in each closed recess, a plurality of elongate levers, the number of levers being equal to the number of sides of the frame, each lever having a first end adapted to bear against a reactor vessel element and a second end, said lever being spaced from said elastic means, the cross-section of the lever increasing from said first end to said second end for maintaining stress per unit of lever cross-sectional area essentially constant, pivot axis forming means pivotally connected to each lever between said lever first and second ends



and mounted on said frame for pivotally connecting each lever to said frame, coupling means connecting each of said lever second ends to a corresponding elastic means and spacing each of said levers from said corresponding elastic means for separating each of said levers from said corresponding elastic means, said elastic means exerting a restoring torque on the corresponding lever via said coupling means.

4,551,302

DENTAL ALLOY BASED ON PALLADIUM FOR THE PRODUCTION OF FIXED AND REMOVABLE DENTAL CONSTRUCTIONS

Rudolph Wagner, Remchingen, and Harry Schiwiora, Pforzheim, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,701

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316595

Int. Cl.⁴ C22C *5/04*

U.S. Cl. 420—464 **3 Claims**

1. A dental alloy suitable for the production of fixed and removal dental constructions consisting essentially of 65–80% palladium, 0.5–5% gold, 0.5–5% platinum, 3–8% copper, 4–8% gallium, 4–9% tin and 0.2–0.7% rhenium or 0.7–0.9% ruthenium.

4,551,303

METHOD OF USING AN EVAPORATION SOURCE

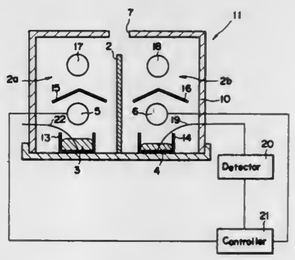
Hiroyuki Moriguchi, Koufu; Masanori Matsumoto, Hachioji; Akira Nishiwaki, Hachioji; Yasuo Morohoshi, Hachioji, and Hiroyuki Nomori, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,215

Claims priority, application Japan, Sep. 4, 1982, 57-154240; Sep. 4, 1982, 57-154241

Int. Cl.⁴ C22C *28/00*

U.S. Cl. 420—590 **11 Claims**



1. A method of using an evaporation source designed so that two or more materials to be evaporated are heated to evaporate by respective heaters comprising detecting the temperature of material to be evaporated contained in each of a plurality of receptacles for holding materials to be evaporated, detecting the temperature of the material to be evaporated having the slowest evaporation rate, and controlling at least one heater associated with each of said receptacles and providing the energy for evaporation of the material contained in that receptacle to maintain the power delivered to each of such heaters constant as long as the temperature of said material with the slowest evaporation rate remains constant.

4,551,301

SINTERED COMPOUND MATERIAL FOR ELECTRICAL CONTACTS AND METHOD FOR ITS PRODUCTION

Horst Schreiner, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 7, 1984, Ser. No. 577,748

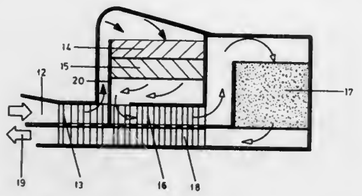
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305270

Int. Cl.⁴ B22F *1/00*

U.S. Cl. 419—21 **18 Claims**

1. In a sintered compound material of silver, stannic oxide, bismuth oxide and copper oxide ($AgSnO_2Bi_2O_3CuO$) for use as an electrical contact, wherein the mean particle sizes of the stannic oxide, bismuth oxide and copper oxide in the silver material structure zones are between 0.1 and 5 μm, and wherein the stannic oxide share is between 6 and 15 percent by weight, and both the bismuth oxide share and the copper oxide share are each between 0.2 and 2 percent by weight, the improvement wherein the material contains at least one other metal oxide additive which sublimes below the melting temperature of silver and which forms a share of the material between 0.2 and 2 percent by weight; wherein the stannic oxide, the bismuth oxide and the copper oxide are globularly precipitated in silver material structure zones having a maximum diameter of 200 μm; and wherein the metal oxide additive is distributed on the surface of these structure zones of silver, stannic oxide, bismuth oxide and copper oxide.

4,551,304
METHOD OF CLEANING AIR LOADED WITH POLLUTANTS
Heinz Hölter, Beisenstr. 39-41, 4390 Gladbeck; Heinrich Igelbüscher, Gladbeck; Heinrich Gresch, Dortmund-Wickede, and Heribert Dewert, Gladbeck, all of Fed. Rep. of Germany, assignors to Heinz Hölter, Gladbeck, Fed. Rep. of Germany
Division of Ser. No. 387,853, Jun. 4, 1982, Pat. No. 4,451,435.
This application May 14, 1984, Ser. No. 610,246
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 3039238; Nov. 11, 1980, 3042455; Jan. 31, 1981, 3103302; Jan. 31, 1981, 3103303; Jul. 9, 1981, 3127129; PCT Int'l Appl., Sep. 30, 1981, PCT/EP81/00153
Int. Cl.[4] A61L *9/00*
U.S. Cl. 422—4 **16 Claims**



9. A method of cleaning air contaminated with at least one toxic substance for supply to a cabin adapted to be occupied by a person and utilizing a gas filter whereby the air before entry into the filter is subjected to a heating and after leaving the filter and before entering the cabin is subjected to a cooling, said method comprising the steps of:

partially heating the air to a temperature of 20° to 30° C. before the air enters the filter;

contacting the partially heated air with a sorption layer of the filter which is constituted as a multilayer filter to reduce toxic substance content of the air;

thereafter further heating the air to a temperature of 55° to 60° C.;

passing the further heated air through a catalyst layer of said multilayer filter to further reduce the toxic substance content of the air;

cooling the air after it has traversed said catalyst layer; and introducing the cooled air into said cabin.

4,551,305
REDUCTION OF ORGANIC WASTE ODORS
Randall B. Nelson, Olympia, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 21, 1983, Ser. No. 544,384
Int. Cl.[4] A61L *9/00*
U.S. Cl. 422—5 **13 Claims**

1. A amine and ammonia odor reducing formulation, comprising:

(a) spent sulfite liquor containing substantially undegraded lignosulfonates and sugars;

(b) 1.0 to 15.0% by weight of acetic acid, based upon the solids content of the spent sulfite liquor;

(c) 0.5 to 10.0 grams of phenolic carbonyl compound per liter of said reducing formulation; and

(d) an alkaline pH-modifying substance in an amount sufficient to adjust the pH to a value of from 6.5 to 8.0.

10. A process for reducing amine and ammonia odors of organic waste material, which comprises contacting said organic waste material with a reaction mixture comprising:

(a) spent sulfite liquor containing substantially undegraded lignosulfonates and sugars;

(b) 1.0 to 15.0% by weight of acetic acid, based upon the solids content of the spent sulfite liquor;

(c) 0.5 to 10.0 grams of phenolic carbonyl compounds per liter of such reaction mixture; and

(d) an alkaline pH-modifying substance in an amount sufficient to adjust the pH to a value of from 6.5 to 8.0.

4,551,306
SEALED REAGENT MATRIX
Dale W. Bouwman, and Harold K. Clayborn, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed May 20, 1983, Ser. No. 496,452
Int. Cl.[4] G01N *33/52*
U.S. Cl. 422—56 **7 Claims**

1. A reagent test device comprising multiple reagent carrier matrices attached in spaced relationship to one side of a substrate, said reagent carrier matrices being impregnated with water repellent material on opposing facing edges in an amount sufficient to seal opposing facing edges to prevent liquid runover between adjoining spaced carrier matrices.

4,551,307
ANALYTICAL ELEMENT
Mikio Koyama; Shozo Kikugawa, and Kenichiro Okaniwa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed May 25, 1982, Ser. No. 381,794
Claims priority, application Japan, May 28, 1981, 56-82372
Int. Cl.[4] G01N *33/52, 33/54*
U.S. Cl. 422—56 **23 Claims**

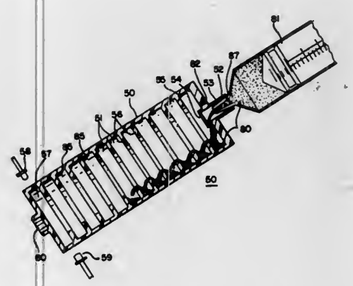
1. An analytical element for detecting a component in a liquid sample, said analytical element containing a light-transmissive and liquid-impermeable support and at least one developing layer having a fibrous structure, said fibrous structure comprising fibers which are loose and randomly entangled with each other in said at least one developing layer, said fibers having a size of from 50 to 325 mesh,

said at least one developing layer containing at least one interactive composition capable of reacting with said component to be detected and said interactive composition being bound to the fibers of said developing layer through a compound having a first reactive group for binding to said fibers and a second reactive group for binding to said interactive composition, and a portion of said reactive groups of said compound being bound to at least one of each other and groups in a binder or adjacent layers, thereby increasing the mechanical strength of the developing layer of fibrous structure and greatly enhancing adhesion to the adjacent layers.

4,551,308
APPARATUS FOR ANALYZING THE INFLUENCE OF ADDITIVE REAGENTS UPON THE COAGULATION OF BLOOD AND RELATED METHODS
Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corp., Edison, N.J.
Division of Ser. No. 281,661, Jul. 9, 1981, Pat. No. 4,443,408.
This application Dec. 23, 1983, Ser. No. 549,070
Int. Cl.[4] G01N *21/03, 21/75, 33/86*
U.S. Cl. 422—58 **4 Claims**

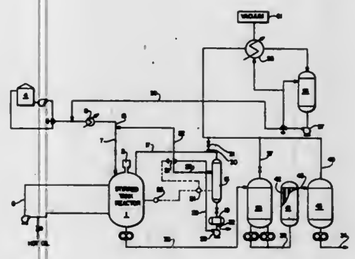
1. An article of manufacture for use as a blood specimen sample holder in performing optical analysis of the coagulation time of a blood sample, comprising:

a longitudinal tubular member fabricated from a transparent rigid plastic having a surface roughness adhesiveness for clotted blood to permit clotted blood to adhere to it, said longitudinal tubular member being symmetrically disposed about an axis and having a closed bottom and an opened top for receiving a blood sample, said member having a plurality of annular walls disposed about the inner surface to form a plurality of chambers with said walls each of a predetermined height and relatively concentric to form a blood sample passageway from the opened top to the closed bottom, whereby when a blood sample is introduced into said opened top and said member is tilted from the horizontal blood will flow into a first chamber until it is filled and overflow over said associated



wall into the next chamber and so on until each of said chambers contains a sample pool of said blood.

4,551,309
APPARATUS FOR PRODUCING STYRENIC/ALKENYLNITRILE COPOLYMERS
Jeffrey D. Morris, and Robert A. Fuller, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.
Division of Ser. No. 422,767, Sep. 24, 1982, abandoned. This application Oct. 3, 1983, Ser. No. 538,235
Int. Cl.[4] C08G *18/32, 18/60*
U.S. Cl. 422—135 **13 Claims**



1. An apparatus for the continuous mass polymerization of styrenic and alkenylnitrile monomers to produce a styrenic-/alkenylnitrile copolymer, comprising:

a reaction vessel;

means for continuously introducing a feed comprising a predetermined ratio of styrenic and alkenylnitrile monomers into said reaction vessel to produce a reaction mixture;

means for subjecting the reaction mixture containing styrenic and alkenylnitrile monomers to conditions of temperature and pressure under which said monomers copolymerize to produce a styrenic/alkenylnitrile copolymer;

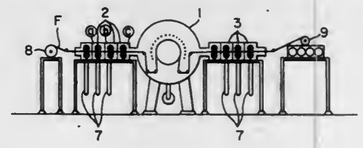
means for subjecting the reaction mixture to agitation sufficient to maintain a substantially uniform composition distribution and a substantially uniform temperature distribution throughout the reaction mixture;

means for continuously withdrawing styrenic/alkenylnitrile copolymer from the reaction vessel; and

a devolatilizer for removing volatile components from the styrenic/alkenylnitrile copolymer withdrawn from the reaction vessel, wherein said devolatilizer comprises a first stage comprising means for restoring in the withdrawn copolymer the ratio of styrenic to alkenylnitrile monomers to approximately the same ratio as the predetermined styrenic:alkenylnitrile ratio of the feed including means for maintaining the pressure of the first stage devolatilizer at a level sufficient to provide a monomer-containing vapor phase and means for selectively venting alkenylnitrile monomer-rich vapor; and

a second stage comprising means for heating the withdrawn styrenic/alkenylnitrile copolymer to a temperature sufficient to volatilize substantially all of the volatile components therein, and means for separating the volatilized component from the non-volatilized copolymer.

4,551,310
CONTINUOUS VACUUM TREATING APPARATUS
Kiyoshi Imada, Omiya; Susumu Ueno, Ibaraki; Hirokazu Nomura, Ibaraki; Masaie Tohkai, Ibaraki; Yoshitada Hata, Matsudo, and Kenichi Kato, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 288,502, Jul. 30, 1981, abandoned. This application Mar. 27, 1984, Ser. No. 593,964
Claims priority, application Japan, Jul. 30, 1980, 55-103630
Int. Cl.[4] B01J *19/08, 19/12;* **B05C** *3/132*
U.S. Cl. 422—186.05 **14 Claims**



1. A continuous vacuum treating apparatus adapted to treat a flexible plastic film, the apparatus comprising: a vacuum treating chamber, at least one auxiliary vacuum chamber disposed at each of an upstream and a downstream side of said vacuum treating chamber, the auxiliary vacuum chambers each including a case and a pair of opposed seal rolls arranged for pressing said film between the nip of said rolls, one of said seal rolls in wholly made of a metal while the other of said seal rolls has a metallic core and an elastic member on an outer surface of said metallic core, means for effecting seals between said seal rolls and said case along an entire axial length of said rolls including ripple members constituted by elastic members coated with a film of a material having a low friction coefficient, means for effecting seals between both end surfaces of said seal rolls and said case including side pieces for contacting both ends of said seal rolls and at least a pressure adjusting means for pressing one of said side plates against associated end surfaces of said seal rolls, and said apparatus further comprising means for driving at least one of said seal rolls of each of said pairs of seal rolls of the auxiliary vacuum chambers. said driving means including means for adjusting the driving speed of the seal rolls of said upstream auxiliary vacuum chamber and the seal rolls of said downstream auxiliary vacuum chamber with respect to each other, and vacuum pump means for evacuating said vacuum treating chamber and said auxiliary vacuum chambers.

4,551,311
STERILIZER CONTAINER
Jürgen W. Lorenz, Munich, Fed. Rep. of Germany, assignor to Georg Wagner KG, Munich, Fed. Rep. of Germany
Filed Nov. 16, 1982, Ser. No. 442,179
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1981, 3146349
Int. Cl.[4] A61L *2/06;* **B65D** *51/16*
U.S. Cl. 422—300 **16 Claims**

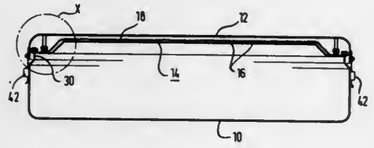
1. A sterilizer container comprising:

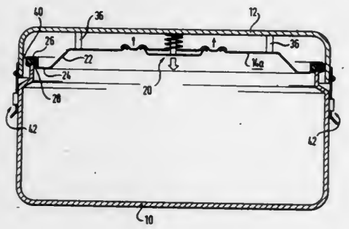
a base portion having a floor and walls, thereby defining an open-topped receptacle; an intermediate cover including means to engage the periphery of the walls of said base portion in sealing relationship therewith before, during and after the container is subjected to sterilization, said

intermediate cover forming with said base portion an interior chamber, and said intermediate cover including means to permit fluid communication therethrough; an outer solid cover dimensioned to overlie said intermediate cover in spaced relationship therefrom; filter means associated with said intermediate cover for preventing passage of microbial contamination into said interior chamber through said fluid communication means in said intermediate cover before, during, and after the container is subjected to sterilization; means supporting said outer cover in spaced relationship to said intermediate cover, to form a space therebetween, and in spaced relationship to said base portion engaging means; and means at the periphery of said outer cover forming with said base portion engaging means a flow passage therebetween, wherein said flow passage and the space between said intermediate cover and said outer cover define a tortuous path for the passage of an exteriorly generated sterilizing fluid to the upstream side of said filter means, the interior chamber being in fluid communication with said tortuous path through said filter means and said fluid communication means.

16. A sterilizer container comprising:

a base portion having a floor and walls, thereby defining an open-topped receptacle;





an intermediate cover including means to engage the periphery of the walls of said base portion in sealing relationship therewith before, during, and after the container is subjected to sterilization, said intermediate cover forming with said base portion an interior chamber;

an outer solid cover dimensioned to overlie said intermediate cover in spaced relationship therefrom;

valve means within said intermediate cover for selectively permitting the passage of fluids through said intermediate cover and into and out of said interior chamber before, during, and after the container is subjected to sterilization;

means supporting said outer cover in spaced relationship to said intermediate cover, to form a space therebetween, and in spaced relationship to said base portion engaging means; and

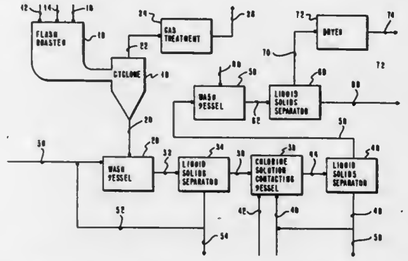
means at the periphery of said outer cover forming with said base portion engaging means a flow passage therebetween, wherein said flow passage and the space between said intermediate cover and said outer cover define a tortuous path for the passage of an exteriorly generated sterilizing fluid to the upstream side of said valve means, the interior chamber being in fluid communication with said tortuous path through said valve means.

4,551,312

PROCESS FOR CONVERTING MOLYBDENITE TO MOLYBDENUM OXIDE

William A. Yuill, Tucson, Ariz., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 13, 1984, Ser. No. 670,244
Int. Cl.[4] C01G *39/02*
U.S. Cl. 423—53 **8 Claims**



1. A process for converting molybdenite to molybdenum oxide, said process comprising;

(a) flash roasting said molybdenite in a flash roasting zone to produce a molybdenum calcine comprising molybdenum oxide and minor quantities of residual sulfur;

(b) intimately contacting said molybdenum calcine with a free chlorine-containing aqueous solution for a time in excess of about 2 hours to remove at least a major portion of said residual sulfur from said molybdenum calcine; and,

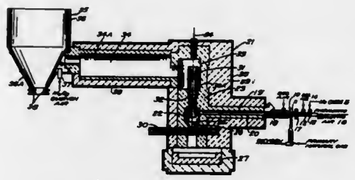
(c) separating said aqueous solution from said molybdenum oxide.

4,551,313

FLASH SUBLIMATION AND PURIFICATION OF MOLYBDENUM OXIDE

Bruce J. Sabacky, Westminster, and Malcolm T. Hepworth, Golden, both of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 27, 1984, Ser. No. 583,566
The portion of the term of this patent subsequent to Nov. 26, 2002 has been disclaimed.
Int. Cl.[4] C01G *39/02*
U.S. Cl. 423—59 **6 Claims**



1. A process for flash-sublimation of molybdic oxide containing slag-forming constituents which comprises,

feeding a pneumatically suspended stream of particulate molybdic oxide and a mixture of fuel and oxidizing gases through a nozzle into a confined furnace chamber,

said fuel gas-oxidizing gas mixture exiting from said nozzle being ignited to provide a flame thereof,

maintaining said flame at a condition to provide a temperature in the range of 1600° C.±200° C. to about 1800° C. in said furnace chamber sufficient to sublime said molybdic oxide, and to melt slag-forming constituents in said molybdic oxide collecting liquid slag formed in said furnace chamber,

causing the resulting gases and any suspended solids including the sublimed molybdenum trioxide to flow from said furnace chamber to and through a condensing chamber,

the temperature of said condensing chamber being controlled to above the condensing temperature of said sublimed molybdenum trioxide but below the volatilization temperature of volatile metal-containing impurities present and thereby effect a separation of the molybdenum trioxide from said impurities, and then condensing and recovering the separated molybdenum trioxide as solids while separating off-gases therefrom.

4,551,314

PROCESS FOR IMPROVING SOLVENT EXTRACTION OPERATION USING TWO MIXERS

Leo W. Beckstead, Arvada; Linn D. Havelick, Westminster, and Robert F. Hogsett, Arvada, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Apr. 11, 1984, Ser. No. 599,127
Int. Cl.[4] C01G *41/00*
U.S. Cl. 423—54 **11 Claims**

1. In a solvent extraction stripping system comprising an aqueous stripping phase of an ammonium hydroxide solution and an immiscible organic phase containing tungsten values by virtue of an amine extractant contained in said immiscible organic, wherein said two phases are fed to and through the system at a net volume ratio R of aqueous to organic and mixed together to effect extraction of said tungsten values by said aqueous phase with the aqueous phase continuous, and wherein said aqueous phase is characterized by entraining substantial amounts of said tungsten-containing organic phase during mixing which adversely affects the subsequent processing of the aqueous phase and adversely affects the subsequent disengagement rate between said phase during separation by settling, the improvement which comprises,

(a) establishing a bath of said aqueous and organic phases in a first mixer,

(b) starting the mixing thereof with the aqueous phase predominant during the initial stages of mixing and thereby produce a mixture with the aqueous phase continuous,

(c) passing said mixed phases to a second mixer and starting the mixing thereof with the organic phase predominant during the initial stage of mixing and thereby produce a mixture with the organic phase continuous,

(d) maintaining the net flow of the phases through the system at said net volume ratio R of aqueous to organic,

(e) passing said mixed phases from said second mixer to a settler,

whereby the rate of disengagement of the phases is substantially increased and the aqueous phase substantially impoverished in entrained organic phase, and

(f) continuing feeding said phases through the system at said net volume ratio R of aqueous to organic.

4,551,315

RECOVERING VANADIUM VALUES FROM AMMONIUM BICARBONATE SOLUTION

Paul J. Marcantonio, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

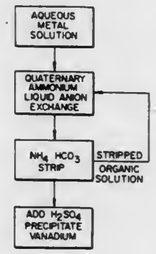
Filed Nov. 26, 1984, Ser. No. 675,093
Int. Cl.[4] C01G *31/00*
U.S. Cl. 423—67 **6 Claims**

1. A method of recovering vanadium values from an aqueous ammonium bicarbonate solvent extraction strip solution comprising;

(a) adding sulfuric acid to the aqueous ammonium bicarbonate strip solution containing vanadium values and adjusting the pH of the strip solution with said acid to a range of from 2 to 6;

(b) removing CO_2 formed from the decomposition of ammonium bicarbonate from the solution;

(c) adding ammonia or ammonium hydroxide or a mixture thereof to the strip solution in order to bring the pH of the strip solution in the range of from 6.5 to 8.5; and



(d) separating the vanadium metal values from the strip solution.

4,551,316

PROCESS FOR PRODUCING BORON NITRIDE OF CUBIC SYSTEM

Eiichi Iizuka, Shiojiri, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,609
Claims priority, application Japan, Nov. 12, 1981, 56-181391
Int. Cl.[4] B01J *21/02*; C01B *35/00, 21/064*
U.S. Cl. 423—290 **11 Claims**

1. A process for producing boron nitride of the cubic system, which comprises the steps of:

maintaining a mixture of (i) a finely divided lithium nitride (Li_3N) or metallic lithium powder, (ii) a finely divided powder of at least one alkaline earth metal nitride or alkaline earth metal selected from the group consisting of calcium nitride (Ca_3N_2), barium nitride (Ba_3N_2), metallic calcium and metallic barium, and (iii) hexagonal boron nitride (BN), at a temperature of 800° to 1,300° C. in an atmosphere of an inert gas or ammonia thereby to react the ingredients (i), (ii) and (iii) with each other in a molten state;

cooling the reaction product to be thereby solidified;

mixing the reaction product with a hexagonal boron nitride powder; and then,

maintaining the thus-obtained mixture in a high-temperature and high-pressure region in which boron nitride of the cubic system is thermodynamically stable.

4,551,317

PHOSPHONITRILIC HALIDE POLYMERS

Hsueh M. Li, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 447,720, Dec. 7, 1982, Pat. No. 4,447,408, which is a continuation-in-part of Ser. No. 314,522, Oct. 26, 1981, Pat. No. 4,374,815. This application Apr. 28, 1983, Ser. No. 489,414
Int. Cl.[4] C01B *25/10*
U.S. Cl. 423—300 **37 Claims**

1. A process for producing halophosphazene polymer which comprises (i) heating a nitrogen source with a stoichiometric excess of a phosphorous source so that hydrogen halide is evolved and halophosphazene is formed, said helophosphazene having the formula

$$[X—(PX_2{=}N)_n—PX_3]^+PX_6^-$$

wherein n is a numeral which averages at least 3 and X is halogen, and (ii) heating at least a portion of the halophosphazene with at least a stoichiometric amount of nitrogen source so that hydrogen halide is evolved and substantially linear halophosphazene phazene polymer of higher molecular weight is formed.

4,551,318

STABILIZED SOLUTIONS OF HYDROXYLAMINE OR ITS SALTS IN WATER OR ALCOHOLS, AND THEIR PREPARATION

Otto-Alfred Grosskinsky; Elmar Frommer; Josef Ritz, all of Ludwigshafen; Erwin Thomas, Freinsheim, and Franz-Josef Weiss, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

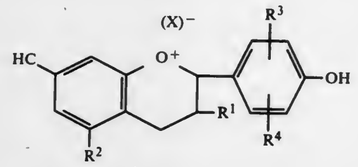
Filed Dec. 24, 1984, Ser. No. 685,257

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347260

Int. Cl.⁴ C01B *21/20*

U.S. Cl. 423—265 **5 Claims**

1. A stabilized solution of hydroxylamine or its salts in water or an alcohol, which contains an anthocyan of the formula



I

where R^1, R^2, R^3 and R^4 are each hydrogen, hydroxyl or C_1–C_4-alkoxy and X is an anion of a strong mineral acid.

4,551,319

TWO-STAGE CONCENTRATION FOR SUPERPHOSPHORIC ACID

Pierre Sanchez, Grand-Couronne, and Pierre Laudat, Franqueville St. Pierre Boos, all of France, assignors to CdF Chimie Azote et Fertilisants, S.A., Paris, France

Filed Aug. 6, 1984, Ser. No. 637,732

Claims priority, application France, Aug. 5, 1983, 8312952

Int. Cl.⁴ C01B *25/16*; B01D *1/00*

U.S. Cl. 423—316 **8 Claims**

1. In a process for the production of superphosphoric acid having a concentration calculated in P_2O_5 of up to 75%, by vacuum evaporation of wet-process phosphoric acid having a concentration calculated as P_2O_5 of between 40 and 54%, comprising in a first stage, concentrating the phosphoric acid in a first evaporator under vacuum until it has a P_2O_5 content of 60 to 66%, and heating in a first heat exchanger under vacuum conditions, said heating being performed by means of a heat-transfer fluid having a temperature of 170° to 200° C., withdrawing a partially concentrated phosphoric acid from said first stage, forming first and second fractions therefrom, and recycling said first fraction into the first evaporator, and in a second stage, passing the second fraction of the phosphoric acid issuing from the first evaporator into a second evaporator, and concentrating said second fraction to a concentration greater than 68%, the heating in a second heat exchanger being performed under vacuum conditions and by means of a heat-transfer fluid at a temperature of 215° to 225° C.,

the improvement which comprises maintaining the pressure in each stage throughout the phosphoric acid side of the heat exchanger equal to or greater than 0.35 bar higher than that in the evaporator vessel in the same stage.

4,551,320

TREATMENT OF CONCENTRATED PHOSPHORIC ACID

Frank J. Dominiani, Jr., Flemington, N.J., and Dennis C. Annarelli, Newtown, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 12, 1984, Ser. No. 660,341

Int. Cl.⁴ C01B *25/16*

U.S. Cl. 423—321 R **6 Claims**

1. The method of selectively and substantially reducing the calcium content without affecting substantially the sodium and potassium content of high purity concentrated phosphoric acid which comprises contacting a high purity, undissociated 85% phosphoric acid including calcium, sodium and potassium containing impurities with a strong cation exchange resin and its acid form and recovering 85% phosphoric acid having a reduced calcium content and substantially the same sodium and potassium content as the high purity 85% phosphoric acid being treated.

4,551,321

PREPARATION OF ZEOLITES

Laszlo Marosi, 32 Leuschnerstrasse, 6700 Ludwigshafen; Hans-Ulrich Schlimper, 74 Im Erlich, 6720 Speyer; Matthias Schwarzmann, 54 Carl-Bosch-Strasse, 6703 Limburgerhof, and Joachim Stabenow, 22 Am Feldrain, 6940 Weinheim, all of Fed. Rep. of Germany

Continuation of Ser. No. 268,379, May 29, 1981, Pat. No. 4,404,175. This application Mar. 18, 1983, Ser. No. 476,577

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021580

The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—329 **2 Claims**

2. A process for obtaining a crystalline ZSM-5 structural type zeolite of the hydrogen cation form directly which comprises reacting at from 100° C. to 200° C. in an aqueous solution under autogenous pressure in the absence of both alkali metal ions and quaternary nitrogen bases and in the presence of one or more amines selected from the group consisting of triethylene tetramine, diethylene triamine, dihexamethylene triamine, dipropylene triamine, and propylene diamine, an aqueous reaction mixture of SiO_2 and $W(OH)_3$, wherein W is an element selected from the group consisting of aluminum, boron, iron or mixtures thereof, said reaction mixture formulated to have a SiO_2/W_2O_3 molar ration of from

$$\frac{96 - \frac{20\,n}{L_R + 4}}{\frac{20\,n}{L_R + 4}} \text{ to } \frac{96 - \frac{20\,n}{L_R + 4}}{\frac{4\,n}{L_R + 4}}$$

which depends on the chain length of carbon atoms L_R in angstrom units and number of amine groups n of the amine employed, an H_2O amine molar ratio of from 0.4 to 100 and an amine/W_2O_3 molar ratio of from 5 to 400, and removing the amine from the zeolite pores by combustion.

4,551,322

PROCESS FOR PREPARING ZEOLITE POWDER OF TYPE A (IV)

Hans Strack, Alzenau; Wolfgang Roebke, Wesseling; Dieter Kneitel, and Ehrfried Parr, both of Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft and Henkel Kommandelgesellschaft auf Aktien, both of Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 358,268, Mar. 15, 1982, abandoned, which is a continuation of Ser. No. 260,764, May 5, 1981, abandoned, which is a division of Ser. No. 846,014, Oct. 27, 1977, Pat. No. 4,303,628. This application Mar. 14, 1983, Ser. No. 474,895

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651419

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—329 **7 Claims**

1. A process of preparing a crystalline zeolite power of Type A with the composition

$$1.0 \pm 0.2 Na_2O : Al_2O_3 : 1.85 \pm 0.5 SiO_2 . yH_2O$$

where y has a value up to 6 with 50 weight % of the particles not over 4.9μ and with a particle spectrum:

Fraction (μ)	Proportion (weight %)
<3	40
<5	90
<10	96
<15	100

comprising hydrothermally crystallizing a SiO_2, Al_2O_3, Na_2O and water containing alkali aluminate, water, alkali silicate synthesis mixture, said process including the steps of having initially present in a tank at 50° C. 300 liters of waterglass containing 7.4% Na_2O and 25.6% SiO_2, feeding in 500 liters of aqueous sodium aluminate containing 90 grams/l of Na_2O and 14 grams/l of Al_2O and having a temperature of 80° C. and adding further aqueous sodium aluminate to this mixture in two steps with 100 liters being added in 25 minutes at 70° C. and then a further 850 liters of the same aqueous sodium aluminate solution being added in 65 minutes at 70° C., the added aqueous sodium aluminate containing 148 grams/l of Na_2O and 103 grams/l of Al_2O_3, then warming the reaction mixture then to 87° C. and crystallizing for 2 hours.

4,551,323

PREPARATION OF ALCOHOLIC HYDROXYLAMINE SOLUTION FROM HYDROXYLAMMONIUM SULFATE

Chempolil T. Mathew, Randolph, and Harry E. Ulmer, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 1, 1982, Ser. No. 437,920

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.⁴ C01B *21/14*

U.S. Cl. 423—387 **16 Claims**

1. A process comprising the steps of:

(a) reacting an alcoholic solution of a base selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, ammonium hydroxide and the corresponding alkoxides of 1–5 carbons with solid hydroxylammonium sulfate, employing an alcohol of 1–3 carbons, a temperature, a pressure and a time sufficient to produce a liquid phase having at least 50% of the hydroxylamine values of the hydroxylammonium sulfate, and

(b) separating the solid phase comprising a sulfate salt corresponding to said base from the liquid phase.

4,551,324

PREPARATION FROM HYDROXYLAMMONIUM SULFATE OF OTHER HYDROXYLAMMONIUM SALTS VIA ALCOHOLIC HYDROXYLAMINE

Chempolil T. Mathew, Randolph, and Harry E. Ulmer, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 437,920, Nov. 1, 1982,. This application Sep. 23, 1983, Ser. No. 534,292

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.⁴ C01B *21/20*

U.S. Cl. 423—387 **30 Claims**

1. A process comprising the steps of:

(a) reacting an alcoholic solution of a base selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, ammonium hydroxide and the corresponding alkoxides of 1–5 carbons with solid hydroxylammonium sulfate, employing an alcohol of 1–3 carbons, a temperature, a pressure and a time sufficient to produce a liquid phase having at least 50% of the hydroxylamine values of the hydroxylammonium sulfate,

(b) separating the solid phase comprising a sulfate salt corresponding to said base from the liquid phase, and

(c) reacting the separated liquid phase with an acid other than sulfuric acid to produce an hydroxylammonium salt other than hydroxylammonium sulfate.

4,551,325

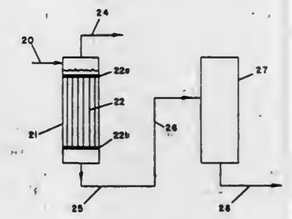
METHOD FOR CONDUCTING A CHEMICAL PROCESS IN A PACKED MULTI-TUBULAR REACTOR

Carlo G. Alesandrini, Jr., and Louie A. Nady, both of Berkeley, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 7, 1983, Ser. No. 549,150

Int. Cl.⁴ C01B *7/01*; C07C *153/01*

U.S. Cl. 423—488 **11 Claims**



1. A method for conducting a liquid phase chemical process in which a feed containing at least one liquid is introduced into a vessel containing a plurality of packed, vertically arranged tubes and in which at least one liquid product and at least one gaseous product are obtained, comprising:

(a) introducing the liquid feed into the vessel at a point above the upper ends of the tubes;

(b) removing a gaseous product from the upper portion of the vessel above the upper ends of the tubes; and

(c) removing a liquid product from the lower portion of the vessel in a controlled manner so as to maintain the level of liquid in the vessel above the upper ends of the tubes substantially throughout the interior of the vessel.

4,551,326

PROCESS FOR PREPARING ALKALI METAL FERRATES

John A. Thompson, 3891 Coco Grove Ave., Miami, Fla. 33133

Continuation of Ser. No. 238,371, Feb. 26, 1981, Pat. No. 4,385,045. This application Feb. 22, 1983, Ser. No. 468,487

Int. Cl.⁴ C01G *49/00*

U.S. Cl. 423—594 **7 Claims**

1. A method for producing alkali metal iron (IV) ferrate, comprising subjecting a particulate reactant mixture of iron oxide and a material selected from the group consisting of alkali metal oxide and alkali metal peroxide, in a respective molar ratio of from about 1:1 to 1:8, to a temperature in the range of from about 400° C. to about 700° C. for a time sufficient to bring about a reaction between said reactants and to form therefrom alkali metal iron (IV) ferrate as a reaction product, the time being in a range extending from less than one minute to a few hours, said reaction being conducted in an atmosphere in which there is an absence of oxygen, and collecting the product.

4,551,327

PROCESS FOR PRODUCING COBALT-AND FERROUS IRON-CONTAINING FERROMAGNETIC IRON OXIDES

Ichiro Honma; Arata Koyama; Masatoshi Amano, all of Moriyama, and Nobusuke Takumi, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaishi, Limited, Osaka, Japan

Filed Jul. 12, 1983, Ser. No. 513,033
Claims priority, application Japan, Jul. 16, 1982, 57-123918
Int. Cl.⁴ C01G *49/06*
U.S. Cl. 423—594 **12 Claims**

1. A process for producing a cobalt- and ferrous iron-containing ferromagnetic iron oxide comprising
(1) dispersing a magnetic iron oxide powder in water,
(2) mixing this dispersion with a suspension prepared by
(a) neutralizing a ferrous salt solution with an alkali to form ferrous hydroxide and then
(b) adding a cobalt salt solution thereto, and
(3) adjusting the excess OH concentration of this mixed slurry to 0.05 to 3 mol/l, thereby coating a ferrous compound and a cobalt compound on the surface of the magnetic iron oxide particles.

4,551,328

SELECTIVELY ABSORBENT LAYER FOR SOLAR COLLECTORS, AND METHOD OF MAKING IT

Edwin Erben, Munich; August Mühlratzer, Gilching; Roland Bertinger, Munich; Boy Cornils, Dinslaken; Bela Tihanyi, Oberhausen, and Werner DeWin, Dinslaken, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,383
Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3219996; Mar. 12, 1983, 3308790
Int. Cl.⁴ C23B *5/00*
U.S. Cl. 423—607 **7 Claims**

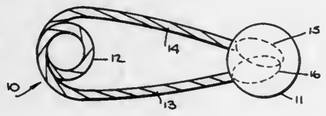
1. A selectively absorbent layer for solar collectors, consisting essentially of a mixture of chromium oxides formed by the thermal decomposition of chromium hexacarbonyl, or substituted chromium pentacarbonyl from a process gas containing chromium hexacarbonyl, in an inert gas, and oxygen, the process gas including about 0.05 to about 5% chromium hexacarbonyl, by volume, and about 0.01 to about 0.6% oxygen, by volume.

4,551,329

ORAL MEDICAMENT LOLLIPOP

Joan Harris, 2485 Meridian, Miami Beach, Fla. 33140, and Thomas J. Michel, Miami, Fla., assignors to Joan Harris, Miami Beach, Fla.

Filed Jan. 20, 1984, Ser. No. 572,464
Int. Cl.⁴ A01N *25/12*
U.S. Cl. 424—22 **6 Claims**



1. A handle-supported oral mediament in a lollipop format to facilitate chewing or sucking thereof by a patient for therapeutic purposes without, however, exposing the patient to the inadvertent entry of the handle into his throat, said medicament comprising:
A. a lump of the medicament having a mass affording a full single dose of the medicament when fully consumed; and
B. a safety handle having an enlarged end portion embedded in the lump which occupies a large internal region therein to securely anchor said lump and to prevent it from breaking into large pieces when chewed, said handle being formed of resilient stick material having a pair of spring arms whose enlarged end portions are embedded in the lump and are normally held under tension in the lump, said arms springing apart when the lump is detached from either arm in the course of its consumption or as a result of an accidental impact, whereby the handle cannot then be pushed further into the mouth or into the throat of the patient.

4,551,330

SKIN AND HAIR CONDITIONER COMPOSITIONS AND CONDITIONING METHOD

Julius Wagman, and Branko Sajic, both of Chicago, Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,642
Int. Cl.⁴ A61K *7/06, 7/08, 7/42, 7/44*
U.S. Cl. 424—59 **20 Claims**

1. A hair and skin conditioning composition comprising an oil-in-water emulsion including:
(a) about 70 to about 90 weight percent water;
(b) about 5 to about 25 weight percent water-insoluble, unctuous oleaginous material;
(c) as the sole emulsifying agent in the composition, about 0.1 to about 7 weight percent of a water-dispersible emulsifying agent selected from the group consisting of nonionic and cationic emulsifiers, and mixtures thereof; wherein the water-dispersible emulsifying agent does not form a true solution in water;
(d) about 0.05 to about 3.0 weight percent water-dispersible, non-toxic hydrated polyvalent metal salt having a cation selected from the group consisting of aluminum (III), cerium (III), iron (III), zirconium (IV), aluminum zirconium coordination complexes and mixtures thereof; and
(e) sufficient acid or alkali to provide a pH value of about 1.5 to about 7.5;
said emulsion being adapted to invert to a water-in-oil emulsion when rubbed onto skin and hair to provide a moisturizing, conditioning, protective barrier on said skin and hair.

4,551,331

EASILY DISPERSIBLE DIETARY FIBER PRODUCT AND METHOD FOR PRODUCING THE SAME

Richard E. Rudin, Kenosha County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 2, 1983, Ser. No. 500,603
Int. Cl.⁴ A61K *35/78*
U.S. Cl. 424—195.1 **21 Claims**

1. A coated dietary fiber which is readily dispersible in liquids without agglomeration comprising from about 80 to 99.95% by weight of at least one dietary fiber subject to agglomeration upon mixing with liquids, and from about 0.05 to 20% by weight of a food grade emulsifier wherein the emulsifier substantially coats the powder to prevent agglomeration when added to liquids.

4,551,332

VITAMIN E COMPOSITIONS AND METHODS

Theodore Stillman, P.O. Box 63, Hardy, Ark. 72542

Continuation-in-part of Ser. No. 290,157, Aug. 5, 1981, Pat. No. 4,410,517, which is a continuation of Ser. No. 151,627, May 20, 1980, abandoned. This application Oct. 17, 1983, Ser. No. 542,645
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.⁴ A61K *35/78, 31/355, 47/00*
U.S. Cl. 424—195.1 **42 Claims**

1. A dermatological coating material prepared by combining at least 3 parts by weight of a glyceryl stearate with up to 97 parts by weight of vitamin E component to form a solution with the aid of heat, which solution, when cooled, forms a frozen solution at room temperature, wherein said glyceryl stearate is selected from the group consisting of glyceryl monostearate and glyceryl distearate.

4,551,333

METHOD OF PRODUCING FREEZE DRIED FISH EGGS

Michael A. Neri, 48 Flatt Rd., Rochester, N.Y. 14623

Filed May 12, 1983, Ser. No. 493,960
Int. Cl.⁴ A23L *1/325;* **A23C** *1/08*
U.S. Cl. 426—1 **4 Claims**

1. A method for producing a dry, rehydratable fish egg for use as fishing bait, comprising
procuring a supply of fresh, raw fish eggs from a female fish,
carefully separating said eggs from each other and from the tissue which normally holds them in clusters,
cleaning the separated eggs to rinse away therefrom unwanted residues and salts,
freezing said eggs while maintaining the eggs in spaced, separated relation to each other in a single layer on a substrate having a surface which prevents the eggs from becoming attached by freezing to the substrate, and
subjecting said separated frozen eggs to a sublimation process in a vacuum chamber to remove substantially all moisture therefrom.

4,551,334

DOUGH IMPROVER

Harry Zentner, North Ryde, Australia, assignor to Mauri Brothers & Thomson (Aust.) Pty. Limited, New South Wales, Australia

Filed May 31, 1983, Ser. No. 499,376
Int. Cl.⁴ A21D *2/06*
U.S. Cl. 426—26 **6 Claims**

1. A method for producing bread which comprises:
(a) adding sodium thiosulphate to a yeast-containing dough mixture, said sodium thiosulphate being added as a component of an improver composition, said improver composition being present in an amount of about 0.25% based on the weight of the flour component of the dough;
(b) allowing the mixture to ferment; and
(c) baking the fermented dough.

4,551,335

FERMENTED SUNFLOWER MEAL AND THE METHOD FOR ITS PREPARATION

Marco Canella, Rome; Daniele Marghinotti, Capena; Adriano Bernardi, Monterotondo, and Giancarlo Sodini, Grottaferrata, all of Italy, assignors to E.N.I. Ente Nazionale Incorporated, Rome, Italy

Filed Mar. 31, 1983, Ser. No. 480,835
Claims priority, application Italy, May 27, 1982, 21513 A/82
Int. Cl.⁴ A23L *1/36*
U.S. Cl. 426—44 **4 Claims**

1. A method for preparing fermented sunflower meal, consisting of
activating the heterolactic fermentation of an aqueous suspension of the de-oiled sunflower meal by adjusting its pH to an acid value within the range of 4.0 to 5.5; and
allowing the de-oiled sunflower meal to digest for three days at a temperature between 30° and 40° C. to allow for lactic acid bacteria fermentation with the subsequent removal of chlorogenic acid.

4,551,336

INFUSION BAG

Ying-Cheng Chen, 3rd Fl., No. 29, La. 49, Jen Kung 1st Rd., Hsin Chu City, Taiwan

Filed Dec. 22, 1983, Ser. No. 564,337
Int. Cl.⁴ B65B *29/04*
U.S. Cl. 426—83 **4 Claims**

1. An infusion bag containing infusible substances, comprising a sachet member of liquid-permeable sheets having first and second cones; a transverse seam joining said two cones along a common cone-base circumference, the apexes of said cones being formed at opposite sides of said transverse seam; a longitudinal seam extending from the apex of said first cone to the apex of said second cone; thereby forming a three dimensional hollow internal space wherein said infusible substance is



packed; and a pull string, one end of which is joined near the apex of said first cone.

4,551,337

FRIED PIZZA PRODUCT AND PROCESS FOR PREPARING SAME

Justin M. Schmit, and Eugene H. Luoma, both of Duluth, Minn., assignors to Jeno's, Inc., Casselberry, Fla.

Filed Sep. 30, 1982, Ser. No. 425,023
Int. Cl.⁴ A21D *13/00*
U.S. Cl. 426—94 **8 Claims**

1. A process of preparing a pizza, comprising the steps of:
(a) forming a flat, thin dough base for a pizza crust;
(b) removing a plurality of plugs from the dough base to form a pattern of perforations through the dough base where the plugs have been removed;
(c) frying the dough base by immersing it in a fluid medium;
(d) removing the fried crust from said fluid medium; and
(e) applying sufficient sauce to the upper surface of the crust so that a coating of sauce is formed on said upper surface, at least some sauce flows through said perforations onto the lower surface of the crust and pools of sauce form on the upper surface over said perforations.

4,551,338

METHOD FOR CHANGING THE INTERNAL TEMPERATURE OF MEAT BY THE USE OF GAS

Charles H. Wallace, 114 Obrey Dr., Carrollton, Va. 23314

Filed Nov. 22, 1982, Ser. No. 443,285
Int. Cl.⁴ A23L *1/31*
U.S. Cl. 426—281 **2 Claims**

1. A method of changing the internal temperature of meat which comprises butchering animals to produce animal carcasses, dressing the carcasses, immediately cutting primal cuts of meat from the animal carcasses at a temperature of 100°–105° F., moving a plurality of needles, each of which has at least one air opening formed therein, into engagement with the meat, with the air openings being contiguous with discrete portions of the meat, supplying air at a pressure of ten to 100 PSI to the needles at a temperature not exceeding approximately 125° F. for a period of time sufficient to raise the internal temperature of the meat to 120° F., removing the needles, heating the meat in a smokehouse to a temperature of about 157° F., moving a plurality of needles, each of which has at least one air opening formed therein, into engagement with the meat, with the air openings being contiguous with discrete portions of the meat, and supplying air at a pressure of ten to 100 PSI to the latter needles at a temperature above approximately 32° F. for a period of time sufficient to chill the meat to a temperature of about 38° F.

4,551,339

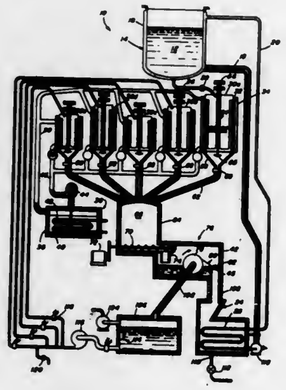
METHOD AND APPARATUS FOR OBTAINING A CONCENTRATED EXTRACT FROM LIQUID SMOKE

Jay Olson, P.O. Drawer C, Crossville, Tenn. 38555

Continuation of Ser. No. 347,907, Feb. 11, 1982, abandoned. This application Mar. 21, 1984, Ser. No. 591,890

Int. Cl.⁴ B01D *9/04;* **A23L** *1/221*

U.S. Cl. 426—384 **2 Claims**



1. A method for obtaining a concentrated liquid smoke extract by separating solvent ice crystals from a refrigerated liquid smoke solution containing ice crystals and a liquid smoke solute, said method comprising the steps of:

(a) forming a liquid smoke slush and placing the slush in a tank;

(b) rotating a multiple compartment drum within said tank, said compartments having openings at the outer surface of said drum, said openings sequentially immersed into and withdrawn out of the liquid smoke slush as said drum is rotated, a filter medium covering said openings;

(c) applying suction to each said compartment only when said compartment is immersed in said solution;

(d) capturing the solvent ice crystals on said filter medium by drawing the liquid smoke slush through said filter medium only when said suction is applied to said compartment associated with said filter medium, a concentrated liquid smoke extract flowing into said compartment;

(e) scraping said captured crystals from said filter medium; and

(f) transmitting the concentrated liquid smoke extract in said compartments to said tank for recycling.

4,551,340

PROCESS FOR PREPARING FROZEN PAR-FRIED POTATOES

Nabil A. El-Hag, Lake Peekskill, N.Y.; Stuart A. Cochran, Robinsville, N.J.; Kenneth R. Schwabe, Tuckahoe; Louis Carricato, Yonkers, both of N.Y., and Sudhakar P. Shanbhag, Bourbonnais, Ill., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 2, 1980, Ser. No. 212,178

Int. Cl.⁴ A23L *1/216*

U.S. Cl. 426—437 **7 Claims**

1. A method of improving the taste, texture, moisture and appearance of frozen potato products wherein the potato products consist of whole raw potato pieces that are to be heated in an oven before consumption which comprises:

(a) soaking the raw potato pieces in an oil bath having a temperature from 120° F. to 250° F. for 30 seconds to 6 minutes,

(b) par-frying said potato products by immersing the oil soaked potato pieces in oil having a temperature from 300° F. to 375° F. for 10 seconds to 120 seconds,

(c) cooling said oil soaked par-fried potato pieces until internal product temperature is below 175° F.,

(d) par-frying said oil soaked par-fried cooled potato products by immersing the potato piece in oil having a temperature from 325° to 400° F. for 10 seconds to 180 seconds, and then

(e) freezing the potato pieces for commercial distribution.

4,551,341

METHOD FOR OBTAINING CLEAR PLANT JUICES AND FOR THE RECOVERY OF VALORIZABLE CONSTITUENTS

Paul Blanie, 282, rue Saint Jacques, 75005 Paris, and Claude Vernier, 15, rue du Louvre, 75001 Paris, Yves Vrignaud, 5, Avenue de Rivoli, 92190, Meudon, all of France

PCT No. PCT/FR81/00098, § 371 Date Apr. 13, 1982, § 102(e) Date Apr. 13, 1982, PCT Pub. No. WO82/00569, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 10, 1981, Ser. No. 373,483

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 426—489 **7 Claims**

1. A process for the production of clear juices from plants and for the recovery of a pectic concentrate containing valorizable constituents comprising the steps of

(a) adjusting the temperature of a raw juice, obtained by pressing, as a function of measured pH of the raw juice according to the formula T° C.=−6 pH+80° C.±about 3° C.;

(b) subjecting the temperature-adjusted raw juice to ultrafiltration on a membrane to yield a primary clear juice and a primary retained pectic concentrate containing valorizable constituents;

(c) subjecting said primary retained pectic concentrate to a second ultrafiltration on a membrane to yield a second clear juice and a second retained pectic concentrate containing said valorizable constituents;

(d) conducting at least one of the ultrafiltrations on a membrane having a cutoff level of molecular weight on the order of 15,000 to 25,000; and

(e) recovering said second retained pectic concentrate containing said valorizable constituents.

4,551,342

BEVERAGES CONTAINING SPECIFIC CATION-EDIBLE ACID MIXTURES FOR IMPROVED FLAVOR IMPRESSION

Gunther M. Nakel, Aurora, Ind., and David C. Heckert, Oxford, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 462,734, Feb. 1, 1983, abandoned. This application Oct. 21, 1983, Ser. No. 544,310

Int. Cl.⁴ A23L *1/236, 2/00, 2/40*

U.S. Cl. 426—548 **32 Claims**

1. A composition for preparing a liquid beverage having a pH of from about 2.5 to about 6.5, which comprises:

(a) a flavor component which contains a flavor selected from the group consisting of fruit flavors, botanical flavors and mixtures thereof in an amount effective to impart flavor characteristics to the prepared liquid beverage;

(b) a cation component defined by the formula:

$$(8.0\times Ca)+(7.1\times Mg)+(7.0\times K)+(3.0\times Ca\times Mg)+(12.9\times Ca\times K)+(11.5\times Mg\times K)+(20.3\times Ca\times Mg\times K)=B,$$

wherein Ca is the weight ratio of calcium in said cation component, Mg is the weight ratio of magnesium in said cation component, and K is the weight ratio of potassium in said cation component, and B is from about 10.0 to about 11.3; and

(c) an edible acid component defined by the formula: $(8.7\times cit)+(8.9\times mal)+(11.4\times phos)+(5.5\times cit\times mal)-(0.6\times cit\times phos)+(5.0\times mal\times phos)+(30.1\times cit\times mal\times phos)=A$, wherein cit is the weight ratio of citric acid in said acid component, mal is the weight ratio of malic, succinic, or a mixture of malic and succinic acid in said acid component, phos is the weight ratio of phosphoric acid in said acid component, and A is from about 9.6 to about 12.1;

(d) said cation and acid components being in amounts effective to impart body to the prepared liquid beverage.

4,551,343

CANINE BISCUIT CONTAINING DISCRETE MEAT AND/OR MEAT BY-PRODUCT PARTICLES AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erburt, Morristown, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 341,969, Jan. 22, 1982, Pat. No. 4,454,163, and a continuation-in-part of Ser. No. 549,352, Nov. 7, 1983,. This application May 29, 1984, Ser. No. 614,601

The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.

Int. Cl.⁴ A21D *10/00*

U.S. Cl. 426—549 **20 Claims**

1. A method for making dry hard canine biscuits having discrete meat and/or meat by-product particles distributed substantially uniformly throughout the biscuit comprising: p1 (a) dry blending particles containing meat and/or meat by-product as substantial components having a moisture content of less than or equal to about 35 percent by weight with non-fat solids, said meat and/or meat by product particles being present in an amount sufficient to provide particles visible on the surface of said dry canine biscuits, said non-fat solids containing farinaceous material;

(b) admixing about 20 to 30% by weight water with said dry blended mixture to form a first stage dough;

(c) mixing about 0.5 to 10% by weight added fat with said first stage dough to form a final biscuit dough;

(d) forming said final dough into pieces under low shear, non-cooking forming conditions; and

(e) baking and drying said pieces to form dry hard biscuits, wherein the water activity of said particles in step (a) is less than the water activity of a final dough obtained by admixing said non-fat solids, said fat and said water without said particles, and whereby dry, biscuits are produced having discrete visually-apparent meat particles distributed substantially uniformly throughout and embedded in the surface of said dry hard canine biscuits.

4,551,344

METHOD FOR AROMATIZING SOLUBLE COFFEE

George A. Jasovsky, Bayonne; Harold W. Jacquett, and Gaetano J. de Ceglie, both of Palisades Park, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 481,003, Mar. 31, 1983, abandoned. This application Jul. 18, 1984, Ser. No. 632,153

Int. Cl.⁴ A23F *5/00*

U.S. Cl. 426—594 **6 Claims**

1. A method for aromatizing soluble coffee comprising the steps of:

(a) condensing, as a frost, grinder gas which has a high carbon dioxide content;

(b) placing the grinder gas frost in a pressure vessel;

(c) supplying heat to the contents of the vessel and allowing the frost to equilibrate at a pressure in excess of 750 psi, thereby forming three phases, a water phase, a liquid carbon dioxide phase, and a gaseous carbon dioxide phase:

(d) draining the water phase from the vessel;

(e) venting quickly the gaseous carbon dioxide phase from the vessel until a pressure of about 300 psi to about 375 psi is reached, then resealing the vessel;

(f) introducing a glyceride into the vessel;

(g) supplying heat to the vessel and pressurizing the vessel;

(h) slowly venting the vessel;

(i) obtaining an aromatized glyceride; and

(j) combining the aromatized glyceride with soluble coffee powder.

4,551,345

PROCESS FOR PREPARING A LIQUID AROMA AND AROMATIZING A DRY COFFEE SUBSTRATE WITH SAME

Reghina Davidescu, Princeton Junction; Gaetano J. de Ceglie, Palisades Park; Harold W. Jacquett, Palisades Park, and Joseph A. Paluzzi, Allentown, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 481,093, Mar. 21, 1983, abandoned. This application Sep. 17, 1984, Ser. No. 651,504

Int. Cl.⁴ A23F *5/00*

U.S. Cl. 426—594 **13 Claims**

1. A process for preparing a liquid coffee aroma comprising the steps of:

(a) condensing coffee grinder gas as a frost;

(b) placing the grinder gas frost in a pressure vessel;

(c) supplying heat to the contents of the vessel and allowing the frost to equilibrate at a pressure in excess of 750 psi, thereby forming three phases, a water phase, a liquid carbon dioxide phase, and a gaseous carbon dioxide phase;

(d) draining the water phase from the vessel;

(e) chilling a second vessel to a temperature of less than −80° F.;

(f) venting from below the liquid carbon dioxide surface in the first vessel through a line into the second vessel for a period sufficient to transfer substantially all the liquid carbon dioxide from the first to the second vessel, wherein a solid aroma-rich phase is formed;

(g) isolating the second vessel from the first vessel and warming the second vessel to a temperature of between about −20° F. and 15° F., thereby producing a highly concentrated, effervescent liquid coffee aroma.

4,551,346

METHOD OF PRODUCING AN EDIBLE FAT EMULSION AND FOOD PRODUCT PRODUCED THEREOF

Stanley A. R. Kilroy, Mitcham, Australia, assignor to Alpen Dairy Foods Pty. Limited, Victoria, Australia

PCT No. PCT/AU82/00183, § 371 Date Jun. 30, 1983, § 102(e) Date Jun. 30, 1983, PCT Pub. No. WO83/01728, PCT Pub. Date May 26, 1983

PCT Filed Nov. 11, 1982, Ser. No. 513,968

Claims priority, application Australia, Nov. 11, 1981, PF1515

Int. Cl.⁴ A23D *3/00, 3/02*

U.S. Cl. 426—602 **15 Claims**

1. A method of producing a food product containing an edible fat which comprises the steps of

a. preparing a premix comprising casein and/or a casein derivative, an aqueous carrier and an effective amount of peptising agent,

b. agitating and heating the premix to a temperature of at least about 80° C. for a time effective to peptise the casein and/or casein derivative and thereby provide a sol,

c. homogeneously mixing with the sol an edible fat containing casein to obtain a mixture,

d. cooling the mixture to a temperature below 5° C. sufficient to obtain a gel and crystallize the fat within said mixture,

e. stabilizing the mixture by adding further effective amounts of peptising agent thereto and homogeneously mixing and heating the resultant further mixture to a temperature of at least 80° C. to obtain a further mixture in which the added casein molecules have been peptised,

f. cooling the further mixture to a temperature below 5° C. sufficient to obtain a further gel and recrystallize the fat within said further mixture,

g. warming the cooled further mixture to a temperature of about 20° C. to redistribute the fat in said further mixture, and

h. storing the resultant food product at a temperature up to about 5° C.

4,551,347

PROCESS OF PREPARING INSTANT, FLAKED, WHEAT FARINA

Jan Karwowski, Franklin Lakes, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Sep. 14, 1983, Ser. No. 531,983
Int. Cl.[4] A23L *1/164*
U.S. Cl. 426—621 **26 Claims**

1. Process for preparing a dry, instant, wheat farina or wheat middlings product in flake form which will readily rehydrate with hot water, comprising:

(a) admixing a particulate wheat component selected from the group consisting of wheat farina and wheat middlings, and 0.5 to 3 weight percent of guar gum in powder form, based on the total dry weight of the mixture of the guar gum and the particulate wheat component;

(b) impregnating homogeneous mixture (a) with a sufficient amount of water to saturate mixture (a);

(c) tempering mixture (b) to produce a material at uniform moisture;

(d) cooking tempered material (c) sufficiently at 110° to 120° C. to gel the starch present in the wheat farina or wheat middlings, the average particle size of the mixture (c) being increased thereby;

(e) reducing the average particle size of the cooked material (d), the cooked material (d) being in particulate form;

(f) drying particulate, cooked material (e);

(g) tempering mixture (f) to provide a uniform moisture content throughout mixture (f); and

(h) flaking, tempered, particulate material (g) to form a dry product in flake form,

the dry, flake product being capable of being readily rehydrated to have the texture and flavor characteristics of cooked wheat farina or middlings.

4,551,348

SUGAR INFUSION OF FRUIT

John S. O'Mahony, Amherst; Marvin L. Kahn, Williamsville, and Satya N. Adapa, Derby, all of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Filed Feb. 15, 1983, Ser. No. 466,411
Int. Cl.[4] A23L *1/09*
U.S. Cl. 426—639 **6 Claims**

1. A process for infusing fruit with sugar solutes comprising:

(a) suspending the fruit in a heated aqueous syrup bath which is circulated at about 35–45 gal./min., said syrup initially incorporating about 65–75 percent dissolved sugar solutes, said sugar solutes being comprised of about 35 to about 100 percent fructose;

(b) inhibiting dilution of the bath caused by exfusing fruit water by introducing a concentrated sugar solution into the bath and withdrawing substantially equal amounts of diluted syrup at a rate of about 2–9 gal./min. so as to stabilize the bath solutes concentration;

(c) concentrating the withdrawn, diluted syrup by evaporation; and

(d) returning the concentrated syrup to the infusion bath.

4,551,349

BIS(PENTAFLUOROSULFUR)DIACETYLENE POLYMER THEREFROM AND PREPARATIONS THEREOF

Thomas A. Kovacena, McConnellsburg, Pa.; Ronald A. DeMarco, Fairfax, and Arthur W. Snow, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1983, Ser. No. 562,252
Int. Cl.[4] C23L *11/00*; C08F *12/30, 112/30, 212/18*
U.S. Cl. 427—255.6 **2 Claims**

1. A method of coating poly bis(pentafluorosulfur)diacetylene on a surface which comprises vaporizing bis(pentafluorosulfur)diacetylene to a gas at a temperature from about 55° to about 75° C. and exposing said surface to said gas until sufficient bis(pentafluorosulfur)diacetylene has polymerized on said surface.

4,551,350

TEXTILE FINISHING WITH DURABLE PRESS RESIN COMPOSITION

Eugene R. Martin, Onsted, Mich.; David S. Ansel, Sylvania, Ohio, and Paul A. Manis, Adrian, Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

Division of Ser. No. 560,348, Dec. 12, 1983, Pat. No. 4,520,126, which is a continuation-in-part of Ser. No. 430,187, Sep. 30, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 672,647
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—389.9 **12 Claims**

1. A process for coating textile materials which comprises applying (1) a textile finishing composition consisting essentially of a diluent and a durable press resin composition containing (a) an aminoplast resin and (b) an aldehyde in excess of that present in the aminoplast resin, in which the durable press resin composition is present in an amount of at least 0.18 percent based on the weight of diluent and aminoplast resin and the weight ratio of aldehyde to aminoplast resin is from 0.05 to 0.6, (2) an acid catalyst and (3) a softening agent in an amount of from 0 to 8 parts by weight per 100 parts by weight of finishing composition to a textile material, and thereafter drying the coated material at an elevated temperature.

4,551,351

PROCESS FOR PRODUCING MEAT BLOCK-LIKE PROTEIN MATERIAL

Yoichi Kawasaki, Sennan, and Tsutomu Katayama, Izumisano, both of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Feb. 9, 1984, Ser. No. 578,757
Int. Cl.[4] A23J *3/00*
U.S. Cl. 426—656 **10 Claims**

1. A process for producing a meat block-like protein material which comprises preparing a slurry containing a raw protein material, heating the slurry under pressure to force the slurry to flow through a flow path, and continuously releasing the flowing slurry from the downstream end of the flow path into a hollow piece connected to the flow path and having an inner surface extending across the releasing direction of the slurry and an outlet opening communicating with the atmosphere provided in the hollow piece thereby forming a fibrous protein material and allowing the fibrous material to accumulate and coagulate on the inner surface to form a block or lump of the fibrous protein material so that it continuously or intermittently discharges from the hollow piece through its outlet opening to give the meat block-like protein material.

4,551,352

METHOD OF MAKING P-TYPE HYDROGENATED AMORPHOUS SILICON

Jacques I. Pankove, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 17, 1985, Ser. No. 692,238
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—39 **6 Claims**

1. A method of forming P-type hydrogenated amorphous silicon comprising the steps of

subjecting a substrate to a gaseous mixture of a silicon hydride and an acceptor material with the substrate being heated at a temperature of no greater than about 120° C. so as to deposit a layer of acceptor doped hydrogenated amorphous silicon on the substrate, and then

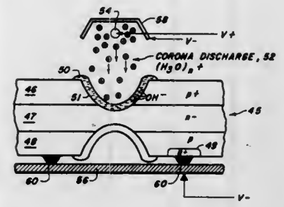
heating the deposited layer at a temperature greater than 130° C. but less than the temperature at which hydrogen will disassociate from the layer to increase the conductivity of the deposited layer.

4,551,353

METHOD FOR REDUCING LEAKAGE CURRENTS IN SEMICONDUCTOR DEVICES

Philip L. Hower, Concord, and Eric K. Li, Cambridge, both of Mass., assignors to Unitrode Corporation, Lexington, Mass.

Continuation of Ser. No. 335,696, Dec. 30, 1981, abandoned. This application Jul. 24, 1984, Ser. No. 633,675
Int. Cl.[4] H01L *21/326*
U.S. Cl. 427—39 **15 Claims**



1. A method of reducing leakage currents from ions in nonpassivated portions within a multilayer semiconductor device comprising the steps of:

passivating a portion of the surface of said multilayer semiconductor device;

generating a corona discharge at a V+ potential which produces ions which drift from said corona discharge to a V− potential;

placing said multilayer semiconductor device between said V+ and V− potentials to urge the ions to drift to said passivated portion, wherein

the leakage currents from nonpassivated portions are reduced by neutralizing the ions within said multilayer semiconductor device by said ions resulting from said corona discharge.

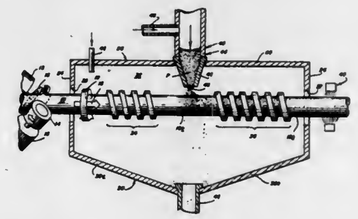
4,551,354

METHOD FOR METALIZING METAL BODIES

Darryl Feder, 3134 Maple Leaf Dr., Glenview, Ill. 60025

Division of Ser. No. 374,282, May 3, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,256
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—46 **4 Claims**

1. A method of metalizing an elongated body of metal comprising the steps of pre-heating by induction a portion of the length of the body to a temperature at which metalizing powder will cling and adhere to the pre-heated body's exterior surface; then bathing the exterior of the preheated body portion in a flowing stream of a pre-heated metalizing powder entrained in a fluid carrier of a pre-heated, pressurized, nonoxidizing gas by moving the metal body axially along a path that passes through, and transverse of the direction of flow of, the flowing stream of pre-heated metalizing powder, while simultaneously rotating the metal body about its longitudinal axis, so that particles of the metalizing powder will impinge



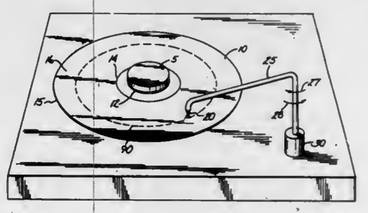
upon and cling to the entire surface of the pre-heated body; and then fusing the clinging, metalizing, powder to the body at a fusing temperature that is higher than the pre-heat temperature of both the body and the metalizing powder.

4,551,355

HIGH SPEED COATING PROCESS FOR MAGNETIC DISKS

Charles P. Ericson, St. Paul, and Bahram Shadzi, Richfield, both of Minn., assignors to Magnegic Peripherals, Minneapolis, Minn.

Continuation of Ser. No. 504,638, Jun. 15, 1983, abandoned. This application Jul. 26, 1984, Ser. No. 614,882
Int. Cl.[4] H01F *10/02*
U.S. Cl. 427—48 **8 Claims**



1. In an apparatus having a spindle rotatable by a power source, a disk having an inside diameter and an outside diameter and a central opening, said disk being secured for rotation with said spindle at said central opening, and a nozzle for dispensing magnetic medium material at a nozzle discharge pressure onto said disk, said nozzle being moveably mounted with respect to said disk and being moveable between said outside diameter and said inside diameter, a method for applying a magnetic medium to said disk, comprising the steps of:

rotating said disk at a rotational speed of at least 3000 rpm;

during said disk rotating step, applying said magnetic medium material to said disk from said nozzle at a nozzle discharge pressure of about 6–8 psig. as said nozzle moves at a rate of travel between 1.0 and 1.5 inch/second from said outside diameter to said inside diameter and returns;

reducing the rotational speed of said disk almost immediately following said medium material applying step to a speed suitable for magnetic orienting the medium; and

exposing said disk to a medium-orienting magnetic field during said period of reduced rotational speed.

4,551,356
PROCESS FOR PRODUCING AN ANTIREFLECTING LAYER ON VIEWING SCREENS
Hans Heiz, Dagmersellen, Switzerland, assignor to Therese Heiz, Dagmersellen, Switzerland
PCT No. PCT/EP83/00026, § 371 Date Oct. 3, 1983, § 102(e) Date Oct. 3, 1983, PCT Pub. No. WO83/02682, PCT Pub. Date Aug. 4, 1983
PCT Filed Feb. 1, 1983, Ser. No. 540,561
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, 3203291
Int. Cl.[4] B05D *5/06, 5/12*
U.S. Cl. 427—64 9 Claims

1. A process for producing an anti-reflecting layer on a viewing screen which comprises:
(a) coating an outer face of said viewing screen with a layer of a composition comprising linseed oil varnish, and then processing said layer, while still wet, with a composition comprising an alkali metal silicate or a silicic acid, which is capable of reacting with said varnish composition; or
(b) coating an outer face of said viewing screen with a layer of a mixture of the composition comprising linseed oil varnish and the composition comprising an alkali metal silicate or silicic acid.

7. The process as claimed in claim 1, wherein said alkali metal silicate or silicic acid is compounded with fluorescent or coloring substances or a mixture thereof for optically matching the anti-reflecting layer to the viewing screen.

4,551,357
PROCESS OF MANUFACTURING CERAMIC CIRCUIT BOARD
Yukihisa Takeuchi, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan
Filed Oct. 16, 1984, Ser. No. 661,470
Claims priority, application Japan, May 25, 1984, 59-107083
Int. Cl.[4] B05D *5/12, 3/02*
U.S. Cl. 427—96 30 Claims

1. A process for manufacturing a ceramic circuit board, wherein at least dielectric ceramics and a conductor paste of base metal are co-fired, comprising the steps of:
preparing said conductor paste of base metal containing an organic material which is thermally decomposed at a temperature higher than a decomposition point of an organic binder contained in said dielectric ceramics;
forming a circuit pattern of said conductor paste containing said organic material;
thermally decomposing said organic binder in an oxidizing atmosphere at a temperature lower than said decomposition point of said organic material; and
thermally decomposing said organic material in an atmosphere having a partial oxygen pressure lower than that of said oxidizing atmosphere.

16. A process of manufacturing a ceramic circuit board, werein at least dielectric ceramics and a conductor paste of base metal are co-fired, comprising the steps of:
forming a circuit pattern of said conductor paste of base metal;
covering the formed circuit pattern with an organic material which is thermally decomposed at a temperature higher than a decomposition point of an organic binder contained in said dielectric ceramics;
thermally decomposing said organic binder in an oxidizing atmosphere at a temperature lower than said decomposition point of said organic material; and
thermally decomposing said organic material in an atmosphere having a partial oxygen pressure lower than that of said oxidizing atmosphere.

4,551,358
ELECTRODE PREPARATION
Edward S. Lane, Didcot, and Michael R. H. Hill, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, England
Continuation of Ser. No. 450,130, Dec. 15, 1982, abandoned.
This application Jun. 11, 1984, Ser. No. 619,323
Claims priority, application United Kingdom, Dec. 18, 1981, 8138252
Int. Cl.[4] H01M *4/28*
U.S. Cl. 427—126.6 4 Claims

1. A method of making a nickel oxide electrode which comprises
(i) impregnating a porous nickel substrate for an electrode with a solution of a nickel compound in a non-aqueous liquid medium, said nickel compound being convertible to nickel hydroxide gel in step (ii);
(ii) contacting the impregnated substrate with an epoxy compound thereby to convert the nickel compound in situ to nickel hydroxide gel; and
(iii) removing reaction product(s) to provide the final electrode.

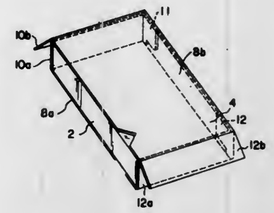
4,551,359
PRODUCTION OF MAGNETIC RECORDING MEDIA
August Lehner, Roedersheim-Gronau; Joachim Hack, Ludwigshafen; Karl Krucker, Frankenthal; Werner Balz, Limburgerhof; Karl H. Roemer, Frankenthal; Peter Rudolf, Fussgoenheim; Roland Falk, Achern, and Guenter Eckert, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Jul. 12, 1984, Ser. No. 630,181
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325555
Int. Cl.[4] H01F *10/02*
U.S. Cl. 427—130 2 Claims

1. In a process for the production of a magnetic recording medium having a thin magnetic layer by dispersing finely divided, magnetically anisotropic material and conventional additives in a solution of a polymeric binder in an organic solvent, applying a layer of the dispersion to a non-magnetizable base by means of a knife-coater, and drying the applied layer, the improvement which comprises: adding to the dispersion to be applied to the base from 3 to 30% by weight, based on the amount of polymeric binder, of a high molecular weight organic compound based on a cellulose reaction product having a K value of more than 75, whereby the dispersion has a viscosity of from 50 to 400 mPa.s measured at 23° C. and an oxide/solvent ratio of from 1:4.5 to 1:10.

4,551,360
METHOD OF OFFSET PRINTING ON POLYPROPYLENE RESIN CASES FOR VIDEO TAPE CASSETTES
Masayuki Kawajiri, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 13, 1984, Ser. No. 670,900
Claims priority, application Japan, Nov. 10, 1983, 58-211372
Int. Cl.[4] B05D *1/36, 5/04, 7/04*
U.S. Cl. 427—160 7 Claims

1. A method of offset printing on a polypropylene resin case for a video tape cassette, which comprises the steps of first

applying an anchor coat onto the surface to be thus printed of a polypropylene sheet to be folded into said case, and then



carrying out offset printing on the anchor coat surface by using an offset printing ink of ultraviolet ray-curing type.

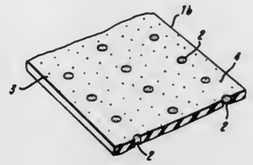
4,551,361
TINTABLE SCRATCH RESISTANT COATING
Alfred J. Burzynski, and James J. Tillman, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 15, 1984, Ser. No. 671,535
Int. Cl.[4] B32B *3/00*
U.S. Cl. 427—164 18 Claims

1. A composition for providing a scratch resistant, tintable cured coating for a substrate, the composition comprising
(A) a further curable, solvent soluble organopolysiloxane that is a hydrolysis reaction product of methacryloxypropyltrimethoxy silane and water;
(B) phenylphosphonic acid as an additive to part (A) before coating the substrate or used in the hydrolysis as a starting ingredient; and
(C) an organic solvent for (A) and (B), the solution being adapted for coating and curing to form a scratch resistant azo dye tintable cured coating.

10. A method of producing a scratch resistant, cured, tintable coating on a transparent substrate without reducing the tinting absorbency at the expense of greater adhesion and scratch resistance, the method comprising the steps of:
(A) hydrolyzing methacryloxypropyltrimethoxy silane and vinyl triethoxy silane with 1 to 7 moles of water and phenylphosphonic acid to provide a solvent soluble, further curable organopolysiloxane;
(B) dissolving the organopolysiloxane of step (A) in an organic solvent;
(C) adding phenylphosphonic acid to the solution of (B) and dissolving the same;
(D) coating a transparent substrate with the solution of (C);
(E) heating the coating to cure the organopolysiloxane and provide a tintable, cured, scratch resistant coating.

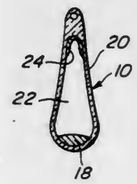
4,551,362
METHOD OF TREATING UNVULCANIZED ELASTOMERIC OBJECTS
Engelbert G. Harms; Axel W. Schmeitz, both of Aachen, and Hubertus P. Thomaschewski, Alsdorf, all of Fed. Rep. of Germany, assignors to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany
Filed Aug. 23, 1984, Ser. No. 643,659
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330505; Aug. 24, 1983, 8324313[U]
Int. Cl.[4] B05D *1/16*
U.S. Cl. 427—180 5 Claims

1. A method of treating at least a surface of an unvulcanized and therefore tacky elastomeric molded object or semi-finished product for use in further manufacturing, said method including the step of neutralizing said thickness with powdery or dust-like separating material thereby avoiding problems with regard to product surface sticking venting, molding and removal from the molds during further manufacturing of semi-finished products;
the improvement therewith comprising the steps of using a separating material which is in the form of an unvulcanized powdery rubber employed as dry and non-adhesive fine



particles, and applying said powdery rubber at least to said surface which is to be treated.

4,551,363
ELECTRO LUMINESCENCE VISUAL DEVICE
Brian Fenech, 3 Schernott Pl., Bellmore, N.Y. 11710
Filed May 2, 1984, Ser. No. 606,282
Int. Cl.[4] A44C *25/00*
U.S. Cl. 428—28 11 Claims

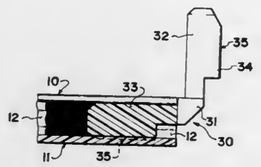


1. An electroluminescence visual device, comprising, in combination liquid mercury and a sealed glass enclosure, said mercury only partially filling said enclosure so as to be free to move therein, said glass enclosure having at least a portion thereof unobstructed in the vicinity of the location of the mercury, whereby when said mercury moves in said enclosure, light is emitted arising from ionization and excitation throughout the entire volume of said enclosure, said light being visible therethrough at least in said unobstructed portion of the enclosure, and further comprising a sealed enclosure with a conducting region on a portion thereof for preventing the buildup or redistribution of electrical charges, wherein said mercury may move against said conducting surface region yet not emit light but will emit light on the other portions of the sealed enclosure.

4,551,364
CORNER MEMBER FOR A SPACER STRIP FOR A SEALED WINDOW UNIT
Lawrence W. Davies, Winnipeg, Canada, assignor to Omniglass Ltd., Winnipeg, Canada
Filed Jul. 12, 1984, Ser. No. 630,275
Claims priority, application United Kingdom, Jul. 15, 1983, 8319264
Int. Cl.[4] E06B *3/24*; E04B *1/66*
U.S. Cl. 428—34 13 Claims

1. A combination of a corner member and spacer strips for use in the manufacture of a sealed window unit comprising a plurality of spacer strips each comprising a hollow elongate body of substantially rectangular cross-section providing two side surfaces for contacting and spacing adjacent surfaces of glass panes, an outer surface for facing outwardly of the outer edge of the glass panes and an inner surface for facing inwardly toward opposed spacer strips of the sealed window unit, the inner surface having a slot extending along the full length thereof, the corner member comprising a pair of legs arranged

right angles, each of the legs being dimensioned so as to be received within the hollow body of one of the spacer strips in a compression fit, the leg and spacer strip being shaped and arranged such that the compression fit is limited to areas of the



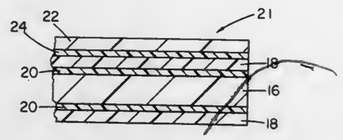
spacer strip adjacent junctions thereof between the side surfaces and the outer surface whereby the compression fit does not cause opening of the spacer strip at the slot in the inner surface.

4,551,365

RIGID COEXTRUDED SHEET AND CONTAINER

Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Oct. 23, 1981, Ser. No. 314,115
Int. Cl.⁴ B65D *89/00, 1/02;* **B32B** *27/28*
U.S. Cl. 428—35 **8 Claims**



1. A coextruded thermoplastic sheet suitable for thermoforming into a rigid container, said sheet comprising
a bulk layer made of a first nonfoamed material,
a pair of bending moment resisting layers adhered to opposite surfaces of said bulk layer and made of a second material that is more rigid than said first material,
said second material being acrylonitrile-methyl acrylate copolymer, said moment resisting layers being adhered to said bulk layer by adhesive tie layers coextruded with said bulk layer and said moment resisting layers,
whereby said bulk layer acts to locate said second material of more rigidity at a location spaced from the neutral axis of said sheet where it efficiently resists bending moments and provides rigidity to said sheet.

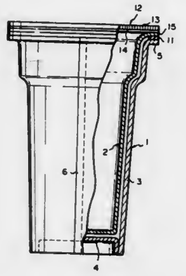
4,551,366

COMPOSITE VESSEL EXCELLENT IN PRESERVABILITY AND PROCESS FOR PREPARATION THEREOF

Yoshitsugu Maruhashi, Yokohama, and Sadao Hirata, Kamakura, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,612
Claims priority, application Japan, Jan. 11, 1982, 57-1252[U]; Mar. 10, 1982, 57-36512
Int. Cl.⁴ B32B *15/08*
U.S. Cl. 428—35 **17 Claims**

1. A function-separated composite vessel excellent in the easy openability, preservability and resistance to the deformation due to reduction of the pressure, which comprises (1) a cup-shaped outer member composed of a paper substrate and having a barrel portion, a bottom portion bonded to the lower end of the barrel portion and a curl or flange portion formed on an upper end opening of the barrel portion, said bottom portion being formed of a paper sheet having an air permeability, and (2) a flexible seamless cup-shaped inner member composed of a gas-barrier plastic material, said inner member being formed by plug-assist-forming a film of the gas-barrier plastic material within the outer member as a female mold until the film is substantially exactly fitted in the inner side of the outer member and an opening of the inner member is bonded only to the curl portion or flange portion of the outer member, whereby



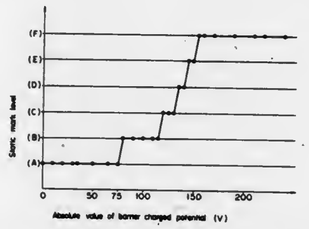
when the vessel is hot-filled, the opening of the vessel sealed and the filled contents allowed to cool, deformation of the configuration of the cup-shaped outer member caused by reduction of the inner pressure in the sealed vessel due to decrease of the volume of the content and condensation of vapors is substantially avoided.

4,551,367

PACKAGED PHOTOGRAPHIC PRODUCT

Toshio Nagatani; Norio Chiba; Takao Hatanaka, and Toshio Saito, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 273,924, Jun. 15, 1981, abandoned. This application May 2, 1984, Ser. No. 606,343
Claims priority, application Japan, Jun. 23, 1980, 83910
Int. Cl.⁴ B65D *65/40*
U.S. Cl. 428—35 **7 Claims**



1. A packaged photographic product, comprising a composite having a light-sensitive photographic material interposed between protective materials, which composite is further packaged within a barrier packaging material, said barrier packaging material having at least a metal layer provided internally and at least one layer of a polyolefin or a polyolefin derivative prepared by extrusion lamination, and said product also satisfying at least one of the conditions (a) and (b) shown below:
condition (a): the surface potential of said barrier packaging material on the side of said protective material having an absolute value of not higher than 25 V;
condition (b): the surface specific resistance of said protective material being not higher than $1\times10^{11}\Omega$ under the condition of the relative humidity of 60%.

4,551,368

POLYESTER MELT BLENDS HAVING HIGH GAS BARRIER PROPERTIES

Richard R. Smith, Cuyahoga Falls, and John R. Wilson, Hartville, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 7, 1982, Ser. No. 415,211
Int. Cl.⁴ C08L *67/02*
U.S. Cl. 428—35 **17 Claims**

1. A melt blend of polyesters having good oxygen barrier resistance, consisting essentially of:
the melt product of two polyesters, one of said polyesters being polyethylene isophthalate homopolymer in an amount of from about 5 to about 95 mole percent and the remaining 95 to 5 mole percent being polyethylene terephthalate homopolymer, said mole percent based upon the total moles of said polyesters, the melt blend having an oxygen permeability of 8 cc·mil/100 in^2·day·atm or less and an intrinsic viscosity of 0.4 dl/g or greater.

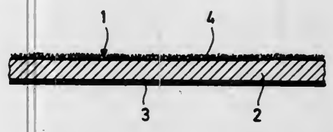
7. A melt blend of polyesters according to claim 1, 2, 4, 5, or 6, wherein said polyester blend is in the form of a container.

4,551,369

COMPOSITE PACKAGING MATERIAL AND PROCESS FOR MAKING SAME

Roland K. Belz, Sonnenhalde 31, D-7022 Leinfelden-Echterdingen-1, Fed. Rep. of Germany

Continuation of Ser. No. 221,288, Dec. 30, 1980, Pat. No. 4,469,728. This application Aug. 30, 1984, Ser. No. 645,508
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000516
Int. Cl.⁴ A47K *13/14*
U.S. Cl. 428—36 **32 Claims**



1. In a packaging material having at least one outer, normally water-insoluble sealing layer and at least one soluble layer connected to said water insoluble layer, said soluble layer containing a solubilizer for said water-insoluble sealing layer, the improvement wherein:
said water-insoluble sealing layer comprises an extruded non-porous layer of a thermoplastic material which is soluble in a non-neutral medium;
said soluble layer comprises an extruded layer of a thermoplastic material; and,
said solubilizer is present in an amount sufficient for solubilizing said water insoluble layer and said water soluble layer when the latter is also formed by extrusion of a water insoluble thermoplastic material.

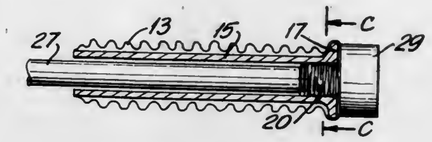
4,551,370

SHIRRED CASING STICK ARTICLE WITH END CLOSURE AND METHOD FOR MAKING THE SAME

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1983, Ser. No. 481,032
Int. Cl.⁴ A22C *13/00*
U.S. Cl. 428—36 **4 Claims**

1. A hollow shirred stick tubular casing article having compressed casing pleats disposed about and along a cylindrical bore, with an end portion of said casing length extended forward from said pleats and over a fore end of said bore and formed into an end closure inside said bore; said end closure being a compacted, substantially axially symmetrical body of casing composed of at least one single-ply tubular layer of the casing of said end portion invaginated symmetrically into said



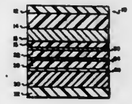
bore and collapsed axially upon itself inside said bore between an end of a said layer and the end of said casing end portion.

4,551,371

MULTIPLE LAYER FLEXIBLE SHEET STRUCTURE

John P. Eckstein, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 306,675, Sep. 29, 1981, Pat. No. 4,418,841. This application Nov. 4, 1983, Ser. No. 535,935
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.⁴ B65D *35/08;* **B32B** *15/08, 27/08*
U.S. Cl. 428—36 **20 Claims**





2. A multiple layer sheet structure, wherein the layers are firmly adhered to each other to make a unitary structure, the layers comprising, in order:
(a) a layer of LLDPE;
(b) a first adhesive layer;
(c) a metal foil layer;
(d) a second adhesive layer; and
(e) a polyethylene layer.

4,551,372

LAMINATED SAFETY GLASS

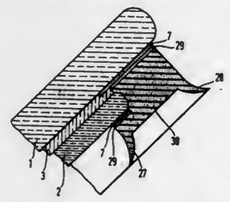
Heinz Kunert, Cologne, Fed. Rep. of Germany, assignor to Saint-Gobain Vitrage, Courbevoie, France

Filed Mar. 23, 1984, Ser. No. 592,895
Claims priority, application France, Mar. 31, 1983, 83 05326; Mar. 31, 1983, 83 05328
Int. Cl.⁴ B32B *23/02*
U.S. Cl. 428—38 **8 Claims**

1. A safety glass suitable for mounting in an opening, comprising:
a first glass sheet having a peripheral edge,
a second glass sheet having a peripheral edge and a width and length smaller than that of said first glass sheet, said

first and second glass sheets being glued together by a plastic insert therebetween in such fashion that said second glass sheet falls entirely within the periphery of said first glass sheet so that corresponding portions of said edges form a stairstep structure,

the portion of the side of the first sheet facing said second sheet but not covered thereby being covered with a peripheral strip of opaque material,



the opaque material being covered with an adhesive bead extending from the peripheral edge of said second glass sheet to that of said first glass sheet, said bead forming a water tight seal about the plastic insert, and having a thickness greater than that of the peripheral edge of said second sheet so as to serve as a fastener for mounting said safety glass in said opening.

4,551,373

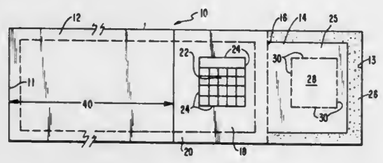
LABEL CONSTRUCTION

Thomas J. Conlon, 90 Broadway, Massapequa Park, N.Y. 11762

Filed Nov. 4, 1983, Ser. No. 548,788

Int. Cl.⁴ G09F *3/00*

U.S. Cl. 428—43 **4 Claims**



1. An improved label construction for a retail product comprising

a base label segment including

a main body portion securable to said product, and

an end portion foldably disposable into overlying coplanar relationship with a portion of the upper surface of said main body portion

said end portion having

a first surface adapted to be disposed in interfacial overlying abutting relation with the portion of the upper surface of said body portion disposed therebeneath when disposed in folded-over condition, and

a second surface adapted to form a coplanar continuation of the upper surface of said body portion when said end portion is disposed in folded condition thereover,

said foldable end portion serving to define, when folded into overlying coplanar relation with said main body portion, an ever exposed upper surface on said main body portion and an adjacent concealable upper surface on said main body portion disposed therebeneath,

means disposed at least adjacent a portion of the perimetric edge of the first surface of said end portion to secure the end portion in overlying relation with the concealable upper surface of said main body portion when folded thereover,

product identification indicia complementally disposed on the ever exposed surface of said main body portion and on the second surface of said foldable end portion to compositely present the same in continuous unbroken relation when said end portion is folded over said main body portion; and

means for facilitating removal of at least a portion of said end portion from overlying relationship with said concealable upper surface of said body portion to expose the surface of the main body portion therebeneath.

4,551,374

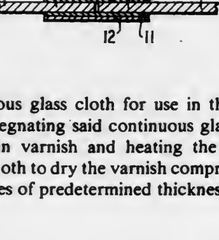
CONTINUOUS SHEET WITH PERFORATED TEAR-OFF DRIVING EDGE AND RECESSED REINFORCED INNER EDGE

Thomas A. Holmberg, Richfield, Minn., assignor to The Holmberg Company, Minneapolis, Minn.

Filed Jun. 20, 1984, Ser. No. 622,756

Int. Cl.⁴ B32B *3/08*

U.S. Cl. 428—43 **2 Claims**



1. A continuous sheet having a plurality of drive perforations formed along at least one edge portion thereof,

the perforated driving edge portion of said continuous sheet having a tear line to permit removal of the perforated edge portion,

a reinforcing strip permanently adhered to said sheet along the tear line on the opposite side of the tear line from the perforated driving edge portion, said strip being recessed into the edge portion of the sheet so that the thickness of said sheet reinforced by said strip is no greater than the full thickness of the remaining portion of the sheet to produce substantially uniform sheet thickness across the entire width of the continuous sheet before and after removal of the perforated edge portion.

4,551,375

GLASS CLOTH WITH THIN REINFORCED JOINTS

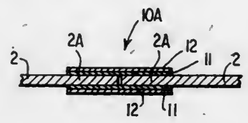
Masanori Sato, and Kazuo Iizima, both of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Japan

Filed Sep. 14, 1984, Ser. No. 650,531

Claims priority, application Japan, Sep. 22, 1983, 58-146051[U]

Int. Cl.⁴ B32B *3/00*

U.S. Cl. 428—57 **9 Claims**



1. In a continuous glass cloth for use in the formation of pre-pregs by impregnating said continuous glass cloth with a thermosetting resin varnish and heating the soimpregnated continuous glass cloth to dry the varnish comprising a plurality of glass cloth pieces of predetermined thickness, having edges

and end portions associated with and adjacent respective edges, which are joined together, the improvement comprising:

joints connecting adjacent glass cloth pieces together at respective adjacent edges thereof, each said joint having a total thickness less than about 1.5 times the thickness of said glass cloth, said joints comprising:

end portions of respective adjacent glass cloth pieces, said end portions being disposed in a subtantially coplanar relationship with one another and having respective associated edges thereof in substantially abutting relationship with each other;

at least one joining member overlapping said end portions of said adjacent glass cloth pieces, said joining member inert to and insoluble in said thermosetting resin varnish during pre-preg formation and being capable of withstanding the drying temperature of said varnish without substantial loss of bending, tensile and impact strength; and

a thermoplastic resin located between said at least one joining member and said end portions of said adjacent glass cloth pieces, said thermoplastic resin bonding said at least one joining member to said end portions, said thermoplastic resin being inert to and insoluble in said thermosetting resin varnish during pre-preg formation and capable of withstanding the drying temperature of said varnish without substantial loss of bonding strength.

4,551,376

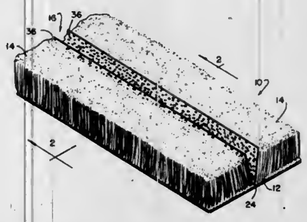
LUBRICATED FIN PILE-TYPE WEATHERSTRIP

Milton Kessler, 302 McClurg Rd., Youngstown, Ohio 44501

Filed May 7, 1985, Ser. No. 731,376

Int. Cl.⁴ D04H *11/00;* **E06B** *7/22*

U.S. Cl. 428—85 **20 Claims**



1. A weatherstrip of the fin, pile-type, comprising:

a base strip;

a longitudinally extending row of pile attached to said base strip;

a barrier fin of generally U or V shaped configuration secured in an upright orientation along said base strip adjacent said row of pile, with legs of said barrier fin defining therebetween an elongated reservoir; and

a lubricating grease within the reservoir defined by the legs of said barrier strip, said lubricating grease having a viscosity sufficiently high so that it is squeezed out of the reservoir only with some difficulty, and having a liquification temperature sufficiently high so that it does not liquify under conditions of normal usage.

4,551,377

ABSORBENT PADS

John Elves, Magor, Wales, and Stephen J. Ley, Nr. Lydney, England, assignors to Chicopee, New Brunswick, N.J.

Filed May 9, 1983, Ser. No. 492,917

Claims priority, application United Kingdom, Jun. 10, 1982, 8216937

Int. Cl.⁴ B32B *5/28;* **B65D** *81/26;* **D04H** *1/48, 1/66*

U.S. Cl. 428—137 **22 Claims**

1. An absorbent pad of non-woven fabric comprising absorbent textile fibers, said fabric having high absorbency and integrity, the pad having on one side a layer of binder material for providing a surface having an absorbency reduced with respect to the remainder of the pad, the remainder of the pad being free of binder, said fabric having apertures formed therein for allowing fluid to pass through the binder layer.

17. A method of manufacturing an absorbent pad as claimed in claim 1 comprising the steps of entangling a web of absorbent textile fibres, forming apertures therein, and applying a layer of binder material to the web.

4,551,378

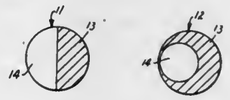
NONWOVEN THERMAL INSULATING STRETCH FABRIC AND METHOD FOR PRODUCING SAME

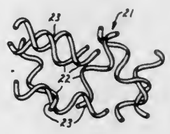
Patrick H. Carey, Jr., Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 11, 1984, Ser. No. 629,770

Int. Cl.⁴ D04H *1/06, 1/54*

U.S. Cl. 428—198 **18 Claims**





1. A substantially uniform stretch fabric comprising a nonwoven web of bicomponent fibers bonded together by fusion of fibers at points of contact and thermally crimped in situ in the web.

14. The fabric of claim 1 wherein said fabric is repeatedly stretchable to an amount at least 50% above the original fabric length.

4,551,379

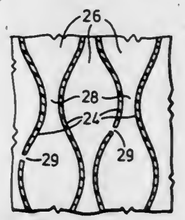
INFLATABLE PACKAGING MATERIAL

Stanley R. Kerr, Apt. 2201, 355 St. Clair Ave. W., Toronto, Ontario, Canada (M5P 1N5)

Filed Aug. 31, 1983, Ser. No. 528,004

Int. Cl.⁴ B32B *3/12;* **B65D** *81/02*

U.S. Cl. 428—200 **20 Claims**



1. A packaging material formed from a pair of juxtaposed sheets, said material including a plurality of continuous passages formed between said sheets and extending between two edges thereof, said passages being inflatable by admission of air and sealing of each passageway to provide a shock absorbing facility, adjacent passages being separated by partitions extending between said edges and having a substantially uniform thickness at least one partition of each passage following a sinuous path between said edges, each of said one partitions

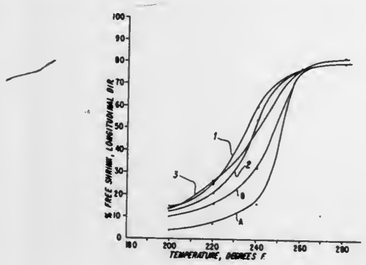
having a line of symmetry that extends across portions of adjacent ones of said passages whereby an object supported on a marginal portion of one passage adjacent said one partition will also be supported on a marginal portion of an adjacent passage and the spacing between the partitions delimiting each passage varying between the two edges of said sheet to provide a plurality of reductions in the cross sectional area of said passage spaced apart along the passage whereby air displaced from one end of said passage to the other is subjected to successive restrictions to the flow of air.

4,551,380

ORIENTED HEAT-SEALABLE MULTILAYER PACKAGING FILM

Julian H. Schoenberg, Greenville, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed May 10, 1984, Ser. No. 609,046
Int. Cl.⁴ B32B *27/08, 27/32;* **B29D** *23/04*
U.S. Cl. 428—218 **20 Claims**



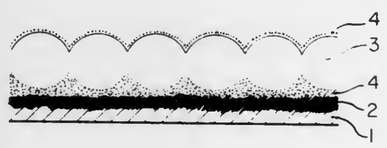
1. An oriented heat sealable multilayer film comprising:
a cross-linked core layer consisting essentially of a linear low density polyethylene; and
two cross-linked surface layers each comprising a three component blend of (1) a linear low density polyethylene, (2) a linear medium density polyethylene and (3) an ethylene vinyl acetate copolymer.

4,551,381

COATING FILM HAVING ADHESIVENESS

Tetsuhiko Inoue, 2-37-8 Mukogaoka, Bunkyo-ku, Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,340
Claims priority, application Japan, Mar. 29, 1982, 57-48847
Int. Cl.⁴ B32B *5/16*
U.S. Cl. 428—240 **9 Claims**



1. A composite sheet comprising a flexible thin fabric substrate, a first flexible continuous layer of a cured liquid coating material formed on one side of said fabric substrate and partially impregnated in said fabric substrate, a second flexible continuous layer of a cured resinous powder coating material formed on the first flexible layer, and an adhesive layer formed on the other side of said fabric substrate.

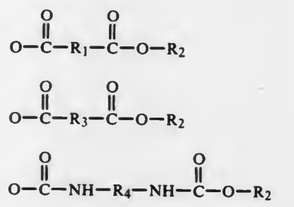
4,551,382

SIZING COMPOSITION AND METHOD OF MAKING SAME AND USE THEREOF FOR SIZING TEXTILE YARNS

Pierre Gagne, Tassin La Demi Lune; Yvette Girardeau, Fontaines-sur-Saone, and Bernard Pointud, Dardilly, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Division of Ser. No. 582,483, Feb. 22, 1984,. This application Jan. 25, 1985, Ser. No. 694,795
Claims priority, application France, Feb. 23, 1983, 83 02917
Int. Cl.⁴ D06M *15/52*
U.S. Cl. 428—258 **31 Claims**

1. A process for sizing warps of textile yarns with a sizing composition comprising in aqueous solution
(a) an anionic polyester-urethane of molecular weight between 10,000 and 100,000 having a plurality of polyester blocks therein derived from at least one chain formation of units of the formulas (I) and (II), said blocks being joined together by groups of the formula (III)

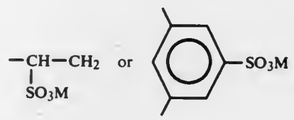


(I)

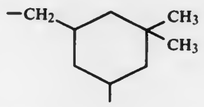
(II)

(III)

wherein;
R_1 is a divalent radical represented by a saturated hydrocarbon radical, an unsaturated aliphatic hydrocarbon radical, an unsaturated aliphatic hydrocarbon radical or a monocyclic aromatic radical;
R_2 is a divalent radical represented by a saturated aliphatic radical or a saturated cyclic hydrocarbon radical;
R_3 is a divalent radical selected from



M being an alkali metal;
R_4 is a divalent radical selected from the group consisting of hexamethylene, tetramethylhexamethylene,



m-phenylene, p-phenylene, 2,4-tolylene, 2,6-tolylene, dicyclohexylmethane-4,4′-diyl, diphenylmethane-4,4′-diyl and naphthalane-1,5-diyl; and
(b) a polymer derived from
(i) an acrylic monomer of the formula:



(IV)

wherein X is a hydrogen atom or methyl radical and Y is one of the following groups:

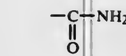
—COOH

—COOZ

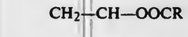
(Z being an alkyl radical containing 1 to 8 carbon atoms)

—C≡N

or



and/or
(ii) a vinyl monomer corresponding to the formula:



(V)

in which R is a hydrocarbon radical having from 1 to 20 carbon atoms,
wherein said composition comprises from about 40 to about 90 weight percent of a polyester-urethane and 10 to 60 weight percent of said polymer of (b); said process comprising immersing the yarn in an aqueous bath containing said sizing composition at a predetermined concentration and temperature, and dewatering said yarns by passing said yarns between rollers.

7. Textile yarns sized according to the process of claim 1.

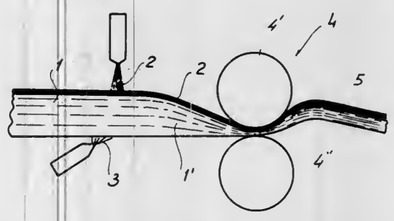
10. Woven fabrics derived from the yarns according to claim 7.

4,551,383

PROCESS FOR THE PRODUCTION OF PADDING FOR CLOTHING OR FURNISHINGS AND PRODUCT

Luciano Siniscalchi, Via Milano, 53, 22059 - Robbiate (Como), Italy

Filed Dec. 27, 1984, Ser. No. 686,833
Claims priority, application Italy, May 17, 1984, 20978 A/84
Int. Cl.⁴ D04H *1/58*
U.S. Cl. 428—286 **7 Claims**



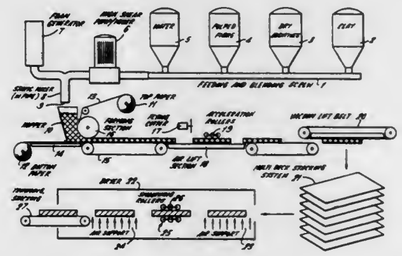
1. In a process for the production of padding in synthetic or other fibres, the improvement comprising the steps of:
first producing a web including a layer obtained by carding a mixture of fibres of polyester or other fibres with silicone treated fibres of diverse nature and origin;
treating one side of said web with a mixture of bonding agents of sticky plastic consistency which, when polymerised, create a very soft and elastic film;
spray-applying in the opposite side of said web from said one side thereof another type of bonding agent, of different nature, which is not sticky;
passing said web, thus treated through a calender composed of two or more cylinders; and
heating said cylinders whereby to cause said sticky plastic bonding agent to adhere to the facing roller in the region of separation of said web from said rollers such that said layer of fibres as caused partially to separate to create air spaces therein.

4,551,384

BOARDS

Geoffrey W. Aston, Horsham; Susan Smith, Crawley; Paul Chapman, and Howard A. Barker, both of Horsham, all of England, assignors to Redland Technology Limited, Reigate, England

Filed May 25, 1984, Ser. No. 614,208
Claims priority, application United Kingdom, Jun. 2, 1983, 8315164
Int. Cl.⁴ B32B *5/18, 9/04, 19/00*
U.S. Cl. 428—312.6 **17 Claims**



1. In a board of sandwich construction which comprises two outer preformed support membranes consisting of or comprising fibrous material, the said membranes having interposed therebetween an intermediate layer, the improvement which comprises the said intermediate layer being aerated, the said intermediate layer consisting of at least 70% by weight based on the dry board of an unfired clay which contains less than 20% by weight of expandable minerals and the said intermediate layer including fibres therein.

4,551,385

METHOD FOR PRINTING CELLULOSIC SUBSTRATES USING MODIFIED REACTIVE SILOXANES TO FORM AN OLEOPHILIC LAYER THEREON AND IMPREGNATING THEREAFTER WITH AN INK

Edward Robbart, 15 Emerson Pl., Boston, Mass. 02115

Filed Nov. 16, 1983, Ser. No. 552,315
Int. Cl.⁴ B32B *5/16;* **C23C** *11/00*
U.S. Cl. 428—323 **14 Claims**

1. In printing cellulosic substrates wherein printing ink is printed onto at least one surface of said celluosic substrate, the improvement which comprises chemically bonding a modified reactive siloxane and polymers thereof to a surface of the substrate to form an oleophilic siloxane layer thereon, and impregnating the bonded layer with an ink selected from the group consisting of solvent inks, oleoresinous inks, heat set inks, steam set inks and newsprint inks to effect printing.

4,551,386

MAGNETIC RECORDING MATERIALS

Nobutaka Yamaguchi; Shinobu Iida; Masahiro Utsumi; Toshimitu Okutu; Kenichi Masuyama, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1984, Ser. No. 596,776
Claims priority, application Japan, Apr. 4, 1983, 58-59078
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—323 **14 Claims**

1. A magnetic recording material, comprising:
a non-magnetic support having provided on one side thereof;
a magnetic recording layer comprised of ferromagnetic particles dispersed in a binder with carbon black particles having an average primary particle size of 30 mμ or less; and
a back layer provided on the other side of the support, the

back layer being comprised of a binder having dispersed therein carbon black having an average primary particle size in the range of 50 to 150 mμ, wherein the magnetic recording layer includes the carbon black having an average particle size of 30 mμ or less in an amount in the range of 1 to 20 parts by weight per 100 parts by weight of the ferromagnetic particles.

4,551,387

COLORED RESINOUS ARTICLES WITH CONCEALED METALLIC LUSTER

Katsuhide Manabe, and Masatoshi Tsutsui, both of Ichinomiya, Japan, assignors to Toyoda Gosei Kabushiki Kaisha, Nishikasugai, Japan

Filed Sep. 14, 1983, Ser. No. 532,153
Int. Cl.⁴ B32B *27/40*
U.S. Cl. 428—336 **21 Claims**

1. A rigid colored resinous article having a concealed metallic luster which comprises (a) a rigid, resinous molded article having been overlaid on the surface thereof successively with (b) a highly weather-resistance two-component polyurethane paint or UV-curable pain as a base coat, (c) a filmy layer of a metal of 2–150 Å in thickness which has been applied onto the base coat by dry plating so that said colored resinous article transmits color of the base coat or resinous article through the filmy layer of metal has a concealed metallic luster, and (d) a transparent highly weather-resistant and abrasion-resistant two-component polyurethane paint or UV-curable paint as a top coat, either of said (a) and said (b) having incorporated thereinto a material of a desired color tint.

4,551,388

ACRYLIC HOT MELT PRESSURE SENSITIVE ADHESIVE COATED SHEET MATERIAL

James A. Schlademan, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 27, 1983, Ser. No. 508,298
Int. Cl.⁴ C09J *3/00;* **C08F** *265/04*
U.S. Cl. 428—355 **4 Claims**

1. Pressure-sensitive adhesive coated sheet material comprising a flexible backing having a coating of a thermoplastic graft copolymer of (a) 10–40 percent by weight, based on graft copolymer, of a macromolecular monomer consisting of poly(-vinyl aromatic monomer) made by polymerization of vinyl aromatic monomer with an alkyllithium initiator to a poly(vinyl aromatic monomer) of number average molecular weight between 5000 and 50,000 capping with alkylene oxide and subsequent reaction with acryloyl or methacryloyl chloride to form terminal acrylate or methacrylate groups, and (b) 60–90 percent by weight, based on graft copolymer, of one or more monomers selected from the group consisting of acrylic acid, acrylamide, methacrylic acid, methacrylamide, and alkyl acrylates having 1–10 carbon atoms in the alkyl groups, whereby the terminal acrylate or methacrylate groups of said macromolecular monomer (a) are addition copolymerized with the monomer of monomer (b) to produce a graft copolymer having pendant poly(vinyl aromatic monomer) groups.

4,551,389

POROUS SPHERICAL CELLULOSE ACETATE PARTICLES

Etsuo Ohtake, Yokohama, and Kazuhiro Yamazaki, Hyogo, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 23, 1985, Ser. No. 693,720
Claims priority, application Japan, Mar. 21, 1984, 59-54004
Int. Cl.⁴ B32B *5/14, 5/16, 9/00*
U.S. Cl. 428—402 **6 Claims**

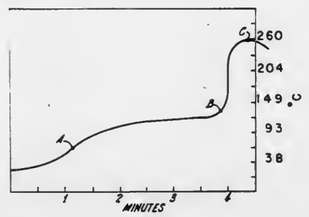
1. Porous, spherical particles of cellulose acetate, which consist essentially of a cellulose acetate having
an acetylation degree of 49 to 60%,
a particle diameter of 0.05 to 10 mm,
a sphericity of 0.7 or larger,
a pore volume of 0.4 cc/g or larger and
a collapsing strength of 9 kg or higher.

4,551,390

METHOD OF MOLDING MULTI-PLY POLYMERIC COMPOSITES

John L. Canning, Newark, and John F. Kay, Columbus, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 310,555, Oct. 13, 1981, Pat. No. 4,404,261.
This application May 9, 1983, Ser. No. 492,869
Int. Cl.⁴ B32B *9/00*
U.S. Cl. 428—431 **6 Claims**



1. An article comprising a plurality of plies including at least an inner ply and a pair of outer plies positioned in contacting contiguous relationship over a desired portion of their surfaces, wherein said inner and pair of outer plies each include an unsaturated, crosslinkable polyester, a monomer and a polymerization catalyst system, the catalyst system in said inner ply exhibiting a lower initiation temperature as compared to initiation temperatures of the catalyst system in each said pair of outer plies, wherein the catalyst system in each of the plies substantially simultaneously reach their respective polymerization initiation temperatures to crosslink the polyesters within each ply when the plies are molded at elevated temperatures and pressures; wherein said catalyst systems are selected from the group consisting of aliphatic diacyl peroxides, hydroperoxides, dialkyl peroxides, peroxyketals, aromatic diacyl peroxides, peroxyesters and "azo" catalyst.

4,551,391

RUBBER COMPOSITIONS AND ARTICLES THEREOF HAVING IMPROVED METAL ADHESION AND METAL ADHESION RETENTION

Jung W. Kang, Clinton, and James A. Davis, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 20, 1984, Ser. No. 572,493
Int. Cl.⁴ B32B *15/06*
U.S. Cl. 428—462 **9 Claims**

1. A vulcanizable rubber composition devoid of rosin-derived resins having improved metal adhesion and metal adhesion retention properties with brass and brass-plated metallic reinforcing elements, the improvement wherein:
from about 0.5 to about 10.0 parts by weight of nickel molybdate, cobalt molybdate or a mixture thereof per 100 parts of the rubber component in said rubber composition is incorporated into said rubber composition prior to curing.

4,551,392

COMPOSITE MATERIALS AND COMPOSITE BUILDING ELEMENTS BASED ON EP(D)M

Adolf Draexler, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,448
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321176
Int. Cl.⁴ B32B *27/08, 25/12*
U.S. Cl. 428—495 **15 Claims**

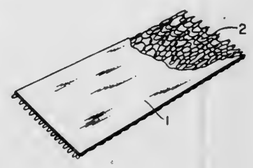
1. A composite material comprising the following two layers:
(1) a layer comprising an ethylene/propylene or ethylene/-propylene/diene elastomer and an effective amount of a vulcanizing agent; and
(2) an adjoining layer comprising an elastomer component comprising 5–50% by weight of a polyoctenylene elastomer having a viscosity number (J value) of 40–350 cc/g, measured at 25° C. in tolune in a concentration of 0.5% (weight/volume of solution), and
50–95% by weight of one or more elastomers selected from the group of styrene/butadiene rubber, acrylonitrile/-butadiene rubber, chlorinated polyethylene and diene elastomers,
and an effective amount of a vulcanizing agent.

4,551,393

HEAT-RESISTANT SHIFT MEMBER

Kikuo Sumiyoshi; Eiji Sato, both of Fujisawa; Kazuo Hirai, Kamakura; Kingo Miyasaka, and Masayoshi Izumi, both of Ayase, all of Japan, assignors to Oiles Industry Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1983, Ser. No. 522,009
Claims priority, application Japan, Aug. 16, 1982, 57-140987
Int. Cl.⁴ F16J *15/12*
U.S. Cl. 428—609 **3 Claims**



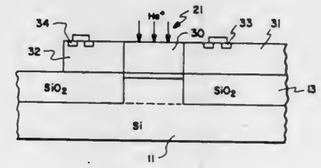
1. A heat-resistant shift member comprising: (a) a fundamental body having substantially a desired configuration formed by shaping at least one heat-resistant material selected from the group consisting of expanded graphite, mica and asbestos, together with a reinforcing material of stainless steel metal mesh so that the heat resistant material and the reinforcing material are integrally combined with each other; and (b) a shifting surface layer member formed of a heat-resistant sheet material selected from the group consisting of paper, non-woven cloth, woven cloth composed of one or more filaments made of asbestos, carbon other than expanded graphite and glass, said heat-resistant sheet material being covered with a powdered solid lubricating compound, the heat-resistant sheet material thus covered with said lubricating compound being reinforced by a metal mesh made of fine copper alloy wires, and the surface of said fundamental body being integrally covered with said shifting surface layer member, whereby the metal meshes of said fundamental body and said shifting surface layer member are entangled with each other.

4,551,394

INTEGRATED THREE-DIMENSIONAL LOCALIZED EPITAXIAL GROWTH OF SI WITH LOCALIZED OVERGROWTH OF GAAS

Regis J. Betsch, Eden Prairie; Michael S. Liu, Bloomington, and Obert N. Tufte, Prior Lake, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 26, 1984, Ser. No. 674,903
Int. Cl.⁴ H01L *21/205*
U.S. Cl. 428—641 **5 Claims**



1. A Si-GaAs integrated electronic structure by localized epitaxial growth comprising:
a monocrystalline silicon substrate having a planar surface coated with an insulating layer;
said insulating layer having a window down through the layer to the silicon surface thereby exposing a portion of the silicon surface;
an epitaxially-grown monocrystalline silicon island grown from said surface portion and filling said window substantially to the upper surface of the insulating layer;
an epitaxially-grown monocrystalline thin-film buffer layer grown from and over the surface of said silicon island;
an epitaxially-grown monocrystalline layer of $Al_xGa_{1-x}As$ (where $x \geqq 0$) grown from said buffer layer which layer of $Al_xGa_{1-x}As$ extends horizontally from the island over the surface of the insulating layer adjacent said window.

4,551,395

BEARING MATERIALS

Kenneth Lloyd, Grosse Pointe Park, Mich., assignor to D.A.B. Industries, Inc., Troy, Mich.

Filed Sep. 7, 1984, Ser. No. 648,466
Int. Cl.⁴ C22C *9/02;* **F16C** *33/12*
U.S. Cl. 428—677 **4 Claims**

1. A bearing comprising bearing material bonded to a steel backing, said bearing material consisting essentially of 10% to 20% by weight of bismuth, 0.5% to 4% by weight of tin, 0% to 1% by weight of lead and the balance copper.

4,551,396

SLIDING MATERIAL FOR SEALS ON ROTARY REGENERATIVE HEAT EXCHANGERS WITH A CERAMIC CORE

Klaus Wiegard, Esslingen; Karlheinz Kinast, Plochingen; Wolfgang Kleinekathöfer, Waldstetten, and Eggert Tank, Wernau, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,239
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331919
Int. Cl.⁴ B32B *15/18*
U.S. Cl. 428—678 **6 Claims**

1. Sliding material for seals on rotary regenerative heat exchangers with a ceramic core formed as an alloy of the composition
Cr 15–19% by weight
Mo 5–32.5% by weight
Si 0.3–10% by weight
≦10% by weight
≦4.5% by weight

Ti ≦4.5% by weight
Ni remainder

4,551,397
ZINC SILICATE PHOSPHOR AND ELECTRON EXCITED FLUORESCENT DISPLAY DEVICE USING THE PHOSPHOR

Masachika Yaguchi; Tomoki Mikami, and Takashi Hase, all of Odawara, Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,387
Claims priority, application Japan, Apr. 4, 1983, 58-58987; Jun. 27, 1983, 58-115396
Int. Cl.⁴ C09K *11/44*
U.S. Cl. 428—691 **15 Claims**

1. A zinc silicate phosphor represented by the formula:

$$(Zn_{1-x-2y}, M^{II}_x, Na_{2y})_2SiO_4:Mn_a, As_b, M_c \quad (I)$$

where M^{II} is at least one element selected from the group consisting of barium, calcium and strontium, M is at least one of antimony and bismuth, and x, y, a, b and c satisfy the conditions of $0 \leqq x \leqq 5\times10^{-2}$, $0 \leqq 2y \leqq 5\times10^{-3}$, $5\times10^{-5} \leqq a \leqq 3\times10^{-2}$, $0 \leqq b \leqq 5\times10^{-3}$ and $0 < c \leqq 1\times10^{-2}$, respectively, provided $x+2y \neq 0$, and exhibiting a higher fluorescence maintaining rate than said phosphor where c=0, and a higher fluorescence maintaining rate than said phosphor where x+2y=0.

4,551,398
TETRAALKYL TITANATE MODIFIED NYLON MAGNET WIRE INSULATION COATING

Francois A. Lavallee, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jun. 13, 1984, Ser. No. 620,310
Int. Cl.⁴ B32B *27/00;* **H01B** *7/00*
U.S. Cl. 428—383 **7 Claims**

1. An electrically insulated magnet wire insulated with at least one layer of an enamel composition comprising nylon reacted with tetraalkyl titanate in an amount of about 0.25% to about 10% by weight of the nylon present in the enamel composition.

5. An electrically insulated magnet wire insulated with a layer of polyurethane which is bonded to a layer of polyvinyl butyral through a layer of an enamel composition comprising nylon reacted with tetraalkyl titanate in an amount of about 0.25% to about 10% by weight of the nylon present in the enamel composition.

4,551,399
BIPOLAR BATTERY

Aleksandar Despic, Vlajkoviceva 13, 11000 Beograd, Yugoslavia

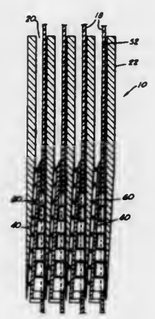
Filed May 31, 1984, Ser. No. 615,917
Claims priority, application Yugoslavia, Jun. 2, 1983, 1224/83
Int. Cl.⁴ H01M *4/00, 6/48*
U.S. Cl. 429—27 **4 Claims**

1. A bipolar storage battery employing a number of cells between a pair of parallel end walls and a pair of parallel side walls normal to the plane of said end walls, each of said cells formed between opposed cells walls each having a first and second face, said battery including:

a removable-replaceable anode including a wall contacting side and cell facing side, said wall contacting side being coplanar and abutting the first face of said one wall, said cell facing side having an upper portion generally parallel with said wall contacting side and a lower tapered portion angled inwardly and downwardly forming a wedge;

a cathode member contacting the second face of said other wall, said member including projections and spaces for air to act as an oxidant, and a face opposite said projections angularly disposed thereto toward said tapered portion and generally parallel with said lower tapered portions of said anode;

each of said side walls including slots therethrough complimentary with the projections of said cathode member and receiving said projections, said projections extending through said wall into an adjacent cell and bearing against said wall contacting side of said anode;



said wedge portion of said anode gravitationally biasing said cathode against said wall;

spacer means separating said anode and said cathode member in the same cell;

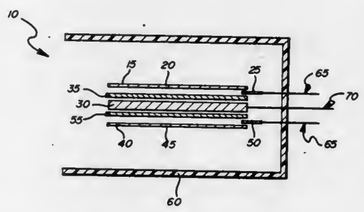
contact means interconnecting said anodes and passing to the exterior of said bettery forming one contact; and

contact means interconnecting said cathodes and passing to the exterior of said battery forming another contact.

4,551,400
HYDROGEN STORAGE MATERIALS AND METHODS OF SIZING AND PREPARING THE SAME FOR ELECTROCHEMICAL APPLICATIONS

Krishna Sapru; Kuochih Hong, both of Troy; Michael A. Fetcenko, Farmington Hills, and Srinivasan Venkatesan, Royal Oak, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Apr. 17, 1984, Ser. No. 601,641
Int. Cl.⁴ H01M *4/36, 6/24*
U.S. Cl. 429—94 **59 Claims**



1. An active material for an hydrogen storage electrode, said material comprising the composition formula selected from the group consisting of:

$$(TiV_{2-x}Ni_x)_{1-y}M_y \quad (a)$$

whereas, $0.2 \leqq x \leqq 1.0$, $0 \leqq y \leqq 0.2$ and M=Al or Zr;

$$Ti_{2-x}Zr_xV_{4-y}Ni_y \quad (b)$$

whereas, $0 < x \leqq 1.5$, $0.6 \leqq y \leqq 3.5$; and

$$Ti_{1-x}Cr_xV_{2-y}Ni_y \quad (c)$$

whereas, $0 < x \leqq 0.75$, $0.2 \leqq y \leqq 1.0$.

4,551,401
METHOD OF SUPPRESSING LEAD DUST

Frank Wilson, Lancashire, England, assignor to Chloride, Inc., Tampa, Fla.

Filed Apr. 13, 1984, Ser. No. 600,140
Int. Cl.⁴ H01M *6/00, 2/16*
U.S. Cl. 429—122 **27 Claims**

15. A substantially dust free unformed leaded plate for lead acid storage batteries comprising a lead pasted supporting grid coated with a copolymeric water insoluble porous coating made porous by applying a suspension of copolymer emulsion, ammonium sulfate and water.

4,551,402
ELECTRODE SEPARATOR FOR AN ELECTRIC CELL

Tadashi Tamura, Shiga; Etsuro Nakao, Moriyama, and Hiroaki Yamazaki, Ibaraki, all of Japan, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,491
Claims priority, application Japan, Nov. 17, 1982, 57-202490
Int. Cl.⁴ H01M *2/16*
U.S. Cl. 429—254 **3 Claims**



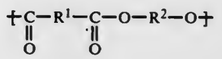
1. An electrode separator for an electric cell, comprising: a mat of a collected plurality of filaments which are continuous in the mat, each filament having segments of 2–4μ in diameter and segments of 10–30μ in diameter, the proportions of segments of 2–4μ in diameter and those of 10–30μ in diameter being 30–50% and 20–40%, respectively, of the total in a unit area of the mat of filaments.

4,551,403
PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

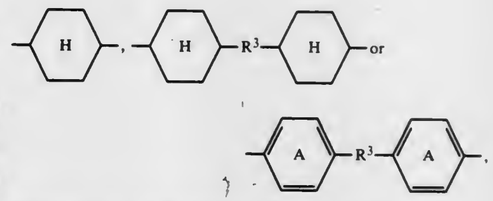
Nobuhiro Miyakawa, Abiko; Teruaki Higashiguti, Tokyo; Yumiko Sano, Ibaragi, and Masatomi Funato, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 434,120, Oct. 13, 1982, abandoned.
This application Sep. 24, 1984, Ser. No. 653,488
Claims priority, application Japan, Oct. 16, 1981, 56-164277
Int. Cl.⁴ G03G *5/05*
U.S. Cl. 430—58 **16 Claims**

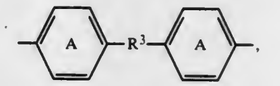
1. A photosensitive material for the electrophotography, which comprises an electroconductive substrate and a photosensitive layer formed on said substrate, said photosensitive layer comprising a charge transfer medium and a charge-generating pigment dispersed in said medium, wherein the photosensitive layer contains as the matrix resin a thermoplastic polyester consisting essentially of recurring units represented by the following general formula



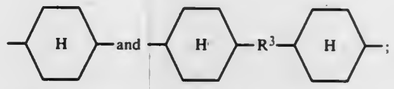
wherein R^1 stands for a phenylene group or an ethylene group, and R^2 stands for at least one group represented by the formula



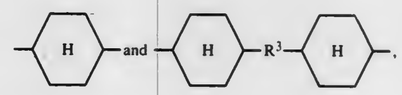
wherein the ring A may have a substituent not participating in the reaction, with the proviso that when R^1 stands for the ethylene group, R^2 stands for the group



or one or both of



and when R^1 stands for the phenylene group, R^2 stands for one or both of



wherein R^3 stands for

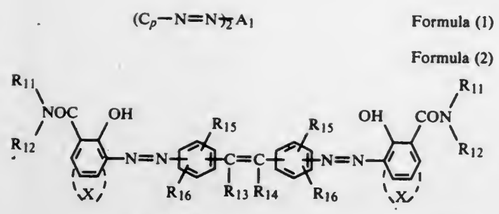


4,551,404
DISAZO ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Masaaki Hiro, Kawasaki; Yoshio Takasu, Tama; Shozo Ishikawa, Yokohama; Kazuharu Katagiri, Yokohama, and Hideyuki Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha and Copyer Kabushiki Kaisha, both of Tokyo, Japan

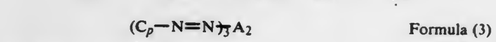
Filed Aug. 9, 1982, Ser. No. 406,313
Claims priority, application Japan, Jun. 18, 1981, 56-129162; Aug. 18, 1981, 56-129164; Aug. 18, 1981, 56-129165; Aug. 18, 1981, 56-129166; Aug. 19, 1981, 56-130765; Aug. 19, 1981, 56-130766; Sep. 7, 1981, 56-141439; Oct. 5, 1981, 56-158478; Oct. 5, 1981, 56-158479; Nov. 25, 1981, 56-188908; Nov. 26, 1981, 56-190036
Int. Cl.⁴ G03G *5/06, 5/14*
U.S. Cl. 430—59 **15 Claims**

1. An electrophotographic photosensitive member characterized by a conductive layer or substrate a charge transport layer and a layer comprising a binder and at least one azo pigment represented by the following formula (1), (2) or (3):



Formula (1)

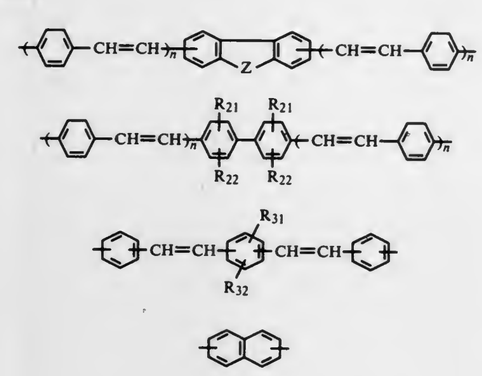
Formula (2)

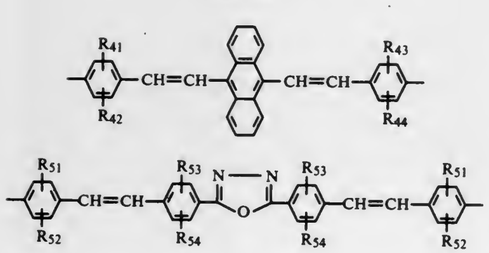


Formula (3)

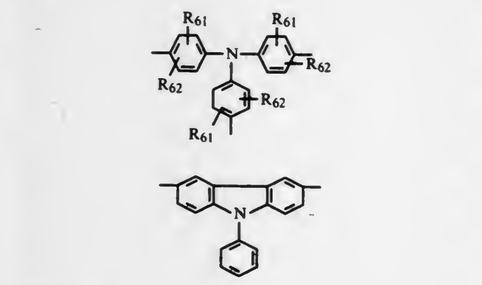
in these formulae;

A1:

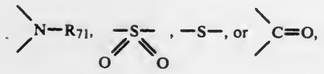




A2:



wherein, Z is



in which R_{71} is hydrogen, or substituted or unsubstituted alkyl;

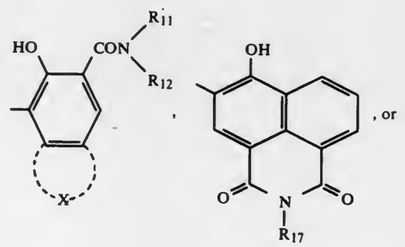
n is 0 or 1;

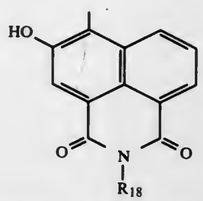
R_{21}, R_{22}, R_{61} and R_{62} are hydrogen, alkyl, alkoxy, nitro, or hydroxyl;

R_{31} and R_{32} are hydrogen or alkoxy; and

R_{41}, R_{42}, R_{43}, R_{44}, R_{51}, R_{52}, R_{53} and R_{54} are hydrogen, halogen, or organic monovalent residue:

Cp:





wherein X represents a residue necessary for completing an aromatic hydrocarbon ring or a hetercyclic ring, each ring being substituted or unsubstituted;

R_{11} is hydrogen or alkyl;

R_{12} is methyl, ethyl, or C_3–C_8 linear alkyl; and

R_{17} and R_{18} are alkyl, aralkyl or aryl, each substituted or unsubstituted:

in formula (2); R_{11}, R_{12} and X are as defined above;

R_{13} and R_{14} are hydrogen or cyano; and

R_{15} and R_{16} are hydrogen, halogen, alkyl, alkoxy, nitro, or hydroxyl.

4,551,405

IMAGE FORMING PROCESS EMPLOYING MEMBER WITH A DEPLETION LAYER

Katsumi Nakagawa, Tokyo; Toshiyuki Komatsu, Kawasaki; Yutaka Hirai, Tokyo; Teruo Misumi, Toride, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 269,846, Jun. 3, 1981, Pat. No. 4,461,819, which is a continuation of Ser. No. 16,986, Mar. 2, 1979, abandoned. This application Dec. 23, 1983, Ser. No. 565,146

Claims priority, application Japan, Mar. 3, 1978, 53-24628; Mar. 14, 1978, 53-29030; Apr. 28, 1978, 53-51851

Int. Cl.⁴ G03G *5/14, 5/082*

U.S. Cl. 430—64 **21 Claims**

1. An electrophotographic process which comprises the steps of:

applying a charging treatment to an image forming member for electrophotography, said image forming member comprising a substrate and a charge generation layer comprising an inner region containing hydrogenated amorphous silicon and an outer region containing a hydrogenated amorphous silicon, said charge generation layer being sensitive to electromagnetic wave and having a depletion layer formed by the junction of said regions, said regions having different electric properties, said charging treatment conducted under a charging polarity sufficient to broaden the width of said depletion layer to prevent charge carriers from being injected into the charge generation layer from the substrate, and

irradiating said image forming member with an electromagnetic wave carrying information, thereby forming an electrostatic image.

4,551,406

ELECTROPHOTOGRAPHIC RECORDING PROCESS AND PHOTOCONDUCTIVE COATING SUITABLE FOR USE THEREIN

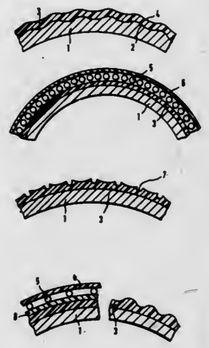
Günther Schaedlich, and Roland Moraw, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,565

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204221

Int. Cl.⁴ G03G *13/10*

U.S. Cl. 430—119 **3 Claims**



1. A method for recording electrophotographically an image on a copy carrier by using a liquid developer, comprising the steps of:

electrostatically charging and exposing a photoconductive coating in a manner whereby a charge image is generated thereon;

rendering visible said charge image as a toner image by means of a liquid developer, said developer containing dispersing liquid for the toner; and

transferring and fixing said toner image to a copy carrier;

wherein said photoconductive coating is deposited on a carrier and has a texture pattern with a surface roughness of from about 5 μm to about 50 μm and repetition lengths of from about 100 μm to about 3000 μm, said texture pattern reducing the drag-out of dispersing liquid;

wherein said carrier of the photoconductive coating is provided with texturing elements by mechanical removal, embossing, etching or spot-wise application of electrically conducting substances, said texturing elements producing textures on the photoconductive coating applied to the surface of the carrier, the texture patterns having a substantially sinusoidal cross-section; and

wherein the texture pattern is produced on the photoconductive coating by a shrinkable flexible tubing with an inserted embossing matrix of a screen printing fabric, drawn tightly over the photoconductive coating, and heated to a temperature sufficient to cause shrinkage of the tubing.

4,551,407

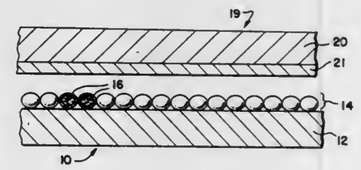
TRANSFER IMAGING SYSTEM

Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 320,356, Nov. 12, 1981, Pat. No. 4,399,209. This application Aug. 3, 1983, Ser. No. 520,023

Int. Cl.⁴ G03C *1/72, 5/54, 5/16*

U.S. Cl. 430—138 **19 Claims**



1. A transfer imaging system in which images are formed by image-wise reaction of one or more chromogenic materials and a developer, said system comprising:

an imaging sheet comprising a first substrate,

a chromogenic material,

a photodepolymerizable composition which undergoes a decrease in viscosity upon exposure to actinic radiation,

a coating on one surface of said first substrate comprising said chromogenic material and said photodepolymerizable composition,

said photodepolymerizable composition being encapsulated in rupturable capsules as an internal phase, and

a developer sheet comprising a second substrate and a developer material capable of reacting with said chromogenic material to form an image on one surface of said substrate,

wherein images are formed by image-wise exposing said coating to actinic radiation, and rupturing said capsules in the exposed areas with said coating in facial contact with said developer sheet such that said internal phase is image-wise released from said ruptured capsules and there is image-wise transfer of said chromogenic material to said developer sheet and a patterned image-forming reaction occurs between said chromogenic material and said developer material.

13. A transfer imaging process comprising:

image-wise exposing to actinic radiation an imaging sheet comprising a first substrate and a coating composition of said substrate,

said coating composition including a chromogenic material and a photodepolymerizable composition which undergoes a decrease in viscosity upon exposure to actinic radiation,

said photodepolymerizable composition being encapsulated in rupturable capsules,

rupturing capsules in the exposed areas, and

transferring said chromogenic materials from the ruptured capsules to a sheet carrying a developer material on one surface such that there is a patterned reaction between said developer material and said chromogenic material which produces an image.

4,551,408

COLOR IMAGE FORMING METHOD AND COLOR IMAGE FORMING PHOTO-SENSITIVE MATERIAL TO BE USED THEREFOR

Hisashi Mino, Saitama, and Takeshi Iizima, Higashimatsuyama, both of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 538,881
Claims priority, application Japan, Oct. 7, 1982, 57-176752
Int. Cl.⁴ G03C *5/18, 5/00;* G03F *7/08*
U.S. Cl. 430—141 **1 Claim**

1. An image forming process comprising:
(a) providing a color layer upon a transparent base material, said color layer comprising a film-forming, water soluble, high molecular weight polymer, a photosensitive material which reacts with said polymer when exposed to light to insolubilize said polymer; and a coloring agent corresponding to the color to be printed from the separation plate, said coloring agent being used in a concentration such that the optical transmission density of the color layer is between 0.5 and 1.5 after exposure to light;
(b) superimposing upon said color layer a color separated negative film of the original image which is to be printed;
(c) exposing said color layer to light through said negative film;
(d) washing said color layer and base material with water to remove non-exposed, water-soluble portions and to form a color image;
(e) proofing said color image against a background; and
(f) dyeing said proofed color image with a dye such that the optical density of the color image is at least 2.5 within the range of the active rays of light.

4,551,409

PHOTORESIST COMPOSITION OF COCONDENSED NAPHTHOL AND PHENOL WITH FORMALDEHYDE IN ADMIXTURE WITH POSITIVE O-QUINONE DIAZIDE OR NEGATIVE AZIDE

Michael Gulla, Sherborn; Paul Taylor, North Andover, and Michael J. Oddi, Burlington, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Nov. 7, 1983, Ser. No. 549,286
Int. Cl.⁴ G03C *1/60, 1/71;* G03F *7/26*
U.S. Cl. 430—192 **22 Claims**

1. A photoresist composition comprising an admixture of a binder and a sensitizer, said binder being an alkali soluble naphthol polymer that is the product of condensation of an aldehyde and a mixed monomer consisting of a naphthol and a phenol, the binder having a naphthol content of at least 1 mole percent, and said sensitizer comprising a binder compatible and developable sensitizer selected from the group of positive working o-quinone diazide compounds and negative working azide compounds, said sensitizer being present in an amount of from 0.1 to 50 weight percent of the photoresist composition.

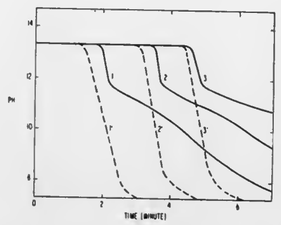
12. A photoresist composition comprising an admixture of a binder and a sensitizer, said binder being an alkali soluble admixture of an alkali soluble naphthol polymer and an alkali soluble polymer, said naphthol polymer consisting of the condensation product of an aldehyde and naphthol in combination with a phenol, said alkali soluble polymer being selected from the group of novolak resins and polyvinyl phenols, said binder having a naphthol content of at least 1 mole percent, and said sensitizer being a binder compatible and developable sensitizer selected from the group of positive working o-quinone diazide compounds and negative working azide compounds, said sensitizer being present in an amount of from 0.1 to 50 weight percent of the photoresist composition.

4,551,410

PHOTOGRAPHIC ELEMENT FOR COLOR DIFFUSION TRANSFER WITH TWO NEUTRALIZING LAYERS

Hideki Tomiyama, and Masaki Satake, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1984, Ser. No. 631,113
Claims priority, application Japan, Jul. 14, 1983, 58-128224
Int. Cl.⁴ G03C *5/54, 1/40*
U.S. Cl. 430—215 **23 Claims**



1. A photographic element for color diffusion transfer comprising a neutralization system for reducing pH of an alkaline processing solution, comprising:
an element comprising an integral laminate film unit comprising (1) a light-sensitive sheet comprising a support having coated thereon, in succession, an image-receiving element and a light-sensitive element containing at least one silver halide emulsion layer in association with a dye image-providing compound; (2) a cover sheet comprising a neutralization system and (3) a processing element comprising an alkaline processing solution capable of being spread between said light-sensitive elements and said cover sheet to develop and transfer an image;
wherein said neutralizing system comprises a neutralization layer, an auxiliary neutralization layer and one or two timing layers;
wherein the alkaline processing solution reaches said neutralization layer and said auxiliary neutralization layer through at least one timing layer;
wherein neutralization of said processing solution in said neutralization system is divided into at least two steps in such a manner that:
in the first step the pH of said processing solution is reduced in said auxiliary neutralization layer to a range in which development and dye release reactions are substantially discontinued, but in which diffusion of a dye for forming transfer images continues, and
in the second step, the pH of said processing solution is further reduced in said neutralization layer at a rate lower than in the first step to a final pH in which the transfer image formed is stabilized; and
wherein when two timing layers are present, said neutralization system is coated on a support and comprises, in succession, said neutralizing layer, a second timing layer said auxiliary neutralizing layer and a first timing layer wherein said first timing layer has a positive temperature coefficient.

4,551,411

SEQUESTRANTS USED IN DIFFUSION TRANSFER ELEMENTS WITH METALLIZABLE DYES

David P. Brust; Stephen M. Neumann, both of Rochester, and Edward Weissberger, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,415
Int. Cl.⁴ G03C *1/40, 5/54*
U.S. Cl. 430—216 **21 Claims**

1. In a photographic assemblage comprising:
(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a metallizable redox dye-releaser;
(b) a dye image-receiving layer;
(c) an alkaline processing composition and means containing same for discharge within said assemblage; and
(d) a transparent cover sheet located over the layer outermost from said support;
said assemblage containing an electron transfer agent; the improvement wherein said assemblage contains a sequestering agent which is gluconic acid, $N[CH_2—P(O)(OH)_2]_3$ or $(HO)_2P(O)—C(CH_3)(OH)—P(O)(OH)_2$.

4,551,412

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL FOR PHOTOMECHANICAL PROCESS AND METHOD OF REDUCTION TREATMENT THEREFORE

Masashi Ogawa; Taku Nakamura; Yukihide Urata, and Shingo Yamauchi, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 17, 1983, Ser. No. 524,001
Claims priority, application Japan, Aug. 17, 1982, 57-142464
Int. Cl.⁴ G03C *1/48*
U.S. Cl. 430—265 **27 Claims**

1. A silver halide photographic light-sensitive material for photo-mechanical process comprising a support having thereon at least one light-sensitive silver halide emulsion layer and at least one light-insensitive upper layer which is positioned above the light-sensitive silver halide emulsion layer, wherein at least one of the light-insensitive upper layers has a melting time longer than a melting time of the light-sensitive silver halide emulsion layer and at least one of the light-insensitive upper layers contains a polymer latex, wherein the polymer latex is a polymer latex having a glass transition temperature higher than room temperature, whereby antiadhesive property is improved.

23. A method of reduction treatment for a silver halide photographic light-sensitive material for photo-mechanical process comprising the steps of:
exposing a silver halide photographic light-sensitive material, wherein the silver halide photographic light-sensitive material comprises a support having thereon at least one light-sensitive silver halide emulsion layer and at least one light-insensitive upper layer which is positioned above the light-sensitive silver halide emulsion layer, wherein at least one of the light-insensitive upper layers has a melting time longer than a melting time of the light-sensitive silver halide emulsion layer and at least one of the light-insensitive upper layers contains a polymer latex, wherein the polymer latex is a polymer latex having a glass transition temperature higher than room temperature, whereby antiadhesive property is improved,
development processing the exposed silver halide photographic light-sensitive material to form a silver image, and
carrying out reduction treatment of the silver image.

4,551,413

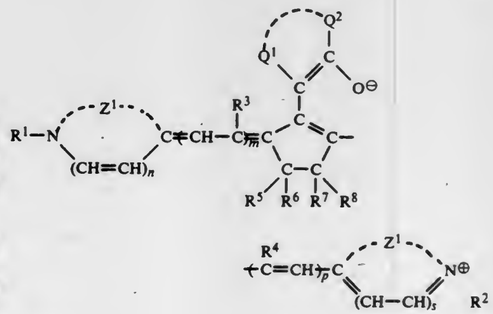
RECORDING ELEMENT FOR OPTICAL DATA STORAGE

Vivien L. Bell, London, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 23, 1983, Ser. No. 564,938
Claims priority, application United Kingdom, Dec. 31, 1982, 8237040
Int. Cl.⁴ G03C *5/24*
U.S. Cl. 430—270 **25 Claims**

1. An optical recording element on which information can be recorded and read directly afterwards by means of laser light characterized in that the element comprises, as a recording medium, a substrate having coated thereon and adhered thereto an amount of one or more dyes sufficient to enable optical differentiation between areas exposed and unexposed to a laser beam, said dyes having the formula:

(I)



in which:
m+p=2,
n is 0 or 1,
s is 0 or 1,
Z^1 and Z^2 independently represent the non-metallic atoms necessary to complete a heterocyclic nucleus of the type present in cyanine dyes,
R^1 and R^2 independently represent an alkyl or substituted alkyl, alkenyl, substituted alkenyl or aralkyl group of up to 20 carbon atoms,
R^3 and R^4 independently represent a hydrogen atom or an alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkoxy or substituted alkoxy group of up to 10 carbon atoms,
R^5, R^6, R^7 and R^8, which together may not contain more than 12 carbon atoms, independently represent a hydrogen atom, an alkyl, substituted alkyl, alkenyl, substituted alkenyl, aryl, alkaryl or substituted alkaryl group, or
one of R^5 and R^6 together with one of R^7 and R^8 represent the necessary atoms to complete a carbocyclic ring in which case the others of R^5 to R^8 are absent,
Q^1 and Q^2 together represent the non-metallic atoms necessary to complete an acidic nucleus of the type present in oxonol or merocyanine dyes.

4,551,414

POSITIVE RESIST MATERIAL

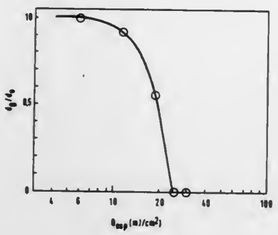
Frithjof Asmussen; Hideto Sotobayashi; Jiang-Tsun Chen, and Wolfram Schnabel, all of Berlin, Fed. Rep. of Germany, assignors to Max-Planck-Gesellshaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,437

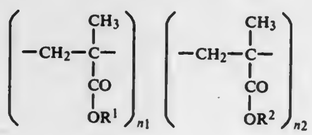
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206633; Dec. 17, 1982, 3246825

Int. Cl.⁴ G03C *1/495, 5/16, 18/02, 18/20*

U.S. Cl. 430—270 **7 Claims**



1. A positive resist material of a thermally crosslinkable methacrylic polymer soluble in an organic solvent wherein the methacrylic polymer is a copolymer of the formula



wherein R^1 represents a wholly or partly fluorinated alkyl group with 2 to 6 carbon atoms, R^2 represents a partially chlorinated alkyl group with 2 to 6 carbon atoms and having a terminal ω-trichloromethyl group, the degree of polymerization n_1+n_2 being between 300 and 3000 and the mole fraction

$$\frac{n_2}{n_1 + n_2}$$

being between 0.02 and 0.20.

4,551,415

PHOTOSENSITIVE COATINGS CONTAINING CROSSLINKED BEADS

Abraham B. Cohen, Springfield, N.J., and Vincent J. Webers, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 370,991, Apr. 22, 1982, abandoned. This application May 18, 1984, Ser. No. 611,870

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.⁴ G03C *1/68*

U.S. Cl. 430—281 **9 Claims**

1. A photosensitive coating composition consisting essentially of

(a) 5 to 45% by weight based on the weight of components (a) to (d) of at least one nongaseous, ethylenically unsaturated compound having at least one terminal ethylenic group, said compound being capable of forming a high polymer by free-radical initiated, chain-propagating addition polymerization;

(b) 0.05 to 10% by weight based on the weight of components (a) to (d) of an organic, radiation-sensitive, free-radical generating system, activatable by actinic radiation which initiates polymerization of the unsaturated compound;

(c) at least one organic polymeric binder;

(d) discrete, substantially nonswellable crosslinked polymeric beads having an average diameter in the range of 0.02 to 4.0 μm, wherein at least 90% of the beads by population are below 6 μm, the beads being insoluble and nonagglomerating in a solvent for the organic polymeric binder component, said crosslinked polymeric beads are taken from the class consisting of homopolymers and copolymers of tri-, and tetraacrylate, and tri-, and tetramethacrylate monomers which contain three or more free-radical polymerizable double bonds per molecule, copolymers of at least one of said acrylate and methacrylate monomers and up to 25% by weight of at least one monomer having one terminal ethylenic group, and copolymers of at least one of said acrylate and methacrylate monomers and up to 75% by weight of at least one monomer having two terminal ethylenic groups, the total weight percent of the combination of components (c) and (d) based on the total weight of components (a) to (d) being 40 to 70% by weight, component (d) being present in an amount of 15 to 90% by weight based on the weight of components (c) and (d); and

(e) at least one solvent for components (a), (b) and (c), the crosslinked polymeric beads being resistant to absorbing or being plasticized by any component or mixture of components of the coating composition, being mutually compatible with the dissolved ingredients a, b, c and e of the coating composition in which said beads are dispersed.

4,551,416

PROCESS FOR PREPARING SEMICONDUCTORS USING PHOTOSENSITIVE BODIES

Edwin A. Chandross, Berkeley Heights; Elsa Reichmanis, Piscataway, and Cletus W. Wilkins, Jr., Westfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

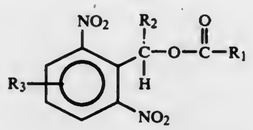
Continuation-in-part of Ser. No. 265,554, May 22, 1981, Pat. No. 4,400,461. This application Apr. 29, 1983, Ser. No. 489,796

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—311 **11 Claims**

1. A process for preparing a semiconductor device comprising the steps of depositing a photosensitive material on a substrate comprising a semiconductor material, irradiating said photosensitive material with electromagnetic radiation in a desired pattern, developing said pattern with an alkaline composition, and completing the fabrication of said semiconductor device wherein said photosensitive material comprises a mixture of an o,o'-dinitroarylmethyl ester of a carboxylic acid and a polymer which is soluble in said alkaline composition, said o,o'-dinitroarylmethyl ester being represented by the formula



where R_1 is a substituent chosen so that a salt of the carboxylic acid, R_1COOH, is sufficiently soluble in water to produce at least a 0.01M solution and R_1, R_2 and R_3 are chosen so that the ratio expressed as 1:n of the solubility rate of said unexposed to said exposed portions is such that n is at least 4.

4,551,417

METHOD OF FORMING PATTERNS IN MANUFACTURING MICROELECTRONIC DEVICES

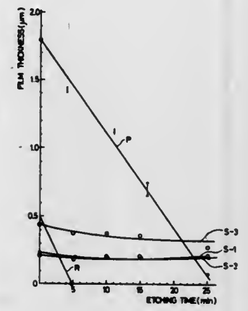
Masayoshi Suzuki, and Kazuhide Saigo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,201

Claims priority, application Japan, Jun. 8, 1982, 57-98089; Jun. 8, 1982, 57-98090; Jul. 16, 1982, 57-123865; Jul. 16, 1982, 57-123866; Nov. 5, 1982, 57-194286

Int. Cl.⁴ G03C *5/16*

U.S. Cl. 430—316 **21 Claims**



1. A method of forming a pattern in the manufacture of microelectronic devices, the method comprising the steps of:

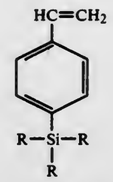
forming an organic polymer layer which can be etched by dry etching on a substrate to ultimately be etched;

forming a resist film directly on said organic polymer layer, the material of said resist film being a polymer comprising a trialkylsilyl group and being formed by using a monomer selected from the group consisting of monomers of formula (I), monomers of formula (II), and monomers of formula (III), and forming a desired pattern in said resist film by using a lithography technique such that the number of said substituted silyl groups in the patterned resist film is at least 1×10^{16} per 1 cm^2;

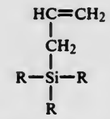
etching said organic polymer layer by a dry etching technique with the patterned resist film as a mask; and

etching said substrate with the unetched areas of said organic polymer layer as a mask;

wherein formula (I) is:

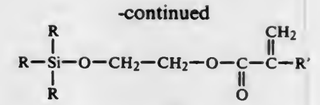


formula (II) is



and formula (III) is

-continued

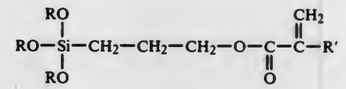


where R represents a lower alkyl group, and R′ represents a hydrogen atom or a lower alkyl group.

11. A method of forming a pattern in the manufacture of microelectronic devices, the method comprising the steps of:

forming an organic polymer layer which can be etched by dry etching on a substrate to ultimately be etched;

forming a resist film directly on said organic polymer layer, the material of said resist film being a polymer comprising a trialkoxysilyl group and being formed by using a monomer of



where R represents a lower alkyl group, and R^3 represents a hydrogen atom or a lower alkyl group, and forming a desired pattern in said resist film by using a lithography technique such that the number of said substituted silyl groups in the patterned resist film is at least 1×10^{16} per 1 cm^2;

etching said organic polymer layer by a dry etching technique with the patterned resist film as a mask; and

etching said substrate with the unetched areas of said organic polymer layer as a mask.

4,551,418

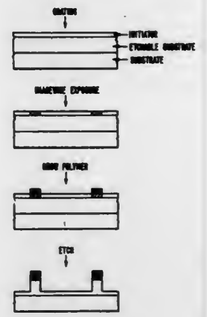
PROCESS FOR PREPARING NEGATIVE RELIEF IMAGES WITH CATIONIC PHOTOPOLYMERIZATION

Anders Hult, Täby, Sweden; Hiroshi Ito, San Jose, Calif.; Scott A. MacDonald, San Jose, Calif., and Carlton G. Willson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1985, Ser. No. 702,514

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—325 **14 Claims**



1. A process for generating a negative tone resist image comprising the steps of:

(1) coating a substrate with a film that contains a cationic photoinitiator;

(2) exposing the film in an imagewise fashion to radiation and thereby generating cationic initiator in the exposed regions of the film;

(3) treating the exposed film with a cationicsensitive monomer to form a film of polymer resistant to plasma etching; and

(4) developing the resist image by etching with a plasma.

4,551,419

METHOD OF DEVELOPING SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tadao Sugimoto; Hideo Ikeda, and Koki Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Feb. 10, 1984, Ser. No. 579,048
Claims priority, application Japan, Feb. 10, 1983, 58-21269
Int. Cl.⁴ G03C *5/26*
U.S. Cl. 430—445 **26 Claims**

1. A method for surface development-processing a silver halide photographic material containing a surface latent image light-sensitive silver halide emulsion and an internally fogged silver halide emulsion, in which the surface development-processing is carried out in the presence of at least one compound selected from the group consisting of compounds represented by the general formulae (I) and (II) and at least one azaindene having a mercapto group:

$$R_1\text{-}\{(R_3)_1X\}_nR_3'\text{—}R_2 \qquad (I)$$

wherein R_1 and R_2 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; R_3 and R_3' each represents a substituted or unsubstituted alkylene group, a substituted or unsubstituted arylene group, and a substituted or unsubstituted divalent heterocyclic group; X represents

—S—, —O—, —C(=O)—O—, —C(=O)—, —SO_2—, —$CONR_4$—,

—NR_4CNR_4—, —SO_2NR_4—, —NR_4—, —CHR_4 or —$C(R_4)_2$—;

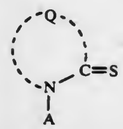
R_4 represents a hydrogen atom or —R_5—$Y\}_mR_5'$—R_6; R_5 and R_5' have the same meanings as R_3 and R_3'; R_6 has the same meaning as R_1 and R_2; Y represents

—S—, —O—, —C(=O)—O—, —SO_2—, —C(=O)—, —NR_7—,

—$CONR_7$—, —NR_7CONR_7—, or —SO_2NR_7—;

R_7 has the same meaning as R_1 and R_2; l represents 0 or 1, n represents an integer of 1 to 110, and m represents an integer of 0 to 10, wherein when m and n each is not less than 2, X, Y, R_3 and R_5 may be different between repeating units respectively and at least one X therein must be a sulfur atom:

(II)



wherein Q represents atoms necessary to form a heterocyclic ring which may be substituted, and A represents a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, wherein said azaindene is selected from the group consisting of tetrazaidenes, triazaidenes, pentazaindenes, and purines, and wherein said compounds represented by formula (II) are other than said at least one azaidene having a mercapto group.

4,551,420

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Naohiko Sugimoto, and Tetsuro Kojima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

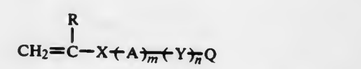
Continuation of Ser. No. 541,183, Oct. 12, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 698,251
Claims priority, application Japan, Oct. 12, 1982, 57-178788
Int. Cl.⁴ G03C *1/78*
U.S. Cl. 430—505 **28 Claims**

1. A silver halide photographic light-sensitive material comprising:

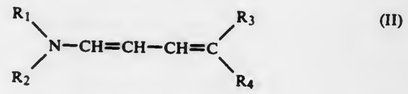
a support having thereon;

at least one light-sensitive silver halide emulsion layer; and at least one light-insensitive hydrophilic colloid layer;

wherein at least one of a surface protective layer, an intermediate layer or a silver halide emulsion layer contains (A) an ultraviolet ray absorbing polymer latex which comprises a polymer or copolymer having a repeating unit derived from a monomer represented by the following general formula (I):

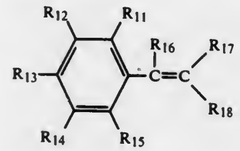


herein R represents a hydrogen atom, a lower alkyl group having from 1 to 4 carbon atoms or a chlorine atom; X represents —CONH—, —COO— or a phenylene group; A represents a linking group selected from an alkylene group having from 1 to 20 carbon atoms; Y represents —COO—, —OCO—, —CONH—, —NHCO—, —SO_2NH—, —NHSO_2—, —SO_2— or —O—; m represents 0 or an integer of 1; n represents 0 or an integer of 1; and Q represents an ultraviolet ray absorbing group represented by a general formula selected from the group consisting of (II) and (III):



(II)

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms, provided that the both of R_1 and R_2 do not simultaneously represent hydrogen atoms, and further R_1 and R_2 may combine to form an atomic group necessary to form a cyclic amino group; R_3 represents a cyano group, —$COOR_5$, —$CONHR_5$, —COR_5 or —SO_2R_5; and R_4 represents a cyano group, —$COOR_6$, —$CONHR_6$, —COR_6, or —SO_2R_6; wherein R_5 and R_6 each represents an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms, and further R_5 and R_6 may combine to form an atomic group necessary to form a 1,3-dioxocyclohexane nucleus, a 1,3-diaza-2,4,6-trioxocyclohexane nucleus (a barbituric acid nucleus), a 1,2-diaza-3,5-dioxocyclopentane nucleus or a 2,4-diaza-1-alkoxy-3,5-dioxocyclohexene nucleus; and at least one of R_1, R_2, R_3 and R_4 bonds to the vinyl group through the linking group;



(III)

wherein R_{11}, R_{12}, R_{13}, R_{14}, R_{15} each represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms, an alkoxy group having from 1 to 20 carbon atoms, an aryloxy group having from 6 to 20 carbon atoms, an alkylthio group having from 1 to 20 carbon atoms, an arylthio group having from 6 to 20 carbon atoms, an amino group, an alkylamino group having from 1 to 20 carbon atoms, an arylamino group having from 6 to 20 carbon atoms, a hydroxyl group, a cyano group, a nitro group, an acylamino group, a carbamoyl group, a sulfonyl group, a sulfamoyl group, a sulfonamide group, an acyloxy group or an oxycarbonyl group, and R_{11} and R_{12}, R_{12} and R_{13}, R_{13} and R_{14} or R_{14} and R_{15} may form a 5- or 6-membered ring by ring closure; R_{16} represents a hydrogen atom or an alkyl group having from 1 to 20 carbon atoms; R_{17} represents a cyano group, —$COOR_{19}$, —$CONHR_{19}$, —COR_{19} or —SO_2R_{19}; R_{18} represents a cyano group, —$COOR_{20}$, —$CONHR_{20}$, —COR_{20} or —SO_2R_{20}; wherein R_{19} and R_{20} each represents an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms; wherein one of R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17} and R_{18} bonds to the vinyl group through the linking group;

wherein a fine grained silver halide having a diameter of 0.2 microns or less is present in a photographic layer other than a silver halide emulsion layer; and

wherein the ultraviolet ray absorbing polymer latex is present in an amount within the range of from 10 to 2,000 mg/m^2 of the material.

4,551,421

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Tadao Sugimoto; Hideo Ikeda, and Koki Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 13, 1984, Ser. No. 579,321
Claims priority, application Japan, Feb. 14, 1983, 58-22372
Int. Cl.⁴ G03C *1/28*
U.S. Cl. 430—509 **21 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide layer comprising a support having thereon at least one silver halide emulsion layer, wherein the photographic material contains in the same emulsion layer or in separate layers

(1) internally fogged silver halide grains,

(2) Surface latent image silver halide grains more sensitive than the internally fogged silver halide grains, and

(3) at least one of the compounds represented by the following general formula (I)

$$R_1\text{-}\{(R_3)_l\text{-}X\}_n\text{-}R_3'\text{—}R_2 \qquad (I)$$

wherein R_1 and R_2 each represents a substituted or unsubstituted alkyl group having a hydroxy group, a substituted or unsubstituted aryl group having a hydroxy group, or a substituted or unsubstituted heterocyclic ring having a hydroxy group; R_3 and R_3' each represents a substituted or unsubstituted alkylene group, a substituted or unsubstituted arylene group, a substituted or unsubstituted heterocyclic ring, or a combination of them; X represents

—S—, —O—, —C(=O)—O—, —C(=O)—, —SO_2—, —$CONR_4$—,

—NR_4CNR_4—, —SO_2NR_4—, —NR_4—, —CHR_4—, or

—$C(R_4)_2$—,

wherein, R_4 represents a hydrogen atom or [R_5—Y—]$_mR_5'$—R_6; R_5 and R_5' have the same significance as R_3 and R'_3; R_6 represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; Y represents

—S—, —O—, —C(=O)—O—, —SO_2—, —C(=O)—,

—NR_7CONR_7—, or —SO_2NR_7—;

R_7 has the same significance as R_6; and m represents an integer of 0 to 10; l represents 0 or 1; and n represents an integer of 1 to 110; in the formula, when n is 2 or more X and R_3 each may be the same or different, when m is 2 or more Y and R_5 each may be the same or different and at least one X is a sulfur atom said at least one of the compounds represented by formula (I) is present in an amount sufficient to provide an image having a high maximum density at a high speed and a high contrast.

4,551,422

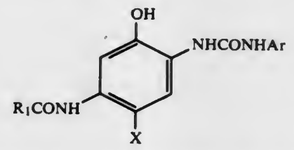
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshihiko Kimura, Hachioji; Yutaka Kaneko, Sagamihara, and Takashi Sasaki, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan.

Continuation-in-part of Ser. No. 572,767, Jan. 23, 1984, abandoned. This application Dec. 21, 1984, Ser. No. 684,981
Claims priority, application Japan, Jan. 29, 1983, 58-13140
Int. Cl.⁴ G03C *7/26*
U.S. Cl. 430—551 **15 Claims**

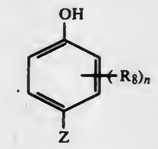
1. A silver halide photographic light-sensitive material comprising a support bearing thereon at least one silver halide emulsion layer, said silver halide photographic light-sensitive material characterized in that said silver halide emulsion layer contains at least one phenol cyan coupler having the Formula (I)

Formula (I)



wherein, R_1 represents a ballast radical necessary for endowing the phenol cyan coupler having Formula (I) and a cyan dye produced by the coupler with diffusion-resistance; Ar represents an aryl radical; and X represents hydrogen or a radical capable of splitting off when coupling to the oxidant of an aromatic primary amine color developing agent and at least one non-color-developable and diffusion-resistive phenol compound having the following Formula (IV):

Formula IV



wherein, Z represents an alkyl radical, an alkenyl radical, an aryl radical, a cycloalkyl radical, an alkylcarbonyl radical, an arylcarbonyl radical, an alkoxycarbonyl radical, an aryloxycarbonyl radical or a cyano radical; R_8 represents a monovalent radical capable of substituting a hydrogen atom of the phenol ring of said compound selected from the group consisting of halogen, alkyl, aryl, heterocyclic, alkoxy, aryloxy, alkylcarbonyloxy, arylcarbonyloxy, hydroxycarbonyl, alkoxycarbonyl, aryloxycarbonyl, alkylthio, alkylcarbonyl, arylcarbonyl, acylamino, sulfona-

mide, carbamoyl, nitro, cyano, alkysulfonyl, alkenyl and cycloalkyl radical, provided that when said phenol compound has two substituents represented by R_8 at the both ortho positions of hydroxy group thereof at the same time, said two substituents are unsubstituted normal or secondary alkyl radicals respectively and n is 2.

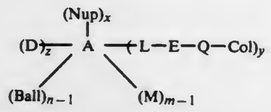
4,551,423

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH NUCLEOPHILIC DISPLACEMENT DYE RELEASERS

Koichi Koyama; Yasuhiro Noguchi, and Masaharu Toriuchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 6, 1984, Ser. No. 597,623
Claims priority, application Japan, Apr. 6, 1983, 58-60289
Int. Cl.[4] G03C *1/40, 5/54*
U.S. Cl. 430—559 **17 Claims**

1. A photographic light-sensitive material comprising a support having provided thereon at least one light-sensitive silver halide emulsion layer in combination with an immobile LDA compound represented by the following general formula (I):


(I)

wherein n, x, y and z each stands for an integer of 1 or 2; m stands for an integer of 1 or more; D stands for a group containing an electron doner or its precursor moiety that forms an electron donor under alkaline conditions; A stands for an organic group linking Nup to -E-Q-Col and D so as to permit an intramolecular redox reaction between the electron donor group and the nucleophilic precursor group and intramolecular nucleophilic displacement between the nucleophilic group and the electrophilic group; Nup stands for a precursor of a nucleophilic group that forms a nucleophilic group upon reduction; E stands for an electrophilic center; Q is a divalent group; Col stands for a group containing a dye or its precusor moiety; Ball stands for a ballast group; L stands for a linking group; and M stands for an optional substituent, said LDA compound being capable of releasing a diffusible dye or its precursor upon redox reaction.

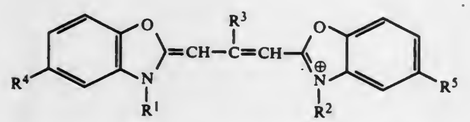
4,551,424

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tadashi Ikeda; Kenichi Kuwabara; Kiyohiko Yamamuro, and Tadayoshi Kokubo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

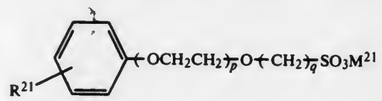
Filed Dec. 14, 1984, Ser. No. 681,757
Claims priority, application Japan, Dec. 22, 1983, 58-242716
Int. Cl.[4] G03C *1/02*
U.S. Cl. 430—588 **10 Claims**

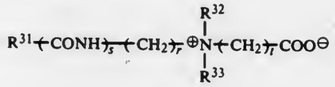
1. A silver halide photographic light-sensitive material comprising a support and at least one silver halide emulsion layer on the support, containing at least one sensitizing dye represented by formula (I)

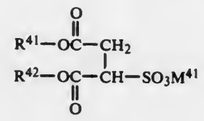

(I)

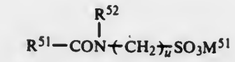
wherein R^1 and R^2 each represents a lower alkyl group substituted by a sulfo group, a carboxy group, or a hydroxyl group, provided that at least one of R^1 and R^2 represents a sulfoalkyl group; R^3 represents a hydrogen atom, a lower alkyl group, or a substituted or unsubstituted phenethyl group; R^4 represents a chlorine atom, a methoxy group, an ethoxy group, or a hydrogen atom; R^5 represents a chlorine atom, a phenyl group, a lower alkoxy group, or a lower alkyl group;

wherein at least one of the silver halide emulsion layer and other hydrophilic colloid layers contains at least one compound represented by formula (II), (III), (IV), or (V)


(II)


(III)


(IV)


(V)

wherein R^{21} represents an alkyl or alkenyl group having from 4 to 16 carbon atoms; R^{31} and R^{51} each represents an alkyl or alkenyl group having from 5 to 17 carbon atoms; R^{32} and R^{33} each represents an alkyl group having 4 or less carbon atoms, or a hydroxyalkyl group, provided that the total number of carbon atoms of R^{32} and R^{33} is 5 or less; R^{41} and R^{42} each represents an alkyl or alkenyl group having from 4 to 12 carbon atoms, provided that the total number of carbon atoms in R^{41} and R^{42} is 18 or less; R^{51} represents an alkyl or alkenyl group having from 5 to 17 carbon atoms; R^{52} represents a methyl group, an ethyl group, or a propyl group; p is an integer of from 1 to 11; q is 2, 3, or 4; r is an integer of from 2 to 8; s is 0 or 1; t is 1, 2, or 3; u is 2, 3, or 4; and M^{21}, M^{42} and M^{51} each represents a hydrogen atom or an alkali metal atom;

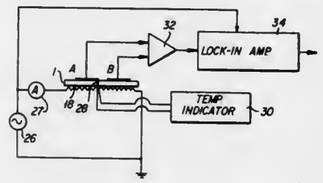
and the silver halide grains contained in the silver halide emulsion are substantially tetradecahedral grains in which the proportion of (100) faces is at least 50%.

4,551,425

PYROELECTRIC GAS SENSOR

Jay N. Zemel, Jenkintown, Pa., assignor to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Sep. 28, 1982, Ser. No. 425,400
Int. Cl.[4] C12Q *1/00;* **G01N** *25/32, 25/48*
U.S. Cl. 435—4 **20 Claims**



1. A pyroelectric fluid sensor for determining at least the presence of a fluid in a test medium, said sensor comprising:

a pyroelectric substrate;

first electrode means for deriving a signal from said pyroelectric substrate when the temperature of said substrate changes;

means for fluctuating the temperature of said pyroelectric substrate during heating to a maximum temperature during sensing for the presence of said fluid in said test medium;

temperature dependent means for absorbing and for desorbing said fluid, said absorbing/desorbing means in thermal contact with said substrate; and

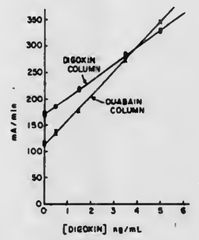
means for recording and comparing said signal when said absorbing/desorbing means is exposed to a fluid-free test medium with said signal when said absorbing/desorbing means is exposed to a test medium in which the presence of said fluid is to be determined and for indicating any difference in said signals.

4,551,426

HETEROGENEOUS IMMUNOASSAY FOR DIGOXIN USING OUABAIN AS A SEPARATION MEANS

William J. Freytag, Wilmington, Del., and Shung-Ho Chang, Encinitas, Calif., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 538,772, Oct. 3, 1983, abandoned. This application Jan. 18, 1984, Ser. No. 571,966
Int. Cl.[4] G01N *33/54, 33/56*
U.S. Cl. 435—7 **20 Claims**



1. A noncompetitive immunoassay for the measurement of digoxin in a test sample, said assay comprising the steps of:

(a) forming a reaction mixture by contacting a molar excess of labeled monovalent or divalent anti-digoxin antibody with the test sample, whereby a fraction of said antibody forms a complex with the digoxin and a fraction remains free; and

(b) contacting the reaction mixture with a solid phase having ouabain immobilized thereon, the ouabain being present in an amount capable of binding all of the free antibody, whereby the free antibody is bound to the solid phase; and

(c) measuring the amount of complex which elutes from the solid phase by measuring the activity of the label.

4,551,427

PROCESS AND REAGENT FOR THE DETERMINATION OF BLOOD GLUCOSE IN HAEMOLYSED WHOLE BLOOD

Brigitte Draeger, Tutzing, and Joachim Ziegenhorn, Starnberg, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 575,409
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303098
Int. Cl.[4] C12Q *1/54*
U.S. Cl. 435—14 **17 Claims**

1. In a process for the determination of D-glucose in a blood sample by reaction with ATP in the presence of hexokinase, glucose-6-phosphate dehydrogenase, NADP, Mg^{++} ions and buffer and measurement of the NADPH formed, the improvement comprising, before reaction with ATP, the step of mixing the blood sample with 0.01 to 0.5% weight/volume of an alkyl sulphate, an alkyl sulphonate or an alkyl-aryl sulphonate, wherein the alkyl radicals contain 8 to 32 carbon atoms and are unsubstituted or substituted by one or more hydroxyalkylamino radicals as substituents and are uninterrupted or interrupted by one or more ether-oxygen atoms and the alkyl-aryl radicals contain 8 to 18 carbon atoms in the alkyl moiety.

9. A reagent for use in an improved method for determination of D-glucose in a blood sample of the type wherein the blood sample is reacted with ATP in the presence hexokinase, glucose-6-phosphate dehydrogenase, NADP, Mg^{++} ions and buffer, whereafter the NADPH formed is measured, the improvement being in reacting the blood sample with said reagent before reaction with ATP; said reagent comprising, effective amcunts of

alkyl sulphate or sulphonate or alkyl-aryl sulphonate, wherein the alkyl radicals contain 8 to 32 carbon atoms and are unsubstituted or substituted by one or more hydroxyalkylamino radicals as substituents, and are uninterrupted or interrupted by one or more ether-oxygen atoms and the alkyl-aryl radicals contain 8 to 18 carbon atoms in the alkyl moiety, and

a preserving reagent selected from the group consisting of alkali metal azides, thiocid, chlorhexidine and imidazoline-urea.

4,551,428

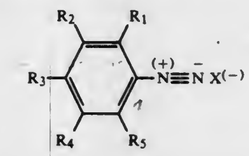
AGENT FOR THE DETERMINATION OF ESTEROLYTIC AND/OR PROTEOLYTIC ENZYMES

Dieter Berger, Viernheim; Günter Frey, Ellerstadt; Wolfgang-Reinhold Knappe, Bürstadt; Manfred Kuhr, Mannheim; Walter Rittersdorf, Mannheim, and Wolfgang Werner, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed May 5, 1981, Ser. No. 260,616
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017721
Int. Cl.[4] C12Q *1/44, 1/38, 1/02, 1/04, 1/06*
U.S. Cl. 435—19 **22 Claims**

1. Agent for the detection of esterolytic and proteolytic enzymes comprising an esterase or protease or combination thereof, detection reagent and a buffer, the detection reagent being a combination of a substituted diazonium salt and an ester compound; wherein

said diazonium salt is a compound of the formula:



in which

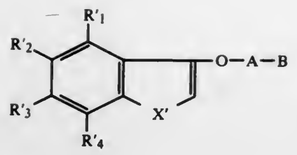
R_1 is a lower alkyl, lower alkoxy, lower alkylthio, N-morpholino, N-thiomorpholino, N-pyrrolidino, N-alkylated N-piperazino, N-piperazino or N-piperidino radical or is a halogen or hydrogen atom;

R_3 is a lower alkyl, lower alkoxy, aryloxy, lower alkylthio, alkylamino, dialkylamino, hydroxyl, N-morpholino, N-thiomorpholino, N-pyrrolidino, N-piperazino, N'-alkylated N-piperazino, N-piperidino or phenylamino radical or a phenyl radical or phenyl substituted with a lower alkyl or lower alkoxy radical, or is a hydrogen or halogen atom;

R_2, R_4 and R_5, which may be the same or different, are lower alkyl, lower alkoxy or lower alkylthio radicals or halogen or hydrogen atoms; and

X is a stabilizing anion; and

said ester is a compound of the formula:



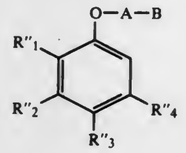
in which

R'_1, R'_2, R'_3 and R'_4, which may be the same or different, are hydrogen or halogen atoms or lower alkyl, lower alkoxy, aryl, aralkyl, aralkoxy, hydroxyl, carboxy, carboxy lower alkoxy, aralkoxycarbonyl, aralkoxycarbonyl lower alkoxy, nitro, alkylamino, dialkylamino or acylamino radicals or in which two adjacent substituents represent a fused benzene ring or a halogen-substituted fused benzene ring;

X' is a sulfur atom or an imino group optionally substituted by lower alkyl, aryl, aralkyl or acyl radical;

A is an acyl residue of an amino acid or of a peptide; and

B is a nitrogen protective group or derived therefrom or a compound of the formula



wherein

R''_1, R''_2, R''_3 and R''_4, which may be the same or different, are hydrogen atoms or lower alkyl, lower alkoxy, alkylamino or dialkylamino radicals or in which two adjacent substituents can also represent a fused benzene ring;

A is an acyl residue of an amino acid or of a peptide; and

B is a nitrogen protective group conventional in peptide chemistry or derived therefrom.

4,551,429

STIMULATION OF ANTIGEN PRODUCTION BY *BORDETELLA PERTUSSIS*

George Greenspan, Narberth, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Sep. 15, 1983, Ser. No. 532,642

Int. Cl.[4] C12N *1/38, 1/10, 1/00;* **A61K** *39/02, 39/10;* **C12P** *21/00, 21/02*

U.S. Cl. 435—68 **2 Claims**

1. In a method for preparing the protective antigenic hemagglutinin of *Bordetella pertussis*, consisting of fimbrial hemagglutinin and leucocytosis promoting factor hemagglutinin, which comprises propagating a *Bordetella pertussis* culture in an aqueous nutrient medium containing a source of carbohydrate, a source of organic nitrogen and inorganic salts, under submerged aerobic conditions with shaking of the culture medium, transferring an inoculum of the first stage growth of *Bordetella pertussis* into an aqueous nutrient medium containing sources of organic nitrogen, vitamins and inorganic salts, growing said inoculum in said medium under submerged aerobic conditions, with shaking, separating the *Bordetella pertussis* cells from the medium and recovering the protective antigenic hemagglutinin-containing supernatant, the improvement which comprises adding to the non-carbohydrate containing aqueous nutrient medium polyvinyl alcohol having a molecular weight ranging from about 1,500 to about 16,000 at the level of 0.5 to 2.0 g/l of medium, whereby substantially enhanced hemagglutinating activity is imparted thereto.

4,551,430

CONSTITUTIVE PRODUCER OF A THERMOSTABLE GLUCOSE ISOMERASE

Edmund W. Hafner, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 27, 1983, Ser. No. 546,132

Int. Cl.[4] C12P *19/24;* **C12N** *9/92, 1/20;* **C12R** *1/465*

U.S. Cl. 435—94 **6 Claims**

1. A biologically pure culture of a mutant of *Streptomyces thermoviolaceus* NRRL 15615 having the ability to produce a thermostable glucose isomerase as a constitutive enzyme when the mutant microorganisms are grown aerobically in a medium containing an assimilable source of carbon, nitrogen, and mineral nutrients at a temperature from about 20° to about 55° C.

4,551,431

THE USE OF GALLIUM AND INDIUM SALTS FOR THE IMMOBILIZATION OF PROTEINS

Phyllis J. Pierce, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 21, 1983, Ser. No. 487,362

Int. Cl.[4] C12N *11/14;* **A61K** *37/16, 37/48*

U.S. Cl. 435—176 **25 Claims**

1. A process for the production of a dried immobilized gel/protein composite, which comprises:

(A) substantially simultaneously admixing (a) an aqueous solution/dispersion of a physiologically and chemically active protein, (b) an aqueous solution of a Group IIIA metal salt selected from the group consisting of salts of gallium and indium, and (c) an alkaline solution, in proportions effective to coprecipitate said protein and said Group IIIA metal as a hydrous gel suspension, said gel suspension containing at least a substantial proportion of said protein,

(B) separating said hydrous gel/protein, and

(C) drying said hydrous gel/protein, thereby forming said dried immobilized gel/protein composite.

15. A dried immobilized protein composite comprising a dispersed physiologically and chemically active protein in a dry gel matrix of an oxide/hydroxide of gallium or of indium.

4,551,432

***PARACOCCUS DENITRIFICANS*, FUM-14: A FUMARASE OVERPRODUCER**

Yoshihisa Tsuda, Wilmette, and Denise M. Jackson, Chicago, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 14, 1983, Ser. No. 551,646

Int. Cl.[4] C12N *9/88, 1/20;* **C12P** *7/42;* **C12R** *1/01*

U.S. Cl. 435—232 **1 Claim**

1. A method of producing fumarase comprising growing aerobically *Paracoccus denitrificans*, FUM-14, NRRL B-15710, in a medium containing an assimiliable source of carbon, nitrogen, and mineral nutrients at a temperature from about 20° to about 45° C., and recovering the fumarase produced thereby.

4,551,433

MICROBIAL HYBRID PROMOTERS

Herman A. DeBoer, Pacifica, Calif., assignor to Genentech, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 264,306, May 18, 1981, abandoned, and a continuation-in-part of Ser. No. 328,174, Dec. 7, 1981, abandoned. This application Jan. 11, 1982, Ser. No. 338,397

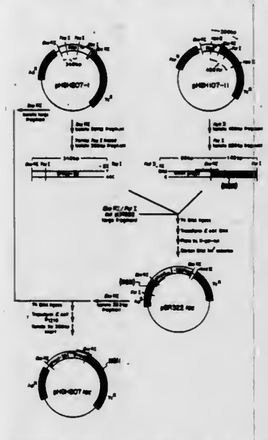
Int. Cl.[4] C12N *1/20, 15/00, 1/00;* **C12P** *21/00, 21/02, 21/04;* **C07H** *21/04;* **C12R** *1/19*

U.S. Cl. 435—253 **15 Claims**

8. A hybrid promoter/operator which comprises:

(a) an operator DNA sequence of a first promoter/operator which is capable of being derepressed by induction, and which comprises that sequence immediately downstream of a position between about −10 and −35 of said first promoter operator; and

(b) upstream from the sequence of (a), a DNA sequence which comprises that sequence of a second promoter



which is immediately upstream of a position between about −10 and −35 of said second promoter.

4,551,434

METHOD FOR RECOGNIZING STRUCTURAL INHOMOGENEITIES IN TITANIUM ALLOY TEST SAMPLES INCLUDING WELDED SAMPLES

Martin Thoma, Munich, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,253

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1983, 3309448

Int. Cl.[4] G01N *1/32, 33/20*

U.S. Cl. 436—5 **6 Claims**

1. A method for visually inspecting a test specimen made of titanium alloy for grain or textural inhomogeneities in said test specimen made of titanium alloy, comprising the following steps:

(a) cleaning a specimen made of titanium alloy by a steam degreasing operation;

(b) blasting the cleaned surface of the specimen with aluminum oxide (Al_2O_3) particles having a mesh size of about 270;

(c) erosive etching of the specimen with a nitric acid (HNO_3)—hydrofluoric acid (HF) solution;

(d) washing or rinsing the specimen with water;

(e) grain or texture etching the test specimen with a solution including a mixture of chromic acid (CrO_3) and hydrofluoric acid (HF) wherein each of these acids includes hexafluosilicic acid (H_2SiF_6) as an additive A in the molar ratio range of $8 \geqq F/A \geqq 5$ with regard to fluorine and in the molar ratio range of $6 \geqq Cr/A \geqq 3$ with regard to chromium, and wherein the molar concentration range for said additive A is 0.1 to 2.0 mole per liter;

(f) washing or rinsing the specimen with water, whereby contrast between any grain or textural inhomogeneities and their background is substantially increased for said visual inspection, and

(g) then visually inspecting the specimen for any grain or textural inhomogeneities.

4,551,435

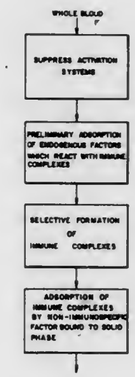
SELECTIVE REMOVAL OF IMMUNOSPECIFICALLY RECOGNIZABLE SUBSTANCES FROM SOLUTION

Paul A. Liberti, Churchville, Pa., and Paul Pollara, South Plainfield, N.J., assignors to Immunicon, Inc., Philadelphia, Pa.

Filed Aug. 24, 1983, Ser. No. 526,039

Int. Cl.[4] G01N *33/54;* **B01D** *27/00*

U.S. Cl. 436—541 **20 Claims**



1. A method for selectively removing from a solution any soluble or suspended immunospecifically recognizable substance, which method comprises the steps of:

a. determining the amount of said substance present in said solution;

b. adding to said solution an immunospecific component capable of reacting specifically with said substance, said component being added in a quantity appropriate to form immune complexes with the amount of said substance determined to be present in said solution, said immune complexes being capable of binding to non-immunospecific factor having an affinity therefor; and

c. contacting said solution with an adsorbent comprising non-immunospecific factor which exhibits an affinity for said immune complexes, whereby said immune complexes become bound to said non-immunospecific factor and said immunospecifically recognizable substance is substantially completely removed from said solution.

4,551,436

FABRICATION OF SMALL DENSE SILICON CARBIDE SPHERES

Curtis A. Johnson, Schenectady; Gary M. Renlund, Scotia; Charles E. Van Buren, Schenectady, and Svante Prochazka, Saratoga, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 11, 1984, Ser. No. 599,033

Int. Cl.[4] C04C *35/56*

U.S. Cl. 501—90 **30 Claims**

1. A process for producing sintered spherical or nominally spherical particles of polycrystalline silicon carbide having a density greater than 80% of the theoretical density for silicon carbide and having a diameter ranging from about 5 microns to about 2000 microns which consists essentially of forming a slurry consisting essentially of sinterable silicon carbide powder and a liquid medium which has no significantly deleterious effect thereon, said sinterable silicon carbide powder having an average particle size which is submicron and which consists essentially of silicon carbide, a boron additive selected from the group consisting of boron and boron carbide in an amount equivalent to from about 0.3% by weight to about 3% by weight of boron based on said silicon carbide, and an amount of a carbonaceous additive equivalent to from about 0.1% by weight to about 5% by weight of free carbon based on said

silicon carbide, said carbonaceous additive being selected from the group consisting of a carbonaceous organic material which completely decomposes at a temperature ranging from 50° C. up to 450° C. to free carbon and gaseous product of decomposition, and mixtures thereof with free carbon, spray drying said slurry into spherical or nominally spherical agglomerates, at least a portion of said carbonaceous organic material being an agglomerate-forming binder in solution and/or suspension in said liquid medium in said slurry and being present in an amount at least sufficient to form said agglomerate and being at least about 1% by weight of said agglomerate, and sintering said agglomerates at a temperature ranging from about 1900° C. to about 2300° C. at about or below atmospheric pressure in a vacuum or atmosphere which has no significant deleterious effect thereon, said agglomerates being of a size which produces said sintered particles, said slurry being characterized as sprayable into droplets into a hot air spray dryer wherein said droplets are dried into said spherical or nominally spherical agglomerates.

9. A polycrystalline spherical or nominally spherical particle having a density greater than 80% of the theoretical density for silicon carbide and consisting essentially of silicon carbide, from about 0.2 part to about 3 parts by weight of boron based on 100 parts by weight of silicon carbide, and up to about 5 parts by weight of free uncombined carbon based on 100 parts by weight of silicon carbide, said polycrystalline particle ranging in diameter from about 5 microns to about 10,000 microns.

4,551,437

PROCESS FOR THE TRANSPORTATION THROUGH AN ELONGATE CHAMBER AND ELECTROMAGNETIC RADIATION HEATING OF GRANULATED MATERIAL

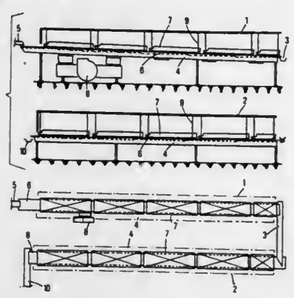
Georges Berrebi, Valence, France, assignor to Eurecat-Europeene de Retraitement de Catalyseurs, La Voulte sur Phone, France

Filed Jan. 3, 1984, Ser. No. 567,722

Claims priority, application France, Mar. 15, 1983, 83 04350

Int. Cl.⁴ B01J *23/96, 23/94, 23/92;* **F27B** *9/06*

U.S. Cl. 502—5 **8 Claims**



1. A process for reactivating or regenerating solid catalyst particles used for the treatment or conversion of hydrocarbons, the process comprising at least one step of heating the catalyst particles wherein said heating step is conducted by (a) continuously displacing said catalyst particles through at least one elongate chamber having its longitudinal axis inclined with respect to a horizontal line at an angle of about 0°–5°, said particles progressing from an inlet zone of said chamber to an outlet zone of said chamber over a plurality of floor plates stepped so that the particles can fall from an upstream plate to a downstream plate as the particles are displaced, the plates being inclined at an angle with respect to the axis of the elongate chamber of less than 15°, said movement being imparted to the particles by causing the elongate chamber to vibrate in a direction substantially parallel to the elongate direction of the chamber, by means of vibratory power, at an amplitude such that a translational movement is imparted to said catalyst particles over the length of said chamber, with a substantially uniform statistical distribution over the length of said chamber, and with a variable speed producing continuous mixing of the individual particles with the catalyst particles remaining substantially in contact with the floor plates and being displaced substantially by sliding without microprojection on said floor plate, (b) heating said particles in said chamber along substantially the entire length of the chamber with infrared radiation having a wavelength in the range of about 0.75 μm–1.5 mm wherein said particles are irradiated over the entire surfaces thereof as they drop from upstream plates to downstream plates, and (c) establishing a gas flow into said chamber through the bed of catalyst particles by having said floor plate constructed of a discontinuous construction.

2. A two-step process of reactivation or regeneration of a catalyst containing hydrocarbon traces, sulfur and carbon, the first step comprising stripping the hydrocarbons and removing at least a portion of the sulfur, and the second step comprising removing at least a part of the carbon, and characterized in that at least the second step is conducted according to the process of claim 1.

4. A process according to claim 2, wherein the first step is effected in a revolving furnace comprising an elongate, substantially cylindrical and horizontal zone, slowly revolving on its longitudinal axis, and wherein the catalyst particles are stirred by means of at least one gas, at a temperature of 170°–350° C., the gas being introduced all along the chamber through openings provided in the walls of said chamber.

4,551,438

OLIGOMERIZATION OF LIQUID OLEFIN OVER A NICKEL-CONTAINING SILICACEOUS CRYSTALLINE MOLECULAR SIEVE AND HYDROCARBYL ALUMINUM HALIDE

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 11, 1984, Ser. No. 598,772

Int. Cl.⁴ B01J *29/28*

U.S. Cl. 502—62 **15 Claims**

1. A catalyst composition for promoting oligomerization of olefins, said composition comprising the components:

(a) a nickel-containing silicaceous crystalline molecular sieve in the hydrogen form selected from the group consisting of ZSM-5, ZSM-11, crystalline admixtures of ZSM-5 and ZSM-11, silicalite, an organic silicate disclosed in Ser. No. Re. 29,948 and CZM or mixtures thereof; and

(b) at least one hydrocarbyl aluminum halide; the molar ratio of the hydrocarbyl aluminum halide to the nickel being from 1:1 to 10:1.

2. The catalyst composition of claim 1 wherein the nickel-containing silicaceous crystalline molecular sieve also contains zinc cation.

3. The catalyst composition of claim 1 wherein said nickel-containing silicaceous crystalline molecular sieve is silicalite.

6. The catalyst composition of claim 1 wherein said nickel-containing silicaceous crystalline molecular sieve is ZSM-5.

4,551,439

SOLID CATALYST COMPONENT FOR OLEFIN POLYMERIZATION AND PROCESS FOR PRODUCING SAME

Masato Harada, Kisarazushi; Shinya Miya; Sadahiko Yamada, both of Ichiharashi, and Makoto Iijima, Ichiharashi, all of Japan, assignors to Chisso Corporation, Japan

Filed Feb. 11, 1985, Ser. No. 700,592

Claims priority, application Japan, Oct. 4, 1984, 59-208775

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—107 **5 Claims**

2. A process for producing a solid catalyst component for olefin polymerization, characterized by producing it via the reaction of the following steps I to III:

I. a step of mixing (a) an anhydrous magnesium dihalide, (b) an orthotitanic acid ester expressed by the general formula $Ti(OR^1)_4$ and/or a polytitanic acid ester expressed by the general formula $R^2—O-Ti(OR^3)(OR^4)]_mO-R^5$ wherein R^1, R^2, R^3, R^4, and R^5 each represent an alkyl group having 1 to 20 carbon atoms, an aryl group having 1 to 20 carbon atoms or a cycloalkyl group having 3 to 20 carbon atoms and m represents a number of 2 to 20, and (c) a saturated or unsaturated, monohydric or polyhydric alcohol, in an inert hydrocarbon solvent and dissolving these materials therein, to obtain a component A;

II. a step of mixing and reacting said component A with a component B consisting of (d) an aliphatic or aromatic mono- or polycarboxylic acid ester having 2 to 24 carbon atoms (hereinafter referred to as organic acid ester), (e) an aluminum halide expressed by the general formula $AlX_nR^8_{3-n}$ wherein X is Cl or Br, R^8 represents an alkyl group having 1 to 20 carbon atoms, an aryl group having 1 to 20 carbon atoms or a cycloalkyl group having 3 to 20 carbon atoms and n represens a number of 0 to 3, and (f) a silicon halide expressed by the general formula $SiX_lR^6_{4-l}$ or $SiX_p(OR^7)_{4-p}$ wherein X represents Cl or Br, R^6 and R^7 each represent an alkyl group having 1 to 20 carbon atoms, an aryl group having 1 to 20 carbon atoms or a cycloalkyl group having 3 to 20 carbon atoms, and l and p each represent a number of 1 to 4, to deposit solids (hereinafter referred to as "solid product (I)"); and

III. reacting this solid product (I) with a component C consisting of (g) a titanium halide expressed by the general formula $TiX_q(OR^9)_{4-q}$ wherein X represents Cl or Br, R^9 represents an alkyl group having 1 to 20 carbon atoms, an aryl group having 1 to 20 carbon atoms or a cycloalkyl group having 3 to 20 carbon atoms and q represents a number of 1 to 4, and/or (h) a vanadyl halide or a vanadium halide expressed by the general formulas $VOX_s(OR^{10})_{3-s}$ or $VX_t(OR^{11})_{4-t}$ wherein X represents Cl or Br, R^{10} and R^{11} each represent an alkyl group having 1 to 20 carbon atoms, an aryl group having 1 to 20 carbon atoms or a cycloalkyl group having 3 to 20 carbon atoms, s represents a number of 1 to 3, and t represents a number of 1 to 4, to obtain solids (hereinafter referred to as "solid product (II)").

3. A process according to claim 2 wherein said (a), (b) and (c) as raw materials constituting said component A are mixed in an inert hydrocarbon solvent with stirring or shaking at a temperature of 50° to 150° C., under a pressure of 0 to 5 Kg/cm^2G, for a time of 10 minutes to 5 hours and dissolved therein.

4,551,440

CATALYST COMPONENT FOR POLYMERIZATION OF OLEFINS

Masafumi Imai; Tadashi Yamamoto; Hiroyuki Furuhashi, and Hiroshi Ueno, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,463

Claims priority, application Japan, Aug. 30, 1983, 58-157094

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—119 **30 Claims**

1. A catalyst component for the polymerization of olefins obtained by (1) reacting (A) Mg(OR)(OR') with (B) a silicon compound having at least one silicon-hydrogen bond, (2) contacting the reaction product with (C) an electron donor compound, (3) contacting the product from step (2) with an organoaluminum compound, and (4) contacting the step (3) product with a titanium compound, wherein R and R' are radicals selected from alkyl, alkenyl, cycloalkyl, aryl and aralkyl radicals and R and R' may be the same or different.

6. The catalyst component of claim 1 wherein the silicon compound is trichlorosilane.

4,551,441

NICKEL BORIDE-POLYMER IN-OIL CATALYST

Cornelis Van Dijk, Zwijndrecht, and Rudolph O. De Jongh, The Hague, both of Netherlands, assignors to Internationale Octrooi Maatscappij "Octropa" B.V., Rotterdam, Netherlands

Filed Jul. 11, 1984, Ser. No. 629,967

Claims priority, application Netherlands, Jul. 20, 1983, 8302590

Int. Cl.⁴ B01J *31/06*

U.S. Cl. 502—159 **10 Claims**

1. A finely divided nickel boride catalyst stabilized with a linear organic polymer, characterized in that nickel boride with a stabilizing linear organic polymer is suspended in a fatty compound.

4,551,442

CATALYST FOR UPGRADING SYNTHESIS GAS

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Division of Ser. No. 557,725, Dec. 2, 1983, Pat. No. 4,496,666, which is a continuation of Ser. No. 333,218, Dec. 21, 1981, abandoned. This application Sep. 24, 1984, Ser. No. 653,395

Int. Cl.⁴ B01J *21/04, 21/08, 23/78*

U.S. Cl. 502—178 **8 Claims**

1. A catalyst for the upgrading of synthesis gas to alcohol products of the formula

$$A_aRuM_bO_x$$

wherein

A is an alkali metal

M is Pd, Pt or mixtures thereof, and

wherein

a is about 0.002 to about 2,

b is about 0.1 to about 10, and

x is the number of oxygens needed to fulfill the valence requirements of the other elements.

4,551,443

CATALYSTS FOR THE SELECTIVE HYDROGENATION OF ACETYLENES

Henry C. Hudson, New Caney, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 27, 1984, Ser. No. 675,175

Int. Cl.⁴ B01J *21/04, 23/44, 23/64*

U.S. Cl. 502—313 **18 Claims**

1. A catalyst composition for the selective hydrogenation of acetylenic hydrocarbon impurities in olefinic hydrocarbon streams which comprises palladium and optionally chromium supported on a porous carrier which comprises alumina having a surface area less than about 5 m^2/g microns, a pore volume (Hg at 3000 psi) of between about 0.2 to about 0.5 cc/g and wherein greater than about 40% of the pore volume is contained in pores having pore diameters of greater than about 10 microns.

4,551,444

CATALYST FOR ALCOHOL SYNTHESIS

Fan-Nan Lin, and Filippo Pennella, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 584,374, Feb. 28, 1984,. This application Mar. 22, 1985, Ser. No. 714,735

Int. Cl.³ B01J *23/72, 23/78, 23/84, 23/86*

U.S. Cl. 502—313 **6 Claims**

1. A catalyst composition suitable for the synthesis of alcohols from synthesis gas consisting of:

(a) at least one copper component,

(b) at least one iron group metal component,

(c) at least one metal component other than component (b) having a Periodic element number of 23 to 26,

(d) at least one alkali metal component, and

(e) promoting amount of about 0.1 to about 5 weight percent of at least one rhodium component which amount is a small effective amount sufficient to increase catalyst activity and catalyst life without significantly changing selectivity in comparison with the unpromoted catalyst.

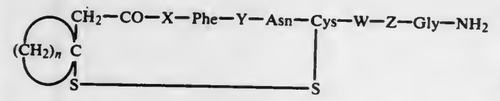
4,551,445

DERIVATIVES OF ARGININE VASOPRESSIN ANTAGONISTS

Maurice Manning, Toledo, Ohio, and Wilbur H. Sawyer, Scarsdale, N.Y., assignors to The Medical College of Ohio, Toledo, Ohio and The Trustees of Columbia University, New York, N.Y.

Filed Oct. 14, 1983, Ser. No. 541,979
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.[4] A61K *37/00;* **C07C** *103/52*
U.S. Cl. 514—9 **26 Claims**

1. A compound of the formula



wherein n is 4 or 5; X is D—Tyr(R), D—Phe, D—Val, D—Leu, D—Ile, D—Nva, D—Nle, D—Cha, D—Abu, D—Thr, D—Met, D—Asn or D—Gln; Y is Ile, Thr, Gln, Ala, Lys, Cha, Nva, Nle, Orn, Ser, Asn, Abu, Met or Leu; W is (D— or L—)Pro, Hy—Pro or Δ^3—Pro; Z is (D— or L—)Arg, Orn or Hys and R is methyl, ethyl, propyl or butyl.

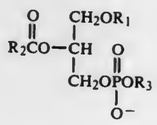
4,551,446

USE OF SYNTHETIC PHOSPHOGLYCERIDES POSSESSING PLATELET ACTIVATING PROPERTIES AS DESENSITIZING AGENTS

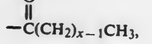
Donald J. Hanahan, and R. Neal Pinckard, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 349,699, Feb. 18, 1982, Pat. No. 4,504,474, which is a division of Ser. No. 163,808, Jun. 27, 1980, Pat. No. 4,329,302. This application Dec. 27, 1982, Ser. No. 453,224
Int. Cl.[4] A61K *31/685, 31/66;* **C07F** *9/28*
U.S. Cl. 514—77 **2 Claims**

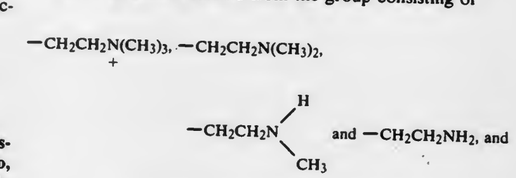
1. A method of therapeutic intervention to prevent systemic anaphylactic shock in a mammalian host susceptible to anaphylaxis upon challenge with an allergen, the method comprising:
determining that the host is susceptible to anaphylactic shock upon challenge with an allergen;
immediately prior to challenging the host with the allergen, administering to the host a sublethal, anti-anaphylactic effective amount of a compound represented by the formula:



wherein
R_1 is a long chain carbon radical selected from the group consisting of $-(CH_2)_xCH_3$ and



and x denotes the integer 15 or 17;
R_2 is methyl or ethyl or if R_1 is $-(CH_2)_xCH_3$ then R_2 can be n-propyl; and
R_3 is an amine selected from the group consisting of



pharmaceutically acceptable salts thereof, and allowing the host to be challenged with the allergen, thereby preventing the systemic anaphylactic shock normally caused by the allergen.

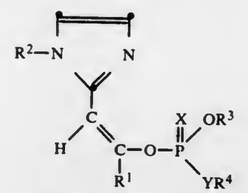
4,551,447

BETA-IMIDAZOLYL-ALPHA-(TRIFLUOROMETHYL-)ETHENYL PHOSPHATES AND INSECTICIDAL AND MITICIDAL USE

Willy D. Kollmeyer, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1985, Ser. No. 726,575
Int. Cl.[4] A01N *57/16;* **C07F** *9/65*
U.S. Cl. 514—94 **11 Claims**

1. A compound of the formula I



wherein R^1 is an alkyl group containing from 1 to 6 carbon atoms optionally substituted by one or more halogen atoms, a phenyl group optionally substituted by one or more halogen atoms or alkyl or alkoxy groups containing 1 to 2 carbon atoms each optionally substituted by one or more halogen atoms; R^2 is a hydrogen atom, or an alkyl group containing 1 to 4 carbon atoms; R^3 and R^4 each independently is an alkyl group containing 1 to 6 carbon atoms; and X and Y each independently is an oxygen or sulfur atom.

11. A method of combatting insect pests at a locus which comprises applying to the locus or the pests an insecticidally or miticidally effective amount of a compound according to claim 1.

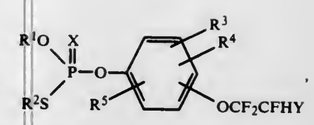
4,551,448

FLUOROETHOXYPHENYL (DI)THIOPHOSPHATES, A PROCESS FOR THEIR PREPARATION AND THEIR USE FOR CONTROLLING PESTS

Walter Seufert, Speyer; Juergen Varwig, Heidelberg; Gerd Husslein, Ludwigshafen; Wolfgang Seppelt, Bobenheim-Roxheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 7, 1983, Ser. No. 482,775
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213152; Jul. 8, 1982, 3225507
Int. Cl.[4] A01N *57/14;* **C07F** *9/165*
U.S. Cl. 514—130 **4 Claims**

1. A fluoroethoxyphenyl(di)thiophosphate of the formula



(I)

where R^1 is ethyl, R^2 is alkyl of 3 or 4 carbon atoms, or ethoxyethyl R^3, R^4 and R^5 independently of one another are each hydrogen, chlorine or bromine, X is oxygen or sulfur, and Y is fluorine.

2. A process for combating pests, wherein a fluoroethoxyphenyl(di)thiophosphate of the formula I as claimed in claim 1 is allowed to act on the pests and/or their habitat.

4,551,449

AVOIDANCE OF THE IMMUNOSUPPRESSIVE AND ANTIPROLIFERATIVE EFFECTS OF LIPID EMULSIONS

Stephan Ladisch, Pacific Palisades, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 16, 1983, Ser. No. 552,489
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—182 **11 Claims**

1. The method which comprises the administration to humans on hyperalimentation of a lipid emulsion which contains a sterol, said sterol being present in an amount effective to substantially mitigate immunosuppressive and antiproliferative effects caused by conventional lipid emulsions in humans on hyperalimentation.

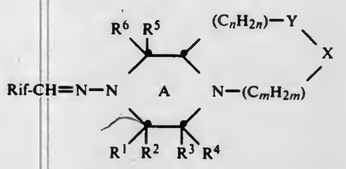
4,551,450

RIFAMYCIN HYDRAZONES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE

Peter Traxler, Schönenbuch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

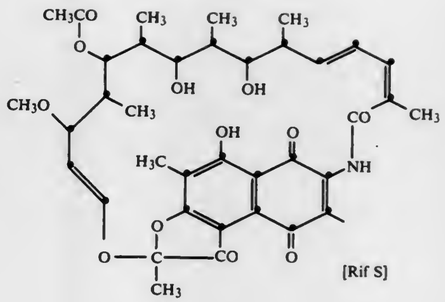
Filed Aug. 27, 1984, Ser. No. 644,886
Int. Cl.[4] A61K *31/395;* **C07D** *519/00*
U.S. Cl. 514—183 **18 Claims**

1. A compound of the formula



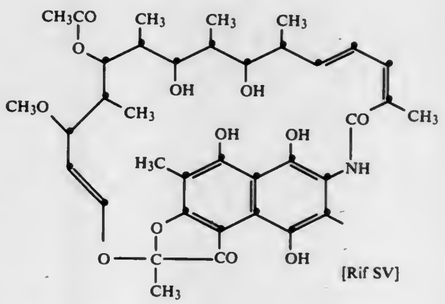
(I)

in which p1 R^1, R^2, R^3, R^4, R^5 and R^6, independently of one another, each represents a hydrogen atom or C_{1-4}-alkyl,
m and n, independently of one another, each represents an integer from 0 to 5,
X represents C_{1-5}-alkylidene, benzylidene or C_{1-4}-alkoxymethylene,
Y represents C_{1-5}-alkylidene, C_{1-4}-alkoxymethylene, oxy, thio or optionally substituted imino of the formula —N(R)— wherein R represents hydrogen, C_{1-4}-alkyl, C_{3-5}-alkenyl, C_{3-12}-cycloalkyl or phenyl, or
X and Y together represent 1,2-cycloalkylene or o-phenylene each of which can be substituted by from one to three C_{1-4}-alkyl radicals, and
Rif represents a radical of the partial formula



[Rif S]

or



[Rif SV]

and salts thereof.

18. A method for the treatment of infections in the human or animal body, characterised by the administration to the affected subject of an antimicrobially active dose of one of the compounds of of the formula I defined in claim 1, or a pharmacologically acceptable salt thereof, alone or together with a suitable carrier.

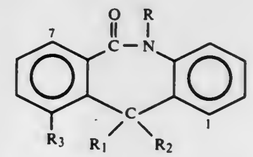
4,551,451

TRICYCLIC DERIVATIVES OF 5,6-DIHYDRO-11H-DIBENZO (B,E) AZEPIN-6-ONE HAVING PHARMACOLOGICAL ACTIVITY

Vittorio Pestellini; Mario Ghelardoni; Alessandro Giolitti; Giovanna Volterra, all of Florence; Martino Furio, Rome, and Alberto Meli, Florence, all of Italy, assignors to A. Menarini S.a.S., Italy

Continuation of Ser. No. 475,327, Mar. 14, 1983, abandoned. This application Aug. 10, 1984, Ser. No. 639,687
Claims priority, application Italy, Mar. 15, 1982, 9356 A/82
Int. Cl.[4] A61K *31/53;* **C07D** *223/20*
U.S. Cl. 514—217 **18 Claims**

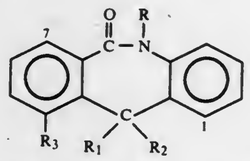
1. A compound of the formula:



in which R is hydrogen or alkyl containing 1 to 4 carbon atoms, R_1 and R_2 jointly represent an oxygen atom, and R_3 is NHCO-lower alkyl, NHCO-phenyl, NHCONH-lower alkyl or NHCONH-phenyl.

14. A pharmaceutical composition comprising as active

principle an anti-convulsant or sedative amount of at least one compound of the formula



in which R is methyl, R_1 and R_2 which can be different represent hydrogen, hydroxy, alkyl containing 1 to 8 carbon atoms, alkoxy containing 1 to 8 carbon atoms or phenyl lower alkyl, and R_3 is hydrogen, in proportional association with a corresponding pharmaceutical administration amount of a pharmaceutical carrier or excipient.

4,551,452

ANTI-INFLAMMATORY 2-METHYL-2H-1,2-BENZO-(OR -THIENO-)THIAZINE-3-CARBOXAMIDE 1,1-DIOXIDE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

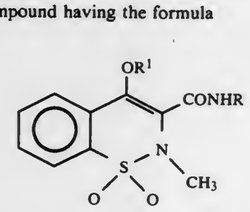
Anthony Marfat, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 563,902, Dec. 21, 1983, abandoned. This application May 2, 1984, Ser. No. 606,113

Int. Cl.[4] C07D *513/04, 279/02;* **A61K** *31/54*

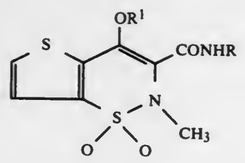
U.S. Cl. 514—222 **28 Claims**

1. A compound having the formula



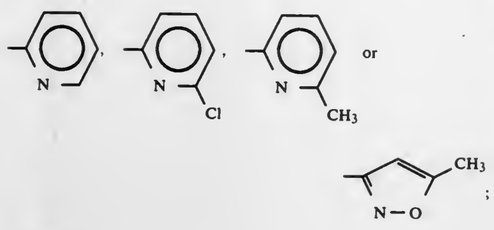
(I)

or

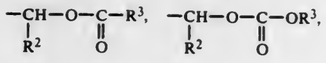


(II)

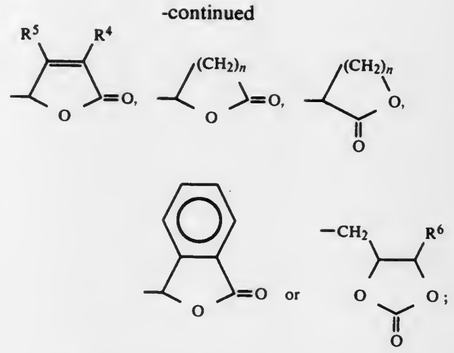
wherein R is



and R^1 is



-continued



n is 2, 3 or 4;

R^2 is hydrogen, methyl or phenyl;

R^4 and R^5 are each independently hydrogen or methyl;

R^3 is (C_1-C_{10})alkyl, (C_3-C_7)cycloalkyl, phenyl or benzyl, each optionally substituted by OR^6 or $OCOR^6$, and

R^6 is (C_1-C_3)alkyl.

4,551,453

2-(ω-ALKYLAMINOALKYL)- AND 2-(ω-DIALKYLAMINOALKYL-3-(4-X-BENZYLIDENE)-PHTHALIMIDINES

Antonio Marsili, Pedona di Camaiore, Italy, assignor to Laboratori Baldacci SpA, Pisa, Italy

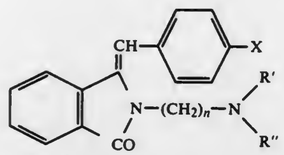
Filed Aug. 1, 1983, Ser. No. 518,848

Claims priority, application Italy, Jun. 8, 1982, 22759 A/82

Int. Cl.[4] A61K *31/40;* **C07D** *209/46, 411/06*

U.S. Cl. 514—234 **12 Claims**

1. A method of inducing local anesthesia in a patient comprising applying at the locus to be anesthetized a local anesthetic effective amount of a compound having the formula



(I)

wherein X and R′ are both hydrogen atoms and R″ is a methyl or ethyl group; or R′ and R′ are both methyl or ethyl groups, or R′ and R″ together with the nitrogen atom to which they are attached may be a morpholino group, and X represents OH, $OCOCH_3$, OCH_3, $OCOOC_2H_5$, NO_2 or NH_2; and n may be either 2 or 3; or the hydrochloride thereof.

4,551,454

3-(4-ALKOXYCARBONYLPIPERAZIN-1-YL)-SYDNONIMINES, A PROCESS FOR THEIR PREPARATION AND USE

Karl Schönafinger, Uehlfeld; Rudi Beyerle, Frankfurt am Main; Helmut Bohn; Melitta Just, both of Schoöneck; Piero A. Martorana, Bad Homburg, and Rolf-Eberhard Nitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Fed. Rep. of Germany

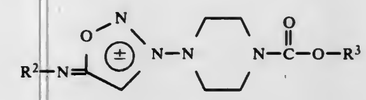
Division of Ser. No. 350,366, Feb. 19, 1982, Pat. No. 4,436,743. This application May 6, 1983, Ser. No. 477,146

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107933

Int. Cl.[4] C07D *413/04;* **A61K** *31/41*

U.S. Cl. 514—252 **25 Claims**

1. A pharmacologically-active compound which, in free-base state, is of the formula



wherein R^2 is —H or —CO—R^4;

R^3 is methyl, ethyl, propyl or isopropyl;

R^4 is aliphatic hydrocarbyl with from 1 to 4 carbon atoms and optionally substituted by alkoxy with from 1 to 3 carbon atoms, cycloaliphatic hydrocarbyl with from 5 to 7 ring carbon atoms, bicycloaliphatic hydrocarbyl with from 7 to 14 ring carbon atoms, tricycloaliphatic hydrocarbyl with from 7 to 16 ring carbon atoms, alkoxy with from 1 to 6 carbon atoms, carbocyclic aryloxy with from 6 to 12 ring carbon atoms, alkoxycarbonyl with from 2 to 7 carbon atoms, carbocyclic aryl with from 6 to 12 ring carbon atoms or such aryl with from 1 to 3 substituents each of which is a member selected from the group consisting of halo, alkyl with from 1 to 3 carbon atoms, alkoxy with from 1 to 3 carbon atoms and nitro, and at most 2 of which are nitro.

4,551,455

METHOD OF TREATING HIGH BLOOD PRESSURE USING 6-[4-(1-IMIDAZOLYL)-PHENYL]-5-METHYL-3-OXO-TETRAHYDROPYRIDAZINES

Gerd Hilboll, Cologne; Ille-Stephanie Doppelfeld, Bergheim-Giessen, and Gerrit Prop, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

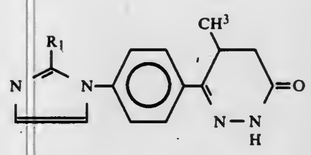
Filed Mar. 25, 1983, Ser. No. 478,993

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212304

Int. Cl.[4] C07D *237/06;* **A61K** *31/50*

U.S. Cl. 514—252 **3 Claims**

1. A method for the treatment of humans suffering from high blood pressure comprising administering a compound of general formula I,



I

wherein R_1 is a hydrogen atom or a methyl group, and their pharmaceutically compatible acid-addition salts with inorganic or organic acids, in a dosage between 0.1 and 500 mg one to three times daily.

4,551,456

OPHTHALMIC USE OF NORFLOXACIN AND RELATED ANTIBIOTICS

Irving M. Katz, Doylestown, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 14, 1983, Ser. No. 551,775

Int. Cl.[4] A61K *31/50, 31/495*

U.S. Cl. 514—254 **4 Claims**

1. A method of treating ocular bacterial infections which comprises topical ocular administration to an infected eye, of 0.015-1.5 mg of an antibiotic selected from norfloxacin, ofloxacin, pefloxacin, AT-2266 and Bayer 09867, hydrates or ophthalmologically acceptable salts thereof.

4,551,457

SUBSTITUTED THIAZOLO[3,2-A]PYRIMIDINES AND PROCESS FOR THEIR PREPARATION

Gianfederico Doria, Milan; Carlo Passarotti, Gallarate; Giuliana Arcari, and Ada Buttinoni, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

Continuation of Ser. No. 538,910, Oct. 4, 1983, abandoned, which is a division of Ser. No. 398,302, Jul. 14, 1982, Pat. No. 4,444,773. This application May 30, 1984, Ser. No. 615,346

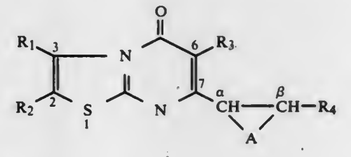
Claims priority, application United Kingdom, Jul. 15, 1981, 8121979; Jan. 20, 1982, 8201621; Apr. 29, 1982, 8212430

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] C07D *513/04;* **A61K** *31/505*

U.S. Cl. 514—258 **9 Claims**

1. A compound having the following general formula (I)



(I)

wherein

A completes a bond, thereby providing a double bond between the α- and β-carbon atoms, or

A represents a —CH_2— group, thereby providing a cyclopropane ring including the α- and β-carbon atoms; each of R_1 and R_2 independently represents:

(a) a hydrogen or a halogen atom;

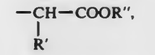
(b) C_1-C_4 alkyl, cyano or trifluoromethyl;

(c) thienyl, pyridyl, biphenyl or naphtyl;

(d) a phenyl group, unsubstituted or substituted by 1 to 3 substituents chosen from halogen, C_1-C_4 alkyl, hydroxy, C_1-C_4 alkoxy, formyloxy, C_2-C_8 alkanoyloxy, trifluoromethyl, nitro, amino, formylamino, C_2-C_8 alkanoylamino;

(e) a phenyl group substituted by one or two C_1-C_4 alkylenedioxy groups wherein the oxygen atoms are linked to two adjacent carbon atoms of the phenyl ring;

(f) a group



wherein each of R′ and R″ independently represents a hydrogen atom or a C_1-C_4 alkyl group;

R_3 represents:

(a′) a hydrogen or halogen atom;

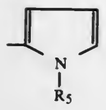
(b′) C_1-C_4 alkyl;

(c′) hydroxy, formyloxy or C_2-C_8 alkanoyloxy;

(d′) C_1-C_4 alkoxy or C_3-C_4 alkenyloxy;

R_4 represents:

(a″) a group



wherein R_5 represents a hydrogen atom or a C_1–C_4 alkyl group;

(b″) a group of formula



wherein each of R_6, R_7 and R_8 independently represents a hydrogen or a halogen atom; a hydroxy group; a C_1–C_6 alkoxy group unsubstituted or substituted by C_1–C_4 dialkylamino group; a C_1–C_4 alkyl group; formyloxy or a C_2–C_8 alkanoyloxy group; a $—NO_2$ group or a group



wherein each of R_9 and R_{10} independently represents a hydrogen atom, a C_1–C_4 alkyl group, formyl or a C_2–C_8 alkanoyl group;

(c″) a thiazolyl group, which may be unsubstituted or substituted by C_1–C_4 alkyl, or the pharmaceutically acceptable salts thereof.

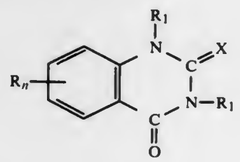
4,551,458

QUINAZOLINES AND FUNGICIDAL COMPOSITIONS THEREOF

Peretz Bracha, Omer, and Solomon Massil, Beer-Sheva, both of Israel, assignors to Makhteshim Chemical Works, Ltd., Beer Sheva, Israel

Filed Apr. 11, 1983, Ser. No. 483,938
Claims priority, application Israel, Apr. 11, 1982, 65464
Int. Cl.⁴ A61K *31/505;* **C07D** *239/80*
U.S. Cl. 514—259 **13 Claims**

8. Fungicidal compositions comprising a solid or liquid diluent or carrier and a fungicidally effective amount of an active compound of the formula



wherein:

R is lower alkyl, halogen or nitro;

R_1 is selected from a haloalkylthio group containing 1 or 2 carbon atoms and at least two halogen substituents; lower alkyl, phenyl, halophenyl, and halo-lower alkyl-phenyl, provided that at least one of R_1 is a haloalkylthio group as defined;

n is zero or an integer of from 1 to 4; and

X is oxygen or sulfur.

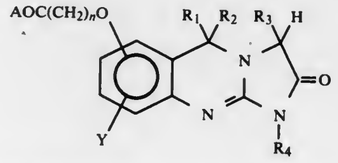
4,551,459

METHOD OF TREATING HEART FAILURE USING (2-OXO-1,2,3,5-TETRAHYDROIMIDAZO-[2,1-B]QUINAZOLINYL)OXYALKYLAMIDES

Gordon H. Jones, Cupertino; Michael C. Venuti, San Francisco; Robert Alvarez, Menlo Park, and John J. Bruno, Redwood City, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 467,125, Feb. 16, 1983, Pat. No. 4,490,371. This application Apr. 13, 1984, Ser. No. 599,858
Int. Cl.⁴ A61K *31/505, 27/00*
U.S. Cl. 514—267 **6 Claims**

1. A method of treating heart failure by stimulating suppressed heart activity which occurs during heart failure which method comprises administering a therapeutically effective amount of a compound of formula I alone or in admixture with a pharmaceutically acceptable excipient wherein formula I is



(I)

and the pharmaceutically acceptable acid addition salts thereof wherein

n is an integer of 1 to 6;

R_1 is hydrogen or alkyl of 1 to 4 carbon;

R_2 is hydrogen or R_1 and R_2 combined are oxo;

R_3 is hydrogen, alkyl of 1 to 6 carbons, phenyl, benzyl, hydroxy lower alkyl and its acylates, carbamoyl alkyl, or carboxyalkyl;

R_4 is hydrogen, alkyl of 1 to 6 carbons, benzyl, or hydroxy lower alkyl;

Y is hydrogen, alkyl of 1 to 4 carbon atoms, halo or lower alkoxy;

A is an amide forming group wherein the nitrogen substituents are: hydrogen; alkyl of 1 to 6 carbon atoms; hydroxyalkyl of 1 to 6 carbon atoms and its aliphatic acylates of 1 to 6 carbon atoms or aryl acylates of 7 to 12 carbon atoms; cycloalkyl of 3 to 8 carbon atoms or cycloalkyl lower alkyl of 4 to 12 carbon atoms wherein the cycloalkyl ring is unsubstituted or substituted with a lower alkyl, lower alkoxy, —OH, $—OCOR_5$, halo, $—NH_2$, $—N(R_5)_2$, $—NHCOR_5$, —COOH, or $—COO(R_5)$ group wherein R_5 is lower alkyl; phenyl or phenyl lower alkyl wherein phenyl is unsubstituted or substituted with 1 or more lower alkyl, halo or lower alkoxy groups or an $—NH_2$, $—N(R_5)_2$, $—NHCOR_5$, —COOH, or $—COOR_5$ group wherein R_5 is lower alkyl; morpholinyl; piperidinyl; perhexylenyl; N-loweralkylpiperazinyl; pyrrolidinyl; tetrahydroquinolinyl; tetrahydroisoquinolinyl; (±)-decahydroquinolinyl or indolinyl and the pharmaceutically acceptable salts thereof.

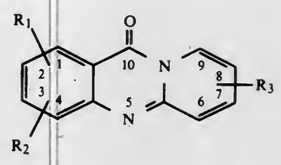
4,551,460

PYRIDO[2,1-B]QUINAZOLINE DERIVATIVES USEFUL AS AGENTS FOR TREATMENT OF ALLERGIC CONDITIONS AND VASCULAR DISORDERS INVOLVING THROMBOSIS

Jefferson W. Tilley, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

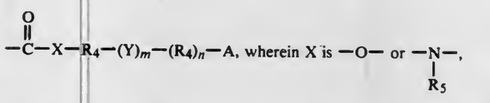
Continuation-in-part of Ser. No. 376,324, May 10, 1982, abandoned. This application Mar. 2, 1983, Ser. No. 471,382
Int. Cl.⁴ A61K *31/505;* **C07D** *471/04*
U.S. Cl. 514—267 **58 Claims**

1. A compound of the formula



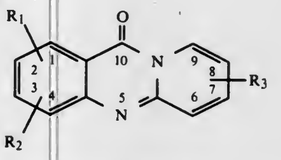
I

wherein R_1 and R_2, independently, are hydrogen, lower alkyl, lower alkoxy, hydroxy or halogen, and R_3 is in the 6-, 7- or 8-ring position and is



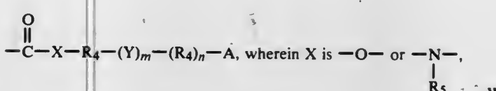
wherein R_5 is hydrogen or lower alkyl, R_4 is lower alkylene, Y is —O— or —S—, m is zero or 1, n is zero or 1, and A is an unsubstituted or substituted aromatic 5- or 6-membered heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl, imidazolyl, furyl, thienyl thiazolyl, oxazolyl, isoxazolyl, pyrazinyl, quinolinyl, isoquinolinyl, quinazolinyl, 1,2,4-triazinyl, 1,2,4-triazolyl, benzimidazolyl and pyridazinyl and wherein the substituents are selected from the group consisting of straight- and branched-chain lower alkyl, straight- and branched-chain lower alkoxy, halogen and nitro, provided that when A is linked through a heterocyclic nitrogen, m and n must each be zero, or a pharmaceutically acceptable acid addition salt thereof.

27. A pharmaceutical composition comprising a compound of the formula



I

wherein R_1 and R_2, independently, are hydrogen, lower alkyl, lower alkoxy, hydroxy or halogen, and R_3 is in the 6-, 7- or 8-ring position and is



wherein R_5 is hydrogen or lower alkyl, R_4 is lower alkylene, Y is —O— or —S—, m is zero or 1, n is zero or 1, and A is an unsubstituted or substituted aromatic 5- or 6-membered heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl, imidazolyl, furyl, thienyl thiazolyl, oxazolyl, isoxazolyl, pyrazinyl, quinolinyl, isoquinolinyl, quinazolinyl, 1,2,4-triazinyl, 1,2,4-triazolyl, benzimidazolyl and pyridazinyl and wherein the substituents are selected from the group consisting of straight- and branched-chain lower alkyl, straight- and branched-chain lower alkoxy, halogen and nitro, provided that when A is linked through a heterocyclic nitrogen, m and n must each be zero, or a pharmaceutically acceptable acid addition salt thereof, and an inert pharmaceutical carrier material.

4,551,461

SOFT CONTACT LENS AMBIENT TEMPERATURE DISINFECTANT AND RINSING SOLUTION AND METHOD

Guy J. Sherman, Mandeville, La., assignor to Sherman Laboratories, Inc., Abita Springs, La.

Continuation-in-part of Ser. No. 537,245, Sep. 28, 1983, Pat. No. 4,529,535, which is a continuation-in-part of Ser. No. 384,110, Jun. 1, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,088
Int. Cl.⁴ A01N *43/54;* **A61K** *31/505*
U.S. Cl. 514—275 **16 Claims**

1. A method of treating a contact lens to kill bacteria associated therewith comprising:

(a) placing the lens in contact with an aqueous composition, said composition comprising water, trimethoprim and benzyl alcohol present together in an effective amount to kill bacteria; and

(b) maintaining the lens in contact with said aqueous composition for a time sufficient to kill bacteria.

8. An aqueous composition for ambient temperature disinfection of soft contact lenses comprising trimethoprim and benzyl alcohol present together in an effective amount to kill bacteria, said composition being compatible with soft contact lenses.

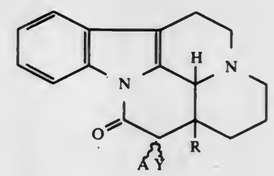
4,551,462

EBURNANE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Csaba Szántay; Lajos Szabó; György Kalaus; János Sápi; Éva Pálosi; Béla Kiss; Elemér Ezer, and György Hajós, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Jun. 27, 1983, Ser. No. 508,438
Claims priority, application Hungary, Jun. 30, 1982, 2132/82
Int. Cl.⁴ A61K *31/435;* **C07D** *461/00*
U.S. Cl. 514—283 **7 Claims**

1. A compound of the Formula (I)



(I)

wherein

R is ethyl,

A is hydroxyl, and

Y is hydrogen, or

A and Y together form an oxo group,

or a pharmaceutically acceptable acid addition salt thereof.

6. An antidepressant method of treatment which comprises the step of administering to a subject in need of said treatment a pharmaceutically effective amount of the compound of the Formula (I) defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof.

7. An anticonvulsive method of treatment which comprises the step of administering to a subject in need of said treatment a pharmaceutically effective amount of the compound of the Formula (I) defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof.

4,551,463

COMPOSITION CONTAINING 1-PHENYL-1,8-NAPHTHRIDIN-2(1H)-ONES AND A NON-STEROIDAL ANTI-INFLAMMATORY DRUG

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 438,681, Nov. 3, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,673

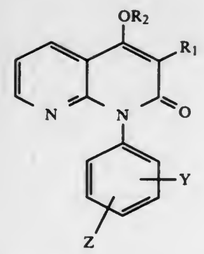
Int. Cl.⁴ A61K *31/435*

U.S. Cl. 514—300 **10 Claims**

1. A composition for inhibiting the formation of a non-steroidal anti-inflammatory drug-induced ulceration which comprises;

(a) a non-steroidal anti-inflammatory drug;

(b) a compound having the structural formula I:



I

wherein

Y is hydrogen, hydroxy, benzyloxy, amino, sulfamyl, halogen, nitro, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, carboxylic acyl having from 2 to 6 carbon atoms, alkyl-$S(O)_m$— having from 1 to 6 carbon atoms wherein m is 0, 1, or 2, trifluoromethyl, trifluromethylthio, or COOA wherein A is hydrogen, alkyl having from 1 to 6 carbon atoms or a cation derived from a pharmaceutically acceptable metal or an amine;

Z is hydrogen, hydroxy, halogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, hydroxyalkyl having from 1 to 6 carbon atoms, or carboxylic acyloxy having from 2 to 6 carbon atoms;

R_1 is alkenyl having from 2 to 10 carbon atoms, alkynyl having from 2 to 10 carbon atoms, cycloalkyl having from 3 to 7 carbon atoms, cycloalkenyl having from 5 to 8 carbon atoms, carboxylic acyl having from 2 to 6 carbon atoms or alkyl having from 1 to 10 carbon atoms which may be substituted with hydroxy, COOH, halogen, alkoxy having from 1 to 6 carbon atoms, phenyl, carboxylic acyl having from 2 to 6 carbon atoms, cycloalky having from 3 to 7 carbon atoms or carboxylic acyloxy having from 1 to 6 carbon atoms;

R_2 is hydrogen, alkenyl having from 3 to 8 carbon atoms, alkynyl having from 3 to 8 carbon atoms, carboxylic acyl having from 1 to 6 carbon atoms, alkyl having from 1 to 6 carbon atoms, $R_aR_bN(CH_2)_n$— (wherein R_a and R_b are hydrogen, alkyl having from 1 to 6 carbon atoms, and n is an integer of from 2 to 6) hydroxyalkyl having from 2 to 6 carbon atoms, dihydroxyalkyl having from 2 to 6 carbon atoms, hydroxyalkoxyalkyl having from 2 to 8 carbon atoms, or a cation derived from a pharmaceutically acceptable metal or an amine;

(c) and a pharmaceutical carrier.

4,551,464

ANTITHROMBOTIC SULFOXIMINO CARBOSTYRILS

Erich Müller; Josef Nickl; Berthold Narr; Josef Roch; Walter Haarmann, and Johannes M. Weisenberger, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

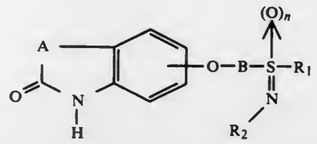
Continuation of Ser. No. 395,631, Jul. 6, 1982, Pat. No. 4,442,111. This application Jan. 26, 1984, Ser. No. 573,964

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129444; Oct. 29, 1981, 3142904

Int. Cl.⁴ A61K *31/47;* **C07D** *215/22*

U.S. Cl. 514—312 **7 Claims**

1. A compound of the formula



wherein

n is 0 or 1;

A is vinylene or ethylene;

B is straight alkylene of 3 to 5 carbon atoms;

R_1 is alkyl of 1 to 6 carbon atoms; benzyl; phenylethyl; cyclohexyl; naphthyl; methoxy-naphthyl; α-, β- or γ-pyridyl; phenyl; 3- or 4-monosubstituted phenyl, where the substituent is alkyl of 3 or 4 carbon atoms, cyclohexyl, phenyl or fluorophenyl; monosubstituted phenyl, where the substituent is methyl, ethyl, methoxy, fluorine, chlorine or bromine; 3,4- or 3,5-disubstituted phenyl, where the substituents are each independently alkyl of 1 to 4 carbon atoms, methoxy, chlorine or bromine; 3,5-disubstituted 4-aminophenyl, 4-hydroxyphenyl or 4-methoxyphenyl, where the substituents are each independently chlorine, bromine, methoxy or alkyl of 1 to 4 carbon atoms; and

R_2 is hydrogen alkanoyl of 1 to 8 carbon atoms; methoxy(alkanoyl of 1 to 8 carbon atoms); benzoyl; monosubstituted benzoyl, where the substituent is halogen, cyano or alkyl of 1 to 4 carbon atoms; phenylsulfonyl; (monosubstituted phenyl)sulfonyl, where the substituent is halogen, cyano or alkyl of 1 to 4 carbon atoms; (alkoxy of 1 to 3 carbon atoms)carbonyl; aminocarbonyl; (chlorophenylamino)-carbonyl; methylamino-carbonyl; dimethylamino-carbonyl; naphthoyl; pinanoyl; camphorsulfonyl; (pentamethylphenyl)sulfonyl; 3-pyridinoyl; or 2-thenoyl;

or a non-toxic, pharmacologically acceptable addition salt thereof formed with a strong acid.

4,551,465

PIPERIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Toth; Jozsef Torley; Eva Palosi; Szabolcs Szeberenyi; Laszlo Szporny; Sandor Gorog, and Istvan Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

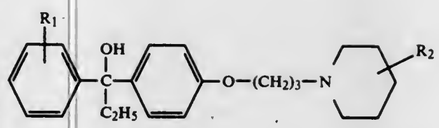
Filed Dec. 27, 1983, Ser. No. 565,902

Claims priority, application Hungary, Dec. 28, 1982, 4185

Int. Cl.⁴ C07D *295/08;* **A61K** *31/445*

U.S. Cl. 514—317 **6 Claims**

1. A compound of the Formula (I)



(I)

wherein

R_1 is halogen, trihalomethyl, C_1–C_4 alkyl, or C_1–C_4 alkoxy; and

R_2 is hydrogen or C_1–C_4alkyl, or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

5. A method of inhibiting the liver microsomal monooxygenase enzyme system in a susceptible subject which comprises administering an effective amount of a compound as defined in claim 1.

4,551,466

PYRIDYL-2-OXY-PROPYL-1H-1,2,4-TRIAZOLE-3,5-DIAMINES

David G. Cooper, Letchworth, and George S. Sach, Welwyn, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

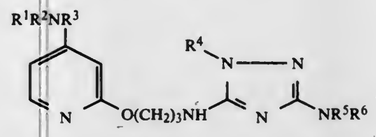
Filed Mar. 9, 1983, Ser. No. 473,519

Claims priority, application United Kingdom, Mar. 17, 1982, 8207835; Mar. 31, 1982, 8209540

Int. Cl.⁴ C07D *401/12, 401/14;* **A61K** *31/445*

U.S. Cl. 514—318 **12 Claims**

1. A compound of formula (1):



or a pharmaceutically acceptable salt thereof, where

R^1 and R^2 are the same or different and are C_{1-6}alkyl or with the nitrogen atom to which they are attached form a pyrrolidino or piperidino group;

R^3 is methylene;

R^4 is hydrogen, C_{1-6} alkyl, hydroxy-C_{2-4} alkyl; optionally substituted phenyl or phenyl (C_{1-6} alkyl) (the substituents being one or more C_{1-6} alkyl, or C_{1-6} alkoxy groups or halogen atoms);

R^5 and R^6 are hydrogen.

4,551,467

VASODILATING CYANOALKYL ESTERS OF 1,4-DIHYDROPYRIDINES

Egbert Wehinger, Velbert; Friedrich Bossert, Wuppertal; Wulf Vater, Leverkusen, and Kurt Stoepel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

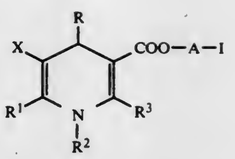
Filed Oct. 11, 1979, Ser. No. 83,884

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847236

Int. Cl.⁴ C07D *211/90, 401/04;* **A61K** *31/455*

U.S. Cl. 514—334 **16 Claims**

1. A compound of the formula I



(I)

or a salt thereof in which

R denotes a phenyl radical which is optionally substituted by one or two substituents selected from trifluoromethyl, nitro, halogen and cyano, or denotes a pyridyl radical,

R^1 and R^3 are identical or different and denote an alkyl group with 1 to 4 carbon atoms,

R^2 denotes a hydrogen atom or an alkyl group with 1 to 4 carbon atoms,

A denotes a straight-chain or branched alkylene group with up to 4 carbon atoms,

Y denotes a nitrile group and

X denotes the group —$COOR^7$, in which

R^7 denotes a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical with up to 6 carbon atoms which is optionally interrupted in the chain by an oxygen atom and which is optionally substituted by trifluoromethyl.

7. A pharmaceutical composition containing as an active ingredient an effective vasodilating influencing amount of a compound according to claim 1 in admixture with a solid, liquid or liquefied gaseous diluent.

4,551,468

HETEROCYCLIC THROMBOXANE SYNTHETASE INHIBITORS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Peter E. Cross, Canterbury; Roger P. Dickinson, Dover, and Geoffrey N. Thomas, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

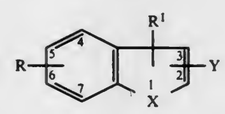
Division of Ser. No. 313,121, Oct. 20, 1981, Pat. No. 4,410,539. This application Aug. 22, 1983, Ser. No. 525,362

Claims priority, application United Kingdom, Oct. 23, 1980, 8034198

Int. Cl.⁴ A61K *31/38;* **C07D** *333/70*

U.S. Cl. 514—339 **10 Claims**

1. A compound of the formula:



(I)

wherein

R^1, which is attached to the 2-, 3- or 4-position, is hydrogen, halogen, C_1–C_4 alkyl, hydroxy, or C_1–C_4 alkoxy;

Y, which is attached to the 2- or 3-position, is —COOH, —$COO(C_1$–C_4 alkyl) or —$CONH_2$;

X is O, S, NH, N (C_1–C_4) alkyl or N(benzyl); and

R, which is attached to the 5-, 6- or 7-position, is (3- or 4-pyridyl)-Z^2— wherein

Z^2 is —CH_2—, —CH_2CH_2—, —CH=CH—, —CH_2O— or —OCH_2—; and the pharmaceutically acceptable salts thereof.

10. A method for treating a human being having a condition characterized by an imbalance of the prostacyclin:thromboxane A_2 ratio which comprises administering to said human a sufficient amount of a compound according to claim 1 to restore the prostacyclin:thromboxane A_2 balance in said human.

4,551,469

ANTIFUNGAL TRIAZOLE ETHANOL DERIVATIVES

Keith P. Parry; Paul A. Worthington, both of Maidenhead, and William G. Rathmell, Wokingham, all of England, assignors to Imperial Chemical Industries PLC, London, England

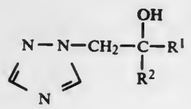
Continuation-in-part of Ser. No. 124,253, Feb. 25, 1980,. This application Sep. 3, 1980, Ser. No. 183,410

Claims priority, application United Kingdom, Mar. 7, 1979, 7908003; Sep. 21, 1979, 7932819; Feb. 15, 1980, 8005141; Aug. 18, 1980, 8026884

Int. Cl.[4] A01N *43/64, 59/20;* **C07D** *249/08, 413/10*

U.S. Cl. 514—383 **6 Claims**

1. A compound of general formula (I)



wherein R^1 is cycloalkyl of up to 6 carbon atoms, or halophenyl, and R^2 is halophenyl or an acid addition salt of copper, zinc, manganese or iron complex thereof.

5. A fungicidal composition consisting essentially of a fungicidally effective amount of a compound, salt or complex as claimed in claim 1, and a carrier or diluent.

4,551,470

HEXAHYDRO-3,5-DIOXO-1H-PYRROLIZINE-2-CARBOXYLIC ACID AND DERIVATIVES, AND USE FOR REVERSING ELECTROCONVULSIVE SHOCK AMNESIA

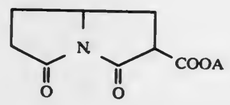
Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 29, 1983, Ser. No. 527,718

Int. Cl.[4] A61K *31/40;* **C07D** *487/06*

U.S. Cl. 514—413 **16 Claims**

1. A compound having the formula



where A is hydrogen, methyl, alkyl of from three to six carbon atoms, phenyl, $-(CH_2)_{1-4}$phenyl, sodium, potassium, magnesium, calcium, aluminum, zinc, iron, or ammonium.

15. A method of reversing amnesia caused by electroconvulsive shock in humans which comprises administering to said human an effective amount of a compound in accordance with claim 1.

4,551,471

USE OF 3-INDOLEPYRUVIC ACID FOR INCREASING SEROTONIN

Giovanna De Luca; Giovanni Di Stazio; Vincenzo Politi, and Mario Materazzi, all of Rome, Italy, assignors to Polifarma S.p.A., Rome, Italy

Filed Oct. 7, 1983, Ser. No. 540,051

Claims priority, application Italy, Oct. 11, 1982, 49251 A/82

Int. Cl.[4] A61K *31/405;* **C07D** *209/20*

U.S. Cl. 514—419 **4 Claims**

2. A method for increasing brain serotonin levels in mammals comprising administering orally a therapeutically effective amount of 3-indolpyruvic acid or a pharmaceutically acceptable salt thereof.

4,551,472

UNSYMMETRICAL BIS-CARBAMATE COMPOUNDS

Themistocles D. J. D'Silva, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

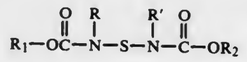
Continuation-in-part of Ser. No. 79,893, Sep. 28, 1979, abandoned, which is a continuation of Ser. No. 737,218, Nov. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 636,630, Dec. 1, 1975, abandoned. This application Jan. 9, 1984, Ser. No. 569,202

The portion of the term of this patent subsequent to Feb. 7, 1995, has been disclaimed.

Int. Cl.[4] A01N *47/12, 47/22;* **C07C** *161/00*

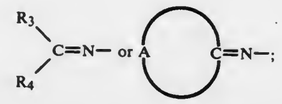
U.S. Cl. 514—477 **31 Claims**

1. A compound of the formula:



wherein: R and R′ are individually alkyl radicals having from 1 to 4 carbon atoms;

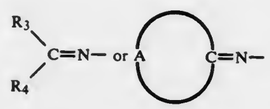
R_1 is



or

R_1 is alkynyl when R_2 is other than alkenyl or alkynyl;

R_2 is other than R_1 and is alkenyl, alkynyl, phenyl, benzofuranyl, benzothienyl, naphthyl or tetrahydronaphthyl all of which may be either unsubstituted or substituted with one or more halogen, nitro, nitrile, alkyl, alkylthio, alkylthioalkyl, methylenedioxy, amino, alkylamino, dialkylamino, alkoxycarbonylamino, dialkylamino-alkyleneimino, alkylcarbonylamino, formylamino, dicyanoethylidene, alkoxy, alkynyloxy, phenoxy, phenyl, 2-dithianyl, 2-dithiolanyl, 2-dioxalanyl, 2-oxathianyl, 2-oxathiolanyl or 2-dioxanyl groups in any combination; or R_2 is:

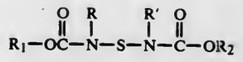


R_3 is hydrogen, alkyl, alkylthio or cyano;

R_4 is alkyl, alkylthio, alkylthioalkyl, alkoxy, aroyl, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl or dialkylaminocarbonyl groups or R_4 is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or an R_5CONH- or R_5CON(alkyl)-group where R_5 is hydrogen, alkyl or alkoxy; and

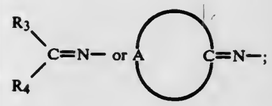
A is a divalent aliphatic chain, completing a five or six member ring, which includes one or two divalent oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent amino alkylamino or carbonyl group; in any combination or A may also complete a six membered ring which includes three divalent sulfur, sulfinyl or sulfonyl groups in any combination; provided that the total number of aliphatic carbon atoms in R_3, R_4 and A, individually, may not exceed eight and provided that R_2 may not be 4-oximino-1,3-dithiolanyl.

24. A method of controlling insects, mites and nematodes which comprises subjecting them to an insecticidally, miticidally or nematocidally effective amount of a compound of the formula:



wherein: R and R′ are individually alkyl radicals having from 1 to 4 carbon atoms;

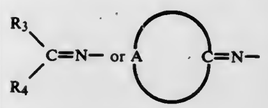
R_1 is



or

R_1 is alkynyl when R_2 is other than alkenyl or alkynyl;

R_2 is other than R_1 and is alkenyl, alkynyl, phenyl, benzofuranyl, benzothienyl, naphthyl or tetrahydronaphthyl all of which may be either unsubstituted or substituted with one or more halogen, nitro, nitrile, alkyl, alkylthio, alkylthioalkyl, methylenedioxy, amino, alkylamino, dialkylamino, alkoxycarbonylamino, dialkylamino-alkyleneimino, alkylcarbonylamino, formylamino, dicyanoethylidene, alkoxy, alkynyloxy, phenoxy, phenyl, 2-dithianyl, 2-dithiolanyl, 2-dioxalanyl, 2-oxathianyl, 2-oxathiolanyl or 2-dioxanyl groups in any combination; or R_2 is:



R_3 is hydrogen, alkyl, alkylthio or cyano;

R_4 is alkyl, alkylthio, alkylthioalkyl, alkoxy, aroyl, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl or dialkylaminocarbonyl groups or R_4 is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or an R_5CONH- or R_5CON(alkyl)-group where R_5 is hydrogen, alkyl or alkoxy; and

A is a divalent aliphatic chain, completing a five or six member ring, which includes one or two divalent oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent amino alkylamino or carbonyl group; in any combination or A may also complete a six membered ring which includes three divalent sulfur, sulfinyl or sulfonyl groups in any combination; provided that the total number of aliphatic carbon atoms in R_3, R_4 and A, individually, may not exceed eight and provided that R_2 may not be 4-oximino-1,3-dithiolanyl.

4,551,473

METHOD OF INHIBITING SNORING AND OBSTRUCTIVE SLEEP APNEA

George W. Schossow, 2316 Lilac La., White Bear Lake, Minn. 55110

Filed Apr. 26, 1984, Ser. No. 603,967

Int. Cl.[4] A61K *31/44, 31/135, 31/195*

U.S. Cl. 514—305 **3 Claims**

3. A method of inhibiting or preventing snoring and associated abstructive sleep apnea comprising administering to a person displaying such symptoms an effective amount of muscle relaxant acting at the spinal or supra-spinal level and selected from the class consisting of orphenadrine, orphenadrine citrate, 4-amino-3(p-chlorophenyl butyric acid), quinine sulfate and 5-chloro benzoxazolinone.

4,551,474

METHODS OF ALLEVIATING CONVULSIONS AND PAIN EMPLOYING 4-ARYLOXY-1,2,3,4 TETRAHYDROISOQUINOLINES

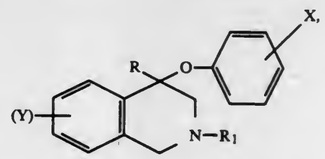
Richard C. Effland, Bridgewater; Larry Davis, Sergeantsville, and Joseph T. Klein, Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 451,139, Dec. 20, 1982, Pat. No. 4,477,670, which is a division of Ser. No. 235,801, Feb. 19, 1981, Pat. No. 4,375,471. This application Aug. 9, 1984, Ser. No. 639,057

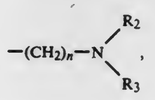
Int. Cl.[4] A61K *31/47;* **C07D** *217/24, 401/06*

U.S. Cl. 514—309 **2 Claims**

1. A method of alleviating convulsions in a mammal which comprises administering to a mammal an anticonvulsant effective amount of a compound having the formula



where Y is hydrogen and alkoxy of 1 to 6 carbon atoms; X is hydrogen, cyano, benzoyl, trifluoromethyl, phenyl, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and nitro; R is hydrogen and alkyl of 1 to 6 carbon atoms; R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, aralkyl where the alkyl moiety has 1 to 6 carbon atoms and



where R_2 and R_3 are the same of different and are hydrogen and alkyl of 1 to 6 carbon atoms or R_2 and R_3 are fused together to form a pyrrolidino or a piperidino ring substituent; m is an integer of 1 or 2; n is an integer of 2 or 3 and a pharmaceutically acceptable acid addition salt thereof.

4,551,475

PHARMACEUTICAL PREPARATIONS FOR TOPICAL APPLICATION WHICH CONTAIN SALTS OF ALKANECARBOXYLIC ACIDS

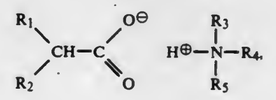
Theodor Eckert, Münster, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 236,097, Feb. 20, 1981, Pat. No. 4,407,824. This application Jul. 27, 1983, Ser. No. 517,606

Int. Cl.[4] A61K *31/36, 31/40*

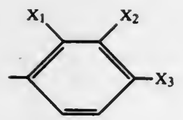
U.S. Cl. 514—408 **10 Claims**

1. A pharmaceutical preparation for topical application which contains an antiinflammatory and analgesically effective amount of a compound of the formula



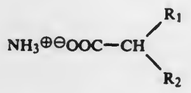
(I)

wherein R_1 is a group of the formula



(IIa)

wherein X_1 is hydrogen, X_2 is chlorine, and X_3 is 3-pyrrolin-1-yl, and R_2 methyl, or X_2 and X_3 are hydrogen and X_1 is 2,6-dichloroanilino, and R_2 is hydrogen, and each of R_3, R_4 and R_5 independently is lower alkyl containing up to and including 4 carbon atoms, or hydroxy-lower alkyl containing up to and including 4 carbon atoms, hydroxy-lower alkyl containing up to and including 4 carbon atoms to or one of the others is lower alkyl containing up to and including 4 carbon atoms, and the third is oligo-hydroxy-lower alkyl, or two of R_3, R_4 and R_5 are hydrogen and the other is lower alkyl containing up to and including 4 carbon atoms, hydroxy-lower alkyl containing up to and including 4 carbon atoms, oligo-hydroxy-lower alkyl containing up to and including 4 carbon atoms, amino-lower alkyl containing up to and including 4 carbon atoms, or a group of the formula



wherein alk is lower alkylene containing up to and including 4 carbon atoms, together with pharmaceutically acceptable carriers and excipients.

4,551,476

13,14-DIDEHYDRO-PROSTAGLANDINS AND PROCESS FOR THEIR PREPARATION

Franco Faustini, Milan; Carlo Passarotti, Gallarate; Roberto Ceserani, and Carmelo Gandolfi, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

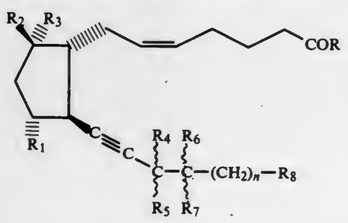
Division of Ser. No. 156,813, Jun. 5, 1980, abandoned, which is a continuation of Ser. No. 69,378, Aug. 24, 1979, abandoned, which is a continuation of Ser. No. 952,324, Oct. 18, 1978, abandoned. This application May 10, 1983, Ser. No. 493,294

Claims priority, application Italy, Nov. 15, 1977, 29654 A/77

Int. Cl.⁴ A61K *177/00;* **C07D** *307/46*

U.S. Cl. 514—461 **18 Claims**

1. Compounds having the following formula (I)



(I)

where R is OH; C_1–C_{12} alkoxy with optional substitution by one or more phenyl groups, said phenyl groups being optionally substituted by C_1–C_6 alkyl or halo-C_1–C_6 alkyl, or heterocyclic radicals chosen from pyridyl, pyrazolyl and pyrazolinyl; or a



group where R′ and R″ are, independently of one another, hydrogen, C_1–C_6 alkyl, phenyl or heterocyclic, or a heterocyclic radical formed by R′, R″ and the nitrogen wherein the heterocyclic or heterocyclic radical is chosen from pyridyl, pyrazolyl or pyrazolinyl; the symbol —— represents a single or double bond, where, when —— is a double bond, R_1 is hydrogen and R_2 and R_3, taken together, form an oxo group, and when —— is a single bond, R_1 is hydroxy, R_2 is hydrogen and R_3 is either hydroxy, C_2–C_6 alkanoyloxy or benzoyloxy, or forms with R_2 an oxo group; one of R_4 and R_5 is hydroxy or C_1–C_6 alkoxy and the other is hydrogen, C_1–C_4 alkyl, phenyl, C_2–C_4 alkenyl or C_2–C_4-alkynyl; R_6 and R_7 are, independently of one another, hydrogen, C_1–C_4 alkyl, fluoro, phenyl or phenyl substituted by methyl, chloro, fluoro or trifluoromethyl; n is zero, 1, 2 or 3; R_8 is furyl unsubstituted or substituted with one or more substituents chosen from a group consisting of (a′) halogen (b′) trihalo-C_1–C_6-alkyl, (c′) C_1–C_4 alkyl, (d′) C_1–C_4 alkoxy, (e′) phenyl and (f′) phenoxy, and pharmaceutically or veterinarily acceptable salts thereof.

4,551,477

ESTERS OF ALKOXY-ACYLDERIVATIVES OF CARNITINE AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Claudio Cavazza, and Maria O. Tinti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.P.A., Rome, Italy

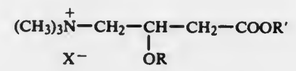
Continuation of Ser. No. 263,655, May 14, 1981, abandoned. This application Jun. 28, 1974, Ser. No. 625,715

Claims priority, application Italy, May 30, 1980, 48853 A/80

Int. Cl.⁴ C07C *101/18;* **A61K** *31/22*

U.S. Cl. 514—547 **3 Claims**

1. An ester of alkoxy-carboxyl derivatives of carnitine having general formula (I):



(I)

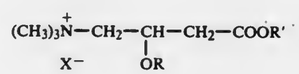
wherein:

X^- is a halogen anion selected from chlorine and bromine;

R is an alkoxy-substituted alkanoyl group radical having from 3 to 6 carbon atoms; and

R′ is an alkyl radical having from 1 to 6 carbon atoms.

3. A pharmaceutical composition for the treatment of cardiac disorders, hyperlipoproteinaemias, or hyperlipidaemias, comprising a therapeutically effective amount of an ester of carnitine of formula (I)



(I)

wherein:

X^- is a halogen anion selected from chlorine and bromine;

R is an alkoxy-substituted alkanoyl radical having from 3–6 carbon atoms; and

R′ is an alkyl radical having from 1 to 6 carbon atoms, and a pharmacologically acceptable excipient.

4,551,478

3-NITROBENZENE SULFONANILIDE DERIVATIVES AND FUNGICIDAL COMPOSITIONS FOR THE CONTROL OF PLANT DISEASES CONTAINING SAME

Tekeo Yoshimoto, Yokohama; Mitsumasa Umemoto, Ohmuta; Keiichi Igarashi, Musashino; Hideo Yamazaki, Yokohama; Yoshio Takasawa, Ayase, and Hirohisa Yanagita, Chigasaki, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,634

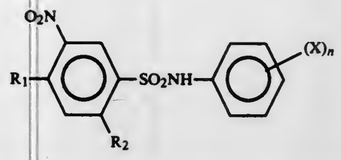
Claims priority, application Japan, Jun. 16, 1982, 57-102080

The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.

Int. Cl.⁴ C07C *143/79;* **A01N** *41/06*

U.S. Cl. 514—603 **8 Claims**

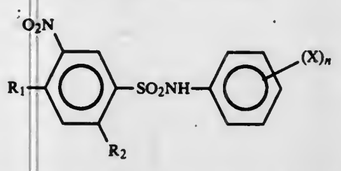
1. A 3-nitrobenzene sulfonanilide derivative having the formula:



(I)

wherein R_1 and R_2 are both hydrogen, R_1 is hydrogen and R_2 is methyl or R_1 is methyl and R_2 is hydrogen, and when R_1 and R_2 are both hydrogen, $(X)_n$ is 2,4,6-trichloro, 2-chloro-4-nitro or 2-chloro-5-nitro; when R_1 is hydrogen and R_2 is methyl, $(X)_n$ is 4-iodo, 2,5-dichloro, 3,5-dichloro, 2-bromo-4,5-dichloro or 2-chloro-4-nitro; and when R_1 is methyl and R_2 is hydrogen, $(X)_n$ is 4-iodo, 2,3-dichloro, 2,5-dichloro, 3,5-dichloro, 2-bromo-4,5-dichloro, 2-chloro-5-nitro, 2-methyl-6-nitro or 2-nitro-4-methyl.

3. A fungicidal composition for controlling soil-borne plant diseases containing, as the active ingredient, in the range of 2 to 5 weight percent for dusts, granules, and fine granules; in the range of 40 to 60 weight percent for wettable powders and flowable formulations; and in the range of 30 to 50 weight percent for emulsifiable concentrates, a 3-nitrobenzene sulfonanilide derivative having the formula:



(I)

wherein R_1 and R_2 are both hydrogen, R_1 is hydrogen and R_2 is methyl or R_1 is methyl and R_2 is hydrogen, and when R_1 and R_2 are both hydrogen, $(X)_n$ is 2,4,6-trichloro, 2-chloro-4-nitro or 2-chloro-5-nitro; when R_1 is hydrogen and R_2 is methyl, $(X)_n$ is 4-iodo, 2,5-dichloro, 3,5-dichloro, 2-bromo-4,5-dichloro or 2-chloro-4-nitro; and when R_1 is methyl and R_2 is hydrogen, $(X)_n$ is 4-iodo, 2,3-dichloro, 2,5-dichloro, 3,5-dichloro, 2-bromo-4,5-dichloro, 2-chloro-5-nitro, 2-methyl-6-nitro or 2-nitro-4-methyl.

4,551,479

COMPOUNDS WITH ANTI-CONVULSIVE PROPERTIES

David S. Savage, Glasgow, and James Redpath, Bishopbriggs, both of Scotland, assignors to Akzo N.V., Arnhem, Netherlands

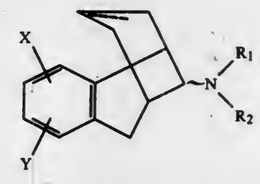
Filed Mar. 22, 1984, Ser. No. 592,102

Claims priority, application Netherlands, Mar. 29, 1983, 8301096

Int. Cl.⁴ A61K *31/135*

U.S. Cl. 514—657 **2 Claims**

1. A method for the treatment of convulsions in human beings or animals which comprises administering to a patient suffering from convulsions an anti-convulsive effective amount of a compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein R_1 and R_2 each represent hydrogen or a (C_1–C_4) alkyl group, the broken line indicates an optional extra bond, and X and Y each represent hydrogen (C_1–C_4) alkyl or halogen, or a pharmaceutically acceptable acid addition salt thereof.

4,551,480

COMPOSITIONS FOR THE TREATMENT OF PSORIASIS

Werner K. Stiefel, Coral Gables, Fla., and Daniel W. Nicolai, Delmar, N.Y., assignors to Stiefel Laboratories, Inc., Coral Gables, Fla.

Continuation-in-part of Ser. No. 506,414, Jun. 21, 1983, abandoned. This application Mar. 2, 1984, Ser. No. 585,515

Int. Cl.⁴ A61K *31/12*

U.S. Cl. 514—680 **16 Claims**

1. A topical anthralin cream composition in which the anthralin demonstrates improved stability, said composition comprising

(a)

(i) from about 0.05% to about 5%, by weight of the composition, of anthralin in

(ii) a water:fluid hydrocarbon emulsion having an oil continuous phase wherein the weight ratio of water to fluid hydrocarbon is at least about 5:1;

(b) an emulsifying amount up to about 3%, by weight of the composition, of at least one anionic emulsifying agent;

(c) from about 0.02% to about 2% by weight of the composition, of at least one oil soluble antioxidant; and

(d) one or more water soluble components which satisfy at least one of the functional categories of

(i) an acidic material in an amount of from about 0.5% to about 1%, by weight of the composition; and

(ii) at least one bifunctional sequestering agent in an amount of from about 0.02% to about 2%, by weight of the composition,

both of said functional categories being satisfied.

4,551,481

FLOOR CLEANING COMPOSITION

James A. Smith, Old Tappan, and Betty J. Murphy, Upper Montclair, both of N.J., assignors to Creative Products Resource Associates, Ltd., Clifton, N.J.

Division of Ser. No. 684,384, Dec. 20, 1984, which is a continuation-in-part of Ser. No. 511,185, Jul. 6, 1983, and a continuation-in-part of Ser. No. 660,350, Oct. 12, 1984, abandoned. This application Mar. 28, 1985, Ser. No. 716,937

Int. Cl.⁴ C08J *9/38*

U.S. Cl. 521—52 **11 Claims**

1. A composition for cleaning flooring fouled with oily or greasy soils comprising oil absorbent shreds of a hydrophilic polyurethane foam comprising an open-celled highly reticulated matrix, wherein said matrix incorporates an interior aqueous phase and abrasive particles silane coupled within said matrix and wherein the cells incorporate an absorbed exterior aqueous phase which is partially released from said shreds when the shreds are contacted with the flooring under condi-

tions of pressure wherein in said foam shreds have a particle size of about 5–20 mesh.

4,551,482

MACROPOROUS, HYDROPHILIC ENZYME CARRIER

Chung-Ji Tschang, Bad Durkheim, and Stefan Marcinowski, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,108
Int. Cl.[4] C08J *9/36, 9/40*
U.S. Cl. 521—53 **5 Claims**

1. A macroporous, hydrophilic enzyme carrier in bead form which comprises a polymer charged with polyethyleneimine, said polymer being sulfonated after its formation and containing sulfo groups polyethyleneimine being neither crosslinked nor covalently bonded to the polymer.

4,551,483

FIRE-RETARDANT POLYURETHANE FOAM CONTAINING FINELY GROUND DRY FIRE-RETARDANT PARTICLES CONTAINING A VOLATILE ACTIVE FIRE-RETARDANT COMPONET

Hamilton Hicks, 60 Butternut Hollow Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 535,058, Sep. 23, 1983, Pat. No. 4,504,603. This application Sep. 13, 1984, Ser. No. 650,062
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—103 **10 Claims**

1. Fire-retardant polyurethane foam containing a fire-retardant amount of dry particles of at least one compound that produces a fire-retardant gas when heated by fire and is unstable when exposed to air with time, the particles being encapsulated by the polyurethane of the foam so as to be protected from the air until exposed to fire by burning of the foam, the particles being substantially uniformly distributed throughout the foam and comprising substantially uniformly intermixed particles of at least one compound of ammonium chloride or phosphate and at least one compound of sodium borate or bicarbonate, said foam being prepared by intermixing said compounds in finely ground and dry condition to form a powder mix which is dispersed throughout or blended in a polyol reactant and then blending there with an isocyanate so as to produce the foam.

4,551,484

TRANSPARENT, ANTIFOGGING COATING COMPRISED OF A PLASTIC MATERIAL CONTAINING A SURFACE ACTIVE AGENT

Helmer Rädisch, Aachen, and Werner Scholz, Pulheim, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Jul. 19, 1984, Ser. No. 632,465
Claims priority, application France, Jul. 22, 1983, 83 12139
Int. Cl.[4] C08L *75/00*
U.S. Cl. 523—169 **9 Claims**

1. A method of manufacturing a coating or film comprised of a transparent highly elastic, 3-dimensionally cross-linked plastic material, which coating or film may be employed as an external anti-lacerative or self-healing layer of a laminated pane, wherein said coating or film is comprised of at least one surface active agent disposed within its cross-linked structure, wherein the coating or film is formed in advance in known fashion and is treated by placing it in contact with a formulation comprised of said at least one surface active agent, under conditions and for a duration sufficient to permit diffusion of molecules of the surface active agent(s) into at least a part of the interior of the coating or film.

4,551,485

POLY(ETHYLENE TEREPHTHALATE) BLENDS

Gary S. Ragan, and Jesse D. Jones, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 4, 1984, Ser. No. 647,059
Int. Cl.[4] C08K *3/40*
U.S. Cl. 523—212 **19 Claims**

1. In a thermoplastic composition for injection and extrusion molding prepared by blending or compounding components comprising a poly(ethylene terephthalate) containing a reinforcing amount of a reinforcing filler, an epoxidized crystallization promoter, and a nucleating agent, the improvement pursuant to which the composition has included therein a small amount of organofunctional silane having a plurality of readily hydrolyzable substituents, said amount of said silane being sufficient to increase the impact strength of an article molded from the composition as compared to the impact strength of the same article molded in the same way from the same composition absent such inclusion.

4,551,486

INTERPENETRATING POLYMER NETWORK COMPOSITIONS

Louis H. Tateosian, and W. Donald Wilson, both of York, Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Nov. 16, 1983, Ser. No. 552,300
Int. Cl.[4] A61K *6/08*; C08K *3/36, 9/06*
U.S. Cl. 523—212 **7 Claims**

1. A polymerizable composite composition comprising:
a. about 10 to about 70 weight percent multifunctional vinyl crosslinking composition,
b. about 3 to about 70 weight percent of crosslinked polymer in the form of discrete particles having average cross-sections up to about 500 microns and being swellable in said composite composition,
c. about 3 to about 80 weight percent of inorganic filler comprising silanated silica and
d. vinyl functional silane monomer in an amount of about 0.001 to about 2 weight percent.

4,551,487

ENHANCED CARBON FIBER COMBUSTION USING A CATALYST

Camille A. Gaulin, Huntington Beach, and Howard A. Katzman, Los Angeles, both of Calif., assignors to The Aerospace Corporation, El Segundo, Calif.

Continuation of Ser. No. 303,061, Sep. 17, 1981, abandoned. This application Aug. 15, 1983, Ser. No. 523,452
Int. Cl.[4] C08K *9/02*
U.S. Cl. 523—215 **1 Claim**

1. A carbon-fiber-reinforced-resin matrix comprising filaments of a carbon fiber having introduced internally a fine dispersion of vanadium trioxide catalyst for enhancing combustion of the carbon fiber.

4,551,488

EPOXY RESIN BASED PROTECTIVE COATING COMPOSITION FOR PRINTED CIRCUIT BOARDS

Edward J. Leech, Oyster Bay, and Frank D. Russo, West Sayville, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 103,600, Dec. 14, 1979, Pat. No. 4,510,276, which is a continuation-in-part of Ser. No. 103,340, Dec. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 3,099, Jan. 12, 1979, abandoned. This application Jun. 29, 1984, Ser. No. 625,963
Int. Cl.[4] C08L *63/00, 63/02, 63/04*
U.S. Cl. 523—427 **22 Claims**

1. In a permanent, protective coating composition useful in the manufacture of printed circuit boards, said coating composition comprised of a thermosetting epoxy resin and curing composition dissolved in a solvent; and a flow promoter; said curing composition present in an amount sufficient to effect substantially complete cure of said thermosetting resin, said coating composition being in an initial state as a high viscosity solution and having an apparent viscosity between about 10,000 centipoise and about 200,000 centipoise, said coating composition upon curing, being transformed from said initial state into a final state as a solid, the improvement which comprises:
said thermosetting epoxy resin being a solid at room temperature, having a melting point between about 60° C. and about 200° C., and having an epoxide functionality greater than about 3;
said curing composition including:
a primary curing agent comprised of an alicyclic polyamine which is corrosive to copper surfaces, the primary curing agent being present in an amount sufficient to effect substantially complete cure of the thermosetting epoxy resin; and
a secondary curing agent comprised of an aromatic amine, said secondary curing agent being present in an amount sufficient to provide said cured coating composition with resistance to flux removal processes.

4,551,489

EMULSIONS OF DICYCLOPENTADIENE CONTAINING POLYESTERS

Charles E. Bayha, Collierville, Tenn., assignor to Alpha Corporation Of Tennessee, Collierville, Tenn.

Division of Ser. No. 419,773, Sep. 20, 1982, Pat. No. 4,447,577, and a continuation-in-part of Ser. No. 370,380, Apr. 21, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,811
Int. Cl.[4] C08L *67/00*
U.S. Cl. 523—501 **24 Claims**

1. A method of casting an aqueous polyester emulsion, said emulsion comprising at least about 20% by weight of a polyester and up to about 80% by weight water, said polyester formed from dicyclopentadiene, maleic acid, and a compound containing at least two alcoholic hydroxy groups, said dicyclopentadiene being present in a molar ratio of at least about one compared to said maleic acid, comprising:
pouring said emulsion into a mold, and
curing said emulsion.

4,551,490

ADHESIVE COMPOSITION RESISTANT TO BIOLOGICAL FLUIDS

Arthur Doyle, Wayne, and Frank M. Freeman, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 507,657, Jun. 27, 1983, abandoned. This application Dec. 30, 1983, Ser. No. 567,012
Int. Cl.[4] C08L *1/26, 3/04, 5/02, 5/06*
U.S. Cl. 524—22 **25 Claims**

1. A pressure sensitive adhesive composition suitable for medical purposes consisting essentially of a substantially homogeneous mixture on a percent weight basis of from about 5% to about 30% by weight of one or more polyisobutylenes or a blend of one or more polyisobutylenes and butyl rubber, from about 3.0% to about 20% by weight of one or more styrene radial or block type copolymers, from about 8.0% to about 40% by weight of mineral oil, from about 15% to about 65% by weight of one or more water soluble hydrocolloid gums, up to about 15% by weight of one or more water swellable cohesive strengthening agents provided that said water soluble hydrocolloid gums and said water swellable cohesive strengthening agents together are present at from about 15% to about 65% by weight of said composition, and from about 7.5% to about 15% by weight of a tackifier.

4,551,491

PEARLESCENT AUTOMOTIVE PAINT COMPOSITIONS

Sol Panush, Framington Hills, Mich., assignor to Inmont Corporation, Clifton, N.J.

Continuation of Ser. No. 518,583, Jul. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 440,764, Nov. 10, 1982, abandoned. This application Dec. 7, 1984, Ser. No. 677,909
Int. Cl.[4] C09C *1/00*
U.S. Cl. 524—31 **4 Claims**

1. A substrate material coated with at least two layers of polymer including a basecoat comprising a pigmented thermosetting or thermoplastic resin and a transparent topcoat on the basecoat, wherein the pigment in the basecoat consists essentially of iron oxide encapsulated mica particles, the mica particles being about 5 microns to about 60 microns nominal longitudinal dimension and having a thickness of about 0.25 micron to about 1 micron, the mica representing about 40% to about 80% by weight of the total weight of the particle, and the oxide encapsulation contains about 0.1% to about 3.5% chromium hydroxide based on total weight of the particle.

4,551,492

POLYESTER COATING COMPOSITION

Armand Aerts, Bekkevoort, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 27, 1984, Ser. No. 686,916
Int. Cl.[4] C08L *1/14, 67/08*
U.S. Cl. 524—40 **3 Claims**

1. A coating composition consisting essentially, in percent by weight based on the binder, of a binder consisting essentially of about
37.5–40% polyester resin having a Tg above 30° C.,
24.5–26% partially butylated melamine crosslinker resin,
6–10% polyurea plasticizer,
8% polyethylene vinyl acetate copolymer wax dispersion,
16% of a mixture of two cellulose acetate butyrate resins having different ranges of molecular weight, as indicated by Ford Cup viscosities in solution in butyl acetate, including 30–50% of a first cellulose butyrate acetate resin having such a molecular weight indication of about 2 seconds and 50–70% of a second such resin having such a molecular weight indication of about 20 seconds,
plus optionally pigments and extenders, said binder with any pigments and extenders being dispersed in a liquid media comprising organic solvents at a binder solids content of about 18% by weight.

4,551,493

TRANSPARENT FLAME-RETARDANT POLY(ARYLETHER-ARYLSULFONE) MOLDING MATERIALS

Gerd Blinne, Bobenheim, and Volker Muench, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,715
Int. Cl.[4] C08L *81/06*
U.S. Cl. 524—89 **8 Claims**

1. A transparent, flame-retardant molding composition which comprises:
poly(arylether-arylsulfone) molding material, and
an effective amount of a poly(2,6-dibromophenylene 1,4-oxide) as a flameproofing agent.

4,551,494

ANTISTATIC POLYPHENYLENE ETHER COMPOSITIONS

Johannes H. G. M. Lohmeijer, Hoogerheide, Netherlands, assignor to General Electric Company, Selkirk, N.Y.

Filed Oct. 27, 1983, Ser. No. 546,137

Claims priority, application Netherlands, Oct. 29, 1982, 8204180

Int. Cl.⁴ C08L *79/04*

U.S. Cl. 524—89 **5 Claims**

1. A polymer mixture consisting essentially of:

(a) a base resin selected from the group consisting of polyphenylene ether resins and polyphenylene ether resins modified with alkenyl aromatic resins; and

(b) an amount of antistatic agent effective for improving the antistatic character of said polymer mixture wherein said antistatic agent is a compound of the formula $R—SO_3X$, where R is an alkyl or aralkyl radical having 5 to 25 carbon atoms and X is an alkali metal; and

(c) an amount of a dye effective for compensating for a discoloration of said polymer mixture upon exposure to light wherein said dye bleaches upon exposure to light.

4,551,495

WEATHER-RESISTANT POLYAMIDES

Bert Brassat; Hans-Josef Buysch; Karl H. Hermann, and Heinrich Haupt, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 461,698, Jan. 28, 1983, abandoned. This application Nov. 18, 1983, Ser. No. 553,148

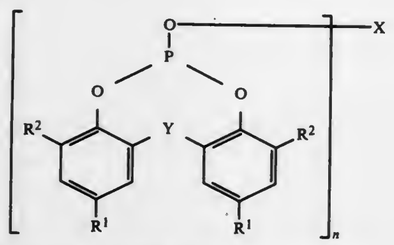
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1982, 3204334

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—94 **9 Claims**

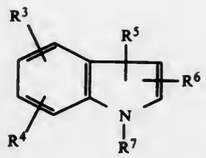
1. A weather-resistant polyamide moulding composition containing a stabilizer combination consisting essentially of:

(1) a phosphorous acid ester corresponding to the formula (I):



in which R^2 in each case independently represents a benzyl, α-methylbenzyl, α,α-dimethylbenzyl, cyclopentyl of cyclohexyl radical, R^1 in each case independently represents an alkyl radical, a cycloalkyl radical, in an aralkyl radical or an aryl radical, Y in each case independently represents S or HC-R^3 where R^3 represents H, an alkyl radical or a cyclohexyl radical, X represents a hydrogen atom, a single-bond to four-bond straight-chain or branched aliphatic radical, an aralkyl radical or an aromatic radical; each of the radicals may contain at least one olefinic double bond and/or a heteroatom selected from N, O and S, and n is an integer of from 1 to 4, with proviso that, where X is H, n is 1, and

(2) an indole derivative corresponding to the formula (II):



in which R^3 to R^6 may be the same or different and represent a hydrogen atom, an alkyl, aryl, aralkyl, cycloalkyl, hydroxy, alkoxy or alkenyl radical, and R^7 represents an alkenyl, aryl or acyl group unsubstituted or substituted by $—OR^8$, —CN or $—COOR^8$ wherein R^8 is alkyl having 1 to 6 carbon atoms or cycloalkyl having 5 or 6 carbon atoms; and wherein the total stabilizer composition is 0.04 to 5% by weight and compound (II) amounts to 0.02 to 3% by weight of the moulding composition.

4,551,496

THERMOPLASTIC MOLDING OF SINTERABLE SILICON CARBIDE

Gary M. Realund, Scotia, and Curtis A. Johnson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 11, 1984, Ser. No. 599,031

Int. Cl.⁴ C04B *35/56*; C08L *91/00*

U.S. Cl. 524—322 **26 Claims**

1. A thermoplastically moldable ceramic composition consisting essentially of a substantially homogeneous dispersion consisting essentially of from about 40% by volume to about 60% by volume of a sinterable silicon carbide powder having an average particle size which is submicron and which consists essentially of silicon carbide, a boron additive selected from the group consisting of boron and boron carbide in an amount equivalent to from about 0.3% by weight to about 3% by weight of boron based on said silicon carbide, and an amount of a carbonaceous additive selected from the group consisting of free carbon, a carbonaceous organic material and mixtures thereof equivalent to from about 0.1% to about 5% by weight of free carbon based on said silicon carbide, said carbonaceous organic material completely decomposing at a temperature ranging from 50° C. up to 450° C. to said free carbon and gaseous product of decomposition, and from about 40% by volume to about 60% by volume of a binder consisting essentially of an organic acid containing from 12 to 26 carbon atoms per molecule and having a melting point ranging from about 44° C. to about 88° C. and a thermoplastic copolymer of ethylene and from greater than about 12 weight % to about 33 weight % vinyl acetate, said copolymer having a melt index ranging from about 8 to about 43, said organic acid ranging from greater than about 18% by weight up to about 45% by weight of the total weight of said binder.

4,551,497

METHOD OF PRODUCING SURFACE-TREATED BARIUM SULFATE

Kiyoshi Shinozuka; Koichi Otu, and Hiroshi Fukumoto, all of Iwaki, Japan, assignors to Onahama Sakai Kagaku Kabushiki Kaisha, Fukushima, Japan

Division of Ser. No. 486,962, Apr. 20, 1983, Pat. No. 4,505,755. This application Dec. 31, 1984, Ser. No. 688,153

Claims priority, application Japan, Dec. 28, 1982, 57-229842; Dec. 28, 1982, 57-229843

Int. Cl.⁴ C09C *1/28*; C01G *23/06*

U.S. Cl. 524—423 **15 Claims**

1. A resin composition which includes surface-treated barium sulfate particles therein, the barium sulfate particles being produced by a method which comprises:

(a) adding an aqueous solution of an alkali silicate to an aqueous feed slurry of barium sulfate which contains barium ions in excess, the alkali silicate being added in amounts of 0.1–30% by weight in terms of silicate based on the weight of barium sulfate in the slurry, to deposit barium silicate on the surface of barium sulfate in the slurry; and then,

(b) adding a mineral acid to the resultant slurry and adjusting it to a pH not greater than about 7 to decompose the barium silicate to hydrous silica.

4,551,498

POLYETHER POLYURETHANE PREPOLYMERS CONTAINING FINELY DIVIDED INORGANIC PARTICLES AND CAST ELASTOMERS MADE THEREFROM

Robert P. Yeater, Moundsville; Richard S. Pantone, New Martinsville, and James N. Rieck, Wheeling, all of W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 487,657, Apr. 22, 1983, abandoned. This application May 3, 1984, Ser. No. 606,492

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 524—424 **11 Claims**

1. A polyether polyurethane prepolymer comprising the reaction product of an organic diisocyanate and a linear poyl-hydroxyl polyether, said polyhydroxyl polyether having a molecular weight of less than 8000, said diisocyanate and said polyhydroxyl polyether being reacted in an isocyanate to hydroxyl equivalent ratio of from 1.1:1 to 5:1, said prepolymer further comprising finely divided inorganic particles present in an amount of from 0.01 to 1% based on the weight of said reaction product.

4,551,499

POLYMERIC DIELECTRICS

Brian A. Cranfield, Southgate; John C. Fothergill, Harlow, and Susan V. Wolfe, Ware, all of Great Britain, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 8, 1984, Ser. No. 639,666

Claims priority, application United Kingdom, Aug. 9, 1983, 8321390

Int. Cl.⁴ C08K *5/01*

U.S. Cl. 524—487 **3 Claims**

1. A thermoplastic polymer dielectric selected from the group consisting of polyethylene and polypropylene and having incorporated therein a nucleating agent, said nucleating agent comprising ceresin wax having an average particulate diameter of less than one micron, said nucleating agent being incorporated in an amount of about 0.01–5 weight percent whereby the average polymer spherulite size is reduced and the breakdown field strength of the polymer is increased.

4,551,500

BLENDS OF A RUBBER-MODIFIED VINYL CHLORIDE RESIN, AN UNMODIFIED VINYL CHLORIDE RESIN, AND A POLYMER OF A VINYL AROMATIC MONOMER AND AN UNSATURATED DICARBOXYLIC ACID ANHYDRIDE MONOMER

Kenneth W. Doak, 3469 Burnett Dr., Murrysville, Pa. 15668

Continuation-in-part of Ser. No. 494,708, May 16, 1983, Pat. No. 4,469,844, and a continuation-in-part of Ser. No. 494,709, May 16, 1983, Pat. No. 4,469,845. This application Aug. 2, 1984, Ser. No. 636,961

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.⁴ C08L *51/04*

U.S. Cl. 525—71 **19 Claims**

1. A polyblend composition comprising:

(a) 80 to 20 percent by weight of;

(1) 90 to 30 percent by weight of a rubber-modified vinyl chloride resin, containing 0 to 20 percent, based on total monomers, of a copolymerizable, ethylenically unsaturated comonomer, said resin prepared by polymerization of vinyl chloride monomer and the comonomer in the presence of 15 to 50 percent, based on the weight of the resin, of a rubber to form a graft copolymer; and

(2) 10 to 70 percent by weight of a vinyl chloride resin, containing 0 to 20 percent, based on total monomers, of a copolymerizable, ethylenically unsaturated comonomer, which is not rubber-modified;

wherein a major amount of the polymerized vinyl chloride homopolymer or copolymer present in the total amount of (1) and (2) is ungrafted to the rubber of said rubber-modified vinyl chloride resin; and wherein said ethylenically unsaturated comonomer in (1) and (2) is selected from the group consisting of ethylene, propylene, an alpha-olefin containing 4 to 8 carbon atoms, vinyl acetate, vinyl stearate, a vinyl alkyl ether in which the alkyl group contains 4 to 20 carbon atoms, vinylidene chloride, alkyl acrylate, acrylic acid, methacrylic acid and methyl methacrylate; and

(b) 20 to 80 percent by weight of a polymer of a vinyl aromatic monomer and an unsaturated dicarboxylic acid anhydride monomer in weight ratios of 95:5 to 70:30, and 0 to 25 percent, based on total monomers, of a copolymerizable, ethylenically unsaturated termonomer, selected from the group consisting of methyl methacrylate, acrylonitrile, and methacrylonitrile.

4,551,501

CRYSTALLINE PROPYLENE POLYMER COMPOSITION

Akinobu Shiga, Tokyo; Masahiro Kakugo, Chiba; Junpei Kojima, Chiba, and Kizuku Wakatsuki, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 27, 1984, Ser. No. 686,866

Claims priority, application Japan, Dec. 27, 1983, 58-248520

Int. Cl.⁴ C08L *23/12, 23/14, 53/00*

U.S. Cl. 525—88 **10 Claims**

1. A crystalline propylene polymer composition comprising a blend of a crystalline polypropylene with a polymer of a vinyl cycloalkane having at least 6 carbon atoms, said composition containing 0.05 weight ppm to 10,000 weight ppm of the vinyl cycloalkane unit.

4,551,502

MACROMOLECULAR COMPLEXES OF AMIDOCARBONYLIC WATER-SOLUBLE POLYMERS AND SQUARE PLATINOUS AND EQUIVALENT ORGANOMETALLICS

Bobby A. Howell, 1948 Willow Dr., Mt. Pleasant, Mich. 48858, and Erik W. Walles, 216 E. South St. Apt. #1, Woodstock, Ill. 60098

Continuation-in-part of Ser. No. 75,722, Sep. 14, 1979, Pat. No. 4,405,757. This application Sep. 19, 1983, Ser. No. 533,516

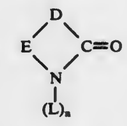
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.⁴ C08F *8/42*

U.S. Cl. 525—326.9 **53 Claims**

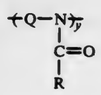
1. As a composition of matter, a chemical complex, comprising:

a. a water-soluble compound having at least one amidocarbonylic unit in its structure and corresponding to either of the formulas:



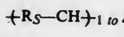
wherein C is carbon, N is nitrogen, O is oxygen, D is a divalent unit selected from the group consisting of oxygen, amino, linear alkylene having from 1 to 4 carbon atoms in the alkylene portion, methylene carbonyl, ethyl-

ene carbonyl and amido anhydride; E is an organic unit which introduces from 2 to 3 carbon atoms into the heterocyclic ring; L is selected from the group consisting of vinyl, allyl or isopropenyl, n is an integer ranging from one to about 5,000; or

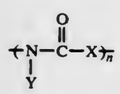


(II)

wherein Q is either a linear or branched alkylene group of the formula

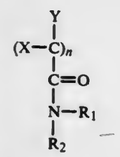


wherein R_S is either hydrogen, or lower alkyl having from 1 to 7 carbon atoms in the alkyl portion; R is either alkyl, haloalkyl, or aminoalkyl having from about 1 to 10 carbon atoms in the alkyl portion, and y is an integer from about 2 to about 5000; or



(III)

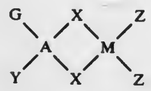
where X is either alkyl, hydroxyalkyl, carboxyalkyl or aminoalkyl having from 1 to about 20 carbon atoms in the alkyl portion, or aryl, heteroaryl or substituted aryl; Y is either hydrogen or any X; n is an integer ranging from 1 to about 5000; or



(IV)

where X is as defined above in (III), Y is either hydrogen or any X; R_1 is any Y; R_2 is any Y; n is an integer ranging from 1 to about 5000; and

(b) a square planar organometallic compound corresponding to the formula:



wherein M is a metal selected from either Group I B or Group VIII B of the Periodic Table, A is a substituted aromatic or heteroaromatic compound having substituents which function as a component of a bidentate ligand; X is an ortho substituent or a heteroatom which can bond to the metal; Y is either a substituted or unsubstituted amino group, sulfoxy, sulfhydryl, nitro, sulfonyl, amino, thiosulfonyl, ureido, amido, ureylene, hydroxy or carboxy; G is either hydrogen or any Y, and Z is, each, independently, a monodentate ligand or bonding sites within a multidentate ligand.

4,551,503

PREPARATION OF INTERPOLYMERS OF ALPHA-OLEFINS AND NONCONJUGATED ALPHA, OMEGA-DIENES

Joginder Lal, Akron, and Michael L. Senyek, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 861,600, Dec. 19, 1977, Pat. No. 4,340,705, which is a continuation-in-part of Ser. No. 694,851, Jun. 10, 1976, abandoned. This application Jan. 25, 1982, Ser. No. 342,261

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.⁴ C08F *236/20*

U.S. Cl. 525—332.1 **7 Claims**

1. Vulcanizates of sulfur-vulcanizable interpolymers having improved properties including tensile strength greater than 2000 psi, elongation at break in the range of 400 to 650%, and crosslink density was measured by swelling ratio value, Q of less than 4.0, said interpolymers being obtained by copolymerization of from 95 to 75 mole percent of at least one α-olefin containing from 4 to 12 carbon atoms and 5 to 25 mole percent of at least one α,ω-diene containing at least 8 carbon atoms in the presence of a coordination catalyst prepared from Components (A) an organoaluminum compound, (B) a transition metal compound selected from Group IVB of the Periodic Table, and (C) at least one compound of the general formula: $Q=P(XY_n)_3$ wherein Q is oxygen or sulfur, P is phosphorous, Y is a hydrocarbyl radical containing from 1 to 20 carbon atoms, and X is oxygen, sulfur or nitrogen, and n is an integer having values of 1 or 2, with the proviso that when X is oxygen or sulfur, then n is 1 and when X is nitrogen, then is 2.

4,551,504

WATER CURABLE, AZIDE SULFONYL SILANE MODIFIED ETHYLENE POLYMERS

Austin E. Barnabeo, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 18, 1984, Ser. No. 570,784

Int. Cl.⁴ C08F *8/34*

U.S. Cl. 525—333.9 **12 Claims**

1. A water-curable polymer of a hydrolyzable, azide sulfonyl silane and a substantially linear, low pressure ethylene polymer having a density of about 0.850 to about 0.970 prepared by reacting a mixture of about 75 to about 96 mole percent ethylene and about 4 to about 25 mole percent butene-1, wherein the amount of said azide reacted with said ethylene polymer to produce said water-curable polymer is about 0.1 to about 4.0 percent by weight based on the weight of said ethylene polymer.

4,551,505

PROCESS FOR CROSSLINKING CHLORINATED POLYETHYLENE

Michael Sauerbier, Altrip, and Helfried Ehrend, Speyer, both of Fed. Rep. of Germany, assignors to Rhein-Chemie Rheinau GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 25, 1984, Ser. No. 654,228

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 3336753

Int. Cl.⁴ C08F *8/34, 8/30*

U.S. Cl. 525—346 **1 Claim**

1. In the process for crosslinking chlorinated polyethylene in the presence of 2,5-dimercapto-1,3,4-thiadiazole or a DMTD derivative and a basic material, the improvement comprises the basic material being an amido amine corresponding to the formula

$$R_2—CO—(NH—CH_2—CH_2)_m—NH—CO—R_3$$

in which

R_2 and R_3 are the same or different and represent a straight-

chain, saturated alkyl radical containing from 8 to 18 carbon atoms and

m is an integer of from 2 to 5.

4,551,506

CATIONIC POLYMERS HAVING CLAY SOIL REMOVAL/ANTI-REDEPOSITION PROPERTIES USEFUL IN DETERGENT COMPOSITIONS

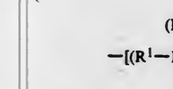
Eugene P. Gosselink, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1982, Ser. No. 452,655

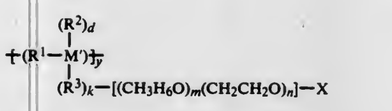
Int. Cl.⁴ C08G *73/04*; C11D *3/48*

U.S. Cl. 525—417 **10 Claims**

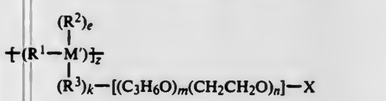
1. A water-soluble cationic polymer having clay soil removal/anti-redeposition properties which consists essentially of units having formulas VII, VIII, and IX:



VII



VIII



IX

wherein R^1 is C_2–C_{12} alkylene, hydroxyalkylene, alkenylene, cycloalkylene, arylene or alkarylene, or a C_2–C_3 oxyalkylene moiety having from 2 to about 20 oxyalkylene units provided that no O—N bonds are formed; R^2 is C_1–C_4 alkyl or hydroxyalkyl, or the moiety $—(R^3)_k—[(C_3H_6O)_m(CH_2CH_2O)_n]—X$; R^3 is C_1–C_{12} alkylene, hydroxyalkylene, alkenylene, arylene or alkarylene; M′ is an N^+ or N center; X is H,



—R^4 or a mixture thereof, wherein R^4 is C_1–C_4 alkyl or hydroxyalkyl; d is 1 when M′ is N^+ and is 0 when M′ is N; e is 2 when M′ is N^+ and is 1 when M′ is N; k is 1 or 0; m and n are numbers such that the moiety $—(CH_2CH_2O)_n—$ comprises at least about 85% by weight of the moiety $—[(C_3H_6O)_m(CH_2CH_2O)_n]—$; m is from 0 to about 5; n is at least about 3; the number of x, y and z are such that there are at least 10M′ groups, at least 2N+ centers and at least 2 X groups.

4,551,507

POLYESTER COMPOSITION CONTAINING TERTIARY AND QUATERNARY AMINE CARBOXYLATE SALTS

John C. Haylock, Dennysville, Me., and Nicholas Vanderkooi, Jr., Pompton Plains, N.J., assignors to Allied Corporation, Morris Township, N.J.

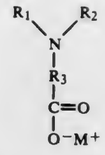
Filed Dec. 17, 1984, Ser. No. 682,714

Int. Cl.⁴ C08G *63/76*

U.S. Cl. 525—437 **30 Claims**

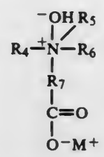
1. A composition comprising:

a linear saturated polyester; and from about 0.1 to 20 percent by weight of an amine carboxylate salt selected from the group consisting of a tertiary amine carboxylate salt and a quaternary amine carboxylate salt, the tertiary carboxylate salt having the formula:



wherein R_1 and R_2 are selected from the group consisting of aryl, alkyl, or alkoxy groups having 1–36 carbon atoms, R_3 is an alkyl group having 1–10 carbon atoms, and M is selected from Group I or Group II of the Periodic Table; and

a quaternary amine carboxylate salt having the formula:



wherein R_4, R_5, and R_6 are selected from the group consisting of aryl, alkyl, and alkoxy groups having 1–36 carbon atoms and H, R_7 is an alkyl group having 1–10 carbon atoms and M is selected from Group I or Group II of the Periodic Table.

4,551,508

POLYGLYCIDYL ETHERS, PROCESS FOR PRODUCTION THEREOF, AND CURED PRODUCTS THEREOF

Takanori Urasaki, Iwakuni, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

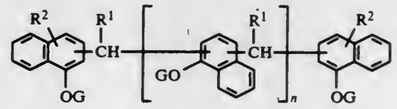
Filed May 23, 1984, Ser. No. 613,306

Claims priority, application Japan, May 25, 1983, 58-90621

Int. Cl.⁴ C08G *59/08*

U.S. Cl. 525—507 **20 Claims**

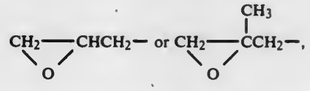
1. A polyglycidyl ether represented by the following formula (I)



(I)

wherein

G represents a hydrogen atom,

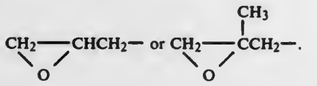


R^1 represents a hydrogen atom, an aliphatic hydrocarbon group having 1 to 10 carbon atoms, an alicyclic hydrocarbon group having 5 to 10 carbon atoms, an aromatic hydrocarbon group having 6 to 10 carbon atoms or a 5- or 6-membered heterocyclic group containing an oxygen or sulfur atom as a hetero atom, provided that the foregoing groups other than the hydrogen atom may be substituted by a halogen atom or the group —OG in which G is as defined,

R^2 represents a hydrogen atom or the group



in which G and R^1 are as defined, and
n is a positive number up to 10,
provided that all groups G, all groups R^1 and all groups R^2 in the molecule may respectively be identical or different but at least two G groups in the molecule are



4,551,509

PROCESS FOR MANUFACTURING HOMOPOLYMERS AND COPOLYMERS OF ETHYLENE

Okada Takayuki; Tanaka Hisao, both of Ichihara; Sawara Ken-Ichi, Ibaragi, and Konaka Tsutomu, Ichihara, all of Japan, assignors to Societe Chimique des Charbonnages S.A., Paris la Defense, France

Filed Jul. 29, 1983, Ser. No. 518,445
Claims priority, application Japan, Jul. 29, 1982, 57-133139
Int. Cl.⁴ C08F *2/00*; C08G *85/00*
U.S. Cl. 526—68 **5 Claims**

1. A process for producing ethylene polymers or ethylene copolymers comprising the steps of: (a) continuously polymerizing ethylene or ethylene and an α-olefin in a reaction mixture at a pressure of at least 300 kg/cm² and a temperature of at least 130° C. in the presence of a catalyst composed of a compound of a transition metal of groups IVa to VIa of the Periodic Table and an organometallic compound of a metal of groups I to III of the Periodic Table; (b) adding a polyalkylene glycol to said reaction mixture to deactivate said catalyst, the molar ratio of said polyalkylene glycol to the metals of groups IVa to VIa and Groups I to III of the Periodic Table in said catalyst being between 0.4 and 15, and the molecular weight of said polyalkylene glycol being between 300 and 5000; (c) separating product polymer or copolymer from unreacted monomer; and (d) recycling said unreacted monomer to said polymerization step.

4,551,510

PROCESS FOR PRODUCING STYRENIC/ALKENYLNITRILE COPOLYMERS

Jeffrey D. Morris, and Robert A. Fuller, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 423,488, Sep. 24, 1982, abandoned. This application Aug. 17, 1984, Ser. No. 642,219
Int. Cl.⁴ C08F *212/10*
U.S. Cl. 526—68 **23 Claims**

1. A process for the continuous mass polymerization of styrenic and alkenylnitrile monomers to produce a styrenic-/alkenylnitrile copolymer, comprising the steps of:
(a) continuously introducing a feed comprising a predetermined ratio of styrenic and alkenylnitrile monomers into a reation vessel to produce a reation mixture;
(b) subjecting the reaction mixture containing styrenic and alkenylnitrile monomers to conditions of temperature and pressure under which said monomers copolymerize to produce a liquid containing styrenic/alkenylnitrile copolymer and styrenic and alkenylnitrile monomers;
(c) subjecting the reaction mixture to agitation sufficient to maintain a substantially uniform composition distribution and a substantially uniform temperature distribution throughout the reaction mixture;
(d) continuously withdrawing at least part of a liquid containing styrenic/alkenylnitrile copolymer and styrenic and alkenylnitrile monomers from the reaction vessel; and
(e) cooling the reaction mixture by withdrawing vapor phase containing vaporized styrenic and alkenylnitrile monomer from the reaction vessel to a condenser, condensing the vaporized styrenic and alkenylnitrile withdrawn from the reaction vessel by contact with a cooled condensing surface to produce a condensed monomer-containing liquid and returning at least a part of the condensed monomer-containing liquid to the reaction vessel, wherein said cooling step further comprises controlling the amount of vaporized monomers withdrawn from the reaction vessel by varying the amount of cooled surface area available for contact with the withdrawn vaporized monomers in response to the temperature in the reaction vessel, whereby the amount of vaporized monomers condensing is controlled.

4,551,511

MALEIC ANHYDRIDE/STYRENE COPOLYMERIZATION CONTROLLED WITH OXAZOLINES

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 19, 1984, Ser. No. 662,759
Int. Cl.⁴ C08F *212/08, 112/08*
U.S. Cl. 526—204 **4 Claims**

1. The process for preparing maleic anhydride/styrene copolymers of higher molecular weight comprising heating a mixture of maleic anhydride, styrene and a small amount of an oxazoline at a temperature in the range of from 50° to 150° C.

4,551,512

WATER-SOLUBLE POLYMERS HAVING A LOW HYGROSCOPICITY

Ferdinand Straub, Hockenheim; Axel Sanner, Frankenthal; Karl Seib, Weinheim, and Siegfried Lang, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 6, 1984, Ser. No. 597,665
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312668
Int. Cl.⁴ C08F *218/04, 218/08, 220/20, 226/10*
U.S. Cl. 526—264 **2 Claims**

1. A water-soluble terpolymer which consists of
(a) from 10 to 40% by weight of N-vinylpyrrolidone,
(b) from 20 to 50% by weight of vinyl acetate (VAc) or vinyl propionate and
(c) from 10 to 40% by weight of hydroxyethyl acrylate, hydroxypropyl acrylate or hydroxyethyl methacrylate.

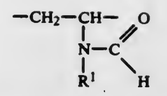
4,551,513

WATER SOLUBLE COPOLYMERS

Friedrich Engelhardt, Frankfurt; Klaus Kuhlein, Kelkheim; Ulrich Riegel, Frankfurt; Sigmar von Halasz, Kelkheim, all of Fed. Rep. of Germany; Jeffery C. Dawson, Katy, and Anthony R. Reed, Houston, both of Tex., assignors to Cassella Aktiengesellschaft, Fed. Rep. of Germany and Dresser Industries, Inc., Houston, Tex.

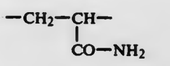
Continuation of Ser. No. 534,083, Sep. 20, 1983, abandoned, which is a continuation of Ser. No. 216,671, Dec. 15, 1980, abandoned. This application Oct. 18, 1984, Ser. No. 663,326
Int. Cl.⁴ C08F *20/54*
U.S. Cl. 526—307.1 **17 Claims**

1. Copolymers soluble in water and aqueous acids containing a statistical distribution of 5 to 50% by weight of moieties of formula I



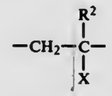
(I)

10 to 95% by weight of moieties of formula II



(II)

and 1 to 85% by weight of moieties of formula III



(III)

wherein R^1 stands for hydrogen, methyl or hydroxymethyl, R^2 stands for hydrogen or methyl and X stands for cyano, the carboxyl group or its alkali or ammonium salts, the alkoxycarbonyl group having 1 to 6 carbon atoms, the hydroxyalkoxycarbonyl group having 1 to 3 carbon atoms, the N-methylolamidocarbonyl group, methylol, methylol etherified with alkanols having 1 to 4 carbon atoms, alkanoylamino group having 1 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms N-substituted with methylol or alkyl having 1 to 4 carbon atoms, pyridinium pyrrolidonyl-(1), phenyl, the phosphonic acid group, alkali or ammonium salts of the phosphonic acid group, a moiety of the formula IV

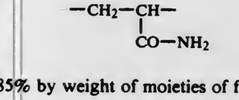


(IV)

wherein R^3 and R^4 are the same or different and represent alkyl having 1 to 4 carbon atoms, a moiety of the formula V

(V)

wherein p is a number from 1 to 4, a moiety of the formula VI



(VI)

wherein R^5 and R^6 are the same or different and each is alkyl having 1 to 4 carbon atoms, or the quaternary ammonium salt of formula (V) and (VI).

4,551,514

BIAXIALLY ORIENTED FILMS OF BUTENE-1 HOMOPOLYMER AND COPOLYMERS

Charles L. Rohn, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 264,895, May 18, 1981, Pat. No. 4,385,022. This application Sep. 30, 1982, Ser. No. 429,659
Int. Cl.⁴ D01D *5/12*
U.S. Cl. 526—348.1 **4 Claims**

1. A polymer consisting essentially of polymerized butene-1 and up to 10 mole percent of another olefin; which, upon extrusion, has been rapidly reduced in temperature to a temperature of from below 0° C. to −196° C. to solidify the polymer in the amorphous state and, while being continuously maintained at below 0° C. to inhibit the formation of crystals therein, biaxially stretched to produce an oriented film of improved clarity compared to a film of similar composition which has been similarly biaxially stretched while in other than its amorphous state.

4,551,515

PROCESS FOR THE CONTINUOUS MANUFACTURE OF SILICONE GUMS

Michael J. Herberg, Troy; Rudolph F. Macander, Clifton Park, and Todd R. Stegman, Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,060
Int. Cl.⁴ C08G *77/06*
U.S. Cl. 528—18 **25 Claims**

1. A process for the continuous polymerization of polydiorganosiloxanes comprising:
(a) mixing one or more cyclopolysiloxane monomers with one or more chainstopping agents,
(b) preheating the mixture resulting from (a),
(c) adding to the preheated mixture of (b) an amount of catalyst effective for catalyzing a polymerization reaction,
(d) polymerizing the catalyzed mixture of (c) in a screw extruder having essentially plug flow therethrough, and
(e) adding to the resulting polydiorganosiloxane an amount of neutralizing agent effective for neutralizing said catalyst.

2. A process for the continuous polymerization of polydiorganosiloxane comprising:
(a) mixing one or more cyclopolysiloxane monomers with one or more chainstopping agents,
(b) preheating the mixture resulting from (a),
(c) adding to the preheated mixture of (b) an amount of catalyst effective for catalyzing a polymerization reaction,
(d) partially polymerizing the catalyzed mixture of (c) in a static mixer and/or a scraped surface reactor having essentially plug flow therethrough,
(e) passing the partially polymerized mixture of (d) to a screw extruder having essentially plug flow therethrough and completing the polymerization reaction therein, and
(f) adding to the resulting polydiorganosiloxane an amount of neutralizing agent effective for neutralizing said catalyst.

13. A process as set forth in claims 1 or 2 wherein the catalyst is potassium silanolate and the neutralizing agent is silyl phosphate.

4,551,516

COATING COMPOSITION AND THE USE THEREOF

Kazuo Kitamura, Otsu, and Mitsuru Suezawa, Shiga, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

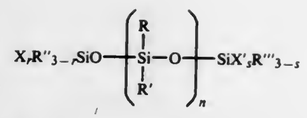
Filed May 17, 1983, Ser. No. 495,578
Int. Cl.⁴ C08G *77/06*
U.S. Cl. 528—18 **11 Claims**

1. A coating composition comprising the combination of
(a) a diorganopolysiloxane having 1 to 3 functional groups on both ends, represented by the following formula I,

I



(b) a diorganopolysiloxane having 1 to 3 functional groups on only one end, represented by the following formula I',



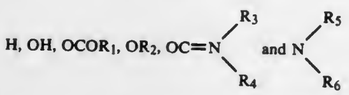
and

(c) a cross-linking agent other than (a) or (b), and having two or more functional groups capable of undergoing condensation reactions with said functional groups, and represented by the formula

$$X_mS_iR_{4-m},$$

wherein X and R are as defined for Formula I, m is an integer of 2 to 4, or a condensate thereof,

wherein in said formulas I and I' the designations R, R', R'' and R''' each independently represent an alkyl, alkenyl or aryl group from 1 to 10 carbon atoms, which may optionally have suitable substituents, X and X' each independently represents a functional group selected from the group consisting of halogen,



in which R_1, R_2, R_3, R_4, R_5, and R_6 each independently represents unsubstituted or substituted alkyl from 1 to 10 carbon atoms, n is a number from 100 to 10,000, p and q are independently integers from 1 to 3, r and s are integers from 0 to 3, wherein one of r and s is 0, and r is an integer from 1 to 3 when s is 0, and when r is 0 s is an integer from 1 to 3.

4,551,517

TWO-COMPONENT POLYURETHANE ADHESIVE

Julius Herold, Hilden; Hermann Kluth, Duesseldorf; Alfred Meffert, Monheim, and Manfred Leder, Hilden, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 12, 1984, Ser. No. 680,862

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347045

Int. Cl.⁴ C08G *18/48*

U.S. Cl. 528—60 **17 Claims**

1. A two-component polyurethane adhesive preparation consisting of

(A) an isocyanate compound having a functionality of from 2 to 10, as hardener, and

(B) A substantially anhydrous polyol, as resin, Components (A) and(B) being separately storable prior to their combination and at least one of said components being adapted to contain adhesive auxiliaries selected from the group consisting of solvents, accelerators, fillers, plasticizers flameproofing agents, retarders, dyes, anti-agers and mixtures thereof, wherein said resin component is a liquid mixture of anhydrous polyols, said polyols having more than 10 carbon atoms and more than 1 hydroxyl group per molecule obtained by the reaction of an epoxy compound selected from the group consisting of epoxidized higher fatty alcohols, epoxidized higher fatty acid esters, epoxidized higher fatty acid amides, with an alcohol having a functionality of from 1 to 10, said reaction opening the epoxide ring with formation of a secondary hydroxyl group and an adjacent ether group, and optionally further reaction with C_2–C_4-alkylene oxides.

4,551,518

PROCESS FOR PRODUCTION OF POLYURETHANE

Mitsuo Matsumoto; Koji Hirai; Noriaki Yoshimura, all of Kurashiki, and Takayuki Okamura, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

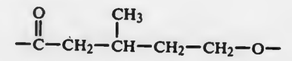
Filed Jul. 20, 1984, Ser. No. 632,921

Claims priority, application Japan, Jul. 21, 1983, 58-134100; Dec. 5, 1983, 58-230396; Mar. 19, 1984, 59-52828

Int. Cl.⁴ C08G *18/42, 18/08*

U.S. Cl. 528—80 **5 Claims**

1. A process for production of polyurethane having excellent hydrolysis resistance which is obtained from a polymerized polyol having two or more hydroxyl groups in the molecule and a polyisocyanate, and optionally a chain extender, characterized in that the polymerized polyol component is a polymerized polyol having



groups in the molecule, and the amount of the reactants is such that the ratio of the number of groups of NCO in the polyisocyanate to the number of active hydrogen atoms in the polymerized polyol and the chain extender ranges from 0.8/1 to 3.0/1.0.

4,551,519

PROCESS FOR THE PRODUCTION OF FLUORINATED PYROMELLITATE CONTAINING MIXTURES USEFUL AS SURFACTANTS

Bryce C. Oxenrider, Florham Park, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 2, 1983, Ser. No. 490,593

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.⁴ C08G *63/12*; C07C *67/08*

U.S. Cl. 528—296 **18 Claims**

1. A process for the production of an organic fluorinated pyromellitate-containing mixture useful as a fiber surface modifying agent wherein said process comprises:

(a) reacting pyromellitic dianhydride with fluorinated alcohol at a mole ratio of about two moles of fluorinated alcohol per mole of pyromellitic dianhydride to produce a pyromellitate having two fluorinated ester moieties and two carboxylic acid moieties; and

(b) reacting said pyromellitate of step (a) with an excess of an oxirane compound selected from the group consisting of epichlorohydrin, epibromohydrin and propylene oxide in the presence of trimellitic anhydride to produce said organic fluorinated pyromellitate-containing mixture.

4,551,520

POLYESTERS OF TRANS-4,4-STILBENEDICARBOXYLIC ACID, TEREPHTHALIC ACID AND 1,4-CYCLOHEXANEDIMETHANOL

John C. Morris, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1984, Ser. No, 676,909

Int. Cl.⁴ C08G *63/16*

U.S. Cl. 528—302 **6 Claims**

1. A polyester comprising repeating units from about 40 to about 95 mol % terephthalic acid, repeating units from about 5 to about 60 mol % trans-4,4'-stilbenedicarboxylic acid and repeating units from at least 60 mol % 1,4-cyclohexanedimethanol, said polyester having an inherent viscosity of 0.3 or more determined at 25° C. in 60/40 (wt/wt) phenol/tetrachloroethane at a concentration of 0.5 g/100 mL.

4,551,521

LOW-MELTING COPOLYESTER ADHESIVES

Richard L. McConnell; Abraham J. Cox, both of Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 26, 1984, Ser. No. 686,503

Int. Cl.⁴ C08G *63/16*

U.S. Cl. 528—302 **7 Claims**

1. A linear, essentially crystalline, thermoplastic copolyester having an I.V. of about 0.4–1.2 and a melting point of about 60°–130° C., said copolyester having repeat units from about 70.5–100 mole % adipic acid, about 29.5–0mole % of a co-acid selected from the group consisting of aliphatic, cycloaliphatic and aromatic dibasic acids having 4 to 12 carbon atoms, about 70–99.5 mole % 1,4-cyclohexanedimethanol and about 30–0.5 mole % of aliphatic coglycol having 2–8 carbon atoms, said copolyester having a bonding temperature of about 90°–120° C.

4,551,522

PROCESS FOR MAKING PHOTOPOLYMERIZABLE AROMATIC POLYAMIC ACID DERIVATIVES

Michael Fryd, Haddonfield, N.J., and David L. Goff, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1985, Ser. No. 727,809

Int. Cl.⁴ C08G *73/12*

U.S. Cl. 528—351 **1 Claim**

1. A process for the synthesis of photosensitive polyamicacid derivatives which are polyimide precursors comprising the sequential steps:

(1) forming a solution in aprotic solvent of aromatic dianhydride and monomer(s) corresponding to the formula RZH, wherein R is an ethylenically unsaturated moiety capable of addition polymerization and Z is —O—, —S— or —NR'— wherein R' is —H or C_{1-4} alkyl, the amount of monomer being 0–40 equivalent %, basis dianhydride, and maintaining the solution for a time and temperature sufficient to effect partial reaction of the aromatic dianhydride with substantially all of the monomer;

(2) admixing with and dissolving in the aromatic dianhydride-containing reaction solution of step (1) aromatic diamine while maintaining the reaction solution below 50° C. to effect condensation polymerization of the unreacted anhydride and the amine moieties to form the corresponding polyamic acid(s);

(3) admixing with and dissolving in the polyamic acid(s)-containing reaction solution of step (2) an isoimidization agent selected from the group consisting of N,N'-dihydrocarbyl-substituted carbodiimides, trifluoroacetic acid anhydride and mixtures thereof to convert the polyamic acid(s) to the corresponding polyisoimide(s);

(4) admixing with and dissolving in an aprotic solution of the polyisoimide(s) of step (3) a molar excess of monomer corresponding to the formula RZH and maintaining the solution for a time and temperature sufficient to effect substantially complete esterification of the carboxylic acid moieties of the polyisoimide(s) with monomer and converting the polyisoimide(s) to the corresponding polyamic acid derivatives; and

(5) separation of polyamic acid derivatives from the reaction solution of step (4).

4,551,523

PREPARATION OF SACCHARIDE ACETOACETATES

Edward U. Elam, and Michael L. Middleton, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,807

Int. Cl.⁴ C07H *1/00*

U.S. Cl. 536—119 **5 Claims**

1. A process for the preparation of mono- and di-saccharide acetoacetates which comprises reacting a mono- or di-saccharide with 2,2,6-trimethyl-4H-1,3-dioxin-4-one.

4,551,524

PLATINUM COMPLEXES OF GLUCURONIC ACID

Yoshinori Kidani, and Masahide Noji, both of Nagoya, Japan, assignors to Yoshinori Kidani, Nagoya, Japan

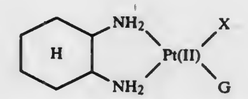
Filed Jun. 23, 1983, Ser. No. 507,243

Claims priority, application Japan, Jun. 24, 1982, 57-108925

Int. Cl.⁴ C07H *11/00, 23/00*

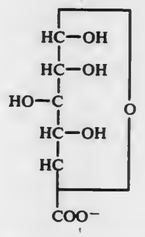
U.S. Cl. 536—121 **5 Claims**

1. A platinum complex represented by the general formula (I):



(I)

wherein X is a halogen atom and G is a glucuronic acid residue of the formula:



the configuration of diaminocyclohexane being selected from cis-, trans-l- and trans-d-forms.

4,551,525

PROCESS FOR PREPARING N-(2-PYRIDYL)-2-METHYL-4-HYDROXY-2H-1,2-BENZOTHIAZINE-3-CARBOXAMIDE-1,1-DIOXIDE

Natasa Zupancic; Boris Sket, both of Ljubljana; Pavel Zupet, Novo mesto, and Marko Zupan, Ljubljana, all of Yugoslavia, assignors to KRKA, tovarna zdravil, n.sol.o., Novo mesto, Yugoslavia

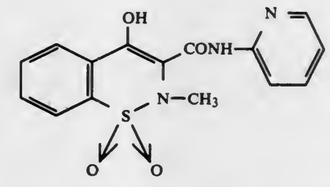
Filed Oct. 2, 1984, Ser. No. 656,850

Claims priority, application Yugoslavia, Oct. 6, 1983, 2021/83

Int. Cl.⁴ C07D *401/12*

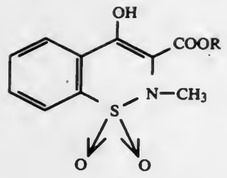
U.S. Cl. 544—49 **8 Claims**

1. A process for preparing N-(2-pyridyl)-2-methyl-4-hydroxy-2H-1,2-benzothiazine-3-carboxamide-1,1-dioxide of formula I

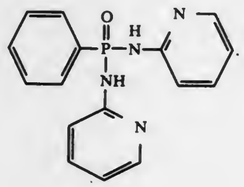


I

characterized in that alkyl-4-hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxylate-1,1-dioxide of the formula II



wherein R represents an alkyl group of 1 to 4 carbon atoms, is reacted with P-phenyl-N,N'-di-2-pyridyl-phosphonium diamide of the formula III



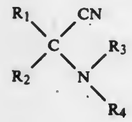
4,551,526

SYNTHESIS OF ALPHA-AMINONITRILES

Khuong H. X. Mai, and Ghanshyam Patil, both of Vernon Hills, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 26, 1984, Ser. No. 654,430
Int. Cl.[4] C07D *295/14;* C07C *121/78*
U.S. Cl. 544—163 **6 Claims**

1. A process of preparing an alpha-aminonitrile of the formula



wherein R_1, R_2, R_3 and R_4 are each independently hydrogen, C_1–C_{20} alkyl, C_3–C_{12} cycloalkyl, C_7–C_{15} aralkyl, a phenyl or naphthyl group which may be unsubstituted or substituted with loweralkyl of from 1 to 6 carbon atoms, halo, hydroxy, amino, nitro, loweralkoxy, carboxy, loweralkanoyl, or loweralkoxy-carbonyl, thiophene, furan, pyridine or imidazole, or R_1 and R_2 together with the carbon atom to which they are attached form a 6 member cycloalkyl group, which process comprises:

reacting a compound of the formula



with trimethylsilyl cyanide in the presence of a catalytic amount of a catalyst selected from the group consisting of an alkali metal iodide, zinc iodide, quaternary ammonium iodide or ammonium chloride, and subsequently reacting the alpha-trimethylsilyloxynitrile so formed with an amine selected to produce the desired alpha-aminonitrile.

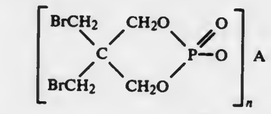
4,551,527

SALTS OF 5,5-BIS-(BROMOMETHYL)-2-HYDROXY-2-OXO-1,3,2-DIOXAPHOSPHORINANE AND PROCESS FOR PREPARING SAME

Yuval Halpern, Skokie, and Donna Mott, Des Plaines, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Jul. 2, 1981, Ser. No. 279,636
Int. Cl.[4] C07F *9/65, 9/15*
U.S. Cl. 544—214 **13 Claims**

1. A salt of 5,5-bis-(bromomethyl)-2-hydroxy-2-oxo-1,3,2-dioxaphosphorinane having the structure:



where A is a metal or amine group and n is 1–3.

5. The salt of claim 1 wherein A is magnesium.

7. A process for preparing salts of 5,5-bis-(bromomethyl)-2-hydroxy-2-oxo-1,3,2-dioxaphosphorinane comprising reacting (1) 5,5-bis-(bromomethyl)-2-chloro-2-oxo-1,3,2-dioxaphosphorinane with (2) a water-soluble metal salt or an amine, in the presence of water, to form the corresponding salt of 5,5-bis-(bromomethyl)-2-hydroxy-2-oxo-1,3,2-dioxaphosphorinane, and isolating said salt from the process mixture.

4,551,528

CARRYING OUT ORGANIC CONDENSATION REACTIONS AT ELEVATED TEMPERATURES BY FEEDING THE STARTING MATERIALS INTO THE BOTTOM OF A REACTOR CHARGED WITH MINERAL OIL FOLLOWED BY PRODUCT DISTILLATION

Toni Dockner, Meckenheim, and Herbert Krug, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,442
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245109
Int. Cl.[4] C08G *12/06*
U.S. Cl. 544—242 **11 Claims**

1. A method of carrying out organic condensation reactions at elevated temperatures, wherein the starting material or materials are fed in, in gaseous form, at the bottom of a reactor charged with mineral oil having a boiling point of not less than 150° C., or are fed in, in liquid form, at the bottom of the reactor charged with mineral oil, and the mineral oil is kept at a temperature which is sufficiently high for the starting materials introduced as liquids at the bottom of the reactor to vaporize, and the product is obtained by distillation.

4,551,529

GUANINE-N[7]-OXIDE

Donald L. Kern, Dearborn; Gerard C. Hokanson, and James C. French, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 6, 1983, Ser. No. 539,517
Int. Cl.[4] C07D *473/18;* A61K *31/52;* C12P *17/18;* C12R *1/04*
U.S. Cl. 544—265 **5 Claims**

1. The compound 2-amino-1,9-dihydro-6H-purin-6-one-7-oxide and its tautomers and the pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition for treating microbial infections in a mammal comprising an antimicrobially effective amount of a compound defined by claim 1 together with a pharmaceutically acceptable carrier.

4,551,530

PYRIDYL IMIDAZO[1,2-A]PYRIMIDINES

John P. Dusza, and Jay D. Albright, both of Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 19, 1984, Ser. No. 672,753
Int. Cl.[4] C07D *487/04;* A61K *31/505*
U.S. Cl. 544—281 **2 Claims**

1. The compound, 5-(3-pyridyl)imidazo[1,2-a]pyrimidine or a nontoxic pharmaceutically acceptable salt thereof.

2. The compound, 5-(4-pyridyl)imidazo[1,2-a]pyrimidine or a nontoxic pharmaceutically acceptable salt thereof.

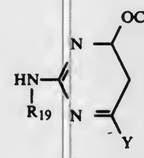
4,551,531

4-DIFLUOROMETHOXY-2-AMINO-PYRIMIDINES

Willy Meyer, Riehen; Karl Gass, Magden; Werner Töpfl, Dornach; Rolf Schurter, Binningen, all of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 455,175, Jan. 3, 1983, Pat. No. 4,478,635.
This application Jul. 26, 1984, Ser. No. 641,140
Claims priority, application Switzerland, Jan. 11, 1982, 124/82; Sep. 2, 1982, 5224/82
Int. Cl.[4] C07D *239/47*
U.S. Cl. 544—320 **4 Claims**

1. A compound of the formula



wherein

Y is C_1–C_3 alkyl, C_1–C_3 haloalkyl, C_1–C_3 alkoxy, C_1–C_3 haloalkoxy, C_2–C_3 alkoxyalkyl, C_1–C_3 alkylthio, halogen or $-NR_{16}R_{17}$,

each of R_{16} and R_{17} is hydrogen or C_1–C_4 alkyl, and R_{19} is C_1–C_3 alkyl or C_1–C_3 alkoxy.

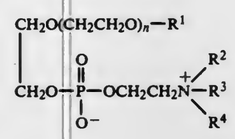
4,551,532

ETHYLENE GLYCOL DERIVATIVES HAVING ANTI-PROTOZOAN, ANTI-FUNGAL AND ANTI-TUMOR ACTIVITY

Motoo Hozumi, Omiya; Hiroaki Nomura, Takatsuki, and Yoshio Yoshioka, Kitakatsurag, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 27, 1981, Ser. No. 257,771
Claims priority, application Japan, May 8, 1980, 55-61463; Feb. 20, 1981, 56-24460
Int. Cl.[4] C07F *9/40, 9/58, 9/60, 9/65*
U.S. Cl. 546—22 **12 Claims**

1. A compound of the formula:



wherein

n is an integer of 1 to 15;

R^1 is C_{6-26} alkyl, C_{6-26} alkenyl or C_{6-26} alkynyl, each of said groups being unsubstituted or substituted by hydroxyl, mercapto, amino, oxo, carbamoyl, carboxyl, halogen, C_{3-7} cycloalkyl or phenyl; and

R^2, R^3 and R^4 are independently hydrogen or C_{1-5} alkyl, or



represents cyclic ammonio selected from the group consisting of pyridinio, oxazolio, thiazolio, pyridazinio, quinolinio, isoquinolinio, N-C_{1-4} alkylmorpholinio and N-C_{1-4} alkylpiperazinio, each of said groups being unsubstituted or substituted by C_{1-4} alkyl, hydroxyl, hydroxyethyl, aminoethyl, amino, carbamoyl or ureido,

or a pharmaceutically acceptable salt thereof.

4,551,533

ANTIBIOTIC LL-D42067α

Taikwang M. Lee, Holmdel, N.J.; Donald B. Borders, Suffern; Joseph J. Goodman, Spring Valley, both of N.Y.; Raymond T. Testa, Cedar Grove; William M. Maiese, Bridgewater, both of N.J., and David P. Labeda, Peoria, Ill., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 26, 1984, Ser. No. 593,160
Int. Cl.[4] C07D *521/00;* C12P *17/18;* C12R *1/03;* C12N *1/20*
U.S. Cl. 546—35 **1 Claim**

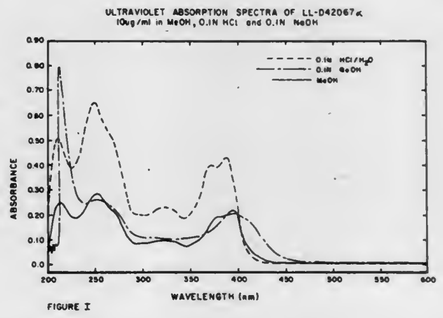
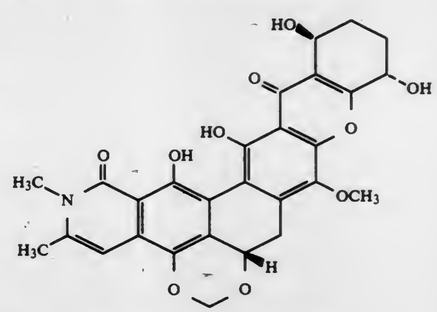


FIGURE I

1. The compound designated as LL-D42067α, wherein the compound has:

(a) the relative stereochemistry and structure:



(b) a molecular weight of 535 (FAB-MS);

(c) a molecular formula: $C_{28}H_{25}NO_{10}$;

(d) a specific optical rotation: $[\alpha]_D^{26} = +836^+ - 40°$ (C 0.3, DMF);

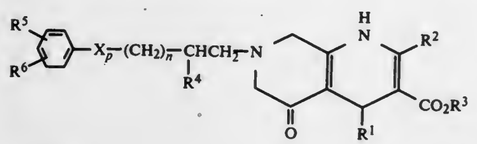
(e) characteristic ultraviolet absorption spectra as shown in Figure I of the attached drawings;

(f) a characteristic infrared absorption spectrum as shown in FIG. II of the attached drawings;

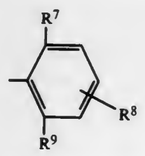
(g) a characteristic proton nuclear magnetic resonance spectrum as shown in FIG. III of the attached drawings;
(h) a characteristic carbon-13 nuclear magnetic resonance spectrum as shown in FIG. IV of the attached drawings with significant peaks at: 20.4; 25.4; 25.8; 29.0; 30.4; 58.5; 61.6; 63.3; 71.7; 90.4; 100.0; 109.2; 109.7; 111.0; 113.7; 119.0; 125.8; 126.6; 134.9; 135.3; 136.1; 141.3; 147.9; 151.1; 152.5; 165.4; 165.6; 182.3; and
(i) a characteristic proton to carbon-13 chemical shift correlation as shown in Figure V of the attached drawings.

4,551,534
ARALKYL OR ARYLOXYALKYL 1,7-NAPHTHYRIDINE-3-CARBOXYLIC ACID ESTERS
Theodore S. Sulkowski, Wayne; Paul J. Silver, West Chester; Albert A. Mascitti, Norristown, and Reinhold H. W. Bender, Valley Forge, all of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed Mar. 30, 1984, Ser. No. 595,168
Int. Cl.⁴ C07D *471/02*
U.S. Cl. 546—123 **13 Claims**

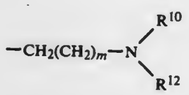
1. A compound of the formula:



in which
R^1 is tetra- or penta- chloro, bromo or fluoro- phenyl or



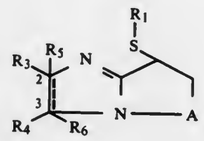
where R^7 and R^9 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms, halo, trifluoromethyl, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, cyano or nitro and R^8 is hydrogen, alkyl of 1 to 6 carbon atoms, halo, trifluoromethyl, cyano or nitro;
R^2 is alkyl of 1 to 6 carbon atoms;
R^3 is alkyl of 1 to 6 carbon atoms, alkoxyalkyl in which each alkyl moiety is of 1 to 6 carbon atoms, $-CH_2CF_3$, $-CH_2CH_2CF_3$ or



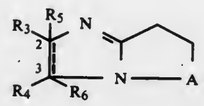
where R^{10} is hydrogen or alkyl of 1 to 6 carbon atoms; and R^{12} is alkyl of 1 to 6 carbon atoms or arylalkyl of 7 to 10 carbon atoms, and R^{10} and R^{12}, taken with the nitrogen atom to which they are attached, form a pyrrolidinyl, imidazolidinyl, piperidyl, piperazinyl, 4-alkylpiperazinyl, in which the alkyl group contains from 1 to 6 carbon atoms, or morpholinyl heterocycle; and m is one of the integers 0, 1 or 2;
R^4 is hydrogen, hydroxy or alkyl of 1 to 3 carbon atoms;
R^5 and R^6 are, independently, hydrogen, —Cl, —Br, —F, trifluoromethyl, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms;
X is —O—, or —S—,
n is one of the integers 0, 1, 2 or 3; and
p is one of the integers 0 or 1, with the proviso that when n is 0, p is 0 and R^4 is hydroxy;
or a pharmaceutically acceptable salt thereof.

4,551,535
PROCESS FOR PREPARING NOVEL 7-THIOESTER DERIVATIVES OF 3H PYRROLO [1,2-a]-IMIDAZOLE AND 8-THIOESTER DERIVATIVES OF IMIDAZO [1,2-a] PYRIDINE
Thomas A. Davidson, and Robert J. Murray, both of Penfield, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Division of Ser. No. 518,514, Jul. 29, 1983, Pat. No. 4,507,481.
This application Nov. 26, 1984, Ser. No. 675,053
Int. Cl.⁴ C07D *247/02*
U.S. Cl. 546—121 **2 Claims**

1. A process for preparing the compound



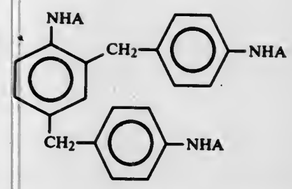
wherein: R_1 is hydrogen, lower alkyl, phenyl, benzyl, or phenyl or benzyl substituted by lower alkyl, amino, lower alkylamino, nitro, halogen, hydroxy or lower alkoxy;
A is CH_2 or CH_2CH_2;
R_3 and R_4 are independently selected from hydrogen, lower alkyl, phenyl or phenyl substituted with lower alkyl, amino, lower alkylamino, nitro, hydroxy, lower alkoxy or halogen, provided that at least one of R_3 and R_4 is phenyl or substituted phenyl; and
R_5 and R_6 are each hydrogen or join to form a double bond at the 2,3-position,
and pharmaceutically acceptable addition salts thereof, which process comprises contacting the corresponding amidine compound



wherein A, R_3, R_4, R_5, and R_6 are as described above with about one molar equivalent of R_1SSR_1 in the presence of about two molar equivalents of a base and at a temperature of from about −78° C. to about 0° C., and recovering from the resultant reaction mixture the desired monosulfenylated amidine.

4,551,536
BIS-(P-AMINO-HETEROARYLMETHYL)ANILINES AS ANTIOXIDANTS
John T. Roberts, Metuchen, N.J., assignor to UOP Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 338,444, Jan. 8, 1982, Pat. No. 4,411,805. This application Jul. 15, 1983, Ser. No. 514,370
Int. Cl.⁴ C07D *401/14*
U.S. Cl. 546—264 **4 Claims**

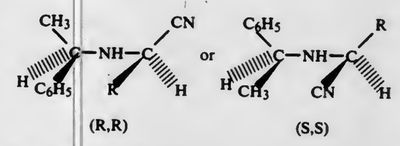
1. Compounds of the structure



where A is selected from the group consisting of heteroarylmethyl moieties of the formula $-CH_2X$, where X is a monovalent radical whose parent is a heteroaromatic ring selected from the group consisting of pyridine, thiophene, pyrrole, furan, imidazole, oxazole, thiazole, quinoline, and carbazole.

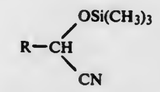
4,551,537
SYNTHESIS OF ALPHA-AMINONITRILES
Khuong H. X. Mai, and Ghanshyam Patil, both of Vernon Hills, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Sep. 26, 1984, Ser. No. 654,429
Int. Cl.⁴ C07D *213/55*; C07C *121/78*
U.S. Cl. 546—330 **5 Claims**

1. A process for preparing an optically active compound of the formula

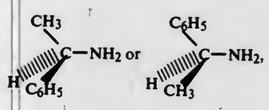


(R,R) (S,S)

wherein R is C_1–C_{20} alkyl, C_3–C_{12} cycloalkyl, C_7–C_{15} aralkyl or a phenyl or naphthyl group which may be unsubstituted or substituted with loweralkyl of from 1 to about 6 carbon atoms, halo, hydroxy, amino, nitro, lower alkoxy, carboxy lower alkanoyl, or lower alkoxycarbonyl, or a pyridyl, thienyl, furyl or pyrrolyl group, which process comprises: reacting in an inert medium, a compound of the formula



with an optically active compound of the formula

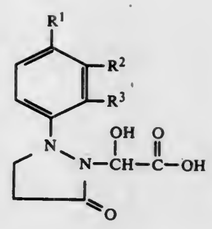


R S

respectively at a temperature and for a time sufficient to complete the reaction between said compounds.

4,551,538
PHENYLPYRAZOLIDINE ACETIC ACID DERIVATIVES
Peter H. L. Wei, Springfield, and Richard P. Carlson, Lansdale, both of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed Dec. 20, 1984, Ser. No. 683,977
Int. Cl.⁴ C07D *231/08*
U.S. Cl. 548—367 **6 Claims**

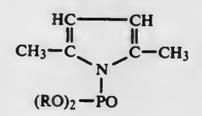
1. A compound having the formula



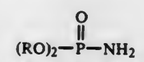
wherein
R^1 is hydrogen, lower alkyl, trifluoromethyl or halo;
R^2 is hydrogen, trifluoromethyl or halo; and
R^3 is hydrogen, nitro or carboxy.

4,551,539
SUBSTITUTED 2,5-DIMETHYLPYRROLES
Ingenuin Hechenbleikner, West Cornwall, and William P. Enlow, Falls Village, both of Conn., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.
Continuation of Ser. No. 458,602, Jan. 17, 1983, abandoned. This application Oct. 17, 1984, Ser. No. 661,641
Int. Cl.⁴ C07D *207/327, 207/36, 207/30*
U.S. Cl. 548—412 **3 Claims**

1. A process for preparing substituted 2,5-dimethylpyrroles having the molecular structure:



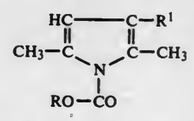
wherein R is alkyl or aralkyl and contains 1–19 carbon atoms, said process comprising reacting acetonylacetone with a phosphoramidate having the molecular structure:



wherein R is alkyl or aralkyl of 1–19 carbon atoms in a water-immiscible solvent at a temperature of between 75° and 200° C. in the presence of an acidic catalyst, removing water and isolating the said substituted 2,5-dimethylpyrrole.

4,551,540
SUBSTITUTED 2,5-DIMETHYLPYRROLES
Ingenuin Hechenbleikner, West Cornwall, and William P. Enlow, Falls Village, both of Conn., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.
Division of Ser. No. 458,602, Jan. 17, 1983, abandoned. This application Oct. 17, 1984, Ser. No. 661,640
Int. Cl.⁴ C07D *207/327, 207/36, 207/30*
U.S. Cl. 548—531 **8 Claims**

1. A substituted 2,5-dimethylpyrrole having the molecular structure:



wherein R is alkyl or aralkyl and contains 1–19 carbon atoms, and R^1 is hydrogen or carboalkoxy having 2–5 carbon atoms.

4,551,541

ORGANOSILANE ESTERS HAVING GLYCOL ETHER MOIETIES

Horst Hanisch, Hennef/Sieg, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,863

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203688

Int. Cl.[4] C07F *7/08, 7/10, 7/18*

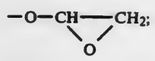
U.S. Cl. 549—215 **12 Claims**

1. An organosilane ester of the formula

$$Y-(CH_2)_n-Si(CH_3)_mX_pZ_{3-(m+p)},$$

wherein

Y is —SH;



the grouping —NH—$(CH_2)_2$—NH—$(CH_2)_2$—NH_2; or NHR where R is H, C_{1-6} alkyl, phenyl or —$(CH_2)_2$—NH_2

X is —OCH_3, —OC_2H_5 or —OC_3H_7,

Z is —O—$(CH_2$—$CH_2O)_q$—R' where q is 2 or 3 and R' is an alkyl of 1 to 4 carbon atoms and one of the H-atoms can be substituted by a methyl group, and

m is 0, 1 or 2; n is 1,2 or 3; and p is 0 or 1; with the proviso that m+p are equal to 0, 1 or 2.

4,551,542

REGENERATION OF 6-FLUORO-4-CHROMANONE FROM 6-FLUORO-4-UREIDOCHROMAN-4-CARBOXYLIC ACID

Bernard S. Moore, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 26, 1984, Ser. No. 655,006

Int. Cl.[4] C07D *311/68*

U.S. Cl. 549—401 **11 Claims**

1. A process for the regeneration of 6-fluoro-4-chromanone from (R)-6-fluoro-4-ureidochroman-4-carboxylic acid or a mixture of (R)- and (RS)-6-fluoro-4-ureidochroman-4-carboxylic acid, which comprises:

reacting said (R)-6-fluoro-4-ureidochroman-4-carboxylic acid or mixture of (R)- and (RS)-6-fluoro-4-ureidochroman-4-carboxylic acid with a metal permanganate, in an aqueous or partially aqueous solvent system, at a temperature in the range from 10° to 70° C., and at a pH in the range from 3.0 to 7.0.

4,551,543

BIMETALLIC CARBONYL HYDROFORMYLATION CATALYSTS

Gerald Doyle, Whitehouse Station; Kenneth A. Eriksen, Phillipsburg, both of N.J., and Roy L. Pruett, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1983, Ser. No. 563,971

Int. Cl.[4] C07F *1/08, 15/00, 15/06*

U.S. Cl. 556—14 **28 Claims**

1. A hydroformylation catalyst having the structural formula:

$$T_aCuM(CO)_4$$

where L is a monodentate or bidentate phosphine, a is 1–3 and M is cobalt or rhodium.

11. The catalyst according to claim 1 wherein the bidentate phosphine is a compound having the formula

$$[R_1R_2Q(CH_2)_nQR_3R_3R_4]$$
$$R_1R_2P(CH_2)_nPR_3R_4$$

wherein R_1, R_2, R_3 and R_4 are the same or different and are each independently selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl; and n is 1–4.

20. A hydroformylation catalyst having the formula

$$(R_1R_2N(CH_2)_nNR_3R_4)_aCuM(CO)_4$$

wherein R_1, R_2, R_3 and R_4 are the same or different and are each independently selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl; n is 1–4; a is 1–3; and M is cobalt or rhodium.

4,551,544

TITANIUM ESTER COMPOSITIONS HAVING DEPRESSED FREEZING POINTS

Gordon B. Robbins, Edison, Nebr., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 439,567, Nov. 5, 1982, abandoned. This application Aug. 21, 1984, Ser. No. 642,813

Int. Cl.[4] C07F *7/28*

U.S. Cl. 556—40 **18 Claims**

1. A composition comprising the reaction product obtained by reacting (i) a titanate represented by the empirical formula

$$(R^1O)_4Ti$$

with (ii) 2,4-pentanedione and removing all or part of the R^1OH thereby generated and replacing all or part of it by combining the resulting titanate/pentanedione reaction product with (iii) a substance which is either

(a) at least one other titanate represented by the empirical formula

$$(R^2O)_4Ti$$

or

(b) at least one alcohol represented by the empirical formula

$$R^3OH$$

wherein

the titanate:pentanedione mol ratio is in the range between 1:1 and 1:2;

R^2 and R^3 differ from R^1; and

R^1, R^2 and R^3 are each methyl, ethyl, 2-chloroethyl, isopropyl, n-propyl, n-butyl, n-pentyl, 2-pentyl, 3-methylbutyl, 2-methoxyethyl, or methoxyethoxyethyl;

the quantity of said substance being sufficient, even in the presence of a nucleating agent, to depress the freezing point of the reaction product obtained by combining said first-mentioned titanate with 2,4-pentanedione.

4,551,545

PROCESS OF PREPARING ALKYL CIS CHRYSANTHEMATES

Michel Frank-Neumann, Strasbourg; Madjid Sedrati, Osthoffen; Jean-Pierre Vigneron, Boissy-sous-Saint-Yon, and Vincente Bloy, Paris, all of France, assignors to Roussel Uclaf, Paris, France

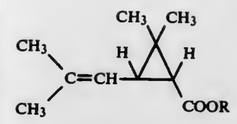
Filed Jul. 18, 1984, Ser. No. 632,203

Claims priority, application France, Jul. 21, 1983, 83 12073

Int. Cl.[4] C07C *69/747*

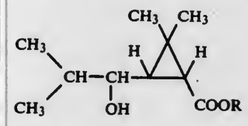
U.S. Cl. 560—124 **3 Claims**

1. A process for the preparation of racemic or optically active isomers of alkyl esters of cis chrysanthemic of the formula



I

wherein R is alkyl of 1 to 6 carbon atoms comprises reacting a racemic or optically active cis compound of the formula



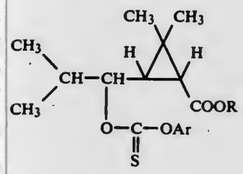
II

wherein R has the above definition with an aryl halothioformate of the formula



III

wherein Hal is a halogen and Ar is aryl of 6 to 12 carbon atoms optionally substituted with at least one alkyl of 1 to 3 carbon atoms to obtain a compound of the formula



IV

of cis configuration and heating the latter at 100° to 150° C. in a non-polar organic solvent to obtain the compound of formula I.

4,551,546

HALOGENATED ESTERS

Nazim Punja, Crowthorne, England, assignor to Imperial Chemical Industries PLC, London, England

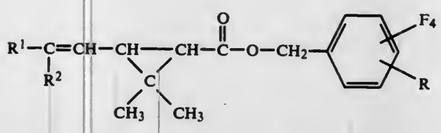
Continuation of Ser. No. 339,733, Jan. 15, 1982, , which is a division of Ser. No. 211,943, Dec. 1, 1980, Pat. No. 4,405,640. This application Nov. 14, 1983, Ser. No. 551,697

Claims priority, application United Kingdom, Dec. 21, 1979, 7944151; Nov. 20, 1980, 8037257

Int. Cl.[4] A01N *53/00;* **C07C** *69/74*

U.S. Cl. 560—124 **4 Claims**

1. A compound of formula:



where R^1 and R^2 are both halo or both methyl and R is methyl, ethyl, allyl, methoxy, ethoxy or allyloxy.

4,551,547

BIOCIDAL 2-ARYL-1, 3-CYCLOPENTANEDIONE ENOL ESTER COMPOUNDS

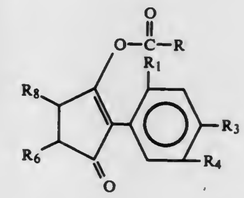
Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 205,650, Nov. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 944,996, Sep. 22, 1978, abandoned. This application Sep. 2, 1983, Ser. No. 528,936

Int. Cl.[4] C07C *67/02*

U.S. Cl. 560—255 **7 Claims**

1. A compound of the formula:



wherein:

R is C_1–C_{15} linear alkyl, C_1–C_{15} branched alkyl or phenyl;

R_1 is alkyl or halogen;

R_3 and R_4 are individually hydrogen, alkyl or halogen;

R_6 is hydrogen alkyl or alkylene; and

R_8 is hydrogen or R_6 and R_8 together form a six-membered alkylene ring.

4,551,548

PROCESS FOR THE RECOVERY OF S-(CARBOXYMETHYL)-(R)-CYSTEINE AND S-(CARBOXYMETHYL)-(S)-CYSTEINE

Axel Kleemann, Hanau; Jürgen Martens, Alzenau, and Horst Weigel, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,514

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211127

Int. Cl.[4] C07B *19/00*

U.S. Cl. 562—402 **15 Claims**

1. A process for obtaining purified S-(carboxymethyl)-(R)-cysteine and purified S-(carboxymethyl)-(S)-cysteine from a mixture of the two enantioners comprising dissolving the mixture of the two enantiomers in water in the presence of sufficient ammonia that the solution of ammonium salts formed has a pH between 6 and 9, bringing about in the solution of ammonium salts a state of supersaturation by the addition of seeding crystals of the ammonium salt of one of the two enantiomers, crystallizing one of the two enantiomers, separating off the crystals, adding seeding crystals of the ammonium salt of the other enantiomer to the remaining mother liquor to crystallize the ammonium salt of this other enantiomer, separating off the precipitated crystals and finally setting free from the ammonium salts the respective S-(carboxymethyl)-cysteines.

4,551,549

PREPARATION AND USE OF NITROTEREPHTHALAMIC ACIDS

George N. Milford, Jr., Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 293,329, Aug. 17, 1981, Pat. No. 4,399,303. This application Apr. 18, 1983, Ser. No. 485,942

Int. Cl.[4] C07C *102/06*

U.S. Cl. 562—437 **3 Claims**

1. Process for the preparation of nitroterephthalamic acids by reaction of 1–4 carbon dialkyl nitroterephthalate with 20–51% by weight aqueous ammonia under at least autogenous pressure at 100°–200° C. for 1–6 hours at a dialkyl nitroterephthalate concentration of 10–40% by weight.

4,551,550

N-2,3-BUTADIENYL-1,4-BUTANEDIAMINE DERIVATIVES

Philippe Bey, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Dec. 17, 1984, Ser. No. 682,396
Int. Cl.⁴ C07C *103/127, 87/24*
U.S. Cl. 564—215 **17 Claims**

1. A compound of the formula:

$$H_2C{=}C{=}CHCH_2NHCH_2{-}Z{-}CH_2NHR$$

wherein:
Z is $-CH_2CH_2-$ or trans$-CH{=}CH-$,
R is H, CH_3-, CH_3CH_2, $CH_3(CH_2)_2-$, $-(CH_2)_3NH_2$, $-(CH_2)_3NHCOCH_3$, $-CH_2CH{=}CH_2$, or $-CH_2CH{=}C{=}CH_2$, or a pharmaceutically acceptable acid addition salt thereof.

4,551,551

PREPARATION OF BIS(AMINOPHENYL) ETHERS FROM (N-ACETYL)AMINOPHENOLS OR THEIR PHENOLATES

Ervin B. Inskip, Troy, Ill., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sep. 27, 1982, Ser. No. 424,134
Int. Cl.⁴ C07C *85/00*
U.S. Cl. 564—430 **16 Claims**

1. A process for preparing a high-purity substantially colorless bis(aminophenyl)ether product which comprises (a) effecting condensation reaction of an (N-acetyl)aminophenol or the corresponding (N-acetyl)aminophenate with a halonitrobenzene under condensation reaction conditions to form an (N-acetyl)aminophenyl nitrophenyl ether, said conditions comprising refluxing a liquid reaction mixture comprising (i) a dipolar aprotic solvent, (ii) said (N-acetyl)aminophenol or said (N-acetyl)aminophenate, and (iii) said halonitrobenzene, (b) separating said (N-acetyl)aminophenyl nitrophenyl ether from said liquid reaction mixture and forming a dispersion of the last-mentioned ether in a lower aliphatic alcoholic solvent therefor, (c) hydrogenating the nitro group of said ether in said dispersion under nitro-group hydrogenation conditions to form an (N-acetyl)-bis-(aminophenyl)ether, (d) hydrolyzing the (N-acetyl)-bis-(aminophenyl)ether with aqueous mineral acid under acid hydrolysis conditions to form an acidic aqueous dispersion of the bis-(aminophenyl)ether product, and (e) recovering said bis-(aminophenyl)ether product from said aqueous dispersion.

4,551,552

PROCESS FOR PREPARING RIMANTADINE

John J. Liu, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 23, 1984, Ser. No. 613,374
Int. Cl.⁴ C07C *85/11*
U.S. Cl. 564—448 **6 Claims**

1. In a process for the preparation of rimantadine by the reduction of 1-adamantyl methyl ketoxime, the improvement comprising reducing the ketoxime by contacting a solution of the ketoxime with hydrogen in the presence of a platinum on carbon catalyst at a temperature in the range of about 10°–60° C. and a pressure of about 25 to 215 psia (170–1500 KPa).

4,551,553

DECOMPOSITION OF HYDROPEROXIDES IN THE PRESENCE OF HOMOGENEOUS BINARY CATALYSTS

Paul D. Taylor, Berwyn, and Michael T. Mocella, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 22, 1983, Ser. No. 468,261
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Int. Cl.⁴ C07C *45/53, 37/08*
U.S. Cl. 568—311 **16 Claims**

1. A process for the decomposition of a hydroperoxide comprising contacting the hydroperoxide with a catalytic quantity of a catalyst system comprising chromium and ruthenium while maintaining a hydroperoxide concentration during the reaction of at least 1 percent at a temperature of between about 25° C. and about 250° C. and a pressure sufficient to maintain the reactants in the liquid phase.

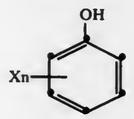
4,551,554

PROCESS FOR PRODUCTION OF 2-HALOACETYLPHENOLS

Tsutomu Sugasawa, Kobe; Tatsuo Toyoda, Osaka, and Kazuyuki Sasakura, Omihachiman, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00012, § 371 Date Sep. 23, 1981, § 102(e) Date Sep. 23, 1981, PCT Pub. No. WO81/02157, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 16, 1981, Ser. No. 305,621
Claims priority, application Japan, Jan. 23, 1980, 55-7148
Int. Cl.⁴ C07C *45/46*
U.S. Cl. 568—322 **1 Claim**

1. A process for production of 2-haloacetylphenols which comprises reacting a phenol having the formula



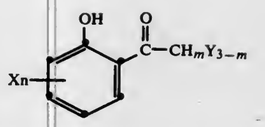
wherein,
X is hydrogen, C_1–C_5 alkyl, C_3–C_6 cycloalkyl, C_1–C_5 alkoxy or a halogen atom, and
n is an integer of 0–2
with a haloacetonitrile having the formula

$$CN{-}CH_mY_{3-m}$$

wherein,
Y is chlorine or bromine and
m is an integer of 0–2
and a boron halide compound having the formula



wherein,
R is chlorine or bromine, and
R′ is chlorine, bromine, C_1–C_5 alkyl or phenyl
in the presence of a Lewis acid to give a compound having the formula



wherein, X, Y, m and n are as defined above.

4,551,555

PROCESS FOR THE PRODUCTION OF CARBONYL COMPOUNDS

Yoshio Hironaka, Sodegaura, and Takashi Kumazawa, Kisarazu, both of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,594
Claims priority, application Japan, Jun. 15, 1983, 58-105945
Int. Cl.⁴ C07C *45/35*
U.S. Cl. 568—401 **25 Claims**

1. In the process for producing a carbonyl compound by contacting olefin and oxygen or oxygen-containing gas with a catalyst in the presence of water, the improvement which comprises using a catalyst comprising a carrier and (a) rhodium, (b) manganese and (c) a Group IIIA element excluding the actinium series elements.

4,551,556

PROCESS FOR PRODUCING CARBONYL COMPOUNDS

Eiichiro Nishikawa; Masuo Shinya, both of Saitama; Kayako Ueda, Tokyo, and Katsumi Kaneko, Saitama, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,544
Claims priority, application Japan, May 2, 1983, 58-76173
Int. Cl.⁴ C07C *45/00*
U.S. Cl. 568—403 **8 Claims**

1. A process for producing a carbonyl compound which comprises dehydrogenating a linear aliphatic alcohol of 1 to 6 carbon atoms in the gas phase at a temperature of from 150° to 400° C. in the presence of a ruthenium catalyst supported on a carrier comprising a basic oxide selected from the group consisting of zinc oxide, magnesium oxide, calcium oxide and barium oxide.

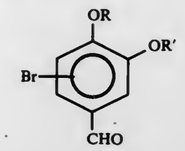
4,551,557

BROMINATION OF SUBSTITUTED BENZALDEHYDES

Serge Ratton, La Verpilliere, and Jean-Luc Bougeois, Sainte-Foy les Lyon, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

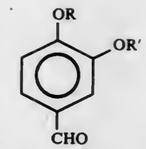
Filed Dec. 24, 1984, Ser. No. 685,372
Claims priority, application France, Dec. 22, 1983, 83 20797
Int. Cl.⁴ C07C *45/63*
U.S. Cl. 568—433 **13 Claims**

1. A process for the preparation of a substituted bromobenzaldehyde having the general formula:



(I)

wherein R and R′ are each hydrogen, methyl or ethyl, comprising brominating a substituted benzaldehyde having the general formula:



(II)

wherein R and R′ are as defined above, with a brominating agent couple which comprises hydrobromic acid and a bromide ion oxidizer.

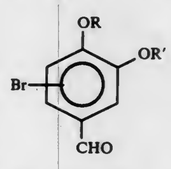
4,551,558

BROMINATION OF SUBSTITUTED BENZALDEHYDES

Serge Ratton, La Verpilliere, and Jean-Luc Bougeois, Sainte-Foy les Lyon, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevole, France

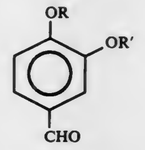
Filed Dec. 24, 1984, Ser. No. 685,373
Claims priority, application France, Dec. 22, 1983, 83 20798
Int. Cl.⁴ C07C *45/63*
U.S. Cl. 568—433 **17 Claims**

1. A process for the preparation of a substituted bromobenzaldehyde having the general formula:



(I)

wherein R and R′ are each hydrogen, methyl or ethyl, comprising (i) first brominating a substituted benzaldehyde having the general formula:



(II)

wherein R and R′ are as defined above, with a less than stoichiometric amount of bromine, and (ii) completing said bromination reaction with a brominating agent couple which comprises (1) the hydrobromic acid generated in situ in the step (i) and (2) a bromide ion oxidizer.

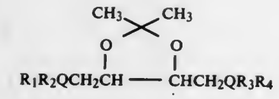
4,551,559

HYDROFORMYLATION CATALYST AND PROCESS

Chao-Yang Hsu, Media, and Paul E. Ellis, Jr., Downingtown, both of Pa., assignors to Sun Refining and Marketing Company, Philadelphia, Pa.

Division of Ser. No. 598,934, Apr. 11, 1984,. This application May 9, 1985, Ser. No. 732,314
Int. Cl.⁴ C07C *45/50*
U.S. Cl. 568—454 **11 Claims**

1. In the process of hydroformylating an olefin having from about 2 to 20 carbon atoms by reacting the olefin with hydrogen and carbon monoxide at elevated pressures in the presence of a catalyst to produce an aldehyde, the improvement of using as the catalyst a catalyst system which comprises (1) a platinum (II) $(acetylacetonate)_2$; (2) a Group IVB metal halide; and (3) a bidentate tertiary ligand of the formula:



wherein Q is arsenic, antimony, or phosphorus; and R_1, R_2, R_3 and R_4 are alkyl, aryl, alkoxyl, or aryloxyl groups, and may be the same or different.

4,551,560

THERMALLY-INDUCED HYDROLYSIS OF ACETAL

Nabil M. Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Nov. 9, 1984, Ser. No. 669,708
Int. Cl.[4] C07C *45/51, 47/02*
U.S. Cl. 568—465 **11 Claims**

1. A process for the selective-thermally induced hydrolysis of acetals to the corresponding lower non aromatic aldehydes and alcohols of about 2 to 6 carbon atoms, comprising:

forming a substantially catalyst-free, acetal-containing solution;

heating and pressurizing the acetal-containing solution to a temperature above about 140° C. and a corresponding pressure ranging from about 50–5000 psia to effect the substantial hydrolysis of the acetal present in the solution to the corresponding non aromatic aldehyde and alcohol of about 2 to 6 carbon atoms; the reaction occurring in a suitable amount of water;

removing the resultant liquid solution as product.

4,551,561

PROCESS FOR THE PREPARATION OF POLYGLYCEROLS

Herbert Stühler, Burgkirchen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 19, 1984, Ser. No. 683,376
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346097
Int. Cl.[4] C07C *41/01*
U.S. Cl. 568—619 **6 Claims**

1. A process for the preparation of a polyglycerol, in which glycerol is reacted in the presence of catalysts at a temperature from 190° to 250° C., the water of reaction being removed, which comprises using compounds containing phosphorus individually or as mixtures and compounds containing an alkali metal individually or as mixtures as the catalyst such that the phosphorus is present in an amount of 0.005 to 1% by weight, based on the weight of glycerol, and the molar ratio of alkali metal to phosphorus is 1 to 12:1, the compounds containing phosphorus and an alkali metal being selected from the group consisting of reducing phosphorus acids, alkali metal salts of reducing phosphorus acids, alkali metal hydroxides, alkali metal carbonates, alkali metal bicarbonates, alkali metal alcoholates and alkali metal oxides.

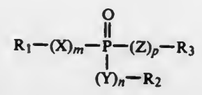
4,551,562

PROCESS FOR THE PRODUCTION OF DIHYDROXYBENZENES

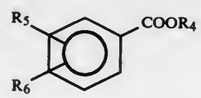
Karlheinz Drauz, Freigericht, and Axel Kleemann, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 588,847, Mar. 12, 1984,. This application Mar. 13, 1984, Ser. No. 588,999
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308726
Int. Cl.[4] C07C *37/60, 41/26*
U.S. Cl. 568—771 **42 Claims**

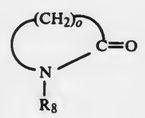
1. A process for the production of a nuclear hydroxylated product comprising reacting phenol per se, chlorophenol, fluorophenol, 1 to 4 carbon alkyphenol, carbomethoxyphenol, cyclohexyphenol, phenylphenol or naphthol, phenyl naphthyl ether, methoxyanthracene, methoxyphenanthrene, hydroxynaphthalene, hydroxy 1 to 4 carbon alkyl naphthalene, hydroxyanthracene, or hydroxyphenanthrene with hydrogen peroxide in a high boiling organic solvent having not over 1 weight % of water, which organic solvent does not form an azeotrope with water that boils near or above the boiling point of hydrogen peroxide at normal pressure, said solvent having the following formula:



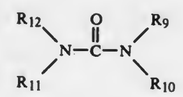
wherein X, Y, and Z are 0, a N-(C_1–C_8)-alkyl group or a N-(VC_4-C_7)-cycloalkyl group, n, m, and p are each 0 or 1, R_1, R_2, and R_3 are C_1–C_8 alkyl or C_4–C_6-cycloalkyl or such an alkyl or cycloalkyl group substituted by halogen, hydroxyl, C_1–C_4-alkoxy, -CN, or phenyl,



wherein R_4 is an alkyl group having 1 to 4 carbon atoms and R_5 and R_6 are H, Cl, F, Br, alkyl having 1 to 4 carbon atoms, methoxy, ethoxy, or $COOR_7$ where R_7 is alkyl having 1 to 4 carbon atoms,



wherein R_8 is alkyl of 1 to 4 carbon atoms or such a group substituted by halogen, hydroxy, or a C_1 to C_3 alkyl group and o is a number from 2 to 5, or



and using a catalyst of the formula XO_2 wherein X is sulfur, selenium or tellurium.

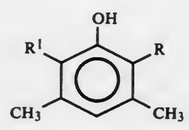
4,551,563

METHOD FOR MAKING POLYMETHYLATED PHENOLS

John J. Talley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 24, 1984, Ser. No. 613,546
Int. Cl.[4] C07C *37/16, 39/07*
U.S. Cl. 568—804 **4 Claims**

1. A method for making polymethylated phenols of the formula



(I)

from a mixture of isophorone and methanol, comprising effecting contact between an isophorone and methanol mixture having from 0.5 to 5 moles of methanol per mole of isophorone, and the calcination residue of a mixture of magnesium carbonate and/or magnesium hydroxide and manganese hydroxide at a temperature in the range of from 400° to 600° C., where the mixture of isophorone and methanol is passed over the calcination residue at a rate sufficient to maintain a liquid hourly space velocity (LHSV) having a value of from about 0.1 to 3 where

$$LHSV = \frac{\text{volume of feed passed over calcination residue per hour}}{\text{volume of a dry mixture of magnesium carbonate and/or magnesium hydroxide and manganese hydroxide prior to calcination where R and } R^1 \text{ are members selected from hydrogen and methyl}}$$

4,551,564

PROCESS FOR THE PRODUCTION OF 2- AND 4-TERT-BUTYLCYCLOHEXANOLS WITH HIGH PROPORTIONS OF CIS-ISOMERS BY CATALYTIC-HYDROGENATION OF THE CORRESPONDING TERT-BUTYLPHENOLS

Werner Otte, Dorsten; Rudolf Nehring, and Manfred zür Hausen, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,734
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338437; Jan. 17, 1984, 3401343
Int. Cl.[4] C07C *35/08*
U.S. Cl. 568—834 **18 Claims**

1. A process for the production of 2- or 4-tertbutylcyclohexanol having a high proportion of cis-isomers comprising hydrogenating the corresponding tert-butylphenol in two stages under hydrogen pressures of above 200 bar in each stage, and, in the first stage, on a Pd metal catalyst at a temperature of 120°–280° C. and, in the second stage, on a Ru metal catalyst at a temperature of 70°–200° C.

4,551,565

PROCESS FOR THE PRODUCTION OF ETHYLENE GLYCOL AND/OR GLYCOLLIC ACID ESTERS, AND CATALYST THEREFOR

Haruhiko Miyazaki; Koichi Hirai; Taizo Uda; Yasuo Nakamura, all of Ube; Harumi Ikezawa, Onoda, and Takanori Tsuchie, Ube, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Continuation of Ser. No. 341,237, Jan. 21, 1982, abandoned. This application Jul. 5, 1983, Ser. No. 510,387
Claims priority, application Japan, Jan. 26, 1981, 56-9059
Int. Cl.[4] C07C *29/136*
U.S. Cl. 568—864 **11 Claims**

1. In a process for producing ethylene glycol by the vapor phase catalytic hydrogenation of a di(C_1–C_8)alkyl ester of oxalic acid in the presence of a catalyst and hydrogen gas, the improvement wherein

(i) said hydrogenation is carried out at a temperature of about 150° to about 240° C. and a pressure of about 0.5 to about 50 atmospheres for a contact time of about 0.2 to about 6 seconds in a hydrogen/oxalate mole ratio of about 10 to about 500, and

(ii) said catalyst has the following composition formula

$$CuMo_kBa_pO_q$$

wherein k, p and q represent gram-atom of Mo, Ba and O, respectively, per gram-atom of Cu, each of k and p is a positive number of at least 0.01 such that the sum k+p is up to 1.5, and the k/p ratio is in the range of from 0.8 to 1.2, and q is a number determined depending upon the atomic valences and gram-atoms of Cu, Mo and Ba.

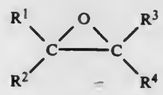
4,551,566

PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOLS

John H. Robson, Charleston, and George E. Keller, II, S. Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 428,815, Sep. 30, 1982, abandoned. This application Sep. 8, 1983, Ser. No. 530,235
Int. Cl.[4] C07C *29/10, 33/26, 35/14, 31/20*
U.S. Cl. 568—867 **29 Claims**

1. A process for the production of monoalkylene glycol comprising reacting in a liquid phase, a vicinal alkylene oxide of the formula:



wherein R^1, R^2, R^3 and R^4 each designate a hydrogen atom, an alkyl group having between 1 and about 10 carbon atoms, an aryl group having at least 6 carbon atoms, an alkenyl group having 2 or 3 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms, with water in the presence of a sufficient amount of water-soluble vanadate salt to enhance the selectivity of the reaction to monoalkylene glycol, said liquid phase having a pH of between about 8 to 11.

4,551,567

DEETHERIFICATION PROCESS

Lawrence A. Smith, Jr., Bellaire, Tex., assignor to Chemical Research & Licensing Company, South Houston, Tex.

Continuation-in-part of Ser. No. 517,220, Jul. 25, 1983,. This application Sep. 7, 1984, Ser. No. 648,071
Int. Cl.[4] C07C *29/00, 31/04*
U.S. Cl. 568—907 **18 Claims**

1. A process for the deetherification of ethers comprising of contacting said ether in vapor phase with a solid catalyst composition comprising a resin of a macroporous matrix of polyvinyl aromatic compound crosslinked with a divinyl compound and having thereon from about 3 to 5 milli equivalents of sulfonic acid groups per gram of dry resin, wherein at least 50% to less than 100% of said sulfonic acid groups are neutralized with a metal of Al, Fe, Zn, Cu, Ni or mixtures thereof and said sulfonic acid groups not neutralized with said metal ion are neutralized with alkali metal ions or alkaline earth metal ions of Group 1*a* or 2*a* of the Periodic Table of elements or mixtures thereof.

4,551,568

PROCESS FOR NITRATION OF BENZENE

Hiroshi Sato, Ibaraki, and Shuzo Nakamura, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 15, 1983, Ser. No. 485,453
Claims priority, application Japan, Apr. 16, 1982, 57-64202
Int. Cl.[4] C07C *79/10*
U.S. Cl. 568—939 **10 Claims**

1. A gas-phase nitration process of benzene with a nitrating agent of NO_2 or N_2O_4, which consists essentially of carrying out the process in the presence of a catalyst composed of an acidic mixed oxide consisting of at least one component selected from the group of WO_3, MoO_3 and TiO_2 as indispensable component and containing optionally SiO_2 and/or ZnO, the sole components of the mixed oxide being selected from the group consisting of WO_3, MoO_3, TiO_2, SiO_2, and ZnO.

4,551,569
TELECOMMUNICATION CABLE FILLING COMPOSITION

Stefan Verne, London, England, assignor to BICC Public Limited Company, London, England

Continuation of Ser. No. 400,480, Jul. 21, 1982, abandoned, which is a continuation of Ser. No. 177,925, Aug. 13, 1980, Pat. No. 4,356,342, which is a continuation-in-part of Ser. No. 87,437, Oct. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 952,590, Oct. 18, 1978, abandoned. This application Aug. 28, 1984, Ser. No. 645,163
Int. Cl.⁴ H01B *3/22, 11/02*
U.S. Cl. 585—6.6 **5 Claims**

1. A cable-filling medium having a base comprising a hydrocarbon oil characterised by the use of two non-polar additives, namely:

(i) a first additive which is soluble and consists substantially of molecules that are substantially incapable of diffusing into polyethylene or polypropylene at temperatures of up to 80° C. but having a low (number average) molecular weight such that it will reduce substantially the osmotic pressure of the base, this additive having no appreciable useful effect on the composition's resistance to flow at temperatures in the range 50°–80° C.; and

(ii) a second additive which is polymeric and which is also soluble and has a high enough (viscosity average) molecular weight to raise the resistance to flow of the composition so that a cable filled with the composition will pass a water-penetration test as defined in Post Office Telecommunications Specification No. CW236 (issued by the Post Office Corporation in Great Britain) not only at room temperature but also at temperatures up to a limit that is higher than 50° C.

4,551,570
PROCESS FOR THE ISOMERIZATION OF LIMONENE TO TERPINOLENE

Walter E. Johnson, Jr., Jacksonville, Fla., assignor to SCM Corporation, New York, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,412
Int. Cl.⁴ C07C *5/30*
U.S. Cl. 585—355 **8 Claims**

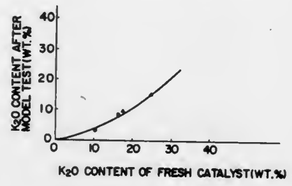
1. A process for isomerizing limonene to terpinolene at a temperature of from 75 degrees C. to 200 degrees C. in the presence of a catalytic amount of orthotitanic acid catalyst which is characterized by the inclusion in the isomerization mass of less than 2% by weight of the catalyst of a buffer selected from alkali metal or alkaline earth metal or ammonium acetates, carbonates, bicarbonates, citrates, hydroxides, oxides, phosphates, acid phosphates, and stearates.

4,551,571
PRODUCTION OF ALKENYLBENZENES

Kohei Sarumaru; Tomoatsu Iwakura, both of Ami; Yasuo Yoshino; Toshimichi Ito, both of Hasaki; Akikazu Watanabe, and Mikio Mori, both of Mie, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1985, Ser. No. 708,743
Claims priority, application Japan, Mar. 14, 1984, 59-48453; Mar. 14, 1984, 59-48454
Int. Cl.⁴ C07C *4/02, 2/64*
U.S. Cl. 585—440 **6 Claims**

1. In a method for producing an alkenylbenzene by catalytically dehydrogenating an alkylbenzene under a non-oxidative condition in the presence of steam in the reaction zone comprising a fixed-bed of potassium-based dehydrogenation catalyst particles, the improvement in which (a) said fixed-bed comprises particles of at least two kinds of potassium-based dehydrogenation catalyst with respectively different potassium contents and (b) the catalyst particles with higher potassium content are not disposed on the upstream side of said fixed-bed with respect to said reaction.



4,551,572
PROCESS FOR REACTING AROMATIC COMPOUNDS

Jeffrey T. Miller, Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 17, 1984, Ser. No. 641,830
Int. Cl.⁴ C07C *2/86*
U.S. Cl. 585—454 **18 Claims**

1. A method for reacting an aromatic compound, water and carbon monoxide, at a temperature in the range of from about 300° C. to about 480° C., at a pressure in the range of from about 5 to about 150 kilograms per square centimeter, and in the presence of a catalyst composition comprising a cadmium component and a support material having acidic properties, wherein the cadmium component is in the form of the elemental metal, its oxide or salt or a combination thereof, and wherein the cadmium component is present at a concentration level in the range of from about 0.1 to about 20 weight percent, calculated as cadmium oxide and based on the weight of the catalyst, with the mole ratio of carbon monoxide-to-water being in the range of from about 4:1 to about 1:4 and with the mole ratio of carbon monoxide-to-aromatic compound being in the range of from about 2:1 to about 1:10.

4,551,573
ALKYLATION OF AROMATIC COMPOUNDS

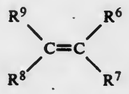
Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1984, Ser. No. 655,825
Int. Cl.⁴ C07C *2/64, 2/68*
U.S. Cl. 585—459 **25 Claims**

1. A process comprising contacting

(a) at least one monocyclic, bicyclic or tricyclic aromatic compound having 6 up to 30 carbon atoms and

(b) at least one olefinic compound having the formula



wherein each of R^6 through R^9 is independently selected from hydrogen and C_1 through C_{10} alkyl or cycloalkyl radical; or R^6 and R^7 or R^6 and R^9 can be joined as part of a polymethylene or alkyl- or cycloalkyl-substituted polymethylene radical having two to about 20 carbon atoms, wherein said olefinic compound has 4 up to 30 carbon atoms, and wherein said olefinic compound is capable of forming a tertiary carbocation under the process conditions in the presence of a catalyst consisting essentially of

(i) AlX_3 and

(ii) I_2;

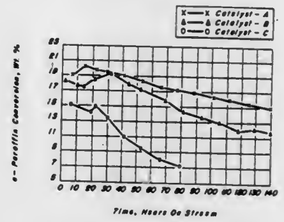
wherein each X is individually selected from the halogens.

4,551,574
INDIUM-CONTAINING DEHYDROGENATION CATALYST

Tamotsu Imai, Mount Prospect, Ill., and Chi-wen Hung, San Rafael, Calif., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 13, 1984, Ser. No. 640,288
Int. Cl.⁴ C07C *5/333*
U.S. Cl. 585—660 **3 Claims**

1. A process for dehydrogenating dehydrogenatable hydrocarbons having from 2 to 20 or more carbon atoms which comprises contacting said hydrocarbons at dehydrogenation conditions in a dehydrogenation zone with a catalyst comprising a platinum group component, a tin component, an indium component, an alkali or alkaline earth component, and a porous support material wherein the atomic ratio of indium to platinum group component is about 1.6, or higher.



4,551,575

SUBSTRATE FOR AMORPHOUS SILICON SEMICONDUCTOR MATERIAL

Kiyoshi Takahashi; Makoto Konagai, both of Tokyo; Toshihiko Yoshitomi, Sagamihara, and Takeshi Omori, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,721
Claims priority, application Japan, Sep. 24, 1982, 57-166161
Int. Cl.⁴ H01L *31/06*
U.S. Cl. 136—255 **6 Claims**

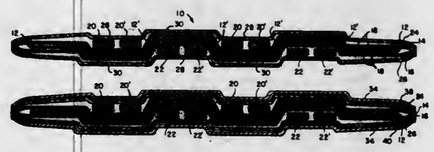
1. An amorphous silicon semiconductor solar cell comprising one or more layers of amorphous silicon semiconductor material, a metal substrate on one side of and in contact with the amorphous silicon semiconductor material and a transparent electroconductive layer or Schottky barrier layer on the other side of and in contact with the silicon semiconductor material, characterized in that the surface of the metal substrate in contact with the amorphous silicon semiconductor is the surface of a two layer laminated metal or alloy film present upon an aluminum plate or film base and formed by means of an electroplating treatment on said aluminum plate or film base.

4,551,576

FLAT EMBEDDED-SHIELD MULTICONDUCTOR SIGNAL TRANSMISSION CABLE, METHOD OF MANUFACTURE AND METHOD OF STRIPPING

Donald S. Rich, Long Valley, N.J., assignor to Parlex Corporation, Methuen, Mass.

Filed Apr. 4, 1984, Ser. No. 596,534
Int. Cl.⁴ H01B *7/08, 11/00*
U.S. Cl. 174—36 **17 Claims**



1. A flat embedded shield multiconductor signal transmission cable having elements including at least two adjacent conductors laterally spaced apart and occupying different planes, said cable including a sheet-like shield of electrically conductive material running between said adjacent conductors across at least a portion of the width of said cable, said conductors positioned to either side of said shield in different planes and in a laterally offset fashion, said cable having an outer skin and means for insulating said conductors one from the other and from said shield, whereby cross-talk between said adjacent conductors is substantially reduced.

4,551,577

RETRACTABLE POWER CENTER

Norman R. Byrne, 2736 Honey Creek, NE., Ada, Mich. 49301

Filed Jul. 25, 1983, Ser. No. 517,182
Int. Cl.⁴ H01H *9/02*
U.S. Cl. 174—57 **20 Claims**

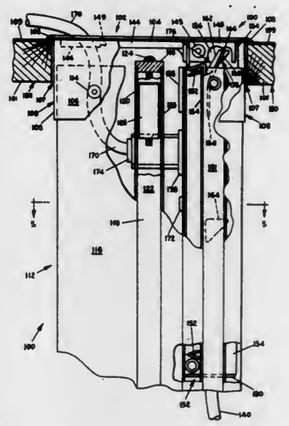
1. In a power center mounted in a desk or work surface at a selectible working height, and comprising receptacle means supplying electrical power from an interconnected common power source to selectively interconnected electrical devices, the improvement which comprises:

a stationary housing means mounted within a slot formed in the desk or work surface;

carriage means coupled to the housing means and mounting the receptacle means so as to be movable with respect to the housing means;

spring activating means coupling the housing means and the carriage means and imparting forces to the carriage means so as to move the carriage means and receptacle means between a retracted, closed position and an extended, open position, wherein the receptacle means is substantially hidden from view when the carriage means is in the retracted position, and the receptacle means is accessible to a user to receive power cords and plugs of the electrical devices when the carriage means is in the extended position;

securing means releasably maintaining the carriage means in the retracted position and responsive to manually exerted forces to automatically release the carriage means and



allow the activating means to impart the forces to the carriage means;

the receptacle means are mounted to the carriage means so that the electrical devices can remain energized from the power source when the carriage means is in the retracted, closed position; and

the carriage means comprises means allowing the power cords of the electrical devices to extend below the surface and remain connected to the receptacle means when the carriage means is in the retracted, closed position and substantially hidden from view.

4,551,578

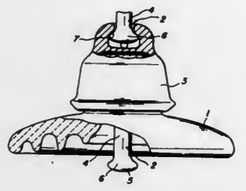
BALL AND SOCKET TYPE SUSPENSION INSULATOR

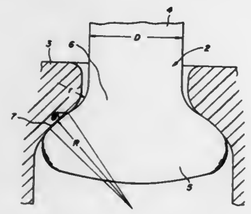
Hiroshi Nozaki, Nagoya, Japan, assignor to NKG Insulators, Ltd., Japan

Filed Mar. 18, 1985, Ser. No. 712,605
Claims priority, application Japan, Mar. 28, 1984, 59-60028
Int. Cl.⁴ H01B *17/08, 17/38*
U.S. Cl. 174—182 **1 Claim**

1. A ball and socket type suspension insulator, wherein the radius of curvature at the fillet portion between a pin shank portion and a ball portion of a ball pin buried and secured into the inside of a head portion of an insulator body is designed at 30–40% of the diameter of the pin shank portion, and the angle

which a contact surface between the socket portion of the cap attached to the outer surface of the head of the insulator body





and the ball pin forms with respect to the horizontal plane is 38°–45°.

4,551,579

CONSTRUCTION OF A CONNECTION FOR FLAT CABLES

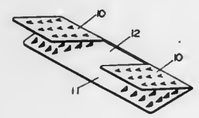
Shuichi Takasaki, Moriguchi, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

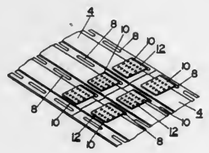
Filed Sep. 28, 1983, Ser. No. 536,729

Claims priority, application Japan, Oct. 8, 1982, 57-153433[U]

Int. Cl.⁴ H01R *9/07, 4/18*

U.S. Cl. 174—88 R **3 Claims**





1. A connection of two electrically conductive flat cables and a connector therefor, each cable having an outer sheath of insulating material with at least one elongated flat electrical conductor embedded in said insulating material and a web portion, containing no conductor, extending along at least one elongate edge of the cable, said connection comprising:

a series of elongated apertures through said web portion at spaced intervals along the length thereof;

said connector being of an electrically conductive flat material bent into a generally "U" shape having two upper segments and a lower segment connected to said upper segments by bending portions;

a plurality of upstanding sharpened pawls projecting from the inner surface of at least one of said upper or lower segments;

the two upper segments being spaced apart a distance equal to the distance between two of said elongated apertures, the two upper segments passing through two of said elongated apertures and the upper and lower segments mechanically bent toward each other along the bending portions sandwiching therebetween end portions of the two adjacent flat cables with the sharpened pawls piercing said insulating material and contacting the embedded electrical conductors of both said cables and establishing an electrical connection between the conductors.

4,551,580

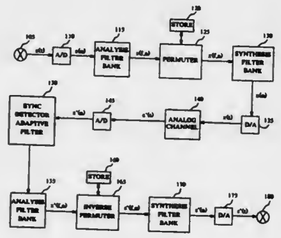
TIME-FREQUENCY SCRAMBLER

Richard V. Cox, Piscataway, and Nuggehally S. Jayant, Short Hills, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 22, 1982, Ser. No. 443,483

Int. Cl.⁴ H04K *1/04*

U.S. Cl. 179—1.5 S **20 Claims**



1. Apparatus for scrambling an analog signal comprising:

means for sampling the analog signal at a predetermined rate to develop digital sample signals corresponding to the analog signal;

means responsive to the digital sample signals for digitally forming a plurality of contiguous subband digital sample signals, said contiguous subbands extending over a prescribed portion of the frequency spectrum of the analog signal spectrum;

means for partitioning the digital sample signals of each subband into digital signal blocks;

means for permuting the digital signal blocks of a predetermined group of blocks;

means for digitally combining the permuted subband digital signal blocks into a single band digitally samples signal; and

means responsive to said combined permuted single band digitally signal block sample signals for forming a scrambled analog signal.

4,551,581

METHOD AND APPARATUS FOR SENDING A DATA MESSAGE TO A SELECTED STATION DURING A SILENT INTERVAL BETWEEN RINGING

Carolyn A. Doughty, Wheaton, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

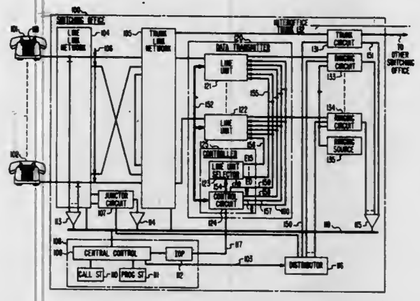
Filed Jul. 12, 1983, Ser. No. 512,955

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 179—2 A **23 Claims**

1. For use with a telephone switching system serving a plurality of stations and having a central processor for generating a data message and a ringing circuit for transmitting a first and a second ringing signal to a selected one of said stations, said first and second ringing signals having a silent interval therebetween, apparatus for sending a data message to a selected station during the silent interval between ringing signals while the apparatus remains connected to the ringing circuit; comprising:

detector means connectable to said ringing circuit and responsive to said first ringing signal for generating a status signal representative of said silent interval between said first and second ringing signals; and



sender means responsive to said status signal for sending to said selected station a signal representative of said data message during said silent interval.

4,551,582

CIRCUIT FOR AUTOMATICALLY RELEASING HOLDING STATE OF TELEPHONE SYSTEM

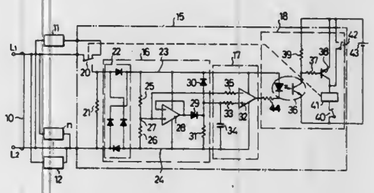
Nobuo Matsuo, Kawasaki, Japan, assignor to Nitsuko Limited, Kanagawa, Japan

Filed Mar. 30, 1984, Ser. No. 595,387

Claims priority, application Japan, Nov. 28, 1983, 58-221966

Int. Cl.⁴ H04M *1/00*

U.S. Cl. 179—81 R **8 Claims**



1. An automatic hold releasing circuit for use in a branch telephone system including a plurality of telephone sets connected in parallel across a pair of wires of a subscriber's line, comprising:

switching means for selectively connecting said subscriber line wires with either a line seizing resistor in order to place the subscriber's line on hold or with one of said plurality of telephone sets;

voltage detecting means for continually providing an output indicating the voltage across the subscriber's line wires;

voltage comparing means for continually comparing the voltage across the subscriber's line wires after said line was placed on hold with the voltage across the subscriber's line wires at the time the live was initially placed on hold by said switching means, thus to detect a drop in voltage across said wires in order to provide an output indicating that any of said telephones connected in parallel other than said one telephone has been taken off-hook; and

said switching means including a switching element and switch driving means, said switch driving means selectively actuating said switching element to thereby connect said line seizing resistor between said subscriber line wires, and deactuating said switching element to disconnect said line seizing resistor in response to the output from said voltage comparing means, thereby to release said subscriber's line from hold.

4,551,583

CONTROL SIGNAL TRANSMISSION SYSTEM FOR KEY TELEPHONE SYSTEM

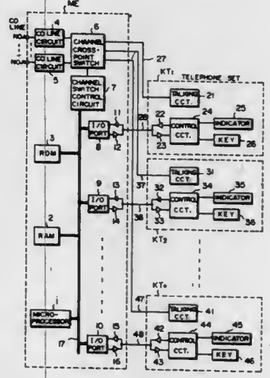
Koichi Sekiguchi, Asaka; Hikaru Takematsu, Higashikurume; Kazuyuki Yamamoto, and Teruyuki Kubo, both of Yokohama, all of Japan, assignors to Telegraph & Telephone Pub. Corp. and Iwasaki Tsushinki Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 346,006, Feb. 5, 1981, which is a continuation-in-part of Ser. No. 172,012, Jul. 24, 1980, abandoned. This application Mar. 8, 1984, Ser. No. 587,373

Claims priority, application Japan, Jul. 30, 1979, 54-97066

Int. Cl.⁴ H04M *1/00;* **H04Q** *5/18*

U.S. Cl. 179—99 M **5 Claims**



1. In a key telephone system comprising a key service unit, a plurality of key telephone sets connected to the key service unit each key telephone set having keys operable for developing key information signals and indicators for indicating the busy status of a plurality of CO lines corresponding to said keys, a plurality of pairs of parallel communication lines each connecting a corresponding key telephone sets individually to the key service unit;

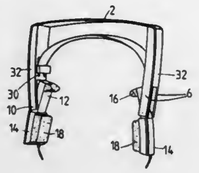
the improvement comprising: a plurality of pairs of parallel control lines, each pair connecting a corresponding key telephone set individually to the key service unit; each key telephone set having a parallel-serial converter for converting key information signals to a serial signal configuration for transmission through a corresponding one of said pairs of parallel control lines to said key service unit;

a random-access memory in said key service unit for receiving and storing the key information signals of the key telephone sets;

said key service unit having means effective for connecting and disconnecting said pairs of parallel communication lines to selected ones of said CO lines in reponse to said key information signals and to store status signals representative of said busy status of each CO line and transmit said status signals to each key telephone set over said corresponding parallel control lines.

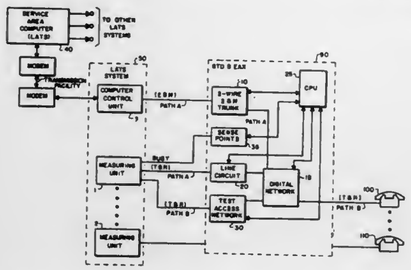
control means in the key service unit for controlling said storage of the status signals for accessing all of the pairs of parallel control lines simultaneously for key information signals and applying them in a first synchronized access time into the key service unit random-access memory, said control means including additonal control means for reading out from said random access memory stored status signals and applying them at a second synchronized access time through corresponding parallel control lines to the parallel-serial converters of the corresponding key telephone sets as control signals for activating the corresponding indicators of said key telephone sets.

4,551,584
EARPHONE SET
Herluf S. Mathiasen, Virum, Denmark, assignor to Bang & Olufsen A/S, Struer, Denmark
Filed Apr. 13, 1984, Ser. No. 600,160
Claims priority, application Denmark, Apr. 15, 1983, 1652/83
Int. Cl.⁴ H04M *1/05*
U.S. Cl. 179—156 R **4 Claims**



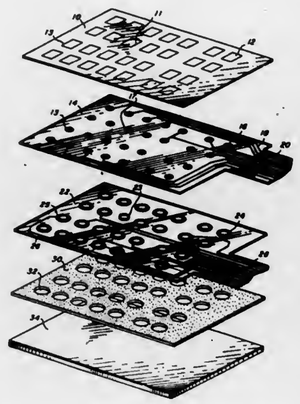
1. An earphone set comprising a resilient head band having an earphone carrier portion on at least one of its opposed ends, an elongate carrier member provided with an earphone unit adjacent one end and a temple pad adjacent the other end thereof, and means pivotally connecting said carrier member to said carrier portion about a transverse axis located between the earphone unit and the temple pad.

4,551,585
ARRANGEMENT FOR FACILITATING EXTERNAL LOOP ANALYSIS TESTING FOR A DIGITAL SWITCHING SYSTEM
William R. Daniels, Chicago, Ill., and John S. Young, Scottsdale, Ariz., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.
Filed Dec. 28, 1983, Ser. No. 566,246
Int. Cl.⁴ H04B *3/46*
U.S. Cl. 179—175.3 R **15 Claims**



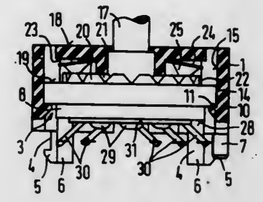
1. In an arrangement for facilitating external loop analysis testing for a digital switching system, a loop analysis and test system (LATS) having a computer control unit and at least one measuring unit each being connectable to said digital switching system for transmitting testing information between each said unit, said arrangement for facilitating external loop analysis testing comprising:
CPU means;
a plurality of sense point means connected to said CPU means;
a plurality of connections, a connection from each of said plurality of sense point means to a corresponding measuring unit;
each said sense point means being operated to contain a first logic value for a busy condition of said corresponding measuring unit or alternatively each said sense point means being operated to contain a second logic value for an idle condition of said corresponding measuring unit; and
said CPU being operated to interrogate each said sense point means for determining said busy and said idle condition of each said corresponding measuring unit;
first means for connecting being connectable to said computer control unit of said LATS and being connected to said CPU means, said first means for connecting being operated in response to a request from said computer control unit and said CPU means to connect said computer control unit to said digital switching system;
digital switching means connected to said first means for connecting and to said CPU means, said digital switching means being operated in response to said CPU means to selectively connect said first means for connecting through said digital switching means to a particular output port of said digital switching means;
second means for connecting being connectable between said output port of said digital switching means and a corresponding measuring unit of said LATS, second means for connecting being operated in response to said CPU means to connect said corresponding measuring unit to said output port for transmitting said testing information between said computer control unit and said measuring unit.

4,551,586
MULTIPLE CONTACT LAYER MEMBRANE SWITCH
Leonard Latasiewicz, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 18, 1984, Ser. No. 621,987
Int. Cl.⁴ H01H *3/12*
U.S. Cl. 200—5 A **20 Claims**



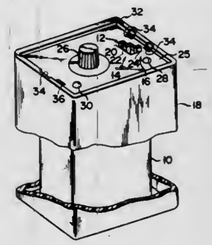
1. A membrane switch assembly comprising a flexible first layer, a second layer having a plurality of contacts, a third layer having a plurality of contacts, certain of said third layer contacts being in registration with at least a portion of said second layer contacts, and a fourth layer having at least one contact area, certain of said third layer contacts being of a configuration so as to permit contact between each such third layer contact, a second layer contact in registration therewith and the fourth layer contact area when an area of said flexible first layer in registration with said second and third layer contacts is compressed.

4,551,587
ROTARY SWITCH FOR PRINTED CIRCUIT BOARDS
Jochen Rose, Röthenbach, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Jun. 23, 1983, Ser. No. 507,039
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3225694
Int. Cl.⁴ H01H *19/58*
U.S. Cl. 200—11 R **11 Claims**



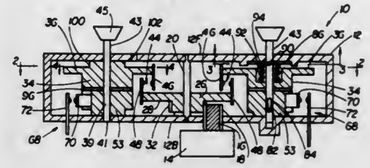
1. A rotary switch for being mounted on a printed circuit board, said switch comprising:
a housing defining a throughgoing aperture;
a rotor with a centric shaft, said centric shaft defining a throughgoing aperture, said rotor is frictionally mounted in said housing; and
a rotating control shaft being axially adjustably mounted in the centric shaft aperture, and said centric shaft aperture being sized to adjustably receive said control shaft,
and said control shaft projecting through said housing aperture.

4,551,588
TIMER DEVICE
Hiromi Kubota, Shizuoka, and Toshiyuki Kambe, Mishima, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Jun. 22, 1984, Ser. No. 623,388
Claims priority, application Japan, Jun. 27, 1983, 58-98934[U]
Int. Cl.⁴ H01H *43/00*
U.S. Cl. 200—33 R **2 Claims**



1. A timer device comprising:
timer circuit means;
time unit setting switch means which is movable to a selected one of plural positions to set a corresponding one of plural kinds of time units in the timer circuit means;
a housing for containing the timer circuit means and the time unit setting switch means;
a time setting knob connected to the timer circuit means to operate the timer circuit means and arranged to project from the housing;
at least two scale plates each having a through-hole through which the time setting knob is received, each scale plate having a time scale corresponding to a different one of the plural kinds of time units;
time scale attaching means for detachably mounting the scale plates individually onto the housing at a predetermined position; and
scale-plate-guiding and time-unit-setting switch-position-holding means arranged at that area of each of said scale plates which area corresponds to the position of the time unit setting switch means when the scale plate confronts the housing at said predetermined position, wherein said guiding and holding means enables the scale plate attaching means to attach a selected scale plate to the housing at the predetermined position and prevents the time unit setting switch means from moving from an initial position which sets a particular time unit in the timer circuit means, when the time unit represented by the time scale on the selected scale plate coincides with the time unit set in the timer circuit means by the time unit setting switch means, and wherein said guiding and holding means prevents the selected scale plate from being attached to the housing at the predetermined position when the time unit represented by the time scale on the selected scale plate fails to coincide with the time unit set in the timer circuit means by the time unit setting switch means;
wherein the time unit setting switch means is of the slide type, and the scale-plate-guiding and time-unit-setting switch-position-holding means comprises a part of each of the scale plates, said part having a hole extending at least partially through a thickness of said scale plates into which hole a button of the time unit setting switch means is insertable when said button is located at a certain position to set in the timer circuit means a time unit corresponding to the time scale on the selected scale plate and when the scale plate is attached to the housing at the predetermined position and wherein the time unit setting switch means is prevented by said part from moving from said initial position.

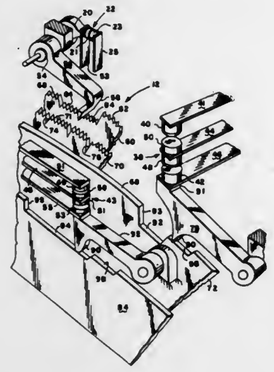
4,551,589
VARIABLE POWER CONTROL DEVICE
Teamus Bowling, 4310 Starlite La., Louisville, Ky. 40291
Filed Mar. 9, 1984, Ser. No. 587,829
Int. Cl.⁴ H01H *7/00*
U.S. Cl. 200—38 A **19 Claims**



1. A variable, adjustable control device for variably controlling the duty cycle for an electrical load comprising:
electrical cycling contact switch means having two movable contact arms adapted for movement toward and away from each other; a rotatable cycling cam means operatively associated with one of the contact arms of the cycling contact switch means for opening and closing the gap between the movable contact arms of the cycling contact switch means as a function of the development of the cam surface of the cycling cam means;
motor means for rotating the cycling cam means at a constant angular velocity;
on-off contact switch means operatively associated with means;
on-off rotatable cam means operatively associated with the on-off contact switch means for opening and closing the on-off switch means; and,
rotatable adjustment cam means operatively associated with the outer one of the movable contact arms of the cycling contact switch means for adjusting the gap between the contacts of the movable contact arms of the cycling switch

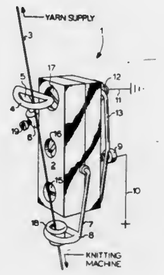
means as a function of the development of the the cam surface of the adjustable cam means.

4,551,590
APPLIANCE CONTROL AND PROGRAMMER TIMER THEREFOR
Joseph J. Mahon, Libertyville, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed May 14, 1984, Ser. No. 610,225
Int. Cl.⁴ H01H *43/00*
U.S. Cl. 200—38 R **15 Claims**



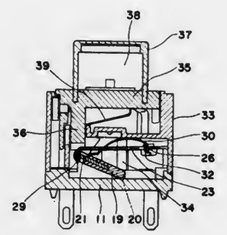
15. An electromechanial programmer timer for an electrically energized appliance comprising,
(a) timing motor means operable to provide rotation, of a shaft means at a predetermined rate;
(b) a motor switch operable upon actuation and deactuation to energize and de-energize said motor means;
(c) a load switch operable for actuation and deactuation and adapted for energizing and de-energizing said appliance;
(d) program cam means selectively positionable by the operator of said appliance to an initial position and operable upon timed advancement to actuate and deactuate said switches for providing a selected program of appliance operation;
(e) an auxiliary function switch operable upon actuation to shunt said load switch;
(f) advance means connected to said shaft means and operable upon rotation of said shaft means to step-index said program cam means for the selected program interval from said initial position to a timed-out position, said advance means operable in a first mode of initial positions of said program cam means corresponding to a minimum program interval to advance said program cam means at a first expanded rate for time-out, said advance means in response to a second mode of initial positions of said program cam means is operable to advance said program cam means at a second compressed rate less than said first rate, said advance means upon time-out of said selected program interval, operable to advance said program cam means at a third rate for time-out of an auxiliary function interval; and,
(g) sub-interval cam means connected for rotation by said shaft means and operable to actuate and deactuate said auxiliary function switch for intervals comprising a fraction of the period of rotation of said shaft means, wherein said cam means is operable upon program time-out and advancement at said third rate and time-out of said auxiliary interval to effect deactuation of all of said switch means.

4,551,591
STOP MOTION SWITCH
Robert E. Jones, Rte. 4, Box 509, Hickory, N.C. 28601
Filed Jun. 18, 1984, Ser. No. 621,841
Int. Cl.⁴ B65H *25/14;* **D04B** *35/12;* **F26B** *13/12*
U.S. Cl. 200—61.13 **5 Claims**



1. A switch adapted to be in engagement with an elongated filament and responsive to a break in said elongated filament to cause the switch to go from a "first" to a "second" position comprising:
(a) a rocker arm including first, median and second members made from material adapted to conduct electricity, one end portion of either of the first and second members containing a filament guide means; and,
(b) a dielectric block containing (i) an aperture therein into which the median member portion of the rocker arm is rotatably received, (ii) a first terminal means in continuous electrical communication with the median member of the rocker arm, (iii) a second terminal means adapted to be in electrical communication with ground and, (iv) an elongated member adapted to conduct electricity connected to said second terminal means, a portion thereof spaced apart from the dielectric block in such a fashion that upon rotation of the rocker arm the second member comes in sliding electrical and mechanical contact with the elongated member by making an initial mechanical and electrical contact therewith at a first position and sliding along the longitudinal axis thereof to a second position different from that of the first.

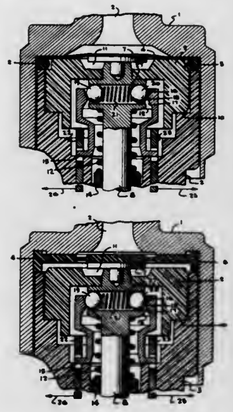
4,551,592
PUSH-BUTTON SWITCH
Hiroyuki Nishi; Mitsuji Hayashi, both of Nagaokakyo, and Motoyuki Tomizu, Kyoto, all of Japan, assignors to Omron Tateisi Electronics, Co., Kyoto, Japan
Filed Mar. 2, 1984, Ser. No. 585,465
Claims priority, application Japan, Mar. 5, 1983, 58-31715[U]
Int. Cl.⁴ H01H *5/30*
U.S. Cl. 200—67 D **2 Claims**



1. A push-button switch, comprising:
a base member provided on one surface with a bearing portion, fixed contacts and a pair of studs;

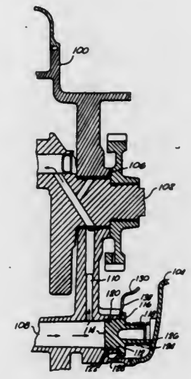
a link member comprising a first end having a support shaft pivotally received in said bearing portion of said base member, and a second end having a hinge portion;
a movable, T-shaped electrically conductive plate piece having a broad end which has movable contacts for connection to said fixed contacts, and a narrow end pivotally engaged with the hinge portion of said link member;
a reversing spring in the form of a generally U-shaped plate spring in a bent configuration, engaged with said studs at its free ends and engaged with said movable piece at its base; and
a push-button movably disposed for vertical movement with respect to said base, to depress the link member in the vicinity of said hinge portion.

4,551,593
MECHANISM FOR THE SUDDEN TRIPPING OF AN ELECTRICAL CONTACT UNDER THE EFFECT OF A SLOW VARIATION IN PRESSURE
Maurice De Raco, Grasse, and Pierre Rey, Menton, both of France, assignors to Eaton S.A.M., Monaco, France
Filed Dec. 27, 1983, Ser. No. 566,072
Claims priority, application Monaco, Nov. 21, 1983, 1665
Int. Cl.⁴ H01H *35/24*
U.S. Cl. 200—81 R **12 Claims**



1. A mechanism for the instantaneous tripping of an electrical contact in response to a progressive variation in applied fluid pressure, comprising:
a housing, the interior of said housing being fluid connected to a source of pressurized fluid,
a conductive element located in said housing, said conductive element having a longitudinal axis and movable along said axis between an open position and a closed position and having an interior wall and an exterior wall, said interior wall at the upper portion thereof comprising opposed first and second connecting sloping sections of substantially triangular cross-section having a side in common at their connection, and a throttle defined by the connection between said first and second sloping sections,
cage means at least partially positioned within said conductive element and movable therein in response to the applied fluid pressure in a direction substantially parallel to said longitudinal axis of said conductive element, said cage means including a head portion having channel means therethrough, said channel means having a longitudinal axis substantially perpendicular to said longitudinal axis of said conductive element, and at least one ball housed in said channel means and movable along said longitudinal axis of said channel means and up and down said sloping sections in response to the movement of said cage means within said conductive element,
first means for exerting on said at least one ball a transverse elastic force substantially parallel to said longitudinal axis of said channel means and directed towards said sloping sections, said force breaking down into a first vertical component acting on said first sloping section in a first direction substantially parallel to said longitudinal axis of said conductive element and a second vertical component acting on said second sloping section in a second direction opposite said first direction, and
second means engaging said cage means for exerting an said cage means an elastic force in opposition to the pressure variations to be controlled,
the passage of said at least one ball through said throttle causing the instantaneous displacement of said conductive element from one to the other of said open and closed positions.

4,551,594
OIL PRESSURE SWITCH
Tadashi Katoh, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 12, 1984, Ser. No. 619,791
Claims priority, application Japan, Jun. 20, 1983, 58-110675
Int. Cl.⁴ H01H *35/40*
U.S. Cl. 200—82 R **7 Claims**

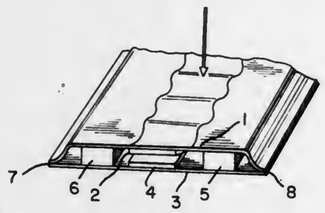


1. An oil pressure switch for an engine lubricating system, comprising
a port through a wall of the lubricating system;
a piston slidably mounted in said port;
a spring bias means for biasing said piston into said port;
an elastic, electrical conductor exhibiting a change in conductivity under compression, said elastic, electrical conductor being between said piston and the lubricating system wall for compression by said spring bias means; and
a monitoring circuit including said conductor in series.

4,551,595
TAPE SWITCH WITH CORRUGATED WAVY CONDUCTOR
Robert H. Koenig, Huntington Hills, N.Y., and Walter Lovell, Wilbraham, Mass., assignors to Tapeswitch Corporation of America, Farmingdale, N.Y.
Filed Jul. 16, 1984, Ser. No. 631,494
Int. Cl.⁴ H01H *1/06, 13/04*
U.S. Cl. 200—86 R **2 Claims**

1. Tape switch comprising:
a first insulating cover strip,
a second insulating cover strip,
a first conductive strip bonded to the first cover strip,
said first cover strip and said first conductive strip having a corrugated wavy form,

first and second spacer strips running parallel to each other and mounted between the first and second cover strips,
a second conductive strip bonded to the second cover strip between the first and second insulated strips,



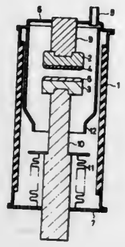
whereby when the tape switch is pressed at any point, contact is made between the first and second conductive strips.

4,551,596

SURGE-ABSORBERLESS VACUUM CIRCUIT INTERRUPTER

Ryuji Watanabe, Toukai; Hisashi Ando, Hitachi; Keiichi Kuniya, Hitachi, and Yukio Kurosawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,306
Claims priority, application Japan, Mar. 26, 1982, 57-47423
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B **16 Claims**



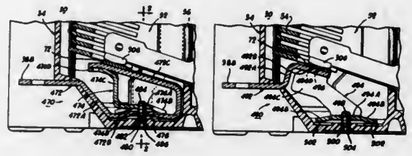
1. A vacuum circuit interrupter comprising a vacuum container confining a vacuum atmosphere of a pressure less than 10^{-5} mmHg and a pair of electrodes at least one of which is a movable electrode for making and breaking an electric load circuit including either a transformer of a rated surge voltage strength of less than 45 kV or a motor of a rated surge voltage strength of less than 25 kV, wherein at least one of said electrodes is provided with a contact of an alloy of low surge voltage characteristics, said alloy consisting essentially of a porous body of a refractory conductive material and an intermetallic compound selected from the group consisting of silver telluride, silver selenide, and mixtures thereof, and being substantially free of free silver, impregnated in said porous body, said interrupter having a chopping current of not more than 1A and a high frequency arc extinguishing capability of not more than 27 A/μs when measured in a circuit of 6 kV, whereby said interrupter can operate in said electric load circuit without a surge absorber for protecting the load in the load circuit from a surge voltage generated at the time of breaking said electric load circuit.

4,551,597

MOLDED CASE CIRCUIT BREAKER WITH ADJUSTABLE STATIONARY LOWER ELECTRICAL CONTACT

Alfred E. Maier, Chippewa, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 19, 1983, Ser. No. 562,644
Int. Cl.⁴ H01H *1/34*
U.S. Cl. 200—249 **9 Claims**



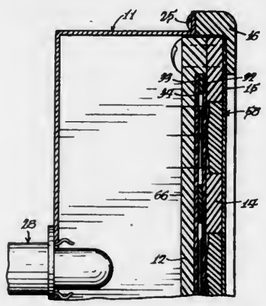
1. An electrical circuit breaker comprising
a base,
a movable electrical contact and
an adjustable stationary electrical contact,
said movable and stationary electrical contacts being movable into a CLOSED position and into an OPEN position,
said stationary electrical contact comprising a formed spacer bracket, a separate, formed conductive contact having an elongated stationary contact arm disposed above and secured to said spacer bracket, contact means fixedly secured to said stationary contact arm for physically and electrically contacting said movable electrical contact, and spacer means comprising a plurality of deflectable members in contact with said base for maintaining said contact means spaced from said base,
said stationary electrical contact further comprising means for controllably adjusting and fixedly maintaining the spatial position of said contact means within said circuit breaker, said adjusting and maintaining means determining the amount of deflection of said deflectable members which adjusts the distance between said contact means and said base.

4,551,598

ILLUMINATED MEMBRANE SWITCH

Lawrence E. Hamilton, Chicago, and Renzo N. Rutili, Evanston, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 536,637, Sep. 28, 1983, Pat. No. 4,493,958. This application May 16, 1984, Ser. No. 610,652
Int. Cl.⁴ H01H *9/18*
U.S. Cl. 200—314 **11 Claims**



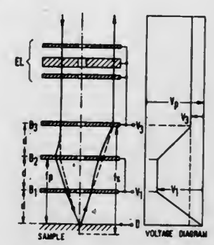
1. An illuminated membrane switch assembly, comprising; a first flexible film member having a partly opaque conductive area on one side thereof, a second flexible film member adjacent and normally spaced from the one side of the first film member, said second film member having a partly opaque conductive area aligned with the first conductive area and being on the side of said second film member adjacent said first film member, said second conductive area including spaced switch contacts positioned to be electrically closed when simultaneously contacted by the conductive area on the first film member when one of the film members is pressed into engagement with the other film member, at least one of said conductive areas having opaque portions extending substantially centrally across the conductive area, a movable switch actuator member mounted adjacent one of the first and second film members having indicia thereon adapted to be illuminated, said actuator member having an axis substantially perpendicular to said film members and a translucent light diffusing surface substantially parallel and aligned with the conductive areas on the first and second film members, a transparent backplate behind and supporting the first and second film member, and a source of light positioned behind the first and second film members to direct light through the backplate substantially parallel to and substantially along said axis, through the first and second film members conductive areas and into the actuator member to be diffused therein by the light diffusing surface to eliminate shadowing caused by the conductive area.

4,551,599

COMBINED ELECTROSTATIC OBJECTIVE AND EMISSION LENS

Helmut Liebl, Eching, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Aug. 22, 1983, Ser. No. 525,413
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3231036
Int. Cl.⁴ H01J *37/26*
U.S. Cl. 250—396 R **6 Claims**



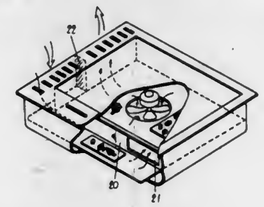
1. In a combined objective and emission lens system for a particle-optical instrument, such as a microbeam probe for SIMS, with said system comprising a plurality of electrodes coupled in each case to a source of potential so that, in cooperation with a conductive sample surface, said system focuses a bundle of primary rays on a small spot of the sample surface and collimates the secondary particles emitted by this spot into a bundle of secondary rays which leaves the electrode system in a direction substantially opposite to the bundle of primary rays; the improvement wherein said system includes:
(a) a first electrode arrangement disposed adjacent the sample surface and having a first electrode (B_1) which is immediately opposite the sample surface at a first given distance (d_1) and at least a second electrode (B_2) arranged at a given second distance (d_2) from said first electrode (B_1) on the side of said first electrode facing away from the sample surface, a first potential (V_1) applied to said first electrode such that the electric field strength between said first electrode and the sample surface is at least about 40% of the vacuum breakdown field strength, a second potential (V_2) with respect to the sample surface applied to said second electrode, and said first and second distances (d_1, d_2) and said first and second potentials (V_1, V_2) are so proportioned that the bundle of primary rays accelerated by a given accelerating voltage (V_p) is focused on a spot (PF) of the sample surface and the bundle of secondary rays emanating from this spot is focused into an intermediate image (BP) in an image plane located on that side of said first electrode arrangement which faces away from the sample surface, at a close distance from the last electrode of said first electrode arrangement; and
(b) a second electrode arrangement forming an einzel lens (EL) whose focal plane, on the side where the sample surface is located, coincides substantially with said image plane of said intermediate image (BP).

4,551,600

VENTILATED COOKING APPLIANCE UNIT

Junichi Miyagawa, Neyagawa, and Yukio Hirai, Takarazuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP83/00117, § 371 Date Dec. 14, 1983, § 102(e) Date Dec. 14, 1983, PCT Pub. No. WO83/03735, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 14, 1983, Ser. No. 567,845
Claims priority, application Japan, Apr. 14, 1982, 57-62741
Int. Cl.⁴ H05B *6/12;* **F24C** *15/10*
U.S. Cl. 219—10.49 R **4 Claims**



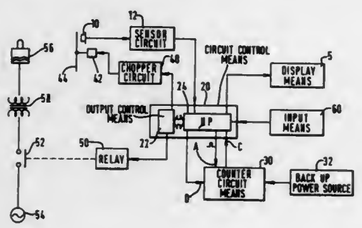
1. A cooking appliance unit, comprising:
(a) a horizontal top plate having a plurality of sides defining an outer periphery and having means for transmitting heat to food items placed thereon;
(b) a horizontal frame formed on each of said plurality of sides of said outer periphery so as to surround said plate; said plate having vertically directed inlet ventilating holes and vertically directed exhaust ventilating holes on only one of said plurality of sides thereof;
(c) a cooking appliance body below said plate and said frame having a plurality of walls defining mutually separated first, second and third chambers enclosed therein, said plurality of walls including a bottom wall having said third chamber directly thereabove, a first inner wall above said bottom wall having said second chamber thereabove, separating said third chamber from said second chamber, and a second inner wall separating said first chamber from said second chamber; said inlet ventilating holes being in fluid communication with said first chamber; said exhaust ventilating holes being in fluid communication with said third chamber; said second inner wall having at least one ventilation opening providing fluid communication between said first and second chamber; said first inner wall having means therein for providing fluid communication between said second and third chamber;
(d) first means for heating said heat transmitting means, disposed in said second chamber;
(e) means for controlling said first heating means, disposed in said first chamber; and
(f) means for drawing a flow of cooling air successively through said inlet holes, said first chamber, said at least one ventilation opening, said second chamber, said means for providing fluid communication between said second and third chamber, said third chamber and said exhaust holes.

4,551,601

HEAT COOKING APPARATUS WITH TEMPERATURE OPERATING SYSTEM

Nobuichi Nishimura, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Apr. 6, 1984, Ser. No. 597,752
Claims priority, application Japan, Jul. 11, 1983, 58-125933
Int. Cl.⁴ H05B *9/06*
U.S. Cl. 219—10.55 B **18 Claims**



1. A fault indication circuit for a heating apparatus comprising:

(a) a sensor for generating a sensor signal indicative of the temperature of products placed in said apparatus during operation thereof;

(b) a control circuit, including a microprocessor having timing means, said control circuit responsive to said sensor signal for comparing the sensor signal indicative temperature with a predetermined temperature and for generating a sensor fault signal if said sensor signal indicative temperature does not reach said predetermined temperature within a predetermined default time period as timed by said timing means;

(c) an output control means connected to said control circuit and operative to de-energize said heating apparatus when said fault sensor signal is generated;

(d) a counter connected to receive said sensor fault signal for incrementing in response thereto, said counter outputting a sensor defect signal in response to a predetermined number of sensor fault signals; and

(e) output means for outputting an indication of said sensor defect in response to said sensor defect signal.

4,551,602

ELECTRICAL MACHINING USING AN AQUEOUS SOLUTION WITH A RECYCLED SURFACE ACTIVE AGENT

Kiyoshi Inoue, Tokyo; Makoto Onoue, and Sadao Sano, both of Yokohamashi, all of Japan, assignors to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Jun. 21, 1983, Ser. No. 506,448
Claims priority, application Japan, Jun. 23, 1982, 57-108942; Jul. 8, 1982, 57-119105
Int. Cl.⁴ B01D *17/00;* **B23P** *1/16*
U.S. Cl. 219—69 D **27 Claims**

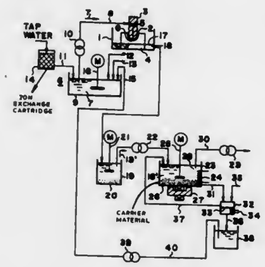
1. A method of processing a machining liquid in an electrical machining system, comprising the steps of:

(a) forming an input machining liquid consisting at least in major part of an aqueous solution containing a non-ionic surface active agent dissolved in deionized water, said surface active agent having a temperature-dependent solubility in the solution and a cloud point of temperature below which it remains dissolved therein;

(b) supplying said input machining liquid to an electrical machining zone whereby at least a volume portion of the supplied liquid serves as a medium for an electrical machining action therein;

(c) feeding a liquid effluent from said machining zone, constituted by residual volume portions of said deionized water and said surface active agent remaining in the solution having electrical machining products entrapped therein, into a separation zone;

(d) in said separation zone, heating said liquid effluent to, and maintaining it at, a temperature sufficiently above a said cloud point thereof to separate therefrom an amount of



said surface active agent substantially in a solid form while forming a liquid constituted by at least a portion of the remainder of said liquid effluent; and

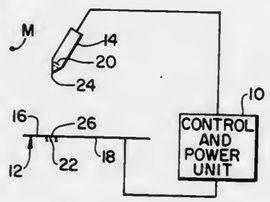
(e) recycling said separated surface active agent at least as a portion of the surface active agent in said input machining liquid into a said electrical machining zone.

4,551,603

DEVICE AND METHOD FOR SURFACING A WORKPIECE

Isadore J. Rocklin, 3240 Douglas St., Sioux City, Iowa 51104

Continuation-in-part of Ser. No. 900,245, Apr. 26, 1978, abandoned, which is a continuation of Ser. No. 721,831, Sep. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 550,824, Feb. 18, 1975, which is a continuation-in-part of Ser. No. 332,216, Feb. 13, 1973, Pat. No. 3,878,351, which is a division of Ser. No. 451,059, Mar. 14, 1974, abandoned, which is a division of Ser. No. 130,734, Apr. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 386,189, Aug. 6, 1973, Pat. No. 3,969,601. This application Aug. 9, 1984, Ser. No. 639,112
Int. Cl.⁴ B23K *9/04*
U.S. Cl. 219—76.13 **47 Claims**



1. A method of surfacing a metal workpiece comprising steps of:

establishing an electrostatic potential between the metal workpiece and the electrode;

controlling the electrostatic potential between the electrode and the workpiece to a level which is essentially equal to that potential associated with glow discharge and less than that potential associated with arc welding;

contacting the electrode to the metal workpiece at a selected location;

withdrawing the electrode from the workpiece to create a spark arc prior to any significant current flow between the electrode and the workpiece to prevent current heating of the metal workpiece;

moving the electrode out of contact with the metal workpiece to a position in which the spark arc is extinguished; and

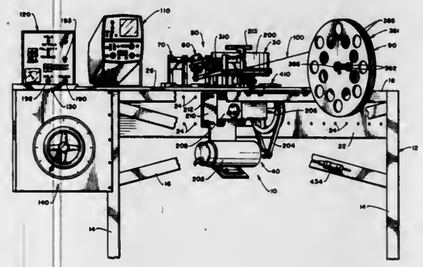
then again contacting the electrode to the metal workpiece a second time.

4,551,604

METHOD AND APPARATUS FOR FABRICATING HONEYCOMB SEAL

James R. Campbell, South Laguna, Calif., assignor to Thomas P. Mahoney, Balboa Island; Donald A. Ruston and Robert S. Barnes, both of Newport Beach, all of, Calif., a part interest to each

Filed Jun. 13, 1983, Ser. No. 503,542
Int. Cl.⁴ B23K *11/06, 11/32*
U.S. Cl. 219—78.12 **34 Claims**



1. A welding apparatus for fabricating a circular honeycomb-type seal from a continuous preformed metallic strip having male and female nodes, comprising: continuous strip supply means; a cylindrical, strippable forming means juxtaposed to said strip supply, said forming means being conductive and adapted to orient said strip into the circular configuration of said seal as successive laminae of said strip are wound thereabout by rotation of said forming means; welding head means located tangentially of the perimeter of said forming means and engageable with the uppermost lamina of said strip to weld it to the adjacent lamina, said welding head means being driven by engagement with the successive nodes of said metallic strip as caused by rotation of said strip induced by rotation of said forming means; and a welding circuit connected to said welding head means and to said forming means to successively weld the respective adjacent laminae of said strip to each other.

31. The method of fabricating a circular, honeycomb-type seal from a continuous pre-formed strip having alternate male and female nodes, comprising: forming said strip into a circular configuration on a cylindrical, conductive form with said male and female nodes juxtaposed to one another to permit the weldment thereof; simultaneously welding a plurality of said nodes to each other by engaging only the uppermost of said nodes during rotation of said form; and stripping said seal from said form upon completion of said seal.

4,551,605

GUN ARM APPARATUS FOR RESISTANCE WELDING GUN

Morikuni Numata, Ageo, and Toshihiko Nakadate, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

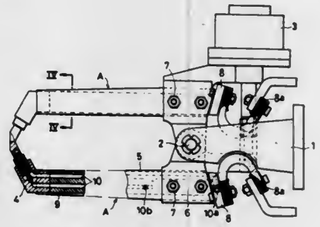
Filed Dec. 27, 1983, Ser. No. 566,071
Claims priority, application Japan, Dec. 27, 1982, 57-195610[U]; Dec. 27, 1982, 57-195611[U]
Int. Cl.⁴ B23K *11/10*
U.S. Cl. 219—86.31 **5 Claims**

1. A gun arm for a resistance welding gun, said gun arm comprising:

(a) a main body;

(b) an electrode holder mounted on the front portion of said main body;

(c) a support member fixed to the rear portion of said main body; and



(d) said main body comprising conductor plate means having a water passage means on at least one side thereof and body plate means fixed to said at least one side of said conductor plate means and in contact with said water passage means.

4,551,606

BEAMED ENERGY RADIATION CONTROL METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 26, 1983, Ser. No. 498,177
Int. Cl.⁴ B23K *15/00, 26/00*
U.S. Cl. 219—121 EA **10 Claims**

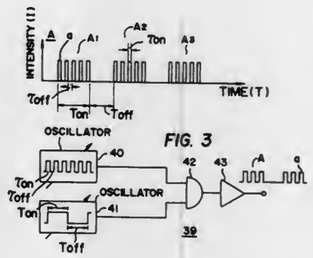


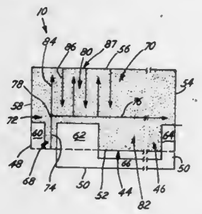
FIG. 3

1. A method of controlling beamed energy radiation onto a workpiece, comprising:

producing a beamed energy flow in the form of a series of successive, time-spaced beam groups each of which groups comprises a succession of time-spaced energy beams with a beam on-time τon and a beam off-time τoff for irradiation of the workpiece, said successive beam groups having each individually a time duration Ton and being separated by a time interval Toff which is greater than said beam off-time τoff; and

controlling said beamed energy flow being radiated onto the workpiece by controlling at least one of said on-time τon, said off-time τoff, said time duration Ton, said time interval Toff and the number n of the time-spaced energy beams in each of said successive groups.

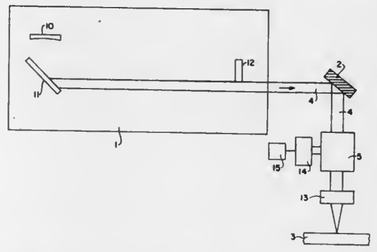
4,551,607
ELECTRICAL FILM RESISTOR
Alexander Moy, Evanston, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.
Filed Apr. 30, 1984, Ser. No. 605,612
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LJ **5 Claims**



1. A process for making a film resistor having first and second terminals comprising, in combination, the steps of:
applying a first electrode to an electrically non-conductive substrate, said first electrode defining a first terminal;
applying a second electrode to said substrate at a first predetermined distance from said first electrode;
applying a third electrode to said substrate at a second predetermined distance from said first electrode, said second predetermined distance being greater than said first predetermined distance; electrically interconnecting said second and third electrode apart from said substrate, said second and third electrodes cooperatively forming said second terminal, said first electrode being substantially electrically isolated from both said second and third electrodes;
applying an electrically resistive film to said non-conductive substrate, said resistive film being in contact with said first, second, and third electrodes;
selectively removing, in a predetermined pattern, said resistive film from said substrate between said first and second electrodes, whereby electrical resistance between said first and second terminals is gradually increased, until said second electrode is substantially electrically isolated from said first electrode; and
selectively removing, in a predetermined pattern, said resistive film from said substrate between said first and third electrodes, whereby electrical resistance between said first and second terminals is further gradually increased.

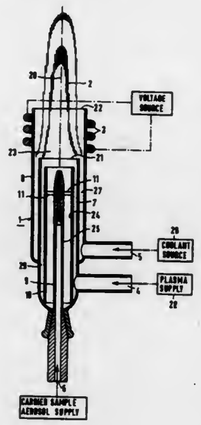
4,551,608
MATERIAL WORKING APPARATUS
Hans Opower, Krailling, Fed. Rep. of Germany, assignor to W.C. Heraeus GmbH, Hanau, Fed. Rep. of Germany
Filed May 10, 1984, Ser. No. 608,992
Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317022
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 L **3 Claims**

1. A combination for working materials, comprising:
a laser having an unstable optical resonator, including cylindrical mirrors, for emitting an optical laser beam;
at least one additional mirror for deflecting said optical beam onto a workpiece; and
image-rotating means disposed in said optical beam and including an uneven number, but at least three, fully reflective mirrors, the angle of rotation of said image-rotating means about the optical beam axis being electronically



controllable according to the direction of the working path.

4,551,609
SPECTROMETRY PLASMA BURNER
Gertrud Falk, Röttenbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 1, 1984, Ser. No. 585,249
Claims priority, application Austria, Mar. 24, 1983, 3310742
Int. Cl.⁴ B23K *9/00;* **H01J** *7/24*
U.S. Cl. 219—121 PR **7 Claims**

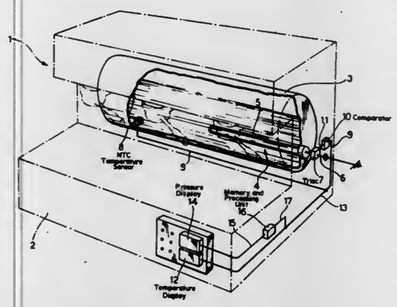


1. In a device used in spectrometry for exciting a chemical element to emit electromagnetic radiation, said device having an outer jacket, an inner jacket coaxial therewith, an axially disposed capillary tube, a first feed line for conveying plasma gas, a second feed line for conveying cooling gas, a third feed line for conveying aerosol including the chemical element to be excited, and an induction coil wound around the outer jacket at one end thereof for generating the plasma,
the improvement comprising insulating means for forming a dead space surrounding said capillary tube, said insulating means including a sleeve disposed between the capillary tube and the inner jacket, said sleeve being coaxial with the outer jacket, said inner jacket and said capillary tube, said sleeve being radially spaced from said capillary tube to form said dead space therewith, said insulating means further including a solid ring for centering said sleeve with respect to said capillary tube and for closing off said dead space at an end thereof proximate to the induction coil, said ring engaging said sleeve at an inner surface thereof and said capillary tube at an outer surface thereof.

4,551,610
TUBULAR WELDING ELECTRODE
Mario A. Amata, Chardon, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio
Filed May 17, 1983, Ser. No. 495,577
Int. Cl.⁴ B23K *35/362*
U.S. Cl. 219—146.3 **14 Claims**

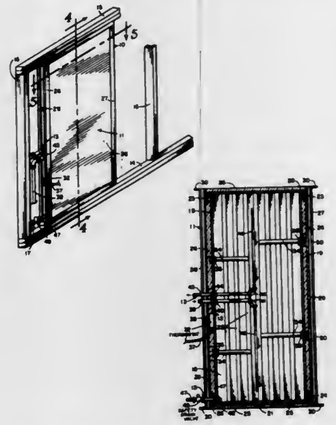
1. An arc welding electrode comprised of a tube of low carbon steel having on the inside thereof as major ingredients, as percentage of total electrode weight:
Lithium oxide (LiO_2): 1.8–3.2%
One or more amphoteric oxides selected from the class consisting of Fe_xO_y and Mn_xO_y: 6.0–23%
Aluminum: 2.5–5.0%
Magnesium: 0.2–2.2%
the lithium oxide being present in a sintered composite with the amphoteric oxide(s) in a one to at least one mole ratio.

4,551,611
ESPRESSO COFFEE MACHINE CONTROL SYSTEM DISPLAYING BOILER TEMPERATURE AND PRESSURE
Walter G. Longo, Milan, Italy, assignor to Nuova Faema S.p.A., Milan, Italy
Filed Apr. 10, 1984, Ser. No. 598,686
Claims priority, application Italy, Apr. 14, 1983, 21543/83[U]
Int. Cl.⁴ H05B *1/02;* **A47J** *31/30, 31/56;* **F24H** *1/20*
U.S. Cl. 219—308 **1 Claim**



1. In an espresso coffee machine of the type having a boiler and heating means associated with the boiler for heating the water contained in the boiler, the improvement comprising a temperature transducer fitted within the boiler and providing a temperature output signal, said transducer being a negative temperature coefficient type (NTC) resistance, activating means responsive to said output signal for activating said heating means, said means for activating the heating means including a comparator unit fed by the said temperature output signal and with the extreme values of a temperature range, to compare said signal with these extremes, said comparator unit controlling activation and deactivation of said heating means,
display means fed by said signal to continuously display the temperature of the water in the boiler,
a memory and processing unit having stored therein the Mollier diagram curve relating to saturated water vapour, said memory and processing unit being continuously fed with the said temperature output signal to continuously output the value of the corresponding pressure, and
display means fed with said pressure value for the display thereof.

4,551,612
WALL-CONTAINED ELECTRIC WATER HEATING TANK
William H. Sprague, R.R. #1, Box 264, Mead, Wash. 99021
Filed Jan. 30, 1984, Ser. No. 575,001
Int. Cl.⁴ F24H *1/20;* **H05B** *3/82;* **B65D** *6/38*
U.S. Cl. 219—312 **2 Claims**

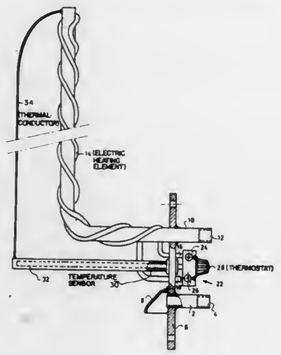


1. In an electrically powered reservoir type water heating tank the invention comprising, in combination:
a relatively thin peripherally insulated tank structure having a rectilinear configuration and dimensioned to be contained in a void defined within a structural wall between the upper and lower plates, opposing surface elements and a pair of spaced vertical studs of the structural wall, said tank having
two spaced opposed vertical sides of substantial areal extent with vertically extending flutes therein to provide rigidity,
two elongate rectilinear ends structurally joining the vertical edges of said sides in spaced relationship, and
rectilinear planar top and bottom elements structurally communicating with said sides and ends to define a chamber for containment of water, said tank being supported by said bottom element from vertical displacement;
relatively thin rigid insulation covering the periphery of the tank to lessen thermal transfer therefrom, the external surface of said insulation defining a structure no larger than the void within a structural wall within which the tank is to be contained;
structural brackets extending laterally from the vertical ends of the tank to the peripheral surface of the insulation thereabout, at least at the upper and lower portions of each end; and
vertically oriented post-like studs, structurally carried by the lateral extensions of said brackets at each vertical end of the tank, with each stud having fastening brackets extending laterally therefrom to aid the fastening of the tank within a wall.

4,551,613
RAPID-HEATING ELECTRIC WATER BOILER
Yechiel Yashfe, 37 Nikanor St., Jerusalem, Israel
Filed Sep. 12, 1983, Ser. No. 531,299
Int. Cl.⁴ H05B *1/02, 3/82;* **F24H** *1/20*
U.S. Cl. 219—316 **12 Claims**

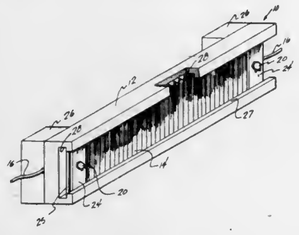
1. A rapid-heating device for an electric water boiler having an access opening in the lower portion thereof, comprising:
(a) a flange adapted to close the access opening in the lower portion of an electric water boiler when the flange is attached to said boiler;

(b) a cold-water inlet pipe passing through said flange;
(c) a hot water outlet pipe having a lower end passing through said flange and a free end adapted to terminate adjacent the top of the boiler when the flange is attached thereto; and
(d) a water-immersible, wetted electrical heating element



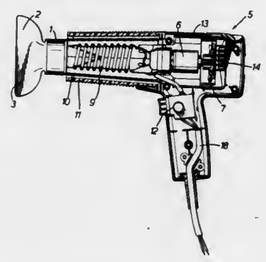
attached to and in intimate thermal contact with said hot water outlet pipe starting substantially from the lower end thereof at said flange and extending along a major portion of the length of said outlet pipe towards the free end thereof for simultaneously heating both water contained inside said hot water outlet pipe as well as water surrounding said hot water outlet pipe.

4,551,614
ELECTRICAL RESISTANCE HEATER UNIT
Joe P. Johnson, 113 Cypress Dr., Inman, S.C. 29349
Filed Jul. 13, 1984, Ser. No. 630,847
Int. Cl.⁴ F24H *3/00*; H05B *1/00*; H01C *3/10, 7/22*
U.S. Cl. 219—355 **11 Claims**



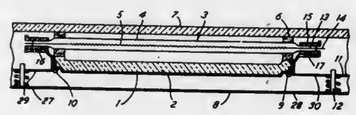
1. An improved high intensity electrical resistance heater unit comprising an elongate thin metal foil ribbon adapted to be heated by passage of electricity therethrough to a high temperature for radiation of heat therefrom, a thermally insulating rigid backing of low electrical conductivity for supporting said ribbon, said backing having an elongate channel formed in a front face thereof for receiving the ribbon, sides of the channel being undercut to form side grooves, and longitudinal side edge portions of the ribbon being received in said side grooves of the channel to frictionally support and retain the ribbon along its length within the channel while leaving the major surface of the ribbon unobstructed to permit unrestricted heat radiation therefrom.

4,551,615
GUARD FOR HOT AIR GUN
Peter H. Wilson, Stockton-on-Tees, England, assignor to Black & Decker Inc., Newark, Del.
Filed May 1, 1984, Ser. No. 605,801
Claims priority, application United Kingdom, May 5, 1983, 8312378
Int. Cl.⁴ F24H *3/04*; H05B *1/00, 3/02*
U.S. Cl. 219—373 **13 Claims**



1. A hot air gun, comprising:
a housing having an outlet for a flow of hot air therefrom;
a guard plate in the vicinity of said hot air outlet, said guard plate being connected to said housing;
said guard plate having a straight edge transverse to the general direction of said hot air flow, said straight edge being located downstream from said outlet and defining the downstream extremity of said guard plate;
said guard plate defining in use part of the boundary of said hot air flow from said outlet; and
a cooling air outlet for a flow of cooling air therefrom, said cooling air outlet being disposed around said hot air outlet and said guard plate being positioned between the respective flow paths of said hot air flow and said cooling air flow.

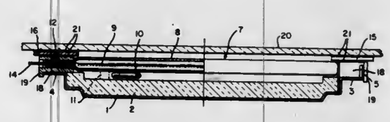
4,551,616
HEATING APPARATUS
Michael H. C. Buttery, Tadworth, England, assignor to Thorn Emi Domestic Appliances Limited, London, England
Filed Jul. 6, 1984, Ser. No. 628,504
Claims priority, application United Kingdom, Jul. 7, 1983, 8318457
Int. Cl.⁴ H05B *3/68*
U.S. Cl. 219—460 **6 Claims**



1. A cooking hob comprising a housing having a base, side walls and an upper surface, said upper surface being formed from glass ceramic material; a heating unit; means for mounting said heating unit in said housing adjacent the underside of said glass ceramic surface; said heating unit comprising a tray member, a layer of thermally-insulative material accommodated in said tray member, an infra-red lamp, and means for mounting said lamp above said layer of thermally-insulative material; said lamp comprising a generally tubular envelope, a filament contained within said envelope, first and second electrical connections connected respectively to each end of said filament, and first and second pinch seals having respectively said first and second electrical connections sealed therein; electrical coupling means for coupling said first and second electrical connections to a power supply; a hollowed member,

formed with aperture placing the ambient environment of said hob in communication with the interior of said hob; said base being apertured, at least in a region beneath said pinch seals, whereby air is encouraged to flow into said housing via said apertured base, around said pinch seals, and out of said housing via said hollowed member.

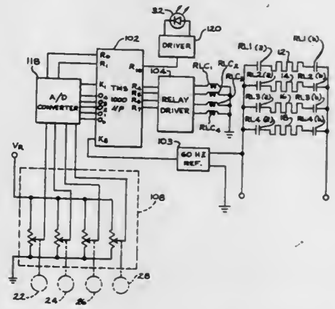
4,551,617
HEATING APPARATUS
Peter W. Crossley, Havant, and Robert D. Smith, Cheshunt, both of England, assignors to Thorn EMI Domestic Appliances Limited, London, England
Filed Jun. 15, 1984, Ser. No. 621,209
Claims priority, application United Kingdom, Jun. 15, 1983, 8316306
Int. Cl.⁴ H05B *3/68*
U.S. Cl. 219—464 **7 Claims**



1. Heating apparatus mounted beneath a glass ceramic layer of a cooking hob, said apparatus including an infra-red lamp and thermally-insulative material below said lamp, and support means supporting said lamp and said thermally-insulative material in a desired location relative to each other and to said glass ceramic layer, said lamp comprising a generally tubular envelope formed from an electrically-insulative and thermally-conductive material, a filament supported within said envelope, first and second pinch seals formed integrally with said envelope and closing respective ends of said envelope, electrical connections to respective ends of said filament sealed within said pinch seals, and first and second thermally-conductive ceramic housings substantially enclosing respectively said first and second pinch seals, said apparatus being adapted to constrain thermal radiation generated by said lamp to a predetermined region of said glass ceramic layer, said apparatus further including first and second thermally-conductive members located respectively in thermal contact with said ceramic housings and an undersurface of said glass ceramic layer so as to conduct heat, from said pinch seals in a substantially upward direction towards a region of said glass ceramic layer outside of said predetermined region.

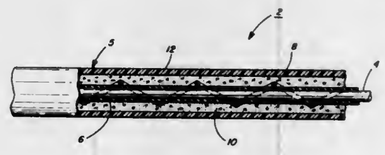
4,551,618
COOKING APPLIANCE INCORPORATING HEATER ENERGY COUNTER MEANS
Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Continuation-in-part of Ser. No. 334,039, Dec. 23, 1981, abandoned. This application Nov. 2, 1982, Ser. No. 438,622
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—510 **26 Claims**

1. An arrangement for monitoring the approximate temperature of a resistive heating element adapted for selective energization by a power signal from an external power supply at one of a plurality of power levels ranging from relatively low power levels, including an OFF level, to relatively high power levels, the heating element having a temperature response characterized by a transient heat-up phase followed by a steady state phase when the power level is changed from OFF to some other power level; and by a transient cool-down phase when the power level is changed from a relatively higher power level to a relatively lower power level, the temperature monitoring arrangement comprising:
energy counter means for approximately tracking the heating element temperature and
counter control means operative to selectively increment said energy counter means at an increment rate which is approximately proportional to the rate of increase of the heating element temperature during the heat-up phase for the applied power level, and to discontinue incrementing said energy counter means when said count at least equals a predetermined maximum count which is approximately proportional to the steady state heating element temperature for the selected power level; said counter control means being further operative to decrement said energy counter means when the power level selection is changed from a relatively higher power level to a relatively lower power



level at a decrement rate which is approximately proportional to the rate of decrease of the heating element temperature during its cool-down phase, and to discontinue decrementing sdid energy counter means when said count is less than a predetermined maximum count which is approximately proportional to the steady state operating temperature of the heating element at the selected relatively lower power level;
whereby the count of said energy counter means is approximately proportional to the temperature of the heating element. during the heat-up, steady state and cool-down phases of heating element operation.

4,551,619
CABLE STRUCTURE FOR IMMERSION HEATERS OR THE LIKE
Fredrick L. Lefebvre, 700 Solano Prado, Coral Gables, Fla. 33156
Filed Jan. 22, 1985, Ser. No. 693,149
Int. Cl.⁴ H05B *3/06*
U.S. Cl. 219—523 **12 Claims**



1. A flexible cable structure having a maximum diameter of $\frac{1}{8}$ inch adapted for use as an electric immersion heater having good temperature and corrosion resistent characteristics with the ability to be bent to a minimum radius, comprising an electric heater wire element adapted for connection to a power source, a sheath made from a relatively thin layer of fluoropolymeric material disposed in close fitting relation around said heater wire element throughout its length thereof, a conductive ground wire element disposed in spiral engagement with and extending substantially throughout the length of said sheath, an insulating barrier layer of high temperature insulation encapsulating said ground wire element substantially

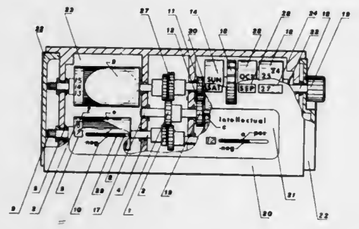
throughout its length thereof, and an outer tubular sheath made from a fluoropolymeric material disposed in encapsulating relation around said insulating barrier layer substantially throughout its length thereof to provide said cable structure.

4,551,620

BIORHYTHMS ANALOG COMPUTER-CALENDAR

Michael Rashev, 40 W. 72nd St., Apt. 31B, New York, N.Y. 10023

Filed Jun. 29, 1982, Ser. No. 393,398
Int. Cl.⁴ G04B *19/21;* **G06C** *3/00;* **G09D** *3/00;* **G01D** *13/08*
U.S. Cl. 235—1 C **7 Claims**



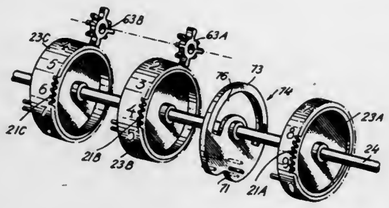
1. A biorythms multicycle analog computer-calendar displaying the level of the biorythms of the human body, comprising:
- a housing having at least one display window arranged to indicate at least one cycle of the human biorythms;
- three rotationally symmetrical bodies having driving means to rotate within said housing with fixed axes of rotation, each body comprising on its surface a closed loop curve to enclose said fixed axis of rotation;
- a calendar date arrangement to correllate in time the angular position of said rotationally symmetrical bodies;
- an actuating means to actuate in parallel the angular position of said bodies and said calendar date arrangement;
- a synchronizing means to synchronize the angular position of said rotationally symmetrical bodies and said calendar date arrangement;
- wherein each closed loop curve disposed on the surface of each body during its rotation projects through said at least one display window different parts of said curve, thus to constitute in time a sinusoidal-like mode of alteration of one of the biorythms of the human body and to correlate it to a given calendar time by means of said calendar date arrangement.

4,551,621

FLIP-OVER MECHANISM

Julio J. Bianchi, Lanus Oeste, Argentina, assignor to General Electric Company, Somersworth, N.H.

Filed Nov. 27, 1984, Ser. No. 675,190
Int. Cl.⁴ G06C *27/00*
U.S. Cl. 235—117 R **11 Claims**



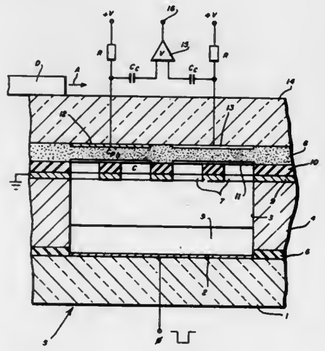
1. A flip-over mechanism for a cyclometer register of a type including at least first and second cyclometer drums rotatable on a drum shaft and a carry pinion for incrementing said second cyclometer drum, comprising:
- means for permitting said first cyclometer drum to be driven by an external device;
- a fly-wheel on said drum shaft;
- means on said fly-wheel for providing a predetermined amount of imbalance therein;
- engaging means on said first cyclometer drum and said fly-wheel for concertedly rotating said fly-wheel by said first cyclometer drum during a predetermined portion of a rotation of said first cyclometer drum;
- said engaging means including means for pemitting said fly wheel to perform a free forward rotation upon said shaft at a predetermined point in a rotation of said first cyclometer drum; and
- said fly-wheel including means for momentarily urging said carry pinion at an end of said free forward rotation whereby a substantially instantaneous carry is provided.

4,551,622

DOCUMENT SCANNING APPARATUS WITH PHOTOSENSOR AND GAS DISCHARGE READOUT

Dieter Fischer, Frankfurt, Fed. Rep. of Germany, assignor to Triumph-Adler Aktiengesellschaft fur Buro- und Informationstechnik, Nurnberg, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,660
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212302
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—211 R **3 Claims**



1. An apparatus for reading a relatively movable illuminated document comprising a line array of light responsive elements extending perpendicular to the direction of movement of said document, each of said light responsive elements comprising,
- a photo conductive layer having on a first side exposed to light reflected from said illuminated document a non-transparent output electrode and a transparent ouput electrode,
- a ground electrode spaced by an insulating layer from a second side of said photoconductive layer opposite from said first side,
- said ground electrode and said insulator layer having aligned perforations defining gas gaps,
- a gas discharge triggering electrode, and
- means defining a gas discharge chamber bounded by said triggering electrode and said ground electrode and said second side of said photoconductor via said gas gaps,
- a source voltage connected across said output and ground electrodes,
- means for supplying a voltage pulse to said triggering electrode to initiate a gas discharge in said gas discharge chamber whereby the discharge in said gas gaps effectively grounds the second side of said photoconductive

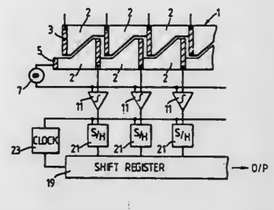
layer and said photoconductive layer charges to said source voltage from lower voltage levels corresponding to exposure to light in intervals between successive gas discharges,
- a differential amplifier, and
- means connecting the transparent and non-transparent electrodes to the input of said differential amplifier whereby an information signal at the output of said differential amplifier will be substantially free of transient and dark currents.

4,551,623

PHOTOCONDUCTIVE DETECTOR WITH AN A/C BIAS AND RESPONSIVITY DEPENDENT UPON THE POLARITY OF THE BIAS

Charles T. Elliott, and Anthony M. White, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 15, 1982, Ser. No. 441,867
Claims priority, application United Kingdom, Dec. 7, 1981, 8136751
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—211 R **10 Claims**



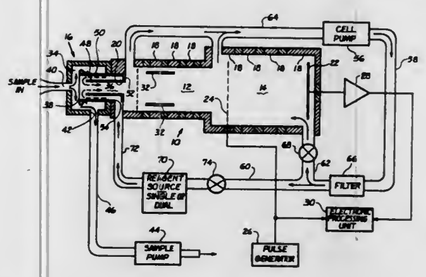
1. A photoconductive detector apparatus including:
- at least one photocondutive element arranged for a responsivity change with a change in bias voltage polarity,
- an AC bias source arranged for biassing said at least one photoconductive element, and
- an output circuit arraged to provide a response to a photoconductive element output signal component differing in frequency from that of the AC bias source.

4,551,624

ION MOBILITY SPECTROMETER SYSTEM WITH IMPROVED SPECIFICITY

Glenn E. Spangler, Lutherville, and John N. Cox, Baltimore, both of Md., assignors to Allied Corporation

Filed Sep. 23, 1983, Ser. No. 535,451
Int. Cl.⁴ B01D *59/44;* **G01N** *27/66*
U.S. Cl. 250—287 **34 Claims**



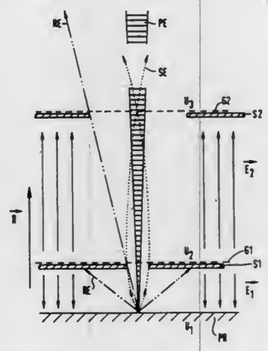
1. In an ion mobility spectrometer wherein a sample gas or vapor having at least one constituent to be detected and a carrier gas are injected into a reaction chamber thereof, and wherein the sample gas contains contaminants which reduce the specificity of the ion mobility spectrometer to the at least one constituent to be detected, an improvement characterized by:
- at least one reagent source for introducing a reagent into the carrier gas prior to being injected into the ion mobility spectrometer, and
- a reagent having a higher proton affinity, electron affinity, or acidity than said contaminants, a lower proton affinity, electron affinity, or acidity than said at least one constituent to be detected, and which does not cluster with water disposed in said reagent source.

4,551,625

SPECTROMETER OBJECTIVE FOR PARTICLE BEAM MEASUREMENT TECHNIQUE

Burkhard Lischke, and Erich Plies, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,605
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236271
Int. Cl.⁴ H01J *37/26*
U.S. Cl. 250—310 **10 Claims**



1. An improved arrangement for particle beam potential measurement having an electron probe objective lens for imaging primary particles on a specimen and a spectrometer for detecting secondary particles released from said specimen, the improvement comprising a first electrode means adjacent said specimen for accelerating said secondary particles and for focusing secondary particles along an optical axis, a second electrode means above said first electrode means for determining energy selection based on secondary particles passing along said optical axis, means for adjusting the voltage of the second electrode means which is in combination with a magnetic field of said objective lens between said first and second electrode means for focusing and retarding secondary particles on said second electrode means.

4,551,626

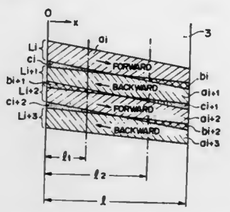
METHOD OF CORRECTING RADIATION IMAGE READ-OUT ERROR

Toshitaka Agano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 8, 1984, Ser. No. 618,859
Claims priority, application Japan, Jun. 9, 1983, 58-103067
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **5 Claims**

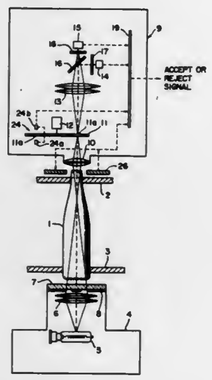
1. A method of correcting a radiation image readout error comprising the steps of:
- (i) scanning a stimulable phosphor sheet carrying a radiation transmission image stored therein by stimulating rays in forward and backward main scanning directions by use of galvanometer mirrors,
- (ii) photoelectrically detecting light emitted from said stimu-

lable phosphor sheet upon stimulation thereof by said stimulating rays scanning in the forward and backward main scanning directions and converting the emitted light into an electric image signal of said radiation transmission image at each position on scan lines in the forward main scanning direction and in the backward main scanning direction, and



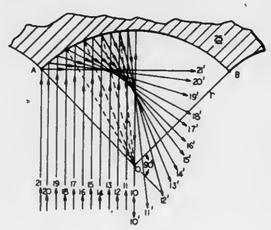
(iii) correcting said electric image signal by use of a correction coefficient predetermined for each position on said scan lines in the forward main scanning direction and in the backward main scanning direction in accordance with the deviation in position in a sub-scanning direction at each said position on said scan lines.

4,551,627
METHODS AND APPARATUS FOR DETECTING RESIDUAL LIQUID IN CONTAINERS
Frederich R. Reich, Richland, Wash., assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 1, 1983, Ser. No. 518,934
Int. Cl.⁴ G01F *23/28;* G01J *5/48*
U.S. Cl. 250—339 **9 Claims**



1. A method for detecting residual oil coexisting with water in a container, comprising the steps of:
(a) measuring optical transmittances of a combination of oil to be detected and a container wall and a combination of water coexisting with the oil to be detected and a container wall;
(b) selecting two optical pass-bands, one of which is relatively high transmittance level with respect to combination of the oil and the container wall while the other of which is relatively low transmittance level with respect to the same, and each of which is almost equal in transmittance level to each other with respect to the combination of water coexisting with the oil to be detected and the container wall;
(c) measuring light quantities at the two optical pass-bands when light passes through the bottom and necks of the container;
(d) converting the light quantities into respective two electric signals; and
(e) comparing one electric signal with respect to one pass-band with the other electric signal with respect to the other pass-band.

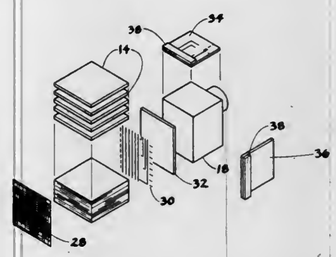
4,551,628
RADIATION DISPERSING CAVITIES
Jack J. Grossman, Manhattan Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Apr. 1, 1983, Ser. No. 481,164
Int. Cl.⁴ G01N *21/24*
U.S. Cl. 250—503.1 **21 Claims**



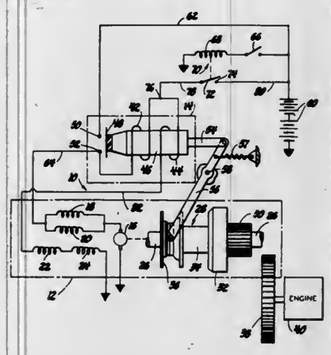
1. A cavity for the diffusion of radiation of a bandwidth having a maximum wavelength of about 100 microns comprising a cavity surface substantially covered by a plurality of interlocking deformations, each deformation being a surface of revolution whose axis is substantially normal to the cavity surface wherein the surface of revolution is formed by a conic such that a cross section containing the axis is a portion of the conic subtending an arc of from 10° to about 140° measured from the focus of the conic and the arc having an effective diameter measured across the end points of the arc wherein the ratio of the longest wavelength in the bandwidth to the arc diameter of a deformation is less than one-fifth and wherein the diameter of the cavity is at least five times the arc diameter of a deformation, wherein the cavity surface is characterized by a specific reflectivity for the bandwidth of the radiation wherein the cavity comprises an enclosed surface having at least one aperture to serve as inlet and outlet apertures such that a Lambertian distribution of radiation is produced and is accessible at the outlet aperture.

4,551,629
DETECTOR ARRAY MODULE-STRUCTURE AND FABRICATION
John C. Carson, Corona Del Mar, and Stewart A. Clark, Huntington Beach, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.
Continuation of Ser. No. 187,787, Sep. 16, 1980, abandoned. This application Jan. 23, 1984, Ser. No. 572,802
Int. Cl.⁴ G06K *9/28;* H05K *3/06;* H01L *21/90*
U.S. Cl. 250—578 **8 Claims**

1. A photo-detector array module comprising:
a plurality of integrated-circuit-providing semiconductor substrates of substantially identical dimensions stacked and secured together to form a multiple layer structure, one end of which terminates in a focal plane and the other end of which terminates in a back plane, the semiconductor substrates extending in layers perpendicular to the focal plane and back plane;
the focal plane end of each substrate having thereon a multiplicity of closely spaced electrical contact points provided by the ends of the metal leads formed as part of the integrated circuitry on the substrate, the electrical contact points on the focal plane end of each semiconductor substrate having a predetermined substantially exact spatial relationship with the electrical contact points on the focal plane end of the other stacked semiconductor substrates;
insulation layers between adjacent substrates to insulate the body of each substrate from adjacent substrates in the stack;
insulation covering the entire focal plane end of the stacked substrates except for the contact points thereon, and preventing current leakage between the contact points and the focal plane ends of the substrates;
the back plane end of each substrate having a multiplicity of electrical contact points thereon; and
insulation covering the back plane end of the stacked substrates except for the contact points thereon, and preventing current leakage between the contact points and the back plane ends of the substrates.

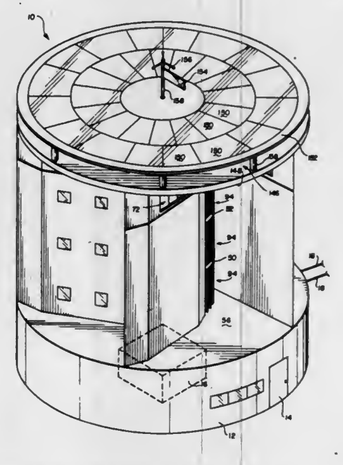


4,551,630
ELECTRIC STARTING SYSTEM
Daniel W. Stahura, Anderson, and Daniel D. Richey, New Castle, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 31, 1984, Ser. No. 615,799
Int. Cl.⁴ H02P *9/04*
U.S. Cl. 290—38 R **4 Claims**



1. An electric starting system for cranking an engine comprising, a source of direct voltage, an electric cranking motor having an armature, a series field winding and a shunt field winding, a shaft driven by said armature carrying a pinion that is adapted to be meshed with the ring gear of an engine to be cranked, a solenoid having a pull-in coil, a hold-in coil and a shiftable plunger, means connecting said plunger and pinion such that shiftable movement of said plunger causes said pinion to shift, a start switch, means connecting one side of said start switch to a first side of said voltage source, a first circuit connected between the opposite side of said start switch and a second side of said voltage source comprising in a series connection said solenoid hold-in coil and said shunt field winding, and a second circuit connected between said opposite side of said start switch and said second side of said voltage source, said second circuit connected in parallel with said first circuit and comprising in a series connection, said solenoid pull-in coil, said series field and the armature winding of said armature.

4,551,631
WIND AND SOLAR ELECTRIC GENERATING PLANT
Gaetano T. Trigilio, 5090 Arch St., Maple Hts., Ohio 44137
Filed Jul. 6, 1984, Ser. No. 628,271
Int. Cl.⁴ F03D *9/00, 7/06*
U.S. Cl. 290—55 **18 Claims**



1. A wind energy collection and conversion system, comprising:
(a) a base having a periphery;
(b) a turbine assembly rotatably supported on said base and said turbine assembly including a plurality of wind current engaging vanes so that wind current impinging on said vanes causes said turbine assembly to rotate;
(c) generator means operably connected to said turbine assembly for generating electric power while said turbine assembly is rotating;
(d) a plurality of support members spaced from said turbine assembly proximate said periphery and said support members extending upwardly generally from said base and generally parallel to the axis of rotation of said turbine assembly;
(e) a plurality of shutter assemblies spaced from said turbine assembly, each of said shutter assemblies disposed between and adjacent two of said support members;
(f) each of said shutter assemblies including a plurality of pivotal shutter means and the shutter means of a shutter assembly are mutually positionable between an open and a closed position for regulating the wind current flowing between the associated support members toward said turbine assembly;
(g) pivot drive means operably interconnecting each shutter means of a shutter assembly for simultaneously pivoting the shutter means of a shutter assembly and for thereby mutually positioning the shutter means of a shutter assembly between the open and closed positions;
(h) wind current direction sensing means;
(i) control means operably associated with said wind current direction sensing means and with each of said pivot drive means for causing the shutter means of each shutter assembly to be selectively positioned between the open and closed positions based upon the direction of the wind current and for thereby regulating the speed of rotation of said turbine assembly;
(j) a wall assembly outwardly extending a substantial dis-

tance from each of said support members for intercepting wind currents and for directing the wind currents generally towards an associated shutter assembly and said wall assemblies extending generally tangential to said periphery; and,

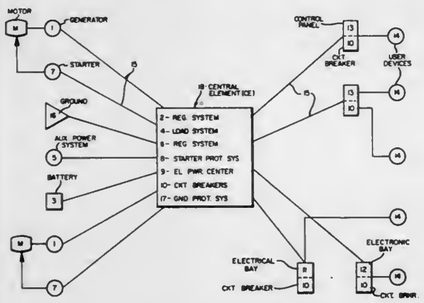
(k) a roof assembly connected to an upper end portion of said wall assemblies and substantially spanning the distance between said wall assemblies so that wind currents intercepted by said wall assemblies are directed toward said shutter assemblies.

4,551,632

SYSTEM FOR PRODUCING AND DISTRIBUTING ELECTRICAL ENERGY FOR VEHICLES PARTICULARLY AIRCRAFT, AS WELL AS AN ELECTRICAL POWER CENTER FOR SUCH A SYSTEM

Jean-Marie Jourdan, Puyricard; Jean Betelle, Toulouse, and Philippe M. M. Bougon, Le Tholonet, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Apr. 25, 1983, Ser. No. 488,345
Claims priority, application France, May 5, 1982, 82 07812
Int. Cl.⁴ H02G *3/08*
U.S. Cl. 307—9 **11 Claims**



1. In a system for producing and distributing electrical energy for aircraft having at least two motors, said system comprising at least two main generators of D.C. or A.C. type moved by the motors of the aircraft, at least one storage battery, starters for said motors, an electrical power centre formed by primary bars supplied from said main generators, primary contactors and primary circuit breakers, an assembly of secondary bars supplied from the primary bars, secondary contactors and secondary circuit breakers, an assembly of relay boxes and electrical bays, an assembly of electronic bays, control panels, user devices, as well as a plurality of regulating and/or protecting means for the generators, the battery and the starters, the improvement comprising a central unit grouping together said electrical power centre, a part of said assembly of circuit breakers and secondary contactors, and said regulating and/or protecting means, the rest of said assembly **10** of circuit breakers and secondary contactors being distributed bewteen the assembly of relay boxes and electrical bays, the assembly **12** of electronic bays and each of the control panels,

said central unit comprising:

as many primary bars of normal supply as there are generators, each of said primary bars of normal supply being supplied by one generator through means for protecting the latter and supplying at least one secondary bar of normal supply through a first primary circuit breaker;

a primary bar of essential and emergency supply connected to said battery through means for protecting and regulating the latter and to each of said primary bars of normal supply by a plurality of primary contactors and supplying a plurality of secondary bars of essential and emergency supply through the second primary circuit breakers; and

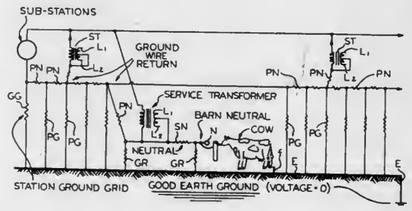
at least one secondary circuit breaker and one secondary contactor directly connecting a secondary bar to the battery.

4,551,633

ELECTRONIC GROUNDING SYSTEM FOR ELECTRICAL DISTRIBUTION SYSTEMS

David F. Winter, Kirkwood, and William K. Dick, St. Louis, both of Mo., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 508,060
Int. Cl.⁴ H04B *3/28;* **A01J** *3/00*
U.S. Cl. 307—147 **13 Claims**



1. A voltage compensating system for reducing the magnitude of stray voltage, with respect to true earth ground potential, on the grounded neutral conductor of an electrical distribution system, said system comprising:

means for providing a point of reference potential with respect to said ground potential;

amplifying means having a first input connected to said means and a second input for connection to said grounded neutral conductor for providing an output signal indicative of the difference between said stray voltage and said reference potential, said amplifying means having an output terminal adapted for connection to an external circuit and having output means for coupling said output signal between said second input and said output termnal; and,

means connecting between said output terminal and said true earth ground for providing an auxiliary ground path therebetween.

4,551,634

MULTIPLEXING INPUT CIRCUIT

Hitoshi Takahashi, Yokohama; Satoru Yamaguchi, and Hideo Nunokawa, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1983, Ser. No. 480,581
Claims priority, application Japan, Mar. 31, 1982, 57-051143
Int. Cl.⁴ H03K *17/60;* **H04J** *3/02*
U.S. Cl. 307—243 **6 Claims**

1. An input circuit for receiving an input signal and transferring the input signal to an internal circuit, the input circuit having a plurality of channels, one of the channels being selectively activated while the remaining channels are nonselected, each of the channels comprising:

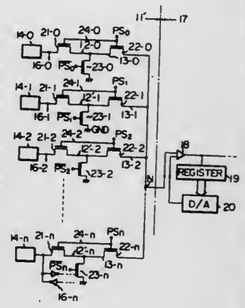
an input terminal for receiving the input signal;

an output terminal operatively connected to the internal circuit;

a first transistor having a current carrying path having a first end which is connected to said first input terminal, and having a second end;

a second transistor having a current carrying path having a first end connected to the second end of said current carrying path of said first transistor, and having a second end connected to said output terminal; and

a third transistor having a current carrying path having a first end connected to a connection point between the second end of said current carrying path of said first transistor and the first end of said current carrying path of



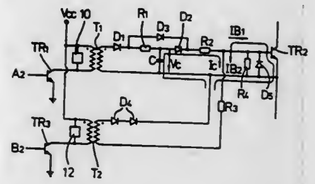
said second transistor, and having a second end connected to a predetermined constant voltage level.

4,551,635

CIRCUIT FOR DRIVING THE BASE OF A TRANSISTOR

Kazuo Kuroki, Tokyo, Japan, assignor to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Sep. 13, 1982, Ser. No. 417,205
Int. Cl.⁴ H03K *17/60, 3/26*
U.S. Cl. 307—254 **5 Claims**



1. A circuit for driving the base of a transistor by supplying a signal from a control circuit to the base in an insulating manner comprising:

a first pulse transformer having a primary winding and a secondary winding, the first transformer being responsive to a pulse string signal corresponding to an ON signal from the control circuit applied to its primary winding for alternatingly being energized and de-energized;

first circuit means coupled to the secondary winding for rapidly supplying a base drive current to the transistor while the first pulse transformer is energized;

second circuit means, including capacitor means and means for charging the capacitor means while the first pulse transformer is energized, coupled to first circuit means and supplying base current drive to the transistor when the capacitor means is charged and the first pulse transformer is de-energized; and

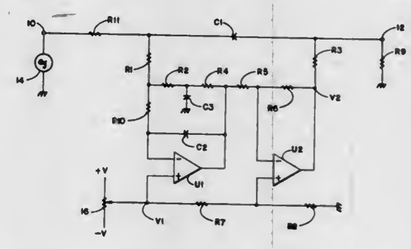
third circuit means including a second pulse transformer having a primary winding and a secondary winding, the second transformer being responsive to a pulse signal corresponding to an OFF signal from the control circuit applied to its primary winding for being energized, the secondary winding of the second transformer being coupled to the second circuit through one or more diodes for discharging the capacitor means and terminating the base current drive to the transistor when the second transformer is energized.

4,551,636

WIDE BANDWIDTH SIGNAL COUPLING CIRCUIT HAVING A VARIABLE VOLTAGE-LEVEL SHIFT FROM INPUT TO OUTPUT

Roland E. Andrews, Portland, and John L. Addis, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 25, 1983, Ser. No. 497,917
Int. Cl.⁴ H03K *5/00*
U.S. Cl. 307—264 **3 Claims**



1. A signal coupling circuit, comprising:

an input terminal and an output terminal;

a high-frequency signal transmission path comprising a capacitor coupled between said input terminal and said output terminal;

a low frequency signal transmission path comprising an operational amplifier and a differential amplifier connected in series between said input terminal and said output terminal; and

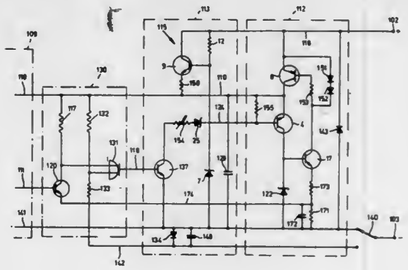
a variable DC voltage source coupled to said operational amplifier.

4,551,637

ELECTRONIC MONITORING SYSTEM WITH DIRECT-CURRENT POWER SUPPLY

Robert Buck, Neukirch, and Jean L. Lamarche, Langenargen, both of Fed. Rep. of Germany, assignors to IFM Electronic GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,122
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214835; Oct. 16, 1982, 3238396
Int. Cl.⁴ H03K *3/26*
U.S. Cl. 307—308 **17 Claims**



1. An electronic monitoring system comprising;

detector means sensitive to an ambient condition for generating on an output lead a binary signal alternating between a first and second value in response to significant changes in said ambient condition, said detector means being provided with a pair of power-input terminals;

a voltage-generating network provided with an incoming lead, an outgoing lead and a common lead, said outgoing and common leads being respectively connected to said power-input terminals;

a utilization circuit including a source of direct current in series with a load, said utilization circuit having a supply terminal of one polarity connected to said incoming lead and a supply terminal of the opposite polarity connected to said common lead; and

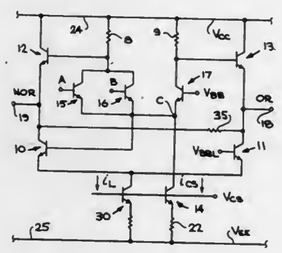
a binary switching circuit connected across said incoming and common leads, said switching circuit including a main electronic switch and an ancillary electronic switch, said main electronic switch having a control electrode coupled to said output lead, said ancillary electronic switch having a first electrode connected to said incoming lead, a second electrode connected to said outgoing lead and a third electrode connectable to said common lead under the control of said main electronic switch upon conduction thereof in response to a changeover of the output signal of said detector means from said first value to said second value thereof, said ancillary electronic switch becoming conductive concurrently with said main electronic switch in the presence of said second value for establishing two flow paths for additional load current, one of said flow paths extending via said second electrode to said outgoing lead, the other of said flow paths extending via said third electrode to said common lead, said voltage-generating network including current-limiting impedance means lying in parallel with said one of said flow paths between said incoming and outgoing leads.

4,551,638

ECL GATE WITH SWITCHED LOAD CURRENT SOURCE

Hemmige D. Varadarajan, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 19, 1983, Ser. No. 562,802
Int. Cl.[4] H03K *19/086*
U.S. Cl. 307—455 **10 Claims**



1. An emitter coupled logic gate having a true output and a complementary output, comprising:

a reference transistor having a base connected to a switch reference voltage supply line, a collector connected through a first collector resistor to a V_{CC} voltage supply line, and an emitter connected to a first common emitter node;

at least one input transistor, each having a base connected to a respective input node, a collector connected at a common collector node and through a second collector resistor to the V_{CC} voltage supply line, and an emitter connected to the first common emitter node;

a first emitter follower transistor having a base connected to the collector of said reference transistor, a collector connected to the V_{CC} voltage supply line, and an emitter connected to an output line supplying one output of the true or complementary outputs;

a second emitter follower transistor having a base connected to the common collector node of said at least one input transistor, a collector connected to the V_{CC} voltage supply line, and an emitter connected to an output line supplying the other output of the true or complementary outputs;

a main current source supplying a gate current at the first common emitter node;

a first load current source transistor having a base connected to a circuit node which experiences a voltage swing as the gate switches, a collector connected to the output line supplying said one output and an emitter connected to a second common emitter node, said voltage swing being out-of-shape with said one output as the gate switches;

a second load current source transistor having a base connected to a reference node suppling a load reference voltage, a collector connected to the output line supplying said other output, and an emitter connected to said second common emitter node;

a load current source supplying a load current at said second common emitter node; and

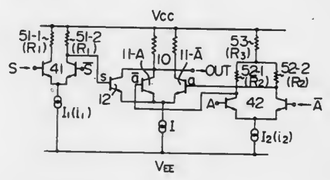
a resistor connected between the output line supplying said one output and the output line supplying said other output.

4,551,639

EMITTER COUPLED LOGIC CIRCUIT CONTROLLED BY A SET INPUT SIGNAL

Hirofumi Takeda, Yokohama, and Hirokazu Suzuki, Yamato, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 9, 1983, Ser. No. 502,560
Claims priority, application Japan, Jun. 29, 1982, 57-110619
Int. Cl.[4] H03K *19/086, 19/092, 3/023, 19/003*
U.S. Cl. 307—455 **13 Claims**



1. An emitter coupled logic circut, operatively connected to receive complementary logic input signals having high and low potentials, respectively, and a set input signal having a high potential side and a low potential side and being operatively connectable to first and second power supplies, said emitter coupled logic circuit having an output terminal and comprising:

a differential transistor pair, operatively connected between the first and second power supplies, one transistor of said differential transistor pair having a collector operatively connected to the output terminal for providing an output from the differential transistor pair, the transistors in said differential transistor pair having bases operatively connected to receive the complementary logic input signals as control input signals, respectively, said differential transistor pair having emitters coupled to each other; and

a set transistor having a base operatively connected to receive the set input signal as a control input signal, said set transistor being connected in parallel with said differential transistor pair,

a logic level of the high potential side of the set signal being higher than a logic level of the high potential of the complementary logic input signals by a first predetermined level difference, and

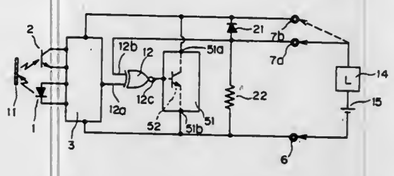
a logic level of the low potential side of the set input signal being lower than a logic level of the low potential of the complementary logic input signals by a second predetermined level difference.

4,551,640

DUAL ELECTRONIC SWITCHING DEVICE WITH REDUCED EXTERNAL TERMINALS

Toshifumi Fukuyama, Kyoto, and Kiyohide Okamoto, Otsu, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 597,561, Apr. 6, 1984, abandoned, which is a continuation of Ser. No. 274,074, Jun. 16, 1981, abandoned. This application Nov. 19, 1984, Ser. No. 672,171
Claims priority, application Japan, Jun. 16, 1980, 55-81103
Int. Cl.[4] H03K *19/21, 17/60*
U.S. Cl. 307—471 **12 Claims**



1. An electronic switching device energizable by connection to an external power source, said device being selectively operable in one of a normally open mode and a normally closed mode of operation depending on the connection to said external power source, comprising:

a plurality of external terminals for connection to said external power source and to an external load, said terminals including a first set of selectable terminals for selective connection to an external power source and a load, and a second set of selectable terminals for selective connection to an external power source and a load;

output circuit means for completing an electrical connection between said first or second set of selectable terminals, said output means having an open circuit state and a short circuit state;

logic circuit means connected to said output circuit means for forcing said output circuit means into said short circuit state or said open circuit state, said logic circuit means having two inputs and being responsive to signals received on said two inputs for forcing said output circuit means into one of said short circuit and open circuit states;

detection circuit means for generating a detection signal and supplying said detection signal to one of said inputs of said logic circuit to cause said logic circuit means to force said output circuit means to change from one of said open circuit and short circuit states to the other of said open circuit and short circuit states; and

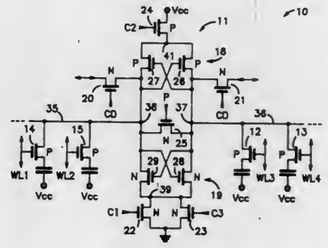
connection means disposed between said external terminals and said logic circuit means for feeding a signal to the other terminal of said logic circuit means to cause said logic circuit means to force said output circuit means normally into said open circuit state or said short circuit state in dependence on the set of selectable terminals chosen for connection to an external power source and a load, said connection means comprising a first polarity lead, means for connecting said first polarity lead to said first set of selectable terminals and said second set of selectable terminals to receive a first polarity voltage from an external power supply through either set of terminals, a second lead connected to said other input of said logic circuit means and to said output circuit, a resistor for connecting said second lead to said first polarity lead, means for connecting said second lead to said first set of selectable terminals for receiving a second polarity voltage when an external power supply is connected to said first set of selectable terminals and for passing current between said output circuit and said first set of selectable terminals; a third lead connected to said output circuit, and means for passing current between said third lead and said second set of selectable terminals, whereby an external power source may be connected to said first set of selectable terminals in series with a load to cause said output means to operate in one of the normally open and normally short circuit states, or can be connected to said second set of selectable terminals in series with a load to cause said output circuit to operate in the other of said normally open and normally short circuit states.

4,551,641

SENSE AMPLIFIER

Perry H. Pelley, III, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1983, Ser. No. 554,517
Int. Cl.[4] H03K *5/24;* **G11C** *7/06*
U.S. Cl. 307—530 **3 Claims**



1. A sense amplifier coupled to a pair of bit lines for sensing and amplifying a voltage differential between the pair of bit lines, comprising:

a first n channel transistor having a first current electrode coupled to a first bit line of the pair of bit lines, a control electrode coupled to a second bit line of the pair of bit lines, and a second current electrode;

a second n channel transistor having a first current electrode coupled to the second bit line, a control electrode coupled to the first bit line, and a second current electrode coupled to the second current electrode of the first transistor;

a third n channel transistor having a first current electrode coupled to the second current electrodes of the first and second n channel transistors, a control electrode for receiving a first signal, and a second current electrode coupled to a first power supply terminal;

a first p channel transistor having a first current electrode coupled to the first bit line, a control electrode coupled to the second bit line, and a second current electrode;

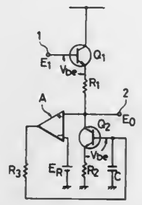
a second p channel transistor having a first current electrode coupled to the second bit line, a control electrode coupled to the first bit line, and a second current electrode coupled to the second current electrode of the first p channel transistor;

a third p channel transistor having a first current electrode coupled to the second current electrodes of the first and second p channel transistors, a control electrode for receiving a second signal, and a second current electrode coupled to a second power supply terminal; and

a fourth n channel transistor having a first current electrode coupled to the second current electrodes of the first and second n channel transistors, a control electrode for receiving a third signal, and a second current electrode coupled to the first power supply terminal;

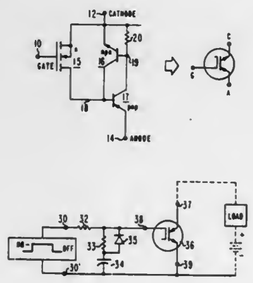
wherein the second signal switches to a logic low a predetermined time duration after the first signal switches to a logic high, and the third signal switches to a logic high a predetermined time duration after the second signal switches to a logic low.

4,551,642
LEVEL SHIFTING CIRCUIT
Koki Aizawa, and Akira Haeno, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Japan
Filed Mar. 4, 1983, Ser. No. 472,331
Claims priority, application Japan, Mar. 5, 1982, 57-30449[U]
Int. Cl.⁴ H03K *5/08;* **H03G** *3/20*
U.S. Cl. 307—552 **6 Claims**



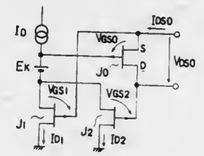
1. A level-shifting circuit, comprising; a first transistor for converting an input signal voltage into a current; a first resistor having one terminal connected to the emitter of said first transistor, for setting a current value for said first transistor; a second transistor having a collector connected to the other terminal of said first resistor at a connecting point, said second transistor including means as a current source and for supplying said current; a high-gain voltage amplifier having two input terminals and a output terminal, wherein, an input voltage at said connecting point of said first resistor and the collector of said second transistor is applied to one of said input terminals and a reference potential applied at another of said input terminals; and said output terminal of said high-gain voltage amplifier is coupled to the base of said second transistor through a low pass filter, said low-pass filter comprising a signal path between the output of said high-gain voltage amplifier and said base of said second transistor, and a capacitor coupled between said base of said second transistor and ground, said capacitor for grounding said base of said second transistor wherein the level shift is automatically varied with the input variation so that level shifted output is maintained at a constant potential approximately equal to said reference potential.

4,551,643
POWER SWITCHING CIRCUITRY
John P. Russell, Pennington, and Alvin M. Goodman, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Oct. 24, 1983, Ser. No. 545,047
Int. Cl.⁴ H03K *17/284, 17/30, 17/72*
U.S. Cl. 307—570 **4 Claims**



1. In combination:
a four-layered insulated-gate-controlled semiconductor device having gate, cathode and anode terminals, having a conduction path between said cathode and anode terminals and said device being characterized in that the level of its anode-to-cathode current is responsive to and monotonically controlled by, the gate-to-cathode potential for anode-to-cathode currents extending up to a given level; said device being nevertheless susceptible to latch-up for anode-to-cathode current below said given level when the rate of change of a turn-off potential applied to the gate is greater than a given value;
means for applying control potentials between said gate and cathode terminals; and
means coupled to said gate terminal for extending the anode-to-cathode current range, in which said device does not latch-up including means for limiting the rate of change of said gate-cathode control potentials having a polarity tending to turn-off said device, and to extinguish anode-to-cathode current conduction.

4,551,644
FIELD EFFECT TRANSISTOR GATE CIRCUIT FOR ANALOG SIGNALS
Eiji Nishimori, Kawasaki; Chikara Tsuchiya, Tokyo, and Yoshiaki Sano, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 31, 1983, Ser. No. 547,236
Claims priority, application Japan, Nov. 2, 1982, 57-192952
Int. Cl.⁴ H03K *17/16, 17/693*
U.S. Cl. 307—573 **7 Claims**

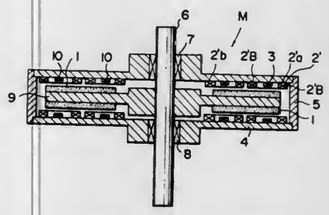


1. A field effect transistor gate circuit for analog signals comprising:
a first field effect transistor (FET) for switching ON and OFF an input signal;
a control voltage source for applying a control voltage for varying the gate voltage of said first FET and for controlling the conductance of said first FET;
a second FET for detecting the source voltage of said first FET and for keeping a variation of voltage between the gate and source of said first FET small when said first FET is in a conductive state;
a third FET for detecting the drain voltage of said first FET and for keeping a variation of voltage between the gate and drain of said first FET small when said first FET is in a conductive state; and
a constant current source for supplying a constant current to said second and third FETs.

4,551,645
DISC TYPE BRUSHLESS MOTOR
Yoshiteru Takahashi, Yamakita, and Masataka Ogawa, Atsugi, both of Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Jun. 3, 1982, Ser. No. 384,598
Int. Cl.⁴ H02K *37/00*
U.S. Cl. 310—46 **19 Claims**

1. A disc type brushless motor comprising a rotor means provided with a 2 m-pole field magnet consisting of north and south poles alternately positioned, wherein m designates a positive integer of 1 or larger, and a stator means provided with loop-like armature power windings in which the angle between the radial conductor sections of each armature power winding is approximately equal to the pole width of said field magnet, said armature power windings being flatly positioned opposite to said field magnet in quantity of two or more in the

circumferential direction of said stator means and in two stages or more in the radial direction thereof, said stator means being



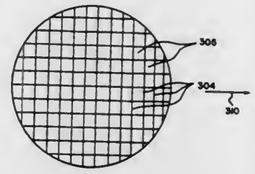
also provided with position detecting elements for detecting said poles of said field magnet.

4,551,646
DOUBLE COIL CONSTANT FORCE EXTENSION SPRING BRACKET
Gerald W. Brown, Christiansburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.
Filed Aug. 24, 1982, Ser. No. 411,076
Int. Cl.⁴ H02K *13/00*
U.S. Cl. 310—242 **9 Claims**



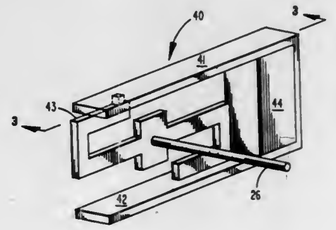
1. An improved brush holder assembly of the type having a brush connected to a shunt cap through a shunt and straddled by a constant force spring having two extendable coils, wherein the improvement comprises a spring bracket straddling the spring and a shunt cap and slidably engaging the coils of the spring so that the coils may be extended, a holder open on both ends into which said spring bracket is removably inserted so that the brush partially protrudes from one end of said holder, and a cap for closing the other end of said holder removably attached thereto, said spring bracket being comprised of a pair of arms slidably engaging the coils of the spring, the shunt cap having slots therein so that said spring bracket can straddle said shunt cap and yet hug said spring, and thereby the brush.

4,551,647
TEMPERATURE COMPENSATED PIEZOELECTRIC TRANSDUCER AND LENS ASSEMBLY AND METHOD OF MAKING THE ASSEMBLY
Robert A. Day, Livermore, Calif., assignor to General Electric Company, San Jose, Calif.
Filed Mar. 8, 1983, Ser. No. 472,871
Int. Cl.⁴ H01L *41/08;* **H04R** *17/00*
U.S. Cl. 310—335 **33 Claims**



1. An ultrasonic transducer comprising:
a piezoelectric crystal including first and second opposite crystal surfaces, the structure of said crystal being weakened in at least one of said surfaces in accordance with a predetermined line pattern;
at least one lens having a first lens surface conforming to said first crystal surface and being bonded thereto;
said conforming surfaces of said lens and said crystal having dissimilar coefficients of expansion in at least a first direction along said conforming surfaces;
said pattern having a predetermined orientation relative to said first direction; and
means for providing electrical connections to said first and second crystal surfaces respectively;
whereby said weakened crystal structure is adapted to relieve stress in said crystal caused by unequal expansion or contraction between said crystal and said lens in said first direction.

4,551,648
LINE CATHODE HEATER AND SUPPORT STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE
Robert A. Gange, Belle Mead, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Sep. 30, 1983, Ser. No. 537,816
Int. Cl.⁴ H01J *1/88*
U.S. Cl. 313—37 **3 Claims**



1. A heater and support structure for a line cathode comprising:
a pair of spaced heater electrodes, said heater electrodes having a resistance higher than the resistance of said cathode whereby current passing through said heater electrodes and said cathode causes heat generated in said

heater electrodes to compensate for heat loss from said cathode;

a cathode support member for supporting said cathode between said heater electrodes, said support member being configured as a substantially S-shaped member to compensate for thermal expansion whereby the positioning of said cathode remains substantially constant during temperature changes, said support member having a cathode retention portion in the proximity of the center and having coupling portions in the proximity of the open ends for coupling said support member to said heater electrodes.

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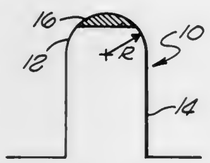
ROUNDED-END PROTUBERANCES FOR FIELD-EMISSION CATHODES

Roy E. Olson, Granada Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 8, 1983, Ser. No. 559,543

Int. Cl.[4] A47B *88/00*

U.S. Cl. 313—336 **7 Claims**



1. A field-emission device cathode comprising:

a cathode base member; and

a plurality of spaced protuberances extending from said base member, the tip of each said protuberance being a spherical zone, each spherical zone having a radius R which is approximately equal to $1/\beta$ where β is the field enhancement factor, said R being a value so that the operating point of the tip lies on a point on the curve of the log of emitter current density vs $(10^8/\beta V)$ well below the point at which impedance collapse occurs.

4,551,650

FIELD-EMISSION ION SOURCE WITH SPIRAL SHAPED FILAMENT HEATER

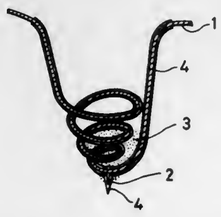
Tamotsu Noda, Toyohashi; Hifumi Tamura, Hachioji, and Hiroshi Okano, Ohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,642

Claims priority, application Japan, Nov. 24, 1981, 56-173288[U]

Int. Cl.[4] H01J *33/02, 49/10*

U.S. Cl. 313—362.1 **7 Claims**



1. A field-emission-type ion source comprising a needle-pointed emitter tip, a heater for heating said emitter tip and a material to be ionized, said heater being made from a spiral-shaped filament heater which is welded to said emitter tip, a reservoir set at the intersection of said emitter tip and said heater to store said material to be ionized, an extracting electrode situated at the front end of said emitter tip to extract ions of said material to be ionized from the end of said emitter tip which is wet by said melted material to be ionized, and a coating-layer which is made from a refractory substance which is anti-reactive with said material to be ionized and which is coated on the surface of said heater and said emitter tip, in order to prevent their reactions with said material to be ionized.

4,551,651

COLOR DISPLAY TUBE INCLUDING A SHADOW MASK SHEET WITH A BULGED PORTION

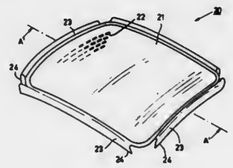
Robert F. L. M. van der Ven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 536,227, Sep. 27, 1983, abandoned, which is a continuation of Ser. No. 270,446, Jun. 4, 1981, abandoned. This application Aug. 20, 1984, Ser. No. 642,745

Claims priority, application Netherlands, Jun. 23, 1980, 8003608

Int. Cl.[4] H01J *29/02, 29/07*

U.S. Cl. 313—402 **9 Claims**





1. A color display tube comprising an envelope including a rectangular display window, a rectangular shadow mask sheet including an apertured portion, mounting means for attaching the sheet to the display window, and an electron gun system for directing a plurality of electron beams through the apertures to the display window, said mounting means comprising:

(a) peripheral sides of the shadow mask sheet, each side shaped such that it includes a bulged portion extending toward the display window and a terminating collar extending away from the display window, and such that the center of mass of each side, when viewed in a cross-section taken perpendicular to a longitudinal axis of the side, lies in a plane which is an extension of the apertured portion of the shadow mask sheet; and

(b) attachment members attached to the collars substantially along said planes.

4,551,652

DISPLAY SCREEN HAVING ALUMINUM PHOSPHATE BARRIER LAYER AND METHOD OF MANUFACTURE

Johannes M. A. A. Compen, and Cornelis Maan, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

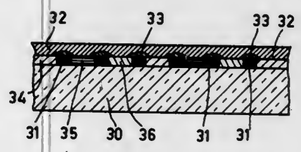
Filed Jun. 1, 1982, Ser. No. 383,844

Claims priority, application Netherlands, Jun. 3, 1981, 8102689

Int. Cl.[4] H01J *29/28, 29/10;* B05D *5/06*

U.S. Cl. 313—466 **7 Claims**

1. In a display tube comprising an envelope including a display window, a display screen disposed on an inner surface of said display window, and means for directing an electron beam at said screen, said display screen comprising at least one layer of a luminescent material deposited on said display window, at least one layer of a particulate carbon-containing material, and an electron permeable layer of an aluminum containing material deposited on said luminescent material,



the improvement comprising a layer of aluminum phosphate disposed between said carbon-containing material and said aluminum containing material.

4,551,653

PRODUCTION OF CORRECTION SIGNALS IN A COLOR CRT SYSTEM

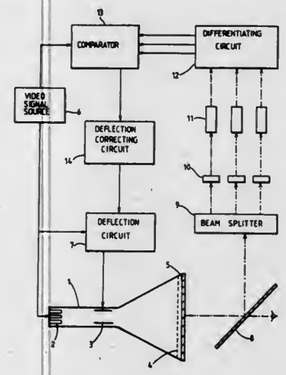
Cyril Hilsum, Middlesex, England, assignor to The General Electric Company, p.l.c., United Kingdom

Filed May 24, 1984, Ser. No. 613,967

Claims priority, application United Kingdom, Jun. 2, 1983, 8315183

Int. Cl.[4] H01J *31/26*

U.S. Cl. 315—10 **9 Claims**



1. A system including a color cathode ray tube (CRT) having electron gun means producing at least one electron beam; a display screen having at least two different color phosphors; means for applying color input signals to the electron gun means; one input signal for each different color phosphor; means for deflecting the electron beam across the screen; and means for utilizing correction signals to control the deflection of the electron beam so as to reduce deviations of color output signals from the CRT from color input signals to the CRT, wherein the improvement comprises having said deflection means including means for producing signals representing the respective light outputs from the different color phosphors substantially at the moment of impact of the electron beam in operation and means for comparing each said light output signal with said color input signals to the CRT to thereby provide correction signals indicative of deviations of said output signals from the corresponding input signals which said correction signals are utilized as aforesaid for controlling the deflection of the electron beam.

4,551,654

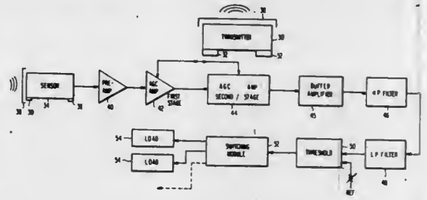
LIGHTING CONTROL SYSTEM AND METHOD

Charly Barnum, Saddle River, N.J., assignor to Kesser Electronics International, Inc., Totowa, N.J.

Continuation of Ser. No. 270,850, Jun. 5, 1981, abandoned. This application May 31, 1984, Ser. No. 615,545

Int. Cl.[4] H05B *37/02*

U.S. Cl. 315—159 **8 Claims**



1. A lighting system for a space comprising:

(a) a source of illumination for the space;

(b) a control circuit for said source of illumination;

(c) means for radiating electromagnetic energy at a predetermined ultrasonic frequency and at a generally constant amplitude into the space to be monitored;

(d) means for detecting electromagnetic energy reflected from the objects in the space, said energy being in the form of the radiated ultrasonic energy modulated by a signal representing any motion within the space, said means providing a first signal;

(e) means for automatically adjusting the amplitude of said first signal to within predetermined limits;

(f) means for filtering out the frequency components of the amplitude adjusted first signal other than the predetermined frequency; and

(g) means for detecting variations in the amplitude of said first signal in excess of said predetermined limit to generate a control signal in response thereto to energize and deenergize said illumination control circuit.

4,551,655

TELEVISION LINE DEFLECTION CIRCUIT

Franciscus W. A. Timmermans, Breda, Netherlands, and Frederik J. Van Roessel, Upper Saddle River, N.J., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,125

Claims priority, application Netherlands, Nov. 2, 1981, 8104947

Int. Cl.[4] H01J *29/56*

U.S. Cl. 315—370 **9 Claims**

1. A television line deflection circuit for deflecting an electron beam comprising:

a main deflection signal generator for supplying a line periodic pulse shaped voltage to a deflection coil;

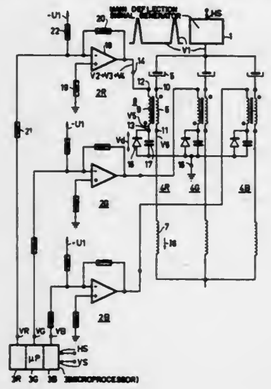
a transformer having a first and a second winding;

a deflection coil;

said main deflection signal generator, transformer first winding, and deflection coil connected to form a series circuit; and

an auxiliary deflection signal generator means for producing an auxiliary deflection current, having an amplifier circuit connected to a first end of said second winding to supply a line deflection correcting signal, and a second end of said second winding connected through a diode to a common terminal of said auxiliary deflection signal generator;

whereby said auxiliary deflection circuit in response to an input signal which changes level in steps, supplies a step-



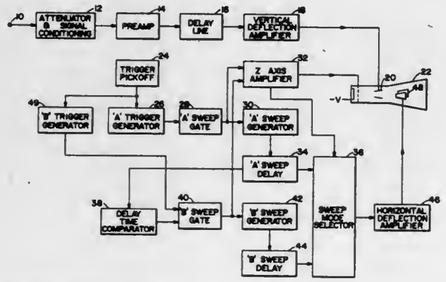
wise change in current in said deflection coil, correcting the linearity of line deflection of said electron beam.

4,551,656

OSCILLOSCOPE HAVING DUAL TIME BASE SYSTEM FOR ACCURATE DIFFERENTIAL TIME MEASUREMENT

Arthur J. Metz, Gervais, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 1, 1982, Ser. No. 437,971
Int. Cl.⁴ G01R *13/28*
U.S. Cl. 315—392 **15 Claims**



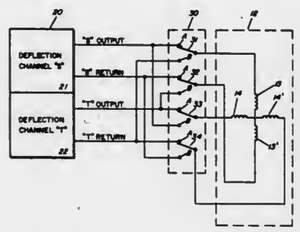
1. A time base system for an oscilloscope, comprising a first sweep generator for generating a first sweep ramp voltage;
means coupled to the output of said first sweep generator for shifting said first sweep ramp voltage in such a manner that a level comparison may be made on said first sweep ramp voltage after at least a predetermined time duration so as to effect a predetermined first delay thereof;
means for providing a second delay of said first sweep ramp voltage;
a second sweep generator responsive to said level comparison of said first delayed first sweep ramp voltage for generating a second sweep ramp voltage; and
means for selectively applying said second delayed first sweep ramp voltage and said second sweep ramp voltage to the horizontal deflection system of said oscilloscope.

4,551,657

FORMAT RECONFIGURABLE CRT DISPLAY

Gary Miller, Binghamton; Sam S. Jobes, Vestal, and David P. Benfey, Endwell, all of N.Y., assignors to General Electric Company, Binghamton, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,215
Int. Cl.⁴ H01J *29/70, 29/76*
U.S. Cl. 315—399 **3 Claims**



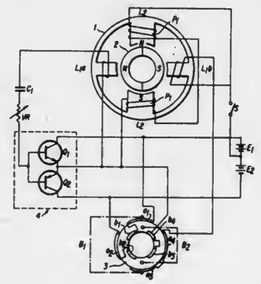
1. In an electronic display including a CRT having at least one electron beam and beam deflection means including horizontal and vertical deflection means for deflecting said electron beam in orthogonal directions;
(a) means for generating horizontal and vertical deflection signals, the slew rates of said horizontal signal being greater than that of said vertical deflection signal;
(b) means for coupling the horizontal signal to the horizontal deflection means and the vertical signal to the vertical deflection means;
(c) means for maintaining the display format in the same spatial orientation with a change in physical orientation of the CRT and its deflection means, or to reorient the spatial display format without changing the physical orientation of the CRT, including;
(d) means for switching signals between the horizontal and vertical deflection means to maintain the different sweep rates aligned along the same spatial orthogonal axes even though the physical orientation of the CRT and the deflection means has been changed.

4,551,658

D.C. MOTOR WITH CENTRIFUGAL SEPARATION STARTING BRUSH

Byung Y. Rhee, 103-5, 4th Dongsandong, Gurogu, Seoul, Rep. of Korea

Filed Dec. 7, 1982, Ser. No. 447,632
Claims priority, application Rep. of Korea, Dec. 8, 1981, 4777
Int. Cl.⁴ H02P *1/22, 6/02;* **H02K** *23/24*
U.S. Cl. 318—254 **5 Claims**



1. A D.C. motor comprising:
a rotor made of a permanent magnet:
a stator having two driving coils, a starting coil and an induction sensing coil;

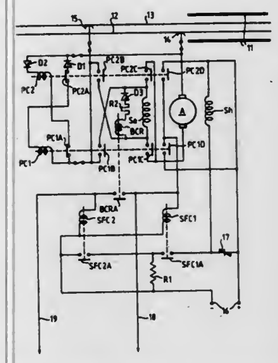
said driving coils being arranged on diametrically opposite sides of the stator;
said starting coil being arranged at 90 degrees from each of said driving coils;
said induction sensing coil being arranged at 90 degrees from each of said driving coils and 180 degrees from said starting coil;
a commutator being fixedly connected to said stator;
a brush mounted on said rotor and moving in synchronism therewith, said brush being pivotally mounted so as to be in contact with said commutator when moving at slow speeds, but pivoting out of contact with said commutator when moving at higher speeds; and
wherein said induction sensing coil is connected to a capacitor which received charging the discharging current from said induction coil caused by the rotation of the magnetic field of said rotor through said coil.

4,551,659

TRACKSIDE-CONTROLLED ELECTRIC RAILWAY SYSTEMS

John D. Markham, 58 Dunkirk St., Droylsden, Manchester, England (M35 7DZ)

Filed Oct. 11, 1983, Ser. No. 540,488
Claims priority, application United Kingdom, Oct. 11, 1982, 8228981
Int. Cl.⁴ H02P *3/00*
U.S. Cl. 318—258 **11 Claims**



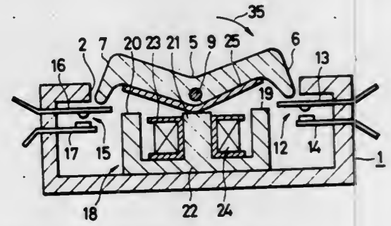
1. A trackside-controlled electric locomotive incorporating the combination of:
first and second current pick-up means for movable engagement with first and second stationary power-supply conductors,
a d.c. electric traction motor comprising an armature, a series field winding and a shunt winding, the armature having a first current supply connection connected to the first said pick-up means and a second current supply connection, a shunt-winding exciting circuit, including an on-board d.c. power supply,
first switch means responsive to the occurrence of a warning signal applied to the stationary power-supply conductors and indicative of the polarity of a d.c. power supply to be applied to such conductors and thereby to the said pick-up means, said first switch means being arranged, in response to said warning signal, to connect the series winding between the second said pick-up means and the said second current supply connection of the armature, and responsive to the indicated polarity sense for the d.c. power to be applied to make such connection in the corresponding sense such that magnetic flux produced by the series winding due to current flowing therein in the direction corresponding to such voltage polarity is additive to magnetic flux produced by the shunt winding when excited by the onboard d.c. power supply, and
a polarity-sensitive bypass circuit connected in parallel across the series winding and providing a low-impedance series-winding bypass for current flow in the direction against said voltage polarity.

4,551,660

MOTOR CONTROLLING SWITCH DEVICE

Masaru Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Filed Jul. 3, 1984, Ser. No. 627,638
Claims priority, application Japan, Jul. 4, 1983, 58-121466
Int. Cl.⁴ H02P *1/22;* **H01H** *71/18, 83/22*
U.S. Cl. 318—293 **11 Claims**



1. A motor controlling switch comprising:
a. a casing;
b. an operating member provided in said casing wherein said operating member is movable between a primary position and an operating position;
c. a switch located in said casing wherein when said operating member is in an operating position said switch is in the on position;
d. an electromagnetic device located in said casing, said electromagnetic device being connected to said switch, wherein said electromagnetic device holds said operating member in an operating position after said operating member has been moved to an operating position;
e. a restoring member located between said casing and said operating member wherein said restoring member is deformed when said operating member is in an operating position, and said restoring member is a material which restores said restoring member to a normal shape when heated with an electric current.

2. A motor controlling switch, comprising:
a. a casing;
b. first and second pair of electrical switch contacts in said casing;
c. a knob pivotally mounted in said casing for operating said first and second pair of electrical switch contacts;
d. first and second means for biasing said knob in a primary position, said first and second biasing means being coupled in series electrically to said first and second pair of electrical switch contacts, respectively;
e. a magnetically attractive piece mounted under said knob; and
f. means located under said knob for generating a magnetic field for holding said knob in a depressed position.

4,551,661

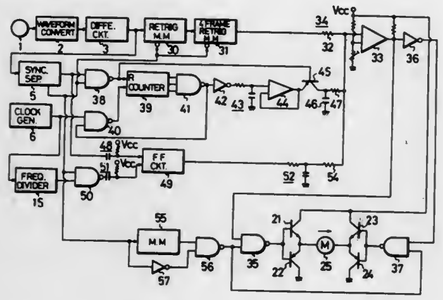
DRIVING APPARATUS FOR A RECORDING MEDIUM

Shigeaki Wachi, Higashikurume, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,977
Claims priority, application Japan, Oct. 14, 1982, 57-180222
Int. Cl.⁴ G05B *5/00*
U.S. Cl. 318—314 **5 Claims**

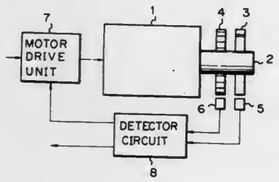
1. Driving apparatus for use with a record medium having a signal recorded thereon, said signal including a periodic syn-

chronizing signal of a first frequency, said apparatus comprising:
motor means for driving said record medium;
sync signal reproducing means for reproducing said synchronizing signal;
clock means for generating clock pulses having a second frequency substantially higher than said first frequency;
counter means for counting said clock pulses from said clock means to a preset value n, n being less than said second frequency divided by said first frequency, said counter means producing a digital output signal and being reset by said synchronizing signal;



circuit means coupled to said counter means for producing an analog output signal which corresponds to a time interval from the time when said counter means reaches said preset value n to the time said counter means is reset, said circuit means comprising inverter and integrator means responsive to said digital output signal from said counter means to produce an integrated signal and sample-and-hold means for sampling and holding said integrated signal; and
comparator means for comparing said analog output signal with a reference signal to produce a control signal for controlling said motor means to drive said record medium at a constant linear speed relative to a pickup device.

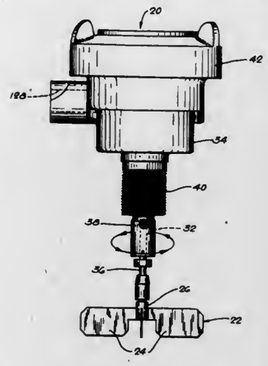
4,551,662
MOTOR SPEED DETECTING DEVICE
Hiroshi Ishida, Tokyo, and Mitsuyuki Taniguchi, Hino, both of Japan, assignors to Fanuc Ltd, Yamanashi, Japan
PCT No. PCT/JP84/00358, § 371 Date Mar. 6, 1985, § 102(e) Date Mar. 6, 1985, PCT Pub. No. WO85/00430, PCT Pub. Date Jan. 31, 1985
PCT Filed Jul. 11, 1984, Ser. No. 711,535
Claims priority, application Japan, Jul. 11, 1983, 58-124822
Int. Cl.⁴ H02P *5/00*; G05B *5/00*
U.S. Cl. 318—316 **1 Claim**



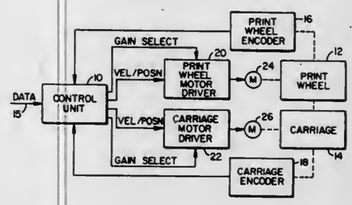
1. A motor speed detecting device comprising:
a first slotted disc composed of ferromagnetic material, having one slot and being mounted on the rotational shaft of a motor driven by a motor drive unit;
a second slotted disc composed of ferromagnetic material, having a plurality of slots;
a first magnetic sensor mounted in close proximity to said first slotted disc, for outputting a first pair signals having a phase difference in response to the width of said slot by one half;
a second magnetic sensor mounted in close proximity to said second slotted disc, for outputting a second pair of signals having a phase difference in response to the width of said slot by one half, and also for outputting a third pair of signals inverted with respect to said second pair of signals; and
a detector circuit for receiving the outputs of said first and second magnetic sensors and for detecting said outputs;
said detector circuit comprising:
a first differential amplifier circuit for counting the difference between said first pair of signals from said first magnetic sensor;
a first comparator circuit for comparing the output from said first differential amplifier circuit with a reference voltage;
a second differential amplifier circuit and a third differential amplifier circuit for receiving respectively said second and third pairs of signals having an opposite phase relationship to each other from said second magnetic sensor and counting the difference therebetween;
a vector synthetic comparator circuit for receiving the outputs of said second and third differential amplifier circuits and searching for the signals having each phase angle of 0, 22.5, 45, 67.5, 90, 112.5, 135 and 157.5 degrees at a phase difference of 22.5 degrees respectively, when the phase angle of the output waveform of the magnetic sensor in response to the width of said slot is 180 degrees, then comparing said signals with the reference voltage to make a series of eight rectangular waves;
a logic circuit for operating the output of said vector synthetic comparator circuit logically;
a first inverting amplifier circuit for inverting and amplifying the output of said second differential amplifier circuit; and
a second inverting amplifier circuit for inverting and amplifying the output of said third differential amplifier circuit;
wherein the sinusoidal wave outputs of said first and second inverting amplifier circuit are rendered to control said motor through said motor drive unit and to provide one pulse per one revolution of said rotational shaft to the output of said first comparator circuit, to provide a rectangular wave of the frequency four times as large as the frequency corresponding to the number of slots of said second disc to the output of said logic circuit and to provide a rectangular wave having a one quarter period of phase difference from said rectangular wave.

4,551,663
LEVEL CONTROL DEVICE
George E. Gruber, Port Sanilac, Mich., assignor to Ludlow Industries, Inc., Elburn, Ill.
Filed Aug. 1, 1984, Ser. No. 636,545
Int. Cl.⁴ H01H *35/00*
U.S. Cl. 318—482 **20 Claims**

1. A level control device, comprising
a housing,
shaft means rotatable in said housing and having a projecting portion extending from said housing,
paddle means on said projecting portion for engagement by rising material whose level is to be controlled,
the rotation of said paddle means being impeded by the drag caused by the rising material,
a carrier in said housing and mounted on said shaft means for rotation therewith,
a plurality of levers swingably mounted on said carrier,
an electrical drive motor in said housing and having a motor output shaft disposed generally in axial alignment with said shaft means,
drive means including a plurality of drive elements mounted on said motor output shaft and rotatable therewith,
said levers having respective first arms engageable with said drive elements for transmitting driving torque to said levers and then to said carrier,
a control plate adjacent said carrier and movable toward and away from said carrier,
spring means biasing said control plate towards said carrier and causing said control plate to rotate with said carrier,
said levers having respective second arms disposed between said carrier and said control plate for moving said control plate away from said carrier when the driving torque transmitted by said first arms increases due to increasing drag on said paddle means caused by the rising material,
and control switch means engageable by said control plate and operable in response to movement of said control plate away from said carrier.

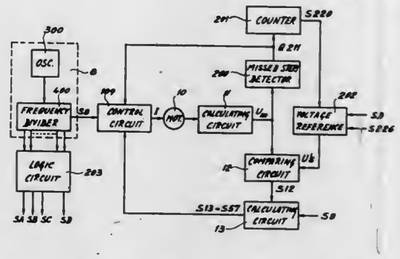


4,551,664
VELOCITY-POSITION SERVO WITH IMPROVED GAIN CONTROL
Harvey C. Wong, Kensington, and Frank W. Lin, Los Altos, both of Calif., assignors to Mechatron Systems, Inc., Sunnyvale, Calif.
Filed Sep. 27, 1983, Ser. No. 536,553
Int. Cl.⁴ G05B *11/18*
U.S. Cl. 318—592 **10 Claims**



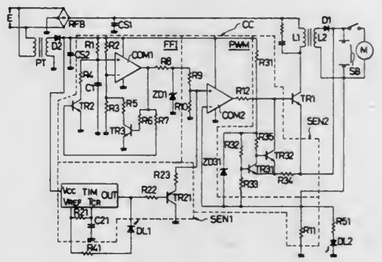
1. A method for operating a rotary printer dual mode servo system having a velocity mode and a position mode, said method comprising the steps of:
(a) operating said servo system in the velocity mode with a first relatively high gain;
(b) switching said servo system to the position mode;
(c) operating said servo system in said position mode at said relatively high gain for a maximum predetermined time period; and
(d) reducing the gain of said servo system to a relatively low value after said maximum predetermined time period has elapsed without resumption of said velocity mode.

4,551,665
METHOD OF AND A DEVICE FOR CONTROLLING A STEPPING MOTOR
Luciano Antognini, La Chaux-de-Fonds, Switzerland, and Yves Guérin, St. Louis, France, assignors to ETA S.A. Fabriques D'Ebauches, Switzerland
Filed Jul. 31, 1984, Ser. No. 636,426
Claims priority, application Switzerland, Aug. 12, 1983, 4412/83
Int. Cl.⁴ H02K *29/04*
U.S. Cl. 318—696 **17 Claims**



1. A method of controlling a stepping motor having a rotor and a coil arranged to receive from a control device associated with the motor normal drive pulses for driving the rotor when the control device is supplied with a voltage, said method comprising measuring during each normal drive pulse a physical magnitude representative of the motion of the rotor, interrupting said drive pulse at an instant determined by the time taken by the physical magnitude to reach a reference level, and, additionally, detecting whether or not the rotor has rotated in response to said normal drive pulses and modifying said reference level according to information provided by such detection.

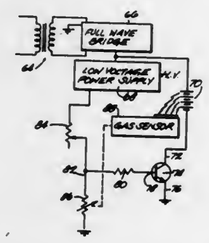
4,551,666
QUICK CHARGING APPARATUS
Sumio Wada, Yahata, and Satoru Inakagata, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 9, 1983, Ser. No. 502,548
Claims priority, application Japan, Jul. 31, 1982, 57-134509
Int. Cl.⁴ H02J *7/00*
U.S. Cl. 320—20 **5 Claims**



1. A quick charging apparatus comprising means for feeding power from a apower source to a substantially dead secondary battery, a charge controlling means associated with said power feeding means and including means for adjusting fed power energy, means associated with said charge controlling means for feeding to said secondary battery a first average charging current of a relatively high level in a relatively short time so as to charge the battery with a required amount of energy for performing a single operation of an electric appliance to which said apparatus is applied, and means associated with the charge

controlling emans for feeding to the battery a second average charging current of a relatively low level in a relatively long time so as to charge the battery to a level at least 80% of a fully chargeable amount of energy; said means for feeding said first average charging current including a first sensor for detecting said required amount of energy for said single operation in said secondary battery, and said means for feeding said second average charging current including a second sensor for detecting the amount of charge in the secondary battery.

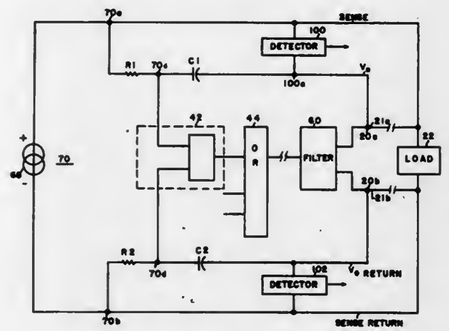
4,551,667
GAS CONTROLLED BATTERY CHARGING SYSTEM USING A GAS DETECTOR
Gerald N. McAuliffe, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jul. 7, 1983, Ser. No. 511,530
Int. Cl.[4] H02J *7/04*
U.S. Cl. 320—46 **8 Claims**



6. A device for controlling charging of a battery which gives off gas when more current is applied than is necessary for charging purposes, said device comprising means for generating a fixed control ramp waveform, electric circuit means for applying D.C. charging current to the battery, means including a resistance which changes as the gas concentration changes and connected in said circuit means for developing a control voltage varied by said resistance to progressively decrease the effective current applied to the battery as the gas concentration increases, and a comparator circuit comparing said control voltage and said ramp waveform and having an output signal which, when the ramp waveform exceeds the control voltage from the gas responsive means, causes said circuit means to apply the charging current to pass current to the battery.

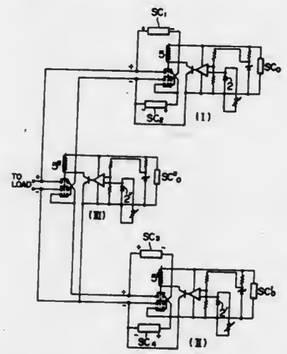
4,551,668
VOLTAGE SENSING AT LOADS REMOTELY CONNECTED TO POWER SUPPLIES
Neil A. Kammiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio
Division of Ser. No. 402,634, Jul. 28, 1982, abandoned. This application Apr. 23, 1984, Ser. No. 603,139
Int. Cl.[4] G05F *1/46*
U.S. Cl. 323—234 **6 Claims**

1. A circuit for sensing a break in at least one of a pair of sense leads in a power supply of the type which regulates the voltage at a remotely located load connected to said supply at its pair of output terminals said sense leads being connected to sense the voltage at said load, said circuit comprising:
(a) current source means connected to said sense leads to provide a current of predetermined polarity thereon;
(b) first detector means connected between one of said sense leads and one of said output terminals for generating a signal when said one sense lead is broken; and



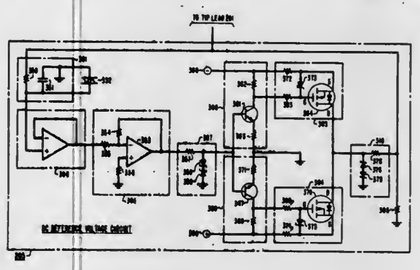
(c) second detector means connected between the other of said sense leads and the other of said output terminals for generating a signal when said other sense lead is broken.

4,551,669
PACKAGED SOLAR CELL APPARATUS
Hiroyasu Itoh, Kariya; Yasutoshi Suzuki, Oobu; Yasuhiro Horiuchi, and Kunihiko Hara, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Sep. 30, 1983, Ser. No. 537,717
Claims priority, application Japan, Oct. 1, 1982, 57-171030
Int. Cl.[4] G05F *1/46*; H01L *27/14*
U.S. Cl. 323—268 **1 Claim**



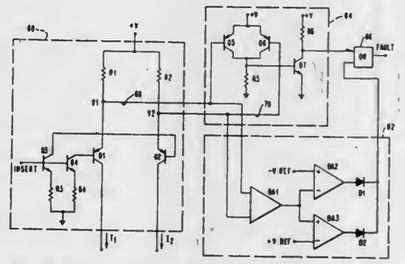
1. A packaged solar cell apparatus comprising: a plurality of package units each one of said package units including:
(a) at least two sunlight electric generating means for converting sunlight into electrical energy;
(b) light intensity detector means including a photoelectric element for supplying an output voltage indicative of the intensity of sunlight to a load resistor connected to said photoelectric element and for producing an output signal formed by a voltage appearing across said load resistor;
(c) comparator means for comparing the output signal of said light intensity detector means with a reference voltage level to produce an output signal indicative of a result of the comparison;
(d) switching means for automatically switching the connection of said at least two sunlight electric generating means in accordance with the output signal of said comparator means; and
(e) third sunlight electric generating means, separate from said at least two sunlight electric generating means, for actuating said switching means;
each of said package units having a light intensity self-deciding function for connecting said at least two sunlight electric generating means in series with each other when the output signal of said light intensity detector means has a level higher than the reference voltage level and for connecting said at least two sunlight electric generating means in parallel with each other when the output signal of said light intensity detector means has a level lower than the reference voltage level, thereby driving a desired electric load with maximum output electrical energy from said at least two sunlight electric generating means in response to the sunlight intensity detected by said light intensity detector means;
said packaged solar cell apparatus including a plurality of packaged units being constructed so that at least two packaged units therein are incorporated with a separate set of said switching means, said third sunlight electric generating means, said light intensity detector means and said comparator means which switches said at least two packaged units, thereby forming a packaged unit of a greater scale, and repeated formation and interconnection of said packaged units of a greater scale resulting in a large scale cell apparatus whereby said resultant large scale solar cell apparatus drives the desired electric load with maximum output electrical energy therefrom in response to a distribution of the sunlight intensity detected by said respective light intensity detector means.

4,551,670
CIRCUIT FOR MAINTAINING THE DC VOLTAGE ON AN ELECTRICALLY ISOLATED TELECOMMUNICATION LINE AT A REFERENCE LEVEL
James V. Anders, Lisle; Thomas W. Anderson, Warrenville; Daniel D. Geiger, West Chicago, and George F. Turnpaugh, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 19, 1984, Ser. No. 602,148
Int. Cl.[4] G05F *1/46*
U.S. Cl. 323—281 **20 Claims**



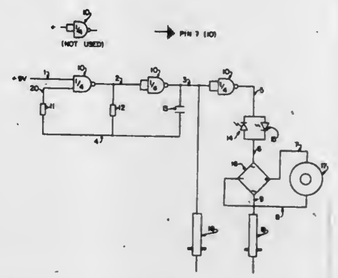
1. A circuit for maintaining the DC voltage on an electrically isolated line at a reference level, comprising:
filter means for passing only the voltage on said line below a predetermined frequency,
difference means for subtracting the passed voltage from a reference voltage at said reference level to form a difference voltage,
first voltage-to-current means for sourcing current to said line to maintain the DC voltage on said line at said reference level when the polarity of said difference voltage is positive, and
second voltage-to-current means for sinking current from said line to maintain the DC voltage on said line at said reference level when the polarity of said difference voltage is negative.

4,551,671
TERMINAL DISCONNECT AND MEDIA WIRE FAULT DETECT MECHANISM
Eugene J. Annunziata, and Thomas E. Stammely, both of Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 23, 1983, Ser. No. 507,252
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—51 **14 Claims**



1. An apparatus for testing and detecting wire faults in a local area network comprising:
a first circuit means operable to generate a pair of reference voltages;
electrical load means operable to control the magnitude of the reference voltages;
electrical conductor means operable to interconnect each of the reference voltages to the electrical load means; and
circuit means operable positioned for monitoring the reference voltages and to generate an error signal in the event that the magnitude of current flow in the conductor means exceeds a predetermined value.

4,551,672
ACTIVE PROBE
Russell F. Hadley, 5101 Fedora, Troy, Mich. 48098, and Carl W. Kovacs, 409 Curry, Royal Oak, Mich. 48067
Filed Dec. 19, 1983, Ser. No. 475,303
Int. Cl.[4] G01R *31/02, 31/08*
U.S. Cl. 324—133 **1 Claim**



1. An apparatus for screen testing and troubleshooting components, said apparatus comprising:
first circuit means, for generating a reversing voltage, consisting of one IC, two resistors and a capacitor;
probe means for applying said reversing voltage to a component under test and for carring current to said component under test;
light-emitting diodes means, in series with said probe means, for indicating current flow direction and for identification of undirectional components;
bridge rectifier means, in series with said probe means, for

generating a DC current in proportion to the current at the component under test;

audio buzzer means, for generating a sound in proportion to said current at the component under test, said audio buzzer means being energized by said bridge rectifier means.

4,551,673

TESTING ARRANGEMENT FOR PRINTED CIRCUIT BOARDS

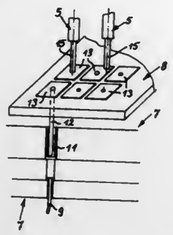
Hans Barth, Schallstadt, and Manfred Prokopp, Wertheim-Waldenhausen, both of Fed. Rep. of Germany, assignors to Riba-Prüftechnik GmbH, Schallstadt-Wolfenweiler, Fed. Rep. of Germany

Filed Sep. 30, 1981, Ser. No. 307,026

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1980, 3038665

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—158 F **52 Claims**



1. An arrangement for testing a printed circuit board having printed conductor locations to be contacted during testing, said arrangement comprising:

(a) a plurality of contact members each of which is arranged to engage a respective printed conductor location;

(b) a corresponding plurality of leads for establishing electrical communication with a tester for the printed circuit board;

(c) support means intermediate said leads and said contact members, said support means having a surface which faces said contact members, and said surface having a plurality of spaced, substantially flat contacts arranged on a grid of predetermined area and each being in electrical communication with a respective contact member, said support means being replaceable to permit conversion of said arrangement from the testing of a printed circuit board with one distribution of printed conductor locations to the testing of a printed circuit board with another distribution of printed conductor locations, and a different one of said contacts being disposed at each intersection of said grid, said contacts having respective areas which are so large that the total area of said contacts significantly exceeds 50% of said predetermined area, and the width of the gap between each pair of neighboring contacts is significantly less than one-half of the dimensions of the respective contacts as measured along a direction bridging the gap; and

(d) a plurality of conducting elements each of which connects one of said contacts with a respective lead.

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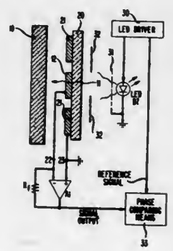
NONCONTACTING CONDUCTIVITY TYPE DETERMINATION AND SURFACE STATE SPECTROSCOPY OF SEMICONDUCTOR MATERIALS

Gabriel L. Miller, Westfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 12, 1982, Ser. No. 441,366

Int. Cl.⁴ G01R *31/26*

U.S. Cl. 324—158 R **15 Claims**



4. A method for capacitive conductivity type determination of at least a part of a sample of semiconductor material, the method comprising

(a) providing a source of above-bandgap amplitude modulated electromagnetic radiation, the amplitude varying periodically at a reference frequency;

(b) placing an electrode in proximity to, but spaced apart from, a surface of the sample, the electrode comprising a first electrode region and a second electrode region, at least the first electrode region being substantially transparent to the radiation, the first electrode region being conductively isolated from the second electrode region;

(c) irradiating, through the first electrode region, a part of the sample surface with the radiation, whereby the surface potential of the part of the sample surface is caused to vary at the reference frequency, substantially all of the irradiated surface part being directly facing the first electrode region and substantially none of the irradiated part being directly facing the second electrode region;

(d) providing, by conductive connection to the first electrode region, an electrical signal that is varying at the reference frequency, and, by conductive connection to the second electrode region, a reference voltage;

(e) providing a reference signal having substantially fixed phase relationship with the periodic amplitude variation of the radiation; and

(f) comparing the phase of the difference between the signal and the reference voltage to the phase of the reference signal, thereby determining the conductivity type.

4,551,675

APPARATUS FOR TESTING PRINTED CIRCUIT BOARDS

George Heys, Cambridge, and Dennis R. Coon, Byesville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1983, Ser. No. 562,795

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—158 F **4 Claims**

1. An apparatus for making temporary electrical connections to a plurality of electrical contact points on a surface of a printed circuit board or the like having said contact points arranged in an irregular pattern peculiar to a particular type of such board or the like in which the surface of the printed circuit board includes circuit elements extending a predetermined distance above the surface of said board, said apparatus comprising:

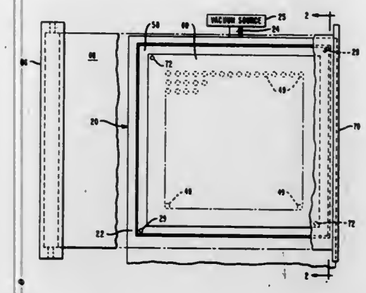
a housing member of insulating material having a continuous sidewall portion;

a first planar board member of insulating material having a plurality of first probe assemblies and mounted within the housing member, said probe assemblies arranged in a fixed matrix pattern different from said irregular pattern of the contact points in the printed circuit board and each including a first sleeve member mounted in said first planar board member, a first stem member slidably positioned within the sleeve member and a first spring member mounted within said sleeve member and engaging said stem member for normally urging said stem member in a sensing direction;

a second planar board member of insulating material slidably mounted on said first board member and engaging said first stem members in a supporting relationship, said second board member including a plurality of second probe assemblies arranged in a pattern corresponding to the irregular pattern of the printed circuit board and in which each of said second probe assemblies includes a second sleeve member mounted in said second planar board member, a second stem member having a sensing head portion slidably positioned within said sleeve member and a second spring member located within said second sleeve member for normally urging said second stem member in a sensing direction;

means secured to said second planar board member for electrically connecting said first and second stem members upon mounting of said second planar board member on said first planar board member;

means for slidably mounting a printed circuit board on said



second planar board member wherein each of said second stem members engages an electrical contact point on the printed circuit board;

said second sleeve member including a shoulder portion formed on said second sleeve member and extending a predetermined distance away from said second planar board member and towards said printed circuit board for limiting the movement of said second stem member, said shoulder portion engaging the head portion of said second stem member upon movement of the second planar board member towards said printed circuit board, thereby preventing the second planar board member from engaging the circuit elements mounted on the printed circuit board;

a spring actuated supply roll of flexible cover material located adjacent said printed circuit board enabling the cover material to be removed from the roll and positioned over said printed circuit board and said housing member; and

means connected to said housing member for applying a vacuum to the housing member whereby the cover material is moved into engagement with the sidewall portion of the housing member sealing the interior of the housing member enabling the applied vacuum to move the cover material, the printed circuit board and the second planar board member in a direction to move said first stem members into contact with said electrical connection means and said second stem members into contact with the contact points of the printed circuit board, thereby establishing electrical contact between the contact points of the printed circuit board and the first stem members.

4,551,676

PULSE CODER USING MAGNETORESISTANCE ELEMENTS HAVING AN IMPROVED Z-PHASE SIGNAL PATTERN

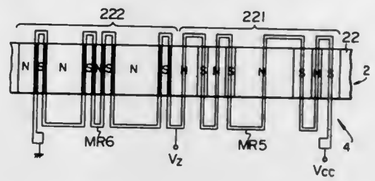
Yoichi Amemiya, Hachioji; Hiroshi Ishida, Hamuramachi; Yashitaka Takekoshi, and Shigeyuki Ushiyama, both of Hino, all of Japan, assignors to Fanuc Ltd, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,206

Claims priority, application Japan, Mar. 2, 1982, 57-31687

Int. Cl.⁴ G01B *7/14*; G01P *3/42*; G08C *21/00*

U.S. Cl. 324—208 **6 Claims**



1. A pulse coder for generating a Z-phase signal for detecting a reference position of a rotating member, comprising:

a fixed member;

a rotating member rotatable with respect to said fixed member;

first and second magnetic patterns formed on a circumference of said rotating member, each of said magnetic patterns having strong magnetic field generating areas and weak magnetic field generating areas arranged alternately, irregularly and non-equidistantly spaced on said circumference; and

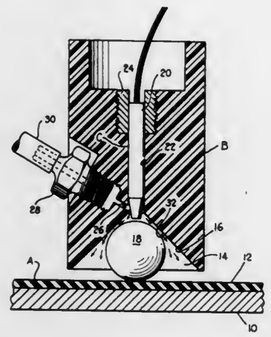
first and second magnetoresistance elements corresponding to said first and second magnetic patterns, respectively, formed on said fixed member, said first and second magnetoresistance elements being electrically connected in series with one another and operably connected to a Z-phase signal detection means,

said first and second magnetoresistance elements exhibiting a minimum resistance value and a maximum resistance value, respectively, when said first and second magnetic patterns of said rotating member are brought into directly facing relation with said first and second magnetoresistance elements, respectively, of said fixed member, such that when said magnetoresistance elements directly face said strong magnetic field generating areas of said magnetic patterns said magnetoresistance elements exhibit a minimum resistance value, and when directly facing said weak magnetic field generating areas of said magnetic patterns, said magnetoresistance elements exhibit a maximum resistance value, said reference position corresponding to a rotational position of said rotating member when one of said magnetoresistance elements is caused to exhibit a maximum resistance value and the other said magnetoresistance element is caused to exhibit a minimum resistance value such that the difference in resistance value between said respective first and second magnetoresistance elements is at a maximum.

4,551,677
APPARATUS AND METHOD FOR INSPECTING A BEARING BALL

Benjamin F. Bankston, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 9, 1983, Ser. No. 473,827
Int. Cl.⁴ G01N *27/90*; G01B *7/28*
U.S. Cl. 324—226 **15 Claims**



1. Apparatus for inspecting a spherical element such as a bearing ball and the like for surface defects comprising:

base means having a high-friction, non-abrasive base scanning surface;

a holding device having a housing for retaining said spherical element in a low-friction environment which includes a low pressure air layer which retains said spherical element for movement over said scanning surface;

an element retaining recess included in said holding device defined by a tapered recess wall tapering upwardly and inwardly to provide a progressively reducing cross-section which receives and accommodates a spherical element of different sizes for retention and movement with said holding device;

said recess including an enlarged open end for receiving said spherical element;

a defect-detecting probe means carried by said holding device extending into said recess in proximity to said spherical element for detecting surface defects in said spherical element;

means for delivering a flow of low pressure air into said recess and creating said low pressure air surface layer adjacent said wall of said recess to relieve the friction between said spherical element and said recess wall while effectively retaining said spherical element during scanning movement over said high-friction base scanning surface;

means establishing a predetermined pattern over which said holding device moves and said spherical element rolls over said base scanning surface during said scanning operation;

means for moving said holding device over said predetermined pattern;

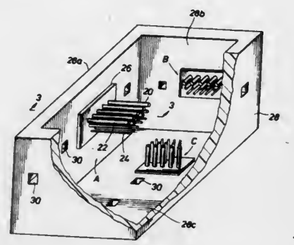
relative frictional forces produced on said spherical element between said low-friction air surface layer and said high-friction scanning base surface imparting a rolling movement to said spherical element; and

said spherical element being rolled and moved by said holding device over said base scanning surface according to said predetermined pattern whereby the entire surface of said spherical element is inspected by said defect-detecting probe means for surface defects.

4,551,678
PHANTOM FOR NUCLEAR MAGNETIC RESONANCE MACHINE

Tommie J. Morgan, 10718 Cranbrook, Houston, Tex. 77042, and M. Robert Willcott, 3502 Drummond, Houston, Tex. 77025

Filed Nov. 26, 1982, Ser. No. 444,620
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—300 **9 Claims**

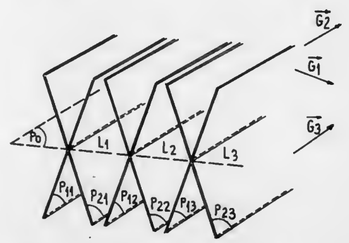


2. A phantom for an NMR machine comprising a plurality of tubes of non-magnetic mterial, such as glass, each of which contain a material having a known spin density, T1 or T2 characteristic that differs a preselected amount from the spin density, T1, or T2 characteristics of the material in the other tubes, said tubes having several different diameters ranging from a tube diameter that the machine cannot resolve up to a tube diameter that the machine can resolve and means for supporting the tubes in a predetermined arrangement in a NMR machine to measure the performance characteristics of the machine.

4,551,679
METHOD OF TOMOGRAPHIC SCANNING OF AN OBJECT BY NUCLEAR MAGNETIC RESONANCE

Jean Bossaert, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 12, 1983, Ser. No. 493,965
Claims priority, application France, May 14, 1982, 82 08483
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—309 **9 Claims**

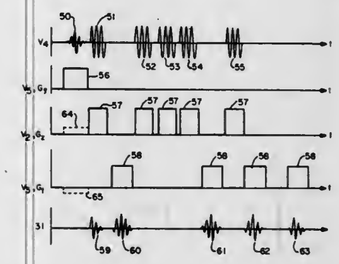


1. A method of tomographic scanning of an object by nuclear magnetic resonance, which consists in producing a nuclear magnetic resonance phenomenon in atoms of a selected element of said object which is placed in a directive magnetic field, then in measuring the characteristics of the rotating magnetic field radiated by said atoms in order to deduce therefrom a representation of their distribution within said object, wherein said method consists in reconstructing a tomographic image line by line by choosing each line at the intersection of two planes selected by two magnetic field gradients applied respectively at the same time as two successive excitation sequences which are capable of subsequently producing a spin echo phenomenon and by measuring said echo phenomenon in order to acquire said line, wherein two planes are selected respectively from two groups of planes at each cycle of acquisition of a line, the two planes selected each time being separate and distinct from all the others in order to ensure that the surface defined by all the lines of intersection of the planes selected in pairs does not coincide with any of said planes.

4,551,680
SELECTIVE REGION NMR PROJECTION IMAGING SYSTEM

Albert Macovski, 2505 Alpine Way, Menlo Park, Calif. 94025

Filed Apr. 21, 1983, Ser. No. 487,294
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—309 **22 Claims**



1. In a method for forming a projection image of the NMR activity of a selected region of a volume the steps of:

exciting the selected region of the volume with a region-selecting excitation using a magnetic gradient having a component in the projection direction;

exciting a sequence of planar sections which are parallel to the projection direction and perpendicular to the projection image;

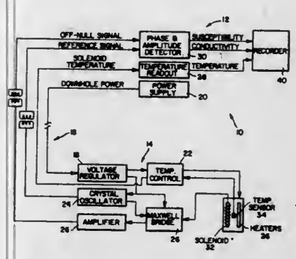
receiving signals from those regions which have experienced both excitations representing projections in solely one direction; and

processing the received signals to form the projection image of the selected region of the volume.

4,551,681
MAGNETIC SUSCEPTIBILITY WELL-LOGGING UNIT WITH SINGLE POWER SUPPLY THERMOREGULATION SYSTEM

Robert L. Seeley, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 2, 1983, Ser. No. 490,276
Int. Cl.⁴ G01V *3/26*; E21B *47/06*; H01F *27/08*
U.S. Cl. 324—333 **17 Claims**



1. A magnetic susceptibility well-logging system comprising surface electronic circuit means including a power supply, a well-logging cable means connected to said surface electronic circuit means and operative to conduct power from said power supply, and a magnetic susceptibility measuring circuit means connected to said well-logging cable means in spaced relationship to said surface electronic circuit means and operating to send data signals by current telemetry over said well-logged cable means to said surface electronic circuit means, said magnetic susceptibility measuring circuit means including voltage regulator means connected to said well-logging cable means to receive power from said power supply and operating to provide one or more regulated output voltages at a regulator output means, stabilized oscillator means connected to said regulator output means and operative to provide a reference signal, sensing bridge means connected to said regulator output means to receive said reference signal from said stabilized oscillator means, said sensing bridge means including a measuring probe means for sensing magnetic susceptibility which is connected to receive a regulated output voltage from said regulator output means, and detector means connected to said sensing bridge means and to receive said reference signal from said stabilized oscillator means.

9. A magnetic susceptibility well-logging system comprising:

surface electronic circuit means including a power supply;

a well-logging cable means connected to said surface electronic circuit means and operative to conduct power from said power supply;

a magnetic susceptibility measuring circuit means connected to said well-logging cable means in spaced relationship to said surface electronic circuit means, said magnetic susceptibility measuring circuit means operating to send data signals by current telemetry over said well-logging cable means and including probe means for sensing magnetic susceptibility;

said probe means including a heater means and a first and second temperature transducer means for sensing the temperature of said probe means and providing output signals which are a function of the magnitude of the sensed temperature and control means operative to receive said output signal from said first temperature transducer means and for providing a control signal which varies linearly and is inversely proportional to said first temperature transducer output signal, and power control means to receive said control signal and operative in response thereto to control the power to said heater means; and

conversion means in said susceptibility for measuring circuit connected to receive the output signal from said second temperature transducer means and for providing a voltage signal and voltage to current conversion means for receiving said voltage signal and providing a current signal on said well-logging cable means which is a function of said voltage signal.

4,551,682
DIGITAL SINE-COSINE GENERATOR

Albert J. Charpentier, Hatfield; James W. Redfield, Pottstown, and David W. DiOrio, Easton, all of Pa., assignors to Commodore Business Machines, Inc., West Chester, Pa.

Filed Jan. 3, 1983, Ser. No. 455,041
Int. Cl.⁴ H03K *5/00*; H03B *19/00*
U.S. Cl. 328—22 **8 Claims**

1. An apparatus to digitally generate sine and cosine signals comprising:

means for providing a train of digital pulses;

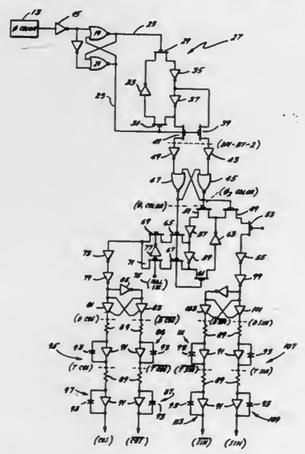
first digital divider means for dividing the output of the pulse train providing means by two, said digital divider means output being a first digital square wave pulse train signal at one-half the frequency of its input;

means connected to said digital divider means output for providing a second square wave pulse signal at the frequency of said digital divider means output and a third square wave pulse signal which is the inverse of said second square wave pulse signal and synchronized therewith;

second divider means connected to receive said second

square wave signal for dividing it by two to provide a fourth square wave pulse signal which is at one-half the frequency of said second square wave pulse signal and a fifth square wave pulse signal which is at one-half the frequency of said second square wave pulse signal and the inverse of said fourth square wave pulse signal and synchronized therewith;

third divider means connected to receive said third square wave pulse signal for dividing it by two to provide a sixth square wave pulse signal which is at one-half the frequency of said third square wave pulse signal and a sev-



enth square wave pulse signal which is at one-half the frequency of said third square wave pulse signal and the inverse of said sixth square wave pulse signal and synchronized therewith, said second divider means and said third divider means operation being synchronized;

wherein said fourth and fifth square wave pulse signals are displaced in time by one quarter of a period from the sixth and seventh square wave pulse signals, and

means connected to receive said fourth, fifth, sixth and seventh square wave pulse signals for integrating each into sinusoidal wave forms.

4,551,683

SWITCHED CAPACITOR FILTER CIRCUIT

Kenji Matsuo, Yokohama, and Shouji Abou, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 17, 1983, Ser. No. 553,022

Claims priority, application Japan, Nov. 19, 1982, 57-202946; Nov. 19, 1982, 57-202954

Int. Cl.⁴ H03H *11/40*; H03F *1/34*; H03K *3/013, 17/693*

U.S. Cl. 328—167 **18 Claims**

1. A switched capacitor filter circuit comprising:

a signal input terminal;

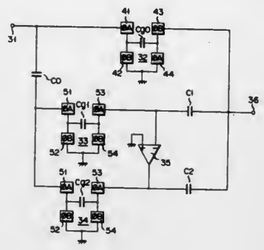
a first resistor circuit composed of a switched capacitor circuit with a negative equivalent resistance, connected at one end to said signal input terminal;

a first capacitor element connected at one end to said signal input terminal;

second and third resistor circuits composed of switched capacitor circuits with positive equivalent resistances, which resistor circuits are connected at one of their ends to the other end of said first capacitor element;

second and third capacitor elements connected respectively at one of their ends to the other ends of said second and third resistor circuits, and at their other ends to the other end of said first resistor circuit;

an amplifier circuit connected at the input terminal to a node between said second resistor circuit and said second capacitor element, and at the output terminal to a node between said third resistor circuit and said third capacitor element; and



a signal output terminal provided at a node between said first resistor circuit and second and third capacitor elements, or a node between said third resistor circuit and said third capacitor element.

4,551,684

NOISE REDUCTION IN LASER AMPLIFIERS

Anthony F. Bernhardt, Berkeley, Calif., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Feb. 4, 1983, Ser. No. 463,713

Int. Cl.⁴ H01S *3/00*

U.S. Cl. 330—4.3 **4 Claims**

3. The method of enhancing the signal to noise ratio at the output of an optical amplifier stage, comprising the steps of

(a) introducing an optical signal to said amplifier stage,

(b) converging said optical signal to form a waist in the transverse extent of said optical signal,

(c) amplifying by stimulated emission phenomena said optical signal and concomitant spontaneous emission flux while carrying out said converging step,

(d) selectively transmitting said converging amplified optical signal from said amplifier stage while selectively attenuating substantially all nonconverging flux issuing from said amplifier stage, and

(e) diverging said converging amplified signal by an amount insufficient to substantially affect the intensity of said signal transmitting step thereof while diverging said nonconverging flux for attenuation of a still substantially greater portion thereof.

4,551,685

PROGRAMMABLE GAIN FEEDBACK AMPLIFIER

David V. Kerns, Jr., 1452 Mitchell Ave., and David V. Kerns, 418 Vinnedge Ride, both of Tallahassee, Fla. 32303

Filed Oct. 25, 1982, Ser. No. 437,482

Int. Cl.⁴ H03F *1/34*

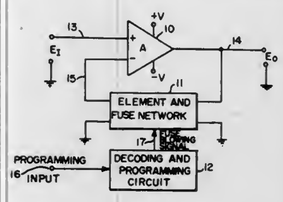
U.S. Cl. 330—86 **4 Claims**

1. A feedback amplifier contained in an integrated circuit, the gain of the amplifier can be permanently set after fabrication said feedback amplifier comprising

a high gain differential amplifier, referred to also as an operational amplifier,

a feedback network integrated with said high gain differential amplifier and consisting of multiple resistive means

each (or some) of which is associated with fusible means of predetermined current capacity, said feedback network being connected from the output of the high gain differential amplifier to the inverting input of said amplifier such that the effective signal attenuation of the feedback network controls the voltage gain of the feedback amplifier and



a decoding and programming means integrated with said feedback network whereby current is selectively directed to the appropriate fusible means to open electrically the selected fuses, the gain of the feedback amplifier circuit then being permanently set by the attenuation of the resistive means remaining electrically operative.

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COUPLING FILTER, ESPECIALLY AN INPUT FILTER, FOR RECEIVERS OF CENTRALIZED RIPPLE CONTROL SYSTEMS

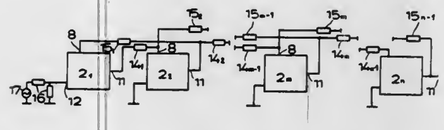
Hans Benzinger, Duisburg, Fed. Rep. of Germany, assignor to Thielscher-Electronic GmbH, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,966

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204508; Apr. 7, 1982, 3213098

Int. Cl.⁴ H03F *1/34*

U.S. Cl. 330—100 **22 Claims**



1. A coupling filter, especially an input filter for receivers of centralized ripple control systems, with a multiplicity of similar four terminal networks (2), each four terminal network (2) having an input (8) and an output (11) and every two adjacent four terminal networks (2) being interconnected by means of two coupling admittances (14,15), wherein active RC four terminal networks (2) with at least one amplifier (7) are provided as four terminal networks, wherein the output (11) of the first RC four terminal network (2_1) is connected by way of a coupling admittance (14_1) to the input (8) of the second RC four terminal network (2_2) and the input (8) of the first RC four terminal network (2_1) is connected by way of another coupling admittance (15_1) to the output (11) of the second RC four terminal network (2_2), wherein, except for the first RC four terminal network (2_1) and the last RC four terminal network (2_n), the input (8) of each RC four terminal network (2_m) is connected on the one hand by way of a coupling admittance (14_{m-1}) to the output (11) of the preceding RC four terminal network (2_{m-1}), and on the other, by way of another coupling admittance (15_m) to the output (11) of the following RC four terminal network (2_{m+1}), and the output of each RC four terminal network (2_m) is connected, on the one hand, by way of a coupling admittance (15_{m-1}) to the input (8) of the preceding RC four terminal network (2_{m-1}), and on the other, by way of another coupling admittance (14_m), to the input of the following RC four terminal network (2_{m+1}), and wherein the output (11) of the last RC four terminal network (2_n) is connected by way of a coupling admittance (15_{n-1}) to the input of the next to last RC four terminal network (2_{n-1}) and the input (11) of the last RC four terminal network (2_n) is connected by way of another coupling admittance (14_{n-1}) to the output (11) of the next to last RC four terminal network (2_{n-1}).

4,551,687

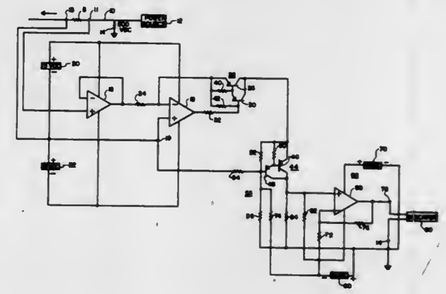
AMPLIFIER FOR MEASURING LOW-LEVEL SIGNALS IN THE PRESENCE OF HIGH COMMON MODE VOLTAGE

Fred E. Lukens, Littleton, Colo., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 7, 1984, Ser. No. 638,584

Int. Cl.⁴ H03F *3/68*

U.S. Cl. 330—258 **15 Claims**



3. An amplifier circuit for measuring low level signals in the presence of widely ranging common mode voltages, said amplifier comprising:

means for current measurement sensing;

first biasing means for reducing the common mode voltage; said first biasing means coupled to said means for current measurement sensing;

a plurality of Darlington amplifier stages serially connected to each other, each said Darlington amplifier stage serially connected to said means for current measurement sensing for receiving an even amount of voltage between said Darlington amplifier stage; at least one of said Darlington amplifier stages serially connected through said first biasing means;

an output circuit means coupled to at least one of said Darlington stages, said output circuit comprising:

an amplifier, for amplifying the signals comprising a first operational amplifier with an inverting input terminal, a noninverting input terminal, an output terminal, said inverting input terminal connected directly to said output terminal through one of said Darlington amplifier stage amplifier stages, and said noninverting input terminal serially connected to said means for current measurement sensing;

a voltage divider serially connected to said amplifier between said amplifier and one of said Darlington amplifier stages, said voltage divider for in effect reducing voltage; and

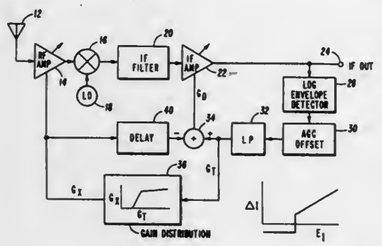
a second biasing means for in effect reducing the common mode voltage of said output circuit means.

4,551,688

DELAY COMPENSATED AUTOMATIC GAIN CONTROL

Robert L. Craiglow, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 23, 1984, Ser. No. 613,661
Int. Cl.[4] H03G 3/10
U.S. Cl. 330—280
11 Claims



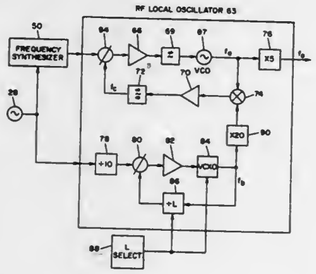
1. An automatic gain control circuit comprising:
means for providing a first automatic gain control signal;
means for receiving said first automatic gain control signal and providing a delayed output of that first automatic gain control signal; and
means for subtracting said delayed automatic gain control signal from said first automatic gain control signal to produce a second automatic gain control signal.

4,551,689

RF LOCAL OSCILLATOR WITH LOW PHASE NOISE

John Scala, Islip Terrance, and William Reuter, Ronkonkoma, both of N.Y., assignors to Comtech Telecommunications Corp., N.Y.

Filed Feb. 25, 1983, Ser. No. 469,636
Int. Cl.[4] H03L 7/00
U.S. Cl. 331—2
8 Claims



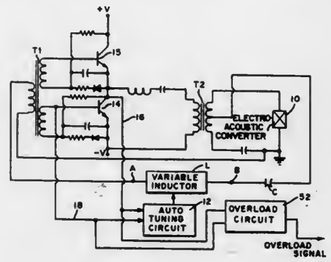
1. An RF local oscillator, responsive to a supplied reference signal for providing a signal at a desired selectable frequency, higher than the frequency of said reference signal and dependent on said reference signal frequency, comprising:
a phase stable crystal oscillator having a plurality of selectable crystals each for oscillating at a selected frequency, for providing a phase stable output signal at one of said selected frequencies which is separated from said desired higher frequency by the frequency of said reference signal;
a voltage controlled oscillator operating at said desired higher frequency; and
a phase locked loop having mixers coupled to receive said reference signal and said phase stable output signal, and including said voltage controlled oscillator, for controlling the output of said voltage controlled oscillator thereby to develop said signal at said desired frequency.

4,551,690

AUTOMATIC TUNING CIRCUIT FOR USE IN AN ULTRASONIC APPARATUS

Eric Quist, Roxbury, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Continuation of Ser. No. 359,214, Mar. 18, 1982, abandoned.
This application Dec. 13, 1984, Ser. No. 681,085
Int. Cl.[4] H03L 7/00
U.S. Cl. 331—36 L
5 Claims



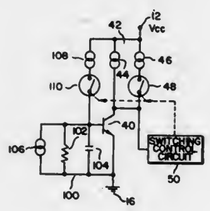
1. A power supply circuit for driving an electroacoustic converter comprising an oscillatory circuit including switching means for providing at an output a high frequency electrical signal at a predetermined frequency for energizing an electroacoustic converter wherein the improvement comprises:
a feedback loop including an electrically variable inductance means coupled between the output and an input of said oscillatory circuit for providing a portion of said high frequency electrical signal at the output of said oscillatory circuit to an input of said oscillatory circuit, and
an automatic tuning circuit coupled to said switching means and said variable inductance means for receiving a first signal commensurate with the voltage across said switching means and a second signal commensurate with the current through said switching means, and providing an adjustment signal responsive to said first and second signals to said variable inductance means for adjusting the inductance thereof from a nominal value to a value to cause said first signal and said second signal to be in phase with each other.

4,551,691

HYSTERESIS CIRCUIT WITH SMALL HYSTERESIS AMPLITUDE AND OSCILLATOR USING THE HYSTERESIS CIRCUIT

Atsushi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 29, 1983, Ser. No. 537,064
Claims priority, application Japan, Sep. 29, 1982, 57-170376; Sep. 29, 1982, 57-170387
Int. Cl.[4] H03K 3/26
U.S. Cl. 331—111
10 Claims



1. A hysteresis circuit comprising:
a power source;
a reference potential source;

input means operative in one of two conductive states connected to said reference potential source for receiving an input signal;
a constant current source connected between said power source and said input means providing first and second current levels to said input means corresponding to said two respective conductive states;
output means responsive to said first and second levels of current for deriving a bilevel hysteresis output signal; and
means for detecting current flowing through said input means and controlling said current source between said first and second levels of current in response to said current flowing through said input means.

4,551,692

MONOLITHIC POLARIZER GRATING

Peter W. Smith, Westport, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 28, 1984, Ser. No. 594,100
Int. Cl.[4] H01P 1/16
U.S. Cl. 333—21 A
3 Claims



1. In a substrate of dielectric material subject to incident propagating polarized microwave radiation capable of vector resolution with respect to components of a selected reference frame perpendicular to the direction of propagation, a monolithic polarizer comprising:
first anisotropic matching means for countering the reflection of microwave radiation;
anisotropic means adjacent said first matching means for transforming between linear and circular polarization states;
second matching means for countering the reflection of microwave radiation; and
isotropic means for providing structural support with respect to said anisotropic means, said first and second matching means straddling said anisotropic and isotropic means, said isotropic and said anisotropic means cmprising the same material, whereby said incident propagating polarized microwave radiation changes polarization state in passing through said matching isotropic and said anisotropic means.

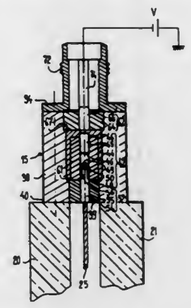
4,551,693

COAXIAL MICROWAVE LOAD ISOLATOR OF THE THREE-PLATE TYPE INCLUDING SUCH A LOAD AND USE OF SUCH AN ISOLATOR

Jacques Guidevaux, Chatillon sous Bagneux, France, assignor to Thomson CSF, Paris, France

Filed Nov. 16, 1983, Ser. No. 552,105
Claims priority, application France, Nov. 19, 1982, 82 19429
Int. Cl.[4] H01P 1/26, 1/36
U.S. Cl. 333—22 R
13 Claims

1. A coaxial microwave load comprising:
a first assembly including a cylindrical conductive body, a first cylindrical rod lodged inside said body, made of insulating material and covered with a resistive layer, said first rod having first and second metallized ends, and a first washer of insulating material interposed between said body and said first rod, said first assembly constituting a first coaxial transmission line having a given characteristic impedance to which said resistive layer of said first rod is mateched; and
a mounting block made of conductive material and having a central bore for receiving said first assembly, said mounting block having an inside surface and an outside surface both of which are covered with an insulating layer, whereby said load is DC isolated once said first assembly is lodged in said mounting block.

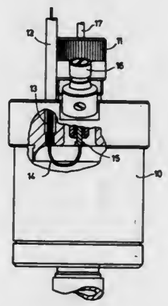


4,551,694

COUPLING ARRANGEMENT FOR A CAVITY RESONATOR

Reinhard Biehl, Karlsruhe; Dieter Schmalbein, Marxzell-Burbach, and Günther Laukien, Rheinstetten, all of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Rheinstetten-Forchheim, Fed. Rep. of Germany

Filed Jan. 6, 1984, Ser. No. 568,728
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1983, 3300766
Int. Cl.[4] H01P 5/04, 7/06
U.S. Cl. 333—24 C
11 Claims



1. A coupling arrangement for coupling a high frequency electrical signal into a cavity resonator through a metallic wall portion thereof by means of a coaxial transmission line having an inner and an outer conductor, the outer conductor being in electrical conductive connection with said metallic wall portion with the inner conductor in spaced electrically insulating relation to the outer conductor, the improvement consisting in that for coupling the high frequency electrical signal into the resonator the inner conductor of the coaxial transmission line is extended for connection, in form of a loop, to a manually adjustable loop holder assembly comprising a threaded electrically conductive sleeve in electrical connection with a wall of the cavity resonator, a screw of dielectric material having first and second threads, the first thread being in engagement with the threads on the sleeve, and a threaded connector element of

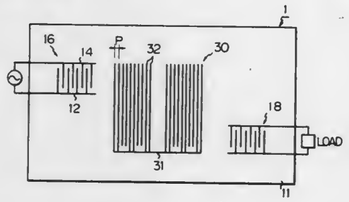
electrically conductive material the threads of which are threadedly engaged with said second threads on the screw of dielectric material, said extended inner conductor being connected at its free end to said electrically conductive connector element.

4,551,695

SURFACE ACOUSTIC DEVICE HAVING MULTISTRIP COUPLER COMPRISED OF ALTERNATE COUPLED AND UNCOUPLED STRIPS

Shigeo Tanji, Yokohama, and Noboru Wakatsuki, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1983, Ser. No. 508,546
Claims priority, application Japan, Jun. 29, 1982, 57-111888
Int. Cl.⁴ H03H *9/25*
U.S. Cl. 333—195 **7 Claims**



1. A surface acoustic wave device comprising:
a piezoelectric substrate;
first electrode means, having a set of interdigital electrodes formed on the surface of said piezoelectric substrate, for generating surface acoustic waves on the surface region of the substrate when an electric signal is applied between two of said interdigital electrodes in said set of interdigital electrodes;
second electrode means having two interdigital electrodes formed on the surface of said piezoelectric substrate, the center of said second electrode means being spaced at a distance from the center of said first electrode means in the direction of propagation of the surface acoustic waves which is oriented transverse to said interdigital electrodes, and generating an output electrical signal between said interdigital electrodes in response to the generated surface acoustic waves; and
electromechanical coupling means, having a plurality of electrically conductive strips formed on said piezoelectric substrate between said first electrode means and said second electrode means and oriented substantially perpendicular to the direction of propagation of the surface acoustic waves, for receiving the generated surface acoustic waves and transmitting the generated surface acoustic waves to said second electrode means, said electrically conductive strips being arranged in parallel, along the direction of propagation of the surface acoustic waves, at a predetermined distance from each other, and in a repeating pattern including two consecutive electrically conductive strips connected at a predetermined position in the direction of propagation of the surface acoustic waves followed by two consecutive unconnected electrically conductive strips.

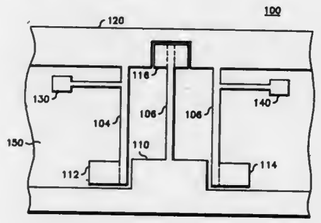
4,551,696

NARROW BANDWIDTH MICROSTRIP FILTER

Michael F. Moutrie, Buffalo Grove; Raymond L. Sokola, Lake Zurich, and Charles Choi, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1983, Ser. No. 562,330
Int. Cl.⁴ H01P *1/203, 7/08*
U.S. Cl. 333—204 **12 Claims**

1. A microstrip transmission line filter having a predetermined signal frequency passband, comprising:
a substrate having a first surface and an electrically grounded second surface;
at least two electrically conductive, opposingly disposed grounded portions on the first surface of said substrate;
a plurality of substantially parallel electrically conductive strips disposed on the first surface of said substrate and each having a free end and a grounded end coupled to one of said grounded portions;



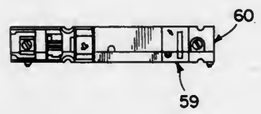
at least two capacitive loading means disposed on the first surface of said substrate and each coupled to a different one of the free ends of said strips coupled to the same one of said grounded portions; and
one of said grounded portions further including at least one additional electrically conductive grounded portion interposed at least partially between said two capacitive loading means.

4,551,697

CURRENT LIMITING CIRCUIT BREAKER MECHANISM

Frank W. Kussy, 2A Willow Brook Ct., Randallstown, Md. 21133

Filed Jan. 23, 1984, Ser. No. 573,157
Int. Cl.⁴ H01H *75/00*
U.S. Cl. 335—16 **10 Claims**



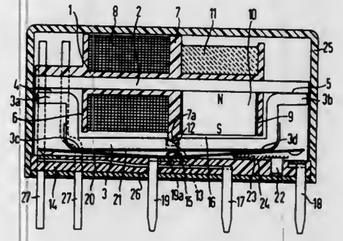
1. Multipole circuit breaker each pole having a mechanism consisting of a molded first lever operated by a metallic shaft, this shaft connecting all poles this shaft not needing an insulating cover, this first lever guiding when rotated a movable contact arm, this contact arm being under influence of an over the center spring, one end of this spring held in a cradle, a second end of this spring held in said movable contact arm, so dividing said contact arm in a first and second section, this first section being positioned between a first end of the movable contact arm and a hook of the spring where this first end can turn in said molded first lever and a second section of the movable contact arm which is positioned between the hook of the spring and a contact point, an approximately L-shaped fixed contact arm, one leg or at least a part of this leg being closely positioned to the second section of this movable contact arm or at least a large part of it, when the circuit breaker is in the "ON" position, and these two sections or at least parts of these two sections of the fixed and movable contact arms being approximately parallel, the current in these two sections flowing in opposite direction that the movable contact arm blows open by the electrodynamic forces at severe fault currents.

4,551,698

POLARIZED ELECTROMAGNETIC RELAY

Martin Aida, Degerndorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,466
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303665
Int. Cl.⁴ H01H *51/22*
U.S. Cl. 335—78 **24 Claims**



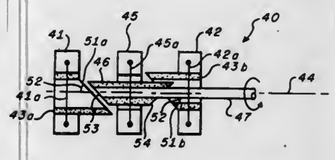
1. A polarized electromagnetic relay comprising:
a housing,
a coil core within said housing,
a coil body positioned along said core,
at least one coil winding positioned along said coil body,
a rocker armature pivotally mounted at its center portion beneath said coil, said rocker armature having opposed end portions providing working air gaps with respective ends of said core, the ends of said rocker armature disposed adjacent the ends of said coil core,
a permanent magnet disposed at one side of said coil winding, said permanent magnet having one pole in close proximity to said coil core,
a pedestal positioned in said housing,
stationary contacts secured to said pedestal, and
spaced movable contact elements on said pedestal below said rocker armature being disposed between said pedestal and said coil body and positioned to be selectively actuated by rocking movement of said rocker armature.

4,551,699

ROTARY VARIABLE DIFFERENTIAL TRANSFORMER

Joannes N. M. de Jong, Westford, and Richard L. Earle, Mendon, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Division of Ser. No. 506,929, Jun. 22, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 721,121
Int. Cl.⁴ H01F *21/06*
U.S. Cl. 336—135 **6 Claims**



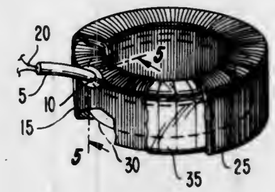
1. A rotary variable transformer comprising:
electrically coupled first and second coils of electrical conducting material cylindrically wound about a longitudinal axis forming first and second hollow cylinders respectively;
a third coil of electrical conducting material positioned between said first and second coils and cylindrically wound about said longitudinal axis forming a third hollow cylinder;
first and second rings of circumferentially continuous magnetic susceptible material respectively positioned in said first and second hollow cylinders, each having an extension toward said third hollow cylinder configured to have a circumferential variation of magnetic susceptible material; and
a core of circumferentially continuous magnetic susceptible material rotatably positioned in said third hollow cylinder having extensions towards said first and second hollow cylinders configured to have a circumferential variation of magnetic susceptible material to provide maximum magnetic coupling with said extension of said first ring and minimum magnetic coupling with said extension of said second ring for at least one angular rotation position and to provide maximum magnetic coupling to said extension of said second ring and minimum magnetic coupling to said extension of said first ring at preselected angles from each of said at least one angular rotation position.

4,551,700

TOROIDAL POWER TRANSFORMER

Anders Waldemar, Rottne, Sweden, assignor to Toroid Transformator AB, Växjö, Sweden

Filed Mar. 14, 1984, Ser. No. 589,693
Int. Cl.⁴ H01F *15/10*
U.S. Cl. 336—192 **4 Claims**

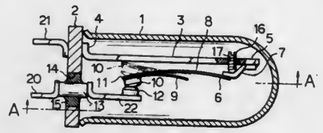


1. A toroidal power transformer having a primary and a secondary winding and comprising:
a toroidal shaped core;
a primary winding wound about said core, having primary lead wires, and having an annular end surface and a cylindrical side surface forming a shoulder therebetween;
sleeve insulator means, having a tube portion and having a flange portion connected to the tube portion with no gaps therebetween and formed continuously about the tube portion such that the flange portion conformingly and continuously covers part of the annular end surface, part of the cylindrical side surface and part of the shoulder in the region around said primary lead wires, for housing said primary lead wires, for positioning said primary lead wires outward from said primary winding and for providing creepage distance between said primary winding and said secondary winding in said region around said primary lead wires;
a wrapped insulator, overlappingly wrapped around said primary winding and said flange portion of said sleeve insulator means; and
said secondary winding wound about said wrapped insulator and above said flange portion of said sleeve insulator means and having secondary lead wires.

4,551,701
THERMALLY ACTUATED SWITCHING DEVICE

Susumu Ubukata, 549-banchi, Nakasuna-cho, Tempaku-ku, Nagoya, Japan, and Yasukazu Mizutani, Nagoya, Japan, assignors to Susumu Ubukata, Japan

Filed May 17, 1984, Ser. No. 611,177
Int. Cl.⁴ H01H *61/00, 71/16*
U.S. Cl. 337—97 **5 Claims**

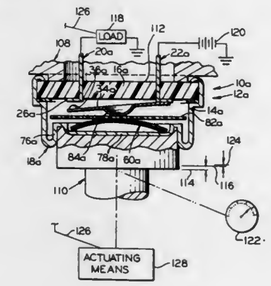


1. A thermally actuated switching device comprising:
(a) a thermally actuated member having a fixed end, a free end and an intermediate central dish-shaped portion to induce snap movement, the fixed end being supported by a stationary member;
(b) a movable contact secured to the free end of said thermally actuated member in making and breaking relationship with a fixed contact at selected temperature, an arc being generated upon breaking contact between the movable and fixed contacts; and
(c) an arc shield made of a heat-resistant material, one end of the arc shield being cantileverly secured to the free end of the thermally actuated member adjacent to the movable contact, said arc shield extending when said member snaps and snaps back, the arc shield being positioned and adapted so as to shield the dish-shaped portion from the said arc.

4,551,702
THERMOSTATIC SWITCH AND METHOD OF MANUFACTURE

Charles J. Hire, Mansfield, Ohio, assignor to Hi-Stat Manufacturing Company, Inc., Lexington, Ohio

Continuation of Ser. No. 257,705, Apr. 27, 1981, abandoned. This application Mar. 28, 1984, Ser. No. 573,847
Int. Cl.⁴ H01H *37/12*
U.S. Cl. 337—347 **37 Claims**

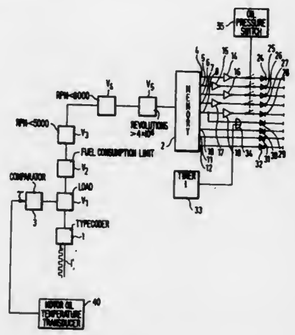


1. A condition responsive switching device comprising a cup-shaped case having an open end and providing an axially extending inner wall, a body secured in axially abutting assembled relationship to said case as to close said open end, said body and said case when in said assembled relationship cooperating to define a chamber, a switch mounted on said body in said chamber providing a fixed electrical contact and a cantilever mounted leaf spring mounted at one end on said body, the axial location of said switch relative to said axially extending inner wall being determined by said axially abutting assembled relationship of said body to said cup-shaped case, the free end of said leaf spring overlying said fixed contact and providing mobile contact means movable into and out of engagement with said fixed contact to close and open said switch, a snap disc in said chamber on the side of said leaf spring remote from said body, said snap disc being movable between two positions of stability in response to two different predetermined environmental conditions, the central portion of said snap disc moving from each position of stability to the other position of stability first with a predetermined amount of creep movement followed by snap movement, said disc and leaf spring being operably connected so that said switch is closed when said disc is in one position of stability and is open when said disc is in the other position of stability, said case comprising axial end wall means oppositely disposed to said open end, said axial end wall means being selectively deformed axially inwardly toward said chamber so as to thereby result in said leaf spring being deflected toward said body which is secured in an axially abutting relationship to said cup-shaped case by said disc beyond the initial closed position of said switch when said disc is in said one position of stability.

4,551,703
SERVICE INTERVAL SIGNALLING DEVICE FOR PRIME MOVERS

Fritz Bourauel, and Walter Weishanpt, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

PCT No. PCT/EP82/00081, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/03714, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 8, 1982, Ser. No. 448,849
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114689
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 340—52 D **19 Claims**

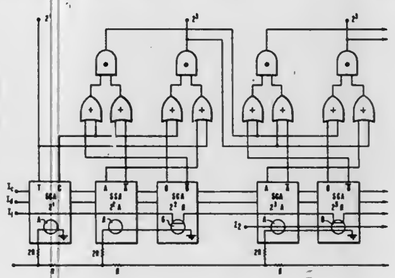


1. A service interval indicating device for engines wherein a service interval is divided into plural serial equal increments, the engine having an output shaft for driving apparatus, comprising
a signal generator means responsive to a plurality of threshold values of different characteristic operating parameters for generating a first signal,
means responsive to the output shaft for actuating the signal generator means in accordance with the total number of revolutions of the output shaft,
a plurality of control lights each assigned to a single increment of the service interval,
means for controlling extinction of each of said control lights as the corresponding increment of the service interval is completed.

4,551,704
LOOK-BACK ANALOG TO DIGITAL CONVERTER

Carl J. Anderson, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1983, Ser. No. 536,429
Int. Cl.⁴ H03K *13/22*
U.S. Cl. 340—347 AD **6 Claims**



1. An ordered register subsystem, for a high speed data processing system, having interconnected analog input means, register/encoder means and output utilization means

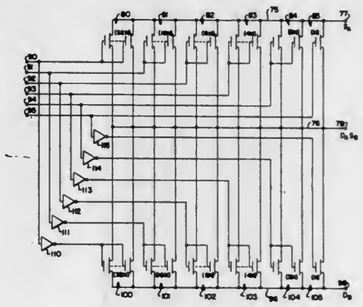
characterized by
(a) base sampling register means, having ordered bit positions settable to analog threshold values in response to an analog input signal, connected to the analog input means, forming part of the register/encoder means;
(b) offset sampling register means, having ordered bit positions settable to analog threshold values in response to an analog input signal, connected to the analog input means, forming part of the register/encoder means;
(c) base sampling interval phasing means connected to said base sampling register means in sampling control configuration;
(d) offset sampling interval phasing means, offset in phase from said base sampling interval phasing means, connected to said offset sampling register means in sampling control configuration;
(e) sample encoding means, connected to said base and offset sampling register means, responsive to threshold value settings of said base and offset sampling register means, and to its own output signals from respectively lower bit order positions, to encode in sequence, on a bit order position basis, as a function of respective next lower order bit position bit values, the respective composite values of respective next lower order bit position and of said base sampling register means, or alternatively the composite values of respective next lower order bit position and of offset sampling register means.

4,551,705
PROGRAMMABLE INTEGRATED CIRCUIT AC RESISTOR NETWORK

Robert D. Andersen, West Covina, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 278,926, Jun. 30, 1981, abandoned. This application Jan. 21, 1983, Ser. No. 460,100
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 DA **7 Claims**

1. A digitally programmable AC resistor network comprising:
a monolithic body of semiconductor material having a plurality of ideally identical field effect transistor cells formed thereon, said cells being subject to unavoidable minor variations in characteristics, each field effect transistor cell having source, drain and gate regions, the electrical resistance between the source and drain regions varying with the voltage applied to the gate region, minimum source-drain resistance occurring in respnse to a gate voltage at least as great as a saturation value;
a first conductor connecting the source regions of at least a first group of said cells to a first output terminal;
a second conductor connecting the drain regions of the first group of said cells to a second output terminal;
a third conductor connecting the drain regions of a second group of said cells to a third output terminal, the source regions of the second group of said cells being connected to said second output terminal;
a plurality of control terminals;
control conductor means individually connecting each control terminal to the gate regions of a distinct set of cells in said first group of cells so that the gate region of each cell in the first group of cells is connected to only one control terminal



and each control terminal is connected to the gate regions of a predetermined plurality of cells, whereby variations of the characteristics of individual cells are averaged out to result in electrical resistance between the first and second output terminals which is inversely proportional to the number of cells in the sets of cells whose gate regions are supplied with voltages at least as great as the saturation value; and
inverter means individually connecting each control terminal to the gate regions of a distinct set of cells in said second group of cells so that the gate region of each cell in said second group of cells is connected through an inverter to only one control terminal and each control terminal is connected through an inverter to the gate region of a predetermined plurality of cells, whereby the resistor network is operable as a digitally controlled variable voltage divider.

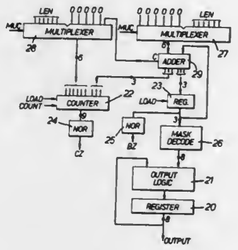
4,551,706
APPARATUS FOR DECODING RUN-LENGTH ENCODED DATA

David J. Hunt, Hitchin, United Kingdom, assignor to International Computers Limited, London, England

Filed May 2, 1984, Ser. No. 606,382
Claims priority, application United Kingdom, May 14, 1983, 8313331
Int. Cl.⁴ G08C *9/00*
U.S. Cl. 340—347 DD **9 Claims**

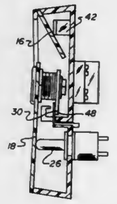
1. Apparatus for decoding run-length encoded data, comprising:
(a) an input for receiving a succession of run-length codes each of which represents the length of a run of signals of the same value,
(b) an output for outputting a succession of groups of signals, each group containing a predetermined number n of signals which are output in parallel,
(c) a position register for storing an indication of the position, within a group of signals, of the latest transition between signal values,
(d) calculation means for using the contents of the position register and the received run-length code to calculate the number x of groups to be output before the next transition,

and the position within the group of that next transition, and



(e) logic means for producing the transition at the calculated position after the calculated number x of groups have been output.

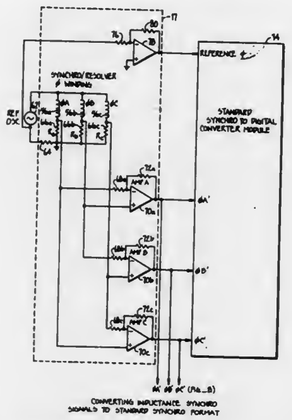
4,551,707
FIRE ALARM PULL STATION
Roger A. Simpson, Lincoln, Nebr., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Filed May 27, 1982, Ser. No. 382,388
Int. Cl.⁴ G08B *25/100*
U.S. Cl. 340—287 **6 Claims**



1. A double action alarm station comprising:
(a) a frame,
(b) a back plate carried by said frame providing a compartment,
(c) latch means carried by said back plate,
(d) a first door pivotally mounted at an end of said frame to be manually pushed inwardly and partially covering a side opposite said back plate,
(e) a second door pivotally mounted at an opposite end of said frame to be manually pulled outwardly after pushing said first door inwardly and covering the remainder of said side,
(f) cam means carried by said second door engaging said latch means, and
(g) a switch closing in response to an opening of said second door and having a terminal block receiving electrical wiring from an alarm to complete an electrical circuit thereto.

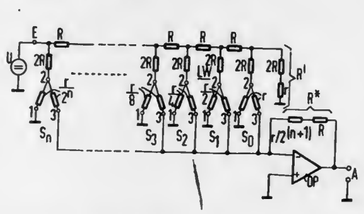
4,551,708
REACTANCE-COMMUTATED HIGH RESOLUTION SERVO MOTOR SYSTEM
Ross D. Welburn, Santa Rosa, Calif., assignor to Motornetics Corporation, Santa Rosa, Calif.
Continuation-in-part of Ser. No. 385,034, Jun. 4, 1982, Pat. No. 4,501,980, and Ser. No. 531,292, Sep. 12, 1983, Pat. No. 4,458,168. This application Nov. 29, 1983, Ser. No. 556,083
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 SY **7 Claims**

1. A position sensing device comprising
a first stator having a plurality of pole pieces,
a plurality of first coil windings, each pole piece of the first stator having a single one of the first coil windings wound on it, and with the first coil windings being connected together in a plurality of phases,
rotor means positioned adjacent the first stator's poles, and movable with respect to them, for changing the inductance of the first coil windings as a function of the position of the rotor means relative to the first stator's poles,
oscillator means for supplying an alternating current reference signal to the first coil windings,
first current sensing means for detectining the magnitude of the



alternating currents flowing through each phase of the first coil windings,
first differential means connected to the first current sensing means for determining the differences in the magnitudes of such alternating currents between each phase and for amplifying such differences, and
first comparing means for comparing the phase of each of the current magnitude differences with the phase of the alternating current reference signal to produce a first output signal which is relative to the first stator.

4,551,709
INTEGRABLE DIGITAL/ANALOG CONVERTER
Kamal Merchant, Holzkirchen, and Claude Schmitt, Ebersberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Oct. 25, 1982, Ser. No. 436,300
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145889
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 DA **9 Claims**

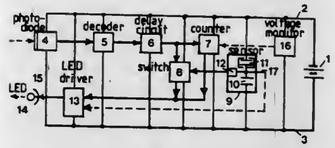


1. Integrable digital/analog converter, comprising a reference d-c voltage or current source having first and second terminals, an R/2R ladder network having a given base resistance R, having an input connected to said first terminal of said reference d-c source and having outputs, a plurality of double-throw switches having two switching positions including a switch carrying the smallest current and a switch carrying the largest current, each of said switches being in the form of a pair of transistors being controlled together by a digital signal to be evaluated, said double-throw switches each having a first current-carrying terminal connected to said second terminal of said reference d-c source through ground, a second current-carrying terminal carrying current in both of said switching positions each being connected to one of said outputs of said R/2R ladder network, and a third current-carrying terminal, a commom operational amplifier forming an output of the converter and and having an inverting input connected to each of said third current-carrying terminals, a resistor being connected to said operational amplifier in a negative feedback loop, and means for weighting said double-throw switches to individually set the internal resistance θ_i thereof according to the relationship:

$$\theta_i = r/2^i,$$

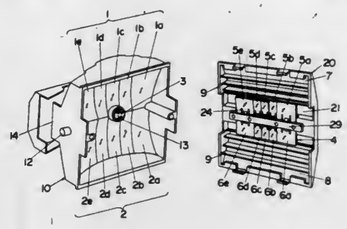
where:
i is the number of said respective double-throw switch which decreases with decreasing current load of said double-throw switches through said R/2R ladder network, and said double-throw switch carrying the smallest current is given the number 0, said resistor in said negative feedback loop of said operational amplifier having a resistance value being equal to the sum of one-half the internal resistance of said double-throw switch carrying the largest current and said base resistance of said R/2R ladder network.

4,551,710
METHOD AND APPARATUS FOR REPORTING DANGEROUS CONDITIONS
Alan P. Troup, Männedorf; Hannes Güttinger, Stäfa, and Gustav Pfister, Uetikon, all of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland
Filed Apr. 19, 1984, Ser. No. 602,127
Claims priority, application Switzerland, Apr. 29, 1983, 2375/83
Int. Cl.⁴ G08B *26/00*
U.S. Cl. 340—505 **11 Claims**



1. A method of signal transmission and signal processing in an alarm system comprising a central signal station and remotely located detectors, comprising the steps of:
transmitting an interrogation signal to said detectors from said central signal station;
transmitting response signals from said detectors after a time delay characteristic of each individual detector back to the central signal station after receiving said interrogation signal;
said response signals corresponding to a current state of the individual detector;
receiving and evaluating the response signals at the central signal station;
the detectors transmitting the response signals after every n^{th} interrogation signal when in an alarm state; and
the detectors transmitting response signals only after every m^{th} interrogation signal when in an operationally ready state and the alarm state is absent;
wherein;
m and n are integers; and
m is greater than n.

4,551,711
INFRARED-TYPE INTRUSION DETECTOR
Shoichi Akiyama, and Mikio Kondo, both of Tsu, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jan. 30, 1984, Ser. No. 575,405
Claims priority, application Japan, Aug. 26, 1983, 58-156995
Int. Cl.⁴ G08B *13/18*
U.S. Cl. 340—567 **10 Claims**

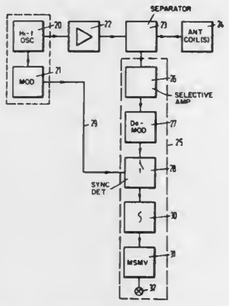


1. An infrared-type intrusion detector comprising:
a housing with at least one front opening and an inner bottom surface;
a single infrared sensing element disposed on the side of said inner bottom surface with its optical axis extending fore and aft of the housing;
a plurality of concave reflector segments disposed on the bottom surface of the housing for providing separate fields of view and collecting infrared radiation therefrom through said front opening;
plane mirror means disposed forwardly of the concave reflector segments within the housings for reflecting said infrared radiation once reflected from said concave reflector segments and focusing it upon said infrared sensing element;
electrical circuit means responding to the infrared detection by the sensing element to produce a cautionary signal; and
means for selectively interrupting one or more paths between the respective concave reflector segments and the sensing element, said means for selectively interrupting comprises an assembly of plane mirrors defining said plane mirror means, each plane mirror corresponding to each one of said concave reflector segments and being pivoted at its one end to a front cover of the housing so as to be movable between an operative position where it focuses the infrared radiation reflected from the corresponding concave reflector segment upon the sensing element and an interrupting position where it fails to focus the infrared radiation reflected from the corresponding concave reflector segment upon the sensing element.

4,551,712
ELECTRONIC DETECTION SYSTEM FOR DETECTING A RESPONDER INCLUDING A FREQUENCY DIVIDER
Tallienco W. H. Fockens, Eibergen, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands
Filed May 14, 1982, Ser. No. 378,244
Claims priority, application Netherlands, Jan. 14, 1982, 8200138
Int. Cl.⁴ G08B *13/24*
U.S. Cl. 340—572 **20 Claims**

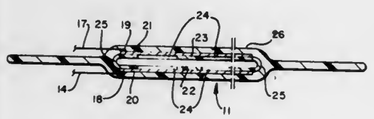
1. In an electronic detection system, comprising:
transmitter means for generating an interrogation field, said transmitter means being coupled with at least one transmitting antenna coil;
responder means including a receiving coil for receiving a signal having a signal frequency and a transmitting coil for transmitting a signal in response to said interrogation field; and
receiver-and-detector means coupled with at least one re-

ceiving antenna coil for receiving and further processing the signal transmitted by said responder means;
the improvement wherein said receiving coil and said transmitting coil of said responder means are arranged in paral-



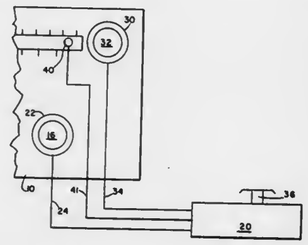
lel to each other, and said responder means comprises a frequency divider connected between said receiving coil and said transmitting coil and arranged to divide the signal frequency received by a factor of $N \geqq 4$.

4,551,713
PET DOOR MAT ALARM
Joseph W. Aossey, 2245 Birchwood Dr., N.E., Cedar Rapids, Iowa 52402
Filed Jan. 28, 1983, Ser. No. 461,936
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—666 **3 Claims**



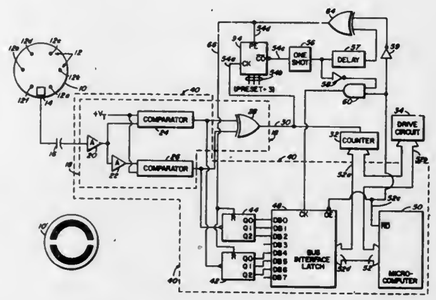
1. A floor mat indicator for indicating a mat depressing weight thereon such as an animal passing thereover comprising: first and second electrical conductive means connectable to an electric circuit; resiliently deflectable structural means normally holding said first and second conductive means apart yet resiliently deflectable by pressure to permit said first and second conductive means to come into electrical conductive contact one with the other; and an electrical non-conductive enclosure enclosing said first and second conductive means, and said resiliently defectable stuctural means; wherein said first and second electrical conductive means are first and second conductive material sheets having electrical connections respectively to first and second electrical line leads extended through said electrical non-conductive enclosure from the interior to the exterior thereof; said resiliently deflectable structural means normally holding said first and second means apart is two planar sheets of electrically insulative plastic that alone hold said first and second electrical conductive material sheets apart yet permit electrical conductive contact between said conductive material sheets when sufficiently resiliently deflected as by an animal walking across said floor mat indicator; with said first and second electrical conductive material sheets positioned to the outside of said two planar sheets of plastic; with said two planar sheets of plastic joined together around their peripheral edges; and wherein openings are provided in said two planar sheets of electrically insulative plastic to permit electrically conductive contact between said conductive material sheets when said two planar sheets of electrical insulative plastic are resiliently deflected together and said first and second conductive material sheets are brought into mutual contact at some location through the general planar extent of said first and second conductive material sheets as would be occasioned by an animal walking across the floor mat.

4,551,714
REMOTE CONTROL APPARATUS FOR AUDIO SYSTEMS
Victor P. Giammarese, 4147 N. Melvina, Chicago, Ill. 60634
Filed Mar. 31, 1983, Ser. No. 480,892
Int. Cl.[4] H04Q *9/00*; H04B *1/06*
U.S. Cl. 340—825.72 **3 Claims**



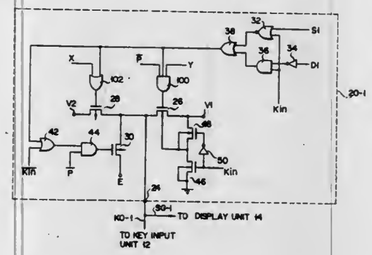
1. A remote control device for controlling an audio entertainment system, and the like, comprising:
a transmitter unit for sending out signal waves;
a receiver unit for accepting the signal waves from said transmitter unit;
motor means operatively connected to said receiver unit, said motor means controlling the functions of the audio system to which it is attached;
photosensing means for detecting specific settings of the tuner of the audio system mounted adjacent to the stereo indicator light of the audio system, and operatively connected to said motor means such that said motor means will stop the tuner upon reception of a signal from said photosensing means; and
transistor switch means operatively connected between said photosensing means and said motor means for disconnecting said motor means upon reception of the signal constituting a negative bias from said photosensing means.

4,551,715
TACHOMETER AND ROTOR IDENTIFICATION APPARATUS FOR CENTRIFUGES
Dennis Durbin, Eugene, Oreg., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Apr. 30, 1984, Ser. No. 605,365
Int. Cl.[4] G01P *3/481*
U.S. Cl. 340—671 **29 Claims**



1. An apparatus for determining the actual speed and the maximum safe speed of a centrifuge rotor, comprising:
(a) a plurality of coding elements of first and second types attached to the rotor, the number of coding elements of each type defining a code which indicates the maximum safe speed of the rotor,
(b) a detector responsive to said coding elements for generating an output signal that varies in accordance with the number and type of said coding elements,
(c) first signal processing means responsive to the number of coding elements for generating a signal indicative of the actual speed of the rotor, and
(d) second signal processing means responsive to the types of the coding elements for generating a signal indicative of the maximum safe speed of the rotor.

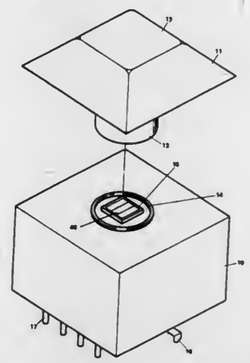
4,551,716
DISPLAY CONTROL FOR ELECTRONIC CALCULATOR
Tomotaka Saito, Yokohama, and Kenichi Nagao, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jun. 18, 1982, Ser. No. 390,046
Claims priority, application Japan, Jun. 30, 1981, 56-101587
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—711 **4 Claims**



1. An electronic calculator comprising:
display means including voltage-controlled capacitive display elements for a plurality of digits;
key-in means including a plurality of key switches connected in matrix fashion to a plurality of column lines and row lines;
calculation control means having a set of output terminals connected both to said display means and said key-in means, said calculation control means including means for supplying detection signals to said key-in means for determining the closure state of said key switches and for supplying segment signals for operating said display means, the output terminals of said set operating simultaneously during a display period to supply said detection and segment signals; and
said calculation control means including a voltage dividing circuit producing a plurality of voltage levels at a plurality of voltage supply points, a plurality of switching means for coupling said voltage levels to said output terminals to supply said detection and segment signals, and means for controlling said switching means to prevent said set of output terminals from being coupled through said switching means to more than one of said voltage supply points for any substantial length of time during said display period.

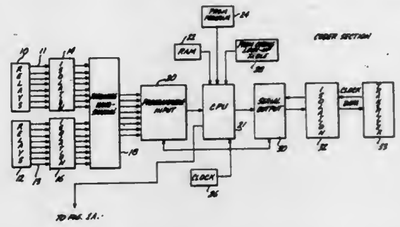
4,551,717
INTELLIGENT KEY DISPLAY
Carl T. Dreher, Dallas, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.
Filed Nov. 10, 1982, Ser. No. 440,778
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—712 **5 Claims**

1. A programmable key for use on a keyboard having a keyselect switch wherein the key has a display visible in the top thereof, including:
a key cap and a key body;
said key cap having a transparent top;
at least one display device mounted in said key cap and visible through said transparent top;
a microcircuit interconnected with the keyselect switch and said display device for providing programmable control of said display device by means of the keyboard when the keyselect switch is placed in the key programming mode;
said microcircuit including:
a state controller;
a buffer;
a clock;
a multiplexer and a driver;



said state controller providing logical control to advance data input into said microcircuit through said buffer and said driver to said display device;
said clock providing timing signals for said state controller and said multiplexer; and
said multiplexer providing enable signals to turn said display device on to display the characters indicative of the data input to said microcircuit; and
said key cap mounted in a moveable relationship with said key body so that upon depression of said key cap a switching function is accomplished.

4,551,718
METHOD AND APPARATUS FOR TRANSMITTING STATUS INFORMATION BETWEEN REMOTE LOCATIONS
John A. Cookson, Bozeman; Richard L. Schatzka, Butte; Richard A. Echard, Butte, and Gary W. Scheer, Butte, all of Mont., assignors to Tetragenics, Inc., Butte, Mont.
Filed Jun. 24, 1983, Ser. No. 507,560
Int. Cl.[4] H04Q *9/00*; G06F *15/20*; H04L *11/16*
U.S. Cl. 340—825.16 **19 Claims**



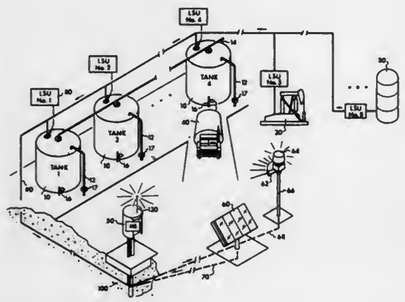
1. A method of transmitting status information from a first location to a remote second location comprising the steps of:
At the first location:
(a) monitoring the state of a plurality of devices, each of which is in either an active or inactive state;
(b) assembling a table of digital codes such that a distinct

code is associated with each possible state of each said device;
(c) determining the current state of each device and assigning the proper digital code for each device in its current state;
(d) determining if any device has changed from the inactive to the active state;
(e) transmitting in a predetermined sequence the codes for each device;
(f) if a change to the active state has occurred for any device, interrupting said predetermined sequence, to transmit the digital code associated with the device that has changed state;
At the second location:
(g) receiving said digital codes in the order transmitted;
(h) comparing the received code with the table to determine the validity of the received code;
(i) if the received code is valid, decoding the code to determine the device and state represented;
(j) outputting the status information based on the most recent code received;
(k) upon reception of any invalid code, inhibiting output so that no status information is output until validity is reestablished; and
(l) reestablishing validity after the reception of a valid code for each of the monitored devices without reception of an intervening invalid code.

4,551,719
OIL FIELD LEASE MANAGEMENT AND SECURITY SYSTEM AND METHOD THEREFOR

John A. Carlin, Aspen; William G. Mesch, Denver; William L. Mobeck, Denver; Randall D. Thompson, Denver; Jules B. Henthorn, Aurora, and Benjamin L. Lopez, Westminster, all of Colo., assignors to Cypher Systems, Denver, Colo.

Filed Mar. 7, 1983, Ser. No. 472,651
Int. Cl.⁴ H04Q *9/00*
U.S. Cl. 340—825.36 **28 Claims**

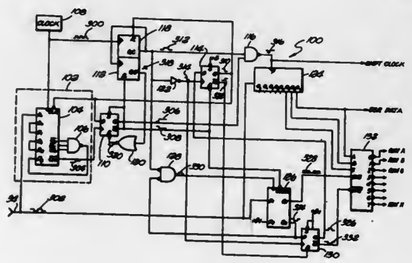


1. An oil field lease management and security system for monitoring oil field lease equipment and for communicating with authorized operators interacting with said oil field lease equipment, said system comprising:
a plurality of means connected to said equipment for sensing operational parameters of said equipment,
a plurality of means connected to said equipment for controlling operational components of said equipment,
means separate from said equipment for converting operator communication signals originating from and directed to said authorized operators into corresponding electrical signals,
an alarm, and
means connected to said converting means and interconnected with said sensing means and with said controlling means for periodically monitoring each of said sensing means and said converting means, said monitoring means being capable of storing equipment information corresponding to said operational parameters and operator information from said converting means and of selectively activating said controlling means based on said equipment and operator information, said monitoring means being further responsive to said operator information for determining whether said operator's interaction with said equipment is authorized, said monitoring means being capable of generating and storing equipment information concerning said operators' interaction, if said operators' interaction is unauthorized with said equipment, said monitoring means being further connected to said alarm for activating said alarm, said converting means being capable of converting said equipment and operator information stored in said monitoring means into operator usable data.

4,551,720
PACKET SWITCHING SYSTEM

Michael M. Levin, Agoura Hills, Calif., assignor to Cybernetic Data Products, Chatsworth, Calif.

Filed Mar. 25, 1983, Ser. No. 478,970
Int. Cl.⁴ H04Q *9/00*; H04J *3/12*
U.S. Cl. 340—825.52 **17 Claims**



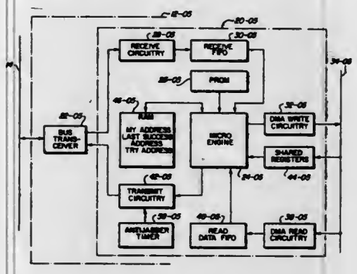
1. A real time packet switching system for serially transmitting a matrix of data bytes along a transmission means, the matrix having at least one matrix dimension, comprising:
an encoding means comprising:
means for selecting a set of data bytes having one common matrix dimension, each data byte having a plurality of data bits; parallel outputting the data bits of one sequentially selected data byte in said set during each of a plurality of time intervals; generating at least one address byte identifying the common dimension and consecutive shifting each of the at least one address byte after all of the data bytes have been sequentially shifted, the set of data bytes and the identifying address bytes defining a word packet; and generating a steering signal indicative of whether the address byte is the last to occur address byte in the word packet;
latch register means for receiving one of the data/address bytes and the steering signal during one of the time intervals and forming a word which comprises a data word when the word includes an address byte, and a steering bit set to correspond to the steering signal valve, and
means for serially shifting the formed word from the latch register means to the transmission means at a predefined bit rate during the time period between the predefined intervals and serially transmitting the word along the transmission means at the bit rate; and
decoding means comprising:
means for detecting the start of each word appearing on the transmission means,
register means having a number of storage locations equivalent to the sum of all the bits in the address bytes,
means for enabling bit-by-bit serial shifting of just the data and address bytes of the formed word into the register means,

means for sensing the level of the steering bit and using the data in the shift register to generate an address command when the steering bit is at a first level indicating that the data in the shift register comprises the at least one address byte.

4,551,721
METHOD FOR INITIALIZING A TOKEN-PASSING LOCAL-AREA NETWORK

Tony J. Kozlik, Phoenix, Ariz., assignor to Honeywell Inc., Phoenix, Ariz.

Filed Oct. 7, 1983, Ser. No. 540,216
Int. Cl.⁴ H04Q *9/00*
U.S. Cl. 340—825.52 **7 Claims**



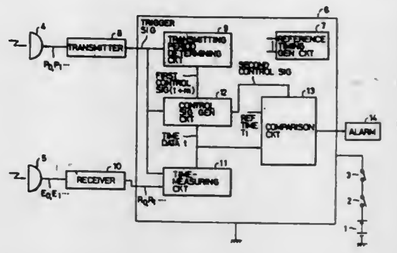
1. The method of initializing a token-passing local-area network which includes a plurality of modules communicating with one another over a common bus, with each module having a unique network address, comprising the steps of:
(1) each module listening for a predetermined period of time for any transmissions of signals on the bus;
(2) transmitting, if no signals are heard during step 1, for a period of time which is a function of each module's address;
(3) listening after a fixed delay for a fixed period of time after terminating transmission under step 2;
(4) the module that hears nothing in step 3, transmitting tokens sequentially addressed to each network address until a token is accepted by an addressed module; and
(5) the module performing step 4 producing a fault signal and terminating initializaton if the network address of a token to be transmitted in step 4 is that of the module performing step 4.

4,551,722
APPARATUS AND METHOD FOR DETECTING OBSTACLES IN THE PATH OF A MOVING VEHICLE

Tadashi Tsuda, Nagoya; Seiichiro Hiramatsu, Oobu; Mitsugi Ohtsuka, and Tsuyoshi Maeno, both of Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 15, 1983, Ser. No. 475,626
Claims priority, application Japan, Mar. 16, 1982, 57-41917
Int. Cl.⁴ G08G *1/00*; G01S *13/00, 15/93*
U.S. Cl. 340—904 **10 Claims**

1. Apparatus for detecting obstacles in the path of a vehicle, comprising:
(a) an ultrasonic radar system for periodically transmitting ultrasonic wave pulses and receiving echo signals reflected at obstacles;
(b) driving-detecting means for measuring time between the instance of transmission of the ultrasonic wave pulse and the instance of reception of its echo signal for detecting the distance between said vehicle and an obstacle, and for causing said ultrasonic radar system to transmit ultrasonic wave pulses at an interval variable in accordance with the distance-indicating time, said driving-detecting means having a computing means arranged to check whether the distance-indicating time has a predetermined relationship with a reference time so as to produce an output detection signal when a detected obstacle is within a dangerous range, said computing means checking said distance-indicating time at every other transmitting period; and

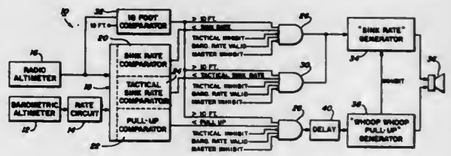


(c) an alarming device responsive to the result of said comparison for alerting the vehicle driver.

4,551,723
EXCESSIVE DESCENT RATE WARNING SYSTEM FOR ROTARY WING AIRCRAFT

Noel S. Paterson, Bothell, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jun. 10, 1983, Ser. No. 503,218
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—946 **18 Claims**



1. A warning system for rotary wing aircraft of the type capable of autorotation, comprising:
means for receiving signals representative of the altitude of the aircraft above the ground and the descent rate of the aircraft; and
means responsive to said receiving means for generating a warning if the relationship between the altitude and descent rate of the aircraft approaches the point where the aircraft cannot be landed safely by autorotation.

4,551,724
METHOD AND APPARATUS FOR CONTOUR MAPPING USING SYNTHETIC APERTURE RADAR

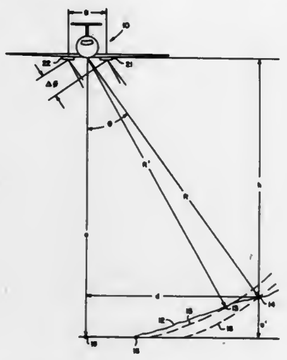
Richard M. Goldstein, La Canada; Edward R. Caro, Monterey Park, and Chialin Wu, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 10, 1983, Ser. No. 465,365
Int. Cl.⁴ G01S *13/90*
U.S. Cl. 343—5 CM **10 Claims**

6. A method for determining the elevation of terrain features in synthetic aperture radar image data using two antennae spaced apart a fixed distance, B, on a platform which carries the radar over terrain, where the distance B is measured in a horizontal plane while the platform is in level flight, comprising the step of
separately processing the return signals from said antennae in complex vector form to the pixel level, and recording for each pixel from each antennae the altitude, a, of the radar platform above a fixed reference together with the roll angle, α, of the platform,

determining the slant range, R, of pixels from the return signals received through said two antennae from substantially the same point of said terrain,

from said pixel data in complex vector form, determining the phase difference, $\Delta\phi$, between pixels received from substantially the same point through said separate antennae from the relationship expressed by the equation $\Delta\phi=(2\pi B/\lambda)$ sin $(\theta-\alpha)$ where λ is the wavelength of said radar,



determining the vertical height, h, of said platform above each pixel from the slant range as a function of the cosine of the slant angle R for each pixel, and

for each pixel, determining elevation, a', with respect to said fixed reference as the difference between said known altitude a of the radar platform and the determined height h of said platform with respect to a corresponding point on said terrain for each pixel.

4,551,725

SYSTEM FOR IDENTIFICATION AND DETERMINATION OF THE MOMENT OF PASSAGE OF A MULTIPLE NUMBER OF MOVING BODIES AT A GIVEN POINT ON THEIR PATH

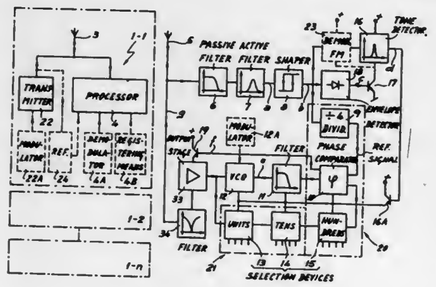
Rudolf Schaffer, La Chaux-de-Fonds, Switzerland, assignor to Compagnie des Montres Longines Francillon S.A., Switzerland

Filed Sep. 3, 1982, Ser. No. 414,913

Claims priority, application Switzerland, Sep. 7, 1981, 5751/81

Int. Cl.⁴ G01S *13/78*

U.S. Cl. 343—6.5 SS **18 Claims**



1. A system for identification and determination of the moment of passage of a multiple number of moving bodies over a given line intersecting their path, comprising in combination:

a plurality of mobile devices mounted respectively on said moving bodies, each of said mobile devices comprising transmitter means capable of transmitting a respective radio identification signal at a frequency which is representative of said moving body;

a fixed receiving antenna set up on said line and to receive the respective identification signals;

means for processing the identification signals received by the receiving antenna to identify each respective moving body which emitted it and the time each respective body passes by said receiving antenna;

a fixed transmitter located in proximity to said given line for emitting a control signal controlling the transmitters of said mobile devices;

each of said mobile devices further comprising

means for receiving said control signal,

means for generating said identification signal at said representative frequency,

first means connected between said receiving means and said generating means for converting said control signal into a reference signal with respect to which the value of said representative frequency signal is established,

second means also connected between said receiving means and said generating means for converting said control signal into a gate signal,

power supply means, and

gate means responsive to said gate signal for connecting said power supply means to said generating means and said transmitter means for applying power thereto only as long as said control signal is received by said receiver means.

4,551,726

OMNI-DIRECTIONAL RADAR AND ELECTRO-OPTICAL MULTIPLE CORNER RETRO REFLECTORS

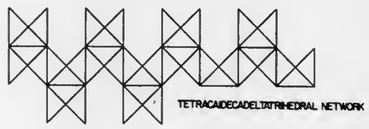
Richard M. Berg, Rte. 2, Box 2507, Stafford, Va. 22554

Filed Jul. 30, 1982, Ser. No. 403,682

Int. Cl.⁴ H01Q *15/18*

U.S. Cl. 343—18 C **27 Claims**





18. A planar two dimensional unitary network or pattern constituting an intermediate product adaptable by preselected design for assembling different members of a family of orthogonal polydeltatrihedral corner reflectors, each of said networks being formed on at least a semi-rigid reflective surfaced sheet material capable of being self-supporting when in the folded and assembled condition, each network comprising:

(a) a plurality of orthogonally arranged parallel horizontal rows and vertical columns of deltatrihedral-forming subpatterns of which each subpattern is constituted by three delineated uniform size adjoining 45° right constituent triangles;

(b) said right triangles oriented to have a common vertex formed by the mutual coincidence of individual apexes of each triangle, and further such that the 45° sides of the respective triangles collectively form a 90° "X" figure, with the respective three hypotenuses disposed at 90° relative to one another, some of which are vertically oriented and other of which are horizontally oriented;

(c) said rows of said subpatterns terminating in oppositely disposed parallel vertical free edges;

(d) said columns of said subpatterns terminating in top and bottom free edges substantially all of which have 90° "V" shapes; and

(e) all non-free edges of said delineated triangles including means facilitating folding or hinged interconnection between all interconnected triangles and subpatterns.

4,551,727

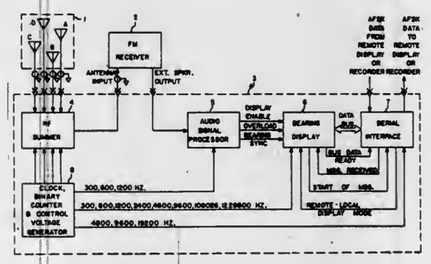
RADIO DIRECTION FINDING SYSTEM

David C. Cunningham, 5540 E. Charter Oak, Scottsdale, Ariz. 85254

Continuation-in-part of Ser. No. 157,366, Jun. 9, 1980,. This application Dec. 23, 1982, Ser. No. 452,712

Int. Cl.⁴ G01S *3/54*

U.S. Cl. 343—418 **15 Claims**



1. A radio direction finding system for determining the bearing of a source of an rf signal comprising:

an array of "n" nondirectional antennas substantially located at the vertices of a regular polygon of "n" sides and positioned substantially perpendicular to the plane of the polygon, where "n" is an integer having values in the range of from 3 to 8, the length of each side of the polygon being in the range of from one eighth to three eighths the wavelength of the rf signals of the source;

"n" electronically controlled variable gain means, the gain of each of which is a continuous function of a control signal applied thereto, each such variable gain means having a substantially constant input impedance and producing an output signal which is a function of an input signal applied thereto and the control signal;

"n" transmission line means each connecting an antenna to a variable gain means for applying antenna signals induced in the antenna to which each transmission line is connected to one of said variable gain means as the input signal thereto, each transmission line presenting to the antenna to which it is connected a characteristic impedance substantially matched to the input impedance of the variable gain means to which it applied signals;

circuit means for summing the output signals of each of the variable gain means to produce a summed output signal;

control signal means for producing "n" control signals for varying the gains of the variable gain means so that the summed output signal approximates the signals induced in a single antenna rotating in a circular path at a rotational frequency corresponding to a doppler modulation frequency f(d) in the audio range;

circuit means for applying a control signal produced by the control signal means to each of the variable gain means;

receiver means to which the summed output signal is applied for detecting the doppler modulation frequency of the summed output signal;

means for measuring the phase angle of the doppler modulation frequency with respect to one of the control signals for generating a bearing signal which is a function of said phase angle; and

means for displaying the bearing signal.

4,551,728

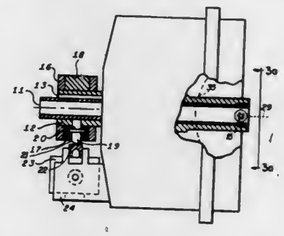
APPARATUS FOR RAPID SWITCH CONICAL SCAN FEED

Robert S. Roeder, Dunedin, and Peter M. Sterghos, St. Petersburg, both of Fla., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 20, 1983, Ser. No. 515,423

Int. Cl.⁴ H01Q *3/18*

U.S. Cl. 343—761 **5 Claims**



1. An apparatus for rapidly starting and stopping a conical scan antenna beam comprising:

feed means having a centerline and first and second ends for directing electromagnetic energy, said feed means includes a hollow circular cylinder,

cylindrical rotating means having first and second ends and a hollow inner region for rotating said feed means about a line coincident with said centerline, said hollow inner region being circular at said first end of said rotating means and elliptical at said second end of said rotating means, said feed means inserted in said hollow inner region with said first end of said feed means pivotally mounted at said first end of said hollow inner region, and

means for displacing said feed means a predetermined distance at said second end from said coincident line.

4,551,729

METHOD OF MAKING THERMAL TRANSFER TYPE MULTICOLOR PRINTING

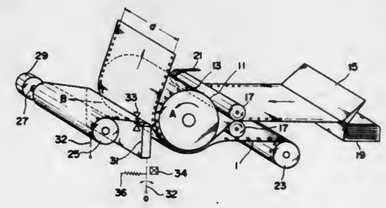
Takeshi Kubo, Tokyo; Junji Kawano, Ise; Fumio Takahashi, Ise, and Tsutomu Yamaguchi, Ise, all of Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,630

Claims priority, application Japan, Jul. 9, 1982, 57-119241

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—1.1 **4 Claims**



1. A method for making a thermal transfer type multicolor printing, comprising the steps of:

(a) setting an ink ribbon over a platen roller with a sheet of printing paper being interposed therebetween, the ink ribbon having at predetermined intervals a plurality of ink zones each carrying one of heat-dissolving inks of different colors;

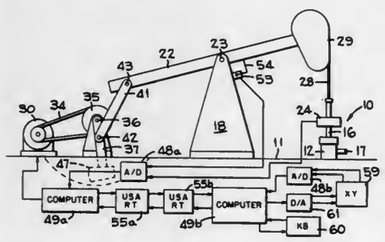
(b) then, positioning one of the ink zones at a printing position on the platen roller, the one ink zone being of a predetermined color;
(c) placing a thermal head at the printing position against the positioned one ink zones;
(d) driving the thermal head for transferring the ink of the one ink zone to the printing paper so that a first dot line of one picture component, for the predetermined color, of a picture to be printed is reproducted by the use of ink of the one ink zone;
(e) after the step (d), advancing the printing paper and the ink ribbon for a subsequent printing of the picture component;
(f) repeating the steps (d) and (e) until the whole picture component for the predetermined color is reproduced on the printing paper;
(g) then, moving the thermal head away from the printing position;
(h) after the step (g), moving backwards a predetermined restarting portion of the printing paper to the printing position on the platen roller for reproducing the remaining picture components; and
(i) repeating the steps (b) to (h) with respect to the other ink zones of different colors for reproducing the remaining picture components on the printing paper, whereby a multicolor picture is reproduced on the printing paper.

4,551,730

METHOD AND APPARATUS FOR ENTERING CONTROL POINTS RELATIVE TO A DYNAGRAPH OF A WELL PUMPING UNIT

Louis S. McTamaney, Cupertino, Calif.; Gary W. Bisbee, The Woodlands, Tex.; Robert W. Kettlety, and James L. Konsevich, both of San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 18, 1983, Ser. No. 470,017
Int. Cl.⁴ G01D *9/00*; E21B *47/00*
U.S. Cl. 346—33 WL **3 Claims**



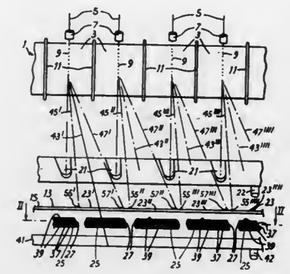
1. Apparatus for entering control points relative to a dynagraph of a well pumping unit having a deep well pump connected to a sucker-rod string, a power unit to reciprocate said rod string to produce fluid from an underground location and a computing means for monitoring rod string position and rod string load to analyze well conditions, said apparatus comprising:
first transducer means for generating a signal representative of a load on said rod string;
second transducer means for generating a signal representative of a position of said rod string;
an XY plotter for using said load signal and said position signal to develop a dynagraph of load versus position of said rod string, said plotter having a beam and a pen holder for moving a pen to visibly produce said dynagraph;
means for using a signal proportional to the position of said beam and a signal proportional to the position of said pen holder to select a control point relative to said dynagraph; and
means for entering said selected control point into said computing means for causing said pumping unit to be shut down when said dynagraph reaches a predetermined relationship to said selected control point.

4,551,731

INK JET PRINTING APPARATUS CORRECTIONAL IN DROP PLACEMENT ERRORS

John D. Lewis, Cambridge; Michael R. Keeling, Willingham; David R. Bowen, Bar Hill, and Anthony D. Paton, Long Stanton, all of England, assignors to Cambridge Consultants Limited, Cambridge, England

Continuation of Ser. No. 246,221, Mar. 23, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,169
Claims priority, application United Kingdom, Mar. 26, 1980, 8010105
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—75 **11 Claims**



1. An ink jet array printer adapted to print by depositing small drops of ink in accordance with printing information on a surface to be printed during unidirectional movement relatively to the printer, of the printing surface, comprising one or more rectilinear rows of ink jet printing guns, each gun having (a) means for supplying printing ink under pressure to an orifice, (b) means for forming regularly spaced drops in the ink stream issuing from the orifice, (c) charge electrode means for imparting charge levels to drops in the stream, (d) means for applying to the charge electrode means, under the control of the printing information, a periodic voltage waveform whose period is sufficient to span the formation of a series, hereinafter referred to as a "raster", of consecutively formed drops and whose amplitude is dependent on said printing information and determines said charge levels imparted to drops in the ink stream, (e) drop deflection means for providing a substantially constant electrostatic field through which the drops pass towards the printing surface and for causing deflection of electrically charged drops, transversely to the direction of relative movement of the printing surface and the printer, to an extent dependent upon the charge levels on the drops, and (f) drop intercepting means for collecting drops other than those drops charged for printing on the printing surface, the drops charged for printing in the printing guns during each period of the voltage waveform being deposited in respective line sections formed by contiguous drops, which sections together present a printed line transversely of the direction of relative movement, the printed lines being formed in contiguity successively at the frequency of the voltage waveform applied to the charge electrode means, the improvement whereby nozzle-associated drop placement errors in the direction of relative movement of the printing surface and the printer are corrected, wherein the printer further includes:
a plurality of detector means, one said detector means associated with each printing gun, for electrically sensing the position of jets of charged test drops from said associated printing gun, thereby to provide values representative of drop placement errors in the direction of relative motion of the printing surface and the printer of drops printed by said associated printing gun, and

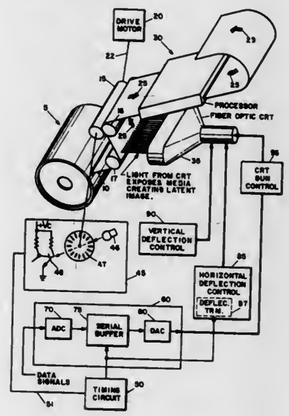
controls means responsive to said values provided by said detector means of each printing gun for advancing or retarding, in dependence upon said values, the application to the charge electrode means of the corresponding printing gun of the periodic voltage waveform, thereby to correct for drop placement errors in the direction of relative movement of the printing surface and the printer, as measured by the positions of the jets of charged test drops sensed by the detector means.

4,551,732

METHOD AND APPARATUS FOR MODULATING THE RECORDING RATE OF AN IMAGE ON THE RECORDING MEDIA OF A LINE SCAN GRAPHIC RECORDER WITH THE VELOCITY OF THE RECORDING MEDIA

Jerrold J. Rogers, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 20, 1983, Ser. No. 505,680
Int. Cl.⁴ G01D *9/00, 9/42*
U.S. Cl. 346—110 R **6 Claims**



1. A method of modulating the recording rate of an image on a recording media, as the media passes a fixed position single line writing means, with the instantaneous velocity of the recording media in a line scan recorder, the method comprising the steps of:
a. generating a signal having characteristics that are directly proportional to instantaneous variations in the velocity of the recording media;
b. sequentially storing each line of input data; and
c. triggering the sequential release of each line of data stored in step b in response to the signal of step a.

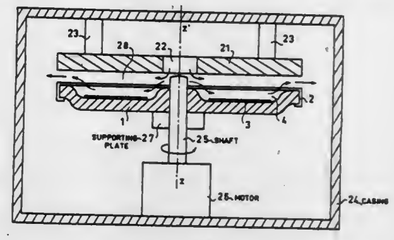
4,551,733

PROTECTED OPTICAL DISC COMPRISING A FLEXIBLE CLOSURE ELEMENT

Jean Cornet; Francois Langé ; Francois Le Carvennec; Jean-Claude Lehureau, and Roger Rascle, all of Paris, France, assignors to Thomson CSF, Paris, France

Filed Mar. 11, 1983, Ser. No. 474,452
Claims priority, application France, Mar. 23, 1982, 82 04913
Int. Cl.⁴ G01D *15/32*
U.S. Cl. 346—137 **8 Claims**

1. An optical disc and disc-drive device for use with an optical beam apparatus comprising:
a drive motor with a drive shaft;
a supporting element having a center hole for receiving said drive shaft, and having two annular raised portions of said element, one of which is concentric and adjacent to said center hole and the other of which is concentric and adjacent the periphery of said element, and having an annular depressed portion between said raised portions;
means defining an annular recording surface deposited on said supporting element in said depressed portion;
a protective flexible layer permeable to optical beams from said optical beam apparatus, and supported on raised portions of said element so as to form an annular chamber between said element and said layer, said recording surface being contained therein;
stationary disc cover means mounted parallel to said supporting element having a hole coaxial with but larger than said drive shaft and having portions permeable to said optical beams; and
a gas chamber defined by a space betwen said disc cover and said flexible layer so that rotation of said disc causes centrifugal force on gas in said gas chamber to push the same radially outward away from said coaxial hole and thereby draw gas through said coaxial hole into said gas chamber, wherein negative pressure thereby created in said gas chamber draws said flexible layer upward to prevent the flexible layer from contacting said recording surface.

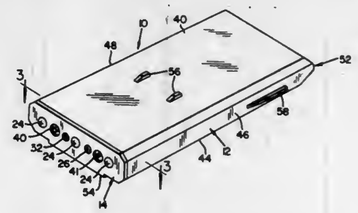


4,551,734

INK CARTRIDGE WITH INK LEVEL SENSOR

Gary C. Causley, Portland, and Martin D. Rosback, West Linn, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 6, 1984, Ser. No. 679,199
Int. Cl.⁴ G01D *15/18*; B65D *37/00*; G01F *23/26*; E41F *33/12*
U.S. Cl. 346—140 R **11 Claims**



1. An ink cartridge comprising:
an ink container having an ink flow opening through which ink is delivered from the ink container, the ink container collapsing as ink is used from the container;
electrical probe support means projecting into the interior of the ink container, said electrical probe support means including a first flat ink container closure surface against which the ink container collapses as ink is used from the container;
first and second spaced apart electrical probes extending into the ink container, a portion of each of the probes being exposed to the ink within the ink container with the flat ink container closure surface extending between the exposed probe portions, thereby providing a first electrically conductive path between the exposed probe portions and through the ink along the first ink container closure sur-

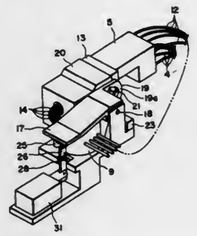
face, the conductive path being closed as ink is used from the ink container and the ink container collapses against the first container closure surface.

4,551,735

INK JET RECORDING APPARATUS

Tetsuo Suzuki, Yokohama, and Shigemitsu Tazaki, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1984, Ser. No. 612,698
Claims priority, application Japan, May 30, 1983, 58-96492; May 30, 1983, 58-96493; May 31, 1983, 58-97278
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—140 R **13 Claims**



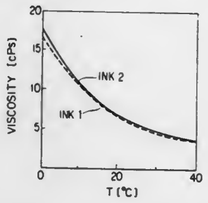
1. An ink jet recording apparatus comprising:
recording means for discharging ink in response to a recording signal;
cap means for covering the ink discharging portion of said recording means;
attracting means for attracting said recording means covered by said cap means; and
means for inhibiting said cap means from being released from a condition in which it covers said recording means, for a predetermined time after said attracting means has been operated.

4,551,736

INK-JET RECORDING METHOD

Eiichi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,268
Claims priority, application Japan, Sep. 9, 1983, 58-165119
Int. Cl.⁴ G01D *15/18;* **C09D** *11/00*
U.S. Cl. 346—140 R **8 Claims**



1. An ink-jet recording method employing inks of at least one color and a plurality of inks containing different concentration of a dye for each color, characterized in that the viscosities of the plurality of inks of the same color in the temperature range of 0° to 40° C. satisfy the relation

$$V_{max.} - V_{min.} \leqq 1.0 \text{ (cps)}$$

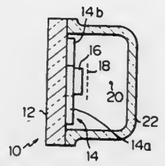
wherein, $V_{max.}$ and $V_{min.}$ represent the maximum and minimum values, respectively, of the viscosities.

4,551,737

OPTICAL DATA PATTERN GENERATION DEVICE COMPRISING PHOSPHOR MEMBER

Toshiyuki Inokuchi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 15, 1983, Ser. No. 504,760
Claims priority, application Japan, Jun. 21, 1982, 57-106595; Jun. 21, 1982, 57-106596
Int. Cl.⁴ G01D *15/14*
U.S. Cl. 346—161 **16 Claims**



1. An optical data pattern generation device for generating an optical dot pattern, said apparatus comprising:
at least one electrode array comprising a plurality of electrodes arranged in an array in a main scan direction, each of said electrodes having a narrow width;
a phosphor member extending in the main scan direction in the neighborhood of the electrode array, said phosphor member defining optical dots in portions thereof which overlap the electrode array;
a cathode filament extending in the main scan direction; and
drive means for driving the individual electrodes of the electrode array to cause the portions of the phosphor member overlapping the electrodes to emit light and thereby form a luminous dot pattern.

4,551,738

THERMOSENSITIVE RECORDING MATERIAL

Keiichi Maruta, and Yukihiro Yuyama, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 352,605, Feb. 24, 1982, Pat. No. 4,444,819. This application Feb. 17, 1984, Ser. No. 581,106
Claims priority, application Japan, Mar. 5, 1981, 56-31457
The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—200 **15 Claims**

1. A thermosensitive recording material comprising, in successive layers:
a support material;
a thermosensitive coloring layer formed on the front side of said support material, said thermosensitive coloring layer comprising a leuco dye and an acidic material, said acidic material being capable of causing said leuco dye to become colored when heat is applied thereto; and
a protective layer formed on the front side of said thermosensitive coloring layer, said protective layer comprising polyvinyl alcohol having a saponification ratio in the range of from 70% to 85%.

4,551,739

RECORD MEMBER

Robert E. Miller, and Steven L. Vervacke, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed May 23, 1984, Ser. No. 612,957
Int. Cl.⁴ B41M *5/16, 5/22*
U.S. Cl. 346—216 **10 Claims**

1. A record member comprising a substrate and a developer composition comprising 2,2-bis(4-hydroxyphenyl)-5-methylhexane.

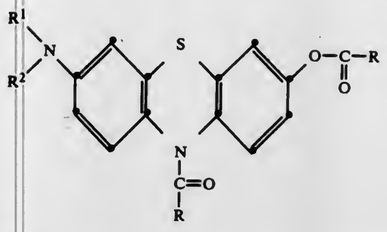
4,551,740

ELECTROCHROMIC AND MARKING SYSTEMS

William M. Hung, Cincinnati, Ohio, assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Filed Jul. 31, 1984, Ser. No. 636,464
Int. Cl.⁴ B41M *5/20*
U.S. Cl. 346—218 **6 Claims**

1. A substrate for use in electrochromic recording comprising a support sheet containing as a color-forming substance a 3-(R-carbonyloxy)-7-[N-(R^1)(R^2)-amino]-10-(R-CO)-phenothiazine having the formula



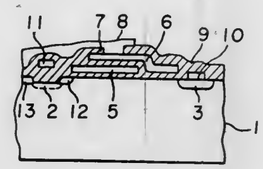
wherein:
R represents non-tertiary C_1 to C_{12} alkyl, C_4 to C_8 cycloalkyl, non-tertiary C_1 to C_{12} alkyl substituted with halogen, non-tertiary C_1 to C_4 alkoxy or non-tertiary C_1 to C_4 alkoxycarbonyl, phenyl or phenyl substituted by one to three of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro, halo, phenyl or cyano; and
R^1 and R^2 independently represent C_1 to C_4 alkyl, phenyl, phenyl substituted by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy, benzyl or benzyl substituted in the benzene ring by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy.

4,551,741

DRAM WITH POLYSI BIT LINES AND ADDED JUNCTION CAPACITANCE

Kazuhiro Shimotori, and Hideyuki Ozaki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 279,559, Jul. 1, 1981, abandoned. This application Dec. 29, 1983, Ser. No. 565,531
Claims priority, application Japan, Jul. 7, 1980, 55-93461
Int. Cl.⁴ H01L *27/04;* **G11C** *11/40*
U.S. Cl. 357—23.6 **3 Claims**



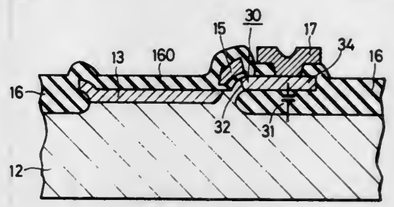
1. In a semiconductor memory device having at least two layers of polycrystalline silicon and having an insulated gate field effect transistor as a fundamental element formed on a substrate, an improvement comprising:
a first layer of polycrystalline silicon serving as an electrode of a capacitor including an electric charge storage region, and a bit line, said first polycrystalline silicon layer extending over only a portion of said electric charge storage region, said electric charge storage region including a region not covered by said first polycrystalline layer, said not covered region formed in said substrate and having a conductivity type opposite that of said substrate and acting as an additive junction capacitor to increase the charge storage capacity of said charge storage region; and
a second layer of polycrystalline silicon serving as a gate electrode of said transistor,
said second layer of polycrystalline silicon partially covering said first layer of polycrystalline silicon and also not covering said additive junction capacitor; and
said first and second polycrystalline silicon layers extending over and covering regions of said substrate which are all only of the substrate conductivity type.

4,551,742

SOLID-STATE IMAGING DEVICE

Iwao Takemoto, Tokyo; Shiya Ohba, Kanagawa; Masakazu Aoki, Kodaira; Haruhisa Ando, Hachioji; Masaaki Nakai, Kodaira; Toshifumi Ozaki, Tokyo; Masao Tamura, and Masanobu Miyao, both of Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 328,621, Dec. 8, 1981,. This application Aug. 14, 1984, Ser. No. 640,570
Claims priority, application Japan, Dec. 8, 1980, 55-184784[U]
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 357—31 **13 Claims**



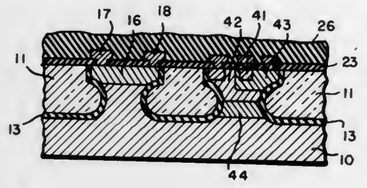
1. A solid-state imaging device comprising:
a substrate;
a plurality of photoelectric conversion elements formed on said substrate;
a plurality of switching means formed on said substrate, said switching means each being coupled to a respective photoelectric conversion element to form a plurality of picture element pairs in said substrate, each of said picture element pairs comprising a photoelectric conversion element and a switching means, said picture element pairs being arranged in an array in said substrate, wherein each of said switching means is formed of a plurality of semiconductor regions including a first region for receiving a signal from said photoelectric conversion element, a second region for providing an indication of a state of said photoelectric conversion element signal received at said first region, and a third region coupled between said first and second regions to control the transfer of said indication of said state of said photoelectric conversion element signal from said first region to said second region; and
scanning means coupled to said third region for controlling the transfer of said indication of said state of said photoelectric conversion element signal from said first region to said second region,
wherein said second region is disposed on an insulating film overlaying said substrate, said insulating film having a predetermined thickness which is sufficient to prevent a flow of photoelectrons generated in said photoelectric conversion element into said second region.

4,551,743

SEMICONDUCTOR INTEGRATED CIRCUIT WITH ISOLATION REGION MADE OF DIELECTRIC MATERIAL

Kenji Murakami, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 296,476, Aug. 26, 1981, abandoned. This application Aug. 6, 1984, Ser. No. 637,707
Claims priority, application Japan, Aug. 29, 1980, 55-119294
Int. Cl.⁴ H01L *21/76, 21/302, 27/04, 29/78*
U.S. Cl. 357—50 **11 Claims**



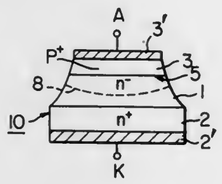
1. A semiconductor integrated circuit, comprising:
(a) a semiconductor substrate having a surface;
(b) a plurality of isolation regions formed in said substrate and filled with a dielectric material, each of said isolation regions having a first portion near said surface of said substrate with parallel side walls and a second portion below said first portion with side walls extending outwardly beyond said side walls of said first portion, the substrate adjacent the juncture of said first and second portions of at least one of said isolation regions having a constant impurity profile;
(c) an active region included in said substrate and surrounded by said isolation regions; and
(d) a circuit component formed at least partially in said active region.

4,551,744

HIGH SWITCHING SPEED SEMICONDUCTOR DEVICE CONTAINING GRADED KILLER IMPURITY

Kensuke Suzuki, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,328
Claims priority, application Japan, Jul. 31, 1981, 56-119087
Int. Cl.⁴ H01L *29/167, 29/74*
U.S. Cl. 357—64 **6 Claims**



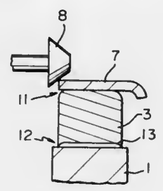
1. A semiconductor device including at least one pn junction across which a current is allowed to flow, comprising:
a first semiconductor region of a first conductivity type having a high resistivity;
a second semiconductor region of a second conductivity type opposite to said first conductivity type, having an impurity concentration higher than that of said first semiconductor region and disposed adjacent to said first semiconductor region to form one of said at least one pn junction therebetween; and
a graded distribution of lifetime killer formed in substantially the whole portion of said first semiconductor region and having a killer concentration distribution which decreases with an increase in distance from said one pn junction.

4,551,745

PACKAGE FOR SEMICONDUCTOR DEVICE

Hisashi Watanabe, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 28, 1982, Ser. No. 425,650
Claims priority, application Japan, Sep. 30, 1981, 56-153892
Int. Cl.⁴ H01L *23/04;* **B23K** *11/34*
U.S. Cl. 357—72 **3 Claims**



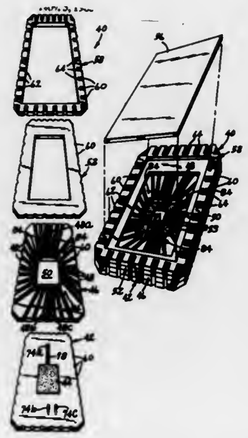
1. A package for a semiconductor device comprising: a sealing frame having first and second opposing sides, the second side having a projected edge portion comprising a flash or a burr produced by blanking presswork of said sealing frame; a package substrate fixed to said first side of said sealing frame; a semiconductor element fixed to said package substrate; and a sealing cap fixed to said second side of said sealing frame by seam welding,
wherein said semiconductor element is sealed by said sealing frame and said sealing cap, and wherein said sealing cap is welded to said sealing frame at the projected edge portion of said sealing frame.

4,551,746

LEADLESS CHIP CARRIER APPARATUS PROVIDING AN IMPROVED TRANSMISSION LINE ENVIRONMENT AND IMPROVED HEAT DISSIPATION

Barry K. Gilbert, and Daniel J. Schwab, both of Rochester, Minn., assignors to Mayo Foundation, Rochester, Minn.

Continuation-in-part of Ser. No. 432,843, Oct. 5, 1982,. This application Jun. 20, 1983, Ser. No. 505,866
Int. Cl.⁴ H01L *23/14, 23/40, 23/48, 23/04*
U.S. Cl. 357—74 **21 Claims**



1. A carrier apparatus for mounting logic components on a mounting surface having electrical pathways such as a circuit board, comprising:

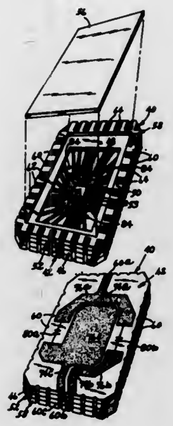
(a) a housing defining top and bottom surfaces, said housing further having a cavity for receipt of a logic component;
(b) lid means for enclosing said cavity;
(c) a plurality of electrical pathways positioned within said housing, said electrical pathways being positioned on at least two vertically spaced apart horizontal planes within said housing so as to have a "co-planar" arrangement on each of said horizontal planes, said electrical pathways further being horizontally spaced apart from one another and configured to minimize parasitic inductance and capacitance of individual electrical pathways, said electrical pathways being embedded between spaced apart planes selected from voltage and ground planes, said electrical pathways cooperating with said planes to provide a transmission line environment along said electrical pathways;
(d) vertically extending means for electrically interconnecting said electrical pathways in said housing with the electrical pathways on said mounting surface, said vertically extending means including vertically extending signal means configured to cooperate with corresponding vertically extending ground means spaced apart from said vertically extending signal means and extending substantially parallel to said vertically extending signal means, said vertically extending signal means and said vertically extending ground means cooperating to provide a transmission line like environment along said vertically extending signal means wherein said vertically extending signal means display a controlled impedance; and
(e) means for structurally attaching the carrier apparatus to said mounting surface.

4,551,747

LEADLESS CHIP CARRIER APPARATUS PROVIDING FOR A TRANSMISSION LINE ENVIRONMENT AND IMPROVED HEAT DISSIPATION

Barry K. Gilbert, and Daniel J. Schwab, both of Rochester, Minn., assignors to Mayo Foundation, Rochester, Minn.

Filed Oct. 5, 1982, Ser. No. 432,843
Int. Cl.⁴ H01L *23/14, 23/40, 23/48, 23/04*
U.S. Cl. 357—74 **20 Claims**



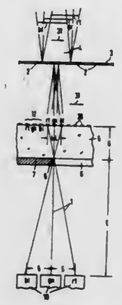
1. A carrier apparatus for mounting a logic component on a mounting surface of a circuit board, comprising:
(a) a housing including multiple layers of dielectric material, said housing having a bottom surface and a top surface facing in an opposite direction and separated from said bottom surface by the multiple layers of dielectric material, said housing having a cavity disposed in said bottom surface for receipt of a logic component, said housing having no such cavity disposed in said top surface, said cavity extending part way into said housing and defining a surface recessed within said housing for attachment of the logic component;
(b) a lid portion positioned over said cavity for hermetically sealing the logic component in said cavity;
(c) means for mounting said housing on the mounting surface of the circuit board with said bottom surface of said housing and said lid portion facing the mounting surface such that said lid portion is spaced from the mounting surface of the circuit board, said top surface facing away from the circuit board;
(d) heat dissipation means positioned proximate said top surface for dissipating heat away from the surface of the circuit board, the thickness of said top surface of said housing being minimized to facilitate heat dissipation and yet provide structural integrity to said housing; and
(e) said housing including means for electrically interconnecting the logic component to the circuit board, said electrical interconnecting means including horizontally extending electrical leads embedded within said housing and vertically extending electrical leads electrically interconnecting said horizontally extending electrical leads to the circuit board, said horizontally extending electrical leads including horizontally spaced apart alternating ground and signal electrical leads embedded in said dielectric material of said housing between vertically spaced apart planes selected from voltage and ground planes extending parallel to said ground and signal electrical leads so as to provide a transmission line environment along said signal electrical leads, certain of said horizontally extending electrical leads being interconnected to the logic component.

4,551,748

MEASURING HEAD FOR DETERMINING THE COLOR PURITY AND THE CONVERGENCE IN A COLOR PICTURE TUBE

Hans P. Mattle, Waiblingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 16, 1983, Ser. No. 467,121
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206913
Int. Cl.⁴ H04N *9/62*
U.S. Cl. 358—10 **7 Claims**



1. A measuring head for determining the convergence and the color purity of a color TV picture tube having phosphor areas arranged in the form of stripes, comprising
a diaphragm with a diaphragm aperture;
a housing for said measuring head;
a base plate carrying a plurality of sensors, including one sensor each for the colors red, green, and blue, said sensors are spaced apart from each other, the center-to-center distance between adjacent sensors being the distance S, said sensors are arranged in one line at a distance E=G S/L from said diaphragm wherein G is the glass thickness of the front screen of said TV picture tube and L is the

center-to-center distance of adjacent ones of said stripes; and

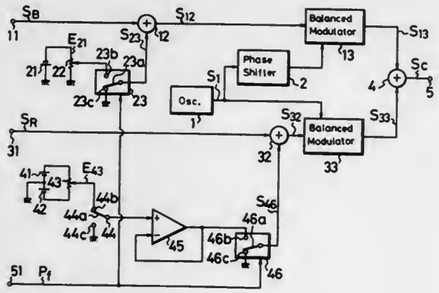
at least one portion of said diaphragm aperture is wedge-shaped in two directions perpendicular in relation to one another.

4,551,749

CIRCUIT TO VARY THE PHASE OF THE COLOR BURST SIGNAL

Takato Narita, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,259
Claims priority, application Japan, Jul. 30, 1982, 57-134127
Int. Cl.⁴ H04N *9/46, 9/535*
U.S. Cl. 358—28 **4 Claims**



1. A hue control circuit used for a hue corrector of a video signal processor comprising:

first adding means for adding a first DC voltage to a B−Y color difference signal during generation of a burst flag pulse;

means for selecting a second DC voltage;

second adding means for adding said second DC voltage to an R−Y color difference signal during generation of said burst flag pulse.

generating means for generating a first carrier signal and a second carrier signal with a phase difference of 90 degrees between said first and second carrier signals;

first modulating means for modulating said first carrier signal by an output signal of said first adding means;

second modulating means for modulating said second carrier signal by an output signal of said second adding means; and

mixing means for mixing output signals of said first and second modulating means;

whereby a phase of a burst signal output from said mixing means is varied in accordance with said second DC voltage.

4,551,750

COLOR PICTURE READING SYSTEM

Masami Kurata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

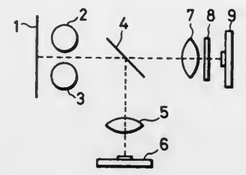
Filed Aug. 30, 1982, Ser. No. 413,199
Claims priority, application Japan, Sep. 4, 1981, 56-138619
Int. Cl.⁴ H04N *1/46;* G03F *3/08*
U.S. Cl. 358—75 **6 Claims**

1. A color picture reading system, comprising:

first and second means for subjecting an optical image of an original to photo-electric conversion with respectively wide and narrow wavelength ranges;

first encoder means for binary-encoding a signal obtained from said first means with a predetermined voltage level;

second encoder means for binary-encoding an output signal from said second means with a single threshold level proportional to a level of said signal from said first means; and



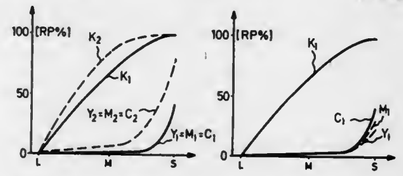
circuit means for processing signals output by said first and second encoder means to perform a desired two-color separation.

4,551,751

COLOR REDUCTION DEPENDENT ON TONE

Eggert Jung, Schoenberg, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,733
Claims priority, application European Pat. Off., Apr. 10, 1982, 82103090.5
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—75 **5 Claims**



1. In a color reduction method which is dependent on tone in four-color printing, in which the color components of the chromatic printing inks are reduced and the amount of black printing ink is increased for compensating such color reduction the steps of:

increasing the black printing ink signal on the basis of nearly complete achromatic synthesis up to a gray tone value which corresponds to the full tone of the black printing ink; the improvement comprising increasing the chromatic printing ink signals from this gray tone value up to the maximum shadow.

4,551,752

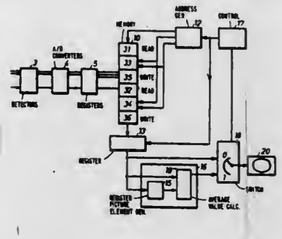
METHOD AND APPARATUS FOR CORRECTING DISTORTION IN AN IMAGE WHICH IS RECORDED ELECTRONICALLY AND BUILT UP ALONG LINES

Lars E. Wall, Mölndal, and John E. Jonsson, Mölnlycke, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE82/000365, § 371 Date Jun. 16, 1983, § 102(e) Date Jun 16, 1983, PCT Pub. No. WO.83/01718, PCT Pub. Date May 11, 1983
PCT filed Nov. 2, 1982, Ser. No. 514,823
Claims priority, application Sweden, Nov. 10, 1981, 8106650
Int. Cl.⁴ H04N *5/33, 3/08*
U.S. Cl. 358—113 **11 Claims**

1. A method of correcting distortion in an image recorded electronically and built up of picture elements along lines, the distortion consisting therein that in a field of view scanned along lines, the picture elements situated vertically below each other will be horizontally displaced relatively to each other when reproduced on parallel straight lines, the improvement comprising storing the picture elements arising by scanning the field of view are stored in a memory and controllably feeding the stored picture signals a picture screen, the control being in such manner that the picture signals associated with the shortest reproduction line contain the picture elements unchanged

while in picture signals associated with longer scanning lines picture elements at definite distance from each other are fed out delayed with a time corresponding to a whole or part picture element, picture signals of corresponding length being



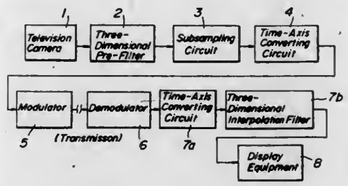
generated and inserted in the arising interspaces, said definite interspaces being selected in such a manner that the number per line of interspaces is proportional to the difference between the length of the respective line and of the shortest line.

4,551,753

PICTURE SIGNAL PROCESSING SYSTEM INCLUDING SPATIO-TEMPORAL FILTER

Taiji Nishizawa, and Yutaka Tanaka, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,078
Claims priority, application Japan, Dec. 17, 1981, 56-204189; May 26, 1982, 57-88018; Sep. 9, 1982, 57-155788
Int. Cl.⁴ H04N *5/02*
U.S. Cl. 358—140 **28 Claims**



1. A picture signal processing system in which a sequential scanning wideband picture signal is converted into an interlace scanning narrowband picture signal and reconverted into substantially its original state after transmission through a narrowband transmission line, comprising at a sending end:

a picture signal generating means for generating said sequential scanning wideband picture signal,

a multidimensional spatio-temporal prefiltering means for filtering aliasing signal components caused in said picture signal by sampling required for scanning conversion to provide a filtered picture signal,

a subsampling means for sampling said filtered picture signal, so as to convert said sequential scanning wideband picture signal into an interlace scanning wideband picture signal,

a time axis converting means for expanding the time axis of said interlace scanning wideband picture signal, so as to convert said interlace scanning wideband picture signal into said interlace scanning narrowband picture signal, and

a modulating means for modulating a carrier signal by said interlace scanning narrowband picture signal; and comprising at a receiving end:

a demodulating means for demodulating the modulated carrier signal, so as to restore said interlace scanning narrowband picture signal,

a time axis reconverting means for compressing the time axis of said restored interlace scanning narrowband picture signal, so as to convert said restored interlace scanning narrowband picture signal into an intermittent quasi-wideband picture signal,

a multidimensional spatio-temporal interpolation filtering means for filtering aliasing signal components in said picture signal caused by resampling required for scanning reconversion and for interpolating said intermittent quasi-wideband picture signal so as to substantially restore said sequential scanning wideband picture signal, and

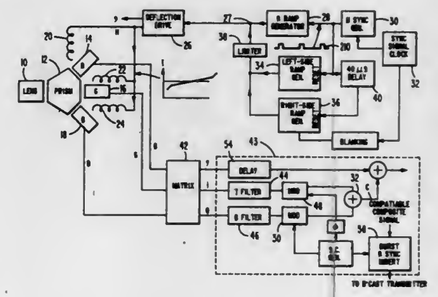
a display means for displaying the substantially restored sequential scanning wideband picture signal, wherein both of said spatio-temporal prefiltering means and said spatio-temporal interpolation filtering means have a passing region substantially restricted to a lower frequency region on at least a coordinate plane extending along a vertical spatial frequency axis and a temporal frequency axis of multidimensional coordinates consisting of a horizontal spatial frequency axis, a vertical spatial frequency axis and a temporal frequency axis, provided for defining said picture signal, which lower frequency region includes an origin of said multidimensional coordinates which is separated from a higher frequency region, in which said aliasing signal components appear, by a symmetrical line intercrossing both of the vertical spatial frequency axis and the temporal frequency axis and equally distant from both of said origin and an imaginary origin corresponding to a sampling frequency employed for the sampling of said picture signal.

4,551,754

COMPATIBLE WIDE-SCREEN COLOR TELEVISION SYSTEM

William H. Meise, Wrightstown, Pa., and Robert A. Dischert, Burlington, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 18, 1982, Ser. No. 350,088
Int. Cl.⁴ H04N *5/91, 9/535*
U.S. Cl. 358—180 **20 Claims**



1. A compatible wide-angle television system comprising:

generating means for generating recurrent line-scan television signals representative of a wide-aspect ratio scene:

identifying means coupled to said generating means for providing an output signal manifestation identifying first signal portions of each of said line-scan television signals as relating to a relatively narrow-aspect-ratio portion of the scene and second portions as being an excess thereover;

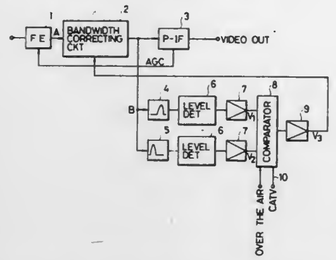
processing means coupled to said generating means and to said identifying means for processing at least a portion of said second portion signals differently relative to said first portion signals, the different processing being selected with respect to the processing of said first portion signals such that a wide-aspect ratio signal is generated which may be displayed on a relatively narrow aspect-ratio raster with a substantial portion of said excess concealed from view.

4,551,755

TELEVISION BANDWIDTH CORRECTING SYSTEM

Kouichi Matsuda, and Youichi Sato, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,448
Claims priority, application Japan, Dec. 28, 1982, 57-22731
Int. Cl.⁴ H04N *5/44*
U.S. Cl. 358—188 **2 Claims**



1. A television bandwidth correcting system for use in a television receiver or television tuner, comprising:

a bandwidth adjusting circuit having a passband determined in accordance with a state of a signal applied to a bandwidth controlling input thereof, said bandwidth adjusting circuit receiving an input from a front end and having an output applied to an intermediate frequency amplifier of a television receiver;

video and audio band filters for filtering out video and audio components, respectively, from said output of said bandwidth adjusting circuit;

first and second level detecting means having inputs coupled to outputs of said video and audio band filters, respectively, for producing first and second signals representative of levels of video and audio components contained in a signal at said output of said bandwidth adjusting circuit; and

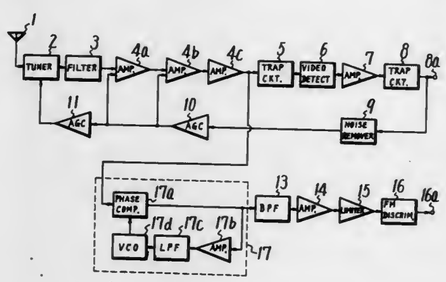
a comparator for comparing said first and second signals, an output of said comparator being applied to said bandwidth controlling input of said bandwidth adjusting circuit.

4,551,756

INTERCARRIER SOUND DETECTING APPARATUS FOR A TELEVISION RECEIVER

Masumi Ogawa; Hiromi Kawakami, both of Yokohama, and Toshiaki Meguro, Akishima, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,464
Claims priority, application Japan, Dec. 16, 1981, 56-203139
Int. Cl.⁴ H04N *5/62, 5/60*
U.S. Cl. 358—197 **8 Claims**



1. Sound detecting apparatus for a television receiver comprising:

receiving means for receiving a television signal including an amplitude-modulated video carrier component and a sound carrier component;

video intermediate frequency means for producing a video intermediate frequency signal having said amplitude-modulated video carrier component and said sound carrier component, in response to said received television signal;

phase-locked loop means for phase-locking said video intermediate frequency signal with respect to said amplitude-modulated video carrier component thereof and producing an output signal in response thereto; and

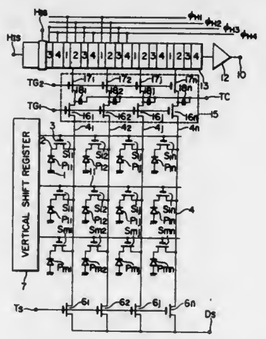
sound signal generating means for producing a sound signal in response to said output signal.

4,551,757

METHOD FOR DRIVING SOLID-STATE IMAGE SENSOR

Yoshio Ohkubo; Yoshiaki Sone, both of Osaka; Susumu Hashimoto, Shiga; Kiyotsugu Ishikawa, Osaka; Masanori Omae, Kyoto, and Masao Hiramoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 22, 1982, Ser. No. 436,067
Claims priority, application Japan, Oct. 22, 1981, 56-169870
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—212 **5 Claims**



1. In a solid-state image sensor of the type comprising

(a) an array of photosensors disposed over one major surface of a semiconductor substrate,

(b) an array of transistor switches disposed in one-to-one correspondence relationship with said photosensors,

(c) a plurality of vertical signal lines for reading out the signal charges generated at said array of photosensors,

(d) a horizontal readout charge-coupled device (CCD) shift register, and

(e) a plurality of transfer gates equal in number to said plurality of vertical signal lines and interconnected between stages of said horizontal readout CCD shift register and said plurality of vertical signal lines, a driving method comprising the steps of:

(A) injecting bias charges having an identical value into the stages, respectively, of said horizontal readout CCD shift register,

(B) transferring signal charges from said array of photosensors to said vertical signal lines, respectively,

(C) transferring said bias charges from said horizontal readout CCD shift register through said transfer gates to said vertical signal lines, respectively, thereby adding them to said signal charges, respectively,

(D) transferring the sum of said signal and bias charges into said horizontal readout CCD shift register, and

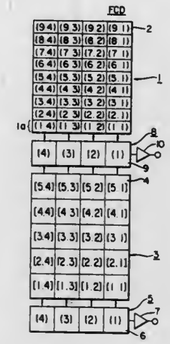
(E) driving said horizontal readout CCD shift register to supply said signal charges to an output terminal.

4,551,758

IMAGE PICK-UP DEVICE AND SYSTEM

Makoto Masunaga, and Takao Kinoshita, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,536
Claims priority, application Japan, Jun. 9, 1982, 57-99861; Dec. 8, 1982, 57-215900
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **39 Claims**



1. A system for generating an electrical indication indicative of an image scansion, comprising in combination:

(A) image sensing means including a plurality of one-dimensional image sensing arrays arranged in parallel with each other, each of said sensing arrays being for generating an electrical indication indicative of a line scansion of a portion of an image;

(B) storage means including a plurality of one-dimensional storage arrays arranged in parallel with each other; and

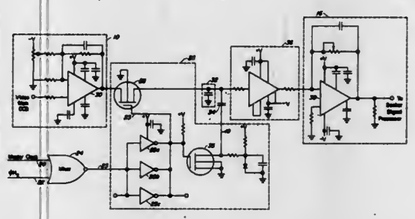
(C) control means for controlling said image sensing means and said storage means, said control means causing the sensing means to successively form, at a selected one of said sensing arrays, composite electrical indications each being composed of a selected plural number of said line scansion indications and causing the storage means to successively store said composite electrical indications formed by the sensing means.

4,551,759

SAMPLE VIDEO AMPLIFIER

Daniel L. Crabtree, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1983, Ser. No. 484,657
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **2 Claims**



1. A sample video amplifier for amplifying a raw video signal from a charge coupled device array having multiple phase horizontal shift signals and a master clock signal, comprising:

a mixer for inputting said master clock signal and one of said horizontal shift signals and producing a sample signal output;

a first stage gain for inputting said raw video signal and amplifying said raw video signal to a preselected level;

an inverter electrically connected to said mixer;

a switching transistor electrically connected to said inverter and to said first stage gain for sampling said raw video signal, said switching transistor being controlled by a signal from said mixer;

a sample capacitor electrically connected to said switching transistor for storing said sampled video signal;

a reset electrically connected between said inverter and said sample capacitor for clearing said sample capacitor upon a preselected reset signal;

a hold circuit electrically connected to said sample capacitor for maintaining said sampled video signal until a fresh sample pulse occurs; and

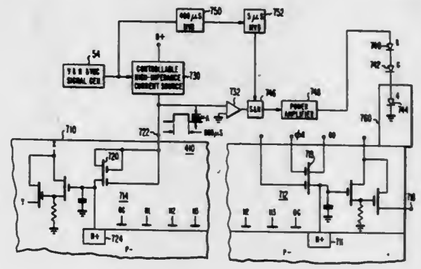
a second stage gain electrically connected to said hold circuit for inputting the output of said hold circuit and amplifying said hold circuit output to a preset level.

4,551,760

TELEVISION CAMERA WITH SOLID-STATE IMAGERS COOLED BY A THERMAL SERVO

Sidney L. Bendell, Burlington, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 16, 1983, Ser. No. 532,958
Int. Cl.⁴ H04N *3/15, 9/04, 9/07, 9/09*
U.S. Cl. 358—213 **4 Claims**



1. A thermal servo for a television camera, comprising:

a solid-state imager responsive to clock signals and including a photosensitive surface responsive to incident light from a scene for generating output signals representative of said scene;

synchronizing means coupled for controlling said clock signals applied to said imager such that said photosensitive surface develops integrated incident light signals during recurrent field intervals and transfers said integrated incident light signals out of said photosensitive surface during recurrent transfer intervals as said output signals of said imager;

thermoelectric cooling means coupled to said imager for cooling said imager for reducing thermal noise in said output signals of said imager;

temperature sensing means coupled to said imager for developing a signal representative of the temperature of said imager during said recurrent transfer intervals;

drive means coupled to said thermoelectric cooling means and responsive to a temperature control signal for energizing said thermoelectric cooling means for closing a thermal servo loop for stabilizing the temperature of said imager; and

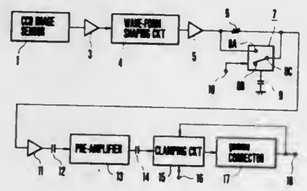
sample-and-hold means coupled between said temperature sensing means and said drive means and responsive to said signal representative of the temperature of said imager for developing said temperature control signal during said recurrent transfer intervals and for applying said tempera-

ture control signal to said drive means during said recurrent field intervals.

4,551,761
SIGNAL PROCESSING CIRCUIT INCLUDING IMAGE SENSOR

Masatoshi Sase, Kanagawa, and Seisuke Yamanaka, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,621
Claims priority, application Japan, Feb. 25, 1983, 58-26780[U]
Int. Cl.⁴ H04N *3/15*
U.S. Cl. 358—213 **6 Claims**

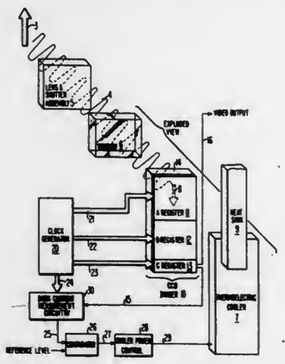


1. A signal processing circuit comprising:
an image sensor having an optical black level detecting portion and producing an output signal alternately representing a sensed image and said optical black level;
a buffer circuit for receiving said output signal and producing a buffer output signal;
a clamping circuit for receiving said buffer output signal;
circuit means provided between said buffer circuit and said clamping circuit and capable of assuming a low-pass filter configuration wherein it has a cutoff frequency such that it responds to drift of said optical black level and of assuming a low-impedance configuration; and
terminal means connected to said circuit means for supplying a signal thereto causing said circuit means to assume said low-pass filter configuration, in an interval corresponding to detection of said optical black level and otherwise to assume said low-impedance configuration.

4,551,762
DARK-CURRENT LEVEL REGULATION IN SOLID-STATE DEVICES

Peter A. Levine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 18, 1984, Ser. No. 571,719
Int. Cl.⁴ H04N *5/16*
U.S. Cl. 358—221 **11 Claims**



1. A television camera comprising:
a solid-state imager having therein one or more area registers for holding at times charge samples descriptive of a received image, in at least a portion of which said one or more area registers at other times charge samples are to be found descriptive only of accumulated dark current;
thermoelectric cooling means for cooling said solid-state imager;
means for controlling the amount of power supplied to said thermoelectric cooler in response to an error signal, whereby the temperature of said solid-state imager is modified and consequently the dark current generated within said solid-state imager is accordingly modified;
means, responsive to the charge samples descriptive of the received image, for obtaining a video output signal from said imager;
dark current measurement means, responsive to the charge samples descriptive only of accumulated dark current, for obtaining a signal representing the level of dark current noise accompanying said video output signal;
means for comparing, against a reference value, the signal representing the level of dark current noise accompanying said video output signal to generate said error signal; and
means applying said error signal to said means for controlling the amount of power supplied to said thermoelectric cooler, for completing a regulatory feedback loop to limit the amplitude of said dark current noise.

4,551,763
DIAGONAL SWEEP SHUTTER MECHANISM FOR VIDEO TAPE CAMERA

Steven L. Swinehart, and Werner H. Kuhn, both of Albuquerque, N. Mex., assignors to Nisus Video Incorporated, Albuquerque, N. Mex.

Filed Dec. 16, 1983, Ser. No. 562,280
Int. Cl.⁴ H01N *5/30*
U.S. Cl. 358—225 **8 Claims**



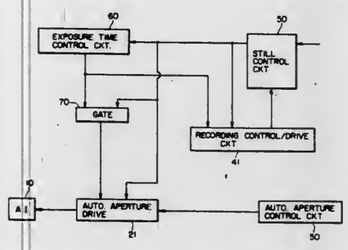
1. A focal plane shutter for a video camera having a lense and pickup comprising:
disk means disposed between said lense and said pickup for rotation about an axis;
said disk means having an opening bounded on first and second sides by lines emanating from a point on said disk offset from said axis of rotation.

4,551,764
VIDEO CAMERA

Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,483
Claims priority, application Japan, Dec. 20, 1982, 57-223544; Dec. 20, 1982, 57-223545
Int. Cl.⁴ G01J *1/42*
U.S. Cl. 358—228 **5 Claims**

1. A video camera provided with an automatic aperture and an automatic aperture drive circuit for driving said automatic aperture, comprising: a still control circuit for producing a still control signal representative of a still picture photographing operation; a programmed exposure time control circuit for producing an exposure time control signal; and a gate circuit receiving said exposure time control signal and said still signal for producing in response thereto an automatic aperture shutter control signal applied to control an automatic opening and closing operation of said automatic aperture for still picture photographing, wherein said automatic aperture is closed in response to said still signal and returned to an opened state in response to both said still signal and said exposure time control signal, and then said automatic aperture is the closed in re-



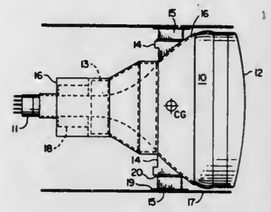
sponse to disappearance of said exposure time control signal to effect a still picture photographing operation, and for photographing operations other than still picture photographing, automatic operation of said automatic aperture is carried out in accordance with the brightness of an object being photographed

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4,551,765
CATHODE RAY TUBE VIBRATION ISOLATOR

Edward A. Meeder, Jr., Little Ferry, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 26, 1981, Ser. No. 314,613
Int. Cl.⁴ H04N *5/645*
U.S. Cl. 358—248 **5 Claims**



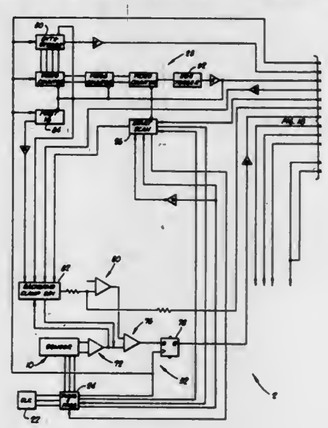
1. Apparatus for mounting a cathode ray tube in a housing which is subject to vibrations and to isolate the tube from the vibrations, comprising:
a shield potted to the tube;
a plurality of resilient means mounted to the shield external thereto and mounted to the housing, and disposed in a plane passing through the center of gravity of the tube;
each of the plurality of resilient means including a bracket mounted to the shield and a pad mounted to the bracket and the housing; and
each of the pads including a first and second plate having a resilient member sandwiched therebetween, with the first plate having means for mounting said first plate to a corresponding bracket and the second plate having means for mounting said second plate to the housing.

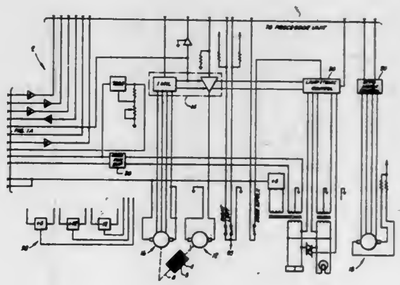
4,551,766
OPTICAL READER

John E. Mosier; Jim B. Surjaatmadja, and Jack C. Penn, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 8, 1982, Ser. No. 355,465
Int. Cl.⁴ H04N *1/00*
U.S. Cl. 358—256 **6 Claims**

1. An optical reader, comprising:
a housing;
a drum rotatably mounted in said housing for receiving indicia-carrying means which is to be read by said optical reader;
drum drive means for rotating said drum about a longitudinal axis;
illumination means for illuminating the indicia-carrying means when it is mounted on said drum;
optical lens means for receiving light reflected from said indicia-carrying means mounted on said drum;
photo-responsive means for converting said light received by said optical lens means into electrical signals;
carriage means having said optical lens means and said photo-responsive means mounted thereon;
carriage movement means for moving said carriage means and said optical lens means and said photo-responsive





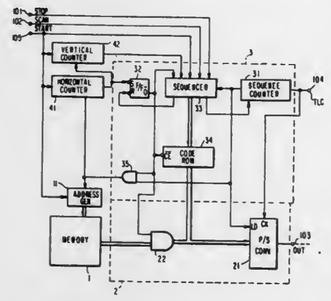
means mounted thereon substantially parallel to said longitudinal axis of said drum;
control means for incrementally activating said carriage movement means to position said optical lens means and said photo-responsive means along the length of said drum and for actuating said drum drive means for incrementally rotating said drum after said carriage movement means has positioned said carriage means at a predetermined position along the length of said drum; and
wherein said housing includes a cover slidably disposed therein, said cover being movable to an open position underlying said drum for receiving the indicia-carriage means if said drum does not properly receive the indicia-carrying means while said cover is at said open position.

4,551,767

STATIONARY-PICTURE TRANSMISSION SYSTEM

Toshiaki Higashiguchi, and Michiaki Sonoda, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,635
Claims priority, application Japan, Jan. 30, 1982, 57-13981
Int. Cl.⁴ H04N *1/32*
U.S. Cl. 358—257 **8 Claims**



1. A stationary-picture transmission system comprising:
means for transmitting complete video data over a transmission line, said complete video data representing a stationary-picture and having a plurality of horizontal scanning periods;
means for producing a stop code, said stop code being transmitted over said transmission line;
means for temporarily stopping the transmission of said complete video data at a time point during the transmission of said complete video data after said stop code is transmitted over said transmission line, timing of the stopping of the transmission being responsive to said horizontal scanning periods;
means for producing a restart code, said restart code being transmitted over said transmission line; and
means for restarting said transmission to complete the transmission of remaining video data in said complete video data after said restart code is transmitted over said transmission line.

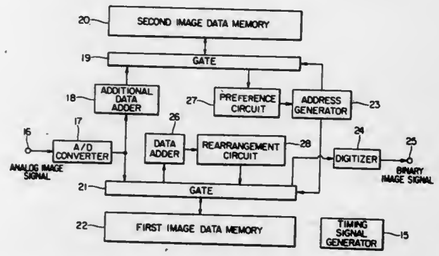
4,551,768

METHOD AND APPARATUS FOR PROCESSING IMAGE SIGNAL

Hiroyoshi Tsuchiya, Kanagawa; Katsuo Nakazato, Tokyo; Kunio Sannomiya, Kanagawa; Hidehiko Kawakami, Tokyo, and Hirotaka Otsuka, Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 27, 1983, Ser. No. 545,926
Claims priority, application Japan, Oct. 27, 1982, 57-188401; Jul. 28, 1983, 58-138016; Jul. 28, 1983, 58-138017
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **13 Claims**

1. A method for processing an image signal, comprising:
a first step of storing in image signal memory means image signal levels of picture elements which are obtained by scanning an original image in a divided manner;
a second step of producing data obtained by adding to the image signal levels additional data which imparts regularity to image signals to be displayed;
a third step of obtaining a sum S of the image signal levels of all the picture elements within a scanning window which has a size corresponding to M picture elements and which scans said image signal memory means, and obtaining values of N and A which satisfy an equation $S=C\times N+A$ for $0\leqq A<C$ where C is a predetermined image signal level, N is an integer, and A is a remainder;
a fourth step of numbering the image signal levels in accordance with one of ascending and descending orders so as to assign an order of preference to all the picture elements within the scanning window in accordance with sum data obtained in the third step;
a fifth step of assigning C as an image signal level to N picture elements in one of the ascending and descending



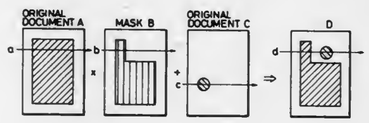
orders, A as an image signal level to a next picture element, and 0 as an image signal level to remaining picture elements; and
a sixth step of moving the scanning window by a predetermined number of picture elements so as to correspond to memory locations of said image signal memory means.

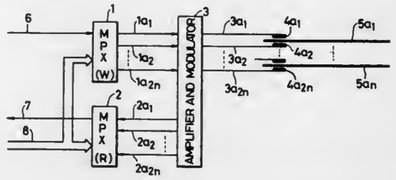
4,551,769

PICTURE IMAGE PROCESSING MAGNETIC DISC CONTROLLING METHOD AND APPARATUS THEREFOR

Masato Satoh, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,363
Claims priority, application Japan, Dec. 7, 1981, 56-195710
Int. Cl.⁴ H04N *1/22*
U.S. Cl. 358—296 **9 Claims**





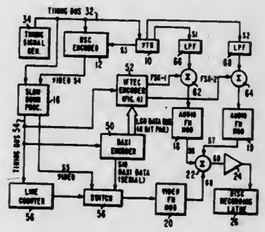
7. An apparatus for controlling a plurality of magnetic discs for processing a picture image wherein each of said discs have first and second recording surfaces each of said recording surfaces have a plurality of tracks, and each of said tracks have a plurality of positions therein, said apparatus comprising:
a plurality of magnetic discs;
a plurality of magnetic heads for writing into and reading out signals in a predetermined region of said magnetic discs; wherein, two separate signals are sequentially stored at two separate regions of said magnetic discs and then simultaneously, read out and combined to produce a new composite signal;
multiplexer code means for setting the positional access between said magnetic heads and said magnetic discs; so that a particular magnetic head can be actuated;
writing head selector means for receiving information signals to be written into said magnetic discs;
reading head selector means for transmitting information signals read from said magnetic discs; and
multiplex code register means for controlling both of said receiving means and said transmitting means as a function of a received control signal.

4,551,770

VIDEO DISC ENCODING AND DECODING SYSTEM PROVIDING INTRA-FIELD TRACK ERROR CORRECTION

Richard C. Palmer, Blawenburg, N.J., and Michael A. Plotnick, Southampton, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 6, 1984, Ser. No. 567,535
Int. Cl.⁴ H04N *5/781*
U.S. Cl. 358—342 **3 Claims**



1. A method for forming a video disc recording signal for facilitating intra-field track error correction upon subsequent playback of video disc records recorded with said disc recording signal comprising the steps of:
(a) providing first and second baseband sound signals, a baseband video signal and a data sequence representative of field numbers of said video signal;
(b) providing a subset of said data sequence representative of track identification numbers;
(c) encoding said subset of said data sequence on first and second frequency shift keyed carrier waves;
(d) combining said first baseband sound signal with said first carrier wave to form a first resultant signal and combining said second baseband sound signal with said second carrier wave to form a second resultant signal;
(e) applying said baseband video signal and said resultant signals to respective frequency modulators; and
(f) summing the output signals produced by said frequency modulators to provide said video disc recording signal.

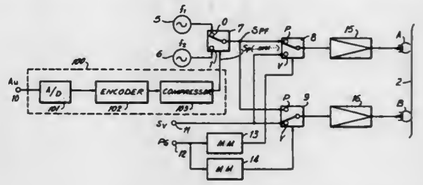
4,551,771

METHOD AND APPARATUS FOR RECORDING DIGITAL INFORMATION IN ALTERNATE RECORDING TRACKS

Yukihiko Machida, Seki; Kenji Nakano, Ebina, and Takao Takahashi, Sagamihara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 5, 1982, Ser. No. 375,103
Claims priority, application Japan, May 14, 1981, 56-72461
Int. Cl.⁴ H04N *5/782*
U.S. Cl. 360—19.1 **26 Claims**

1. A method of recording first and second information signals in adjacent parallel tracks on a record medium, said first information signal having frequency modulated components and said second information signal being an analog signal, comprising the steps of:
digitizing said second information signal to produce an encoded digital signal representative thereof having a preselected frequency;
producing frequency modulated signals from said encoded digital signal, whereby said frequency modulated signals have an instantaneous frequency which is one of two selected frequencies based on the state of the encoded digital signal and has a frequency spectrum, the central frequency of which, is substantially equal to the central frequency of said frequency modulated components of said first information signal; and
recording said frequency modulated signals in alternate tracks with alternate recording heads, said alternate recording heads having air gaps of difference azimuth angles.

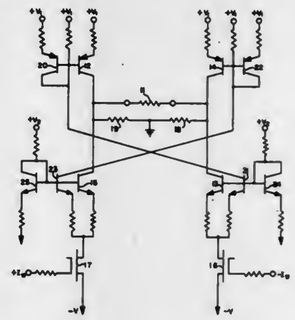


4,551,772

WRITE DRIVE WITH CURRENT MIRRORS WHICH REDUCE FEED-THROUGH

David E. Sliger, Lafayette, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 28, 1984, Ser. No. 594,263
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 360—46 **4 Claims**



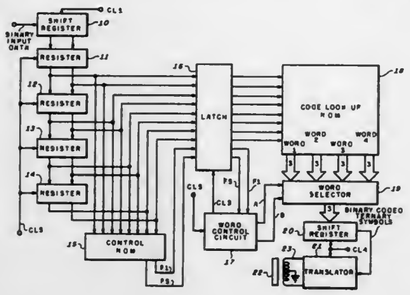
1. A write driver circuit for a magnetic head comprising:
first and second driver transistors connected on both sides of said head to produce current flow through said head in one direction;
third and fourth driver transistors connected on both sides of said head to produce current flow through said head in the other direction;
first and second current mirror transistors connected in parallel with said first and second driver transistors to produce current flow in a path parallel to said head to maintain the current flow through said first and second driver transistors equal; and
third and fourth current mirror transistors connected in parallel with said third and fourth driver transistors to produce current flow in a path parallel to said head to maintain the current flow through said third and fourth driver transistors equal.

4,551,773

ENCODING AND DECODING APPARATUS AND METHOD UTILIZING HIERARCHICAL CODE SUBSTITUTION

Martin Cohn, Arlington, Mass.; George V. Jacoby, Los Altos, and Jorgen P. Vinding, Monte Sereno, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,744
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 360—40 **37 Claims**



1. Apparatus for encoding binary data into corresponding code signals comprising

data storage means for receiving input binary data and forming said input binary data into a plurality of input data bits,

code generating means responsive to said plurality of input data bits for storing a plurality of variable length code symbol groupings corresponding to variable lengths of binary data bit groupings,

at least two of said binary data bit groupings matching the same plurality of input data bits,

each plurality of input data bits being matched by at least one of said binary data bit groupings,

said code generating means providing the code symbol grouping corresponding to the longest match between said binary data bit groupings and said plurality of input data bits, and

translating means responsive to said code generating means for translating said code symbol grouping corresponding to said longest match into corresponding code signals.

4,551,774

METHOD FOR SELECTING DESIRED PIECE OF INFORMATION RECORDED IN MAGNETIC TAPE MOUNTED IN MAGNETIC TAPE RECORDER AND/OR REPRODUCER

Shouzaburou Sakaguchi, and Yoshiharu Ueki, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 353,349, Mar. 1, 1982, abandoned. This application Oct. 12, 1984, Ser. No. 660,244
Claims priority, application Japan, Mar. 2, 1981, 56-29570; Mar. 2, 1981, 56-29571; Mar. 5, 1981, 56-31486
Int. Cl.⁴ G11B *15/00*
U.S. Cl. 360—72.1 **6 Claims**

1. A device for selecting a desired piece of information recorded on a magnetic tape having blank portions and recorded portions and mounted in a tape player system having a magnetic head and a tape transport structure adapted to perform one of operational modes including a PLAY mode for a normal playback of recorded information, a CUE mode and a REVIEW mode in which the tape is moved respectively forward and backward at a speed higher than a normal playback speed while said magnetic head is engaged for picking up the recorded information on the magnetic tape, said device comprising:

(a) means for generating an audio pulse train signal in response to an output signal of said magnetic head, which audio pulse train signal has a plurality of pulses corresponding to high level portions of recorded information for each of said recorded portions;

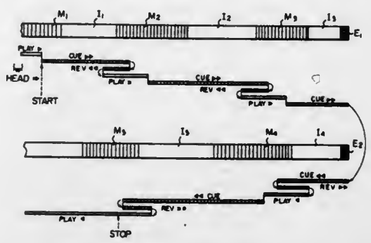
(b) a clock signal generating means for generating a clock signal of a predetermined frequency;

(c) a counter means having a clock input terminal and a reset input terminal;

(d) a first switch means for connecting said clock signal and said audio pulse train signal respectively to said clock input terminal and said reset input terminal of said counter means;

(e) a second switch means for connecting said audio pulse train signal to said clock input terminal of said counter means; and

(f) a control means having a first operational means for selecting said CUE mode and activating said first switch



means to detect that a blank portion is present when a content of said counter means has reached a predetermined value due to absence of said audio pulse train signal at said reset terminal and activating said second switch means when a blank portion is detected, said control means having a second operational means for selecting said REVIEW mode when a leading edge of a next one of recorded portions is detected from the content of the counter means when the second switch means is activated during said CUE mode and thereafter activating said first switch means during said REVIEW mode to detect a blank portion, and said control means having a third operational means for selecting said PLAY mode when the blank portion is detected from the content of the counter means during REVIEW mode in which the first switch means is activated.

4,551,775

TAPE RECORDER WITH TWO RECORDING/PLAYING MECHANISMS

Satoru Koizumi; Hiroshi Furuhara, and Daisuke Teshima, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 24, 1981, Ser. No. 334,361
Claims priority, application Japan, Dec. 24, 1980, 55-188029; Dec. 24, 1980, 55-188030
Int. Cl.⁴ G11B *15/48, 15/00*
U.S. Cl. 360—74.1 **7 Claims**

1. A tape recorder comprising:

first and second recording/playing mechanisms for driving a tape at a constant speed for recording or playing;

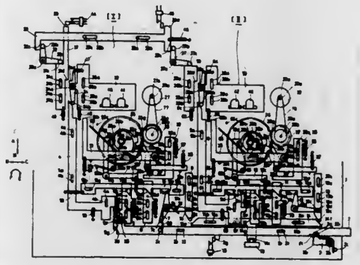
an auto-stop assembly for discontinuing operation of said first or second recording/playing mechanism when an end of the tape approaches;

a control assembly for placing said first or second recording/playing assemblies selectively into a first stop mode or a second stop mode, said first stop mode being the mode from which said first or second recording/playing mechanisms is adapted to be switched into a constant driving mode independently of each other and said second stop mode being the mode from which the constant driving mode is adapted to be switched from said first recording/playing mechanism to said second or vice versa;

a link assembly connected between said auto-stop assembly and said control assembly for rendering said control assembly operable to shift the constant driving mode from said first recording/playing mechanism to said second or vice versa upon the completion of the constant driving mode in said second or first recording/playing mechanism;

a first driving motor and a second driving motor operatively connected to said first and second recording/playing mechanisms, respectively, each driving motor is provided for execution of the constant driving mode and each of the driving motors is adapted to assist the control assembly for bringing the associated recording/playing mechanism into a desired operating mode;

means for sensing the completion of the constant driving mode of said first recording/playing mechanism as the end of the tape approaches, and for enabling the motor for said second recording/driving mechanism in response to said auto-stop assembly responsive to the completion of the constant driving mode in said first recording/playing



mechanism and wherein the constant driving mode is taken over from said first recording/ playing mechanism automatically; and

means for sensing the completion of the constant driving mode of said second recording/playing mechanism as the end of the tape approaches, and for enabling the motor for said first recording driving mechanism in response to said auto-stop assembly responsive to the completion of the constant driving mode in said second recording/playing mechanism and wherein the constant driving mode is taken over from said second recording/playing mechanism automatically;

said control assembly includes a first cam gear and first cam operatively connected to said first driving motor and a second cam gear and second cam operatively connected to said second driving motor, said first and second cam gears and first and second cams being operatively connected to said link assembly for assisting in the shifting of the constant driving mode from said first recording/playing mechanism to said second or vice versa.

4,551,776

AUTOMATIC REFERENCE ADJUSTMENT FOR POSITION ERROR SIGNAL ON DISK FILE SERVO SYSTEM

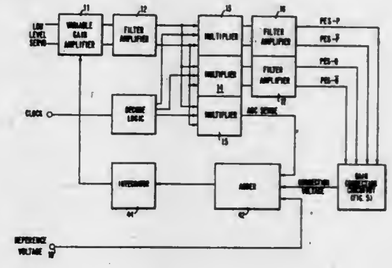
Howard J. Roalson, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,583
Int. Cl.⁴ G11B *21/10*
U.S. Cl. 360—77 **4 Claims**

1. A system for automatically calibrating servo circuitry used with a servo pattern in which a position error signal (PES) is generated, said servo circuitry including a variable gain amplifier involved in generating said PES, said servo pattern having a primary signal P and a quadrature signal component Q in quadrature with said primary signal, said P and said Q signals having linear portions except near their peaks, a signal representing the sum of said P and said Q signals having a flat portion corresponding to said linear portions of said P and said Q signal, comprising

means for generating a $\overline{P}$ signal and a $\overline{Q}$ signal,

means for separately, averaging the following combinations of said signals



P+Q, P+Q, P+Q, P+Q

means for comparing the amplitudes of said averaged signals with a first reference voltage, and

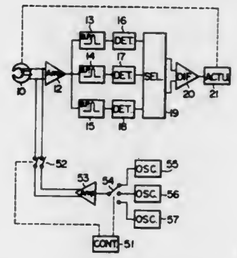
means responsive to the results of said comparison for modifying the gain of said amplifier to change said PES.

4,551,777

TRACKING SERVO SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS USING FLEXIBLE MAGNETIC DISK

Tadashi Saito; Shigemitsu Higuchi, both of Yokohama; Kazutoshi Konno, Yokosuka; Tohru Sampei, Kanagawa; Kenji Hayashi, Kamakura; Yoshihiko Noro, and Manabu Wakabayashi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1982, Ser. No. 407,080
Claims priority, application Japan, Aug. 24, 1981, 56-131501
Int. Cl.⁴ G11B *21/10, 5/27*
U.S. Cl. 360—77 **5 Claims**



1. A tracking servo system for a magnetic recording and reproducing apparatus using a flexible magnetic magnetic disk, comprising:

the flexible magnetic disk having on one magnetic surface thereof a plurality of adjacent tracks, each track including a data track portion on which an information signal is to be recorded and a pair of servo track portions which are located on both sides of the data track portion and on which a tracking signal is recorded, different frequencies being respectively alloted to the tracking signals recorded on the servo track portion pairs of at least three adjacent tracks, the pair of servo track portions located on both sides of the data track portion having the same frequency;

a magnetic head assembly including a data head means and a servo head means formed in a unitary structure, said data head means being movable over said flexible magnetic

disk, said data head means being provided with at least one gap for forming the data track portion in a given one of said tracks to record the information signals thereon and for reading out the recorded information signals therefrom, said servo head means being movable together with said data head means for reading out the tracking signals from said servo track portions, said servo head means being provided with a gap for reading out, when said data head means records an information signal on the data track portion in a given one of said tracks and when it reads out the recorded information signal therefrom, the tracking signals recorded on the servo track portions in the two adjacent tracks with the given track interposed therebetween, the gap of said servo head means and said at least one gap of said data head means being arranged parallel to each other, the gap of said servo head means having a width larger than the width of the track, and said at least one gap of said data head means having a width smaller than the width of the track;

a tracking error detection circuit for receiving the tracking signals read out from said servo head means to produce an output signal proportional to a difference in amplitude therebetween; and

an actuator responsive to the output signal of said tracking error detection circuit for urging said data head means to a correct position of the data track portion in said given track.

4,551,778

MAGNETIC RECORDING MEDIA AND PROCESS OF PRODUCING THEM

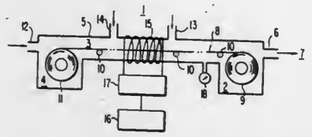
Yoshihiro Arai, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Division of Ser. No. 348,883, Feb. 16, 1982, Pat. No. 4,419,404. This application Aug. 2, 1983, Ser. No. 519,641

Claims priority, application Japan, Feb. 16, 1981, 56-21652

Int. Cl.⁴ G11B *5/74, 5/78, 23/00;* **A23C** *9/12*

U.S. Cl. 360—131 **2 Claims**



1. A process for producing a magnetic recording medium, comprising the steps of:

forming a thin ferromagnetic metal layer on a surface of a non-magnetic, flexible support by vacuum obliquely injecting vapor deposition; and

forming an overcoat layer on said ferromagnetic metal layer, by performing plasma polymerizations of a fluorine free monomer gas, such that said overcoat layer is formed on said ferromagnetic metal layer in such a manner that the fluorine content of said overcoat layer continually increases in a direction away from said ferromagnetic metal layer.

4,551,779

SEMICONDUCTOR SWITCHING CIRCUIT WITH AN OVERCURRENT PROTECTION

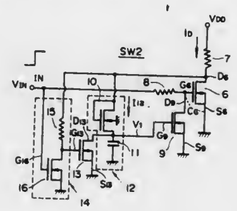
Koichi Murakami, Yokosuka, and Takeshi Oguro, Tokyo, both of Japan, assignors to Nissan Motor company, Limited, Yokohama, Japan

Filed Oct. 11, 1983, Ser. No. 540,666

Claims priority, application Japan, Oct. 12, 1982, 57-178785; Nov. 30, 1982, 57-209987

Int. Cl.⁴ H02H *3/26*

U.S. Cl. 361—86 **11 Claims**



1. A semiconductor switching circuit for switching on and off a current flow through a load according to a switching signal inputted thereto, comprising:

(a) a first MOS transistor having a drain, a source and a gate, said drain thereof being connected to a DC power supply through the load and said source thereof being grounded, said first MOS transistor turning on when the switching signal is received at said gate thereof;

(b) a first resistor connected between an input terminal at which the switching signal for turning on said first MOS transistor is inputted and gate of said first MOS transistor;

(c) a second MOS transistor, a drain thereof connected to the gate of said first MOS transistor and a source thereof being grounded, said second MOS transistor operatively turning on to ground the gate of said first MOS transistor so as to forcefully turn off said first MOS transistor when a first signal exceeding a threshold voltage is received at a gate thereof; and

(d) circuit means for detecting a change in a drain potential of said first MOS transistor after the switching signal is applied to the gate of said first MOS transistor and outputting the first signal to the gate of said second MOS transistor when the drain potential of said first MOS transistor remains at a high level, said circuit means being responsive to said drain potential for outputting as said first signal a voltage having a level which increases to a level near said drain potential high level when said drain potential remains at said high level.

4,551,780

APPARATUS FOR REDUCING SUBSYNCHRONOUS FREQUENCIES IN A POWER SUPPLY

Muzaffer Canay, Birr, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Continuation of Ser. No. 27,407, Apr. 5, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,545

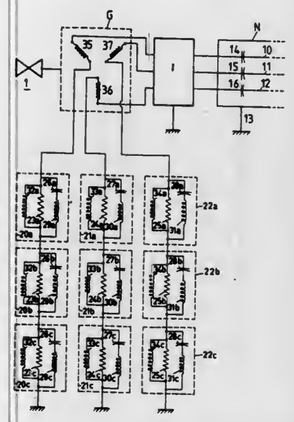
Claims priority, application Switzerland, Jan. 10, 1979, 212/79

Int. Cl.⁴ H02H *7/06*

U.S. Cl. 361—113 **9 Claims**

1. In a power transmission system comprising a turbine-driven multiphase synchronous generator for supplying power signals at a predetermined rated frequency to a transmission line network by means of a multiphase block transformer, wherein at least one of said generator and said transformer includes a secondary winding having a plurality of phase windings, the high-voltage terminals of which are respectively connected to respective transmission lines of said network, and further including a line of shafts connecting the turbine to the generator that exhibit one or more natural frequencies lower than said rated frequency, a system for protecting said line of shafts from damage due to oscillations at said natural frequencies, comprising:

a plurality of damping resistors directly and separately connecting the low voltage terminals of said phase windings to a neutral potential terminal; and



a series resonant circuit tuned to said predetermined rated frequency connected in parallel with each of said damping resistors whereby said damping resistors have negligible effect on signals at said predetermined rated frequency and are effective to damp out signals at frequencies other than said predetermined rated frequency.

4,551,781

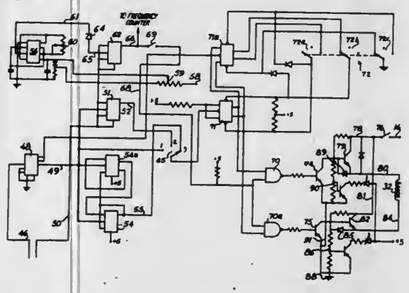
CONTROL CIRCUIT FOR MAGNETIC PROBE

Rocky S. Bykerk, Newport, Wash., assignor to Chris G. Nicholson, Richmond; J. Gid Parrish, Dekalb, both of, Ga.; Ivan H. Brown, Sonoma, Calif. and Reuben H. Gordon, Richmond, Ga.

Filed Aug. 3, 1983, Ser. No. 519,820

Int. Cl.⁴ H01H *47/32*

U.S. Cl. 361—143 **6 Claims**



1. A magnet control circuit comprising a power supply, clock means for providing pulses at a fixed rate, first dividing means for dividing said fixed rate and providing a first pulse rate, second dividing means for dividing said fixed rate and providing a second pulse rate, selector switch means selectively connectable for receiving said first pulse rate and said second pulse rate, a coil constituting said magnet, a first transistor connected to one side of said coil, a second transistor connected to the opposite side of said coil, gate means for selectively causing said first transistor to conduct for connecting said one side of said coil to ground, said opposite side of said coil being connected to a positive voltage from said power supply, and for selectively causing said second transistor to conduct for connecting said other side of said coil to ground, said one side of said coil being connected to a positive voltage from said power supply, and circuit means for selectively connecting said selector switch to said gate means.

4,551,782

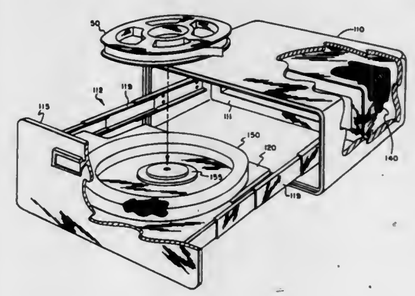
METHOD AND APPARATUS FOR DEGAUSSING MAGNETIC STORAGE MEDIA

Earle S. Seely, Boonton, and Roger O. LaValley, Hopatcong, both of N.J., assignors to RFL Industries, Inc., Boonton, N.J.

Continuation-in-part of Ser. No. 530,658, Sep. 9, 1983. This application May 7, 1984, Ser. No. 607,681

Int. Cl.⁴ H01F *13/00*

U.S. Cl. 361—151 **27 Claims**



1. A method for degaussing a reel of magnetic tape, comprising the steps of:

(a) simultaneously rotating the magnetic tape reel on its axis and applying a transverse magnetic field substantially in the plane of the reel, the transverse magnetic field being applied first in one direction and then in the opposite direction; and

(b) applying an axial magnetic field substantially parallel to the axis of the reel, the axial magnetic field being applied first in one direction and then in the opposite direction.

4,551,783

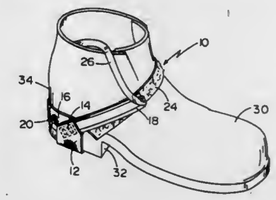
HEEL GROUNDING STRAP

Lenard Cohen, Brighton, and Michael E. Gordon, Wayland, both of Mass., assignors to Plastic Systems, Inc., Marlboro, Mass.

Filed Oct. 19, 1984, Ser. No. 662,785

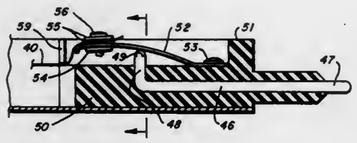
Int. Cl.⁴ H05F *3/02*

U.S. Cl. 361—223 **6 Claims**



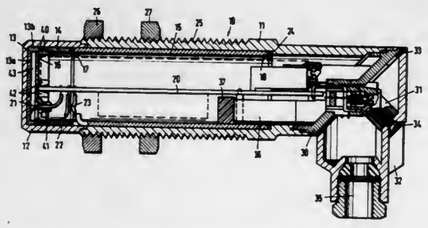
1. A grounding device comprising: a pair of straps connected together at right angles at their ends; fastener means connected to said ends of said straps; and an elongated conductor connected to one end of said straps; said grounding device characterized in that said straps each comprise a conductive elastomer, each strap thereby comprises a grounding strap, said grounding straps are of substantially equal length, and the length of said grounding straps is such that with either grounding strap extending about a shoe counter, the other grounding strap will be positioned under the heel of said shoe.

4,551,784
CORONA GENERATING DEVICE
Ernest L. DiNatale, Rochester, and Robert J. Yax, Marion, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 29, 1984, Ser. No. 626,518
Int. Cl.⁴ H01T *19/04*
U.S. Cl. 361—225 **11 Claims**



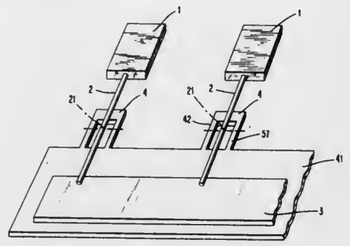
1. A corona generating device comprising at least one coronode wire supported between first and second end block assemblies, one of said first or second end block assemblies comprising a conductive electrode having at one end a coronode contact and at the other end a conductive plug adapted for engagement with a power supply contact, said electrode being positioned in an electrically insulating holder between said coronode contact and said conductive plug, said electrically insulating holder having one end of a conductive spring means mounted thereto on one side of said coronode contact with the other end of said conductive spring means being connected to said coronode wire, said corona generating device further comprising means to tension said coronode wire and said spring means such that said spring means is in electrical contact with said coronode contact whereby said coronode wire may be energized and wherein in the event said coronode wire ruptures the spring acts as a circuit breaker returning to its untensioned position breaking electrical contact with said coronode contact.

4,551,785
CAPACITIVE SENSOR
Holger Kröner, Schopfheim, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany
Filed Aug. 1, 1984, Ser. No. 636,848
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328210
Int. Cl.⁴ G01F *23/26*
U.S. Cl. 361—284 **14 Claims**



1. A capacitive sensor comprising a tubular plastic housing closed at the front end, a sensor electrode disposed in the interior of the housing at the front end thereof, at least one tubular shield electrode, the electrodes being arranged in the interior of the housing in such a manner that they adjoin each other a small distance apart, an electronic circuit which is disposed in the interior of the housing and is connected on the one hand to the electrodes and on the other hand to a cable led at the back out of the housing, the plastic housing including a tubular body and a cup-shaped cap, the sensor electrode being formed of a shock-resistant metal member and being disposed in the cap, the shield electrode being an impact-resistant metal tube and being disposed in the tubular body, a stop disposed on the inner side of the tubular body for supporting the rear end of the shield electrode introduced from the front into the body, an insulating spacer member between the electrodes, and means for tightly connecting the cup-shaped cap and the tubular body to each other.

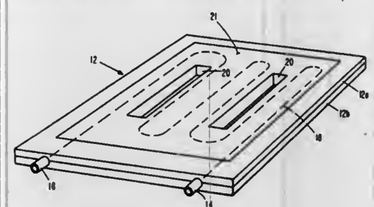
4,551,786
UNENCAPSULATED SOLID ELECTROLYTIC CAPACITOR AND METHOD FOR MANUFACTURING THE SAME
Hideo Oka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 31, 1984, Ser. No. 615,821
Claims priority, application Japan, May 31, 1983, 58-82377[U]
Int. Cl.⁴ H01G *1/14, 4/32;* H01R *4/02*
U.S. Cl. 361—306 **9 Claims**



5. An unencapsulated solid electrolytic capacitor, comprising:
a substantially flat capacitor element having a planar principal surface and a longitudinal axis and including a flat anode body, a dielectric layer formed on the anode, a semiconductor layer formed on the dielectric layer and a cathode layer formed on the semiconductor layer;
an anode lead-out wire connected to the anode body and extending along the longitudinal axis of said capacitor element; and
a solderable flat anode terminal plate welded to said lead-out wire in the same plane as that of the principal surface of said capacitor element, said terminal plate having a pair of protrusions formed on a side remote from the capacitor element, and said lead-out wire having an end portion positioned between, but not extending beyond, said protrusions.

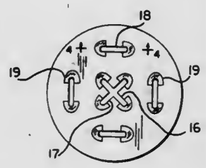
4,551,787
APPARATUS FOR USE IN COOLING INTEGRATED CIRCUIT CHIPS
Faquir C. Mittal, Audubon, and Charles R. Solis, Warminster, both of Pa., assignors to Sperry Corporation, New York, N.Y.
Continuation of Ser. No. 464,294, Feb. 7, 1983, abandoned. This application Sep. 13, 1984, Ser. No. 649,877
Int. Cl.⁴ H05K *7/20*
U.S. Cl. 361—387 **1 Claim**

1. A cooling apparatus including integrated circuit chips comprising:
a cold plate;
a first film of paste in contact with said plate, said first film being heat conductive and electrically insulative;
a second film in contact with said first film, said second film having a predetermined array of interconnected metallic pads;
a third film in contact with said second film, said third film being heat conductive and electrically insulative, said films comprising a compliant mat;
a substrate having a plurality of circuit packages including integrated circuit chips in a predetermined array corresponding to said array of metallic pads; and



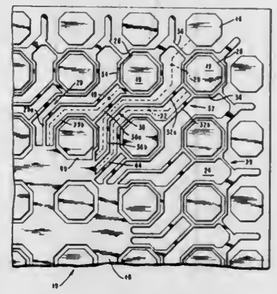
each of said circuit packages being in contact with said third film adjacent an associated metallic pad.

4,551,788
MULTI-CHIP CARRIER ARRAY
Robert P. Daniel, 12932 Brittany Woods, Santa Ana, Calif. 92705, and Larry Yglesia, 2301 Coco Palm, Tustin, Calif. 92680
Filed Oct. 4, 1984, Ser. No. 657,596
Int. Cl.⁴ H05K *1/02*
U.S. Cl. 361—403 **3 Claims**



1. An improved multi-chip carrier array of the type having:
a. individual carriers defined by two perpendicular sets of parallel lines scribed on either of the planar surfaces of a thin sheet of insulating material,
b. a plurality of oblong feed-through perforations equally spaced about the perimeter of each carrier such that adjacent carriers share perforations along common borders, and
c. solder pads located on one of said planar surfaces at the site of each oblong perforation,
d. a feed-though extension of each pad, said extension being adhered to the perforation wall and extending to the surface of said sheet opposite that on which said pads are located,
wherein the improvement comprises:
the major axes of all oblong perforations being bisected by at least one scribe line; and
each oblong perforation having first and second solder pads positioned around its opposite ends on the same planar surface, each solder pad having a feed-through extension which extends to the other planar surface, said feed-through extensions being adhered to the perforation wall, and said first solder pad and associated feed-through extension being separated from said second solder pad and associated feed-through extension by an insulating gap.

4,551,789
MULTILAYER CERAMIC SUBSTRATES WITH SEVERAL METALLIZATION PLANES
Helmut Schettler, Dettenhausen, and Ewald Stadler, Herrenberg-Kuppingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 13, 1982, Ser. No. 449,095
Claims priority, application European Pat. Off., Dec. 23, 1981, 81110713.5
Int. Cl.⁴ H05K *1/18*
U.S. Cl. 361—406 **4 Claims**

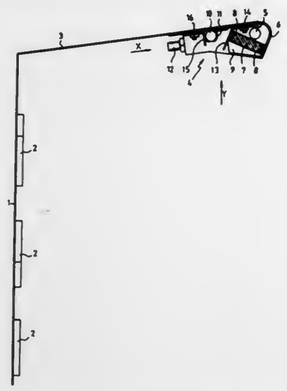


1. A ceramic substrate for mounting integrated circuit semiconductor devices, the substrate having holes therethrough with lead pins mounted therein and having at least two patterned metallization layers, wherein increased density is achieved while eliminating capacitive and inductive coupling comprising:
a first metallization layer on the top surface of said substrate including a plurality of closely spaced pads provided to make contact to I/O pads on said device mounted on said substrate and a plurality of signal conductors connected to and emanating from said closely spaced pads and connected to said lead pins mounted on said substrate;
a second shielding metallization layer on the top surface of said substrate comprised of a plurality of electrically interconnected first loops said first loops including metal stripe portions located laterally of said signal conductors of said first metallization layer and in conforming relationship and second interconnected loops disposed about and in spaced relation to said lead pins and
a layer of insulating material disposed between said first and second metallization layers.

4,551,790
LIGHT RAMP FOR LIGHTING INSTRUMENT PANELS, MORE ESPECIALLY IN AIRCRAFT OR HELICOPTER
Jean Benquey, and Louisa F. Benquey, both of Rabastens De Bigorre, France, assignors to Societe d'Exploitation du Laboratoire Abadie, Vic En Bigorre, France
Filed Jun. 13, 1983, Ser. No. 503,495
Claims priority, application France, Apr. 20, 1983, 83 06502
Int. Cl.⁴ G01D *11/28*
U.S. Cl. 362—23 **3 Claims**

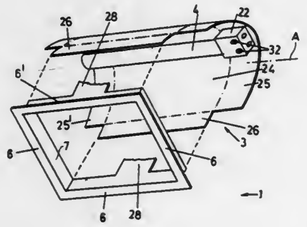
1. A light ramp for lighting instrument panels comprising a frame disposed in front of said panel, at least one fluorescent tube mounted to said frame for emitting ultra-violet light toward said panel, a filter plate sealingly fixed to said frame and extending between said panel and said fluorescent tube for

filtering a portion of said ultra-violet light, and an additional fluorescent tube mounted to said frame in a spaced relation to



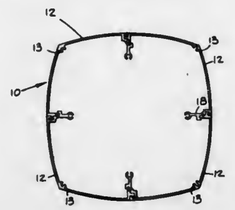
said one fluorescent tube for emitting additional unfiltered light towards said panel.

4,551,791
RECESSED LAMP
Werner Salansky, Vienna, Austria, assignor to Stabeg Apparatebangesellschaft m.b.H., Vienna, Austria
Filed May 31, 1984, Ser. No. 616,006
Int. Cl.[4] F21V *7/18*
U.S. Cl. 362—296 **10 Claims**



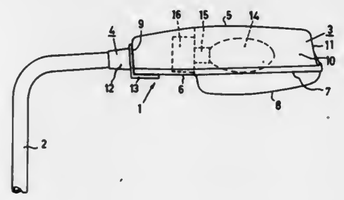
1. A lamp adapted to be mounted in a hole in a wall, the lamp comprising:
an outer frame fittable in the hole;
means for securing the frame snugly in the hole bearing inward against the wall;
a generally part-cylindrical reflector engaged snugly inside the frame, extending along an axis, and having a pair of axially open ends bearing outward against the outer frame and extending axially past the opening, the reflector being of limitedly elastically flexible sheet metal and of U-section and having axially extending edges provided with tabs engaging outward into the outer frame;
a socket for a bulb at one of the ends of the reflector and wholly hidden by the frame;
a terminal box on the securing means; and
a flexible electric wire extending between the box and the socket.

4,551,792
EXTERIOR POST TOP MOUNTING LIGHTING FIXTURE
Merle C. Hoke; Richard G. Armstrong, both of Newark, and James E. Penn, Lockbourne, all of Ohio, assignors to Manville Service Corp., Denver, Colo.
Filed Sep. 16, 1983, Ser. No. 533,326
Int. Cl.[4] B60Q *3/04*
U.S. Cl. 362—362 **7 Claims**



1. A light fixture for exterior post top mounting having a housing comprising four identical right-angled extruded aluminum members with interlocking joints for holding each other to form a solid rigid housing.

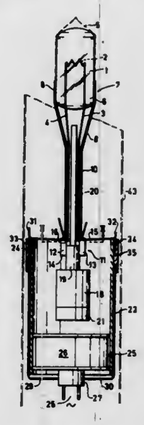
4,551,793
ROAD ILLUMINATION LUMINAIRE FOR POLE-MOUNTING
Sybe J. Mellema, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 416,839, Sep. 13, 1982, abandoned. This application May 31, 1984, Ser. No. 616,777
Claims priority, application Netherlands, Oct. 29, 1981, 8104892
Int. Cl.[4] F21S *1/10*
U.S. Cl. 362—370 **1 Claim**



1. A road illumination luminaire for mounting on an associated pole which comprises: a housing having a lower wall in which a light-emanating window is present, an upper wall, and side walls; said housing having an aperture in said lower wall and an aperture in one of said side walls, each aperture being dimensioned and configured for cooperation with the end of the associated pole with one of said apertures facing a pole end; means to fix said luminaire to the associated pole, said means comprising a unitary cover member and a sleeve extending from said cover member for receiving therein the end of the associated pole, said sleeve and said cover member having substantially aligned bores extending through them, said cover member being secured against the outside of said housing of said luminaire, said cover member extending over both said aperture in said lower wall and said aperture in said side wall, said cover member being securable to said housing with said aligned bores substantially aligned with one of said apertures, the outer surface of said lower wall and the outer surface of said one side wall at respective areas where said cover member is securable against said housing are at an external angle of 255° to 270° to each other and said sleeve extends substantially perpendicularly to one of said outer surfaces, the connection of said lower wall to said one side wall of said housing in the

region of said cover member is defined by an inclined face which is inclined with respect to each of said outer surfaces, said cover member having a corresponding inclined face through which said means is secured to said housing by means of a bolt.

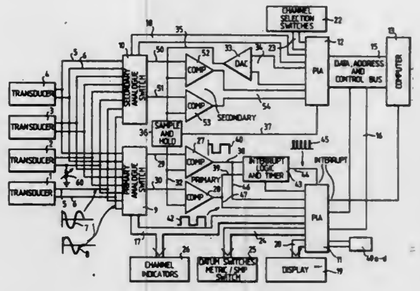
4,551,794
IMITATION CANDLE WITH MAGNETIC PENDULUM
Sven Sandell, Kälkbacksgatan 5, Jönköping, Sweden
Filed Sep. 19, 1984, Ser. No. 652,032
Claims priority, application Sweden, Sep. 21, 1983, 8305081
Int. Cl.[4] F21V *23/00*
U.S. Cl. 362—392 **5 Claims**



1. An imitation candle which comprises an elongated outer candle-like casing having located at one end thereof an electric light bulb (1) which is attached to one end of a pendulum and which is balanced by a counterweight (18) made totally or partially of a magnetic material and attached to the opposite end of said pendulum, said pendulum being pivotally mounted on pivot suspension means (15; 36) at a location between the two ends of said pendulum, and which further comprises an electromagnet (25) which is placed beneath the counterweight (18) and which is arranged to receive periodically an electric current so as to generate an electromagnetic field acting upon the counterweight, characterized in that said pivoting means comprises two wire-like elements (15, 36) which extend in a mutually common plane in mutually opposite directions from a common connector (11) on said pendulum, and the ends (33,34; 37) of said elements remote from the pendulum are firmly attached to a holder (23) surrounding the pendulum; and in that the counterweight (18) is supported by or consists of a permanent magnet (21) with the north pole and the south pole thereof lying on a line extending substantially at right angles to the longitudinal axis of the pendulum.

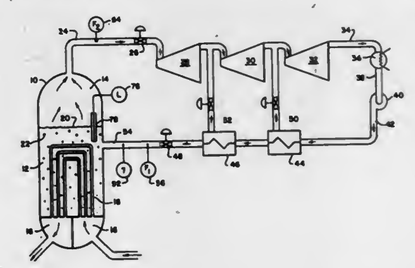
4,551,795
APPARATUS FOR USE IN MONITORING A PLURALITY OF VARIABLE PARAMETERS
John H. Fisher, Royston, and Frank Ferdinandi, Linton, both of England, assignors to Precision Grinding Limited, Mitcham Junction, England
Filed Feb. 22, 1983, Ser. No. 468,845
Claims priority, application United Kingdom, Feb. 24, 1982, 8205480
Int. Cl.[4] G05B *9/02;* G06F *15/46;* G01C *25/00*
U.S. Cl. 364—139 **3 Claims**

1. Apparatus for use in monitoring a plurality of variable parameters, said apparatus including a plurality of transducers, means including each transducer for detecting a variation in a respective parameter and for providing two out-of-phase elelctrical output signals representative of said respective parameter, first and second analog switches, means for applying the two out-of-phase signals from each of the transducers to each of the first and second analog switches, a gating circuit, means for coupling the first analog switch to the gating circuit for transmitting signals related to the output of a respective transducer, display means, means for applying signals derived from the output of the gating circuit to the display means in order to display an output which is representative of a parameter being



monitored, a computer, adapter means coupled to the computer and to the second analog switch for causing the second analog switch to scan the outputs from each of the transducers and to detect any change in an output from a transducer, storage means for storing a respective signal to be displayed, and means under the control of the computer for causing the contents of the storage means to be changed according to any change in an output from a transducer which is detected by the second analog switch.

4,551,796
LIQUID LEVEL CONTROL SYSTEM FOR VAPOR GENERATOR
Gurdip Singh, Windsor Locks, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jun. 3, 1983, Ser. No. 500,759
Int. Cl.[4] G05B *15/02;* H02P *9/04;* F01B *25/00;* F02N *11/06*
U.S. Cl. 364—148 **7 Claims**



1. A method for controlling a flowing liquid entering a vapor generator, the entering liquid having a mass flow rate and a current temperature, and the vapor generator having a current level of liquid therewithin, a flow of a vapor exiting therefrom, including a mass flow rate of the vapor, a rate of liquid mass accumulation or depletion within said vapor generator, and a difference between the entering and exiting mass flow rates, comprising the steps of:
measuring the current level of liquid in said vapor generator;
comparing the measured liquid level with a reference level for generating a liquid level error value;
determining the rate of mass accumulation or depletion within said vapor generator;
measuring the current temperature of the entering liquid;

generating a temperature gain value, responsive to the incoming liquid temperature, said gain value having a value of unity for measured liquid temperatures greater than or equal to a reference temperature and increasing linearly with decreasing measured liquid temperatures below the reference temperature;

multiplying the determined rate of mass accumulation or depletion by said temperature gain value for generating a temperature compensated mass flow correction value;

modifying the liquid level error value by the temperature compensated mass flow correction value for generating a liquid flow error value; and

regulating a device in response to the liquid flow error value for controlling the mass flow rate of the liquid flowing into said vapor generator.

4,551,797

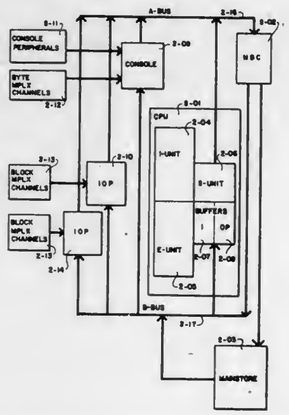
APPARATUS FOR REVERSE TRANSLATION

Gene M. Amdahl, Atherton; Donald L. Hanson, Los Altos Hills; Ronald K. Kreuzenstein, Sunnyvale; Gwynne L. Roshon-Larsen, Saratoga, and Gary A. Woffinden, Scotts Valley, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Aug. 3, 1983, Ser. No. 528,091

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 **17 Claims**



1. In a data processing machine, an apparatus for storing data, comprising:

a primary storage means for storing data;

primary addressing means for uniquely addressing said data with unique primary addresses;

secondary storage means for storing data in communication with said primary storge means so that data may be transferred between said primary storage means and said secondary storage means,

secondary addressing means for addressing said secondary storage means with secondary addresses;

forward translation means for translating said secondary addresses to said unique primary addresses to uniquely address said data; and

reverse translation means for translating said unique primary addresses to synonym secondary addresses which translate to said unique primary addresses.

4,551,798

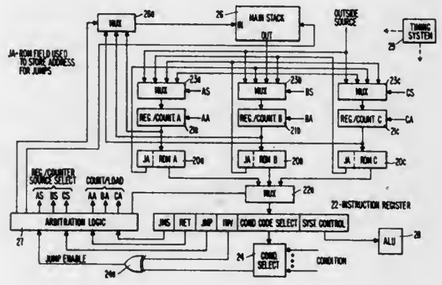
MULTIPLE CONTROL STORES IN A PIPELINED MICROCONTROLLER FOR HANDLING NESTER SUBROUTINES

Carlos F. Horvath, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1982, Ser. No. 438,703

Int. Cl.⁴ G06F *9/32, 9/42*

U.S. Cl. 364—200 **13 Claims**



1. A microcontroller for controlling a digital device, said microcontroller comprising:

a plurality of control memories each for storing a set of microinstructions, each microinstruction being formed of a control field for controlling said digital device, a jump address field specifying the location in other control memory of the next microinstruction to be executed should said each microinstruction be a jump to subroutine or return from subroutine instruction and an instruction field specifying whether that particular microinstruction is a jump microinstruction, return microinstruction, or requires neither action:

a plurality of address registers one for each control memory and containing the address of the next microinstruction to be fetched;

means for fetching said microinstructions from each of said control memories in every clock cycle;

an instruction register coupled to the respective memories and digital device for receiving the control field and instruction field of a microinstruction fetched from one of said control memories;

a multiplexor coupled between said instruction register to select the instruction field and control field of one of the microinstructions being fetched from said respective control memories;

interconnection means coupled between each of said control memories and the address registers of the other control memories for supplying a jump address to the address registers of the other control memories;

logic means coupled to said instruction field portion of said instruction register and to said address registers specifying one of said registers as a program counter and one of said address registers as a return from subroutine register;

means responsive to said logic means to increment said program counter and to keep said return from subroutine register current contents; and

push-down stack means coupled to said plurality of address registers to receive one or more return from subroutine addresses in a first-in last-out manner to accommodate the execution of a series of nested subroutines.

4,551,799

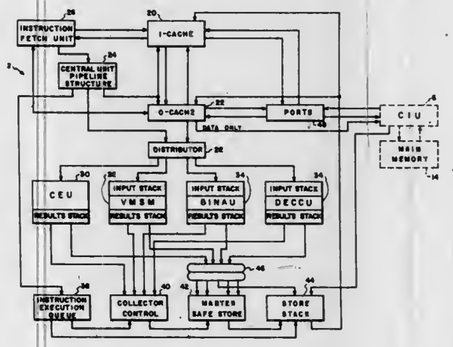
VERIFICATION OF REAL PAGE NUMBERS OF STACK STORED PREFETCHED INSTRUCTIONS FROM INSTRUCTION CACHE

Charles P. Ryan, Phoenix, and Russell W. Guenthner, Glendale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Feb. 28, 1983, Ser. No. 470,125

Int. Cl.⁴ G06F *9/38*

U.S. Cl. 364—200 **2 Claims**



1. In a digital data processing system having a synchronous central processor, said central processor including central execution pipeline means for initiating the execution of instructions including transfer instructions, each instruction having a physical address which includes a real page number; a cache; and instruction fetch means for prefetching instructions from the cache and for storing prefetched instructions awaiting execution in an instruction stack; said central execution pipeline means initiating the execution of instructions obtained from the instruction stack of the instruction fetch means in a number of steps, one step of which includes obtaining of the real page number of the instruction passing through said one step; the improvements comprising:

first random access memory means of the cache said first memory means having addressable storage locations for storing instructions;

random access directory means having addressable storage locations, the addresses of which correlate with addressable storage locations of said first memory means, the storage locations of the directory means storing the real page number of the instruction stored in correlative storage locations in the first memory means;

second stack means for storing the real page number stored in the directory for each instruction fetched from the first memory means of the cache by the instruction fetch means;

register means for storing the real page number of the target instruction of the most recently fully executed transfer instruction; and

means for comparing the real page number stored in said register means with the real page number of the instruction in execution obtained from said second stack means for the same instructions, the failure of the two real page numbers to compare identifying that the instruction in execution was improperly fetched from the first random access memory means of the cache.

4,551,800

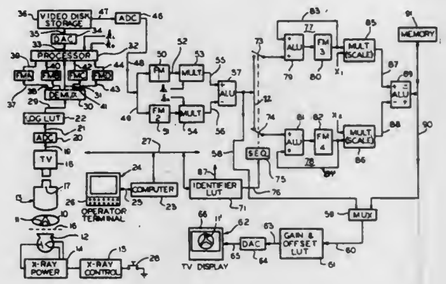
INTEGRATED HYBRID IMAGE REMASKING IN A SUBTRACTION ANGIOGRAPHY METHOD

Stephen J. Riederer, Wauwatosa, and Gary S. Keyes, Hartland, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,954

Int. Cl.⁴ G06F *15/42*

U.S. Cl. 364—414 **12 Claims**



1. An integrated remasking method of producing data representative of an x-ray image of a blood vessel in a region of a body in a subtraction angiography procedure, the method comprising the following steps:

repeatedly expose said body region containing said vessel to a low energy x-ray beam and a high energy x-ray beam in pairs and in either order during at least one of two periods, namely, a pre-contrast period when an x-ray contrast medium that has been introduced into said body has not yet arrived in said vessel and a period during which said medium has departed from said vessel, said periods being defined as non-contrast periods and the resulting images as non-contrast images, and maintaining said exposures during an intervening period when said medium is present in said vessel defined as the post-contrast period and the resulting images as the post-contrast images,

convert the sequence of non-contrast and post-contrast x-ray images thus produced at high and low energy to data representative of the images,

select the data for one of the low energy exposure images obtained during a non-contrast period as the low energy mask image data and select the data for one of the high energy exposure images obtained during a non-contrast period as the high energy mask image data,

subtract the low energy mask image data from the respective data for the low energy exposure images in the sequence and subtract the high energy mask image data from the data for the high energy exposure images in the sequence to thereby provide a series of low energy temporal difference images data and a series of high energy temporal difference images data,

perform energy subtraction comprising multiplying each of said low energy temporal difference images data, respectively, by a weighting coefficient and multiply each of said high energy temporal difference image data next to the low energy temporal difference image data in the series respectively by a different weighting coefficient and subtract the low energy temporal difference image from the high energy temporal difference image data, respectively, to thereby provide a series of first order hybrid difference images data extending over at least one of the non-contrast periods and over the post-contrast period,

display one after another of the images that correspond to the first order hybrid difference images data and observe the images for identifying and selecting those first order hybrid non-contrast images that are of suitable quality to be used for forming new integrated mask image data and those post-contrast images that have contrast medium in

them and are suitable for forming new integrated post-contrast image data,

integrate the sequence of first order hybrid difference images data corresponding to the hybrid difference images that have been identified as usable to form the new mask image data and separately integrate the sequence of hybrid difference images data corresponding to the hybrid difference images that have been identified as usable to form new post-contrast image data,

multiply the image data resulting from at least one of the two integrations by a scaling coefficient to normalize the brightness levels of the data in those cases where the number of images selected for the new integrated mask image differs from the number selected for the new post-contrast image and do not multiply by a scaling coefficient if the number of mask images and post-contrast images selected are equal, and

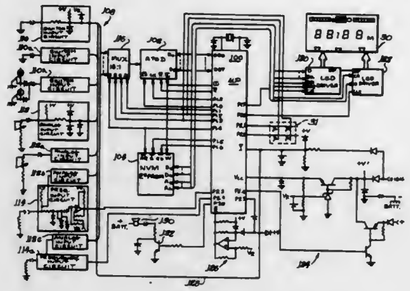
subtract the integrated mask hybrid image data and the integrated hybrid post-contrast image data to produce final data which contains only the data representative of an image of the contrast medium in said blood vessel.

4,551,801

MODULAR VEHICULAR MONITORING SYSTEM

David G. Sokol, Auburn, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Feb. 7, 1983, Ser. No. 464,220
Int. Cl.⁴ G06F *15/20;* A01D *41/00*
U.S. Cl. 364—424 **24 Claims**



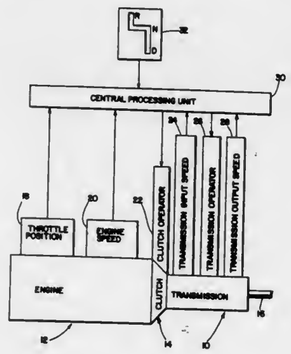
1. A monitoring system for monitoring a plurality of functions and conditions of a vehicle, said vehicle including a plurality of sensors for producing sensor signals in response to said plurality of functions and conditions, said monitoring system comprising: a plurality of identical monitoring modules, each comprising a plurality of input means each for receiving a selected one of said sensor signals, said plurality of input means being fewer in number than said plurality of sensors, processing means responsive to said sensor signals at said input means for producing display signals corresponding to the associated functions and conditions in accordance with said sensor signals, and memory means for storing data and instructions for enabling said processing means to respond to the sensor signals from any of said sensor means for monitoring any of said corresponding functions and conditions; and sensor identifying means associated with each of said modules for producing sensor identifying signals to identify the particular sensors coupled to said input means; said processing means being coupled to receive said sensor identifying signals from the associated sensor identifying means and responsive thereto for selecting from said memory means only those data and instructions for monitoring said corresponding functions and conditions, whereby said plurality of said monitoring modules are capable of monitoring all of said plurality of vehicle functions and conditions.

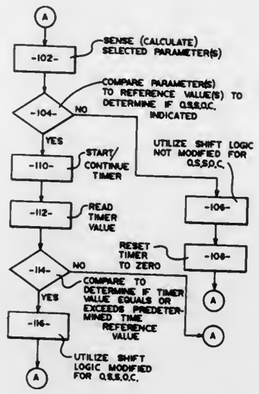
4,551,802

AUTOMATIC TRANSMISSION CONTROL METHOD

Robert R. Smyth, Bloomfield Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1982, Ser. No. 442,474
Int. Cl.⁴ B60K *41/08;* G06F *15/20*
U.S. Cl. 364—424.1 **22 Claims**





1. An improved method for controlling an automatic transmission system for devices having a throttle-controlled engine, an operator actuated throttling control means and a transmission having a plurality of gear ratio combinations selectively engageable between a transmission input shaft and a transmission output shaft, said transmission input shaft being operatively connected to said engine, said transmission system comprising, an information processing unit having means for receiving a plurality of input signals including (1) an input signal indicative of the position of said throttle controlling means and (2) an input signal indicative of the rotational speed of said engine, said processing unit including means for processing said input signals in accordance with a program to provide a predetermined gear ratio for a given combination of input signals and for generating output signals whereby said transmission system is operated in accordance with said program, and means associated with said transmission effective to actuate said transmission to effect engagement of one of said gear ratio combinations in response to said output signals from said processing unit, the improved method comprising:

sensing the presence or absence of operator selected stable operation of the device by causing said processing unit to process at least one of said input signals in accordance with predetermined logic rules; and,

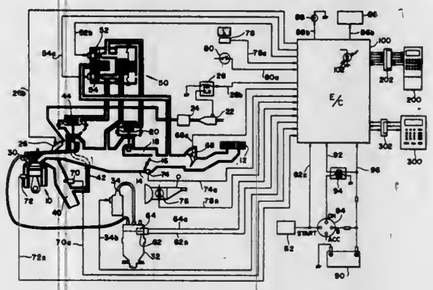
modifying said program by lowering the engine speed at which an upshift will be commanded in response to said processing unit sensing the presence of operator selected stable operation of the device.

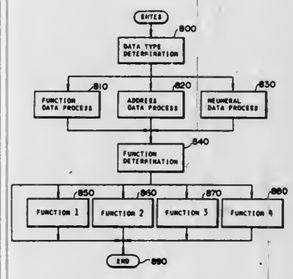
4,551,803

ELECTRONIC ENGINE CONTROL SYSTEM FOR CONTROLLING THE ENERGY CONVERSION PROCESS OF AN INTERNAL COMBUSTION ENGINE

Akio Hosaka; Akito Yamamoto, both of Yokohama, and Katsunori Oshiage, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 15, 1982, Ser. No. 398,554
Claims priority, application Japan, Jul. 17, 1981, 56-110887
Int. Cl.⁴ F02B *3/00;* G05B *15/02;* F02D *37/00*
U.S. Cl. 364—431.05 **3 Claims**





1. An apparatus for controlling the energy conversion process of an internal combustion engine, comprising:

means for controlling the energy conversion process;

sources for providing signals indicative of engine operating parameters;

a data input unit having a keyboard input device for providing data specifying a function to be performed, a memory location, and a numeral; and

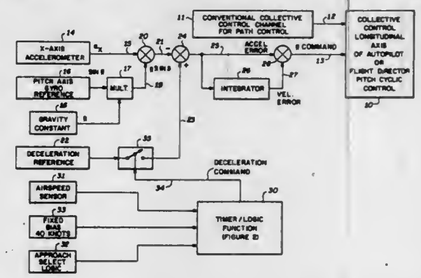
a digital computer having a memory for storing coefficients in respective locations, the digital computer using the signals from the sources and the coefficients stored in the memory for calculating settings of the means for controlling the energy conversion process, the digital computer being connected to receive said data from the data input unit and being programmed to perform said specified function using said specified numeral and said specified memory location, said specified function including modifying a coefficient stored in the memory at the specified location based upon the specified numeral.

4,551,804

APPROACH TO HOVER CONTROL SYSTEM FOR HELICOPTERS

Thomas R. Clark, Peoria, and Carl D. Griffith, Phoenix, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 8, 1983, Ser. No. 464,825
Int. Cl.⁴ G06F *15/50;* B64C *11/44*
U.S. Cl. 364—434 **9 Claims**



1. A pitch axis control system for controlling a deceleration maneuver of a helicopter from an initial airspeed to a hover condition comprising

(a) means for providing a first time measure proportional to the time required to decelerate from said initial airspeed to an airspeed intermediate said initial airspeed and hover,

(b) means responsive to said first time measure for providing a second time measure proportional to the predicted time required to decelerate from said intermediate airspeed to hover,

(c) means for providing a third time measure proportional to the time during which said helicopter is actually decelerating between said intermediate airspeed and hover,

(d) first comparator means for comparing said second and third time measures, and

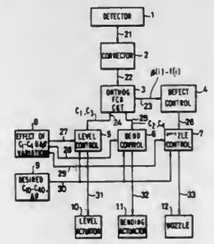
(e) means responsive to said first comparator means for terminating said deceleration maneuver when said second and third time measures become equal.

4,551,805

CONTROL SYSTEM FOR STRIP CONFIGURATION

Michio Shimoda, and Fumio Watanabe, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

PCT No. PCT/JP81/00285, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/01485, PCT Pub. Date May 13, 1982
PCT Filed Oct. 15, 1981, Ser. No. 395,069
Claims priority, application Japan, Oct. 30, 1980, 55-153165
Int. Cl.⁴ G06F *15/46;* B21B *37/00*
U.S. Cl. 364—469 **4 Claims**



1. A configuration control system for the fabrication of a strip material, comprising:

detecting means for detecting a configuration pattern of said strip material at a plurality of positions on said strip material;

means for converting said detected configuration pattern to coefficients multiplying orthogonal polynomials, said coefficients and polynomials forming series representation of said configuration pattern, said series containing at least four polynomials; and

means for controlling the fabrication of said strip material by the values of at least one of said coefficients.

4,551,806

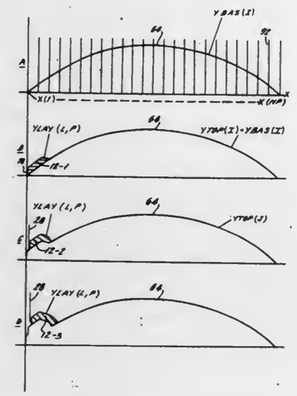
METHOD AND APPARATUS FOR THE SIMULATION OF THE BUILD UP OF THE TREAD ON A TIRE CARCASS

Anthony Storace, Norwalk, and Jeffery Ketchman, Westport, both of Conn., assignors to AMF Inc., White Plains, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,286

Int. Cl.⁴ B31C *81/00;* **B29H** *17/02;* **B65H** *57/28;* **G06F** *15/46*

U.S. Cl. 364—473 **40 Claims**



1. A method for simulating the manner in which a ribbon of known profile is wrapped around a carcass of known profile in accordance with a predetermined winding specification, said method comprising the steps of:

storing the profile of said ribbon, the profile of said carcass, and said winding specification in a memory;

calculating, for at least one cross-section of said carcass, the profile of a final ribbon build which will be created at said cross-section when said ribbon is wrapped around said carcass in accordance with said winding specification, said calculating step being performed as a function of said profile of said carcass, said ribbon profile and said winding specification; and

displaying, for each of said cross-sections, said profile of said final ribbon build.

4,551,807

CURE-CONTROL METHOD FOR THERMOSETTING POLYMERIC MATERIAL

Henry S. Y. Hsich, and Richard J. Ambrose, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Aug. 17, 1983, Ser. No. 523,863

Int. Cl.⁴ G06F *15/46;* **B29H** *5/02*

U.S. Cl. 364—473 **11 Claims**

1. A method for producing cured rubber material with a desired property, said method including the steps of establishing a desired property for the cured material according to the equation:

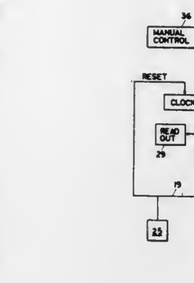


FIG. 2

$$G(t) = G_e \exp\left[\frac{E}{RT(t)}\right] + \left[G_\infty - G_e \exp\left(\frac{E}{RT_C}\right)\right]\left\{1 - \exp\left[-\left(\int_{t_o}^{t} \frac{d(t-t_o)}{\tau}\right)^{\beta}\right]\right\}$$

where:

$$\tau = \tau_O(H/RT)$$

and where:

G(t) is a desired property of rubber at time t;

G_e is a constant representing the property;

E is an activation energy for viscous flow;

H is an activation energy for cure reaction;

R is a gas constant, i.e., 1.98 cal./°K.-mole;

T is a temperature;

G_∞ is a property after complete cure;

T_C is an equilibrium cure temperature;

t_f is a final cure time;

t_o is an induction time at T_C;

t is a time;

τ_o is a constant of the polymeric system; and

β is a filler loading constant,

introducing into a cavity of a mold a selected mass of rubber material having a preselected composition for curing said material in said mold,

initiating curing of said material, and

terminating curing of said material in said mold when the quantity G(t) attains a value according to said equation corresponding to the desired property by said step of establishing.

4,551,808

TOOL WEAR SENSORS

Stanley K. Smith, and Donald J. Rozsi, both of Fenton, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 30, 1983, Ser. No. 480,564

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—474 **23 Claims**

1. A method of applying variable torque to drive a tool and monitoring the performance of the tool which moves relative to a workpiece through a cycle by monitoring the variable torque applied to the tool comprising the steps of:

dividing said cycle into a plurality of increments;

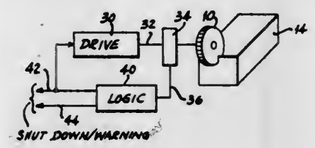
sensing the variable torque applied to said tool during at least some of said increments;

determining and storing the highest sensed torque applied to said tool during at least some of said increments;

determining and storing the lowest sensed torque applied to said workpiece during at least some of said increments;

setting a maximum differential torque limit for the difference between the highest torque and lowest torque sensed during at least one particular increment;

calculating the torque differential between the highest torque and lowest torque sensed during said one particular increment; and



comparing said calculated torque differential between the highest torque and the lowest torque sensed for said particular increment with said set maximum differential torque limit for said paritcular increment and establishing a first signal when said calculated torque differential exceeds said maximum differential torque limit.

4,551,809

APPARATUS AND METHOD FOR MONITORING THE MACHINING CONDITIONS OF AN EDM APPARATUS

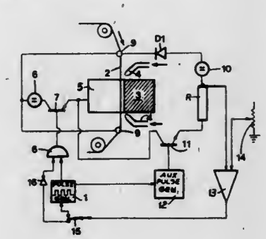
Georges-André Marendaz, Meyrin, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Jun. 21, 1983, Ser. No. 506,308

Claims priority, application Switzerland, Jun. 23, 1982, 3840/82

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—474 **8 Claims**



1. A method for monitoring machining conditions in the course of electrical discharge machining of an electrode workpiece by means of a travelling wire electrode wherein a machining fluid is applied to a machining zone between the electrode workpiece and the wire electrode, said method comprising measuring the resistivity of the machining fluid during time intervals between consecutive electrical discharges, detecting through said resistivity measurements an increase of resistivity of said machining fluid, and providing a signal in response to said increase of resistivity as an indication of machining condition deterioration.

4,551,810

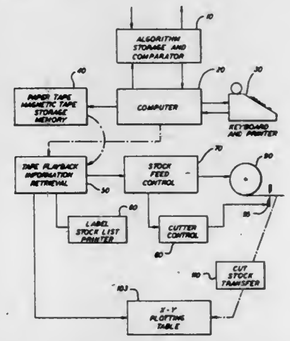
METHOD AND APPARATUS FOR DESIGNING DUCT WORK AND FOR PRODUCING PATTERNS FOR CONDUIT SECTIONS IN THE DESIGNED DUCT WORK

Richard W. Levine, Dobbs Ferry, N.Y., assignor to Construction Technology, Inc., Elmsford, N.Y.

Continuation-in-part of Ser. No. 503,699, Jun. 13, 1983, , which is a continuation-in-part of Ser. No. 402,607, Jul. 28, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 536,648

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—475 **23 Claims**



11. In a method for automatically producing patterns for the sides of a three dimensional product which can be fabricated from sheet material, such as a ventilating duct fitting, said patterns being produced in response to the inputting of actual dimensional and pattern type data relating to said product, the improvement comprising the steps of:

storing, in digital form in memory means, configurations and dimensional requirements of basic product types from which all possible variations of the three-dimensional product may be produced;

entering input data into a computer operatively connected to said memory means, said input data including product type and dimensions of said product, the entered dimensions corresponding to dimensional requirements, stored in said memory means, of the product type entered; electronically deriving in said computer actual dimensional and pattern type data for each side of said product from the entered product type and dimensions of said product;

storing in said memory means said actual dimensional and pattern type data; and producing patterns for the sides of said product in response to said actual dimensional and pattern type data stored in said memory means.

4,551,811

GROUND DETECTION ARRANGEMENT FOR AN A.C. GENERATOR

Ryosuke Taniguti, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 4, 1982, Ser. No. 405,281

Claims priority, application Japan, Aug. 7, 1981, 56-124882

Int. Cl.⁴ G06G *7/62;* **G08B** *21/00*

U.S. Cl. 364—481 **7 Claims**

1. A ground detection arrangement for an A.C. generator comprising:

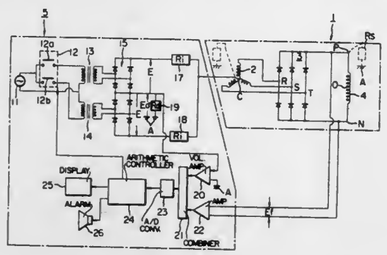
resistors (R_i) of high resistance connected to a neutral point of an armature winding of the A.C. generator;

a voltage source of positive and negative D.C. voltages (+E) and (−E) alternately applied to the neutral point of said armature winding through said resistors (R_i);

a detecting resistor (R_d) connected between the D.C. voltage source and the ground of the circuit arrangement;

an arithmetic controller connected to receive detected voltages developed across said detecting resistor (R_d) when

the respective positive and negative D.C. voltages (+E) and (−E) are applied, and including means for calculating a ground resistance (R_s) on the basis of a sum of absolute values of both the detected voltages (E_{d+}) and (E_{d-}) and said D.C. voltages (+E) and (−E) and said resistors (R_i) and (R_d) and for comparing the calculated result for ground resistance (R_s) with a reference resistance value;



means for deriving the voltage (E_f) of a field winding and applying it to said airthmetic controller, said arithmetic controller including means for calculating a ground position (L) on the basis of a relative sum of both said detected voltages (E_{d+}) and (E_{d-}), the calculated ground resistance (R_s), and the field winding voltage (E_f); and

a display device to display the calculated ground resistance (R_s) and the actual ground position based on the calculated ground position (L).

4,551,812

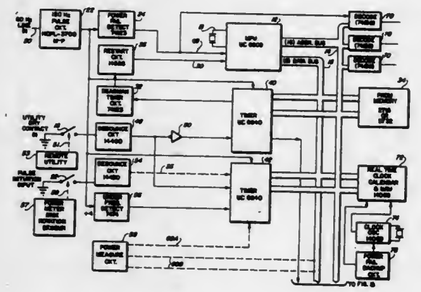
ENERGY CONTROLLER AND METHOD FOR DYNAMIC ALLOCATION OF PRIORITIES OF CONTROLLED LOAD CURTAILMENT TO ENSURE ADEQUATE LOAD SHARING

George P. Gurr, and Frederick A. Matheson, both of Phoenix, Ariz., assignors to Cyborex Laboratories, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 274,488, Jun. 17, 1981, Pat. No. 4,464,724. This application Sep. 20, 1982, Ser. No. 420,563

Int. Cl.⁴ G06F *15/56;* H02J *3/14*

U.S. Cl. 364—492 **32 Claims**



1. A method for controlling delivery of elecrical energy from a power line to an establishment having a plurality of electrical loads in order to maintain the total power delivered to the electrical loads close to a power limit, the electrical loads including a plurality of controlled loads which can be electrically connected to and disconnected from the power line, partially in accordance with user-selected priorities attributed to respect ones of the controlled loads, by means of a control system, the control system including a plurality of load switching means for controllably connecting the controlled loads to and disconnecting the controlled loads from the power line, the control system also including power measuring means for measuring power delivered from the power line to the electrical loads, said method comprising operating a processor to effect the steps of:

(a) for each of said controlled loads, including a first one of said controlled loads,

1. measuring the value of a variable associated with a cumulative effect of operation or non-operation of that controlled load.
2. computing a cumulative priority value for that controlled load, said cumulative priority value being a function of both
   (i) said user-selected priority associated with that controlled load, and
   (ii) said value of said variable; and

(b) making a decision whether to shed or restore said first controlled load on the basis of whether said first controlled load is less than or exceeds the the value of said cumulative priority value of certain other cumulative priority values of other ones of said controlled loads.

4,551,813

JAM DETECTOR

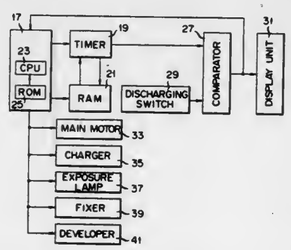
Takeshi Sanbayashi, and Hiroshi Matsumoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 8, 1982, Ser. No. 439,985

Claims priority, application Japan, Nov. 30, 1981, 56-192018

Int. Cl.⁴ B65H *7/02*

U.S. Cl. 364—569 **4 Claims**



1. A jam detector, used in a sheet transfer device, for performing jam detection of first and second transfer sheets on a conveyance path between a first position and a second position by comparing the conveying times of the first transfer sheet and the subsequent second transfer sheet with a predetermined time needed for a transfer sheet to move between the first and second positions, said detector comprising:

a single timer means which can be preset with a value corresponding to said predetermined time, said single timer means begins to count down the preset value to a given value in response to the first transfer sheet passing the first position on said conveyance path, and generates a time-out signal when the given value is reached;

memory means, responsive to the second transfer sheet passing the first position on said conveyance path subsequent to the first transfer sheet, for storing data corresponding to that count value of said timer means which is obtained when the second transfer sheet passes the first position;

detection means for detecting the first transfer sheet at the second position and generating a detection signal;

first judging means for detecting, in response to the detection signal from said detection mens, whether or not the time-out signal is generated and for judging that a paper jam has occurred when it is detected that the time-out signal is generated; and

second judging means for reading the data stored in said memory means, when said first judging means determines that no paper jam has occurred, for computing a preset value for the second transfer sheet based on the read-out

data, for setting said timer means with the computed value, and for permitting said timer to count down.

4,551,814

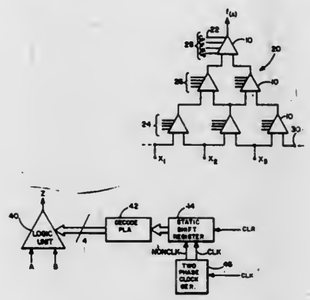
FUNCTIONALLY REDUNDANT LOGIC NETWORK ARCHITECTURES

Donald W. Moore, and Rick A. Verstraete, both of Los Angeles, Calif., assignors to Aerojet-General Corporation, La Jolla, Calif.

Filed Dec. 12, 1983, Ser. No. 560,109

Int. Cl.⁴ H03K *19/003*

U.S. Cl. 364—716 **19 Claims**



1. A logic gate structure having a plurality of data input variables and comprising:

a hierarchial array of multi-variable input gates, at least one such gate having a plurality of gate control input lines for selecting operation of said gate in accordance with any one of a plurality of possible Boolean logic functions for the number of data input variables; said gates comprising:

a plurality of memory devices, at least one such memory device being associated respectively with each such gate and being connected to said gate control input lines for selecting said gate operation;

register means being associated respectively with each such memory device for sequentially selecting the output of said memory devices for application to said gate control lines; and

means for activating said register means for applying selected binary signals from said memory devices to said gates for presenting a selected Boolean logic function to said data input variables.

4,551,815

FUNCTIONALLY REDUNDANT LOGIC NETWORK ARCHITECTURES WITH LOGIC SELECTION MEANS

Donald W. Moore, and Rick A. Verstraete, both of Los Angeles, Calif., assignors to Aerojet-General Corporation, La Jolla, Calif.

Continuation-in-part of Ser. No. 560,109, Dec. 12, 1983,. This application Mar. 15, 1984, Ser. No. 589,943

Int. Cl.⁴ H03K *19/003*

U.S. Cl. 364—716 **18 Claims**

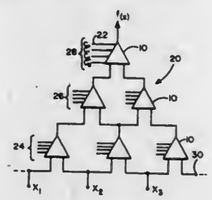
1. A programmable logic gate structure having a plurality of data input variables and comprising:

a hierarchical array of multi-variable input gates at least one such gate having a plurality of gate control input lines for selecting operation of said gate in accordance with any one of a plurality of possible Boolean logic functions for the number of data input variables; said gates comprising:

a plurality of memory devices, at least one such memory device being associated respectively with each such gate and being connected to said gate control input lines for selecting said gate operation;

register means being associated respectively with each such memory device for sequentially selecting the output of said memory devices for application to said gate control lines;

means for activating said register means for applying selected binary signals from said memory devices to said



gates for presenting a selected Boolean logic function to said data input variables; and

means for generating said selected binary signals in response to a functional expression of said selected Boolean logic function.

4,551,816

FILTER DISPLAY SYSTEM

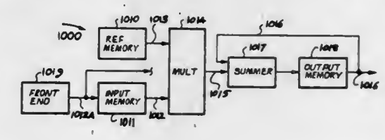
Gilbert P. Hyatt, P.O. Box 846, Cypress, Calif. 90630

Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, and Ser. No. 849,733, Nov. 9, 1977, abandoned, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 899,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 844,765, Oct. 25, 1977, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,209,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 402,520, Oct. 1, 1973, Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, , Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 134,958, Apr. 19, 1971, and Ser. No. 101,881, Dec. 28, 1970. This application Sep. 27, 1982, Ser. No. 425,135

Claims priority, application Japan, Dec. 28, 1971, 47-3974

Int. Cl.⁴ G06F *15/31;* G06K *15/20*

U.S. Cl. 364—724 **51 Claims**



18. A display system comprising:

memory means for storing a plurality of signal samples to be displayed;

synchronization means for generating a synchronization signal related to start of a display operation;

address means for generating a sequence of addresses in response to the synchronization signal generated with said synchronization means;

means for sequentially accessing a plurality of signal samples

stored in said memory means under control of the sequence of addresses generated with said address means;

a filter processor for generating filtered signal samples in response to the stored signal samples accessed from said memory means under control of said sequentially accessing means, said filter processor including

a. receiving means for generating input signal samples in response to the stored signal samples accessed from said memory means under control of said sequentially accessing means,

b. reference means for generating reference signal samples,

c. multiplying means for generating product signal samples by multiplying input signal samples generated with said receiving means by reference signal samples generated with said reference means, and

d. summing means for generating filtered signal samples by summing product signal samples generated with said multiplying means; and

a display for displaying filtered information to an operator in response to the filtered signal samples generated with said summing means.

30. A display system comprising:

input means for generating input signal samples;

synchronization means for generating a synchronization signal for synchronizing a CRT display;

a stored program digital computer for iteratively processinng display information in response to the synchronization signal generated with said synchronization means under control of a stored program, said computer including

1. a main memory for storing the program,

2. processing means for iteratively processing the display information in response to the synchronization signal under control of the program stored in said main memory, and

3. output means for iteratively generating output display information in response to the iterative processing with said processing means;

a filter processor for generating filtered signal samples in response to the input signal samples from said input means in response to the display information output from said output means, said filter processor including;

a. receiving means for receiving the input signal samples from said input means,

b. reference means for generating reference signal samples,

c. multiplying means for generating product signal samples by multiplying input signal samples received with said receiving means by reference signal samples generated with said reference means, and

d. summing means for generating the filtered signal samples by summing product signal samples generated with said multiplying means; and

a CRT display for displaying a filtered image in response to the filtered signal samples generated with said summing means under control of the synchronization signal from said synchronization means.

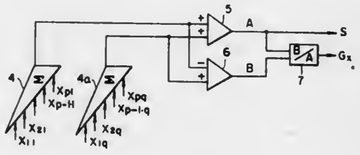
4,551,817

DEVICE FOR DETECTING CENTER POSITION OF TWO-DIMENSIONALLY DISTRIBUTED DATA

Masatoshi Ishikawa, Ibaraki, Japan, assignor to Director General of Agency of Industrial Science and Technology, Japan

Filed Oct. 24, 1983, Ser. No. 544,740
Int. Cl.⁴ G06G *7/12*
U.S. Cl. 364—811 **8 Claims**

1. A device for detecting the center position (G_x, G_y) of two-dimensionally distributed data R_{nm}, where n and m are integers of 1 to p and 1 to q, respectively, said data being the outputs from a p×q matrix of sensors with q-number of first to q-th columns arranged in the direction of the X-axis and p-number of first to p-th rows in the direction of the Y-axis, wherein G_x and G_y are expressed as:



$$G_x = \frac{\sum_{m=1}^{q}\sum_{n=1}^{p}(q-2m+1)R_{nm}}{\left(\sum_{m=1}^{q}\sum_{n=1}^{p}R_{nm}\right)(q+1)}$$

$$G_y = \frac{\sum_{m=1}^{q}\sum_{n=1}^{p}(p-2n+1)R_{nm}}{\left(\sum_{m=1}^{q}\sum_{n=1}^{p}R_{nm}\right)(p+1)}$$

said device comprising:

p×q number of first adders respectively coupled with the sensors for receiving the outputs R_{nm} from their corresponding sensors as part of their respective inputs and arranged such that each first adder receives as the remainder of its inputs the outputs of the first adders whose corresponding sensors are positioned in the same row of its corresponding sensor and adjacent thereto, with the outputs X_{nm} generated from the first adders being each a half of their respective total inputs;

p×q number of second adders respectively coupled with sensors for receiving the output R_{nm} from their corresponding sensors as part of their respective inputs and arranged such that each second adder receives as the remainder of its inputs the outputs of the second adders whose corresponding sensors are positioned in the same column of its corresponding sensor and adjacent thereto, with the outputs Y_{nm} generated from the second adders being each a half of their respective total inputs;

first calculating means, coupled with p-number of the first adders whose corresponding sensors are located at the first column, for receiving their outputs X_{n1} and for generating an output which is the sum of its input

$$\sum_{n=1}^{p} X_{n1};$$

second calculating means, coupled with p-number of the first adders whose corresponding sensors are located at the q-th column, for receiving their outputs X_{nq} and for generating an output which is the sum of its inputs

$$\sum_{n=1}^{p} X_{nq};$$

third calculating means, coupled with q-number of the second adders whose corresponding sensors are located at the first row, for receiving their outputs Y_{1m} and for generating an output which is the sum of its inputs

$$\sum_{m=1}^{q} Y_{1m};$$

fourth calculating means, coupled with q-number of the second adders whose corresponding sensors are located at the p-th row, for receiving their outputs Y_{pm} and for generating an output which is the sum of its inputs

$$\sum_{m=1}^{q} Y_{pm};$$

first means coupled to the first and second calculating means for generating an output of a first value:

$$\frac{\sum_{n=1}^{p} X_{nq} - \sum_{n=1}^{p} X_{n1}}{\sum_{n=1}^{p} X_{n1} + \sum_{n=1}^{p} X_{nq}}; \text{ and}$$

second means coupled to the second and third calculating means for generating an output of a second value:

$$\frac{\sum_{m=1}^{q} Y_{pm} - \sum_{m=1}^{q} Y_{1m}}{\sum_{m=1}^{q} Y_{1m} + \sum_{m=1}^{q} Y_{pm}}$$

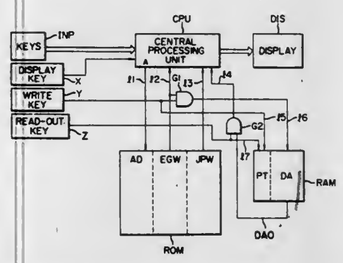
wherein said first and second values are equal to G_x and G_y, respectively.

4,551,818

ELECTRONIC APPARATUS FOR TRANSLATING ONE LANGUAGE INTO ANOTHER

Ichiro Sado; Juji Kishimoto, both of Tokyo; Masayuki Sasaki, Yokohama, and Mitsuo Cho, Ina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 144,216, Apr. 28, 1980, abandoned. This application Feb. 1, 1984, Ser. No. 575,722
Claims priority, application Japan, May 8, 1979, 54-55266
Int. Cl.⁴ G06F *15/38*
U.S. Cl. 364—900 **10 Claims**



1. An electronic apparatus for translating one language into another in which selected words can be stored for review, said apparatus comprising:

first memory means for storing words of a first language and words of a second language as a plurality of pairs;

second memory means for storing selected ones of the words of said first language stored in said first memory means;

first read out means including means for producing a first read out signal for causing reading out of a selected word of said first language stored in said first memory means;

means connecting said first memory means and said second memory means;

writing means including input means, connected to said connecting means, for producing a writing instruction, said connecting means being responsive to said writing instruction for enabling writing of said selected word read out from said first memory means into said second memory means;

second read out means, connected to said second memory means, including means for producing a second read out signal for reading out a selected one of the words of said first language stored in said second memory means

translation means including means for producing a translation signal for causing reading out from said first memory means a word of said second language corresponding to a word of said first language;

visualizing means for visualizing said words of said first language caused to be read out by said first read out means, words of said first language read out by said second read out means, and words of said second language caused to be read out by said translation means, respectively; and

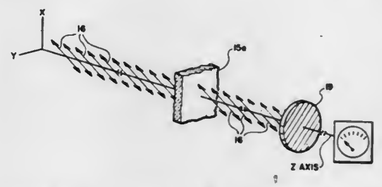
control means connected to said first read out means, said second read out means, said translation means, said visualizing means, and said first memory and being responsive to generation of said first read out signal by said first read out means for reading out said selected word of said first language stored in said first memory means, and being responsive to generation of said translation signal by said translation means to find and read out from said first memory means the words of said second language corresponding to said selected word of said first language read out from said second memory means by said second read out means and visualized by said visualizing means.

4,551,819

OPTICAL RECORDING METHOD AND APPARATUS UTILIZING POLYMERIC BIREFRINGENT MATERIALS

Josef Michl, and Claudio G. Puebla-Ponce, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Apr. 14, 1982, Ser. No. 368,072
Int. Cl.⁴ G11C *13/04*
U.S. Cl. 365—120 **13 Claims**



1. A method for semi-permanently recording information comprising the steps of:

obtaining a birefringent polymeric material;

selecting locations on the birefringent material where it is desired to record information; and

irradiating the selected locations with electromagnetic radiation at a wavelength that is absorbed by the birefringent polymeric material in order to modify the birefringence of the material at said locations such that information is semi-permanently recorded onto the birefringent polymeric material.

4,551,820

DYNAMIC RAM INTEGRATED CIRCUIT DEVICE

Hiromi Matsuura, Kodaira, Japan, assignor to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

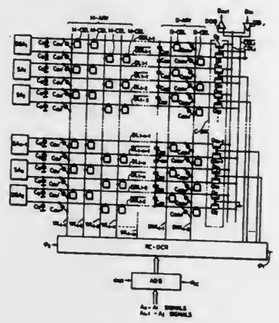
Filed Dec. 23, 1982, Ser. No. 452,446
Claims priority, application Japan, Dec. 25, 1981, 56-209397
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **24 Claims**

1. A dynamic RAM integrated circuit device having a folded bit line arrangement comprising:

a memory array having a predetermined plurality of data line pairs formed on a semiconductor substrate, a plurality of memory cells each connected with a corresponding one

of said plurality of data line pairs and a plurality of word lines each connected with corresponding ones of said plurality of memory cells; and

an additional data line formed on said semiconductor substrate to extend adjacent to and in parallel with a data line pair in said predetermined plurality of data line pairs



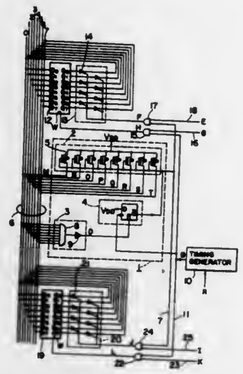
which is disposed at an end of said memory array, said additional data line being permanently decoupled from reading and writing circuits which are coupled to said memory array, thereby to decrease the difference between the stray capacitances connected to the data lines constituting said data line pair disposed at an end of said memory array, respectively.

4,551,821

DATA BUS PRECHARGING CIRCUITS

Hiroshi Yokouchi, and Ryuichi Iketani, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,572
Claims priority, application Japan, Apr. 23, 1982, 57-67452
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—203 **2 Claims**



1. A data bus precharging circuit comprising:

a charging circuit for charging a common data bus in response to a precharge control signal, said common data bus having a plurality of bit lines;

a precharge sensing circuit for generating a reset signal when all of said plurality of bit lines of said data bus are charged, said sensing circuit sensing a charged bit line by sensing that a logic level of said bit line is a logic "1" level; and

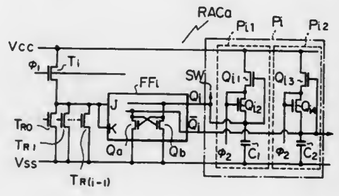
a control signal generating circuit for enabling said charging circuit to charge said data bus when a precharge clock signal is inputted to said control signal generating circuit, and for disabling said charging circuit from charging said data bus when said reset signal is inputted to said control signal generating circuit from said precharge sensing circuit.

4,551,822

DYNAMIC SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, Yokohama, and Katsuhiko Kabashima, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 7, 1982, Ser. No. 447,677
Claims priority, application Japan, Dec. 7, 1981, 56-195561
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—222 **8 Claims**



1. A dynamic semiconductor memory device capable of performing a cyclic refresh operation in response to an external control signal indicative of a state of the refresh operation, comprising:

memory cells, each having a capacitor for storing data;

a refresh-control clock generator for generating a clock signal in response to the external control signal;

a refresh-address counter, operatively connected to said refresh-control clock generator, for sequentially generating refresh-address signals in response to said clock signal, said memory cells being refreshed when addressed by said refresh-address signals, respectively, said refresh-address counter being capable of sequentially changing said refresh-address signals in response to said clock signal and retaining the last one of said refresh-address signals in the absence of said clock signal, and said refresh-address counter being capable of resuming the sequential change of said refresh-address signals starting with said retained last one of said refresh-address signals in response to said clock signal;

an initial resetting means, operatively connected to said refresh-address counter, for resetting said refresh-address counter so as to set predetermined initial refresh-address signals in said refresh-address counter; and

a power supply line, operatively connected to said initial resetting means, for supplying power to at least said initial resetting means, said initial resetting means resetting said refresh-address counter when power is turned on.

4,551,823

METHOD AND APPARATUS FOR ACOUSTIC CEMENT BOND LOGGING

Jerry H. Carmichael, and Charles H. Wellington, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 19, 1981, Ser. No. 322,783
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 367—35 **9 Claims**

1. A method of detecting the relative degrees of bonding of cement to casing in a borehole, comprising the steps of:

traversing said borehole with an instrument, said instrument adapted to periodically transmit acoustic energies through said casing and to receive said acoustic energies at a fixed distance within said instrument from the location of said transmission of said acoustic energies;

transforming said received acoustic energies into a plurality of electrical signals, each electrical signal comprising both a pulse functionally related to the time of said transmission of said acoustic energies and a plurality of electrical alternations about a reference axis representative of said acoustic energies received by said instrument subsequent in time from said transmission;

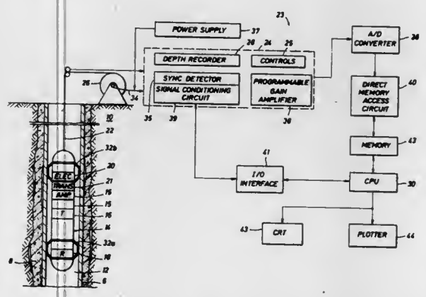
selecting survey signals from said plurality of electrical signals;

digitizing at least a portion of each of said selected survey signals;

selecting at least one of said digitized survey signals to be used as a calibration signal;

selecting at least one half-cycle of one polarity of said calibration signal;

determining time references for said at least one half-cycle, said time references being a function of coincidence of said at least one half-cycle and said reference axis;



defining a portion of each of said survey signals in reference to said time references of said half-cycle of said calibration signal;

determining the area within said half-cycle in relation to said reference axis of said calibration signal;

summing the individual amplitudes within said defined portion of said survey signals, said ampitudes having the same polarity as said half-cycle of said calibration signal, said polarity determined relative to the references axis of said survey signals;

determining from said summation of individual amplitudes the area defined by said individual amplitudes in said survey signals; and

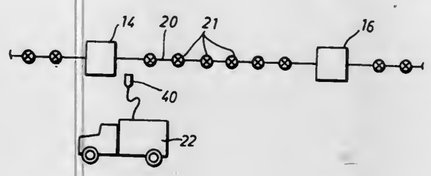
determining from said area of said half-cycle of said calibration signal and said area within said defined area within said portions of each of said survey signals the relative degrees of bonding of cement to casing.

4,551,824

TELEMETRY SYSTEM ADAPTER

William Fehrenkamp; Arnold R. Pater, and Arthur D. Brummel, all of Houston, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,300
Int. Cl.⁴ G01V *1/16, 1/22*
U.S. Cl. 367—76 **1 Claim**



1. In a seismic data gathering telemetry system comprised of a plurality of identical data acquisition array terminals that are serially connected together by cables that transmit seismic data from geophones to the array terminals and then to a recording and control station, and transmit control signals from the recording and control station to said array terminals, and wherein a cable is connected intermediate its ends to one or more geophones and is connected at its respective ends to a pair of array terminals, and wherein a recording and control station conventionally is connected to one end of a cable at an end of the system, said array terminals each having at least a first type of connector adapted to mate only with a different second type of connector and each cable having at each end thereof one of said second type of connectors for mating with said first type connector on an array terminal,

the improvement of a break-in adapter that permits the recording and control station to be removably connected anywhere in the seismic data gathering system between an array terminal and an end of a cable, said adapter comprising,

a second type connector for connection only to a first type connector on an array terminal,

a first type connector for connection only to a second type connector on the end of a cable,

a third connector adapted to be connected only to a recording and control station when the adaptor's first and second type connectors are connected, respectively, to a cable and to an array terminal,

a plurality of analog transmission lines connected between said first and second type connectors of the adapter for transmitting analog signals between the cable and the array terminal to which the adapter is connected,

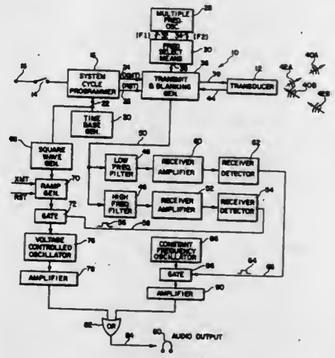
a plurality of digital transmission lines connected between the third connector and each of said first and second type connectors of the adapter for transmitting digital signals between said recording and control station and said array terminal and said cable when the third connector of the adapter is connected to the recording and control station.

4,551,825

SONIC RANGING/DETECTION SYSTEM EMPLOYING VARIED BEAMWIDTH

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 1, 1982, Ser. No. 438,052
Int. Cl.⁴ G01S *15/14, 7/52*
U.S. Cl. 367—101 **3 Claims**



1. Object detection apparatus comprising means for transmitting a urst of sonic energy at more than one frequency toward a remote object and detecting a reflection of said energy from said object, said tramsmitting means including an electrostatic transducer having a frequency dependent transmission pattern, and means for alternately changing the sonic energy transmission frequency between relatively high and low frequencies wherein a portion of said transmission pattern

includes a central beam portion defined by a beam angle and said beam portion is alternated between relatively narrow and wide beam angles in response to said alternating sonic energy transmission frequencies;

means responsive to the transmission and reception of said narrow central beam angle burst of sonic energy in a particular direction and at a first frequency toward a remote object for generating a signal respresentative of object distance;

means responsive to said object distance signal for generating an audible signal whose pitch is varied in accordance with the distance to said remote object;

means responsive to the transmission and reception of said wide central beam angle burst of sonic energy at a second frequency in said particular direction for generating a signal respresentative of the presence of an object located in a direction at an angle to said particluar direction; and

means responsive to said object presence signal for generating an audible signal, of constant pitch, indicating the presence of an object in said angled direction.

4,551,826

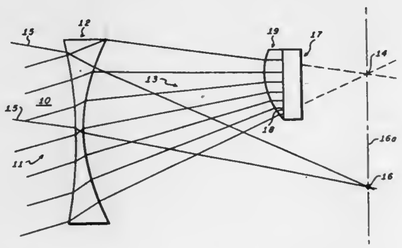
MULTIPLE BEAM LENS TRANSDUCER WITH COLLIMATOR FOR SONAR SYSTEMS

Jacob A. Kritz, Westbury, N.Y., assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 453,303, Dec. 27, 1982, abandoned. This application Mar. 8, 1985, Ser. No. 708,388

Int. Cl.⁴ H04B *13/00*

U.S. Cl. 367—150 **19 Claims**



1. A multiple beam lens transducer for sonar systems comprising:

a first acoustic lens having a focal plane,

a plurality of electro-acoustic transducers, each having a planar surface positioned between said first acoustic lens and said focal plane; and

a plurality of second lenses each having an outwardly curved forward surface facing said first acoustic lens and a planar surface adjacent said planar surface of a corresponding one of said plurality of electro-acoustic transducers, said second lenses constructed to collimate focussed acoustic waves incident at said curved surfaces so that in-phase collimated waves are coupled from said planar surfaces of said second lenses to said planar surfaces of said electro-acoustic transducers.

4,551,827

FLUORESCENT SOUNDTRACK READOUT SYSTEM

Peter A. Custer, 85 Red Hill Rd., Princeton, N.J. 08540, and George R. Bird, Princeton, N.J., assignors to Peter A. Custer, New York, N.Y.

Continuation-in-part of Ser. No. 088471, Oct. 26, 1979, abandoned. This application Oct. 10, 1980, Ser. No. 196,032

Int. Cl.⁴ G11B *7/02, 7/04*

U.S. Cl. 369—101 **12 Claims**

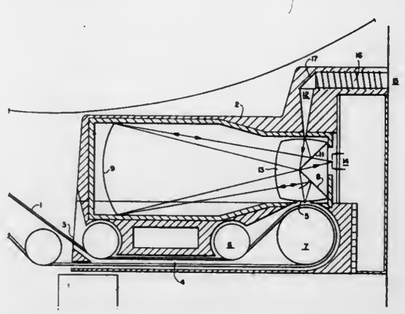
1. A fluorescent soundtrack readout system, comprising:

a. a source of ultraviolet light,

b. a means for directing the ultraviolet light onto the surface of a digitally coded fluorescent soundtrack film to cause the fluorescent soundtrack data matrix to emit visible light, and

c. a means for transmitting the emitted visible light imagewise to a photodiode array to detect the visible light,

wherein the means for directing the ultraviolet light and the means for transmitting the visible light comprise at least one mirror and at least one common lens, wherein the means for directing the ultraviolet light and for transmitting the emitted visible light comprise an ultraviolet light



reflecting, visible light transmitting dichroic mirror and two ultraviolet and visible light reflecting mirrors, wherein the ultraviolet light is first directed onto the dichroic mirror from which it is then directed onto a first totally reflecting concave mirror and then to a second totally reflecting mirror from which it is directed onto the fluorescent soundtrack, and wherein the emitted visible light is directed onto the second total reflecting mirror to the first totally reflecting concave mirror and then transmitted through the dichroic mirror to the photodiode array.

4,551,828

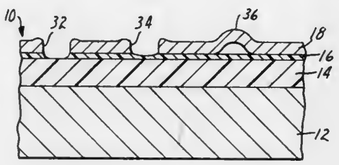
QUADRILAYER OPTICAL DRAW MEDIUM

Chi H. Chung, San Jose, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 18, 1983, Ser. No. 476,503

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—275 **15 Claims**



1. An optical DRAW medium comprising an optically-smooth reflective substrate, an optical spacer layer overlying the reflective substrate, and a light-absorbing layer overlying the optical spacer layer, information being recordable in the form of discrete features in the light-absorbing layer creatable by a focused, modulated laser beam, wherein the improvement comprises: adjacent to each of the light-absorbing and optical spacer layers is a triggering layer formed of an organic material which has a thickness less than that of the optical spacer layer and when heated to a temperature below the melting point of the optical spacer layer rapidly expands to implement or enhance the formation of a bubble or pit in the light-absorbing layer.

4,551,829

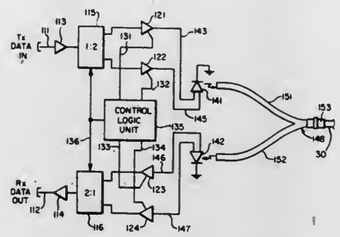
WAVELENGTH DIVISION MULTIPLEXED FIBER-OPTIC CABLE SYSTEM WITH NON-UNIQUE TERMINAL TYPES

Robert E. Dragoo, Melbourne; James R. Teague, Indialantic; Lee M. Burberry, W. Melbourne; David C. Bailey, Cocoa Beach; Andrew M. Bardos, Indian Harbor Beach, and Barry G. Grossman, Satellite Beach, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 10, 1982, Ser. No. 356,304

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 370—3 **2 Claims**



1. For use with a single fiber-optic communication system, a transceiver apparatus comprising:

a multiple wavelength source of optical energy capable of controllably emitting a selected one of transmission wavelengths for application to a single optical fiber for transmission thereover;

a multiple wavelength detector capable of controllably detecting a prescribed one of said transmission wavelengths that has been transmitted over said single optical fiber;

control means, coupled to said multiple wavelength source and said multiple wavelength detector, for selectively enabling said multiple wavelength detector to detect a first of said transmission wavelengths that has been transmitted over said single optical fiber, and for selectively enabling said mutliple wavelength source to emit a second of said transmission wavelengths for transmission over said single optical fiber; and

means for coupling said second of said transmission wavelengths emitted by said source into said single optical fiber for transmission thereover and for coupling said first wavelength received from said single optical fiber to said multiple wavelength detector.

4,551,830

APPARATUS FOR PROVIDING LOOPBACK OF SIGNALS WHERE THE SIGNALS BEING LOOPED BACK HAVE AN OVERHEAD DATA FORMAT WHICH IS INCOMPATIBLE WITH A HIGH SPEED INTERMEDIATE CARRIER OVERHEAD FORMAT

Charles E. Huffman, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

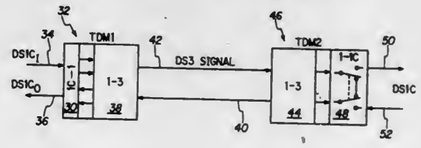
Filed Mar. 19, 1984, Ser. No. 591,083

Int. Cl.⁴ H04J *3/14*

U.S. Cl. 370—15 **4 Claims**

3. The method of inserting switching data control bits in a communication data stream for causing remote destination site switched loopback of given frequency data signals transmitted on a higher frequency data communication line from a local source site where the protocol of the higher frequency data communication line is such that the given frequency data signals cannot be transmitted with their own overhead data bit signals but rather must be divided into lower frequency signal channels and recombined at the destination site to generate said given frequency data signals comprising the steps of:

violating the stuff bit overhead signals assigned at said source site to each of the lower frequency signal channels comprising said given frequency data signals;



detecting the violation of said stuff bit overhead signals at said destination site for each of said channels containing components of said given frequency data signal; and

setting switches at said destination site in response to said detection of stuff bit violations whereby the given frequency data signal is looped-back to said source site.

4,551,831

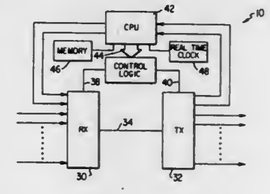
TIME DIVISION MULTIPLEXED SYSTEM FOR NON REAL TIME DIGITAL SWITCHING

Mitchell D. Vaughn, Garland, Tex., assignor to USDATA Corporation, Richardson, Tex.

Filed Jan. 31, 1984, Ser. No. 575,581

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—58 **9 Claims**



1. A communications network, comprising:

a plurality of peripheral communication receiving devices for receiving and processing data;

each of said receiving devices having means for transmitting a status signal indicating if a connection is present;

a plurality of peripheral communication transmitting devices for transmitting data to a select one of said receiving devices

each of said transmitting devices having means for transmitting a status signal indicating the presence of data ready for tansmitting to one of said receiving devices and for receiving a clear to send signal indicating that data can be transferred to said receiving device, said transmitting device transmitting data in response to receiving said clear to send signal;

a signal data highway for carrying said transmit data in a time domain multiplexed format;

multiplexing means having a plurality of input ports interfaced with said transmitting devices and a plurality of output ports interfaced with said receiving devices for receiving the transmit data from all of said transmitting devices and routing it to select ones of said receiving devices over said data highway by time domain multiplexing in accordance with a connection pattern; and

control means for controlling said multiplexing means to interface the transmit data to the select ones of said receiving devices over said data highway in accordance with said connection pattern, said control means having:

means for sampling said transmitting device status signals to determine if data is ready to be transmitted,

means for receiving at said control means said transmit

data in response to receiving said transmitted device status signal indicating data to be transmitted to one of said receiving devices to determine from said transmit data which of said receiving devices is to be interfaced with particular ones of said transmitting devices, said transmit data received by said receiving means having destination information contained therein,

means for sampling said receiving device status signals to determine if a connection is present,

means for generating a connection pattern in accordance with said destination information received by said receiving means, said connection pattern indicating the ones of said receiving devices to be connected to said transmitting devices,

connecting means for connecting said multiplexing means in accordance with said conneciton pattern such that said multiplexing means operates independent of said control means until said control means updates said latch means and

means for transmitting said clear to send signal to said transmitting device to indicate a connection if the select one of receiving devices is not connected.

4,551,832

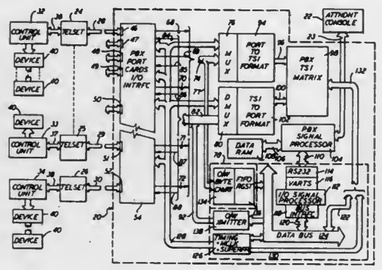
TELEPHONE BASED CONTROL SYSTEM

Richard T. Carll, Granby; Anthony J. Fastaia, Vernon, both of Conn., and Kurt von Nieda, Los Angeles, Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 2, 1983, Ser. No. 557,693

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—58 **6 Claims**



1. Control system apparatus for regulating a remote controlled device, comprising:

central console means responsive to operator entry signals;

time division multiplexed (TDM) telephone system, including private branch exchange (PBX) signal processing means, PBX memory means, and PBX matrix switch having primary ports for exchanging primary port signals including system data signals and system control signals between said central console, said PBX signal processor, and said station equipment, said PBX signal processing means providing said control signals alternatively as PBX control signals and as secondary port control signals which include said operator entry signals, said station equipment having a station port, a secondary port, and station signal processing means responsive to said primary port signals for transferring received secondary port control signals to said secondary port, received primary port data signals to said station port, and for transferring signals received at said secondary port and said station port to said PBX matrix; and

remote control means, connected for response to the secondary port of associated station equipment and to the remote controlled device, and including,

sensor means for providing sensed value signals of controlled device operating parameters,

control unit memory means, and

control unit signal processing means for periodically sampling, and storing in said control unit memory means, said secondary port control signals and said sensed signals, to provide regulation of said controlled device in dependence thereon, and to present said stored sensed signals to said secondary port on request of said PBX signal processing means.

4,551,833

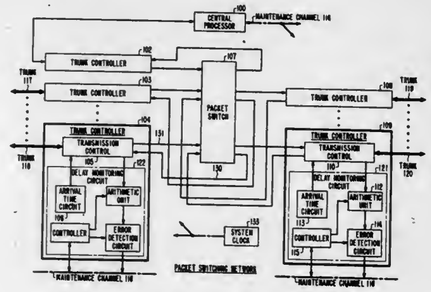
DISTRIBUTED MONITORING OF PACKET TRANSMISSION DELAY

Jonathan S. Turner, Evanston, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 10, 1983, Ser. No. 521,884

Int. Cl.⁴ H04Q *11/04, 11/00*

U.S. Cl. 370—60 **27 Claims**



18. A transmission delay monitoring arrangement for measuring transmission delay of a predetermined number of packets during communication of the latter through a packet switching system and each of said packets comprising arrival time signals, said arrangement comprises:

means responsive to a receipt of said arrival time signals of each of said predetermined number of packets and the present time for calculating present sum delay signals representing an amount of time consumed in communicating said predetermined number of packets;

means for defining transmission delay thresholds; and

means responsive to said transmission delay thresholds from said defining means, said present sum delay signals from said calculating means, and reference sum signals for indicating transmission delay excursions beyond said thresholds by said present sum delay signals from said reference sum delay signals.

4,551,834

METHOD AND SYSTEM FOR COMMUNICATING OVER AN OPEN COMMUNICATION NETWORK

Jean-Claude Liénard, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 25, 1983, Ser. No. 545,320

Int. Cl.⁴ H04J *6/00*

U.S. Cl. 370—94 **6 Claims**

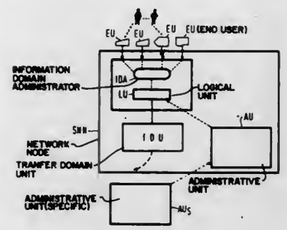
1. A method for operating an open communications network comprising a plurality of network nodes interconnected by transmission resources and a plurality of user boxes connected to the network nodes by further transmission resources, whereby the network nodes includes sending and receiving means, comprising the steps of:

dividing data to be transmitted from a user box into communication data blocks;

providing each communication data block with a communication header comprising at least one code word cyclically numbered for successive communication data blocks;

receiving said communication data blocks in a receiving means of one of said nodes;

monitoring the code word numbers of received communication data blocks and arranging the received data blocks in correct sequence, determining the loss at said receiving means of a communication data block;



restoring the loss of a communication data block by requesting retransmission of said communication data block from said sending means, and leaving the code word number of the missing communication data block out of the cyclic code word numbers and the monitoring procedure after said restoring procedure is effected.

4,551,835

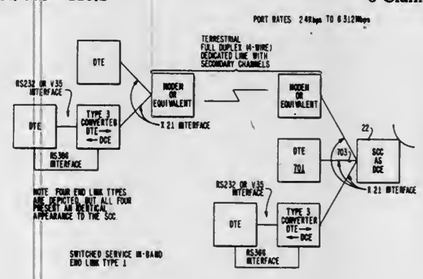
X.21 SWITCHING SYSTEM

Joseph M. Bensadon, Germantown, and Norman F. Brickman, Potomac, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,312

Int. Cl.⁴ H04J *3/12*

U.S. Cl. 370—110.1 **8 Claims**



1. In a communications controller having a plurality of X.21 data ports each connected to "t" and "c" input lines from a respective DTE and each connected to "r" and "i" output lines to said respective DTE, said data ports receiving periodic select signals from a digital switch in said controller to transfer message units to and from said data ports at respective port data rates, apparatus for transferring X.21 call establishment signals between said data ports and a control processor, comprising:

a receive buffer having a data input connected to a transmit bus connected in common through said data ports to said "t" and "c" lines, having an address input and a data output, said receive buffer being divided into a scan portion for buffering a port state control message unit from each of said ports and a digit portion for buffering a plurality of port signaling information message units from a selected one of said ports at said respective port data rate;

a transmit buffer having a data input, having an address input and having a data output connected to a receive bus connected in common through said data ports to said "r" and "i" lines, said transmit buffer being divided into a scan portion for buffering a port state control message unit to each of said ports and a digit portion for buffering a plurality of port signaling information message units to a selected one of said ports at said respective port data rate;

a cotrol module having an input connected to said digital switch for receiving said port select signals, having a control input and having a first address output to said address input of said receive buffer and a second address output to said address input of said transmit buffer, for controlling the writing and reading of said port state control message units and said port signaling information message units in said transmit buffer and in said receive buffer;

a microprocessor connected by means of a processor bus to said data output of said receive buffer, to said data input of said transmit buffer, to said control module and to said control processor, for receiving the currently buffered port state control message unit from said scan portion of said receive buffer for each of said ports and computing the next X.21 control state for each of said ports;

said microporcessor providing control signals to said control module in response to said computed next control state, for controlling the writing of said plurality of port signaling information message units into said digit portion of said receive buffer from a selected one of said ports as call establishment signals;

said microprocessor providing control signals to said control module in response to said computed next control state, for controlling the transfer of said plurality of port signaling information message units from said digit portion of said receive buffer over said processor bus to said control processor as call establishment signals;

whereby call establishment can be achieved for X.21 data ports at said respective port data rates.

4,551,836

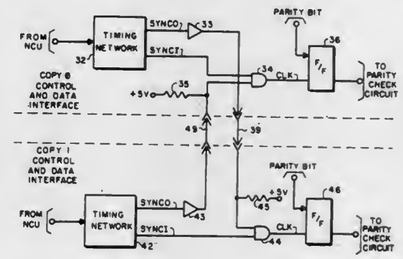
CROSS-COPY ARRANGEMENT FOR SYNCHRONIZING ERROR DETECTION CLOCK SIGNALS IN A DUPLEX DIGITAL SYSTEM

Kamal I. Parikh, Phoenix, Ariz., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Jun. 22; 1983, Ser. No. 506,567

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 371—1 **3 Claims**



1. A cross-copy arrangement producing first and second synchronized output clock signals in a digital system having first and second peripheral processors, said system including a network clock unit transmitting a master-clock signal, said cross-copy arrangement comprising:

first timing generating means associated with said first peripheral processor, said first timing generating means receiving said master-clock signal and developing a first local timing signal and a first remote timing signal;

first gating means associated with said first timing generating means receiving said first local timing signal;

second timing generating means associated with said second peripheral processor, said second timing generating means receiving said master-clock signal and developing a second local timing signal and a second remote timing signal,

and said first gating means further receiving said second timing generating means second remote timing signal and responsive to the concurrent presence of both said first local timing signal and said second remote timing signal said first gating means develops said first output clock signal; and

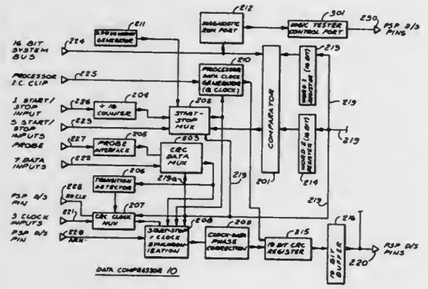
second gating means associated with said second timing generating means receiving said second local timing signal, and said second gating means further receiving said first timing generating means first remote timing signal and responsive to the concurrent presence of both said second local timing signal and said first remote timing signal said second gating means develops said second output clock signal.

4,551,837

HIGH SPEED OPERATIONAL RECURRING SIGNATURE EVALUATOR FOR DIGITAL EQUIPMENT TESTER

Gerald W. Goegelein, Phoenix; Paul H. Longmore, Chandler, and Stan E. Fisher, Phoenix, all of Ariz., assignors to International Telephone & Telegraph Corp., New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,820
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—25 **22 Claims**



1. A test apparatus for enabling a relatively low speed test device to test the operation of a relatively high speed digital circuit at the full operating clock rate thereof, said test apparatus comprising:

(a) signature generating means for generating an actual digital signature from data received from a predetermined point within the digital circuit,

(b) clock control means connected to the digital circuit for clocking the signature generating means at rate consistent with said full operating clock rate,

(c) memory means for storing expected digital signature for a plurality of points within the digital circuit,

(d) control means for receiving digital data indicative of the identity of said predetermined point from the test device, for evaluating the actual digital signature for that point in relation to the expected digital signature for that point, and for communicating the result of that evaluation to the test device,

(e) means for connecting the signature generating means and clock control means to the digital circuit, and

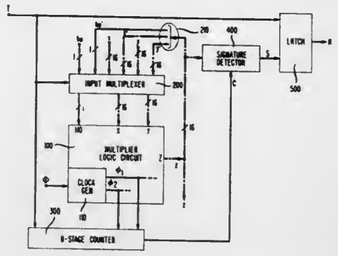
(f) means for connecting the control means to the test device.

4,551,838

SELF-TESTING DIGITAL CIRCUITS

Joel W. Gannett, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1983, Ser. No. 506,070
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—25 **9 Claims**



1. A logic circuit comprising:

(a) a digital circuit having a first plurality of input terminals for receiving input digital signals to the digital circuit during each cycle of circuit operation and a seond plurality of output terminals for delivering output digital signals from the digital circuit during each such cycle;

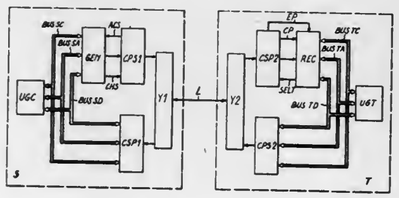
(b) input multiplexer means connected for receiving both normal input digital signals and test signals derived from the output signals by means of a signal processor which receives the output signals and for delivering to the input terminals of the digital circuit the normal input signals during each cycle of normal circuit operation and for delivering to the input terminals of the digital circuit the test signals during each cycle of a test operation havng a plurality of cycles for detecting faults in the digital circuit.

4,551,839

ERROR-PROTECTING SYSTEM FOR A TWO-WAY ASYNCHRONOUS DATA TRANSMISSION

José Botrel, Liffré ; Sami Harari, Paris; Joseph Briere, Cesson-Sevigné , and Bernard Louvel, Rennes, all of France, assignors to L'Etat Francais represente par le Ministre des PTT (Centre National d'Etudes des Telecommunications), Issy-les-Moulineaux and Telediffusion de France, Montrouge, both of, France

Filed Jan. 24, 1983, Ser. No. 460,534
Claims priority, application France, Feb. 4, 1982, 82 02120
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—35 **11 Claims**



1. A method for asynchroneously transmitting data and in particular for transmitting data in an interactive videotex system, said method comprising the steps of:

(a) forming each character with a parity bit for signalling with a continuous ARO-type retransmissin method;

(b) forming the data to be transmitted into blocks of code words, each of said code words being comprised of a block of seventeen bytes "1"–"5" constituting the characters to be transmitted; and

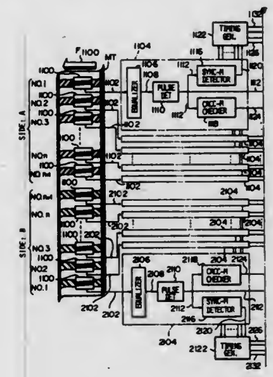
(c) encoding said data by a use of seven bits b1–b7, the eighth bit b8 of each byte being a parity bit, the sixteenth byte being a check byte of the code word, and the seventeenth byte being an enabling byte of the code word.

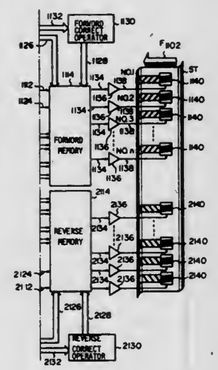
4,551,840

DIGITAL DATA DUPLICATION APPARATUS

Yasuhiko Fujii, Yamato; Isao Owaki, Tokyo; Susumu Saito; Takaro Mori, both of Sagamihara, and Shinji Nakamura, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 27, 1982, Ser. No. 452,971
Claims priority, application Japan, Dec. 29, 1981, 56-215893
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—38 **5 Claims**





1. A digital data duplication apparatus for reproducing digital primary data stored in a master recording medium and recording the reproduced primary data in a slave recording medium, comprising:

a data recording device for recording the digital primary data on the master recording medium, said recording device comprising formatting means for formatting the primary data when the primary data is to be recorded on the master recording medium, adding means for adding secondary check data including at least a master parity code to the primary data employing each fragment of the primary data as a unit, and first recording means for recording said primary and secondary check data on the master recording medium in opposite directions comprising a forward direction and a reverse direction; and

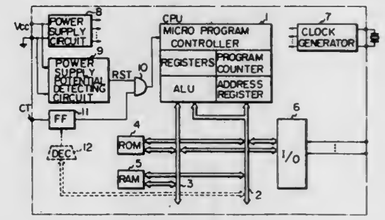
a data reproducing device for reproducing at the same time both the primary data and secondary check data recorded on the master recording medium in both the forward and reverse directions, said reproducing device comprising forward data take-in means for taking in the primary and secondary check data recorded in the forward direction to detect an error in said take-in primary data using a generator polynomial, reverse data take-in means for taking in the primary and secondary check data recorded in the reverse direction to detect an error in said take-in primary data using a reciprocal polynomial, forward master reproduction processing means connected to the forward data take-in means for correcting said detected error, reverse master reproduction processing means connected to the reverse data take-in means for correcting said detected error, and second recording means connected to both the forward and reverse master reproduction processing means for recording at the same time on the slave recording medium the corrected primary data recorded in both the forward and reverse directions.

4,551,841

ONE-CHIP SEMICONDUCTOR DEVICE INCORPORATING A POWER-SUPPLY-POTENTIAL DETECTING CIRCUIT WITH RESET FUNCTION

Kouichi Fujita, Yokohama, and Moritoshi Shirato, Kawagoe, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 9, 1983, Ser. No. 502,591
Claims priority, application Japan, Jun. 9, 1982, 57-098649; Jun. 30, 1982, 57-113308
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—66 **24 Claims**



1. A semiconductor device having a check mode comprising:

first and second power supply terminals, the potential of said first power supply terminal being higher than the potential of said second power supply terminal;

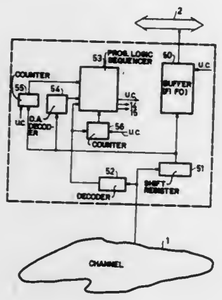
an internal circuit, operatively connected to said first and second power supply terminals, for receiving the potentials of said first and second power supply terminals;

a power-supply-potential detecting circuit, operatively connected to said first and second power supply terminals and to said internal circuit, for detecting the potential at said first power supply terminal and generating a reset signal for resetting said internal circuit when the potential at said first power supply terminal is lower than a predetermined value;

a reset signal inhibiting circuit having a first input operatively connected to said power-supply-potential detecting circuit for receiving said rest signal, having a second input for receiving a control signal, and having an output operatively connected to said internal circuit, said reset signal inhibiting circuit inhibiting the transmission of said reset signal when receiving said control signal; and

generating means, operatively connected to said reset signal inhibiting circuit, for detecting the check mode and for generating said control signal in response to detecting the check mode.

4,551,842
ERROR-PROTECTED DATA TRANSMISSION DEVICE AND COMMUNICATION NETWORK
Gérard Segarra, Jossigny, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 3, 1983, Ser. No. 455,369
Claims priority, application France, Jan. 11, 1982, 82 00285
Int. Cl.⁴ H04L *1/00*; H04B *3/04*
U.S. Cl. 371—69 **10 Claims**



5. A data communication network comprising at least one transmitting station and one receiving station, said transmitting station comprising:

a control device for controlling the transmission of messages on the network, said control device being provided for generating an adjustment signal for each message generated by said transmitting station;

an adjustable counter having a limited number of positions, said adjustable counter comprises a first counter input connected to said control device for receiving said adjustment signal, said adjustable counter being set to one of said positions under control of said adjustment signal, which set position indicates the integer number of copies of the same message to be transmitted, said adjustable counter having an output connected to said control device, said adjustable counter being provided for producing a series of indications which comprises at least a first and a second mutually exclusive indications;

storage means for temporary storage of a message generated by the transmitting station, said storage means being connected to said control device;

an encoder connceted with said storage means for providing an error recognition code to each generated message;

adding means for adding under control of said control device and said adjustable counter said first indication to the first copy and said second indication to the last copy of said integer number of copies of the same message;

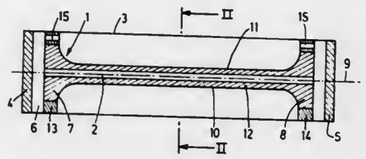
said control device being further provided for transmitting consecutively each generated message together with its provided error recognition code as many times as indicated by said set position;

said receiving station comprising:

a decoder connected to said network for decoding received messages on the basis of their added error recognition code and for generating an acceptance signal if a received message has been correctly decoded;

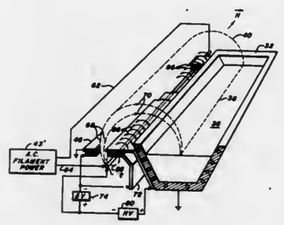
receiving means having a control input connected to said decoder for receiving said acceptance signal and a data input connected to said network for receiving messages transmitted thereon, said receiving means comprising recognition means for recognizing among said received messages said copies of a same message, said receiving means further comprising first fetching means for fetching among said recognized copies under control of said acceptance signal only a single copy for which said acceptance signal has been generated.

4,551,843
GAS WAVE-GUIDE LASER GENERATOR
Michel Ouhayoun, Paris, and Alain Robert, Vitry, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France
Filed Jul. 7, 1983, Ser. No. 511,460
Claims priority, application France, Jul. 9, 1982, 82 12147
Int. Cl.⁴ H01S *3/097*
U.S. Cl. 372—87 **6 Claims**



1. A wave guide laser generator comprising a monolithic bar made of dielectric material and including a thinned portion extending over an intermediate portion of the bar; a resonant cavity defined by an envelope means and comprising a capillary extending throughout the bar, said capillary filled with an active laser gas; said thinned portion extending closely adjacent and coextensive with a central portion of said capillary on opposite sides thereof; and a high frequency electrical pumping means for provoking a laser discharge in said active gas and generating a population inversion therein, said pumping means comprising two electrodes disposed contiguous with and extending over virtually the whole of the length of said thinned portion on opposite sides of said capillary, one of said two electrodes being thread-like in form, the other strip-like in form.

4,551,844
DEMODULATION OF VAPOR DENSITY
Paul N. Arendt, Los Alamos, N. Mex., and Vance I. Valencia, San Diego, Calif., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.
Filed Apr. 5, 1983, Ser. No. 482,184
Int. Cl.⁴ H01J *27/00*
U.S. Cl. 373—12 **12 Claims**



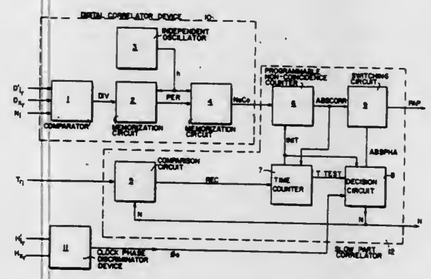
1. An electron beam evaporation system comprising:

a vapor source including an electrically conductive crucible;

a source of electrons including a filament, means for applying alternating heater current to said filament, means for focusing electrons from said filament to said crucible, means for applying a d.c. voltage to said filament such that a voltage differential is established between said filament and said crucible; and,

means for reducing non-uniformities in vapor density caused by periodic trapping of electrons near said filament due to the alternating magnetic field produced by said alternating heater current.

4,551,845
SYSTEM FOR PHASING DIGITAL TRAINS AND APPLICATION THEREOF TO THE SWITCHING OF SAID TRAINS
Charles H. ab der Halden, Tregastel, and Pierre H. Berenguier, Paris, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France
Filed May 4, 1982, Ser. No. 374,699
Claims priority, application France, May 6, 1981, 81 09002
Int. Cl.⁴ H04L *7/00, 1/22*
U.S. Cl. 375—40 **2 Claims**



1. A system for detecting and correctng the phase differences between the respective input digital signal trains of a normal and a switchable backup transmission channel, which ostensibly have identical data streams and clocking, wherein said system comprises:

(a) a data-pulse comparing means for determining the coincidence of corresponding data bits between the two input signal trains whereby an output signal (DIV) is generated by said comparing means with the occurrence of at least one noncoincidence between corresponding data pulses within a predetermined time interval;

(b) a master clocking means for enabling said data-pulse comparing means for said predetermined time interval and connected thereto and whose time base is identical with the clocking of said digital signal trains;

(c) a first latching means connected to the output of said data-pulse comparing means for memorizing said output signal (DIV) for a period h, which corresponds to a packet of a predetermined number of whole bits in said data streams, whereby said latching means generates an output signal (PER) after said period h when there exists at least one noncoincidence among previously compared corresponding pulses in a given packet;

(d) a second latching means connected to receive the output of said first latching means for memorizing said output signal (PER) for said period h, whereby said second latching means generates an output signal (NoCo) after said interval h when there exists at least one noncoincidence in a preceding packet;

(e) a local oscillator connected to enable simultaneously the memorizing actions in both said latching means wherein the time base of said oscillator is equal to period h;

(f) a pulse upcounter connected to said control latching means for counting its output pulses (NoCo) up to a maximum selectable number q in an interval between strobing pulses (INIT), whereby said upcounter generates an output signal (ABSCORR), indicative of a phase mismatch between the two compared digital signal trains, whenever said maximum count q is reached;

(g) a timing and gating means connected to said upcounter to provide it with strobing pulses (INIT) after every elapse of a selectable interval t_1 and also connected to said upcounter's output whereupon receiving this output signal (ABSCORR) said timing and gating means is initialized jointly upon the receipt of a phase-search signal (REC) through a separate input, and whereupon said timing and gating means generates a second output signal (TTEST) at a separate output in the absence of a received signal (ABSCORR) from said upcounter during said initialized interval t_1;

(h) a clock-phase discriminator which monitors and compares, through conventional sampling interconnections, the time bases of the two digital signal trains and generates an output signal (ϕo) when there exists a significant phase difference between said time bases;

(i) A decision circuit whose inputs include connections to said timing and gating means and to said clock-phase discriminator, whereby, if the output signal from this latter input (ϕo) is received within an interval t_1 of the receipt of the second output signal from this former input (TTEST), an output signal (ABSPHA) is generated by said decision circuit, and wherein said decision circuit is further connected to and initialized by the strobing-pulse output (INIT) of said timing and gating means, and wherein said decision circuit generates a channel-status signal (N) which is indicative of whether the normal transmission channel has been switched in favor of said backup channel;

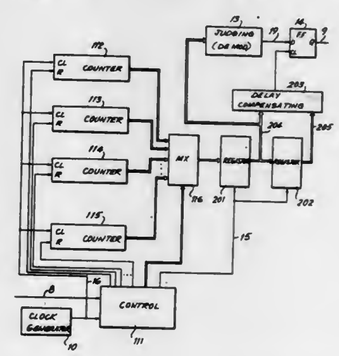
(j) an XOR-type comparator whose duly connected inputs include said channel-status signal (N) and a channel-switch command signal (T_{ri}), whereby said XOR-type comparator generates said phase-search signal (REC) for transmission to said timing and gating means;

(k) a switching circuit connected to said pulse upcounter and to said decision circuit, whereby an output signal from at least one such input (ABSCORR and/or ABSPHA) will cause said switching circuit to emit a control signal (PAP);

(l) a phase-shifting means connected to receive and respond to said control signal (PAP) from said switching circuit such that the phase of the switchable backup digital train is varied on a demand basis; and

(m) means for conducting and sampling said two digital signal trains with respect to the system for detecting and correcting phase differences therebetween and means for generating said channel-switch command signal (T_{ri}) which serves as an independent demand indicator for said system that the transmission of data is about to be switched from the normal channel to the backup channel, thereby initializing the operation of said system.

4,551,846
FSK DEMODULATION CIRCUIT
Koji Takeda; Masao Akahane; Fumiaki Mukaiyama, and Yasuhiko Kudo, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed May 7, 1982, Ser. No. 376,059
Claims priority, application Japan, May 8, 1981, 56-69137
Int. Cl.⁴ H04L *27/14*
U.S. Cl. 375—82 **11 Claims**



1. A circuit for demodulating an FSK signal that has first

and second frequencies which respectively correspond to the high and the low of a binary signal, the circuit comprising:

clock means having a train of clock pulses as an output;

detector means responsive to an FSK input signal to provide a zero-cross output signal having zero-cross intervals;

N counter means, where N is equal to or greater than 2, each counter means having the clock pulses as an input and responding in succession to count the clock pulses in N zero-cross intervals of the zero-cross signal to provide an output;

means for dividing the output of each counter means in sequence by N to provide an average count value for each zero-cross interval, the possible error in the count value for each interval so produced being decreased by 1/N;

means for comparing each successive average count value with a predetermined threshold count value to provide a comparison signal output; and

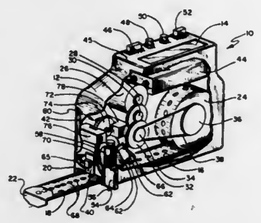
storage means having a demodulated binary signal as an output in which transitions in the output are delayed by the comparison signal.

4,551,847

HAND HELD DIGITAL MEASURING DEVICE

W. Kenneth Caldwell, 11700 W. 24th Pl., Lakewood, Colo. 80215

Filed Apr. 8, 1983, Ser. No. 483,381
Int. Cl.⁴ G01B *3/08*
U.S. Cl. 377—24 **27 Claims**



1. A hand-held motorized measuring tape comprising:

(a) a housing means;

(b) a measuring tape means including an elongated thin and flexible tape having a predetermined length which is wound on a shaft which is rotatably mounted within said housing, the free end of said tape being arranged to extend outwardly from said housing through a suitable opening;

(c) reversible drive motor means mounted within said housing and connected to said tape rotating shaft by a suitable drive means;

(d) an electrical power source mounted in said housing, said power source including a switch mounted on the outer surface of said housing and electrically connected to said motor means to energize said motor means in either the forward or reverse direction so as to result in the extension or retraction of the free end of the measuring tape with respect to the housing;

(e) a digital output display means mounted on said housing and a sensing means positioned within said housing, said sensing means being arranged in conjunction with said measuring tape to accurately measure the lineal extension of said tape means and to provide an accurate digital output reading of the extended length of the tape on the display means; said tape means having a series of equally spaced holes arranged along its central longitudinal axis and said sensor means includes a rotatably mounted sprocket which is arranged to mesh with the holes in said tape and to be rotated by the movement of said tape;

(f) an encoding disk;

(g) said sprocket means is drivingly connected to said ending disk whereby any rotation of the sprocket will be directly translated to similar rotation in the encoding disk, and switch means mounted in conjunction with said encoding disk to sense rotational movement of said disk and provide an output to the digital display means to accurately indicate the extended length of the tape means; and

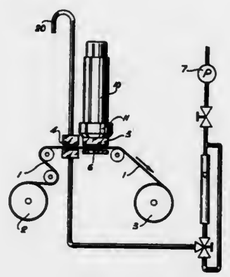
(h) said encoding disk is divided into alternating segments and the switch means includes at least two optical switches which are positioned around the circumference of said disk to provide electrical phase-related inputs to the electronic circuit for said display means which are indicative of the rotational direction of the adjacent disk segment.

4,551,848

LEAD-IN-AIR MONITOR

Robin Greenwood-Smith, Mount Isa, Australia, assignor to Mount Isa Mines Limited, Australia

Filed Nov. 29, 1982, Ser. No. 445,197
Claims priority, application Australia, Dec. 10, 1981, PF1904
Int. Cl.⁴ G01N *23/22*
U.S. Cl. 378—045 **12 Claims**



1. A health safeguard system for operation in an atmosphere containing hazardous substances such as lead, arsenic or other elements which are x-ray fluorescent wherein said system continously suctions in air samples from said atmosphere and measures the level of these hazardous substances by bombarding them with x-ray excitaiton and measuring their fluorescence emission, which comprises:

means for filtering a quantity of air and for retaining on a filter, media particles filtered therefrom at a first position;

means for transporting the media and retained particles from the first position to a second position proximate to the first position;

means for exposing the particles at the second position to X-rays;

means for detecting radiation in a spectral range including the range of X-ray-induced fluorescence of predefined elements during a predetermimed interval, said detecting means including means for transmitting an output signal indicative of quantity of said radiation; and

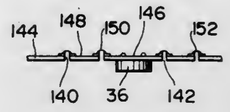
microprocessor means for controlling the transporting means and the detecting means so that the peak response to scatter radiation is maintained at a predetermined value.

4,551,849

VEHICLE PANEL SPEAKER FOR AUTOMOTIVE AUDIO SYSTEM UTILIZING PART OF A VEHICLE PANEL AS A SOUND-PRODUCING MEDIUM

Junichi Kasai; Takayuki Yanagishima, both of Yokosuka; Akio Ajimine, Tokyo; Yoshiaki Murakami, Tokyo; Akimitsu Shino, Tokyo, and Tatsuya Watanabe, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,292
Claims priority, application Japan, May 11, 1982, 57-78634; Jun. 1, 1982, 57-92200; Jul. 12, 1982, 57-119882; Jul. 13, 1982, 57-120484
Int. Cl.⁴ H04R *9/06*
U.S. Cl. 381—86 **22 Claims**



1. A vehicle panel speaker for an automotive audio system comprising:

a vehicle panel constituting a part of a vehicle body and adapted to oscillate at an audio frequency for producing an audio sound, said vehicle panel including a central first section and a second section surrounding said first section;

an intermediate section interpositioned between said first and second section for transmission of the audio frequency vibration therebetween, said intermediate section being relatively flexible in comparison with said first and second sections so as to allow said first section to oscillate at low frequency range of the audio frequency in an amplitude sufficient for reproducing audio sound; and

a driver unit secured at approximately the center of said first section and adapted to drive said vehicle panel at the audio frequency in response to an audio signal fed from the automotive audio system, said driver unit including a housing secured to said vehicle panel and a driver assembly received in said housing and resiliently suspended therein, said driver assembly associated with a voice coil wrapped around a bobbin extending from said vehicle panel for causing vibration of said vehicle panel in accordance with said audio signal.

4,551,850

RESPONSE DETECTOR FOR PATTERN PROCESSING SYSTEM

Larry J. Werth, Eagan, and Larry G. Paulson, Moundsview, both of Minn., assignors to Pattern Processing Technologies, Inc., Minneapolis, Minn.

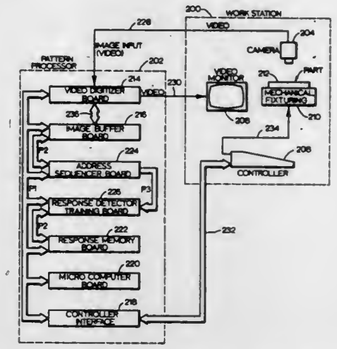
Filed Feb. 7, 1983, Ser. No. 464,624
Int. Cl.⁴ G06K *9/70*
U.S. Cl. 382—18 **11 Claims**

1. A method of providing an output based upon a pattern, the method comprising:

providing an input value representative of the pattern in response to an address;

providing an address stream containing a sequence of addresses in which each address of the sequence is determined by a preceding address and the input value provided in response to the preceding address so that the sequence contains an address loop which characterizes the pattern;

writing a code into selected locations of a response memory which are addressed by the address stream during a training mode;



forming a histogram of codes read out from the response memory which are addressed by the address stream during a time interval; and

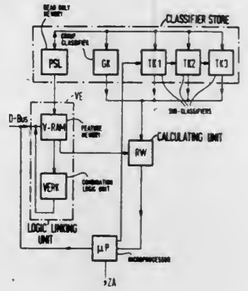
providing an output based upon the histogram.

4,551,851

CIRCUIT ARRANGEMENT FOR MACHINE CHARACTER RECOGNITION

Wilfried Kochert, Constance, Fed. Rep. of Germany, assignor to Computer Gesellschaft Konstanz mbH, Fed. Rep. of Germany

Continuation of Ser. No. 279,360, Jul. 1, 1981, abandoned. This application May 14, 1984, Ser. No. 610,180
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 3026055
Int. Cl.⁴ G06K *9/70*
U.S. Cl. 382—38 **6 Claims**



1. An arrangement for machine character recognition comprising:

a classifier device comprising a group classifier and a plurality of sub-classifiers each storing classifier coefficients;

a feature memory for receiving and storing a respective bit pattern corresponding to each respective character to be classified, said feature memory connected to said classifier device;

a read-only memory for storing link addresses of the data contained in the feature memory and the appertaining classifier coefficients contained in said classifier device, said read-only memory connected to said group classifier and to said plurality of sub-classifiers and to said feature memory;

an arithmetic unit for calculating first and second estimated values assigned to the individual character classes within a character set from the bit pattern, stored in said feature

memory for classification, on the basis of the classifier coefficients, said arithmetic unit connected to said feature memory and to said group classifier and said subclassifiers; and

a microprocessor connected to said feature memory and to said arithmetic unit, said group classifier storing such character coefficients that the character to be classified is respectively assigned to one of n character groups on the basis of the calculated first estimated values, said microprocessor operable to select a respective subclassifier for each of the n groups and respectively assigned to different Z/n character classes as a function of the first estimated values, where Z is the total number of classes within the character set, said microprocessor further operable in response to the classifier coefficients received from one of said subclassifiers and the second estimated values calculatable therefrom by said arithmetic unit to supply an output signal defining the character classified.

4,551,852

PROCESS FOR SPREADING THE VOLUME OF TRAFFIC OVER DIFFERENT CONTROL CHANNELS OF A CELLULAR RADIO TRANSMISSION SYSTEM

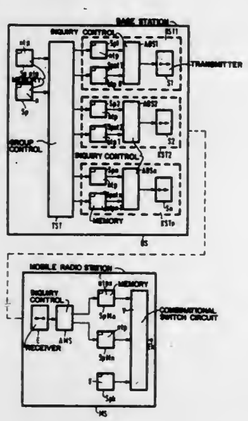
Christoph Grauel, Feucht, Fed. Rep. of Germany; Philippe Duplessis, and Alain Tarabout, both of Velizy, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,385

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246743

Int. Cl.[4] H04B *7/00*

U.S. Cl. 455—33 **13 Claims**



1. A process for spreading the volume of traffic over different control channels of a cellular radio transmission system including a base station having at least two control channels comprising

(a) subdividing at said base station the number of mobile radio stations (MS) in a cellular area of said base station into a variable number of groups (ntp);

(b) transmitting from said base station the variable number of groups (ntp) and a group code (atp) on each control channel;

(c) receiving said transmitted number of groups (ntp) and group code (atp) at each of said mobile stations;

(e) combining at said mobile radio stations (MS) said received number of groups (ntp) and said received group code (atp) with a stored group code number (K); and

(f) assigning at said mobile station one of said control channels to said mobile station when the result of said combining step is a predetermined number.

4,551,853

APPARATUS FOR PROCESSING SPEECH IN RADIOELECTRIC TRANSMITTER/RECEIVER EQUIPMENT SUITABLE FOR TRANSMITTING AND RECEIVING SPEECH

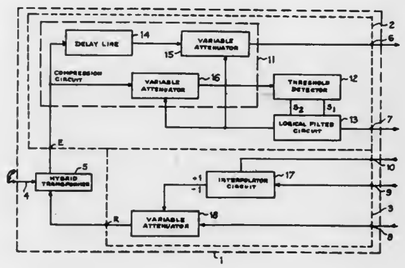
Pierre Deman, Paris, and Jean Potage, Franconville, both of France, assignors to Thomson CSF, Paris, France

Filed Nov. 3, 1983, Ser. No. 548,563

Claims priority, application France, Nov. 10, 1982, 82 18095

Int. Cl.[4] H04B *1/64*

U.S. Cl. 455—72 **13 Claims**



1. Apparatus for processing an input voice signal into a transmission voice signal having a substantially constant level, and for processing a reception voice signal having a substantially constant level into an output voice signal, and for processing digital data representing variations in level of a syllabic term of said voice signals, said transmission and reception voice signals being transmitted to/received from a radio transmitter/receiver main channel, said digital data being transmitted to/received from a radio transmitter/receiver auxiliary channel, comprising:

incremental compreessor means for compressing said input voice signal to provide said transmission voice signal;

threshold detector means, coupled to said incremental compressor means, for detecting variations in level of said syllabic term of said input voice signal;

control means, coupled to said incremental compressor means and controlled by said threshold detector means, for maintaining said transmission voice signal at a substantially constant level, and for providing said digital data to said auxiliary channel;

expander means for receiving said reception voice signal and providing said output voice signal; and

interpolator means, coupled to said expander means, for receiving said digital data from said auxiliary channel and controlling said expander means to cause a level of said output voice signal to be reestablished, and for correcting errors in said received digital data.

4,551,854

ANTI-BLOCKING DEVICE INCLUDING STUCK MICROPHONE RELIEVER FOR AIRCRAFT VOICE COMMUNICATION SYSTEM

John G. Rutty, R.D. 5, Box 292, and Alfred Arndt, R.D. 4, Box 346, both of, Hanover, Pa. 17331

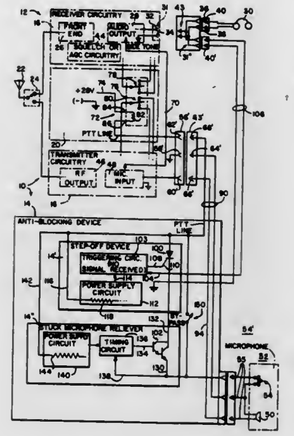
Filed Aug. 22, 1983, Ser. No. 525,461

Int. Cl.[4] H04B *1/44*

U.S. Cl. 455—78 **20 Claims**

1. In combination with an aircraft voice communication radio of the type including radio receiver circuitry and radio transmitter circuitry selectively operable on any one of a plurality of radio frequency channels, and including a microphone switch circuit for activating the transmitter circuitry and deactivating the receiver circuitry, the microphone switch circuit being susceptible to undesired activation, an anti-blocking device comprising:

a step-off device including sensing means connected to said receiver circuitry for sensing when a particular selected radio frequency channel is in use, and a transmitter-disabling means connected to said sensing means and to the transmitter circuitry for preventing activation of said transmitter circuitry by the microphone switch circuit when the particular selected radio frequency channel is in use; and



a stuck microphone reliever including a second transmitter-disabling means connected to the microphone switch circuit and to the transmitter circuitry for limiting any transmission to a predetermined duration even though the microphone switch is activated for a longer duration.

4,551,855

RADIO COMMUNICATIONS SYSTEM FOR DETECTING THE COINCIDENCE OF DECODED INFORMATION

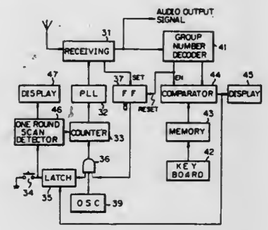
Masanori Kurosaki, and Katsuaki Kawamura, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,387

Claims priority, application Japan, Nov. 15, 1982, 57-200138

Int. Cl.[4] H03J *7/18*

U.S. Cl. 455—161 **2 Claims**



1. A radio communications system having a plurality of channels, comprising:

a receiving part for receiving an RF signal transmitted by another station and for reproducing an audio output signal;

a frequency scanning means for sequentially shifting the tuning frequency of said receiving part, said frequency scanning means including an oscillator for generating a clock signal of a predetermined frequency, a counter means for counting said clock signal, a Phase Locked Loop frequency synthesizer means for generating a frequency signal for controlling the tuning frequency of the receiving part in accordance with the content of said counter means, a gate means for controlling the transmission of said clock signal to said counter means, a scan start switch for generating a signal to be applied to the gate means as a gate control signal, and a latch means for latching said signal generated by the scan start switch;

group number detector means for detecting a presence of a carrier signal on each of said channels, and for picking up group number information from said carrier signal, said group number detector including means for producing a pulse signal when the group number information is detected from the carrier signal; and

means for stopping operation of said frequency scanning means when said group number picked up by said group number detector means is identical with a preselected group number, wherein said means for stopping the operation of the frequency scanning means comprises a flip flop to be set when the carrier signal is detected in the receiving part and to be reset at the timing of a trailing edge of said pulse signal generated by the group number detector means whose $\overline{Q}$ output signal is applied to said gate means as a gate control signal, and comparator means to be triggered at a timing of a leading edge of said pulse signal generated by the group number detector means to compare said group number information with a preselected group number, and to produce a reset signal of said latching means when the detected group number information is identical with the preselected group number.

4,551,856

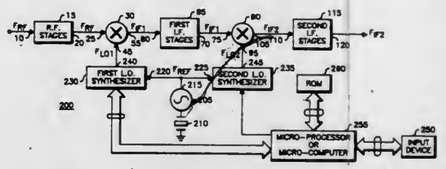
SYNTHESIZED MULTIPLE CONVERSION RECEIVER SYSTEM WITH PROVISION FOR AVOIDING RECEIVER SELF-QUIETING SPURIOUS RESPONSE

Alan M. Victor, Cooper City, and Darrell E. Davis, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 16, 1983, Ser. No. 495,308

Int. Cl.[4] H04B *1/16;* **H03J** *7/18*

U.S. Cl. 455—183 **12 Claims**



5. A multiple conversion superheterodyne receiver system, comprising:

a plurality of cascaded frequency mixers arranged to provide multiple frequency conversion of an incoming frequency corresponding to a predetermined channel;

means for selecting said predetermined channel;

a plurality of frequency generators each coupled to one of said mixers for providing an injection frequency to each of said mixers, each injection frequency constituting either high side or low side injection; and

means for altering one of said injection frequencies between high and low side injection in response to the selection of said predetermined channel to avoid receiver self-quieting.

DESIGN PATENTS

GRANTED NOV. 5, 1985

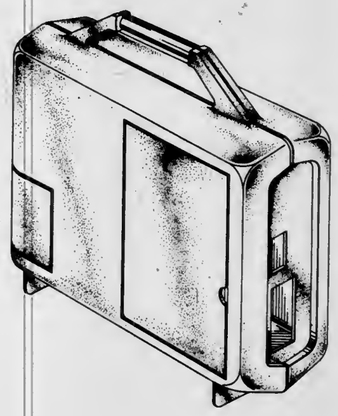
ERRATA

For CLASS	See PATENT NO.
D15–005	281,239

DESIGNS

NOVEMBER 5, 1985

281,200
TAMPERPROOF CARRYING CASE FOR A VIDEO CASSETTE RECORDER
Ted K. Thrush, Phoenix, Ariz., assignor to Portavideo Entertainment Group, Inc., Phoenix, Ariz.
Filed Sep. 12, 1983, Ser. No. 530,897
Term of patent 14 years
U.S. Cl. D3—33



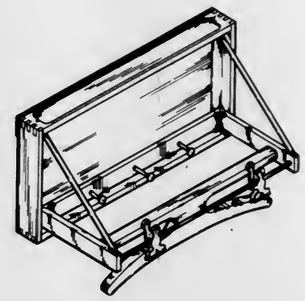
281,201
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Phoenix, Ariz.
Filed Dec. 13, 1982, Ser. No. 449,159
Term of patent 14 years
U.S. Cl. D3—53



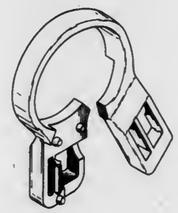
281,202
TOOTHBRUSH
Paul H. Thompson, P.O. Box 16, Forest Dale, Vt. 05745
Filed Oct. 19, 1983, Ser. No. 543,344
Term of patent 14 years
U.S. Cl. D4—104



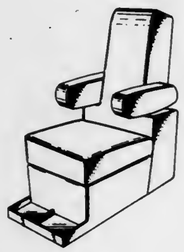
281,203
WALL MOUNTED VALET
Susan T. Nystrom, 297 South St., Medfield, Mass. 02052
Filed Mar. 10, 1983, Ser. No. 474,140
Term of patent 14 years
U.S. Cl. D6—324



281,204
ANTI-THEFT HANGER RING
Gunther Rogahn, Lansdale, Pa., assignor to Independent Products Company, Inc., West Point, Pa.
Filed Mar. 24, 1983, Ser. No. 478,400
Term of patent 14 years
U.S. Cl. D6—328



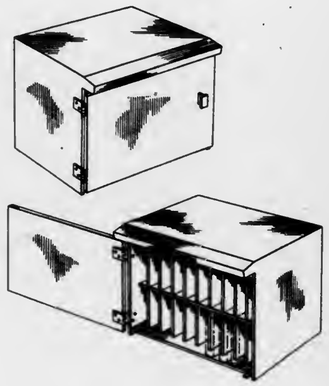
281,205
AUXILIARY SEAT
Richard E. Timmers, 1210 E. County Rd. B, St. Paul, Minn. 55109
Filed Jun. 21, 1983, Ser. No. 506,531
Term of patent 14 years
U.S. Cl. D6—336



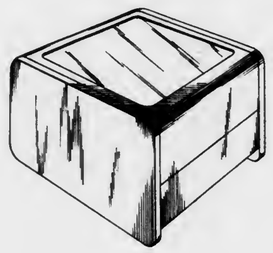
281,206
FLEXIBLE SWING
W. Norman Halsall, Bavelselaan 275, 4834TC Breda, Netherlands
Filed Mar. 1, 1983, Ser. No. 470,994
Term of patent 14 years
U.S. Cl. D6—347



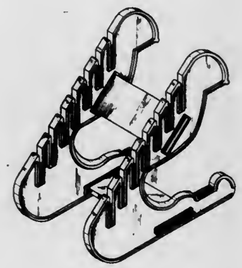
281,207
CABINET FOR VIDEO CASSETTES OR THE LIKE
Joseph M. Armbruster, Lighthouse Point, Fla., assignor to Eagle-Picher Industries, Inc., Ohio
Filed May 2, 1983, Ser. No. 490,370
Term of patent 14 years
U.S. Cl. D6—407



281,208
TABLE
William B. Raftery, Arlington, Tex., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 13, 1983, Ser. No. 494,176
Term of patent 14 years
U.S. Cl. D6—449



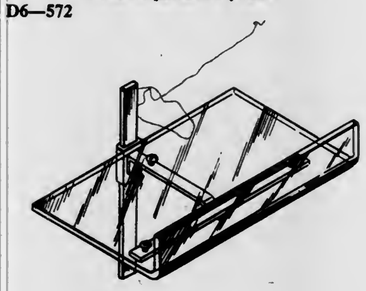
281,209
STAND FOR COMPUTER DISKS
Edward M. Burns, 402 Oakham Pl., Noblesville, Ind. 46060
Filed Jun. 6, 1983, Ser. No. 501,572
Term of patent 14 years
U.S. Cl. D6—468



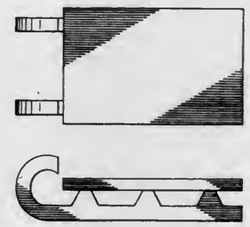
281,210
BACK REST
Frank L. Roberts, Thornhill, Canada, assignor to Bio-Support Industries Ltd, Toronto, Canada
Filed Feb. 10, 1983, Ser. No. 465,570
Term of patent 14 years
U.S. Cl. D6—502



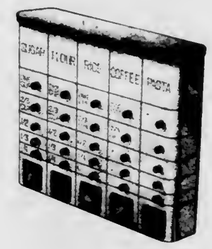
281,211
ARTICLE DISPLAY BRACKET
Wilma R. Beach, Rhinebeck, N.Y., assignor to Daniel E. Gelles Associates, Inc., New York, N.Y.
Filed May 25, 1983, Ser. No. 498,069
Term of patent 14 years
U.S. Cl. D6—572



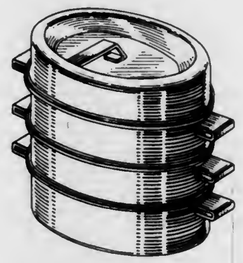
281,212
FOOD CHOPPING BOARD
Joan Appleby, Rte. 1, Clinton, Ark. 72301
Filed Mar. 28, 1983, Ser. No. 463,152
Term of patent 14 years
U.S. Cl. D7—46



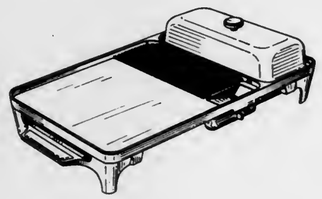
281,213
CABINET FOR STORING, MEASURING AND DISPENSING FOOD STAPLES, SUCH AS COFFEE, SUGAR, FLOUR, OR THE LIKE
Monica F. James, and George E. James, both of 1438 Washington Ave., Apt. #8, Miami, Fla. 33139
Filed Mar. 14, 1983, Ser. No. 475,124
Term of patent 14 years
U.S. Cl. D7—81



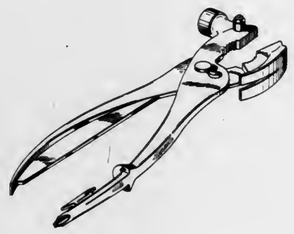
281,214
STACKABLE COOKPOT
Pierre A. Schaller, Lyons, France, assignor to Manufacture Metallurgique de Tournus, S.A., Tournus, France
Filed Jun. 2, 1983, Ser. No. 500,388
Term of patent 14 years
U.S. Cl. D7—356



281,215
TABLE TOP COOKING GRILL
Leonard V. Lastuck, Ontario, Canada, assignor to AMC Appliances, division of Algonquin Mercantile Corporation, Weston, Canada
Filed May 12, 1983, Ser. No. 494,107
Term of patent 14 years
U.S. Cl. D7—363



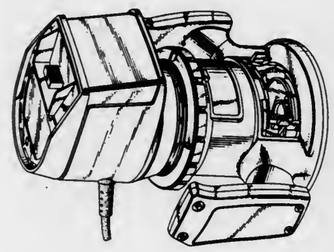
281,216
FIREMAN'S TOOL
Norman J. Cutliff, Jr., 7620 Riverbrook Dr., Dallas, Tex. 75230, and Hugh R. Craft, Box 565, Wills Point, Tex. 75169
Filed Dec. 3, 1982, Ser. No. 446,655
Term of patent 14 years
U.S. Cl. D8—26



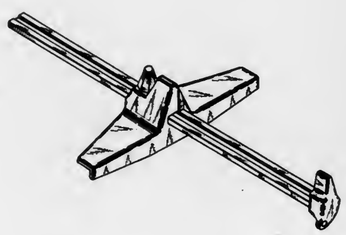
281,217
TAB OPENER FOR EASY-OPEN CANS
Thomas H. Stachler, 5739 Barbanna La., Dayton, Ohio 45415
Filed Nov. 9, 1983, Ser. No. 549,923
Term of patent 14 years
U.S. Cl. D8—33



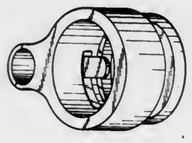
281,218
ROUTER
Michael E. Barrett, Easley; Randy G. Koon, Pickens, both of S.C., and Thomas C. Laughon, Alpharetta, Ga., assignors to The Singer Company, Stamford, Conn.
Filed Apr. 11, 1983, Ser. No. 484,094
Term of patent 14 years
U.S. Cl. D8—67



281,219
STRIP CUTTER
Melvin H. Best, Topanga, Calif., assignor to Glastar Corporation, Northridge, Calif.
Filed Feb. 16, 1982, Ser. No. 349,036
Term of patent 14 years
U.S. Cl. D8—98



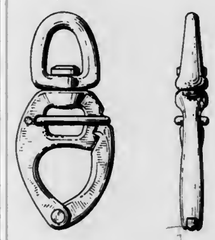
281,220
TRAILER LOCK
Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260
Filed Dec. 2, 1983, Ser. No. 557,205
Term of patent 14 years
U.S. Cl. D8—331



281,221
HOSE BRACKET
Robert G. Edmiston, 912½ N. Benton Way, Los Angeles, Calif. 90026
Filed Feb. 8, 1983, Ser. No. 465,004
Term of patent 14 years
U.S. Cl. D8—356



281,222
SNAP HOOK
Christian Faidide, Marinques, France, assignor to S.A.R.L. Wichard, Thiers, France
Filed Jul. 20, 1983, Ser. No. 515,482
Claims priority, application France, Jan. 21, 1983, 830197
Term of patent 14 years
U.S. Cl. D8—367



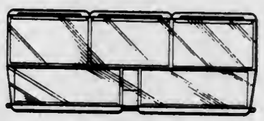
281,223
BOTTLE OR THE LIKE
Timothy Dearing, Ipswich, England, assignor to E. R. Howard Limited, Suffolk, England
Filed Jan. 28, 1983, Ser. No. 461,763
Term of patent 14 years
U.S. Cl. D19—322



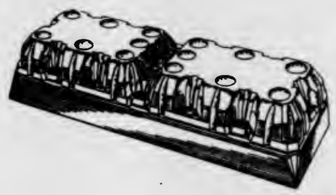
281,224
MASK AND SNORKEL PACKAGE
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Jul. 13, 1983, Ser. No. 513,269
Term of patent 14 years
U.S. Cl. D9—337



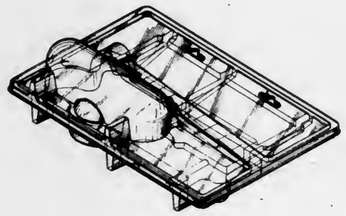
281,225
PILL BOX
Arthur L. Leman, North Attleboro, Mass., assignor to Health Enterprises, Inc., North Attleboro, Mass.
Filed Nov. 1, 1982, Ser. No. 439,054
Term of patent 14 years
U.S. Cl. D9—341



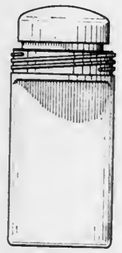
281,226
EGG CONTAINER
Arnaldo Amabili, 7680 Dollier St., St. Leonard, Montreal, Quebec, Canada
Filed May 13, 1983, Ser. No. 494,357
Term of patent 14 years
U.S. Cl. D9—341



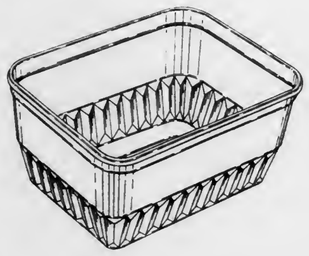
281,227
COMBINED PACKAGING AND DISPLAY CONTAINER
Katsuhiko Okano, Hiroshima, Japan, assignor to Ryobi Limited, Fuchu, Japan
Filed May 25, 1983, Ser. No. 497,850
Term of patent 14 years
U.S. Cl. D9—347



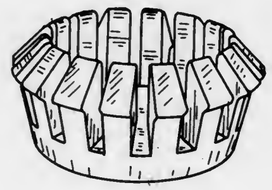
281,228
COMBINED DISPENSING CONTAINER AND CAP
John H. Morgan, Chatham, and John A. Grip, Wayne, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.
Filed Mar. 18, 1983, Ser. No. 476,902
Term of patent 14 years
U.S. Cl. D9—404



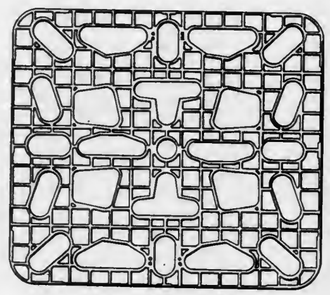
281,229
PACKAGING CONTAINER
Frank S. Tyler, Kent, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Jan. 11, 1983, Ser. No. 457,307
Claims priority, application United Kingdom, Jul. 16, 1982, 1007781
The portion of the term of this patent subsequent to Aug. 20, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—425



281,230
HOUSEHOLD MAGNET FOR KITCHEN USE
David V. Olson, 324 IDS Tower, Minneapolis, Minn. 55402, and Walter I. Bieger, 1689 W. Cty. Rd. F, St. Paul, Minn. 55112
Filed Sep. 29, 1982, Ser. No. 428,125
Term of patent 14 years
U.S. Cl. D9—434



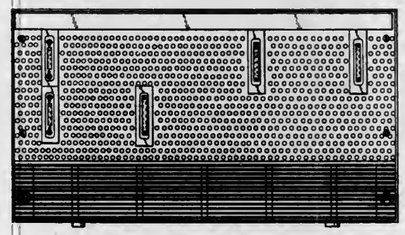
281,231
DIVIDER FOR SEPARATING STACKED ARTICLES
James A. Cochran, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Mar. 17, 1983, Ser. No. 476,382
Term of patent 14 years
U.S. Cl. D9—456



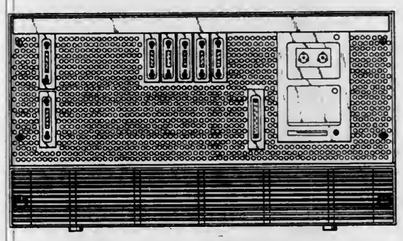
281,232
ANEMOMETRIC WIND VANE
Gary Felix, Box 844, Jerome, Ariz. 86331, and Thomas Rivell, 1598 Blaney Ave., San Jose, Calif. 95129
Filed Oct. 27, 1982, Ser. No. 437,179
Term of patent 14 years
U.S. Cl. D10—59



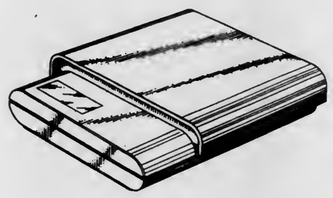
281,233
CIRCUIT BOARD TESTING EQUIPMENT
Kurt Groetzner, Stuttgart, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 19, 1982, Ser. No. 340,793
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 5334
Term of patent 14 years
U.S. Cl. D10—75



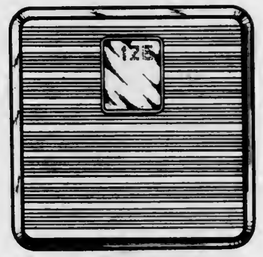
281,234
CIRCUIT BOARD TESTING EQUIPMENT
Kurt Groetzner, Stuttgart, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 19, 1982, Ser. No. 340,795
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 5333
Term of patent 14 years
U.S. Cl. D10—75



281,235
HOUSEHOLD SCALE
Rido Busse, Elchingen, Fed. Rep. of Germany, assignor to Soehnle-Waagen GmbH & Co., Murrhardt, Fed. Rep. of Germany
Filed Jan. 10, 1984, Ser. No. 569,675
Term of patent 14 years
U.S. Cl. D10—91



281,236
DIGITAL SCALE
Ronald L. Muller, Old Saybrook, and William J. Rakocy, Madison, both of Conn., assignors to North American Philips Corporation, New York, N.Y.
Filed Jul. 1, 1983, Ser. No. 509,620
Term of patent 14 years
U.S. Cl. D10—92



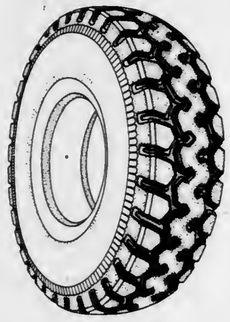


281,237
NOVELTY FIGURINE
Lawrence A. Zusman, Princeton, N.J., assignor to 3 Z Novelty Company, Inc., Princeton, N.J.
Filed Mar. 21, 1983, Ser. No. 477,122
Term of patent 14 years
U.S. Cl. D11—160

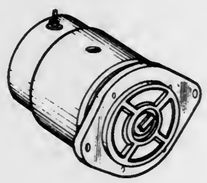




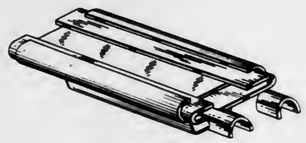
281,238
TIRE
Silvana Hinrichsen, Rome, Italy, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Oct. 28, 1983, Ser. No. 546,346
Claims priority, application Italy, Apr. 29, 1983, 53268/83[U]
Term of patent 14 years
U.S. Cl. D12—147



281,239
STARTER MOTOR FOR AN ENGINE
Julius J. Stevens, Fort Deposit, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Jan. 31, 1983, Ser. No. 462,345
Term of patent 14 years
U.S. Cl. D15—5



281,240
HOUSING FOR A THERMOSTATIC SWITCH
Omar Givler, North Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio
Filed Mar. 16, 1983, Ser. No. 475,720
Term of patent 14 years
U.S. Cl. D13—34

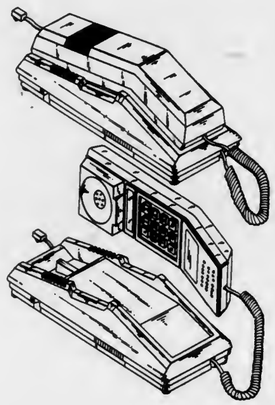


281,241
LOUDSPEAKER
Manabu Kawachi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jun. 29, 1983, Ser. No. 509,075
Claims priority, application Japan, Jan. 7, 1983, 58-134
Term of patent 14 years
U.S. Cl. D14—30

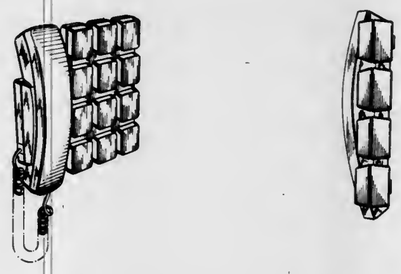




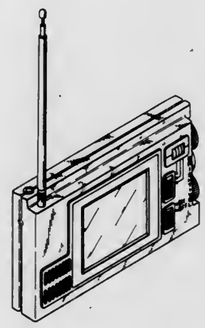
281,242
TELEPHONE
Mordechi Hova, 29 Seaside Dr., Belle Terre, N.Y. 11777
Filed May 31, 1983, Ser. No. 499,301
Term of patent 14 years
U.S. Cl. D14—53



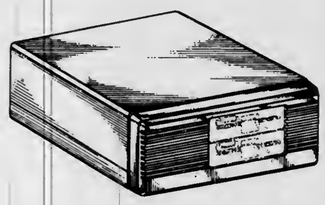
281,243
LARGE BUTTON TELEPHONE
Kenneth Reichenstein, 269-32P Grand Central Pkwy., Floral Park, N.Y. 11005
Filed Jul. 25, 1983, Ser. No. 516,595
Term of patent 14 years
U.S. Cl. D14—53



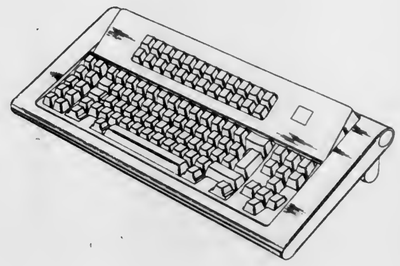
281,244
PORTABLE TELEVISION SET
Yutaka Ohtsu, Yokosuka, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Sep. 21, 1983, Ser. No. 534,382
Term of patent 14 years
U.S. Cl. D14—77



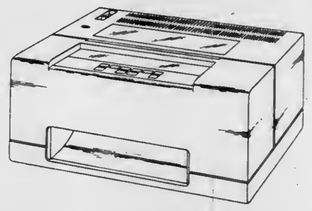
281,245
COMPUTER HOUSING
Barbara K. Lewis, Sunnyvale, Calif., assignor to Qume Corporation, San Jose, Calif.
Filed Apr. 12, 1983, Ser. No. 484,137
Term of patent 14 years
U.S. Cl. D14—100



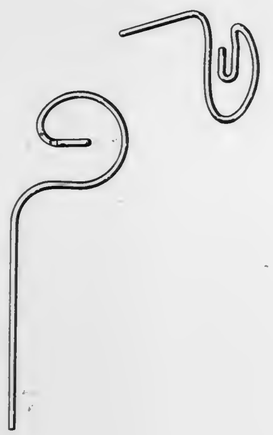
281,246
KEYBOARD
Louis E. Lenzi, Jr., Rhinebeck, N.Y., assignor to International Business Machines, Armonk, N.Y.
Filed Feb. 18, 1983, Ser. No. 467,977
Term of patent 14 years
U.S. Cl. D14—100



281,247
PASSBOOK PRINTER
Donald F. Lahey, Saratoga, and Dallas G. Molerin, Union City, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 13, 1982, Ser. No. 449,012
Term of patent 14 years
U.S. Cl. D14—111



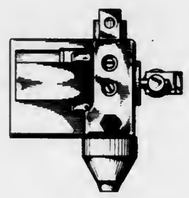
281,248
COIL TINE FOR A HARROW
Reijo Johde, Inhan Tehtaat, Finland, assignor to Fiskars Oy AB, Helsinki, Finland
Filed Dec. 22, 1982, Ser. No. 452,057
Claims priority, application Finland, Jun. 24, 1982, 560/82
Term of patent 14 years
U.S. Cl. D15—29

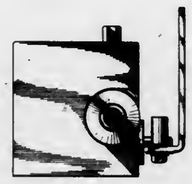


281,249
TUBE CUTTER
Lawson H. Nall, Folsom, and Benny T. Hamasaki, Rocklin, both of Calif., assignors to Tri Tool, Inc., Rancho Cordova, Calif.
Filed Jan. 25, 1983, Ser. No. 461,111
Term of patent 14 years
U.S. Cl. D15—129



281,250
COMBINED ELECTRODE DRIVE AND NOZZLE UNIT FOR AN AUTOMATIC AIR CARBON-ARC CUTTING AND GOUGING TORCH
David E. Johnson, Pataskala; Larry A. Aebersold, and Kenneth E. McCall, both of Lancaster, all of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Apr. 21, 1983, Ser. No. 487,381
Term of patent 14 years
U.S. Cl. D15—144





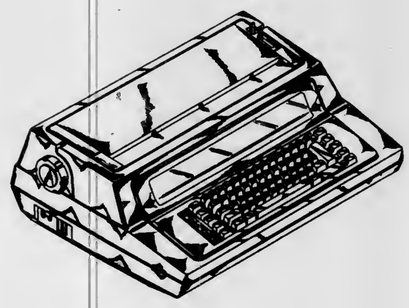
281,251
ELECTRONIC TYPEWRITER
Shigemasa Kato, Zama, and Sanae Takada, Chofu, both of Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1984, Ser. No. 593,423
Claims priority, application Japan, Dec. 29, 1983, 58-56655
Term of patent 14 years
U.S. Cl. D18—1



281,252
ELECTRONIC TYPEWRITER
Shigemasa Kato, Zama, and Sanae Takada, Chofu, both of Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1984, Ser. No. 593,530
Claims priority, application Japan, Dec. 29, 1983, 58-56654
Term of patent 14 years
U.S. Cl. D18—1



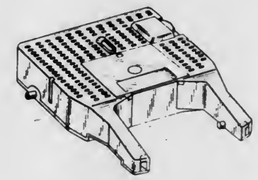
281,253
TYPEWRITER
Cornelius W. Christie, Fulton, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Feb. 6, 1984, Ser. No. 577,407
Term of patent 14 years
U.S. Cl. D18—1



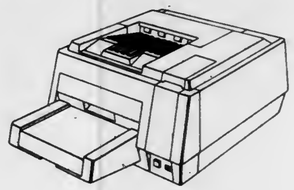
281,254
POS (POINT-OF-SALES) CASH REGISTER
Kunio Akiyama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 15, 1982, Ser. No. 434,594
Term of patent 14 years
U.S. Cl. D18—4



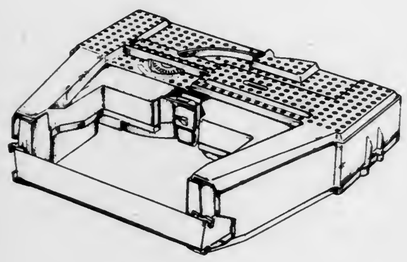
281,255
INK RIBBON CARTRIDGE FOR ELECTRONIC TYPEWRITER
Richard Nibley, Tokyo, and Hiroatsu Kondo, Zushi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,455
Claims priority, application Japan, Jun. 13, 1983, 58-25414
Term of patent 14 years
U.S. Cl. D18—12



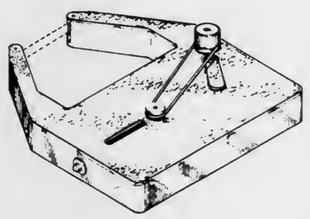
281,256
LASER PRINTER
Toshio Yamamoto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Apr. 25, 1983, Ser. No. 488,109
Claims priority, application Japan, Oct. 26, 1982, 57-048559
Term of patent 14 years
U.S. Cl. D18—13



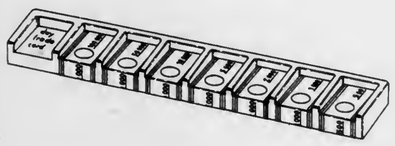
281,257
PRINTING RIBBON CARTRIDGE
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Sep. 7, 1983, Ser. No. 530,039
Claims priority, application Italy, Mar. 7, 1983, 53013-B/83[U]
Term of patent 14 years
U.S. Cl. D18—22



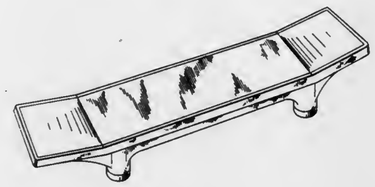
281,258
PRINTER RIBBON CARTRIDGE
William M. Schiffmacher, Boulder, Colo., assignor to Aspen Ribbons, Inc., Lafayette, Colo.
Filed Sep. 19, 1983, Ser. No. 533,119
Term of patent 14 years
U.S. Cl. D18—22



281,259
GAME ACCESSORY HOLDER
Heinz H. Hensley, Dreieich, Fed. Rep. of Germany, assignor to Lillian Hensley Unternehmensberatungs GmbH, Dreieich, Fed. Rep. of Germany
Filed Sep. 9, 1982, Ser. No. 416,251
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 8 MR 560
Term of patent 14 years
U.S. Cl. D21—54



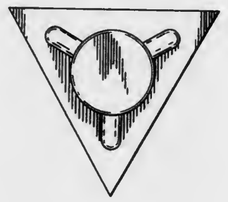
281,260
TOY BALANCE WALKER
Ronald R. Smith, Garden Grove, Calif., assignor to Louis A. Weisenberg and Francis X. LoJacono, both of Westminster, Calif.
Filed May 23, 1983, Ser. No. 497,247
Term of patent 14 years
U.S. Cl. D21—66



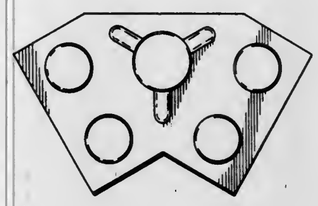
281,261
INFLATABLE RIDING TOY
Albert Stubbmann, 746 Dakota Trail, Franklin Lakes, N.J. 07417
Filed Aug. 29, 1983, Ser. No. 527,121
Term of patent 14 years
U.S. Cl. D21—74



281,262
TOY BUILDING BLOCK
Leo S. Volpe, Collingswood, and Michael O. Hirtle, Delran, both of N.J., assignors to Tyco Industries, Inc., Moorestown, N.J.
Filed Oct. 25, 1983, Ser. No. 545,031
Term of patent 14 years
U.S. Cl. D21—108



281,263
TOY BUILDING BLOCK
Leo S. Volpe, Collingswood, and Michael O. Hirtle, Delran, both of N.J., assignors to Tyco Industries, Inc., Moorestown, N.J.
Filed Oct. 25, 1983, Ser. No. 545,036
Term of patent 14 years
U.S. Cl. D21—108



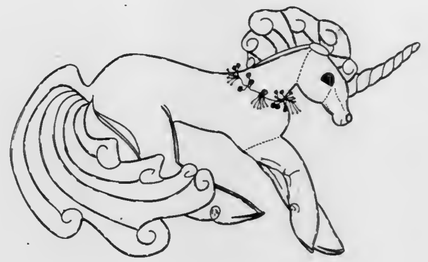
281,264
TOY BOAT OR SIMILAR ARTICLE
John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106, and John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143
Filed Dec. 15, 1982, Ser. No. 450,142
Term of patent 14 years
U.S. Cl. D21—130



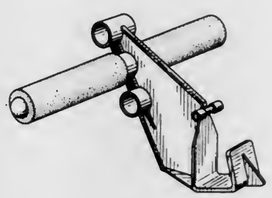
281,265
PUPPET
Jan Griffioen, Rijnsburgersingel 1-A, 2312 NA Leiden, Netherlands
Filed Jan. 20, 1983, Ser. No. 459,488
Term of patent 14 years
U.S. Cl. D21—153



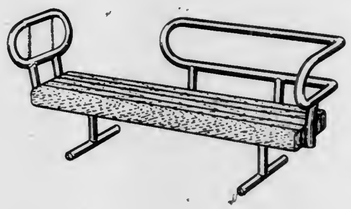
281,266
UNICORN DOLL
Diane Insetta, 8444 San Jose Blvd., Jacksonville, Fla. 32217
Filed May 10, 1983, Ser. No. 493,430
Term of patent 14 years
U.S. Cl. D21—165



281,267
SIT-UP EXERCISE DEVICE
Gale V. Howard, 2900 E. 40 Hwy., Blue Springs, Mo. 64015
Filed Apr. 14, 1983, Ser. No. 484,843
Term of patent 14 years
U.S. Cl. D21—191



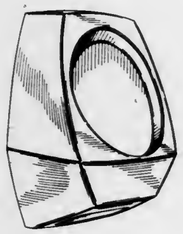
281,268
EXERCISE BENCH
Robert H. Irvine, Mill Valley, and Peter Gutkin, San Francisco, both of Calif., assignors to The Gamefield Concept, Inc., San Francisco, Calif.
Filed Nov. 2, 1983, Ser. No. 548,163
Term of patent 14 years
U.S. Cl. D21—191



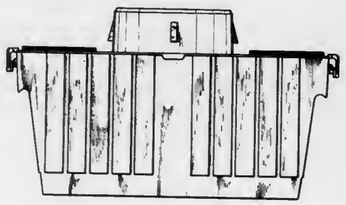
281,269
FLY SWATTER BLADE
Kirk D. Snyder, P.O. Box 78, Reynold, Ind. 47980
Filed Dec. 23, 1982, Ser. No. 452,706
Term of patent 14 years
U.S. Cl. D22—20

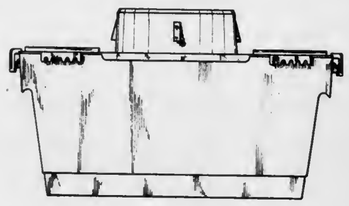


281,270
URINAL
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 13, 1983, Ser. No. 457,757
Term of patent 14 years
U.S. Cl. D23—68

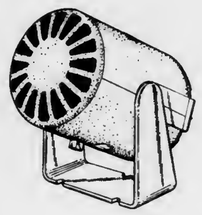


281,271
LINT TRAP
Stephen T. Meyer, Carmel, and C. Rodger Meyer, Noblesville, both of Ind., assignors to Deflecto Corporation, Indianapolis, Ind.
Filed May 11, 1983, Ser. No. 493,612
Term of patent 14 years
U.S. Cl. D23—149

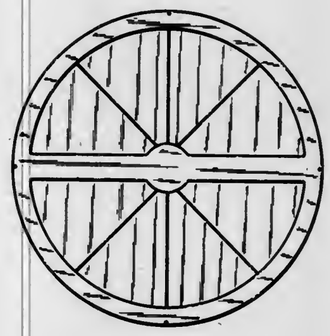




281,272
VEHICLE AIR PURIFIER
Patrick E. Lynch, Jr., Thornton, Colo., assignor to Pyramid Products, Inc., Thornton, Colo.
Filed Jan. 3, 1983, Ser. No. 455,379
Term of patent 14 years
U.S. Cl. D23—149

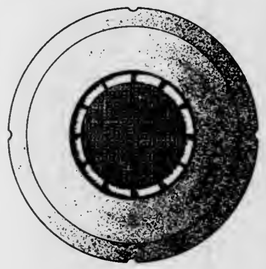


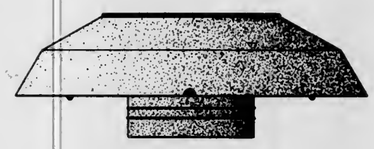
281,273
SELF-CLOSING VENTILATION LOUVER
Kert E. Artwick, Roswell, Ga., assignor to Leslie-Locke, Inc., Atlanta, Ga.
Filed Jan. 6, 1983, Ser. No. 456,306
Term of patent 14 years
U.S. Cl. D23—151



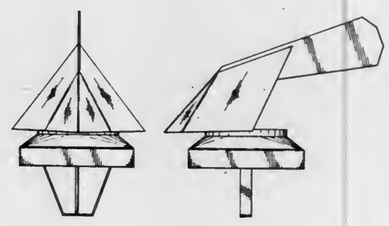


281,274
SOLAR POWERED VENTILATOR
Norman S. Wright, Jr., Lafayette, Calif., assignor to Norman S. Wright & Co., San Francisco, Calif.
Filed Apr. 27, 1983, Ser. No. 489,085
Term of patent 14 years
U.S. Cl. D23—153



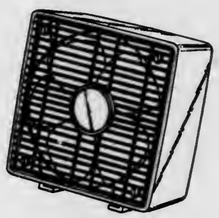


281,275
ROTATABLE CHIMNEY COWL
Timothy A. Feuz, 2007 NE. 104th St., Vancouver, Wash. 98665
Filed Feb. 18, 1983, Ser. No. 467,915
Term of patent 14 years
U.S. Cl. D23—154

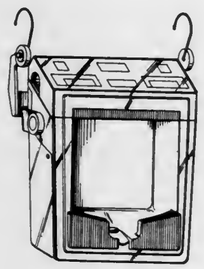


281,276
PORTABLE FAN
Peter B. Farrer, Blackburn, Australia, assignor to Kemtron Properties Pty. Ltd., Melbourne, Australia
Filed Feb. 28, 1983, Ser. No. 470,183
Term of patent 14 years
U.S. Cl. D23—155

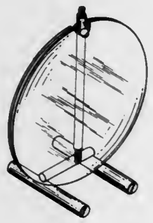
281,277
FAN
James M. Wimsatt, P.O. Box 6855, Reno, Nev. 89513
Filed Jan. 14, 1983, Ser. No. 458,106
Term of patent 14 years
U.S. Cl. D23—155



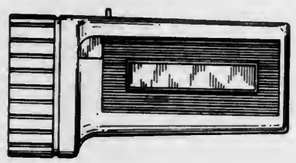
281,278
ELECTRONIC URINE MONITOR
Larry K. Blankenship, Ramona, and Joseph Manno, La Jolla, both of Calif., assignors to Vitalmetrics, Inc., San Diego, Calif.
Filed Nov. 22, 1982, Ser. No. 443,305
Term of patent 14 years
U.S. Cl. D24—17



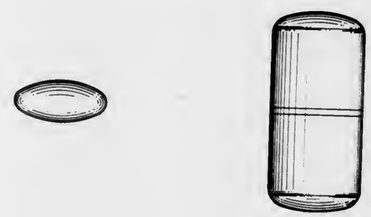
281,279
COMBINED OIL LAMP, VASE OR SIMILAR ARTICLE
David R. Perkins, Manchester, Mass., assignor to Glass Dimensions, Inc., Magnolia, Mass.
Filed Aug. 11, 1983, Ser. No. 522,195
Term of patent 14 years
U.S. Cl. D26—10



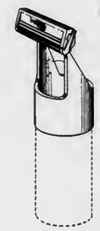
281,280
COMPACT LIGHT
John F. Schosser, New Fairfield; Roger K. Gleason, Stratford, both of Conn.; Charles M. Dole, Purdys, N.Y.; Max Us, Bridgeport, Conn., and Bradley Burke, Dundee, N.Y., assignors to Duracell Inc., Bethel, Conn.
Filed Mar. 7, 1983, Ser. No. 473,164
Term of patent 14 years
U.S. Cl. D26—46



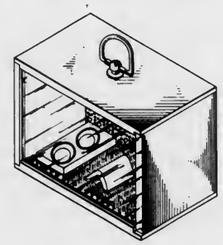
281,281
FRAGRANCE CONTAINER
Norma Matalon, 445 E. 77th St., New York, N.Y. 10021
Filed Sep. 20, 1982, Ser. No. 419,950
Term of patent 14 years
U.S. Cl. D28—5



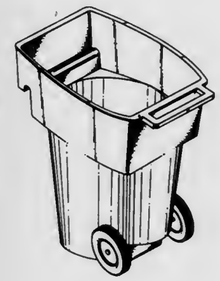
281,282
RAZOR ASSEMBLY OR THE LIKE
Wayne P. Lazarus, Fernleigh Rd., Fernleigh via Ballina, New South Wales, Australia
Filed Jul. 5, 1983, Ser. No. 510,585
Term of patent 14 years
U.S. Cl. D28—47



281,283
INSECT CAGE
Monty N. Cazier, 2253 Linda St., Saginaw, Mich. 48603
Filed Feb. 28, 1983, Ser. No. 470,584
Term of patent 14 years
U.S. Cl. D30—1



281,284
REFUSE CONTAINER
Edward J. Reuter, Excelsior, Minn., assignor to Reuter, Inc., Hopkins, Minn.
Filed Oct. 12, 1983, Ser. No. 541,108
Term of patent 14 years
U.S. Cl. D34—5



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Menarini S.a.S.: *See—*
Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, 4,551,451, Cl. 514-217.000.

A. Nattermann & Cie GmbH: *See—*
Hilboll, Gerd; Doppelfeld, Ille-Stephanie; and Prop, Gerrit, 4,551,455, Cl. 514-252.000.

A-Z International Tool Company: *See—*
Kagler, Edmond, Jr., 4,550,781, Cl. 166-340.000.

ab der Halden, Charles H.; and Berenguier, Pierre H., to Societe Anonyme de Telecommunications. System for phasing digital trains and application thereof to the switching of said trains. 4,551,845, Cl. 375-40.000.

Abe, Seiko: *See—*
Igashira, Toshihiko; Sakakibara, Yasuyuki; Yoshinaga, Toru; Abe, Seiko; and Watanabe, Kazuhide, 4,550,744, Cl. 137-80.000.

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Abou, Shouji: *See—*
Matsuo, Kenji; and Abou, Shouji, 4,551,683, Cl. 328-167.000.

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Acuson: *See—*
Maslak, Samuel H.; and Wright, John N., 4,550,607, Cl. 73-626.000.

Adapa, Satya N.: *See—*
O'Mahony, John S.; Kahn, Marvin L.; and Adapa, Satya N., 4,551,348, Cl. 426-639.000.

Addis, John L.: *See—*
Andrews, Roland E.; and Addis, John L., 4,551,636, Cl. 307-264.000.

Adolphi, Heinrich: *See—*
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,551,448, Cl. 514-130.000.

Adsit, Gordon H., to Industrial Refuse Sales, Inc. Refuse container. 4,550,849, Cl. 220-71.000.

Advanced Evacuation Systems: *See—*
Forrest, William E., 4,550,801, Cl. 182-7.000.

Advanced Micro Devices, Inc.: *See—*
Varadarajan, Hemmige D., 4,551,638, Cl. 307-455.000.

Aerojet-General Corporation: *See—*
Moore, Donald W.; and Verstraete, Rick A., 4,551,814, Cl. 364-716.000.
Moore, Donald W.; and Verstraete, Rick A., 4,551,815, Cl. 364-716.000.

Aerospace Corporation, The: *See—*
Gaulin, Camille A.; and Katzman, Howard A., 4,551,487, Cl. 523-215.000.

Aerts, Armand, to Du Pont de Nemours, E. I., and Company. Polyester coating composition. 4,551,492, Cl. 524-40.000.

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Agawa, Setsuo: *See—*
Beppu, Masaru; Agawa, Setsuo; Hazeyama, Takeshi; and Nashimoto, Toshiyuki, 4,551,240, Cl. 209-143.000.

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Urasaki, Takanori, 4,551,508, Cl. 525-507.000.

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Yu, Ho; and Ai, Daniel K., 4,550,767, Cl. 164-428.000.

Aiba, Kazumi: *See—*
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, 4,550,480, Cl. 29-156.40R.

Aicher, Frederick T.; Martin, James R., Sr.; and Flanagan, William T., to NDM Corporation. Electrosurgical electrode connector. 4,550,961, Cl. 339-14.00R.

Aidn, Martin, to Siemens Aktiengesellschaft. Polarized electromagnetic relay. 4,551,698, Cl. 335-78.000.

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Paterson, Alan J. F., 4,551,091, Cl. 432-23.000.

Aisin Warner Kabushiki Kaisha: *See—*
Kawamoto, Mutsumi, 4,550,629, Cl. 74-689.000.

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Aizawa, Koki; and Haeno, Akira, to Pioneer Electronic Corporation. Level shifting circuit. 4,551,642, Cl. 307-552.000.

Ajimine, Akio: *See—*
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,551,849, Cl. 381-86.000.

Akada, Yasuaki: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,550,993, Cl. 354-402.000.

Akahane, Masao: *See—*
Takeda, Koji; Akahane, Masao; Mukaiyama, Fumiaki; and Kudo, Yasuhiko, 4,551,846, Cl. 375-82.000.

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Savage, David S.; and Redpath, James, 4,551,479, Cl. 514-657.000.

Albany International Corporation: *See—*
Bolton, Joseph A.; and Salls, David J., 4,551,202, Cl. 162-198.000.

Alber, Ulrich. Hand-operated cart. 4,550,924, Cl. 280-5.280.

Albert Bocker GmbH & Co. KG: *See—*
Bocker, Albert, 4,550,806, Cl. 187-10.000.

Albright, Jay D.: *See—*
Dusza, John P.; and Albright, Jay D., 4,551,530, Cl. 544-281.000.

Alcan International Limited: *See—*
Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and Rogers, Charles J., 4,551,218, Cl. 204-240.000.

Alchemia Ltd. Partnership: *See—*
Krumme, John F.; and Hodgson, Darel E., 4,550,870, Cl. 227-19.000.

Alesandrini, Carlo G., Jr.; and Nady, Louie A., to Stuaffer Chemical Company. Method for conducting a chemical process in a packed multi-tubular reactor. 4,551,325, Cl. 423-488.000.

Allen, David L. Spherical maze game apparatus. 4,550,912, Cl. 273-113.000.

Allen, James E. Infant cradle assembly. 4,550,456, Cl. 5-98.00B.

Allied Corporation: *See—*
Bartholomew, Roy E., 4,550,953, Cl. 303-15.000.
Haylock, John C.; and Vanderkooi, Nicholas, Jr., 4,551,507, Cl. 525-437.000.
Kavesh, Sheldon; and Prevorsek, Dusan C., 4,551,296, Cl. 264-177.00F.
Mathew, Chempolil T.; and Ulmer, Harry E., 4,551,323, Cl. 423-387.000.
Mathew, Chempolil T.; and Ulmer, Harry E., 4,551,324, Cl. 423-387.000.
Meeder, Edward A., Jr., 4,551,765, Cl. 358-248.000.
Oxenrider, Bryce C., 4,551,519, Cl. 528-296.000.
Remus, Casimer F., 4,550,630, Cl. 74-800.000.
Riches, Arthur J.; and Mitchell, Brian, 4,550,967, Cl. 339-88.00R.
Spangler, Glenn E.; and Cox, John N., 4,551,624, Cl. 250-287.000.

Alpen Dairy Foods Pty. Limited: *See—*
Kilroy, Stanley A. R., 4,551,346, Cl. 426-602.000.

Alpha Corporation Of Tennessee: *See—*
Bayha, Charles E., 4,551,489, Cl. 523-501.000.

Alps Electric Co., Ltd.: *See—*
Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, 4,551,033, Cl. 400-308.000.

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Ai, Daniel K.; and Yu, Ho, 4,550,766, Cl. 164-428.000.
Yu, Ho; and Ai, Daniel K., 4,550,767, Cl. 164-428.000.

Alvarez, Robert: *See—*
Jones, Gordon H.; Venuti, Michael C.; Alvarez, Robert; and Bruno, John J., 4,551,459, Cl. 514-267.000.

Amano, Masatoshi: *See—*
Honma, Ichiro; Koyama, Arata; Amano, Masatoshi; and Takumi, Nobusuke, 4,551,327, Cl. 423-594.000.

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Beckstead, Leo W.; Havelick, Linn D.; and Hogsett, Robert F., 4,551,314, Cl. 423-54.000.
Sabacky, Bruce J.; and Hepworth, Malcolm T., 4,551,313, Cl. 423-59.000.

Ambient Energy Design: *See—*
Archer, John, 4,550,759, Cl. 160-176.00R.

Ambrose, Richard J.: *See*—
Hsich, Henry S. Y.; and Ambrose, Richard J., 4,551,807, Cl. 364-473.000.
Amdahl Corporation: *See*—
Amdahl, Gene M.; Hanson, Donald L.; Kreuzenstein, Ronald K.; Roshon-Larsen, Gwynne L.; and Woffinden, Gary A., 4,551,797, Cl. 364-200.000.
Amdahl, Gene M.; Hanson, Donald L.; Kreuzenstein, Ronald K.; Roshon-Larsen, Gwynne L.; and Woffinden, Gary A., to Amdahl Corporation. Apparatus for reverse translation. 4,551,797, Cl. 364-200.000.
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American Can Company: *See*—
Eckstein, John P., 4,551,371, Cl. 428-36.000.
American Cyanamid Company: *See*—
Dusza, John P.; and Albright, Jay D., 4,551,530, Cl. 544-281.000.
Gotthard, George, 4,551,266, Cl. 252-400.00R.
Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., 4,551,533, Cl. 546-35.000.
American Home Products Corporation: *See*—
Greenspan, George, 4,551,429, Cl. 435-68.000.
Sulkowski, Theodore S.; Silver, Paul J.; Mascitti, Albert A.; and Bender, Reinhold H. W., 4,551,534, Cl. 546-123.000.
Wei, Peter H. L.; and Carlson, Richard P., 4,551,538, Cl. 548-367.000.
American Hospital Supply Corporation: *See*—
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,551,526, Cl. 544-163.000.
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,551,537, Cl. 546-330.000.
Zegers de Beyl, Rene H.; and Coble, Stephen J., 4,551,133, Cl. 604-66.000.
American Multimedia, Inc.: *See*—
Farrow, Robert I.; and Clark, Richard L., 4,551,190, Cl. 156-159.000.
American Standard Inc.: *See*—
Edwards, John C.; and Ford, Russell A., 4,550,775, Cl. 165-111.000.
Emmel, David G., 4,550,889, Cl. 246-28.00R.
Rumsey, Steven C., 4,550,811, Cl. 188-170.000.
Ames, Theodore; and Brown, Vernon E., Jr., to Glacier Products. Apparatus for manufacturing soft ice cream and the like. 4,551,025, Cl. 366-144.000.
AMF Inc.: *See*—
Bains, Elizabeth M., 4,550,605, Cl. 73-622.000.
Fehrenkamp, William; Pater, Arnold R.; and Brummel, Arthur D., 4,551,824, Cl. 367-76.000.
Storace, Anthony; and Ketchman, Jeffery, 4,551,806, Cl. 364-473.000.
AMP Incorporated: *See*—
Asick, John C.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., 4,550,960, Cl. 339-14.00R.
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,550,959, Cl. 339-9.00E.
Romak, Paul E., 4,550,972, Cl. 339-256.00R.
Anders, James V.; Anderson, Thomas W.; Geiger, Daniel D.; and Turnpaugh, George F., to AT&T Bell Laboratories. Circuit for maintaining the DC voltage on an electrically isolated telecommunication line at a reference level. 4,551,670, Cl. 323-281.000.
Andersen, Robert P.: *See*—
Duga, Robert J.; Kulig, Constantine W.; Doughty, Robert L.; Douglas, Robert J.; and Andersen, Robert P., 4,551,163, Cl. 65-129.000.
Anderson, Carl J., to International Business Machines Corporation. Look-back analog to digital converter. 4,551,704, Cl. 340-347.0AD.
Anderson, Carl P., to Ricoh Company Ltd. Electrophotographic copying apparatus including transfer hold-down pump. 4,550,999, Cl. 355-3.0TR.
Anderson, Robert D., to Honeywell Inc. Programmable integrated circuit AC resistor network. 4,551,705, Cl. 340-347.0DA.
Anderson, Thomas W.: *See*—
Anders, James V.; Anderson, Thomas W.; Geiger, Daniel D.; and Turnpaugh, George F., 4,551,670, Cl. 323-281.000.
Ando, Haruhisa: *See*—
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.
Ando, Hisashi: *See*—
Watanabe, Ryuji; Ando, Hisashi; Kuniya, Keiichi; and Kurosawa, Yukio, 4,551,596, Cl. 200-144.00B.
Andres, Rudolf; Grantz, Helmut; Muenzel, Wolf-Dietrich; and Odebrecht, Wolfgang, to Daimler-Benz Aktiengesellschaft. Surface heating body for vehicles. 4,550,774, Cl. 165-104.210.
Andrews, Roland E.; and Addis, John L., to Tektronix, Inc. Wide bandwidth signal coupling circuit having a variable voltage-level shift from input to output. 4,551,636, Cl. 307-264.000.
Anechoic Systems Company, Inc.: *See*—
Swartz, Henry D.; and Miller, Alan H., 4,550,798, Cl. 181-201.000.
Angelo Guala S.p.A.: *See*—
Guala, Piergiacomo, 4,550,845, Cl. 215-252.000.
Angiomedics, Inc.: *See*—
Fletcher, Bruce W.; Rydell, Mark A.; and Reese, Edward W., 4,551,292, Cl. 264-139.000.
Annarelli, Dennis C.: *See*—
Dominiani, Frank J., Jr.; and Annarelli, Dennis C., 4,551,320, Cl. 423-321.00R.
Annunziata, Eugene J.; and Stammely, Thomas E., to International Business Machines Corp. Terminal disconnect and media wire fault detect mechanism. 4,551,671, Cl. 324-51.000.
Ansel, David S.: *See*—
Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., 4,551,350, Cl. 427-389.900.
Antognini, Luciano; and Guerin, Yves, to ETA S.A. Fabriques D'Ebauches. Method of and a device for controlling a stepping motor. 4,551,665, Cl. 318-696.000.
Anton/Bauer, Inc.: *See*—
Corrigan, John J., 4,550,968, Cl. 339-91.00R.
Aoki, Junji: *See*—
Uematsu, Hiroaki; and Aoki, Junji, 4,551,222, Cl. 204-417.000.
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Herbicidal 2-(1,3,5-1H-triazin-2-one)-tetrahydrobenzothiazole derivatives, and compositions therefor. 4,551,168, Cl. 71-90.000.
Aoki, Masakazu: *See*—
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.
Aoki, Matsuyuki; and Tanaka, Shuji, to Fuji Xerox Co., Ltd. Developer density detecting apparatus. 4,551,002, Cl. 355-3.0DD.
Aossey, Joseph W. Pet door mat alarm. 4,551,713, Cl. 340-666.000.
Apple, James: *See*—
Permut, Ronald; Cope, Robert; Apple, James; Epina, August P.; and Munro, Frederick G., 4,550,884, Cl. 242-189.000.
Appleton Papers Inc.: *See*—
Miller, Robert E.; and Vervacke, Steven L., 4,551,739, Cl. 346-216.000.
Apri, Edward W. Momentum responsive vehicle shoulder harness latch. 4,550,951, Cl. 297-480.000.
Arabori, Hideo: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.
Arai, Yoshihiro; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording media and process of producing them. 4,551,778, Cl. 360-131.000.
Arakawa, Yoshihiro: *See*—
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.
Arbabian, Morteza. Waste water heat recovery apparatus. 4,550,771, Cl. 165-47.000.
Arcari, Giuliana: *See*—
Doria, Gianfederico; Passarotti, Carlo; Arcari, Giuliana; and Buttinoni, Ada, 4,551,457, Cl. 514-258.000.
Archant Limited: *See*—
Inman, Roger, 4,550,632, Cl. 76-86.000.
Archer, John, to Ambient Energy Design. Apparatus for simultaneously closing and opening a group of blinds. 4,550,759, Cl. 160-176.00R.
Arendt, Paul N.; and Valencia, Vance I., to Jersey Nuclear-Avco Isotopes, Inc. Demodulation of vapor density. 4,551,844, Cl. 373-12.000.
Argyo, Wilhelm, to Siemens Aktiengesellschaft. Layer containing carbon and a method and apparatus for producing such a layer. 4,551,216, Cl. 204-192.00C.
Armco Inc.: *See*—
Lawson, John E., 4,550,782, Cl. 166-382.000.
Armstrong, Richard G.: *See*—
Hoke, Merle C.; Armstrong, Richard G.; and Penn, James E., 4,551,792, Cl. 362-362.000.
Armstrong World Industries, Inc.: *See*—
Olcott, Robert S., Jr., 4,550,478, Cl. 29-130.000.
Arndt, Alfred: *See*—
Rutty, John G.; and Arndt, Alfred, 4,551,854, Cl. 455-78.000.
Arney, Jonathan S.: *See*—
Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,551,407, Cl. 430-138.000.
Asahi Glass Company, Ltd.: *See*—
Oda, Yoshio; and Morimoto, Takeshi, 4,551,220, Cl. 204-294.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ogawa, Kimiaki, 4,551,764, Cl. 358-228.000.
Asahi Optical Co., Ltd.: *See*—
Tachihara, Satoru, 4,550,987, Cl. 350-454.000.
Asaka, Urataro; Kanai, Shigeo; Tanaka, Yasuhiro; and Iwamoto, Kazuya, to Honda Giken Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Honda Rokku. Air pump apparatus. 4,551,074, Cl. 417-366.000.
Asano, Shoji: *See*—
Kanayama, Kiyoshi; and Asano, Shoji, 4,550,635, Cl. 82-4.00C.
Asanuma, Mari, to International Paper Company. Semi-rigid container with a bottom of improved stability. 4,550,826, Cl. 206-259.000.
ASE (UK) Limited: *See*—
Patterson, Michael, 4,550,933, Cl. 280-808.000.
Ashland Oil, Inc.: *See*—
Goel, Anil B., 4,551,511, Cl. 526-204.000.
Hettinger, William P., Jr., 4,551,234, Cl. 208-179.000.

Kovach, Stephen M.; and Palmer, James L., 4,551,231, Cl. 208-120.000.
Asick, John C.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., to AMP Incorporated. Shielded backplane assembly. 4,550,960, Cl. 339-14.00R.
ASM Assembly Automation Ltd.: *See*—
Chan, Lo K.; Tang, Yui K.; and Chang, Jui, 4,550,871, Cl. 228-4.500.
Asmussen, Frithjof; Sotobayashi, Hideto; Chen, Jiang-Tsun; and Schnabel, Wolfram, to Max-Planck-Gesellshaft zur Forderung der Wissenschaften e.V. Positive resist material. 4,551,414, Cl. 430-270.000.
Aston, Geoffrey W.; Smith, Susan; Chapman, Paul; and Barker, Howard A., to Redland Technology Limited. Boards. 4,551,384, Cl. 428-312.600.
AT&T Bell Laboratories: *See*—
Anders, James V.; Anderson, Thomas W.; Geiger, Daniel D.; and Turnpaugh, George F., 4,551,670, Cl. 323-281.000.
Chandross, Edwin A.; Reichmanis, Elsa; and Wilkins, Cletus W., Jr., 4,551,416, Cl. 430-311.000.
Cox, Richard V.; and Jayant, Nuggehally S., 4,551,580, Cl. 179-1.50S.
Doughty, Carolyn A., 4,551,581, Cl. 179-2.00A.
Gannett, Joel W., 4,551,838, Cl. 371-25.000.
Levinson, Frank H.; and Schweizer, Rudolph C., 4,550,975, Cl. 350-96.180.
Miller, Gabriel L., 4,551,674, Cl. 324-158.00R.
Turner, Jonathan S., 4,551,833, Cl. 370-60.000.
AT&T Technologies, Inc.: *See*—
Loesch, Robert P., 4,551,185, Cl. 148-150.000.
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Nagano, Masami; Atago, Takeshi; and Yoshida, Tatsuya, 4,550,705, Cl. 123-488.000.
Ateliers de Constructions Electriques de Charleroi (ACEC)-Societe Anonyme: *See*—
Neumann, Jacques, 4,551,101, Cl. 434-55.000.
Ateliers des Charmilles S.A.: *See*—
Marendaz, Georges-Andre , 4,551,809, Cl. 364-474.000.
Atlantic Richfield Company: *See*—
Schlademan, James A., 4,551,388, Cl. 428-355.000.
Taylor, Paul D.; and Mocella, Michael T., 4,551,553, Cl. 568-311.000.
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., 4,551,291, Cl. 264-104.000.
Yuill, William A., 4,551,312, Cl. 423-53.000.
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Aubert, Jean-Daniel; and Fornerod, Andre , to Cybelec S.A. Device for forming part of a press brake for determining automatically the thickness of the sheet. 4,550,586, Cl. 72-389.000.
Axenov, Ivan I.; Bren, Viktor G.; Padalka, Valentin G.; Sablev, Leonid P.; Stupak, Rimma I.; and Khoroshikh, Vladimir M. Vacuum-arc plasma apparatus. 4,551,221, Cl. 204-298.000.
B.S.P. Packaging Systems di Pattarozzi D. & C.s.a.s.: *See*—
Pattarozzi, Domenico, 4,551,052, Cl. 414-81.000.
Babb, John H., Jr.; and Marotto, Robert A., to Kysor Industrial Corporation. Security strike assembly. 4,550,939, Cl. 292-340.000.
Bacardit, Juan S.: *See*—
Coll, Juan V.; Bacardit, Juan S.; and Bofill, Joaquim F., 4,550,566, Cl. 60-554.000.
Bachman, Joseph L., Jr.: *See*—
Johnson, A. David, Jr.; Bachman, Joseph L., Jr.; Ginther, George E., Sr.; Zimmermann, Charles E.; and Johnson, Albert D., Sr., 4,551,126, Cl. 493-453.000.
Bailey, David C.: *See*—
Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., 4,551,829, Cl. 370-3.000.
Bains, Elizabeth M., to AMF Inc. Hopping mechanism for pipe and coupling inspection probe. 4,550,605, Cl. 73-622.000.
Bair, Kenneth W., to Burroughs Wellcome Co. Triphenylene derivatives. 4,551,282, Cl. 260-501.180.
Baker, Bart M.: *See*—
Baker, Stanley Z.; Baker, Bart M.; and Baker, Benjamin H., 4,550,525, Cl. 43-131.000.
Baker, Benjamin H.: *See*—
Baker, Stanley Z.; Baker, Bart M.; and Baker, Benjamin H., 4,550,525, Cl. 43-131.000.
Baker, Hugh W. B.; and White, Robert, to Gillette Company, The. Marking instrument. 4,551,035, Cl. 401-104.000.
Baker, Hugh W. B.; and Whiting, Graham J., to Gillette Company, The. Writing instrument tip. 4,551,038, Cl. 401-265.000.
Baker, Stanley Z.; Baker, Bart M.; and Baker, Benjamin H., to J. T. Eaton & Company, Inc. Tamper proof rodent bait station. 4,550,525, Cl. 43-131.000.
Balashova, Taisia M.: *See*—
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.
Balcke-Durr Aktiengesellschaft: *See*—
Trage, Burghard; Hintzen, Franz-Josef; and Leitz, Richard, 4,550,570, Cl. 60-693.000.
Baldwin, Arthur; and Baldwin, Mark. Portable tool box. 4,550,828, Cl. 206-349.000.
Baldwin, Mark: *See*—
Baldwin, Arthur; and Baldwin, Mark, 4,550,828, Cl. 206-349.000.
Ballmann, Fred A.; and Cooper, James M. Face mask and dispenser assembly. 4,550,856, Cl. 221-63.000.
Balz, Werner: *See*—
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.
Bang & Olufsen A/S: *See*—
Mathiasen, Herluf S., 4,551,584, Cl. 179-156.00R.
Banko, Victor F.: *See*—
Talish, Roger J.; and Banko, Victor F., 4,550,714, Cl. 128-1.500.
Bankston, Benjamin F., to United States of America, National Aeronautics and Space Administration. Apparatus and method for inspecting a bearing ball. 4,551,677, Cl. 324-226.000.
Banton, Martin E., to Xerox Corporation. Image annotator for use with printing and coping machines. 4,551,008, Cl. 355-14.00E.
Barall, Heinz, to Hibar Systems Limited. Fluid pressure operated actuator. 4,551,072, Cl. 417-318.000.
Bardos, Andrew M.: *See*—
Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., 4,551,829, Cl. 370-3.000.
Barho, Hans; and Denz, Helmut, to Robert Bosch GmbH. Multi-cylinder internal combustion engine having disconnectable groups of cylinders. 4,550,704, Cl. 123-481.000.
Barker, Dale E.; Bettle, Griscom, III; and Van Coney, Robert H., to Procter & Gamble Company, The. Liquid product pouring and measuring package with self draining feature. 4,550,862, Cl. 222-109.000.
Barker, Howard A.: *See*—
Aston, Geoffrey W.; Smith, Susan; Chapman, Paul; and Barker, Howard A., 4,551,384, Cl. 428-312.600.
Barlics, John J. Trivet. 4,550,894, Cl. 248-346.000.
Barnabeo, Austin E., to Union Carbide Corporation. Water curable, azide sulfonyl silane modified ethylene polymers. 4,551,504, Cl. 525-333.900.
Barnes, Robert S.: *See*—
Campbell, James R., 4,551,604, Cl. 219-78.120.
Barnum, Charly, to Kesser Electronics International, Inc. Lighting control system and method. 4,551,654, Cl. 315-159.000.
Barsukov, Anatoly V.: *See*—
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.
Barth, Hans; and Prokopp, Manfred, to Riba-Pruftechnik GmbH. Testing arrangement for printed circuit boards. 4,551,673, Cl. 324-158.00F.
Bartholmei, Peter: *See*—
Hoheisel, Peter; and Bartholmei, Peter, 4,550,833, Cl. 206-527.000.
Bartholomew, Roy E., to Allied Corporation. Electro-pneumatic control for a vehicle fluid pressure braking system. 4,550,953, Cl. 303-15.000.
BASF Aktiengesellschaft: *See*—
Blinne, Gerd; and Muench, Volker, 4,551,493, Cl. 524-89.000.
Bott, Kaspar; Kaibel, Gerd; Hartmann, Horst; Irnich, Rudolf; and Buelow, Horst, 4,551,208, Cl. 203-60.000.
Dockner, Toni; and Krug, Herbert, 4,551,528, Cl. 544-242.000.
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,551,318, Cl. 423-265.000.
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,551,448, Cl. 514-130.000.
Straub, Ferdinand; Sanner, Axel; Seib, Karl; and Lang, Siegfried, 4,551,512, Cl. 526-264.000.
Tschang, Chung-Ji; and Marcinowski, Stefan, 4,551,482, Cl. 521-53.000.
Wagner, Eckhart; Volkamer, Klaus; Hefner, Werner; and Wagner, Ulrich, 4,551,158, Cl. 55-46.000.
Bass, Eric. Exercise device for use in tank containing water. 4,551,108, Cl. 441-116.000.
Basseches, Mark T. Binder assembly with randomly removable leaves. 4,551,039, Cl. 402-60.000.
Batina, William P.; and White, Robert M., to Cordis Corporation. Acquisition circuit for cardiac pacer. 4,550,731, Cl. 128-419.0PT.
Battenfeld Extrusionstechnik GmbH: *See*—
Schwab, Erwin; Parisi, Graziano; and Pander, Peter, 4,551,289, Cl. 264-23.000.
Batty, John R., Jr.; and Slocum, Chester D., to Cordis Corporation. System and process for enabling a predefined function within an implanted device. 4,550,732, Cl. 128-419.0PG.
Baugher, Stuart W., to Chevron Research Company. Steam tube yoke and hanger assembly insulation cover. 4,550,690, Cl. 122-510.000.
Bayer Aktiengesellschaft: *See*—
Brassat, Bert; Buysch, Hans-Josef; Hermann, Karl H.; and Haupt, Heinrich, 4,551,495, Cl. 524-94.000.
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,551,265, Cl. 252-301.170.
Schellhammer, Karl-Wolfgang; Rottmaier, Ludwig; Merten, Rudolf; and Schimmel, Ulrich, 4,551,263, Cl. 252-186.390.

Wehinger, Egbert; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 4,551,467, Cl. 514-334.000.

Bayerische Motoren Werke AG: *See*—
Bourauel, Fritz; and Weishaupt, Walter, 4,551,703, Cl. 340-52.00D.

Bayha, Charles E., to Alpha Corporation Of Tennessee. Emulsions of dicyclopentadiene containing polyesters. 4,551,489, Cl. 523-501.000.

BBC Brown, Boveri & Company, Limited: *See*—
Canay, Muzaffer, 4,551,780, Cl. 361-113.000.

Beck, Richard, Jr., to Sundstrand Corporation. Thin valve plate for a hydraulic unit. 4,550,645, Cl. 91-499.000.

Becker, Erwin; Ehrfeld, Wolfgang; Fritz, Wolfgang; Steinhaus, Harald; and Bley, Peter, to Kernforschungszentrum Karlsruhe GmbH. Method for separating light additive gas in separating nozzle cascades. 4,551,157, Cl. 55-17.000.

Becker, John H. Composite horizontally or vertically split casing with variable casing ends. 4,551,065, Cl. 415-219.00R.

Beckman Instruments, Inc.: *See*—
Durbin, Dennis, 4,551,715, Cl. 340-671.000.

Beckman, John H.; Haettinger, George C.; and Kupcikevicius, Vytautas, to Union Carbide Corporation. Shirred casing article. 4,550,471, Cl. 17-1.00R.

Beckstead, Leo W.; Havelick, Linn D.; and Hogsett, Robert F., to Amax Inc. Process for improving solvent extraction operation using two mixers. 4,551,314, Cl. 423-54.000.

Behnke, Horst; Michaud, Horst; Seeholzer, Joseph; and Solansky, Svatoplug, to SKW Trostberg Aktiengesellschaft. Nitrogen fertilizer and process for its manufacture. 4,551,166, Cl. 71-30.000.

Behr-Thomson Dehnstoffregler GmbH: *See*—
Saur, Roland, 4,550,693, Cl. 123-41.100.

Beitler, Brad D.: *See*—
Haeber, John A.; Rains, John K.; Beitler, Brad D.; and Kukuchek, George S., 4,550,936, Cl. 285-26.000.

Bell, James A. E.; Conard, Bruce R.; and Hope, Douglas A., to Inco Limited. Process for obtaining a composite material and composite material obtained by said process. 4,551,184, Cl. 148-127.000.

Bell, John R.; Scoville, Robert E.; and Whitt, Joade, to National Steel Corporation. Shroud tube manipulating and supporting apparatus. 4,550,867, Cl. 222-607.000.

Bell, Vivien L., to Minnesota Mining and Manufacturing Company. Recording element for optical data storage. 4,551,413, Cl. 430-270.000.

Belmont Textile Machinery Company: *See*—
Niederer, Kurt W., 4,550,880, Cl. 242-18.0DD.

Beltone Electronics Corporation: *See*—
Moy, Alexander, 4,551,607, Cl. 219-121.0LJ.

Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I. Joining element for fixation of bone tissues. 4,550,723, Cl. 128-92.00B.

Belz, Roland K. Composite packaging material and process for making same. 4,551,369, Cl. 428-36.000.

Bendell, Sidney L., to RCA Corporation. Television camera with solid-state imagers cooled by a thermal servo. 4,551,760, Cl. 358-213.000.

Bender, David L.: *See*—
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., 4,551,291, Cl. 264-104.000.

Bender, Reinhold H. W.: *See*—
Sulkowski, Theodore S.; Silver, Paul J.; Mascitti, Albert A.; and Bender, Reinhold H. W., 4,551,534, Cl. 546-123.000.

Bendiberica, S.A.: *See*—
Coll, Juan V.; Bacardit, Juan S.; and Bofill, Joaquim F., 4,550,566, Cl. 60-554.000.

Benfey, David P.: *See*—
Miller, Gary; Jobes, Sam S.; and Benfey, David P., 4,551,657, Cl. 315-399.000.

Benquey, Jean; and Benquey, Louisa F., to Societe d'Exploitation du Laboratoire Abadie. Light ramp for lighting instrument panels, more especially in aircraft or helicopter. 4,551,790, Cl. 362-23.000.

Benquey, Louisa F.: *See*—
Benquey, Jean; and Benquey, Louisa F., 4,551,790, Cl. 362-23.000.

Bensadon, Joseph M.; and Brickman, Norman F., to International Business Machines Corporation. X.21 Switching system. 4,551,835, Cl. 370-110.100.

Benzinger, Hans, to Thielscher-Electronic GmbH. Coupling filter, especially an input filter, for receivers of centralized ripple control systems. 4,551,686, Cl. 330-100.000.

Beppu, Masaru; Agawa, Setsuo; Hazeyama, Takeshi; and Nashimoto, Toshiyuki, to Nittetsu Mining Co., Ltd. Apparatus for classifying particulate material with air currents. 4,551,240, Cl. 209-143.000.

Berchem, Rutger, to Berchem & Schaberg GmbH. Traction chain for a driven wheel of a wheeled vehicle. 4,550,757, Cl. 152-228.000.

Berchem & Schaberg GmbH: *See*—
Berchem, Rutger, 4,550,757, Cl. 152-228.000.

Berenguier, Pierre H.: *See*—
ab der Halden, Charles H.; and Berenguier, Pierre H., 4,551,845, Cl. 375-40.000.

Berg, Arthur A., to Sloan Valve Company. Front air swingaway. 4,550,928, Cl. 280-421.000.

Berg, Gunnar H., to Hughes Tool Company. Elevator/spider with counterbalance. 4,550,942, Cl. 294-102.200.

Berg, Lloyd; and Yeh, An-I. Separation of isopropyl ether from acetone by extractive distillation. 4,551,207, Cl. 203-56.000.

Berg, Richard M. Omni-directional radar and electro-optical multiple corner retro reflectors. 4,551,726, Cl. 343-18.00C.

Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Agent for the determination of esterolytic and/or proteolytic enzymes. 4,551,428, Cl. 435-19.000.

Berger, Karl. Throat examination device. 4,550,717, Cl. 128-16.000.

Berkowitz, Herbert: *See*—
Coleman, D. Jackson; Orcutt, Donald E.; and Berkowitz, Herbert, 4,551,129, Cl. 604-21.000.

Bernardi, Adriano: *See*—
Canella, Marco; Marghinotti, Daniele; Bernardi, Adriano; and Sodini, Giancarlo, 4,551,335, Cl. 426-44.000.

Bernhardt, Anthony F., to Spectra-Physics, Inc. Noise reduction in laser amplifiers. 4,551,684, Cl. 330-4.300.

Berrebi, Georges, to Eurecat-Europeene de Retraitement de Catalyseurs. Process for the transportation through an elongate chamber and electromagnetic radiation heating of granulated material. 4,551,437, Cl. 502-5.000.

Berrehail, Mohamed. Orthopedic vest for support and restrainment in the treatment of subjects to trauma and surgery of the shoulder, scapular arch and upper limb. 4,550,724, Cl. 128-133.000.

Bertinger, Roland: *See*—
Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, 4,551,328, Cl. 423-607.000.

Bertsch, Peter K., to Helix Technology Corporation. Balanced integral Stirling cryogenic refrigerator. 4,550,571, Cl. 62-6.000.

Best Lock Corporation: *See*—
Best, Walter E.; and Foshee, William R., 4,550,581, Cl. 70-422.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Break-away knob driver. 4,550,581, Cl. 70-422.000.

Beta II, Incorporated: *See*—
Volk, Joseph A., Jr.; and Volk, Joseph A., 4,550,619, Cl. 73-862.620.

Betancourt, Humberto: *See*—
Calderon, Jose L.; and Betancourt, Humberto, 4,551,232, Cl. 208-92.000.

Betelle, Jean: *See*—
Jourdan, Jean-Marie; Betelle, Jean; and Bougon, Philippe M. M., 4,551,632, Cl. 307-9.000.

Bethmann, Karl W., to Rheinmetall GmbH. Method of making a hollow-charge inserts for armor-piercing projectiles. 4,551,287, Cl. 269-3.00R.

Betsch, Regis J.; Liu, Michael S.; and Tufte, Obert N., to Honeywell Inc. Integrated three-dimensional localized epitaxial growth of Si with localized overgrowth of GaAs. 4,551,394, Cl. 428-641.000.

Bettle, Griscom, III: *See*—
Barker, Dale E.; Bettle, Griscom, III; and Van Coney, Robert H., 4,550,862, Cl. 222-109.000.

Bey, Philippe, to Merrell Dow Pharmaceuticals Inc. N-2,3-Butadienyl-1,4-butanediamine derivatives. 4,551,550, Cl. 564-215.000.

Beyerle, Rudi: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,551,454, Cl. 514-252.000.

Bhojwani, Arju H.; and Woebcke, Herman N., to Stone & Webster Engineering Corp. Solids quench boiler and process. 4,550,769, Cl. 165-1.000.

Bianchi, Julio J., to General Electric Company. Flip-over mechanism. 4,551,621, Cl. 235-117.00R.

Biber, Conrad H., to Polaroid Corporation. Sonic ranging/detection system employing varied beamwidth. 4,551,825, Cl. 367-101.000.

BICC Public Limited Company: *See*—
Verne, Stefan, 4,551,569, Cl. 585-6.600.

Biehl, Reinhard; Schmalbein, Dieter; and Laukien, Gunther, to Bruker Analytische Messtechnik GmbH. Coupling arrangement for a cavity resonator. 4,551,694, Cl. 333-24.00C.

Biernacki, Andreas: *See*—
Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, 4,550,650, Cl. 98-115.300.

Bilik, Charles W.: *See*—
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,551,070, Cl. 417-68.000.

Billerbeck, Gerd: *See*—
Endel, Dieter; and Billerbeck, Gerd, 4,550,459, Cl. 5-437.000.

Bio Clinic Company: *See*—
Wagner, Bill L., Sr., 4,550,547, Cl. 53-430.000.

Bio-Organics, Inc.: *See*—
Tenzer, Abraham I., 4,551,164, Cl. 71-6.000.

BioResearch Inc.: *See*—
Kurtz, Robert J.; and LiCausi, Joseph, 4,550,722, Cl. 128-80.00A.

Bird, George R.: *See*—
Custer, Peter A.; and Bird, George R., 4,551,827, Cl. 369-101.000.

Bisbee, Gary W.: *See*—
McTamaney, Louis S.; Bisbee, Gary W.; Kettlety, Robert W.; and Konsevich, James L., 4,551,730, Cl. 346-33.0WL.

Bishop, Robert R. Apparatus for orienting and stacking hollow, frustoconical containers. 4,550,820, Cl. 198-389.000.

Bitsch, Harald; Donner, Klaus; Hasselmann, Heinz; and Horbach, Rainer, to Mannesmann Aktiengesellschaft. Track wheel block. 4,550,664, Cl. 105-180.000.

Black & Decker Inc.: *See*—
Moores, Robert G., Jr.; Sides, Daniel H.; and Burnside, Howard L., 4,550,501, Cl. 30-393.000.
Wilson, Peter H., 4,551,615, Cl. 219-373.000.

Blair, John J., to Dentsply Research & Development Corp. Method and apparatus to produce artificial dentures. 4,551,098, Cl. 433-171.000.

Blakeway Marviroll Pools Pty. Ltd.: *See*—
Blakeway, Stanley R., 4,550,538, Cl. 52-169.700.

Blakeway, Stanley R., to Blakeway Marviroll Pools Pty. Ltd. Pool and method of making same. 4,550,538, Cl. 52-169.700.

Blanie, Paul; and Vernier, Claude. Method for obtaining clear plant juices and for the recovery of valorizable constituents. 4,551,341, Cl. 426-489.000.

Blattner, Rudolf, to Ciba Geigy AG. Process for isolating 2-naphthylamine-3,6,8-trisulfonic acid in the form of the monopotassium or monoammonium salt. 4,551,283, Cl. 260-508.000.

Blauwhoff, Petrus M. M.; and Cornelissen, Anton E., to Shell Oil Company. Continuous thermal cracking process. 4,551,233, Cl. 208-106.000.

Bley, Peter: *See*—
Becker, Erwin; Ehrfeld, Wolfgang; Fritz, Wolfgang; Steinhaus, Harald; and Bley, Peter, 4,551,157, Cl. 55-17.000.

Blinne, Gerd; and Muench, Volker, to BASF Aktiengesellschaft. Transparent flame-retardant poly(arylether-arylsulfone) molding materials. 4,551,493, Cl. 524-89.000.

Blossfeld, Lothar, to ITT Industries, Inc. Monolithic integrated circuit. 4,550,490, Cl. 29-571.000.

Bloy, Vincente: *See*—
Frank-Neumann, Michel; Sedrati, Madjid; Vigneron, Jean-Pierre; and Bloy, Vincente, 4,551,545, Cl. 560-124.000.

Board of Regents, The University of Texas System: *See*—
Hanahan, Donald J.; and Pinckard, R. Neal, 4,551,446, Cl. 514-77.000.

Boardman, Peter W., to Deere & Company. Scrap scroller for a shear discharge conveying system. 4,550,881, Cl. 242-56.00R.

Bocker, Albert, to Albert Bocker GmbH & Co. KG. Elevating apparatus. 4,550,806, Cl. 187-10.000.

Boehringer Mannheim GmbH: *See*—
Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, 4,551,428, Cl. 435-19.000.
Draeger, Brigitte; and Ziegenhorn, Joachim, 4,551,427, Cl. 435-14.000.

Bofill, Joaquim F.: *See*—
Coll, Juan V.; Bacardit, Juan S.; and Bofill, Joaquim F., 4,550,566, Cl. 60-554.000.

Bogue, Carl E. Fishing pole holder. 4,550,520, Cl. 43-21.200.

Bohn, Helmut: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,551,454, Cl. 514-252.000.

Bolton, Joseph A.; and Salls, David J., to Albany International Corporation. Vacuum control system and method for dewatering fabrics. 4,551,202, Cl. 162-198.000.

Bonis, Laszlo J., to Composite Container Corporation. Rigid coextruded sheet and container. 4,551,365, Cl. 428-35.000.

Booher, Howard. Movable rear cross bar. 4,550,947, Cl. 296-181.000.

Borchert, Werner; and Nitsch, Klaus D. Device for separating solid particles of dirt from cooling water for power stations. 4,551,247, Cl. 210-304.000.

Borders, Donald B.: *See*—
Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., 4,551,533, Cl. 546-35.000.

Borg-Warner Chemicals, Inc.: *See*—
Halpern, Yuval; and Mott, Donna, 4,551,527, Cl. 544-214.000.
Hechenbleikner, Ingenuin; and Enlow, William P., 4,551,539, Cl. 548-412.000.
Hechenbleikner, Ingenuin; and Enlow, William P., 4,551,540, Cl. 548-531.000.

Borg-Warner Corporation: *See*—
Venema, Harry J., 4,550,595, Cl. 73-116.000.

Borza, John S.: *See*—
Drutchas, Gilbert H.; and Borza, John S., 4,550,597, Cl. 73-118.000.

Bosch, Russell H.: *See*—
Teerman, Richard F.; Bosch, Russell H.; and Wirth, Ricky C., 4,550,875, Cl. 239-88.000.

Boss, Heinz, to Grapha - Holding AG. Apparatus for storing or dispensing paper sheets or the like. 4,550,883, Cl. 242-59.000.

Bossaert, Jean, to Thomson-CSF. Method of tomographic scanning of an object by nuclear magnetic resonance. 4,551,679, Cl. 324-309.000.

Bossert, Friedrich: *See*—
Wehinger, Egbert; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 4,551,467, Cl. 514-334.000.

Bossler, Joseph. Countersink core drill assembly and method of utilizing same. 4,551,045, Cl. 408-206.000.

Botrel, Jose ; Harari, Sami; Briere, Joseph; and Louvel, Bernard, to L'Etat Francais represente par le Ministre des PTT (Centre National d'Etudes des Telecommunications); and Telediffusion de France. Error-protecting system for a two-way asynchronous data transmission. 4,551,839, Cl. 371-35.000.

Bott, Kaspar; Kaibel, Gerd; Hartmann, Horst; Irnich, Rudolf; and Buelow, Horst, to BASF Aktiengesellschaft. Recovery of formic acid by distillation. 4,551,208, Cl. 203-60.000.

Bottcher, Hugo; Heimrich, Klaus; Hildebrandt, Gustav; Kracke, Heinrich; and Richter, Johannes, to J. H. Benecke GmbH. Method of making an embossing cylinder. 4,551,297, Cl. 264-224.000.

Boudreaux, Ronald J. Duplex pump controller. 4,551,068, Cl. 417-8.000.

Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., to Northern Telecom Limited. Cradle for a twisting machine. 4,550,558, Cl. 57-58.520.

Bougeois, Jean-Luc: *See*—
Ratton, Serge; and Bougeois, Jean-Luc, 4,551,557, Cl. 568-433.000.
Ratton, Serge; and Bougeois, Jean-Luc, 4,551,558, Cl. 568-433.000.

Bougon, Philippe M. M.: *See*—
Jourdan, Jean-Marie; Betelle, Jean; and Bougon, Philippe M. M., 4,551,632, Cl. 307-9.000.

Bourauel, Fritz; and Weishaupt, Walter, to Bayerische Motoren Werke AG. Service interval signalling device for prime movers. 4,551,703, Cl. 340-52.00D.

Bouwman, Dale W.; and Clayborn, Harold K., to Miles Laboratories, Inc. Sealed reagent matrix. 4,551,306, Cl. 422-56.000.

Bowen, David R.: *See*—
Lewis, John D.; Keeling, Michael R.; Bowen, David R.; and Paton, Anthony D., 4,551,731, Cl. 346-75.000.

Bowling, Teamus. Variable power control device. 4,551,589, Cl. 200-38.00A.

Boyadjiev, Lyubomir A., to Edinen Centar Po Chimia. Method of and apparatus for mass transfer between three liquid phases. 4,551,252, Cl. 210-638.000.

Bracha, Peretz; and Massil, Solomon, to Makhteshim Chemical Works, Ltd. Quinazolines and fungicidal compositions thereof. 4,551,458, Cl. 514-259.000.

Braid, Milton, deceased (by Frangatos, Gerassimos, executor), to Mobil Oil Corporation. Phenolic antioxidants and lubricants containing same. 4,551,259, Cl. 252-48.200.

Brancheau, Harry A.: *See*—
Nussdorfer, William R.; Brancheau, Harry A.; and Clark, Steven C., 4,550,770, Cl. 165-29.000.

Branson Ultrasonics Corporation: *See*—
Quist, Eric, 4,551,690, Cl. 331-36.00L.

Brassat, Bert; Buysch, Hans-Josef; Hermann, Karl H.; and Haupt, Heinrich, to Bayer Aktiengesellschaft. Weather-resistant polyamides. 4,551,495, Cl. 524-94.000.

Breedyk, Frans N.; and van Gelderen, Guido, to Goodyear Tire & Rubber Company, The. Apparatus and method adapted to test tires by eliminating jitter from data signals without losing data. 4,550,598, Cl. 73-146.000.

Breitschwerdt, Gunter: *See*—
Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, 4,550,650, Cl. 98-115.300.

Bren, Viktor G.: *See*—
Axenov, Ivan I.; Bren, Viktor G.; Padalka, Valentin G.; Sablev, Leonid P.; Stupak, Rimma I.; and Khoroshikh, Vladimir M., 4,551,221, Cl. 204-298.000.

Breslow, Jeffrey D.: *See*—
Ferris, Michael J.; and Breslow, Jeffrey D., 4,550,917, Cl. 273-246.000.

Brickman, Norman F.: *See*—
Bensadon, Joseph M.; and Brickman, Norman F., 4,551,835, Cl. 370-110.100.

Bridge, Michael L., to Dresser Industries, Inc. Apparatus for restraining electronic assemblies. 4,550,599, Cl. 73-151.000.

Brieger, Hans: *See*—
Bruderer, Werner; Brieger, Hans; and Hurlemann, Ernst, 4,550,641, Cl. 89-12.000.

Briere, Joseph: *See*—
Botrel, Jose ; Harari, Sami; Briere, Joseph; and Louvel, Bernard, 4,551,839, Cl. 371-35.000.

Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, to Bayer Aktiengesellschaft. Fluorescent dyestuffs, processes for their preparation and their use as laser dyestuffs. 4,551,265, Cl. 252-301.170.

Brittain, Robert D.: *See*—
Wood, Bernard J.; Brittain, Robert D.; and Sancier, Kenneth M., 4,551,155, Cl. 48-197.00R.

Broucksou, Robert H.: *See*—
Martin, George; and Broucksou, Robert H., 4,550,625, Cl. 74-335.000.

Broughton, Roger; and da Costa, Bernardo, to Canadian Patents & Development Limited. Movement artifact detector for sleep analysis. 4,550,736, Cl. 128-731.000.

Brouwer, Cornelis, to Rotaque (Proprietary) Limited. Bottom discharge hopper structures. 4,550,665, Cl. 105-241.200.

Brouwer, Frans. Servo-motor assembly for machine slides. 4,550,626, Cl. 74-409.000.

Brown, Gerald W., to Kollmorgen Technologies Corporation. Double coil constant force extension spring bracket. 4,551,646, Cl. 310-242.000.

Brown, Ivan H.: *See*—
Bykerk, Rocky S., 4,551,781, Cl. 361-143.000.

Brown, Vernon E., Jr.: *See*—
Ames, Theodore; and Brown, Vernon E., Jr., 4,551,025, Cl. 366-144.000.

Brown & Williamson Tobacco Corporation: *See*—
Riehl, Tilford F., Jr., 4,550,740, Cl. 131-336.000.

Browning, Arthur J. Molded wheeled luggage, ensemble thereof and process for making the same. 4,550,813, Cl. 190-18.00A.

Bruderer, Werner; Brieger, Hans; and Hurlemann, Ernst, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Safety apparatus in externally powered firing weapon. 4,550,641, Cl. 89-12.000.

Bruker Analytische Messtechnik GmbH: *See*—
Biehl, Reinhard; Schmalbein, Dieter; and Laukien, Gunther, 4,551,694, Cl. 333-24.00C.

Brummel, Arthur D.: *See*—
Fehrenkamp, William; Pater, Arnold R.; and Brummel, Arthur D., 4,551,824, Cl. 367-76.000.

Bruno, John J.: *See—*
Jones, Gordon H.; Venuti, Michael C.; Alvarez, Robert; and Bruno, John J., 4,551,459, Cl. 514-267.000.

Brunswick Corporation: *See—*
Johnson, Richard H.; and Muma, George A., 4,550,467, Cl. 15-228.000.

Brush Wellman Inc.: *See—*
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,551,187, Cl. 148-411.000.

Brust, David P.; Neumann, Stephen M.; and Weissberger, Edward, to Eastman Kodak Company. Sequestrants used in diffusion transfer elements with metallizable dyes. 4,551,411, Cl. 430-216.000.

BSL Corporation: *See—*
Gidge, Kenneth N.; and Richard, Henry J., 4,550,760, Cl. 160-328.000.

Buck, Alfred: *See—*
Kuhn, Falk; and Buck, Alfred, 4,550,577, Cl. 66-104.000.

Buck, Robert; and Lamarche, Jean L., to IFM Electronic GmbH. Electronic monitoring system with direct-current power supply. 4,551,637, Cl. 307-308.000.

Buckley, Galen L.; and Fox, Paul L., to Pyramid Optical, Inc. Method of constructing a beam spread lens. 4,550,482, Cl. 29-412.000.

Budd Company, The: *See—*
Epel, Joseph N.; and Wilkinson, Robert E., 4,551,085, Cl. 425-405.00R.

Buel, G. Theodore. Ski boot heel binding. 4,550,929, Cl. 280-614.000.

Buelow, Horst: *See—*
Bott, Kaspar; Kaibel, Gerd; Hartmann, Horst; Irnich, Rudolf; and Buelow, Horst, 4,551,208, Cl. 203-60.000.

Bummer, Bruce L. Climbing assist apparatus having controlled descent and escape mechanism. 4,550,804, Cl. 182-233.000.

Burberry, Lee M.: *See—*
Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., 4,551,829, Cl. 370-3.000.

Burczynski, Thomas J. Expanding projectiles. 4,550,662, Cl. 102-509.000.

Burger, Jurgen: *See—*
Kasparek, Alois; and Burger, Jurgen, 4,551,040, Cl. 406-28.000.

Burke, William L., Sr.; Marple, Elwood; and Suisman, A. Eileen. Liquid level marker for container. 4,550,602, Cl. 73-428.000.

Burnside, Howard L.: *See—*
Moores, Robert G., Jr.; Sides, Daniel H.; and Burnside, Howard L., 4,550,501, Cl. 30-393.000.

Burroughs Corporation: *See—*
Graham, John F., 4,550,885, Cl. 242-204.000.
Horvath, Carlos F., 4,551,798, Cl. 364-200.000.
Spisz, Albert S., 4,551,118, Cl. 464-182.000.

Burroughs Wellcome Co.: *See—*
Bair, Kenneth W., 4,551,282, Cl. 260-501.180.
Stratford, Michael G.; and Spencer-Watkins, Harry C., 4,550,745, Cl. 137-99.500.

Burzynski, Alfred J.; and Tillman, James J., to Owens-Illinois, Inc. Tintable scratch resistant coating. 4,551,361, Cl. 427-164.000.

Butler, Donald E., to Warner-Lambert Company. Hexahydro-3,5-dioxo-1H-pyrrolizine-2-carboxylic acid and derivatives, and use for reversing electroconvulsive shock amnesia. 4,551,470, Cl. 514-413.000.

Butterworth Inc.: *See—*
Pacht, Amos, 4,551,077, Cl. 417-454.000.

Buttery, Michael H. C., to Thorn Emi Domestic Appliances Limited. Heating apparatus. 4,551,616, Cl. 219-460.000.

Buttinoni, Ada: *See—*
Doria, Gianfederico; Passarotti, Carlo; Arcari, Giuliana; and Buttinoni, Ada, 4,551,457, Cl. 514-258.000.

Buttner, Gerhard: *See—*
Leikert, Klaus; Buttner, Gerhard; and Michelfelder, Sigfrid, 4,551,090, Cl. 431-188.000.

Buysch, Hans-Josef: *See—*
Brassat, Bert; Buysch, Hans-Josef; Hermann, Karl H.; and Haupt, Heinrich, 4,551,495, Cl. 524-94.000.

Bykerk, Rocky S., to Nicholson, Chris G.; Parrish, J. Gid; Brown, Ivan H.; and Gordon, Reuben H. Control circuit for magnetic probe. 4,551,781, Cl. 361-143.000.

Byrne, Norman R. Retractable power center. 4,551,577, Cl. 174-57.000.

Byron, David A.: *See—*
Gorman, William G.; and Byron, David A., 4,551,135, Cl. 604-82.000.

C. R. Bard, Inc.: *See—*
Krikorian, Donald J., 4,550,749, Cl. 137-843.000.

Cable Belt Limited: *See—*
Thomson, Ian M., 4,550,559, Cl. 57-223.000.

Calderon, Jose L.; and Betancourt, Humberto, to Intevep, S.A. Process and facility for making coke suitable for metallurgical purposes. 4,551,232, Cl. 208-92.000.

Caldwell, W. Kenneth. Hand held digital measuring device. 4,551,847, Cl. 377-24.000.

Callaghan, Stephen P.; Callaghan, Timothy J.; Gustafson, Harry A.; and Lim, Wah L., to Honeywell Inc. Discriminant apparatus for laser gyros. 4,551,021, Cl. 356-350.000.

Callaghan, Timothy J.: *See—*
Callaghan, Stephen P.; Callaghan, Timothy J.; Gustafson, Harry A.; and Lim, Wah L., 4,551,021, Cl. 356-350.000.

Callahan, David J.; Mazzawy, Robert S.; Stryker, Howard Y.; and Kelly, James B., to United Technologies Corporation. Engine surge prevention system. 4,550,564, Cl. 60-39.093.

Cambridge Consultants Limited: *See—*
Lewis, John D.; Keeling, Michael R.; Bowen, David R.; and Paton, Anthony D., 4,551,731, Cl. 346-75.000.

Cambridge, Edward L.: *See—*
Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and Rogers, Charles J., 4,551,218, Cl. 204-240.000.

Campbell, James R., to Mahoney, Thomas P.; Ruston, Donald A.; and Barnes, Robert S., a part interest to each. Method and apparatus for fabricating honeycomb seal. 4,551,604, Cl. 219-78.120.

Campbell, Marshall S.: *See—*
McMullen, Carl R.; and Campbell, Marshall S., 4,550,768, Cl. 164-456.000.

Campbell, Roy: *See—*
Price, Anthony G.; and Campbell, Roy, 4,550,810, Cl. 188-71.400.

Campen, Kenneth W., to Tecumseh Products Company. Flywheel mounting of permanent magnet group. 4,550,697, Cl. 123-149.00D.

Canadian Patents & Development Limited: *See—*
Broughton, Roger; and da Costa, Bernardo, 4,550,736, Cl. 128-731.000.

Canalizo, Carlos R. Well pump. 4,551,075, Cl. 417-383.000.

Canay, Muzaffer, to BBC Brown, Boveri & Company, Limited. Apparatus for reducing subsynchronous frequencies in a power supply. 4,551,780, Cl. 361-113.000.

Canella, Marco; Marghinotti, Daniele; Bernardi, Adriano; and Sodini, Giancarlo, to E.N.I. Ente Nazionale Incorporated. Fermented sunflower meal and the method for its preparation. 4,551,335, Cl. 426-44.000.

Canning, John L.; and Kay, John F., to Owens-Corning Fiberglas Corporation. Method of molding multi-ply polymeric composites. 4,551,390, Cl. 428-431.000.

Cano, Manuel I., to Ensamblaje y Manipulacion Industrial, S.A. (EMINSA). Apparatus for applying reinforcement bottoms to plastic bottles. 4,551,193, Cl. 156-423.000.

Canon Kabushiki Kaisha: *See—*
Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, 4,551,404, Cl. 430-59.000.
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,551,003, Cl. 355-3.00R.
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, 4,551,000, Cl. 355-3.00R.
Masunaga, Makoto; and Kinoshita, Takao, 4,551,758, Cl. 358-213.000.
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,551,405, Cl. 430-64.000.
Ohtsuka, Masanori; and Tokuda, Ryuji, 4,550,992, Cl. 354-173.110.
Sado, Ichiro; Kishimoto, Juji; Sasaki, Masayuki; and Cho, Mitsuo, 4,551,818, Cl. 364-900.000.
Suzuki, Eiichi, 4,551,736, Cl. 346-140.00R.
Suzuki, Tetsuo; and Tazaki, Shigemitsu, 4,551,735, Cl. 346-140.00R.
Toyama, Masamichi, 4,550,995, Cl. 354-403.000.

Cantrel, James F.: *See—*
Hughes, Robert W.; and Cantrel, James F., 4,551,050, Cl. 411-436.000.

Capper, Peter; and Gosney, John J., to U.S. Philips Corporation. Method of growing crystalline cadmium mercury telluride and crystalline cadmium mercury telluride grown by the method. 4,551,196, Cl. 156-616.00R.

Caramaschi, Vittorio; and Castelli, Pier Luigi, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Helicopter rotor. 4,551,067, Cl. 416-140.000.

Carey, Patrick H., Jr., to Minnesota Mining and Manufacturing Company. Nonwoven thermal insulating stretch fabric and method for producing same. 4,551,378, Cl. 428-198.000.

Carl Freudenberg, Firma: *See—*
Tamura, Tadashi; Nakao, Etsuro; and Yamazaki, Hiroaki, 4,551,402, Cl. 429-254.000.

Carl-Zeiss-Stiftung: *See—*
Meier, Hans-Jurgen, 4,550,979, Cl. 350-321.000.

Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., to Cypher Systems. Oil field lease management and security system and method therefor. 4,551,719, Cl. 340-825.360.

Carlin, Samuel R.: *See—*
Karliner, Rudolf R.; and Carlin, Samuel R., 4,551,036, Cl. 401-131.000.

Carll, Richard T.; Fastaia, Anthony J.; and von Nieda, Kurt, to United Technologies Corporation. Telephone based control system. 4,551,832, Cl. 370-58.000.

Carlson, Richard P.: *See—*
Wei, Peter H. L.; and Carlson, Richard P., 4,551,538, Cl. 548-367.000.

Carmichael, Jerry H.; and Wellington, Charles H., to Dresser Industries, Inc. Method and apparatus for acoustic cement bond logging. 4,551,823, Cl. 367-35.000.

Carnes, Ronald C.; and Naumann, Ted F., Jr., to General Electric Company. Oscillating scanner and drive mechanism therefor. 4,550,608, Cl. 73-633.000.

Caro, Edward R.: *See—*
Goldstein, Richard M.; Caro, Edward R.; and Wu, Chialin, 4,551,724, Cl. 343-5.0CM.

Carpenter, Francis W., III: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,550,657, Cl. 100-43.000.

Carricato, Louis: *See—*
El-Hag, Nabil A.; Cochran, Stuart A.; Schwabe, Kenneth R.; Carricato, Louis; and Shanbhag, Sudhakar P., 4,551,340, Cl. 426-437.000.

Carson, Don B., to UOP Inc. Utility conservation in hydrogen recycle conversion processes. 4,551,235, Cl. 208-100.000.

Carson, Donald W.; Penrose, Lee; Leich, Joseph E.; and Caugherty, William C., to Carson Medical Incorporated. Slosh dampening waste receptacle for chairs for care of incontinent persons. 4,550,455, Cl. 4-480.000.

Carson, John C.; and Clark, Stewart A., to Irvine Sensors Corporation. Detector array module-structure and fabrication. 4,551,629, Cl. 250-578.000.

Carson Medical Incorporated: *See—*
Carson, Donald W.; Penrose, Lee; Leich, Joseph E.; and Caugherty, William C., 4,550,455, Cl. 4-480.000.

Carter-Wallace Inc.: *See—*
Sisbarro, Frederick P., 4,551,093, Cl. 432-59.000.

Cash, Gordon G., to Olin Corporation. Paper sizing composition and method. 4,551,200, Cl. 162-135.000.

Cash, Gordon G., to Olin Corporation. Paper sizing composition and method. 4,551,201, Cl. 162-158.000.

Caslin, Richard L.: *See—*
Gaither, John L., 4,550,553, Cl. 56-202.000.

Cassella Aktiengesellschaft: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,551,454, Cl. 514-252.000.

Castelli, Pier Luigi: *See—*
Caramaschi, Vittorio; and Castelli, Pier Luigi, 4,551,067, Cl. 416-140.000.

Castner, John F., Jr.: *See—*
Castner. Sr., J. Fred; and Castner, John F., Jr., 4,550,857, Cl. 221-70.000.

Castner. Sr., J. Fred; and Castner, John F., Jr. Cotton swab vender. 4,550,857, Cl. 221-70.000.

Caterpillar Tractor Co.: *See—*
Demeny, Gary L.; and Smead, Robert G., 4,550,678, Cl. 118-630.000.

Caugherty, William C.: *See—*
Carson, Donald W.; Penrose, Lee; Leich, Joseph E.; and Caugherty, William C., 4,550,455, Cl. 4-480.000.

Causley, Gary C.; and Rosback, Martin D., to Tektronix, Inc. Ink cartridge with ink level sensor. 4,551,734, Cl. 346-140.00R.

Cavazza, Claudio; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.P.A. Esters of alkoxy-acylderivatives of carnitine and pharmaceutical compositions containing same. 4,551,477, Cl. 514-547.000.

CdF Chimie Azote et Fertilisants, S.A.: *See—*
Sanchez, Pierre; and Laudat, Pierre, 4,551,319, Cl. 423-316.000.

Central Electricity Generating Board: *See—*
Cox, Anthony F.; Glanville, Roger; Lloyd, Owen; and Robbins, Keith V., 4,550,591, Cl. 73-28.000.

Central Glass Company Limited: *See—*
Hayakawa, Masanori; Yamada, Noriaki; Kawamoto, Hiromi; and Nishimura, Satoshi, 4,551,260, Cl. 252-62.590.

Cerberus AG: *See—*
Troup, Alan P.; Guttinger, Hannes; and Pfister, Gustav, 4,551,710, Cl. 340-505.000.

CertainTeed Corporation: *See—*
Scott, Peter T., 4,550,550, Cl. 53-529.000.
Sullivan, Dale W.; Janssen, Kermit W.; and Mitchell, Andrew, 4,550,778, Cl. 166-234.000.

Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., to Ethicon, Inc. Non-metallic, bio-compatible hemostatic clips with interlocking latch means. 4,550,729, Cl. 128-325.000.

Ceserani, Roberto: *See—*
Faustini, Franco; Passarotti, Carlo; Ceserani, Roberto; and Gandolfi, Carmelo, 4,551,476, Cl. 514-461.000.

Chambers, Charles A.: *See—*
Garrett, Ernest R.; and Chambers, Charles A., 4,550,851, Cl. 220-277.000.

Champlin, George B., to Seal Company of New England, The. Shaped mechanical compression packing. 4,550,639, Cl. 87-7.000.

Chan, Lo K.; Tang, Yui K.; and Chang, Jui, to ASM Assembly Automation Ltd. Four-motion wire bonder. 4,550,871, Cl. 228-4.500.

Chandross, Edwin A.; Reichmanis, Elsa; and Wilkins, Cletus W., Jr., to AT&T Bell Laboratories. Process for preparing semiconductors using photosensitive bodies. 4,551,416, Cl. 430-311.000.

Chang, Jui: *See—*
Chan, Lo K.; Tang, Yui K.; and Chang, Jui, 4,550,871, Cl. 228-4.500.

Chang, Shung-Ho: *See—*
Freytag, William J.; and Chang, Shung-Ho, 4,551,426, Cl. 435-7.000.

Chapman, Paul: *See—*
Aston, Geoffrey W.; Smith, Susan; Chapman, Paul; and Barker, Howard A., 4,551,384, Cl. 428-312.600.

Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., to International Business Machines Corporation. Heterojunction semiconductor. 4,550,489, Cl. 29-571.000.

Chappell, Terry I.: *See—*
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,550,489, Cl. 29-571.000.

Charpentier, Albert J.; Redfield, James W.; and DiOrio, David W., to Commodore Business Machines, Inc. Digital sine-cosine generator. 4,551,682, Cl. 328-22.000.

Chemical Research & Licensing Company: *See—*
Smith, Lawrence A., Jr., 4,551,567, Cl. 568-907.000.

Chemische Werke Huels, AG: *See—*
Otte, Werner; Nehring, Rudolf; and zur Hausen, Manfred, 4,551,564, Cl. 568-834.000.

Chemische Werke Huels Aktiengesellschaft: *See—*
Draexler, Adolf, 4,551,392, Cl. 428-495.000.

Chen, Jiang-Tsun: *See—*
Asmussen, Frithjof; Sotobayashi, Hideto; Chen, Jiang-Tsun; and Schnabel, Wolfram, 4,551,414, Cl. 430-270.000.

Chen, Ying-Cheng. Infusion bag. 4,551,336, Cl. 426-83.000.

Chevron Research Company: *See—*
Baugher, Stuart W., 4,550,690, Cl. 122-510.000.
Ferm, Richard L., 4,551,226, Cl. 208-48.0AA.
Marcantonio, Paul J., 4,551,315, Cl. 423-67.000.
Miller, Stephen J., 4,551,438, Cl. 502-62.000.
Pecoraro, Theresa A.; Krug, Russell R.; and Deady, Joanne, 4,551,229, Cl. 208-76.000.

Chewey, Paul M.: *See—*
Douglass, Randle; Jacquin, H. George; Chewey, Paul M.; Galvan, Paul A.; and Naragon, Richard S., 4,550,888, Cl. 244-3.220.

Chiba, Norio: *See—*
Nagatani, Toshio; Chiba, Norio; Hatanaka, Takao; and Saito, Toshio, 4,551,367, Cl. 428-35.000.

Chicopee: *See—*
Elves, John; and Ley, Stephen J., 4,551,377, Cl. 428-137.000.

Chida, Tsuneaki: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Chinon Kabushiki Kaisha: *See—*
Maruyama, Takashi, 4,550,994, Cl. 354-402.000.

Chisso Corporation: *See—*
Harada, Masato; Miya, Shinya; Yamada, Sadahiko; and Iijima, Makoto, 4,551,439, Cl. 502-107.000.

Chloride, Inc.: *See—*
Wilson, Frank, 4,551,401, Cl. 429-122.000.

Cho, Mitsuo: *See—*
Sado, Ichiro; Kishimoto, Juji; Sasaki, Masayuki; and Cho, Mitsuo, 4,551,818, Cl. 364-900.000.

Choi, Charles: *See—*
Moutrie, Michael F.; Sokola, Raymond L.; and Choi, Charles, 4,551,696, Cl. 333-204.000.

Chrisley, Barney D. Apparatus for collecting litter and objects from a ground surface. 4,550,465, Cl. 15-84.000.

Chrysler Corporation: *See—*
Lansinger, Jere R.; Dorr, George D.; and Farago, Paul L., 4,550,675, Cl. 116-28.100.

Chung, Chi H., to Minnesota Mining and Manufacturing Company. Quadrilayer optical draw medium. 4,551,828, Cl. 369-275.000.

Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., to Brush Wellman Inc. Copper alloy. 4,551,187, Cl. 148-411.000.

Ciba Geigy AG: *See—*
Blattner, Rudolf, 4,551,283, Cl. 260-508.000.

Ciba-Geigy Corporation: *See—*
Eckert, Theodor, 4,551,475, Cl. 514-408.000.
Meyer, Willy; Gass, Karl; Topfl, Werner; Schurter, Rolf; and Pissiotas, Georg, 4,551,531, Cl. 544-320.000.
Traxler, Peter, 4,551,450, Cl. 514-183.000.

Clapp, Thomas R. Mixing apparatus for cementitious materials. 4,551,024, Cl. 366-40.000.

Clark, Richard L.: *See—*
Farrow, Robert I.; and Clark, Richard L., 4,551,190, Cl. 156-159.000.

Clark, Steven C.: *See—*
Nussdorfer, William R.; Brancheau, Harry A.; and Clark, Steven C., 4,550,770, Cl. 165-29.000.

Clark, Stewart A.: *See—*
Carson, John C.; and Clark, Stewart A., 4,551,629, Cl. 250-578.000.

Clark, Thomas R.; and Griffith, Carl D., to Sperry Corporation. Approach to hover control system for helicopters. 4,551,804, Cl. 364-434.000.

Clayborn, Harold K.: *See—*
Bouwman, Dale W.; and Clayborn, Harold K., 4,551,306, Cl. 422-56.000.

Clifford, G. Frank. Apparatus for the dyeing of shaped articles. 4,550,579, Cl. 68-5.00C.

Clouser, Michael T.; and Coulter, Robert S., to Emhart Industries, Inc. Means controlling a flue damper. 4,550,874, Cl. 236-1.00G.

Cobb, Raymond L., to Phillips Petroleum Company. Alkylation of aromatic compounds. 4,551,573, Cl. 585-459.000.

Coble, Stephen J.: *See—*
Zegers de Beyl, Rene H.; and Coble, Stephen J., 4,551,133, Cl. 604-66.000.

Coca-Cola Company, The: *See—*
Credle, William S., Jr., 4,550,624, Cl. 74-110.000.

Cochran, Stuart A.: *See—*
El-Hag, Nabil A.; Cochran, Stuart A.; Schwabe, Kenneth R.; Carricato, Louis; and Shanbhag, Sudhakar P., 4,551,340, Cl. 426-437.000.

Codman & Shurtleff, Inc.: *See—*
Santangelo, John A.; and DiGiantommaso, Michael, 4,550,715, Cl. 128-4.000.

Coffinberry, George A., to United States of America, National Aeronautics and Space Administration. Method for improving the fuel efficiency of a gas turbine engine. 4,550,561, Cl. 60-39.020.

Coffing, Samuel F., to International Resources Management, Inc. Flotation apparatus utilizing a novel floc barrier and current diverting means. 4,551,246, Cl. 210-221.200.

Cohen, Abraham B.; and Webers, Vincent J., to Du Pont de Nemours, E. I., and Company. Photosensitive coatings containing crosslinked beads. 4,551,415, Cl. 430-281.000.

Cohen, Lenard; and Gordon, Michael E., to Plastic Systems, Inc. Heel grounding strap. 4,551,783, Cl. 361-223.000.

Cohn, Martin; Jacoby, George V.; and Vinding, Jorgen P., to Sperry Corporation. Encoding and decoding apparatus and method utilizing hierarchical code substitution. 4,551,773, Cl. 360-40.000.

Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, to Metropolitan Wire Corporation. Surgical case cart. 4,550,956, Cl. 312-250.000.

Cohrs, Karl S.: *See—*
Pan, Ali; and Cohrs, Karl S., 4,551,087, Cl. 425-466.000.

Coleman, D. Jackson; Orcutt, Donald E.; and Berkowitz, Herbert. Technique and apparatus for intraocular and microsurgery including lighter-irrigator hypodermic tube. 4,551,129, Cl. 604-21.000.

Coll, Juan V.; Bacardit, Juan S.; and Bofill, Joaquim F., to Bendiberica, S.A. Brake master cylinder. 4,550,566, Cl. 60-554.000.

Columbia Gas System Service Corporation: *See—*
Malcosky, Norman D.; and Koziar, Greg, 4,551,154, Cl. 48-193.000.

Columbia University, The Trustees of: *See—*
Manning, Maurice; and Sawyer, Wilbur H., 4,551,445, Cl. 514-9.000.

Combustion Engineering, Inc.: *See—*
Singh, Gurdip, 4,551,796, Cl. 364-148.000.

Commissariat a l'Energie Atomique: *See—*
Feutrel, Claude, 4,551,300, Cl. 376-364.000.
Zuber, Thierry; and Traiteur, Rene , 4,550,688, Cl. 122-360.000.

Commodore Business Machines, Inc.: *See—*
Charpentier, Albert J.; Redfield, James W.; and DiOrio, David W., 4,551,682, Cl. 328-22.000.

Compagnie des Montres Longines Francillon S.A.: *See—*
Schaffer, Rudolf, 4,551,725, Cl. 343-6.5SS.

Compen, Johannes M. A. A.; and Maan, Cornelis, to U.S. Philips Corporation. Display screen having aluminum phosphate barrier layer and method of manufacture. 4,551,652, Cl. 313-466.000.

Composite Container Corporation: *See—*
Bonis, Laszlo J., 4,551,365, Cl. 428-35.000.

Computer Gesellschaft Konstanz mbH: *See—*
Kochert, Wilfried, 4,551,851, Cl. 382-38.000.

Comtech Telecommunications Corp.: *See—*
Scala, John; and Reuter, William, 4,551,689, Cl. 331-2.000.

Conard, Bruce R.: *See—*
Bell, James A. E.; Conard, Bruce R.; and Hope, Douglas A., 4,551,184, Cl. 148-127.000.

Conlon, Thomas J. Label construction. 4,551,373, Cl. 428-43.000.

Conoco Inc.: *See—*
Coon, Julian B.; and Petry, Eston F., 4,551,041, Cl. 406-85.000.

Consolidated Foods Corporation: *See—*
Thompson, Kenneth J.; Rosenquist, Joel C.; and Foster, Wayne G., 4,550,670, Cl. 112-121.110.

Consolidated Technologies Corporation: *See—*
Hibbard, George A.; and Morrison, Ward D., 4,550,785, Cl. 173-134.000.

Construction Technology, Inc.: *See—*
Levine, Richard W., 4,551,810, Cl. 364-475.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Hoheisel, Peter; and Bartholmei, Peter, 4,550,833, Cl. 206-527.000.

Control Fluidics, Inc.: *See—*
Tufts, Wesley M., 4,550,452, Cl. 4-319.000.

Cook Incorporated: *See—*
Osborne, Thomas A., 4,551,137, Cl. 604-171.000.

Cook, John R.; and James, William A., to Johnson & Johnson Baby Products Company. Nonwoven fibrous product and method of making same. 4,551,143, Cl. 604-371.000.

Cooke, Robert A.: *See—*
Dennis, Kenrick J.; and Cooke, Robert A., 4,550,461, Cl. 12-1.00R.

Cookson, John A.; Schatzka, Richard L.; Echard, Richard A.; and Scheer, Gary W., to Tetragenics, Inc. Method and apparatus for transmitting status information between remote locations. 4,551,718, Cl. 340-825.160.

Coon, Dennis R.: *See—*
Heys, George; and Coon, Dennis R., 4,551,675, Cl. 324-158.00F.

Coon, Julian B.; and Petry, Eston F., to Conoco Inc. Vibration method for unplugging a slurry pipeline. 4,551,041, Cl. 406-85.000.

Cooper, David G.; and Sach, George S., to Smith Kline & French Laboratories Limited. Pyridyl-2-oxy-propyl-1H-1,2,4-triazole-3,5-diamines. 4,551,466, Cl. 514-318.000.

Cooper, James M.: *See—*
Ballmann, Fred A.; and Cooper, James M., 4,550,856, Cl. 221-63.000.

Cooper, Stephen M.; and Sooudi, Saeed K., to Siecor Corporation. Fiber optic cable with foamed plastic dummy members. 4,550,976, Cl. 350-96.230.

Cope, Robert: *See—*
Permut, Ronald; Cope, Robert; Apple, James; Epina, August P.; and Munro, Frederick G., 4,550,884, Cl. 242-189.000.

Copeland Corporation: *See—*
Gilmore, Mark R., 4,551,069, Cl. 417-13.000.

Copyer Kabushiki Kaisha: *See—*
Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, 4,551,404, Cl. 430-59.000.

Cordis Corporation: *See—*
Batina, William P.; and White, Robert M., 4,550,731, Cl. 128-419.0PT.
Batty, John R., Jr.; and Slocum, Chester D., 4,550,732, Cl. 128-419.0PG.

Cornelissen, Anton E.: *See—*
Blauwhoff, Petrus M. M.; and Cornelissen, Anton E., 4,551,233, Cl. 208-106.000.

Cornell Research Foundation, Inc.: *See—*
Drost, Cornelis J., 4,550,606, Cl. 73-626.000.

Cornet, Jean; Lange , Francois; Le Carvennec, Francois; Lehureau, Jean-Claude; and Rascle, Roger, to Thomson CSF. Protected optical disc comprising a flexible closure element. 4,551,733, Cl. 346-137.000.

Cornils, Boy: *See—*
Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, 4,551,328, Cl. 423-607.000.

Corning Glass Works: *See—*
Gardner, Robert W.; Guile, Donald L.; and Lynn, Merrill, 4,551,295, Cl. 264-177.00R.

Corrigan, John J., to Anton/Bauer, Inc. Battery pack connection. 4,550,968, Cl. 339-91.00R.

Cosden Technology, Inc.: *See—*
Morris, Jeffrey D.; and Fuller, Robert A., 4,551,309, Cl. 422-135.000.
Morris, Jeffrey D.; and Fuller, Robert A., 4,551,510, Cl. 526-68.000.

Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
Caramaschi, Vittorio; and Castelli, Pier Luigi, 4,551,067, Cl. 416-140.000.

Coulin, Jean-Paul, to Societe d'Etudes de Machines Thermiques (SEMT). Piston pin and piston, notably for an internal combustion engine, equipped with said pin. 4,550,647, Cl. 92-157.000.

Coulter, Robert S.: *See—*
Clouser, Michael T.; and Coulter, Robert S., 4,550,874, Cl. 236-1.00G.

Cox, Abraham J.: *See—*
McConnell, Richard L.; Cox, Abraham J.; and Darnell, William R., 4,551,521, Cl. 528-302.000.

Cox, Anthony F.; Glanville, Roger; Lloyd, Owen; and Robbins, Keith V., to Central Electricity Generating Board. Apparatus for monitoring particulate matter. 4,550,591, Cl. 73-28.000.

Cox, John N.: *See—*
Spangler, Glenn E.; and Cox, John N., 4,551,624, Cl. 250-287.000.

Cox, Richard V.; and Jayant, Nuggehally S., to AT&T Bell Laboratories. Time-frequency scrambler. 4,551,580, Cl. 179-1.50S.

CPG Products Corp.: *See—*
Selvage, Craig C.; and Ventura, Frank D., 4,551,110, Cl. 446-118.000.

Crabtree, Daniel L., to United States of America, Navy. Sample video amplifier. 4,551,759, Cl. 358-213.000.

Craiglow, Robert L., to Rockwell International Corporation. Delay compensated automatic gain control. 4,551,688, Cl. 330-280.000.

Cranfield, Brain A.; Fothergill, John C.; and Wolfe, Susan V., to International Standard Electric Corporation. Polymeric dielectrics. 4,551,499, Cl. 524-487.000.

Cranfill, Leonard J.: *See—*
Smith, Dwight D.; and Cranfill, Leonard J., 4,550,850, Cl. 220-253.000.

Creative Industries, Inc.: *See—*
Lake, Connie, 4,551,084, Cl. 425-185.000.

Creative Products Resource Associates, Ltd.: *See—*
Smith, James A.; and Murphy, Betty J., 4,551,481, Cl. 521-52.000.

Credle, William S., Jr., to Coca-Cola Company, The. Reversing mechanism module for a double acting reciprocating pump and method for repairing the pump. 4,550,624, Cl. 74-110.000.

Cribb, W. Raymond: *See—*
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,551,187, Cl. 148-411.000.

Cristante, Guido, to I.P.E. Nuova Bialetti S.p.A. Household appliance for making ice cream. 4,551,026, Cl. 366-149.000.

Crofts, John G., Sr., to Cummins Engine Company, Inc. Cooling system. 4,550,692, Cl. 123-41.100.

Crosby, John, to Imperial Chemical Industries PLC. Process for the preparation of cyclopropane carboxylic acid esters. 4,551,281, Cl. 260-465.00D.

Cross Company, The: *See—*
Mottershead, Frank R., 4,551,032, Cl. 384-517.000.

Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., to Pfizer Inc. Heterocyclic thromboxane synthetase inhibitors and pharmaceutical compositions containing them. 4,551,468, Cl. 514-339.000.

Crossley, Peter W.; and Smith, Robert D., to Thorn EMI Domestic Appliances Limited. Heating apparatus. 4,551,617, Cl. 219-464.000.

Crow, Morgan L., to Dresser Industries, Inc. Hydraulic jarring tool. 4,550,789, Cl. 175-297.000.

Crown Zellerbach Corporation: *See—*
Weldon, Scott B., 4,551,199, Cl. 162-109.000.

Cummings, Robert, to U.S. Clinical Products, Inc. Flexible plastic sterile closure system for containers. 4,550,842, Cl. 215-232.000.

Cummins Engine Company, Inc.: *See—*
Crofts, John G., Sr., 4,550,692, Cl. 123-41.100.

Cunningham, David C. Radio direction finding system. 4,551,727, Cl. 343-418.000.

Custer, Peter A.; and Bird, George R., to Custer, Peter A. Fluorescent soundtrack readout system. 4,551,827, Cl. 369-101.000.

Cybelec S.A.: *See—*
Aubert, Jean-Daniel; and Fornerod, Andre , 4,550,586, Cl. 72-389.000.

Cybernetic Data Products: *See—*
Levin, Michael M., 4,551,720, Cl. 340-825.520.

Cyborex Laboratories, Inc.: *See—*
Gurr, George P.; and Matheson, Frederick A., 4,551,812, Cl. 364-492.000.

Cypher Systems: *See—*
Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., 4,551,719, Cl. 340-825.360.

Czarnocki, Wlodzimierz S., to Motorola, Inc. Electronic pressure transducer. 4,550,611, Cl. 73-708.000.

Czeschka, Franz, to ERNI Elektroapparate GmbH. Solderless electrical connector assembly. 4,550,962, Cl. 339-17.0LC.

D.A.B. Industries, Inc.: *See—*
Lloyd, Kenneth, 4,551,395, Cl. 428-677.000.

da Costa, Bernardo: *See—*
Broughton, Roger; and da Costa, Bernardo, 4,550,736, Cl. 128-731.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Kawajiri, Masayuki, 4,551,360, Cl. 427-160.000.

Daicel Chemical Industries, Ltd.: *See—*
Ohtake, Etsuo; and Yamazaki, Kazuhiro, 4,551,389, Cl. 428-402.000.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Grantz, Helmut; Muenzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,550,774, Cl. 165-104.210.
Wiegard, Klaus; Kinast, Karlheinz; Kleinekathofer, Wolfgang; and Tank, Eggert, 4,551,396, Cl. 428-678.000.

Dainippon Ink and Chemicals, Inc.: *See—*
Sasaki, Makoto; Sasaki, Haruyoshi; and Sato, Hisato, 4,551,280, Cl. 260-465.00D.

Daley, James A. Scoot ball game apparatus. 4,550,911, Cl. 273-94.000.

Dana Corporation: *See—*
Yarnell, James A., 4,550,628, Cl. 74-477.000.

Daniel, Robert P.; and Yglesia, Larry. Multi-chip carrier array. 4,551,788, Cl. 361-403.000.

Daniels, William R.; and Young, John S., to GTE Automatic Electric Incorporated. Arrangement for facilitating external loop analysis testing for a digital switching system. 4,551,585, Cl. 179-175.30R.

Danos, Olivier; Katinka, Michael; and Yaniv, Moshe, to Institut Pasteur. DNA Fragments coding for polypeptides containing at least one antigenic determinant of the papillomavirus, particularly of the HPV 1a type and corresponding polypeptides. 4,551,270, Cl. 260-112.50R.

Darnell, William R.: *See—*
McConnell, Richard L.; Cox, Abraham J.; and Darnell, William R., 4,551,521, Cl. 528-302.000.

Darrow, Russell E.; Ingraham, Glenn J.; Larnerd, John D.; and Nesky, Robert W., to International Business Machines Corporation. Apparatus for connecting contact pins to a substrate. 4,550,493, Cl. 29-739.000.

Da Silva, Artur F., to U.S. Philips Corporation. Coffee maker. 4,550,652, Cl. 99-279.000.

Davidescu, Reghina; de Ceglie, Gaetano J.; Jacquett, Harold W.; and Paluzzi, Joseph A., to General Foods Corporation. Process for preparing a liquid aroma and aromatizing a dry coffee substrate with same. 4,551,345, Cl. 426-594.000.

Davidson, Thomas A.; and Murray, Robert J., to Pennwalt Corporation. Process for preparing novel 7-thioester derivatives of 3H pyrrolo [1,2-a]-imidazole and 8-thioester derivatives of imidazo [1,2-a] pyridine. 4,551,535, Cl. 546-121.000.

Davies, Lawrence W., to Omniglass Ltd. Corner member for a spacer strip for a sealed window unit. 4,551,364, Cl. 428-34.000.

Davis, Darrell E.: *See—*
Victor, Alan M.; and Davis, Darrell E., 4,551,856, Cl. 455-183.000.

Davis, James A.: *See—*
Kang, Jung W.; and Davis, James A., 4,551,391, Cl. 428-462.000.

Davis, Larry: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,551,474, Cl. 514-309.000.

Davydov, Anatoly B.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Dawson, Jeffery C.: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.

Day, Robert A., to General Electric Company. Temperature compensated piezoelectric transducer and lens assembly and method of making the assembly. 4,551,647, Cl. 310-335.000.

Dayco Corporation: *See—*
Mathieu, Julien C., 4,550,484, Cl. 29-434.000.

Deady, Joanne: *See—*
Pecoraro, Theresa A.; Krug, Russell R.; and Deady, Joanne, 4,551,229, Cl. 208-76.000.

Dearborn Chemical Co.: *See—*
Salihar, Mark W., 4,551,261, Cl. 252-88.000.

DeBoer, Herman A., to Genentech, Inc. Microbial hybrid promoters. 4,551,433, Cl. 435-253.000.

DeCaro, Charles J., to Textron Inc. Adjustment means for a driver bit. 4,550,476, Cl. 29-26.00A.

de Ceglie, Gaetano J.: *See—*
Davidescu, Reghina; de Ceglie, Gaetano J.; Jacquett, Harold W.; and Paluzzi, Joseph A., 4,551,345, Cl. 426-594.000.
Jasovsky, George A.; Jacquett, Harold W.; and de Ceglie, Gaetano J., 4,551,344, Cl. 426-594.000.

Dechape, Michel L. Pneumatic gauging circuit. 4,550,592, Cl. 73-37.500.

Deere & Company: *See—*
Boardman, Peter W., 4,550,881, Cl. 242-56.00R.

Deering, Roland F.; and Duir, John H., to Union Oil Company of California. Apparatus with moving bed pressure letdown stage for recovering retorted oil shale. 4,551,206, Cl. 202-99.000.

DeGaynor, G. Scott. Ice bowl freezing apparatus. 4,550,575, Cl. 62-308.000.

Degen, Max F., to Indalex, Division of Indal Limited. Fixed dummy blocks. 4,550,584, Cl. 72-273.000.

Degussa Aktiengesellschaft: *See—*
Drauz, Karlheinz; and Kleemann, Axel, 4,551,562, Cl. 568-771.000.
Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,551,548, Cl. 562-402.000.
Strack, Hans; Roebke, Wolfgang; Kneitel, Dieter; and Parr, Ehrfried, 4,551,322, Cl. 423-329.000.
Wagner, Rudolph; and Schiwiora, Harry, 4,551,302, Cl. 420-464.000.

de Jong, Joannes N. M.; and Earle, Richard L., to Sperry Corporation. Rotary variable differential transformer. 4,551,699, Cl. 336-135.000.

De Jongh, Rudolph O.: *See—*
Van Dijk, Cornelis; and De Jongh, Rudolph O., 4,551,441, Cl. 502-159.000.

Dellinger, Eugene L. Orthodontic apparatus and method for treating malocclusion. 4,551,096, Cl. 433-24.000.

De Luca, Giovanna; Di Stazio, Giovanni; Politi, Vincenzo; and Materazzi, Mario, to Polifarma S.p.A. Use of 3-indolepyruvic acid for increasing serotonin. 4,551,471, Cl. 514-419.000.

Deman, Pierre; and Potage, Jean, to Thomson CSF. Apparatus for processing speech in radioelectric transmitter/receiver equipment suitable for transmitting and receiving speech. 4,551,853, Cl. 455-72.000.

DeMarco, Ronald A.: *See—*
Kovacena, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., 4,551,349, Cl. 427-255.600.

Demenais, Claude, to Societe Industrielle de Transports Automobiles "SITA" . Apparatus for charging solids under compression into a receptacle. 4,551,055, Cl. 414-293.000.

Demeny, Gary L.; and Smead, Robert G., to Caterpillar Tractor Co. Apparatus for removing an electrostatic charge from a charge collector. 4,550,678, Cl. 118-630.000.

Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, to Waldner Laboreinrichtungen GmbH & Co. Hood for the extraction of gases, vapors and suspended matter. 4,550,650, Cl. 98-115.300.

Dennis, Kenrick J.; and Cooke, Robert A. Biplane posting device. 4,550,461, Cl. 12-1.00R.

Dental Preventech, Inc.: *See—*
Krag, Mark D., 4,550,741, Cl. 132-89.000.

Dentsply Research & Development Corp.: *See—*
Blair, John J., 4,551,098, Cl. 433-171.000.
Tateosian, Louis H.; and Wilson, W. Donald, 4,551,486, Cl. 523-212.000.

Denz, Helmut: *See—*
Barho, Hans; and Denz, Helmut, 4,550,704, Cl. 123-481.000.

Depey, Maurice, to Thomson CSF. Method of making substrate injection logic operator structure. 4,550,491, Cl. 29-577.00C.

De Raco, Maurice; and Rey, Pierre, to Eaton S.A.M. Mechanism for the sudden tripping of an electrical contact under the effect of a slow variation in pressure. 4,551,593, Cl. 200-81.00R.

Derendinger, Max, to RCA Corporation. Apparatus for applying a layer of powder to a surface. 4,550,680, Cl. 118-308.000.

DeSantis, Raymond P. Sagger loader and conveyor apparatus and method. 4,550,551, Cl. 53-534.000.

Despic, Aleksandar. Bipolar battery. 4,551,399, Cl. 429-27.000.

Detexomat Machinery Ltd.: *See—*
Hodges, Michael J.; and Scanes, Malcolm K., 4,550,868, Cl. 223-43.000.

Deutscher, Hans-Christian; Kohler, Alfred; Prohaska, Hans; and Schubert, Karl-Friedrich, to ITT Industries, Inc. Windshield wiper assembly. 4,550,469, Cl. 15-250.340.

Deutschmann, Herbert; and Wolters, Gerd-Michael, to MTU-Motoren- und Turbinen-Union Friedrichshafen GmbH. Diesel internal combustion engine. 4,550,568, Cl. 60-612.000.

DeViaris, Guy, to Otis Elevator Company. Transportation system having a cable drawn vehicle. 4,550,663, Cl. 104-119.000.

Devro, Inc.: *See—*
Temple, Stephen; Jones, Nigel J.; and Syrop, Alan N., 4,550,472, Cl. 17-1.00R.

Dewert, Heribert: *See—*
Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, 4,551,304, Cl. 422-4.000.

DeWin, Werner: *See—*
Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, 4,551,328, Cl. 423-607.000.

Dick, William K.: *See—*
Winter, David F.; and Dick, William K., 4,551,633, Cl. 307-147.000.

Dickakian, Ghazi B., to Du Pont de Nemours, E. I., and Company. High anisotropic pitch. 4,551,225, Cl. 208-43.000.

Dickey-john Corporation: *See—*
Sokol, David G., 4,551,801, Cl. 364-424.000.

Dickinson, Roger P.: *See—*
Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., 4,551,468, Cl. 514-339.000.

Diehl, Larry F., Jr.; and Gibbon, Robert M., to Jamak, Inc. Method of forming spark plug boots. 4,551,293, Cl. 264-150.000.

Dietrich, Glory A. Shopping cart safety belt. 4,550,800, Cl. 182-3.000.

DiGiantommaso, Michael: *See—*
Santangelo, John A.; and DiGiantommaso, Michael, 4,550,715, Cl. 128-4.000.

Digital Hydraulics, Inc.: *See—*
Woodworth, Raymond D.; Stoutamore, James F.; and Vanderhoek, Philip S., 4,550,747, Cl. 137-487.500.

Dilling, Peter, to Westvaco Corporation. Dyestuff composition: disperse or vat dye and lignin sulphonate. 4,551,151, Cl. 8-524.000.

Di Milia, Vincent; Maldonado, Juan R.; Speidell, James L.; and Warlaumont, John M., to International Business Machines Corporation. Electrostatic or vacuum pinchuck formed with microcircuit lithography. 4,551,192, Cl. 156-345.000.

DiNatale, Ernest L.; and Yax, Robert J., to Xerox Corporation. Corona generating device. 4,551,784, Cl. 361-225.000.

DiOrio, David W.: *See—*
Charpentier, Albert J.; Redfield, James W.; and DiOrio, David W., 4,551,682, Cl. 328-22.000.

Director General of Agency of Industrial Science and Technology: *See—*
Ishikawa, Masatoshi, 4,551,817, Cl. 364-811.000.

Dischert, Robert A.: *See—*
Meise, William H.; and Dischert, Robert A., 4,551,754, Cl. 358-180.000.

Disko, Harry: *See—*
Kulesza, Ralph J.; Rosenwinkel, Donald A.; and Disko, Harry, 4,550,876, Cl. 239-211.000.

Di Stazio, Giovanni: *See—*
De Luca, Giovanna; Di Stazio, Giovanni; Politi, Vincenzo; and Materazzi, Mario, 4,551,471, Cl. 514-419.000.

Dixon, Voris F. Physical-rehabilitation and exercising apparatus. 4,550,908, Cl. 272-130.000.

Djordjevic, Ilija, to Stanadyne, Inc. Spill control system for distributor pump. 4,550,702, Cl. 123-450.000.

Doak, Kenneth W. Blends of a rubber-modified vinyl chloride resin, an unmodified vinyl chloride resin, and a polymer of a vinyl aromatic monomer and an unsaturated dicarboxylic acid anhydride monomer. 4,551,500, Cl. 525-71.000.

Dobbins, Frederick A.: *See—*
Owensby, Joseph E.; Rupp, Jody W.; Dobbins, Frederick A.; and Waldrop, Thomas E., 4,550,548, Cl. 53-434.000.

Dockner, Toni; and Krug, Herbert, to BASF Aktiengesellschaft. Carrying out organic condensation reactions at elevated temperatures by feeding the starting materials into the bottom of a reactor charged with mineral oil followed by product distillation. 4,551,528, Cl. 544-242.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Jung, Eggert, 4,551,751, Cl. 358-75.000.

Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See—*
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,551,464, Cl. 514-312.000.

Dominiani, Frank J., Jr.; and Annarelli, Dennis C., to FMC Corporation. Treatment of concentrated phosphoric acid. 4,551,320, Cl. 423-321.00R.

Don Mowry Flexo Parts, Inc.: *See—*
Mowry, Donald E., 4,551,124, Cl. 493-128.000.

Donais, Norman; and Nitowski, Ronald, to Siemon Company, The. Hinged cover and label assembly for connector block. 4,550,964, Cl. 339-44.00M.

Donner, Klaus: *See—*
Bitsch, Harald; Donner, Klaus; Hasselmann, Heinz; and Horbach, Rainer, 4,550,664, Cl. 105-180.000.

Doppelfeld, Ille-Stephanie: *See—*
Hilboll, Gerd; Doppelfeld, Ille-Stephanie; and Prop, Gerrit, 4,551,455, Cl. 514-252.000.

Doria, Gianfederico; Passarotti, Carlo; Arcari, Giuliana; and Buttinoni, Ada, to Farmitalia Carlo Erba, S.p.A. Substituted thiazolo[3,2-a]pyrimidines and process for their preparation. 4,551,457, Cl. 514-258.000.

Dorr, George D.: *See—*
Lansinger, Jere R.; Dorr, George D.; and Farago, Paul L., 4,550,675, Cl. 116-28.100.

Dorr-Oliver Incorporated: *See—*
Lenac, Nevio, 4,551,248, Cl. 210-404.000.

Doty, Gerald A.; and Hunter, William E., Jr., to Gateway Industries, Inc. Safety belt buckle. 4,550,474, Cl. 24-633.000.

Doughty, Carolyn A., to AT&T Bell Laboratories. Method and apparatus for sending a data message to a selected station during a silent interval between ringing. 4,551,581, Cl. 179-2.00A.

Doughty, Robert L.: *See—*
Duga, Robert J.; Kulig, Constantine W.; Doughty, Robert L.; Douglas, Robert J.; and Andersen, Robert P., 4,551,163, Cl. 65-129.000.

Douglas, Ellwood S.: *See—*
Mosher, Oren A.; Mosher, Oren G.; and Douglas, Ellwood S., 4,550,792, Cl. 177-25.000.

Douglas, Robert J.: *See—*
Duga, Robert J.; Kulig, Constantine W.; Doughty, Robert L.; Douglas, Robert J.; and Andersen, Robert P., 4,551,163, Cl. 65-129.000.

Douglass, Randle; Jacquin, H. George; Chewey, Paul M.; Galvan, Paul A.; and Naragon, Richard S. Dual pressure solid propellant control system. 4,550,888, Cl. 244-3.220.

Douthitt Corporation: *See—*
Maher, Robert J.; and Tooson, Ronald, 4,551,016, Cl. 355-91.000.

Douty, George H.: *See—*
Asick, John C.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., 4,550,960, Cl. 339-14.00R.

Dow Chemical Company, The: *See—*
Johnston, Howard; and Troxell, Lillian H., 4,551,170, Cl. 71-94.000.

Dow, John, Jr.; Oetting, William A.; and Yessian, Richard J., to Lockheed Electronics Company, Inc. Microprocessor controlled fluid dispensing system. 4,550,859, Cl. 222-26.000.

Dowa Company, Ltd.: *See—*
Miyahara, Kingo, 4,551,089, Cl. 431-116.000.

Dowe Egberts Koninklijke Tabaksfabrier Koffiebranderijen Theehandel N.V.: *See—*
Noomen, Pieter J., 4,550,858, Cl. 222-1.000.

Doyle, Arthur; and Freeman, Frank M., to E. R. Squibb & Sons, Inc. Adhesive composition resistant to biological fluids. 4,551,490, Cl. 524-22.000.

Doyle, Gerald; Eriksen, Kenneth A.; and Pruett, Roy L., to Exxon Research and Engineering Co. Bimetallic carbonyl hydroformylation catalysts. 4,551,543, Cl. 556-14.000.

Draeger, Brigitte; and Ziegenhorn, Joachim, to Boehringer Mannheim GmbH. Process and reagent for the determination of blood glucose in haemolysed whole blood. 4,551,427, Cl. 435-14.000.

Draexler, Adolf, to Chemische Werke Huels Aktiengesellschaft. Composite materials and composite building elements based on EP(D)M. 4,551,392, Cl. 428-495.000.

Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., to Harris Corporation. Wavelength division multiplexed fiber-optic cable system with non-unique terminal types. 4,551,829, Cl. 370-3.000.

Drauz, Karlheinz; and Kleemann, Axel, to Degussa Aktiengesellschaft. Process for the production of dihydroxybenzenes. 4,551,562, Cl. 568-771.000.

Dreher, Carl T., to Recognition Equipment Incorporated. Intelligent key display. 4,551,717, Cl. 340-712.000.

Drelinger, Sanford. Flute headjoints having replaceable lip plates and a method of replicating same. 4,550,637, Cl. 84-384.000.

Dresser Industries, Inc.: *See—*
Bridge, Michael L., 4,550,599, Cl. 73-151.000.
Carmichael, Jerry H.; and Wellington, Charles H., 4,551,823, Cl. 367-35.000.
Crow, Morgan L., 4,550,789, Cl. 175-297.000.
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.
Miller, John E., 4,550,646, Cl. 92-128.000.

Drogosch, Edward J. Coping system. 4,550,535, Cl. 52-60.000.

Drost, Cornelis J., to Cornell Research Foundation, Inc. Ultrasonic transducer array with controlled excitation pattern. 4,550,606, Cl. 73-626.000.

Drouillard, James R., to General Motors Corporation. Window stabilizing mechanism. 4,550,529, Cl. 49-348.000.

Drutchas, Gilbert H.; and Borza, John S., to TRW Inc. Method and apparatus for sensing relative movement between members. 4,550,597, Cl. 73-118.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Unsymmetrical bis-carbamate compounds. 4,551,472, Cl. 514-477.000.

DuBois, Chester G., to Outboard Marine Corporation. Fluid driven pump with one-way valve in fluid inlet. 4,551,076, Cl. 417-395.000.

Duehr, Bernard W., Jr.: *See—*
Ottestad, Jack B.; and Duehr, Bernard W., Jr., 4,550,784, Cl. 173-114.000.

Duga, Robert J.; Kulig, Constantine W.; Doughty, Robert L.; Douglas, Robert J.; and Andersen, Robert P., to Emhart Industries, Inc. Electronic glass feeder plunger operating mechanism. 4,551,163, Cl. 65-129.000.

Duir, John H.: *See—*
Deering, Roland F.; and Duir, John H., 4,551,206, Cl. 202-99.000.

Dukkers, Hendricus W. A. Resting device with rotatable covering envelope. 4,550,457, Cl. 5-414.000.

Dumoulin, Andre : *See—*
Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., 4,550,558, Cl. 57-58.520.

Duo-Fast Corporation: *See—*
Schwartzenberger, Julius W., 4,550,643, Cl. 91-356.000.

Duplessis, Philippe: *See—*
Grauel, Christoph; Duplessis, Philippe; and Tarabout, Alain, 4,551,852, Cl. 455-33.000.

Du Pont de Nemours, E. I., and Company: *See—*
Aerts, Armand, 4,551,492, Cl. 524-40.000.
Cohen, Abraham B.; and Webers, Vincent J., 4,551,415, Cl. 430-281.000.
Dickakian, Ghazi B., 4,551,225, Cl. 208-43.000.
Fletcher, Richard J.; and Wischusen, Henry, III, 4,550,834, Cl. 206-611.000.
Freytag, William J.; and Chang, Shung-Ho, 4,551,426, Cl. 435-7.000.
Fryd, Michael; and Goff, David L., 4,551,522, Cl. 528-351.000.
Liu, John J., 4,551,552, Cl. 564-448.000.
Milford, George N., Jr., 4,551,549, Cl. 562-437.000.
Robbins, Gordon B., 4,551,544, Cl. 556-40.000.

Duppengiesser, Dieter: *See—*
Hutzenlaub, Armin S. P.; and Duppengiesser, Dieter, 4,550,882, Cl. 242-56.600.

Durbin, Dennis, to Beckman Instruments, Inc. Tachometer and rotor identification apparatus for centrifuges. 4,551,715, Cl. 340-671.000.

Duret, Jean, to Vallourec S.A. Joint for steel tubes. 4,550,937, Cl. 285-334.000.

Durkoppwerke GmbH: *See—*
Kastrup, Eberhard, 4,550,672, Cl. 112-293.000.

Dusch, Albert, to Pfaff Industriemaschinen GmbH. Material presser device for a sewing machine. 4,550,671, Cl. 112-235.000.

Dusza, John P.; and Albright, Jay D., to American Cyanamid Company. Pyridyl imidazo[1,2-a]pyrimidines. 4,551,530, Cl. 544-281.000.

Duval Corporation: *See—*
Wilson, Alex T., 4,551,213, Cl. 204-111.000.

Dyatlova, Nina M.: *See—*
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Hanisch, Horst, 4,551,541, Cl. 549-215.000.

Dyneer Corporation: *See—*
Kraft, Derald H.; and Hitchcock, Gary L., 4,551,122, Cl. 474-170.000.
Thomey, Henry W., 4,551,120, Cl. 474-135.000.

Dytjuk, Leonid T.: *See—*
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.

E. B. Eddy Forest Products, Ltd.: *See—*
Gladish, Herbert E., 4,550,823, Cl. 198-805.000.

E.N.I. Ente Nazionale Incorporated: *See—*
Canella, Marco; Marghinotti, Daniele; Bernardi, Adriano; and Sodini, Giancarlo, 4,551,335, Cl. 426-44.000.

E. R. Squibb & Sons, Inc.: *See—*
Doyle, Arthur; and Freeman, Frank M., 4,551,490, Cl. 524-22.000.
Slusarchyk, William A.; and Kronenthal, David, 4,551,276, Cl. 260-239.00A.
Treuner, Uwe D., 4,551,277, Cl. 260-239.00A.

Eagen, Michael J.: *See—*
Juve, Robert J.; and Eagen, Michael J., 4,550,682, Cl. 118-425.000.

Eagle, Jon R. Attic ventilation system. 4,550,648, Cl. 98-37.000.

Eagle Machinery Company: *See—*
Mosher, Oren A.; Mosher, Oren G.; and Douglas, Ellwood S., 4,550,792, Cl. 177-25.000.

Earle, Richard L.: *See—*
de Jong, Joannes N. M.; and Earle, Richard L., 4,551,699, Cl. 336-135.000.

Eastman Kodak Company: *See—*
Brust, David P.; Neumann, Stephen M.; and Weissberger, Edward, 4,551,411, Cl. 430-216.000.
Elam, Edward U.; and Middleton, Michael L., 4,551,523, Cl. 536-119.000.
Elvin, Warren G., 4,551,006, Cl. 355-14.0FU.
Lemke, James U., 4,550,492, Cl. 29-603.000.
McConnell, Richard L.; Cox, Abraham J.; and Darnell, William R., 4,551,521, Cl. 528-302.000.
Morris, John C.; and Jackson, Winston J., Jr., 4,551,520, Cl. 528-302.000.

Eaton Corporation: *See—*
Lauer, Ernst H.; and Reynolds, Joseph D., 4,550,627, Cl. 74-475.000.
Mahon, Joseph J., 4,551,590, Cl. 200-38.00R.
Martin, George; and Brocksou, Robert H., 4,550,625, Cl. 74-335.000.
Smith, Stanley K.; and Rozsi, Donald J., 4,551,808, Cl. 364-474.000.
Smyth, Robert R., 4,551,802, Cl. 364-424.100.

Eaton S.A.M.: *See—*
De Raco, Maurice; and Rey, Pierre, 4,551,593, Cl. 200-81.00R.

Echard, Richard A.: *See—*
Cookson, John A.; Schatzka, Richard L.; Echard, Richard A.; and Scheer, Gary W., 4,551,718, Cl. 340-825.160.

Eckert, Guenter: *See—*
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.

Eckert, Theodor, to Ciba-Geigy Corporation. Pharmaceutical preparations for topical application which contain salts of alkanecarboxylic acids. 4,551,475, Cl. 514-408.000.

Eckstein, John P., to American Can Company. Multiple layer flexible sheet structure. 4,551,371, Cl. 428-36.000.

Eda, Kazuo; Kikuchi, Yasuharu; Makino, Osamu; and Matsuoka, Michio, to Matsushita Electric Industrial Co., Ltd. Voltage-dependent resistor and method of making the same. 4,551,268, Cl. 252-519.000.

Edinen Centar Po Chimia: *See—*
Boyadjiev, Lyubomir A., 4,551,252, Cl. 210-638.000.

Edwards, John C.; and Ford, Russell A., to American Standard Inc. Compressor intercooler. 4,550,775, Cl. 165-111.000.

EER Products Inc.: *See—*
Martin, Gerald L., 4,550,773, Cl. 165-54.000.

EerNisse, Errol P., to Quartztronics, Inc. Resonator pressure transducer. 4,550,610, Cl. 73-702.000.

Effland, Richard C.; Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Incorporated. Methods of alleviating convulsions and pain employing 4-aryloxy-1,2,3,4 tetrahydroisoquinolines. 4,551,474, Cl. 514-309.000.

Egawa, Takeshi: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,550,993, Cl. 354-402.000.

Ehiro, Takashi; Tanaka, Teruaki; and Yamanaka, Eisuke, to Kawasaki Steel Corporation. Method of producing steel H-sheet pile. 4,550,582, Cl. 72-234.000.

Ehrend, Helfried: *See—*
Sauerbier, Michael; and Ehrend, Helfried, 4,551,505, Cl. 525-346.000.

Ehrfeld, Wolfgang: *See—*
Becker, Erwin; Ehrfeld, Wolfgang; Fritz, Wolfgang; Steinhaus, Harald; and Bley, Peter, 4,551,157, Cl. 55-17.000.

Ehrlich, Josef, to Outboard Marine Corporation. Internal combustion engine with disc inlet valve. 4,550,696, Cl. 123-73.00D.

Eickmann, Karl. Drive shaft arrangement to reduce leakage in fluid machines. 4,550,644, Cl. 91-486.000.

Eidenschink, Rudolf; Romer, Michael; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Polyhalogenoaromatic compounds for liquid crystal compositions. 4,551,264, Cl. 252-299.620.

Eisai Co., Ltd.: *See—*
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.
Tagaya, Ryosaku, 4,551,022, Cl. 356-406.000.

Eisenzimmer, George W., to Goodyear Tire & Rubber Company, The. Heavy duty hose crimper. 4,550,587, Cl. 72-402.000.

Ekland, Joseph D.: *See—*
Roemmele, Carl F.; and Ekland, Joseph D., 4,550,708, Cl. 125-15.000.

Elam, Edward U.; and Middleton, Michael L., to Eastman Kodak Company. Preparation of saccharide acetoacetates. 4,551,523, Cl. 536-119.000.

Electro-Biology, Inc.: *See—*
Talish, Roger J.; and Banko, Victor F., 4,550,714, Cl. 128-1.500.

El-Hag, Nabil A.; Cochran, Stuart A.; Schwabe, Kenneth R.; Carricato, Louis; and Shanbhag, Sudhakar P., to General Foods Corporation. Process for preparing frozen par-fried potatoes. 4,551,340, Cl. 426-437.000.

Elliott, Charles T.; and White, Anthony M., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Photoconductive detector with an A/C bias and responsivity dependent upon the polarity of the bias. 4,551,623, Cl. 250-211.00R.

Ellis, Paul E., Jr.: *See—*
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,551,559, Cl. 568-454.000.

Ellis, Stafford M., to Marconi Avionics Limited. Clamp arrangements. 4,550,836, Cl. 211-41.000.

Ellison, Joseph E.: *See—*
Redman, James; and Ellison, Joseph E., 4,550,890, Cl. 248-59.000.

Elter, Michael R., to Xerox Corporation. Controller for a fusing device of an electrophotographic printing machine. 4,551,007, Cl. 355-14.0FU.

Elves, John; and Ley, Stephen J., to Chicopee. Absorbent pads. 4,551,377, Cl. 428-137.000.

Elvin, Warren G., to Eastman Kodak Company. Thermal conservation apparatus. 4,551,006, Cl. 355-14.0FU.

Emhart Industries, Inc.: *See—*
Clouser, Michael T.; and Coulter, Robert S., 4,550,874, Cl. 236-1.00G.
Duga, Robert J.; Kulig, Constantine W.; Doughty, Robert L.; Douglas, Robert J.; and Andersen, Robert P., 4,551,163, Cl. 65-129.000.
Simpson, Roger A., 4,551,707, Cl. 340-287.000.

Emmel, David G., to American Standard Inc. Traffic control system for single track railroad. 4,550,889, Cl. 246-28.00R.

Ems-Inventa AG: *See—*
Rehmann, Robert, 4,550,661, Cl. 102-251.000.

Endel, Dieter; and Billerbeck, Gerd, to IBU Betten-Union GmbH & Co. KG. Orthopedic pillow. 4,550,459, Cl. 5-437.000.

Endress u. Hauser GmbH u. Co.: *See—*
Kroner, Holger, 4,551,785, Cl. 361-284.000.

Energy Conversion Devices, Inc.: *See—*
Sapru, Krishna; Hong, Kuochih; Fetcenko, Michael A.; and Venkatesan, Srinivasan, 4,551,400, Cl. 429-94.000.

Energy Cycle, Inc.: *See—*
Martin, John H., 4,551,243, Cl. 210-180.000.

Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., to Cassella Aktiengesellschaft; and Dresser Industries, Inc. Water soluble copolymers. 4,551,513, Cl. 526-307.100.

Englehardt, Paul, to PEI, Inc. Truck bed closure. 4,550,945, Cl. 296-100.000.

Engnell, David: *See—*
Rottler, Donald; and Engnell, David, 4,550,530, Cl. 51-34.00R.

Engstrom, Nils M. L., to Hellgren, Lars G. I.; and Vincent, Jan G. Separable column for chromatography with a detection and signal device and an elution system - in combination or separate. 4,550,594, Cl. 73-61.10C.

Enlow, William P.: *See—*
Hechenbleikner, Ingenuin; and Enlow, William P., 4,551,539, Cl. 548-412.000.
Hechenbleikner, Ingenuin; and Enlow, William P., 4,551,540, Cl. 548-531.000.

Ensamblaje y Manipulacion Industrial, S.A. (EMINSA): *See—*
Cano, Manuel I., 4,551,193, Cl. 156-423.000.

Envirotech Corporation: *See—*
Jackson, Michael A., 4,551,285, Cl. 261-87.000.

Epel, Joseph N.; and Wilkinson, Robert E., to Budd Company, The. Compression molding apparatus having vacuum chamber. 4,551,085, Cl. 425-405.00R.

Epina, August P.: *See—*
Permut, Ronald; Cope, Robert; Apple, James; Epina, August P.; and Munro, Frederick G., 4,550,884, Cl. 242-189.000.

Epson Corporation: *See—*
Shingu, Hiroshi, 4,550,980, Cl. 350-349.000.

Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Selectively absorbent layer for solar collectors, and method of making it. 4,551,328, Cl. 423-607.000.

Erburt, George A.: *See—*
Gellman, Gary; Erburt, George A.; and Roe, James E., 4,551,343, Cl. 426-549.000.

Ericson, Charles P.; and Shadzi, Bahram, to Magnegic Peripherals. High speed coating process for magnetic disks. 4,551,355, Cl. 427-48.000.

Eriksen, Kenneth A.: *See—*
Doyle, Gerald; Eriksen, Kenneth A.; and Pruett, Roy L., 4,551,543, Cl. 556-14.000.

ERNI Elektroapparate GmbH: *See—*
Czeschka, Franz, 4,550,962, Cl. 339-17.0LC.

Erwin Kampf GmbH & Co. Maschinenfabrik: *See—*
Hutzenlaub, Armin S. P.; and Duppengiesser, Dieter, 4,550,882, Cl. 242-56.600.

Eskelinen, Pekka, to Valmet Oy. Method and arrangement for guiding a paper web from the press section to the drying section. 4,551,203, Cl. 162-202.000.

Esposito, John A.: *See—*
Kock, Ronald W.; and Esposito, John A., 4,551,191, Cl. 156-276.000.

Essex Group, Inc.: *See—*
Lavallee, Francois A., 4,551,398, Cl. 428-383.000.

Estey, Herman C. Sanitary ashtray system. 4,550,738, Cl. 131-236.000.

ETA S.A. Fabriques D'Ebauches: *See—*
Antognini, Luciano; and Guerin, Yves, 4,551,665, Cl. 318-696.000.

Ethicon, Inc.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,550,729, Cl. 128-325.000.
Shalaby, Shalaby W.; and Schipper, Edgar S., 4,550,730, Cl. 128-335.500.

Ethyl Corporation: *See—*
Li, Hsueh M., 4,551,317, Cl. 423-300.000.
Ragan, Gary S.; and Jones, Jesse D., 4,551,485, Cl. 523-212.000.
Raley, Garland E.; and Goodrum, Richard W., 4,550,546, Cl. 53-425.000.

Etudes et Fabrication Dowell Schlumberger: *See—*
Marshall, Lloyd B.; and Ghebrid, Faycal, 4,550,935, Cl. 285-18.000.

Euler, John W., to Lambert Brake Corporation. Mechanical clutch. 4,550,817, Cl. 192-70.230.

Eurecat-Europeene de Retraitement de Catalyseurs: *See—*
Berrebi, Georges, 4,551,437, Cl. 502-5.000.

Evans, Alan G., to United States of America, Navy. Method for determining the magnitude of earth's gravity. 4,550,601, Cl. 73-382.00R.

Evans Cooling Associates: *See—*
Evans, John W., 4,550,694, Cl. 123-41.020.

Evans, John W., to Evans Cooling Associates. Process and apparatus for cooling internal combustion engines. 4,550,694, Cl. 123-41.020.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,550,910, Cl. 273-86.00B.

Exler, Heribert: *See—*
Hofbauer, Edwin; Lechner, Peter; and Exler, Heribert, 4,551,051, Cl. 414-21.000.

Exner, Gerhard: *See—*
Raschke, Klaus; and Exner, Gerhard, 4,551,063, Cl. 415-115.000.

Exquisite Form Industries, Inc.: *See—*
Porco, Frank, 4,550,734, Cl. 128-460.000.

Exxon Research and Engineering Co.: *See—*
Doyle, Gerald; Eriksen, Kenneth A.; and Pruett, Roy L., 4,551,543, Cl. 556-14.000.
Merchant, Philip; and Lacy, Sylvia M., 4,551,239, Cl. 208-188.000.

Ezer, Elemer: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.

Ezra C. Lundahl, Inc.: *See—*
Lundahl, E. Cordell; Wiser, James G.; Thornley, W. Ray; and Jensen, Laurel H., 4,550,554, Cl. 56-294.000.

Falk, Gertrud, to Siemens Aktiengesellschaft. Spectrometry plasma burner. 4,551,609, Cl. 219-121.0PR.

Falk, Roland: *See—*
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.

Fanuc Ltd: *See—*
Amemiya, Yoichi; Ishida, Hiroshi; Takekoshi, Yashitaka; and Ushiyama, Shigeyuki, 4,551,676, Cl. 324-208.000.
Ishida, Hiroshi; and Taniguchi, Mitsuyuki, 4,551,662, Cl. 318-316.000.

Farago, Paul L.: *See—*
Lansinger, Jere R.; Dorr, George D.; and Farago, Paul L., 4,550,675, Cl. 116-28.100.

Farmitalia Carlo Erba, S.p.A.: *See—*
Doria, Gianfederico; Passarotti, Carlo; Arcari, Giuliana; and Buttinoni, Ada, 4,551,457, Cl. 514-258.000.
Faustini, Franco; Passarotti, Carlo; Ceserani, Roberto; and Gandolfi, Carmelo, 4,551,476, Cl. 514-461.000.

Farrey, Merlyn F., to Fomo Products, Inc. Foam gun for mixing and dispensing two reactants. 4,550,863, Cl. 222-145.000.

Farrow, Robert I.; and Clark, Richard L., to American Multimedia, Inc. Aligning means for tape splicer. 4,551,190, Cl. 156-159.000.

Fastaia, Anthony J.: *See—*
Carll, Richard T.; Fastaia, Anthony J.; and von Nieda, Kurt, 4,551,832, Cl. 370-58.000.

Faustini, Franco; Passarotti, Carlo; Ceserani, Roberto; and Gandolfi, Carmelo, to Farmitalia Carlo Erba S.p.A. 13,14-Didehydro-prostaglandins and process for their preparation. 4,551,476, Cl. 514-461.000.

Fay, James P., Jr.: *See—*
Fay, James P., Sr.; and Fay, James P., Jr., 4,550,861, Cl. 222-78.000.

Fay, James P., Sr.; and Fay, James P., Jr., to Pro-Tex Limited Partnership. Lachrymator/dye dispenser. 4,550,861, Cl. 222-78.000.

Feder, Darryl. Method for metalizing metal bodies. 4,551,354, Cl. 427-46.000.

Federal-Mogul Corporation: *See—*
Roemmele, Carl F.; and Ekland, Joseph D., 4,550,708, Cl. 125-15.000.

Fehrenkamp, William; Pater, Arnold R.; and Brummel, Arthur D., to AMF Incorporated. Telemetry system adapter. 4,551,824, Cl. 367-76.000.

Felstet, Rickerd M. Excavator bucket with detachable implements. 4,550,512, Cl. 37-117.500.

Fender, David A. Ventilated athletic cap. 4,550,445, Cl. 2-181.600.

Fenech, Brian. Electro luminescence visual device. 4,551,363, Cl. 428-28.000.

Fenton, Donald M., to Union Oil Company of California. Arsenic removal from shale oils. 4,551,237, Cl. 208-251.00R.

Ferag AG: *See—*
Meier, Jacques, 4,550,822, Cl. 198-461.000.

Ferdinandi, Frank: *See—*
Fisher, John H.; and Ferdinandi, Frank, 4,551,795, Cl. 364-139.000.

Ferguson, Robert J., to Simpson Industries, Inc. Driveshaft coupling with elastomer damper. 4,551,115, Cl. 464-83.000.

Ferm, Richard L., to Chevron Research Company. Heat exchanger antifoulant. 4,551,226, Cl. 208-48.0AA.

Ferris, Michael J.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board racing game. 4,550,917, Cl. 273-246.000.

Fetcenko, Michael A.: *See—*
Sapru, Krishna; Hong, Kuochih; Fetcenko, Michael A.; and Venkatesan, Srinivasan, 4,551,400, Cl. 429-94.000.

Feutrel, Claude, to Commissariat a l'Energie Atomique. Nuclear reactor fuel assembly end fitting. 4,551,300, Cl. 376-364.000.

Filippov, Jury I.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Finney, Roy P.; Trick, Robert E.; and Lynch, Henry W., to Medical Engineering Corporation. Implantable penile erectile system. 4,550,719, Cl. 128-79.000.

Finster, Emma R.; and Finster, Peter W. Adjustable implement holder for stepladders. 4,550,803, Cl. 182-129.000.

Finster, Peter W.: *See—*
Finster, Emma R.; and Finster, Peter W., 4,550,803, Cl. 182-129.000.

Fiore, John W. Cervical support pillow. 4,550,458, Cl. 5-434.000.

Firestone Tire & Rubber Company, The: *See—*
Kang, Jung W.; and Davis, James A., 4,551,391, Cl. 428-462.000.

Fischer, Dan E., to Ultradent, Inc. Method of preparing gingival area for dental crowns. 4,551,100, Cl. 433-218.000.

Fischer, Dieter, to Triumph-Adler Aktiengesellschaft fur Buro- und Informationstechnik. Document scanning apparatus with photosensor and gas discharge readout. 4,551,622, Cl. 250-211.00R.

Fischer, Kurt; and Muller, Franz, to Georg Fischer Aktiengesellschaft. Apparatus for compacting granular molding materials. 4,550,765, Cl. 164-194.000.

Fischer & Porter Company: *See—*
Herzl, Peter J., 4,550,614, Cl. 73-861.190.

Fisher, John H.; and Ferdinandi, Frank, to Precision Grinding Limited. Apparatus for use in monitoring a plurality of variable parameters. 4,551,795, Cl. 364-139.000.

Fisher, Stan E.: *See—*
Goegelein, Gerald W.; Longmore, Paul H.; and Fisher, Stan E., 4,551,837, Cl. 371-25.000.

Flanagan, William T.: *See—*
Aicher, Frederick T.; Martin, James R., Sr.; and Flanagan, William T., 4,550,961, Cl. 339-14.00R.

Flanigen, Edith M.: *See—*
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,551,236, Cl. 208-112.000.

Fleishman, Gregg. Portable furniture. 4,550,950, Cl. 297-440.000.

Fleming, James W., to Lawson & Jones Limited. Fast food serving tray. 4,550,873, Cl. 229-30.000.

Fletcher, Bruce W.; Rydell, Mark A.; and Reese, Edward W., to Angiomedics, Inc. Method for making a catheter with a soft, deformable tip. 4,551,292, Cl. 264-139.000.

Fletcher, George R., Jr.; Messick, George H., Jr.; Roby, Charles K.; and Huey, Cecil O., Jr., to Tungsten Industries, Inc. Automated machining method. 4,550,532, Cl. 51-288.000.

Fletcher, Richard J.; and Wischusen, Henry, III, to Du Pont de Nemours, E. I., and Company; and Rock-Tenn Co. Self-erecting end-load top-dispensing container. 4,550,834, Cl. 206-611.000.

Flick, Gary D.; and Reinshagen, John H., to Pfizer Inc. Flush edge protected metal laminates. 4,551,219, Cl. 204-290.00R.

Flugger, Ray T., to King, Wayne. Muffler for exhaust gases. 4,550,799, Cl. 181-244.000.

FMC Corporation: *See—*
Dominiani, Frank J., Jr.; and Annarelli, Dennis C., 4,551,320, Cl. 423-321.00R.
McTamaney, Louis S.; Bisbee, Gary W.; Kettlety, Robert W.; and Konsevich, James L., 4,551,730, Cl. 346-33.0WL.

Fockens, Tallienco W. H., to N.V. Nederlandsche Apparatenfabriek Nedap. Electronic detection system for detecting a responder including a frequency divider. 4,551,712, Cl. 340-572.000.

Folson, Henry J., to Illinois Tool Works Inc. Brake for twin wheel casters. 4,550,808, Cl. 188-1.120.

Fomo Products, Inc.: *See—*
Farrey, Merlyn F., 4,550,863, Cl. 222-145.000.

Forcey, Thomas H.: *See—*
Simon, Frederick A.; and Forcey, Thomas H., 4,550,944, Cl. 296-70.000.

Ford Motor Company: *See—*
Gale, Ronald J., 4,550,815, Cl. 192-30.00W.
Simon, Frederick A.; and Forcey, Thomas H., 4,550,944, Cl. 296-70.000.
Stojek, Dieter, 4,551,284, Cl. 261-44.00B.

Ford, Russell A.: *See—*
Edwards, John C.; and Ford, Russell A., 4,550,775, Cl. 165-111.000.

Foresto, Sam. Burning apparatus with means for heating and cleaning polluted products of combustion. 4,550,669, Cl. 110-245.000.

Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, to Metallgesellschaft Aktiengesellschaft; and Mannesmann Aktiengesellschaft. Process of producing liquid carbon-containing iron. 4,551,172, Cl. 75-11.000.

Formhals, C.: *See—*
Tarozzi, R. A.; and Formhals, C., 4,550,864, Cl. 222-209.000.

Fornerod, Andre : *See—*
Aubert, Jean-Daniel; and Fornerod, Andre , 4,550,586, Cl. 72-389.000.

Fornes, Gaston G. Nut kernel extractor. 4,550,495, Cl. 30-120.300.

Forrest, William E., to Advanced Evacuation Systems. Personal high rise evacuation apparatus. 4,550,801, Cl. 182-7.000.

Forschungsgesellschaft fur Biomedizinische Technik e.V.: *See—*
Trispel, Stephan; and Rau, Gunter, 4,550,990, Cl. 351-243.000.

Forster, Martin. Device for supplying farm animals with a liquid feed. 4,550,685, Cl. 119-71.000.

Foshee, William R.: *See—*
Best, Walter E.; and Foshee, William R., 4,550,581, Cl. 70-422.000.

Foster, Terry L. Assemblage formed of a mass of interlocking structural elements. 4,550,539, Cl. 52-236.100.

Foster, Wayne G.: *See—*
Thompson, Kenneth J.; Rosenquist, Joel C.; and Foster, Wayne G., 4,550,670, Cl. 112-121.110.

Fothergill, John C.: *See—*
Cranfield, Brain A.; Fothergill, John C.; and Wolfe, Susan V., 4,551,499, Cl. 524-487.000.

Foundry Technology, Inc.: *See—*
McMullen, Carl R.; and Campbell, Marshall S., 4,550,768, Cl. 164-456.000.

Fournier, Jean; Patron, Henri; and Meynard, Paul, to Stein Industrie. System for interlocking closely ajacent vertical lengths of tube in a heat exchanger having loops. 4,550,777, Cl. 165-162.000.

Fox, Paul L.: *See—*
Buckley, Galen L.; and Fox, Paul L., 4,550,482, Cl. 29-412.000.

Fraignier, Bernard; and Gery, Daniel E., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Multi axis force and moments transducer. 4,550,617, Cl. 73-862.040.

Frailey, Richard C.; and Symborski, Alex P., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass filaments. 4,551,160, Cl. 65-2.000.

Fraioli, Donato M. Air-supported structure for sport activities. 4,550,533, Cl. 52-2.000.

Francis, Alan W., to S. C. Johnson & Son, Inc. Elapsed time indicator. 4,550,676, Cl. 116-206.000.

Francotyp-Postalia GmbH: *See—*
Schulze, Wolfgang, 4,551,188, Cl. 156-441.500.

Frangatos, Gerassimos, executor: *See—*
Braid, Milton, deceased, 4,551,259, Cl. 252-48.200.

Frank-Neumann, Michel; Sedrati, Madjid; Vigneron, Jean-Pierre; and Bloy, Vincente, to Roussel Uclaf. Process of preparing alkyl cis chrysanthemates. 4,551,545, Cl. 560-124.000.

Frankl & Kirchner GmbH & Co. KG Fabrik fur Elektromotoren u. elektrische Apparate: *See—*
Harry, Alan J., 4,550,814, Cl. 192-18.00B.

Franz Haas Waffelmaschinen Industriegesellschaft m.b.H.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,550,655, Cl. 99-450.400.

Freeman, Frank M.: *See—*
Doyle, Arthur; and Freeman, Frank M., 4,551,490, Cl. 524-22.000.

French, James C.: *See—*
Kern, Donald L.; Hokanson, Gerard C.; and French, James C., 4,551,529, Cl. 544-265.000.

Fresenius AG: *See—*
Mathieu, Bernd; and Weber, Wolfram, 4,551,147, Cl. 604-405.000.

Frey, Gunter: *See—*
Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, 4,551,428, Cl. 435-19.000.

Frey, William L. Grinding box. 4,550,531, Cl. 51-125.000.

Freytag, William J.; and Chang, Shung-Ho, to Du Pont de Nemours, E. I., and Company. Heterogeneous immunoassay for digoxin using ouabain as a separation means. 4,551,426, Cl. 435-7.000.

Friedle, Alvin A. Three-dimensional viewing device. 4,550,978, Cl. 350-138.000.

Friml, Zdenek: *See—*
Skvara, Frantisek; Kolar, Karel; Zadak, Zdenek; Friml, Zdenek; and Novotry, Jaroslav, 4,551,176, Cl. 106-90.000.

Frisz, James O. Submerged water wheel. 4,551,066, Cl. 416-119.000.

Fritz, Wolfgang: *See—*
Becker, Erwin; Ehrfeld, Wolfgang; Fritz, Wolfgang; Steinhaus, Harald; and Bley, Peter, 4,551,157, Cl. 55-17.000.

Fritzsche, Klaus-Dietrich: *See—*
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Frommer, Elmar: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,551,318, Cl. 423-265.000.

Fryd, Michael; and Goff, David L., to Du Pont de Nemours, E. I., and Company. Process for making photopolymerizable aromatic polyamic acid derivatives. 4,551,522, Cl. 528-351.000.

Fuchs, Uwe: *See—*
Morper, Manfred; and Fuchs, Uwe, 4,551,250, Cl. 210-603.000.

Fuji Electric Company, Ltd.: *See—*
Kuroki, Kazuo, 4,551,635, Cl. 307-254.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Sakakiyama, Ryuzo, 4,550,816, Cl. 192-0.052.

Fuji Oil Company, Limited: *See—*
Kawasaki, Yoichi; and Katayama, Tsutomu, 4,551,351, Cl. 426-656.000.

Fuji Photo Film Co., Ltd.: *See—*
Agano, Toshitaka, 4,551,626, Cl. 250-327.200.
Arai, Yoshihiro; and Nahara, Akira, 4,551,778, Cl. 360-131.000.
Ikeda, Tadashi; Kuwabara, Kenichi; Yamamuro, Kiyohiko; and Kokubo, Tadayoshi, 4,551,424, Cl. 430-588.000.
Ishibashi, Teruhiko, 4,551,053, Cl. 414-114.000.
Koyama, Koichi; Noguchi, Yasuhiro; and Toriuchi, Masaharu, 4,551,423, Cl. 430-559.000.
Nakauchi, Kenji, 4,551,023, Cl. 356-444.000.
Ogawa, Masashi; Nakamura, Taku; Urata, Yukihide; and Yamauchi, Shingo, 4,551,412, Cl. 430-265.000.
Sugimoto, Naohiko; and Kojima, Tetsuro, 4,551,420, Cl. 430-505.000.
Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, 4,551,419, Cl. 430-445.000.
Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, 4,551,421, Cl. 430-509.000.
Takahashi, Yoshiteru; and Ogawa, Masataka, 4,551,645, Cl. 310-46.000.
Tomiyama, Hideki; and Satake, Masaki, 4,551,410, Cl. 430-215.000.
Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,551,386, Cl. 428-323.000.

Fuji Xerox Co., Ltd.: *See—*
Aoki, Matsuyuki; and Tanaka, Shuji, 4,551,002, Cl. 355-3.0DD.
Kurata, Masami, 4,551,750, Cl. 358-75.000.
Satoh, Masato, 4,551,769, Cl. 358-296.000.

Fujii, Yasuhiko; Owaki, Isao; Saito, Susumu; Mori, Takaro; and Nakamura, Shinji, to Victor Company of Japan, Limited. Digital data duplication apparatus. 4,551,840, Cl. 371-38.000.

Fujimoto, Hiroshi: *See—*
Sakamoto, Junichi; Fujimoto, Hiroshi; and Miyake, Hideo, 4,551,215, Cl. 204-159.230.

Fujirebio Kabushiki Kaisha: *See—*
Sugiyama, Masami; Shibuya, Hiroko; and Kasahara, Yasushi, 4,551,272, Cl. 260-112.50R.

Fujita, Kouichi; and Shirato, Moritoshi, to Fujitsu Limited. One-chip semiconductor device incorporating a power-supply-potential detecting circuit with reset function. 4,551,841, Cl. 371-66.000.

Fujita, Masahiro; and Uemura, Yukio, to Maeda Metal Industries Ltd.; and Nissan Motor Co., Ltd. Power tightening device having detachable socket unit. 4,550,633, Cl. 81-56.000.

Fujitsu Limited: *See—*
- Fujita, Kouichi; and Shirato, Moritoshi, 4,551,841, Cl. 371-66.000.
- Nishimori, Eiji; Tsuchiya, Chikara; and Sano, Yoshiaki, 4,551,644, Cl. 307-573.000.
- Takahashi, Hitoshi; Yamaguchi, Satoru; and Nunokawa, Hideo, 4,551,634, Cl. 307-243.000.
- Takeda, Hirofumi; and Suzuki, Hirokazu, 4,551,639, Cl. 307-455.000.
- Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,551,822, Cl. 365-222.000.
- Tanji, Shigeo; and Wakatsuki, Noboru, 4,551,695, Cl. 333-195.000.
- Watanabe, Hisashi, 4,551,745, Cl. 357-72.000.

Fujiwara, Michiaki; and Ikeda, Toshiharu, to Murata Kikai Kabushiki Kaisha. Yarn end sucking and holding device in winder. 4,550,886, Cl. 242-35.60E.

Fukada, Koichi; and Sugimoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Abnormal noise detector for use in the inspection of gear units. 4,550,603, Cl. 73-587.000.

Fukada, Koichi: *See—*
- Sugimoto, Hiroshi; and Fukada, Koichi, 4,550,604, Cl. 73-587.000.

Fukuda, Tadaji: *See—*
- Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,551,405, Cl. 430-64.000.

Fukuda, Yoshiaki: *See—*
- Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Fukumoto, Hiroshi: *See—*
- Shinozuka, Kiyoshi; Otu, Koichi; and Fukumoto, Hiroshi, 4,551,497, Cl. 524-423.000.

Fukuyama, Toshifumi; and Okamoto, Kiyohide, to Omron Tateisi Electronics Co. Dual electronic switching device with reduced external terminals. 4,551,640, Cl. 307-471.000.

Fuller, Robert A.: *See—*
- Morris, Jeffrey D.; and Fuller, Robert A., 4,551,309, Cl. 422-135.000.
- Morris, Jeffrey D.; and Fuller, Robert A., 4,551,510, Cl. 526-68.000.

Funato, Masatomi: *See—*
- Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,551,403, Cl. 430-58.000.

Furio, Martino: *See—*
- Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, 4,551,451, Cl. 514-217.000.

Furnier -u. Sperrholzwerk: *See—*
- Traumuller, Otfried; and Weinberg, Gerd, 4,550,832, Cl. 206-509.000.
- Traumuller, Otfried; and Weinberg, Gerd, 4,550,847, Cl. 220-4.00F.

Furuhara, Hiroshi: *See—*
- Koizumi, Satoru; Furuhara, Hiroshi; and Teshima, Daisuke, 4,551,775, Cl. 360-74.100.

Furuhashi, Hiroyuki: *See—*
- Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; and Ueno, Hiroshi, 4,551,440, Cl. 502-119.000.

Fushimi, Kazuo; Tsunakawa, Hirokazu; and Yonahara, Kunio, to Kabushiki Kaisha Meidensha. Electrically conductive plastic complex material. 4,551,267, Cl. 252-511.000.

G. D. Searle & Co.: *See—*
- Mueller, Richard A.; and Partis, Richard A., 4,551,279, Cl. 260-404.000.

G.E.M.M. Manufacturing: *See—*
- Henderson, George H., 4,550,739, Cl. 131-247.000.

Gabriele, Louis: *See—*
- Melillo, Anthony; and Gabriele, Louis, 4,550,907, Cl. 272-93.000.

Gagne, Pierre; Girardeau, Yvette; and Pointud, Bernard, to Rhone-Poulenc Specialites Chimiques. Sizing composition and method of making same and use thereof for sizing textile yarns. 4,551,382, Cl. 428-258.000.

Gailey, Edward D.: *See—*
- Hall, William E.; Gailey, Edward D.; and Ovanin, George J., 4,550,922, Cl. 279-119.000.

Gaither, John L., to Caslin, Richard L. Plastic sheet tubing, bag-forming apparatus for lawn mowers. 4,550,533, Cl. 56-202.000.

Gale, Ronald J., to Ford Motor Company. Clutch wear indicator. 4,550,815, Cl. 192-30.00W.

Galvan, Paul A.: *See—*
- Douglass, Randle; Jacquin, H. George; Chewey, Paul M.; Galvan, Paul A.; and Naragon, Richard S., 4,550,888, Cl. 244-3.220.

Gamm, Robert J., to Kangaroos U.S.A., Inc. Instep support for footwear. 4,550,511, Cl. 36-50.000.

Gandolfi, Carmelo: *See—*
- Faustini, Franco; Passarotti, Carlo; Ceserani, Roberto; and Gandolfi, Carmelo, 4,551,476, Cl. 514-461.000.

Gange, Robert A., to RCA Corporation. Line cathode heater and support structure for a flat panel display device. 4,551,648, Cl. 313-37.000.

Gannett, Joel W., to AT&T Bell Laboratories. Self-testing digital circuits. 4,551,838, Cl. 371-25.000.

Gardner, Robert W.; Guile, Donald L.; and Lynn, Merrill, to Corning Glass Works. Process for mixing and extruding ceramic materials. 4,551,295, Cl. 264-177.00R.

Garel-Jones, Philip M.: *See—*
- Vella, Paul J.; Garel-Jones, Philip M.; and Lowe, Richard S., 4,551,019, Cl. 356-73.100.

Garrett, Ernest R.; and Chambers, Charles A., to Garrett, Ernest R. Container top opening means. 4,550,851, Cl. 220-277.000.

Gas Research Institute: *See—*
- Griffiths, James C., 4,550,711, Cl. 126-391.000.

Gass, Karl: *See—*
- Meyer, Willy; Gass, Karl; Topfl, Werner; Schurter, Rolf; and Pissiotas, Georg, 4,551,531, Cl. 544-320.000.

Gateway Industries, Inc.: *See—*
- Doty, Gerald A.; and Hunter, William E., Jr., 4,550,474, Cl. 24-633.000.

Gaulin, Camille A.; and Katzman, Howard A., to Aerospace Corporation, The. Enhanced carbon fiber combustion using a catalyst. 4,551,487, Cl. 523-215.000.

Geary, Alan P., to Rolls-Royce Limited. Device for passing a fluid flow through a barrier. 4,551,062, Cl. 415-115.000.

Geiger, Cletus M. Variable displacement sliding vane pump/hydraulic motor. 4,551,080, Cl. 418-18.000.

Geiger, Daniel D.: *See—*
- Anders, James V.; Anderson, Thomas W.; Geiger, Daniel D.; and Turnpaugh, George F., 4,551,670, Cl. 323-281.000.

Gellman, Gary; Erburt, George A.; and Roe, James E., to Nabisco Brands, Inc. Canine biscuit containing discrete meat and/or meat by-product particles and method for making same. 4,551,343, Cl. 426-549.000.

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- DeBoer, Herman A., 4,551,433, Cl. 435-253.000.

General Electric Company: *See—*
- Bianchi, Julio J., 4,551,621, Cl. 235-117.00R.
- Carnes, Ronald C.; and Naumann, Ted F., Jr., 4,550,608, Cl. 73-633.000.
- Day, Robert A., 4,551,647, Cl. 310-335.000.
- Herberg, Michael J.; Macander, Rudolph F.; and Stegman, Todd R., 4,551,515, Cl. 528-18.000.
- Johnson, Curtis A.; Renlund, Gary M.; Van Buren, Charles E.; and Prochazka, Svante, 4,551,436, Cl. 501-90.000.
- Lohmeijer, Johannes H. G. M., 4,551,494, Cl. 524-89.000.
- Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,017, Cl. 356-28.500.
- Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,018, Cl. 356-28.500.
- Miller, Gary; Jobes, Sam S.; and Benfey, David P., 4,551,657, Cl. 315-399.000.
- Payne, Thomas R., 4,551,618, Cl. 219-510.000.
- Renlund, Gary M.; and Johnson, Curtis A., 4,551,496, Cl. 524-322.000.
- Riederer, Stephen J.; and Keyes, Gary S., 4,551,800, Cl. 364-414.000.
- Talley, John J., 4,551,563, Cl. 568-804.000.

General Electric Company, p.l.c., The: *See—*
- Hilsum, Cyril, 4,551,653, Cl. 315-10.000.

General Foods Corporation: *See—*
- Davidescu, Reghina; de Ceglie, Gaetano J.; Jacquett, Harold W.; and Paluzzi, Joseph A., 4,551,345, Cl. 426-594.000.
- El-Hag, Nabil A.; Cochran, Stuart A.; Schwabe, Kenneth R.; Carricato, Louis; and Shanbhag, Sudhakar P., 4,551,340, Cl. 426-437.000.
- Jasovsky, George A.; Jacquett, Harold W.; and de Ceglie, Gaetano J., 4,551,344, Cl. 426-594.000.

General Motors Corporation: *See—*
- Drouillard, James R., 4,550,529, Cl. 49-348.000.
- Stahura, Daniel W.; and Richey, Daniel D., 4,551,630, Cl. 290-38.00R.
- Teerman, Richard F.; Bosch, Russell H.; and Wirth, Ricky C., 4,550,875, Cl. 239-88.000.

General Signal Corporation: *See—*
- Wiese, John R.; and Walsh, Thomas J., 4,550,620, Cl. 73-864.550.

Gentric, Alain. Connector. 4,550,971, Cl. 339-99.00R.

Genus, Inc.: *See—*
- Mahawili, Imad, 4,550,684, Cl. 118-724.000.

Georg Fischer Aktiengesellschaft: *See—*
- Fischer, Kurt; and Muller, Franz, 4,550,765, Cl. 164-194.000.

Georg Wagner KG: *See—*
- Lorenz, Jurgen W., 4,551,311, Cl. 422-300.000.

Gery, Daniel E.: *See—*
- Fraignier, Bernard; and Gery, Daniel E., 4,550,617, Cl. 73-862.040.

Gesell, Elmer G.: *See—*
- West, James C.; and Gesell, Elmer G., 4,550,762, Cl. 164-98.000.

Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and Rogers, Charles J., to Alcan International Limited. Electrolytic reduction cells. 4,551,218, Cl. 204-240.000.

GFM Gesellschaft Fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: *See—*
- Kirchberger, Peter, 4,551,043, Cl. 407-43.000.

Ghebrid, Faycal: *See—*
- Marshall, Lloyd B.; and Ghebrid, Faycal, 4,550,935, Cl. 285-18.000.

Ghelardoni, Mario: *See—*
- Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, 4,551,451, Cl. 514-217.000.

Giammarese, Victor P. Remote control apparatus for audio systems. 4,551,714, Cl. 340-825.720.

Gibbon, Robert M.: *See—*
- Diehl, Larry F., Jr.; and Gibbon, Robert M., 4,551,293, Cl. 264-150.000.

Gidge, Kenneth N.; and Richard, Henry J., to BSL Corporation. Transparent access curtain for coolers and the like. 4,550,760, Cl. 160-328.000.

Gilbert, Barry K.; and Schwab, Daniel J., to Mayo Foundation. Leadless chip carrier apparatus providing an improved transmission line environment and improved heat dissipation. 4,551,746, Cl. 357-74.000.

Gilbert, Barry K.; and Schwab, Daniel J., to Mayo Foundation. Leadless chip carrier apparatus providing for a transmission line environment and improved heat dissipation. 4,551,747, Cl. 357-74.000.

Giles, Alan F., to Precision Engineering Products Limited (Suffolk). Method and apparatus for checking the weight of a moving article. 4,550,793, Cl. 177-145.000.

Gillette Company, The: *See—*
- Baker, Hugh W. B.; and White, Robert, 4,551,035, Cl. 401-104.000.
- Baker, Hugh W. B.; and Whiting, Graham J., 4,551,038, Cl. 401-265.000.

Gilmore, Mark R., to Copeland Corporation. Integral oil pressure sensor. 4,551,069, Cl. 417-13.000.

Ginther, George E., Sr.: *See—*
- Johnson, A. David, Jr.; Bachman, Joseph L., Jr.; Ginther, George E., Sr.; Zimmermann, Charles E.; and Johnson, Albert D., Sr., 4,551,126, Cl. 493-453.000.

Giolitti, Alessandro: *See—*
- Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, 4,551,451, Cl. 514-217.000.

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- Gagne, Pierre; Girardeau, Yvette; and Pointud, Bernard, 4,551,382, Cl. 428-258.000.

Gist-Brocades N.V.: *See—*
- van Leusen, Albert M.; and van Leusen, Adriaan M., 4,551,278, Cl. 260-397.400.

Glacier Products: *See—*
- Ames, Theodore; and Brown, Vernon E., Jr., 4,551,025, Cl. 366-144.000.

Gladish, Herbert E., to E. B. Eddy Forest Products, Ltd. Air film supported endless belt conveyor system. 4,550,823, Cl. 198-805.000.

Glanville, Roger: *See—*
- Cox, Anthony F.; Glanville, Roger; Lloyd, Owen; and Robbins, Keith V., 4,550,591, Cl. 73-28.000.

Godlewski, Edward S. Stock feeding machine. 4,550,902, Cl. 271-10.000.

Goebel, Joseph A. Rodent trap. 4,550,524, Cl. 43-75.000.

Goegelein, Gerald W.; Longmore, Paul H.; and Fisher, Stan E., to International Telephone & Telegraph Corp. High speed operational recurring signature evaluator for digital equipment tester. 4,551,837, Cl. 371-25.000.

Goehler, Robert F.: *See—*
- La Bonte, David E.; Richter, Kurt W.; and Goehler, Robert F., 4,550,622, Cl. 74-87.000.

Goel, Anil B., to Ashland Oil, Inc. Maleic anhydride/styrene copolymerization controlled with oxazolines. 4,551,511, Cl. 526-204.000.

Goemans, Hermanus I., to Xerox Corporation. Overlay devices. 4,551,015, Cl. 355-75.000.

Goff, David L.: *See—*
- Fryd, Michael; and Goff, David L., 4,551,522, Cl. 528-351.000.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Toy track presenting interference to passage of toy vehicles thereon. 4,550,910, Cl. 273-86.00B.

Goldstein, Norman P.; and Lane, Stephen A., to Westinghouse Electric Corp. Radiation monitoring apparatus. 4,551,298, Cl. 376-245.000.

Goldstein, Richard M.; Caro, Edward R.; and Wu, Chialin, to United States of America, National Aeronautics and Space Administration. Method and apparatus for contour mapping using synthetic aperture radar. 4,551,724, Cl. 343-5.0CM.

Goldstein, Vladimir. Ice making machine and method. 4,551,159, Cl. 62-541.000.

Good, Jack E., to Larsen, Grant; and Larsen, Marian, a part interest to each. Display system. 4,550,839, Cl. 211-189.000.

Goodman, Alvin M.: *See—*
- Russell, John P.; and Goodman, Alvin M., 4,551,643, Cl. 307-570.000.

Goodman, Joseph J.: *See—*
- Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., 4,551,533, Cl. 546-35.000.

Goodrum, Richard W.: *See—*
- Raley, Garland E.; and Goodrum, Richard W., 4,550,546, Cl. 53-425.000.

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- Breedyk, Frans N.; and van Gelderen, Guido, 4,550,598, Cl. 73-146.000.
- Eisenzimmer, George W., 4,550,587, Cl. 72-402.000.
- Hinkel, Walter W., 4,550,756, Cl. 152-209.00R.
- Lal, Joginder; and Senyek, Michael L., 4,551,503, Cl. 525-332.100.
- Smith, Richard R.; and Wilson, John R., 4,551,368, Cl. 428-35.000.
- Watts, George T.; and Thaden, Theron J., 4,550,827, Cl. 206-304.000.

Goossen, Levi H. Tickler system wherein an item of data in card file is readily accessible by either of two criteria, such as date and subject matter. 4,550,934, Cl. 283-37.000.

Gordon, Michael E.: *See—*
- Cohen, Lenard; and Gordon, Michael E., 4,551,783, Cl. 361-223.000.

Gordon, Reuben H.: *See—*
- Bykerk, Rocky S., 4,551,781, Cl. 361-143.000.

Gorman, William G.; and Byron, David A., to Sterling Drug Inc. Syringe for extrusion of semi-plastic material. 4,551,135, Cl. 604-82.000.

Gorog, Sandor: *See—*
- Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.

Goshima, Takayuki: *See—*
- Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, 4,550,638, Cl. 84-431.000.

Gosney, John J.: *See—*
- Capper, Peter; and Gosney, John J., 4,551,196, Cl. 156-616.00R.

Gosselink, Eugene P., to Procter & Gamble Company, The. Cationic polymers having clay soil removal/anti-redeposition properties useful in detergent compositions. 4,551,506, Cl. 525-417.000.

Goto, Tokuju: *See—*
- Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,550,578, Cl. 68-5.00E.

Gotthard, George, to American Cyanamid Company. Treatment of substantially metallic ion free acrylamide and related compounds. 4,551,266, Cl. 252-400.00R.

Gough, Peter R. Cleaning elongate strip by die impaction. 4,551,180, Cl. 134-9.000.

Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Surface mountable coefficient of expansion matching connector. 4,550,959, Cl. 339-9.00E.

Graber, Helen E. Incontinent care pad method and apparatus. 4,551,144, Cl. 604-378.000.

Grabher, Erich; Muller, Max; Wetzel, Horst; and Schultschik, Robert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Pretensioning element for circulation track bearing member for linear bearings. 4,550,955, Cl. 308-6.00C.

Graham, Anne M.: *See—*
- Pesa, Frederick A.; and Graham, Anne M., 4,551,442, Cl. 502-178.000.

Graham, John F., to Burroughs Corporation. Self-braking ribbon transport apparatus. 4,550,885, Cl. 242-204.000.

Grant, Graham C. Fluid flowmeter. 4,550,615, Cl. 73-861.210.

Grantz, Helmut: *See—*
- Andres, Rudolf; Grantz, Helmut; Muenzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,550,774, Cl. 165-104.210.

Grapha - Holding AG: *See—*
- Boss, Heinz, 4,550,883, Cl. 242-59.000.

Grati, Giorgio, to OGRAD s.r.l. Blank article for assembling into a container having double or box-like walls, and an openable hinge wall. 4,550,853, Cl. 220-416.000.

Grauel, Christoph; Duplessis, Philippe; and Tarabout, Alain, to U.S. Philips Corporation. Process for spreading the volume of traffic over different control channels of a cellular radio transmission system. 4,551,852, Cl. 455-33.000.

Grayzel, Joseph. Device for analysis of recorded electrocardiogram. 4,550,502, Cl. 33-1.00B.

Green, James A., II: *See—*
- Young, Donald C.; and Green, James A., II, 4,551,167, Cl. 71-64.100.

Green, Mickey: *See—*
- Vitale, Vincent J., 4,551,103, Cl. 434-225.000.

Greenberg, Lawrence J.: *See—*
- Hyman, Gregory E.; and Greenberg, Lawrence J., 4,551,114, Cl. 446-397.000.

Greenspan, George, to American Home Products Corporation. Stimulation of antigen production by *Bordetella pertussis*. 4,551,429, Cl. 435-68.000.

Greenwood-Smith, Robin, to Mount Isa Mines Limited. Lead-in-air monitor. 4,551,848, Cl. 378-045.000.

Grenthe, Bo, to N.Y. Patent Development Corp. Method for removing oil from water with an absorbent. 4,551,253, Cl. 210-680.000.

Gresch, Heinrich: *See—*
- Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, 4,551,304, Cl. 422-4.000.

Griffith, Carl D.: *See—*
- Clark, Thomas R.; and Griffith, Carl D., 4,551,804, Cl. 364-434.000.

Griffiths, James C., to Gas Research Institute. Pulse combustion deep fat fryer. 4,550,711, Cl. 126-391.000.

Gross, Kimnaja: *See—*
- Mehra-Palta, Asha; and Gross, Kimnaja, 4,550,528, Cl. 47-58.000.

Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Additives for hot mix asphalt. 4,551,178, Cl. 106-273.00N.

Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, to BASF Aktiengesellschaft. Stabilized solutions of hydroxylamine or its salts in water or alcohols, and their preparation. 4,551,318, Cl. 423-265.000.

Grossman, Barry G.: *See—*
- Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., 4,551,829, Cl. 370-3.000.

Grossman, Jack J., to McDonnell Douglas Corporation. Radiation dispersing cavities. 4,551,628, Cl. 250-503.100.

Gruber, George E., to Ludlow Industries, Inc. Level control device. 4,551,663, Cl. 318-482.000.

GTE Automatic Electric Incorporated: *See—*
Daniels, William R.; and Young, John S., 4,551,585, Cl. 179-175.30R.
Parikh, Kamal I., 4,551,836, Cl. 371-1.000.

Guala, Piergiacomo, to Angelo Guala S.p.A. Bottle closure. 4,550,845, Cl. 215-252.000.

Guenthner, Russell W.: *See—*
Ryan, Charles P.; and Guenthner, Russell W., 4,551,799, Cl. 364-200.000.

Guerin, Yves: *See—*
Antognini, Luciano; and Guerin, Yves, 4,551,665, Cl. 318-696.000.

Guidevaux, Jacques, to Thomson CSF. Coaxial microwave load isolator of the three-plate type including such a load and use of such an isolator. 4,551,693, Cl. 333-22.00R.

Guile, Donald L.: *See—*
Gardner, Robert W.; Guile, Donald L.; and Lynn, Merrill, 4,551,295, Cl. 264-177.00R.

Guilmette, Joseph G.; and Wright, Robert C. Method and apparatus for the recovery and recycling of condensable gas reactants. 4,551,197, Cl. 156-642.000.

Gulla, Michael; Taylor, Paul; and Oddi, Michael J., to Shipley Company Inc. Photoresist composition of cocondensed naphthol and phenol with formaldehyde in admixture with positive o-quinone diazide or negative azide. 4,551,409, Cl. 430-192.000.

Gurr, George P.; and Matheson, Frederick A., to Cyborex Laboratories, Inc. Energy controller and method for dynamic allocation of priorities of controlled load curtailment to ensure adequate load sharing. 4,551,812, Cl. 364-492.000.

Gusev, Vladimir I.: *See—*
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.

Gustafson, Harry A.: *See—*
Callaghan, Stephen P.; Callaghan, Timothy J.; Gustafson, Harry A.; and Lim, Wah L., 4,551,021, Cl. 356-350.000.

Guttinger, Hannes: *See—*
Troup, Alan P.; Guttinger, Hannes; and Pfister, Gustav, 4,551,710, Cl. 340-505.000.

Gysling, Peter, to Hewlett Packard Company. Motorized cable mechanism for positioning tractors in a printer. 4,550,623, Cl. 74-89.200.

Haarmann, Walter: *See—*
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,551,464, Cl. 514-312.000.

Haas, Franz, Jr.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,550,655, Cl. 99-450.400.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H. Apparatus for making wafer blocks. 4,550,655, Cl. 99-450.400.

Haas, Johann: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,550,655, Cl. 99-450.400.

Hack, Joachim: *See—*
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.

Hacker, John R.: *See—*
Snetting, Mark; West, Dan; and Hacker, John R., 4,550,919, Cl. 277-23.000.

Hadley, Russell F.; and Kovacs, Carl W. Active probe. 4,551,672, Cl. 324-133.000.

Haeber, John A.; Rains, John K.; Beitler, Brad D.; and Kukuchek, George S., to Vetco Offshore, Inc. Marine riser coupling assembly. 4,550,936, Cl. 285-26.000.

Haeno, Akira: *See—*
Aizawa, Koki; and Haeno, Akira, 4,551,642, Cl. 307-552.000.

Haettinger, George C.: *See—*
Beckman, John H.; Haettinger, George C.; and Kupcikevicius, Vytautas, 4,550,471, Cl. 17-1.00R.

Hafner, Edmund W., to UOP Inc. Constitutive producer of a thermostable glucose isomerase. 4,551,430, Cl. 435-94.000.

Hafner, Klaus. Rimless spectacles. 4,550,989, Cl. 351-103.000.

Hagedorn, Stanley R.; and Roach, Stewart W., to Marco Seattle, Inc. Transfer system for fish and similar articles. 4,551,042, Cl. 406-93.000.

Hahn, Louis T.: *See—*
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,551,178, Cl. 106-273.00N.

Hajdu, Istvan: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.

Hajos, Gyorgy: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.

Hakamata, Kensaku: *See—*
Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, 4,550,638, Cl. 84-431.000.

Hakim, Carlos A.: *See—*
Hakim, Salomon; and Hakim, Carlos A., 4,551,128, Cl. 604-9.000.

Hakim, Salomon; and Hakim, Carlos A. Cerebrospinal fluid shunt valve. 4,551,128, Cl. 604-9.000.

Halcon SD Group, Inc., The: *See—*
Rizkalla, Nabil M., 4,551,560, Cl. 568-465.000.

Hall, Charles B., to Outboard Marine Corporation. Marine propulsion device with tilt and trim means with fluid filtering. 4,551,105, Cl. 440-61.000.

Hall, Harvey. Mining machine with adjustable hood-scoop assembly. 4,550,952, Cl. 299-64.000.

Hall, Timothy J.; and Tridgell, Eric J., to National Research Development Corporation. Method and material for improving the growth of plants. 4,550,527, Cl. 47-58.000.

Hall, William E.; Gailey, Edward D.; and Ovanin, George J., to S-P Manufacturing Corporation, The. Workholder. 4,550,922, Cl. 279-119.000.

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Mosier, John E.; Surjaatmadja, Jim B.; and Penn, Jack C., 4,551,766, Cl. 358-256.000.

Halpern, Yuval; and Mott, Donna, to Borg-Warner Chemicals, Inc. Salts of 5,5-bis-(bromomethyl)-2-hydroxy-2-oxo-1,3,2-dioxaphosphorinane and process for preparing same. 4,551,527, Cl. 544-214.000.

Hamada, Makoto; Hasegawa, Junji; and Oosaka, Kuniaki, to Toyota Jidosha Kabushiki Kaisha. Reinforced side door support structure. 4,550,948, Cl. 296-202.000.

Hamilton, Lawrence E.; and Rutili, Renzo N., to Stewart-Warner Corporation. Illuminated membrane switch. 4,551,598, Cl. 200-314.000.

Hanahan, Donald J.; and Pinckard, R. Neal, to Board of Regents, The University of Texas System. Use of synthetic phosphoglycerides possessing platelet activating properties as desensitizing agents. 4,551,446, Cl. 514-77.000.

Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 4,550,503, Cl. 33-18.00R.

Hanemaayer, Jacobus N. Van layout. 4,550,946, Cl. 296-156.000.

Hanisch, Horst, to Dynamit Nobel Aktiengesellschaft. Organosilane esters having glycol ether moieties. 4,551,541, Cl. 549-215.000.

Hansen, Charles C., III. Valve-strainer housings and assemblies. 4,550,896, Cl. 251-84.000.

Hansen, Frits U.; and Jensen, Ove, to Kosan Teknova A/S. Regulator for mounting on the outlet connection of a gas cylinder or like container. 4,550,746, Cl. 137-461.000.

Hansen, Hans-Jurgen; and Pfoertner, Karlheinz, to Hoffmann-La Roche Inc. Photochemical preparation of previtamin D. 4,551,214, Cl. 204-159.000.

Hansen, Loren F., to Outboard Marine Corporation. Self-propelled aerating device. 4,550,783, Cl. 172-21.000.

Hanson, Donald L.: *See—*
Amdahl, Gene M.; Hanson, Donald L.; Kreuzenstein, Ronald K.; Roshon-Larsen, Gwynne L.; and Woffinden, Gary A., 4,551,797, Cl. 364-200.000.

Hanson, Steven P., to Marvin Glass & Associates. Malleable material vehicle playset. 4,551,109, Cl. 446-95.000.

Hara, Kunihiko: *See—*
Itoh, Hiroyasu; Suzuki, Yasutoshi; Horiuchi, Yasuhiro; and Hara, Kunihiko, 4,551,669, Cl. 323-268.000.

Harada, Masato; Miya, Shinya; Yamada, Sadahiko; and Iijima, Makoto, to Chisso Corporation. Solid catalyst component for olefin polymerization and process for producing same. 4,551,439, Cl. 502-107.000.

Harari, Sami: *See—*
Botrel, Jose ; Harari, Sami; Briere, Joseph; and Louvel, Bernard, 4,551,839, Cl. 371-35.000.

Harder, Benjamin P.; and Harder, Willard J. Side rear view mirror cleaning system. 4,550,988, Cl. 350-584.000.

Harder, Willard J.: *See—*
Harder, Benjamin P.; and Harder, Willard J., 4,550,988, Cl. 350-584.000.

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Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,551,187, Cl. 148-411.000.

Harley-Davidson Motor Co., Inc.: *See—*
Konneker, Reinhard, 4,550,698, Cl. 123-195.0AC.

Harms, Engelbert G.; Schmeitz, Axel W.; and Thomaschewski, Hubertus P., to Uniroyal Englebert Reifen GmbH. Method of treating unvulcanized elastomeric objects. 4,551,362, Cl. 427-180.000.

Harris Corporation: *See—*
Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., 4,551,829, Cl. 370-3.000.

Harris, Joan; and Michel, Thomas J., to Harris, Joan. Oral medicament lollipop. 4,551,329, Cl. 424-22.000.

Harrison, Thomas S., to Sterling Drug Inc. Moist tissue soft pack dispensers. 4,550,855, Cl. 221-63.000.

Harry, Alan J., to Frankl & Kirchner GmbH & Co. KG Fabrik fur Elektromotoren u. elektrische Apparate. Electromagnetic clutch-brake for industrial sewing machine. 4,550,814, Cl. 192-18.00B.

Harter, Robert R., to Werkzeugmaschinenfabrik Oerlikon-Buehrle AG. Missile canister restraint device. 4,550,640, Cl. 89-1.806.

Hartmann, Horst: *See—*
Bott, Kaspar; Kaibel, Gerd; Hartmann, Horst; Irnich, Rudolf; and Buelow, Horst, 4,551,208, Cl. 203-60.000.

Hase, Takashi: *See—*
Yaguchi, Masachika; Mikami, -Tomoki; and Hase, Takashi, 4,551,397, Cl. 428-691.000.

Hasegawa, Junji: *See—*
Hamada, Makoto; Hasegawa, Junji; and Oosaka, Kuniaki, 4,550,948, Cl. 296-202.000.

Hashimoto, Shinichi: *See—*
Nakatomi, Yoshisugu; Uchida, Kohachi; and Hashimoto, Shinichi, 4,551,014, Cl. 355-75.000.

Hashimoto, Susumu: *See—*
Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, 4,551,757, Cl. 358-212.000.

Hasselmann, Heinz: *See—*
Bitsch, Harald; Donner, Klaus; Hasselmann, Heinz; and Horbach, Rainer, 4,550,664, Cl. 105-180.000.

Hata, Yoshitada: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.

Hatanaka, Takao: *See—*
Nagatani, Toshio; Chiba, Norio; Hatanaka, Takao; and Saito, Toshio, 4,551,367, Cl. 428-35.000.

Hattori, Takeshi: *See—*
Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, 4,550,638, Cl. 84-431.000.

Hauni-Werke Korber & Co. Kg.: *See—*
Kasparek, Alois; and Burger, Jurgen, 4,551,040, Cl. 406-28.000.

Haupt, Heinrich: *See—*
Brassat, Bert; Buysch, Hans-Josef; Hermann, Karl H.; and Haupt, Heinrich, 4,551,495, Cl. 524-94.000.

Havelick, Linn D.: *See—*
Beckstead, Leo W.; Havelick, Linn D.; and Hogsett, Robert F., 4,551,314, Cl. 423-54.000.

Hawkins, James B.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,550,657, Cl. 100-43.000.

Hayakawa, Masanori; Yamada, Noriaki; Kawamoto, Hiromi; and Nishimura, Satoshi, to Central Glass Company Limited. Wet process of preparing fine particles of ferrite of magnetoplumbite structure. 4,551,260, Cl. 252-62.590.

Hayashi, Kenji: *See—*
Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.

Hayashi, Kiyoshi, to Mita Industrial Co., Ltd. Light deflector. 4,550,985, Cl. 350-6.300.

Hayashi, Mitsuji: *See—*
Nishi, Hiroyuki; Hayashi, Mitsuji; and Tomizu, Motoyuki, 4,551,592, Cl. 200-67.00D.

Hayashi, Satoru: *See—*
Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, 4,550,638, Cl. 84-431.000.

Hayden, Martin P. Lure having bait storage compartment. 4,550,521, Cl. 43-41.000.

Haylock, John C.; and Vanderkooi, Nicholas, Jr., to Allied Corporation. Polyester composition containing tertiary and quaternary amine carboxylate salts. 4,551,507, Cl. 525-437.000.

Haynes, Joel, to Mindlin, Richard B. Batch-brewing coffee system. 4,550,651, Cl. 99-279.000.

Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, to Hitachi, Ltd. Bearing device of sealed type scroll compressor. 4,551,082, Cl. 418-55.000.

Hazeyama, Takeshi: *See—*
Beppu, Masaru; Agawa, Setsuo; Hazeyama, Takeshi; and Nashimoto, Toshiyuki, 4,551,240, Cl. 209-143.000.

Hechenbleikner, Ingenuin; and Enlow, William P., to Borg-Warner Chemicals, Inc. Substituted 2,5-dimethylpyrroles. 4,551,539, Cl. 548-412.000.

Hechenbleikner, Ingenuin; and Enlow, William P., to Borg-Warner Chemicals, Inc. Substituted 2,5-dimethylpyrroles. 4,551,540, Cl. 548-531.000.

Heckert, David C.: *See—*
Nakel, Gunther M.; and Heckert, David C., 4,551,342, Cl. 426-548.000.

Heden-Team A.G.: *See—*
Hedenberg, Gunnar, 4,550,653, Cl. 99-348.000.
Hedenberg, Gunnar, 4,550,654, Cl. 99-348.000.

Hedenberg, Gunnar, to Heden-Team A.G. Apparatus for making food products. 4,550,653, Cl. 99-348.000.

Hedenberg, Gunnar, to Heden Team A.G. Apparatus for automatic preparation of food products such as bread, cakes and the like. 4,550,654, Cl. 99-348.000.

Hefner, Werner: *See—*
Wagner, Eckhart; Volkamer, Klaus; Hefner, Werner; and Wagner, Ulrich, 4,551,158, Cl. 55-46.000.

Heiland, Wolfgang K., to United States of America, Agriculture. Hide transfer apparatus. 4,550,905, Cl. 271-202.000.

Heimrich, Klaus: *See—*
Bottcher, Hugo; Heimrich, Klaus; Hildebrandt, Gustav; Kracke, Heinrich; and Richter, Johannes, 4,551,297, Cl. 264-224.000.

Heiz, Hans, to Heiz, Therese. Process for producing an antireflecting layer on viewing screens. 4,551,356, Cl. 427-64.000.

Heiz, Therese: *See—*
Heiz, Hans, 4,551,356, Cl. 427-64.000.

Helene Curtis Industries, Inc.: *See—*
Wagman, Julius; and Sajic, Branko, 4,551,330, Cl. 424-59.000.

Helix Technology Corporation: *See—*
Bertsch, Peter K., 4,550,571, Cl. 62-6.000.

Hellgren, Lars G. I.: *See—*
Engstrom, Nils M. L., 4,550,594, Cl. 73-61.10C.

Henderson, Doug: *See—*
Josselson, Marc; and Henderson, Doug, 4,550,636, Cl. 83-743.000.

Henderson, George H., to G.E.M.M. Manufacturing. Pipe tamping tool. 4,550,739, Cl. 131-247.000.

Henkel KGaA: *See—*
Herold, Julius; Kluth, Hermann; Meffert, Alfred; and Leder, Manfred, 4,551,517, Cl. 528-60.000.

Henkel Kommandelgesellschaft auf Aktien: *See—*
Strack, Hans; Roebke, Wolfgang; Kneitel, Dieter; and Parr, Ehrfried, 4,551,322, Cl. 423-329.000.

Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, to U.S. Philips Corporation. Non-linear resistor and method of manufacturing the same. 4,551,269, Cl. 252-520.000.

Henny Penny Corporation: *See—*
Reese, Vernon E.; and Schwierking, Roger A., 4,550,677, Cl. 118-31.000.

Henry, Michael: *See—*
Ramsden, Hugh E.; and Henry, Michael, 4,551,245, Cl. 210-198.200.

Hensley, Albert L., Jr.: *See—*
Miller, Jeffrey T.; and Hensley, Albert L., Jr., 4,551,572, Cl. 585-454.000.

Henthorn, Jules B.: *See—*
Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., 4,551,719, Cl. 340-825.360.

Heochst Aktiengesellschaft: *See—*
Wottka, Bernhard; and Weindl, Alfred, 4,551,294, Cl. 264-175.000.

Hepworth, Malcolm T.: *See—*
Sabacky, Bruce J.; and Hepworth, Malcolm T., 4,551,313, Cl. 423-59.000.

Herberg, Michael J.; Macander, Rudolph F.; and Stegman, Todd R., to General Electric Company. Process for the continuous manufacture of silicone gums. 4,551,515, Cl. 528-18.000.

Herbert, William B.; and Patel, Rohit A. Surgical drainage and irrigation apparatus for post operative patient care. 4,551,130, Cl. 604-32.000.

Herman, Jack. Insert type footwear. 4,550,446, Cl. 2-239.000.

Herman Miller, Inc.: *See—*
Wiersema, Delbert; and Szmadzinski, John A., 4,550,893, Cl. 248-222.400.

Hermann, Karl H.: *See—*
Brassat, Bert; Buysch, Hans-Josef; Hermann, Karl H.; and Haupt, Heinrich, 4,551,495, Cl. 524-94.000.

Herold, Julius; Kluth, Hermann; Meffert, Alfred; and Leder, Manfred, to Henkel KGaA. Two-component polyurethane adhesive. 4,551,517, Cl. 528-60.000.

Herzl, Peter J., to Fischer & Porter Company. Oscillatory flowmeter. 4,550,614, Cl. 73-861.190.

Hettinger, William P., Jr., to Ashland Oil, Inc. Reclaiming lube oil in MRS unit. 4,551,234, Cl. 208-179.000.

Hewlett Packard Company: *See—*
Gysling, Peter, 4,550,623, Cl. 74-89.200.

Heys, George; and Coon, Dennis R., to NCR Corporation. Apparatus for testing printed circuit boards. 4,551,675, Cl. 324-158.00F.

Hi-Stat Manufacturing Company, Inc.: *See—*
Hire, Charles J., 4,551,702, Cl. 337-347.000.

Hibar Systems Limited: *See—*
Barall, Heinz, 4,551,072, Cl. 417-318.000.

Hibbard, George A.; and Morrison, Ward D., to Consolidated Technologies Corporation. Hammer. 4,550,785, Cl. 173-134.000.

Hicks, Hamilton. Fire-retardant polyurethane foam containing finely ground dry fire-retardant particles containing a volatile active fire-retardant componet. 4,551,483, Cl. 521-103.000.

Hicks, John W., Jr., to Polaroid Corporation. Hollow tube method for forming an optical fiber. 4,551,162, Cl. 65-4.200.

Higashiguchi, Toshiaki; and Sonoda, Michiaki, to Nippon Electric Co., Ltd. Stationary-picture transmission system. 4,551,767, Cl. 358-257.000.

Higashiguti, Teruaki: *See—*
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,551,403, Cl. 430-58.000.

Higuchi, Shigemitsu: *See—*
Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.

Hikari Industry Co., Ltd: *See—*
Inoue, Junichi, 4,551,244, Cl. 210-198.100.

Hilboll, Gerd; Doppelfeld, Ille-Stephanie; and Prop, Gerrit, to A. Nattermann & Cie GmbH. Method of treating high blood pressure using 6-[4-(1-imidazolyl)-phenyl]-5-methyl-3-oxo-tetrahydropyridazines. 4,551,455, Cl. 514-252.000.

Hildebrandt, Gustav: *See—*
Bottcher, Hugo; Heimrich, Klaus; Hildebrandt, Gustav; Kracke, Heinrich; and Richter, Johannes, 4,551,297, Cl. 264-224.000.

Hill, Michael R. H.: *See—*
Lane, Edward S.; and Hill, Michael R. H., 4,551,358, Cl. 427-126.600.

Hillenbrand, Gary F.: *See—*
Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,551,407, Cl. 430-138.000.

Hilsum, Cyril, to General Electric Company, p.l.c., The. Production of correction signals in a color CRT system. 4,551,653, Cl. 315-10.000.

Hilton-Davis Chemical Co., The: *See—*
Hung, William M., 4,551,740, Cl. 346-218.000.

Hinkel, Walter W., to Goodyear Tire & Rubber Company, The. Pneumatic tire tread. 4,550,756, Cl. 152-209.00R.

Hintzen, Franz-Josef: *See—*
Trage, Burghard; Hintzen, Franz-Josef; and Leitz, Richard, 4,550,570, Cl. 60-693.000.

Hirabayashi, Toshiyasu: *See—*
Horie, Motonobu; Hirabayashi, Toshiyasu; and Suzuki, Hisao, 4,550,821, Cl. 198-416.000.

Hiraga, Masaharu, to Sanden Corporation. Scroll-type fluid displacement apparatus with angular offset varying means. 4,551,078, Cl. 418-16.000.

Hiraga, Masaharu: *See—*
Sato, Tadashi; and Hiraga, Masaharu, 4,551,081, Cl. 418-55.000.

Hirai, Kazuo: *See—*
Sumiyoshi, Kikuo; Sato, Eiji; Hirai, Kazuo; Miyasaka, Kingo; and Izumi, Masayoshi, 4,551,393, Cl. 428-609.000.

Hirai, Koichi: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,551,565, Cl. 568-864.000.

Hirai, Koji: *See—*
Matsumoto, Mitsuo; Hirai, Koji; Yoshimura, Noriaki; and Okamura, Takayuki, 4,551,518, Cl. 528-80.000.

Hirai, Yoshihiko, to Nippon Electric Co., Ltd. All-solid-state display including an organic electrochromic layer with ion donor/acceptor. 4,550,982, Cl. 350-357.000.

Hirai, Yukio: *See—*
Miyagawa, Junichi; and Hirai, Yukio, 4,551,600, Cl. 219-10.49R.

Hirai, Yutaka: *See—*
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,551,405, Cl. 430-64.000.

Hiramatsu, Seiichiro: *See—*
Tsuda, Tadashi; Hiramatsu, Seiichiro; Ohtsuka, Mitsugi; and Maeno, Tsuyoshi, 4,551,722, Cl. 340-904.000.

Hiramoto, Masao: *See—*
Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, 4,551,757, Cl. 358-212.000.

Hirao, Katsumi; and Sasaki, Akira, to Toyo Aerosol Industry Co., Ltd.; and Kanpe Katei Toryoo Kabushiki Kaisha. Obliquely-handling nozzle for aerosol. 4,550,865, Cl. 222-402.210.

Hirata, Sadao: *See—*
Maruhashi, Yoshitsugu; and Hirata, Sadao, 4,551,366, Cl. 428-35.000.

Hire, Charles J., to Hi-Stat Manufacturing Company, Inc. Thermostatic switch and method of manufacture. 4,551,702, Cl. 337-347.000.

Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, to Canon Kabushiki Kaisha; and Copyer Kabushiki Kaisha. Disazo electrophotographic photosensitive member. 4,551,404, Cl. 430-59.000.

Hirobe, Junichi: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Hironaka, Yoshio; and Kumazawa, Takashi, to Idemitsu Kosan Company Limited. Process for the production of carbonyl compounds. 4,551,555, Cl. 568-401.000.

Hirsch, Martin: *See—*
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Hisajima, Masahiko: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,551,009, Cl. 355-15.000.

Hisao, Tanaka: *See—*
Takayuki, Okada; Hisao, Tanaka; Ken-Ichi, Sawara; and Tsutomu, Konaka, 4,551,509, Cl. 526-68.000.

Hitachi, Ltd.: *See—*
Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, 4,551,082, Cl. 418-55.000.
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.
Isa, Hitoshi; Kaneko, Ryoichi; and Kashiwahara, Katsuto, 4,550,569, Cl. 60-657.000.
Matsuura, Hiromi, 4,551,820, Cl. 365-189.000.
Nagano, Masami; Atago, Takeshi; and Yoshida, Tatsuya, 4,550,705, Cl. 123-488.000.
Noda, Tamotsu; Tamura, Hifumi; and Okano, Hiroshi, 4,551,650, Cl. 313-362.100.
Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.
Suzuki, Kensuke, 4,551,744, Cl. 357-64.000.
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, 4,550,480, Cl. 29-156.40R.
Watanabe, Ryuji; Ando, Hisashi; Kuniya, Keiichi; and Kurosawa, Yukio, 4,551,596, Cl. 200-144.00B.
Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, 4,550,612, Cl. 73-727.000.

Hitachi Microcomputer Engineering, Ltd.: *See—*
Matsuura, Hiromi, 4,551,820, Cl. 365-189.000.

Hitchcock, Gary L.: *See—*
Kraft, Derald H.; and Hitchcock, Gary L., 4,551,122, Cl. 474-170.000.

Hochuli, Erich, to Hoffmann-La Roche Inc. Purification of interferon by metal chelate chromatography. 4,551,271, Cl. 260-112.00R.

Hodges, Michael J.; and Scanes, Malcolm K., to Detexomat Machinery Ltd. Method and apparatus for transferring hosiery between hosiery manufacturing machines. 4,550,868, Cl. 223-43.000.

Hodgson, Darel E.: *See—*
Krumme, John F.; and Hodgson, Darel E., 4,550,870, Cl. 227-19.000.

Hoechst Aktiengesellschaft: *See—*
Schaedlich, Gunther; and Moraw, Roland, 4,551,406, Cl. 430-119.000.
Stuhler, Herbert, 4,551,561, Cl. 568-619.000.

Hoechst-Roussel Pharmaceuticals Incorporated: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,551,474, Cl. 514-309.000.

Hofbauer, Edwin; Lechner, Peter; and Exler, Heribert, to Voest-Alpine Aktiengesellschaft. Apparatus for charging a rotary kiln with pneumatic tires. 4,551,051, Cl. 414-21.000.

Hoffman-Lewis, Ltd.: *See—*
Hoffman, Paul H., 4,550,706, Cl. 123-549.000.

Hoffman, Paul H., to Hoffman-Lewis, Ltd. Fuel vaporizer. 4,550,706, Cl. 123-549.000.

Hoffmann-La Roche Inc.: *See—*
Hansen, Hans-Jurgen; and Pfoertner, Karlheinz, 4,551,214, Cl. 204-159.000.
Hochuli, Erich, 4,551,271, Cl. 260-112.00R.
Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, 4,550,981, Cl. 350-350.00R.
Tilley, Jefferson W., 4,551,460, Cl. 514-267.000.

Hoffmann, Ralph M., to Trochoid Power Corporation. Dual rotor gear assembly for trochoidal rotary device. 4,551,083, Cl. 418-61.00A.

Hogsett, Robert F.: *See—*
Beckstead, Leo W.; Havelick, Linn D.; and Hogsett, Robert F., 4,551,314, Cl. 423-54.000.

Hoheisel, Peter; and Bartholmei, Peter, to Continental Gummi-Werke Aktiengesellschaft. Variable-volume receptacle, especially for use as a compensating receptacle in building heating systems. 4,550,833, Cl. 206-527.000.

Hohman, John E., to Sexton-Espec, Inc. Refrigeration system with liquid bypass line. 4,550,574, Cl. 62-197.000.

Hokanson, Gerard C.: *See—*
Kern, Donald L.; Hokanson, Gerard C.; and French, James C., 4,551,529, Cl. 544-265.000.

Hoke, Merle C.; Armstrong, Richard G.; and Penn, James E., to Manville Service Corp. Exterior post top mounting lighting fixture. 4,551,792, Cl. 362-362.000.

Holik, Herbert; and Kurtz, Rudiger, to Sulzer Brothers Ltd. Headbox for a papermaking machine. 4,551,204, Cl. 162-336.000.

Holley, David M., to Power Components Inc. Pneumatic spring. 4,550,899, Cl. 267-119.000.

Holliday, Robert A. Coin handling apparatus for use in merchandise vending machines. 4,550,818, Cl. 194-1.00D.

Holmberg Company, The: *See—*
Holmberg, Thomas A., 4,551,374, Cl. 428-43.000.

Holmberg, Thomas A., to Holmberg Company, The. Continuous sheet with perforated tear-off driving edge and recessed reinforced inner edge. 4,551,374, Cl. 428-43.000.

Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, to Holter, Heinz. Method of cleaning air loaded with pollutants. 4,551,304, Cl. 422-4.000.

Holzman, James W.: *See—*
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,550,956, Cl. 312-250.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Asaka, Urataro; Kanai, Shigeo; Tanaka, Yasuhiro; and Iwamoto, Kazuya, 4,551,074, Cl. 417-366.000.
Inoue, Kazuo; and Otsuka, Tsuneo, 4,550,794, Cl. 180-219.000.
Katoh, Tadashi, 4,551,594, Cl. 200-82.00R.
Kawaguchi, Takeshi, 4,550,809, Cl. 188-18.00A.
Numata, Morikuni; and Nakadate, Toshihiko, 4,551,605, Cl. 219-86.310.
Okubo, Takeshi; Kodachi, Hideo; and Miyanaka, Masaki, 4,550,488, Cl. 29-568.000.

Honeywell Inc.: *See—*
Anderson, Robert D., 4,551,705, Cl. 340-347.0DA.
Betsch, Regis J.; Liu, Michael S.; and Tufte, Obert N., 4,551,394, Cl. 428-641.000.
Callaghan, Stephen P.; Callaghan, Timothy J.; Gustafson, Harry A.; and Lim, Wah L., 4,551,021, Cl. 356-350.000.
Kozlik, Tony J., 4,551,721, Cl. 340-825.520.
Mott, Richard C., 4,550,616, Cl. 73-861.740.

Honeywell Information Systems Inc.: *See—*
Ryan, Charles P.; and Guenthner, Russell W., 4,551,799, Cl. 364-200.000.

Hong, Kuochih: *See—*
Sapru, Krishna; Hong, Kuochih; Fetcenko, Michael A.; and Venkatesan, Srinivasan, 4,551,400, Cl. 429-94.000.

Honma, Ichiro; Koyama, Arata; Amano, Masatoshi; and Takumi, Nobusuke, to Ishihara Sangyo Kaishi, Limited. Process for producing cobalt-and ferrous iron-containing ferromagnetic iron oxides. 4,551,327, Cl. 423-594.000.

Hope, Douglas A.: *See—*
Bell, James A. E.; Conard, Bruce R.; and Hope, Douglas A., 4,551,184, Cl. 148-127.000.

Horbach, Rainer: *See—*
Bitsch, Harald; Donner, Klaus; Hasselmann, Heinz; and Horbach, Rainer, 4,550,664, Cl. 105-180.000.

Horiba, Ltd.: *See—*
Uematsu, Hiroaki; and Aoki, Junji, 4,551,222, Cl. 204-417.000.

Horicke, Bernhard: *See—*
Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, 4,551,183, Cl. 148-12.00R.

Horie, Motonobu; Hirabayashi, Toshiyasu; and Suzuki, Hisao, to Japan Tobacco & Salt Public Corporation, The. Cigarette reversing apparatus. 4,550,821, Cl. 198-416.000.

Horiuchi, Yasuhiro: *See—*
Itoh, Hiroyasu; Suzuki, Yasutoshi; Horiuchi, Yasuhiro; and Hara, Kunihiko, 4,551,669, Cl. 323-268.000.

Horodysky, Andrew G., to Mobil Oil Corporation. Amides from dialkylenetriamines and lubricant and fuel compositions containing same. 4,551,257, Cl. 252-32.70E.

Horton, Robert A.; and Jayaraman, Gowri S., to TRW Inc. Apparatus and method for casting single crystal articles. 4,550,764, Cl. 164-122.200.

Horvath, Carlos F., to Burroughs Corporation. Multiple control stores in a pipelined microcontroller for handling nester subroutines. 4,551,798, Cl. 364-200.000.

Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, to Nissan Motor Company, Limited. Electronic engine control system for controlling the energy conversion process of an internal combustion engine. 4,551,803, Cl. 364-431.050.

Hoshino, Kazuo; Tanaka, Teruo; and Ito, Kenjiro, to Nisshin Steel Company, Ltd. Process for preparing strips or sheets of high strength austenitic steel having improved fatigue strength. 4,550,487, Cl. 29-527.700.

Hosomizu, Hiroshi: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.

Howell, Bobby A.; and Walles, Erik W. Macromolecular complexes of amidocarbonylic water-soluble polymers and square platinous and equivalent organometallics. 4,551,502, Cl. 525-326.900.

Hower, Larry: *See—*
Runyon, Wayne; and Hower, Larry, 4,550,728, Cl. 128-303.180.

Hower, Philip L.; and Li, Eric K., to Unitrode Corporation. Method for reducing leakage currents in semiconductor devices. 4,551,353, Cl. 427-39.000.

Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, to Takeda Chemical Industries, Ltd. Ethylene glycol derivatives having antiprotozoan, anti-fungal and anti-tumor activity. 4,551,532, Cl. 546-22.000.

Hsich, Henry S. Y.; and Ambrose, Richard J., to Lord Corporation. Cure-control method for thermosetting polymeric material. 4,551,807, Cl. 364-473.000.

Hsu, Chao-Yang; and Ellis, Paul E., Jr., to Sun Refining and Marketing Company. Hydroformylation catalyst and process. 4,551,559, Cl. 568-454.000.

Hubbard, George R. Universal plumbing pipe locator and support. 4,550,451, Cl. 4-192.000.

Huber, William B.: *See—*
Slavik, William H.; and Huber, William B., 4,551,134, Cl. 604-67.000.

Hudson, Henry C., to Shell Oil Company. Catalysts for the selective hydrogenation of acetylenes. 4,551,443, Cl. 502-313.000.

Huey, Cecil O., Jr.: *See—*
Fletcher, George R., Jr.; Messick, George H., Jr.; Roby, Charles K.; and Huey, Cecil O., Jr., 4,550,532, Cl. 51-288.000.

Huffer, Wolfgang: *See—*
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,551,265, Cl. 252-301.170.

Huffman, Charles E., to Rockwell International Corporation. Apparatus for providing loopback of signals where the signals being looped back have an overhead data format which is incompatible with a high speed intermediate carrier overhead format. 4,551,830, Cl. 370-15.000.

Hufnagel, Robert E., to Perkin-Elmer Corporation, The. Achromatic holographic optical system. 4,550,973, Cl. 350-3.720.

Hughes, Robert W.; and Cantrel, James F., to Ingersoll-Rand Company. Threaded engagement means. 4,551,050, Cl. 411-436.000.

Hughes Tool Company: *See—*
Berg, Gunnar H., 4,550,942, Cl. 294-102.200.

Hult, Anders; Ito, Hiroshi; MacDonald, Scott A.; and Willson, Carlton G., to International Business Machines Corporation. Process for preparing negative relief images with cationic photopolymerization. 4,551,418, Cl. 430-325.000.

Hung, Chi-wen: *See—*
Imai, Tamotsu; and Hung, Chi-wen, 4,551,574, Cl. 585-660.000.

Hung, William M., to Hilton-Davis Chemical Co., The. Electrochromic and marking systems. 4,551,740, Cl. 346-218.000.

Hunt, David J., to International Computers Limited. Apparatus for decoding run-length encoded data. 4,551,706, Cl. 340-347.0DD.

Hunter, William E., Jr.: *See—*
Doty, Gerald A.; and Hunter, William E., Jr., 4,550,474, Cl. 24-633.000.

Hurlemann, Ernst: *See—*
Bruderer, Werner; Brieger, Hans; and Hurlemann, Ernst, 4,550,641, Cl. 89-12.000.

Husslein, Gerd: *See—*
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,551,448, Cl. 514-130.000.

Hutzenlaub, Armin S. P.; and Duppengiesser, Dieter, to Erwin Kampf GmbH & Co. Maschinenfabrik. Reel cutting and winding machine. 4,550,882, Cl. 242-56.600.

Hyatt, Gilbert P. Filter display system. 4,551,816, Cl. 364-724.000.

Hydril Company: *See—*
Mott, James D., 4,550,780, Cl. 166-323.000.

Hyman, Frederic E. Method and apparatus for opposing deformity, displacement, and expulsion of the ocular tissues during open eye surgery. 4,550,713, Cl. 128-1.00R.

Hyman, Gregory E.; and Greenberg, Lawrence J. Impact-activated toy. 4,551,114, Cl. 446-397.000.

I.P.E. Nuova Bialetti S.p.A.: *See—*
Cristante, Guido, 4,551,026, Cl. 366-149.000.

Iai, Kenichiro, to Yoshida Kogyo K.K. Apparatus for forming and planting slide fastener elements. 4,550,477, Cl. 29-33.200.

IBU Betten-Union GmbH & Co. KG: *See—*
Endel, Dieter; and Billerbeck, Gerd, 4,550,459, Cl. 5-437.000.

Idemitsu Kosan Company Limited: *See—*
Hironaka, Yoshio; and Kumazawa, Takashi, 4,551,555, Cl. 568-401.000.
Ikeda, Makoto; and Nakamura, Akira, 4,551,258, Cl. 252-32.70E.

IFM Electronic GmbH: *See—*
Buck, Robert; and Lamarche, Jean L., 4,551,637, Cl. 307-308.000.

Igarashi, Keiichi: *See—*
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,551,478, Cl. 514-603.000.

Igashira, Toshihiko; Sakakibara, Yasuyuki; Yoshinaga, Toru; Abe, Seiko; and Watanabe, Kazuhide, to Nippon Soken, Inc. Piezoelectric hydraulic control valve. 4,550,744, Cl. 137-80.000.

Igawa, Tatsuya: *See—*
Sato, Morio; and Igawa, Tatsuya, 4,550,660, Cl. 101-128.210.

Igelbuscher, Heinrich: *See—*
Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, 4,551,304, Cl. 422-4.000.

Iida, Hideo, to Nissan Motor Co., Ltd. Weft picking system of loom and method for operating same. 4,550,754, Cl. 139-452.000.

Iida, Shinobu: *See—*
Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,551,386, Cl. 428-323.000.

Iijima, Makoto: *See—*
Harada, Masato; Miya, Shinya; Yamada, Sadahiko; and Iijima, Makoto, 4,551,439, Cl. 502-107.000.

Iizima, Kazuo: *See—*
Sato, Masanori; and Iizima, Kazuo, 4,551,375, Cl. 428-57.000.

Iizima, Takeshi: *See—*
Mino, Hisashi; and Iizima, Takeshi, 4,551,408, Cl. 430-141.000.

Iizuka, Eiichi; Sando, Tomoji; Kashima, Shinji; and Maki, Masakazu, to Showa Denko Kabushiki Kaisha. Method for growing boron nitride crystals of cubic system. 4,551,195, Cl. 156-603.000.

Iizuka, Eiichi, to Showa Denko Kabushiki Kaisha. Process for producing boron nitride of cubic system. 4,551,316, Cl. 423-290.000.

Ikeda, Hideo: *See—*
Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, 4,551,419, Cl. 430-445.000.
Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, 4,551,421, Cl. 430-509.000.

Ikeda, Makoto; and Nakamura, Akira, to Idemitsu Kosan Company Limited. Grease composition. 4,551,258, Cl. 252-32.70E.

Ikeda, Masafumi: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,173, Cl. 75-12.000.
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,174, Cl. 75-12.000.

Ikeda, Masuhiro: *See—*
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.

Ikeda, Tadashi; Kuwabara, Kenichi; Yamamuro, Kiyohiko; and Kokubo, Tadayoshi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,551,424, Cl. 430-588.000.

Ikeda, Takashi: *See—*
Otake, Katsumasa; Ikeda, Takashi; Omura, Takashi; and Imada, Kunihiko, 4,551,150, Cl. 8-496.000.

Ikeda, Toshiharu: *See—*
Fujiwara, Michiaki; and Ikeda, Toshiharu, 4,550,886, Cl. 242-35.60E.

Iketani, Ryuichi: *See—*
Yokouchi, Hiroshi; and Iketani, Ryuichi, 4,551,821, Cl. 365-203.000.

Ikezawa, Harumi: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,551,565, Cl. 568-864.000.

Illinois Tool Works Inc.: *See—*
Folson, Henry J., 4,550,808, Cl. 188-1.120.
Peterson, Francis C., 4,551,189, Cl. 156-73.500.

Im, Darryl. Bicycle type exercise apparatus with indexing pedal cranks. 4,550,906, Cl. 272-73.000.

Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, to Hitachi, Ltd.; and Shin-Etsu Chemical Co., Ltd. Continuous vacuum treating apparatus. 4,551,310, Cl. 422-186.050.

Imada, Kunihiko: *See—*
Otake, Katsumasa; Ikeda, Takashi; Omura, Takashi; and Imada, Kunihiko, 4,551,150, Cl. 8-496.000.

Imada, Nobuyuki; and Okada, Toshiteru, to Mitsui Mining & Smelting Co., Ltd. Macroporous manganese dioxide water purifier. 4,551,254, Cl. 210-688.000.

Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; and Ueno, Hiroshi, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for polymerization of olefins. 4,551,440, Cl. 502-119.000.

Imai, Tamotsu; and Hung, Chi-wen, to UOP Inc. Indium-containing dehydrogenation catalyst. 4,551,574, Cl. 585-660.000.

Imaizumi, Yutaka: *See—*
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, 4,550,480, Cl. 29-156.40R.

Immunicon, Inc.: *See—*
Liberti, Paul A.; and Pollara, Paul, 4,551,435, Cl. 436-541.000.

Imperial Chemical Industries PLC: *See—*
Crosby, John, 4,551,281, Cl. 260-465.00D.
Parry, Keith P.; Worthington, Paul A.; and Rathmell, William G., 4,551,469, Cl. 514-383.000.
Punja, Nazim, 4,551,546, Cl. 560-124.000.

Ina, Toshikazu: *See—*
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,550,618, Cl. 73-862.340.

Inaba, Masahito: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Kawagoe, Nobukazu; Naruse, Kazuhiko; and Inaba, Masahito, 4,551,011, Cl. 355-35.000.

Inagaki, Hiromichi. Water-proof paper container and its manufacturing method. 4,551,123, Cl. 493-108.000.

Inakagata, Satoru: *See—*
Wada, Sumio; and Inakagata, Satoru, 4,551,666, Cl. 320-20.000.

Inco Limited: *See—*
Bell, James A. E.; Conard, Bruce R.; and Hope, Douglas A., 4,551,184, Cl. 148-127.000.

Indalex, Division of Indal Limited: *See—*
Degen, Max F., 4,550,584, Cl. 72-273.000.

Industrial Parts Depot: *See—*
Rasmussen, Robert, 4,550,513, Cl. 37-141.00R.

Industrial Refuse Sales, Inc.: *See—*
Adsit, Gordon H., 4,550,849, Cl. 220-71.000.

Ingersoll-Rand Company: *See—*
Hughes, Robert W.; and Cantrel, James F., 4,551,050, Cl. 411-436.000.
La Bonte, David E.; Richter, Kurt W.; and Goehler, Robert F., 4,550,622, Cl. 74-87.000.

Ingraham, Glenn J.: *See—*
Darrow, Russell E.; Ingraham, Glenn J.; Larnerd, John D.; and Nesky, Robert W., 4,550,493, Cl. 29-739.000.

Ingre, Lars P., to Telefonaktiebolaget LM Ericsson. Method of manufacturing a structure with a fixed and a movable part provided with optical fibres. 4,550,483, Cl. 29-416.000.

Ingvason, Sigurdur. Hull construction for seagoing vessels. 4,550,673, Cl. 114-56.000.

Inman, Roger, to Archant Limited. Knife sharpener. 4,550,632, Cl. 76-86.000.

Inmont Corporation: *See—*
Panush, Sol, 4,551,491, Cl. 524-31.000.

Inokuchi, Toshiyuki, to Ricoh Company, Ltd. Optical data pattern generation device comprising phosphor member. 4,551,737, Cl. 346-161.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi; Onoue, Makoto; and Sano, Sadao, 4,551,602, Cl. 219-69.00D.
Inoue, Kiyoshi, 4,551,606, Cl. 219-121.0EA.

Inoue, Junichi, to Hikari Industry Co., Ltd. Spilled oil processing catamaran. 4,551,244, Cl. 210-198.100.

Inoue, Kazuo; and Otsuka, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle having an engine with a supercharger. 4,550,794, Cl. 180-219.000.

Inoue, Kiyoshi; Onoue, Makoto; and Sano, Sadao, to Inoue-Japax Research Incorporated. Electrical machining using an aqueous solution with a recycled surface active agent. 4,551,602, Cl. 219-69.00D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Beamed energy radiation control method and apparatus. 4,551,606, Cl. 219-121.0EA.

Inoue, Masao; and Suzuki, Shingo, to Mitsubishi Rayon Co., Ltd. Rear projection screen. 4,550,977, Cl. 350-128.000.

Inoue, Tetsuhiko. Coating film having adhesiveness. 4,551,381, Cl. 428-240.000.

Inoue, Toru: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.

Inskip, Ervin B., to Mallinckrodt, Inc. Preparation of bis(aminophenyl) ethers from (N-acetyl)aminophenols or their phenolates. 4,551,551, Cl. 564-430.000.

Institut Pasteur: *See—*
Danos, Olivier; Katinka, Michael; and Yaniv, Moshe, 4,551,270, Cl. 260-112.50R.

Institute po Metaloznanie I Technologia na Metalite: *See—*
Nikolov, Ivan D., 4,550,763, Cl. 164-119.000.

Integrated Ionics, Inc.: *See—*
Lauks, Imants R., 4,551,209, Cl. 204-1.00T.

International Business Machines Corporation: *See—*
Anderson, Carl J., 4,551,704, Cl. 340-347.0AD.
Annunziata, Eugene J.; and Stammely, Thomas E., 4,551,671, Cl. 324-51.000.
Bensadon, Joseph M.; and Brickman, Norman F., 4,551,835, Cl. 370-110.100.
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,550,489, Cl. 29-571.000.
Darrow, Russell E.; Ingraham, Glenn J.; Larnerd, John D.; and Nesky, Robert W., 4,550,493, Cl. 29-739.000.
Di Milia, Vincent; Maldonado, Juan R.; Speidell, James L.; and Warlaumont, John M., 4,551,192, Cl. 156-345.000.
Hult, Anders; Ito, Hiroshi; MacDonald, Scott A.; and Willson, Carlton G., 4,551,418, Cl. 430-325.000.
Roalson, Howard J., 4,551,776, Cl. 360-77.000.
Schettler, Helmut; and Stadler, Ewald, 4,551,789, Cl. 361-406.000.

International Computers Limited: *See—*
Hunt, David J., 4,551,706, Cl. 340-347.0DD.

International Hydron Corporation: *See—*
Rawlings, David L., 4,551,086, Cl. 425-425.000.

International Paper Company: *See—*
Asanuma, Mari, 4,550,826, Cl. 206-259.000.
Mehra-Palta, Asha; and Gross, Kimnaja, 4,550,528, Cl. 47-58.000.

International Resources Management, Inc.: *See—*
Coffing, Samuel F., 4,551,246, Cl. 210-221.200.

International Standard Electric Corporation: *See—*
Cranfield, Brain A.; Fothergill, John C.; and Wolfe, Susan V., 4,551,499, Cl. 524-487.000.
Mattle, Hans P., 4,551,748, Cl. 358-10.000.
Rose, Jochen, 4,551,587, Cl. 200-11.00R.
Schemmel, Gerald; and Linnebach, Richard, 4,551,186, Cl. 148-171.000.

International Technidyne Corp.: *See—*
Mintz, Michael D., 4,551,308, Cl. 422-58.000.

International Telephone & Telegraph Corp.: *See—*
Goegelein, Gerald W.; Longmore, Paul H.; and Fisher, Stan E., 4,551,837, Cl. 371-25.000.
Murphy, Kent A., 4,550,974, Cl. 350-96.150.
Nelson, Randall B., 4,551,305, Cl. 422-5.000.

Internationale Octrooi Maatscappij "Octropa" B.V.: *See—*
Van Dijk, Cornelis; and De Jongh, Rudolph O., 4,551,441, Cl. 502-159.000.

Intevep, S.A.: *See—*
Calderon, Jose L.; and Betancourt, Humberto, 4,551,232, Cl. 208-92.000.

Irie, Yoichiro: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Irnich, Rudolf: *See—*
Bott, Kaspar; Kaibel, Gerd; Hartmann, Horst; Irnich, Rudolf; and Buelow, Horst, 4,551,208, Cl. 203-60.000.

Irvine Sensors Corporation: *See—*
Carson, John C.; and Clark, Stewart A., 4,551,629, Cl. 250-578.000.

Isa, Hitoshi; Kaneko, Ryoichi; and Kashiwahara, Katsuto, to Hitachi, Ltd. Main steam inlet structure for steam turbine. 4,550,569, Cl. 60-657.000.

Isakov, Edmund, to Kennametal Inc. Two-prong rotary bit, especially for use with roof drills, and insert therefor. 4,550,791, Cl. 175-410.000.

Ishibashi, Teruhiko, to Fuji Photo Film Co. Ltd. Sheet sub-stack separating and feeding apparatus. 4,551,053, Cl. 414-114.000.

Ishida, Hiroshi; and Taniguchi, Mitsuyuki, to Fanuc Ltd. Motor speed detecting device. 4,551,662, Cl. 318-316.000.

Ishida, Hiroshi: *See—*
Amemiya, Yoichi; Ishida, Hiroshi; Takekoshi, Yashitaka; and Ushiyama, Shigeyuki, 4,551,676, Cl. 324-208.000.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,550,578, Cl. 68-5.00E.

Ishigami, Sumiyuki; and Sato, Mitsuru, to Tokyo Denpa Kabushiki Kaisha; and Kabushiki Kaisha Goto Seisakusho. Quartz unit. 4,550,475, Cl. 29-25.350.

Ishihara Sangyo Kaishi, Limited: *See—*
Honma, Ichiro; Koyama, Arata; Amano, Masatoshi; and Takumi, Nobusuke, 4,551,327, Cl. 423-594.000.

Ishihara, Shunichi: *See—*
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,551,003, Cl. 355-3.00R.

Ishikawa, Kiyotsugu: *See—*
Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, 4,551,757, Cl. 358-212.000.

Ishikawa, Masatoshi, to Director General of Agency of Industrial Science and Technology. Device for detecting center position of two-dimensionally distributed data. 4,551,817, Cl. 364-811.000.

Ishikawa, Norio: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,550,993, Cl. 354-402.000.

Ishikawa, Shozo: *See—*
Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, 4,551,404, Cl. 430-59.000.

Ishikawa, Takehiro; Yamazawa, Akira; and Kusumoto, Yasuo, to Kabushiki Kaisha Daini Seikosha. Electronic clinical thermometer. 4,551,031, Cl. 374-117.000.

Ishizaka, Sunao; and Maida, Osamu, to Nippon Kogaku K.K. Device for detecting code on film cartridge. 4,550,991, Cl. 354-21.000.

Ito, Hiroshi: *See—*
Hult, Anders; Ito, Hiroshi; MacDonald, Scott A.; and Willson, Carlton G., 4,551,418, Cl. 430-325.000.

Ito, Kenjiro: *See—*
Hoshino, Kazuo; Tanaka, Teruo; and Ito, Kenjiro, 4,550,487, Cl. 29-527.700.

Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, to Canon Kabushiki Kaisha. Electrophotographic process and apparatus therefor. 4,551,003, Cl. 355-3.00R.

Ito, Toshimichi: *See—*
Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, 4,551,571, Cl. 585-440.000.

Ito, Yoichiro: *See—*
Kolobow, Theodor; and Ito, Yoichiro, 4,551,251, Cl. 210-635.000.

Itoh, Hiroyasu; Suzuki, Yasutoshi; Horiuchi, Yasuhiro; and Hara, Kunihiko, to Nippondenso Co., Ltd. Packaged solar cell apparatus. 4,551,669, Cl. 323-268.000.

ITT Corporation: *See—*
Winter, David F.; and Dick, William K., 4,551,633, Cl. 307-147.000.

ITT Industries, Inc.: *See—*
Blossfeld, Lothar, 4,550,490, Cl. 29-571.000.
Deutscher, Hans-Christian; Kohler, Alfred; Prohaska, Hans; and Schubert, Karl-Friedrich, 4,550,469, Cl. 15-250.340.
Schaefer, Ernst-Dieter, 4,550,567, Cl. 60-562.000.

Iwakura, Tomoatsu: *See—*
Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, 4,551,571, Cl. 585-440.000.

Iwamoto, Kazuya: *See—*
Asaka, Urataro; Kanai, Shigeo; Tanaka, Yasuhiro; and Iwamoto, Kazuya, 4,551,074, Cl. 417-366.000.

Iwao, Noriyuki: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Sekiguchi, Koichi; Takematsu, Hikaru; Yamamoto, Kazuyuki; and Kubo, Teruyuki, 4,551,583, Cl. 179-99.00M.

Iwashita, Takashi; Atsumi, Shinya; and Nakahama, Ryoji, to Sanshin Kogyo Kabushiki Kaisha. Tilt lock mechanism for marine propulsion device. 4,551,104, Cl. 440-56.000.

Izraeli, Hyman, to Thomas & Betts Corporation. Connector assembly for insulated cable. 4,550,965, Cl. 339-47.00R.

Izumi, Masayoshi: *See—*
Sumiyoshi, Kikuo; Sato, Eiji; Hirai, Kazuo; Miyasaka, Kingo; and Izumi, Masayoshi, 4,551,393, Cl. 428-609.000.

J. C. & D Enterprises, Inc.: *See—*
Union, Elias J., 4,550,904, Cl. 271-198.000.

J. D. Phillips Corporation: *See—*
Phillips, James D.; and Sheets, Robert L., 4,551,048, Cl. 409-197.000.

J. F. Werz Jr. KG Werzalit-Pressholzwerk: *See—*
Traumuller, Otfried; and Weinberg, Gerd, 4,550,832, Cl. 206-509.000.
Traumuller, Otfried; and Weinberg, Gerd, 4,550,847, Cl. 220-4.00F.

J. H. Benecke GmbH: *See—*
Bottcher, Hugo; Heimrich, Klaus; Hildebrandt, Gustav; Kracke, Heinrich; and Richter, Johannes, 4,551,297, Cl. 264-224.000.

J & R Manufacturing, Inc.: *See—*
Riley, Roy C., 4,550,966, Cl. 339-84.000.

J. T. Baker Chemical Co.: *See—*
Ramsden, Hugh E.; and Henry, Michael, 4,551,245, Cl. 210-198.200.

J. T. Eaton & Company, Inc.: *See—*
Baker, Stanley Z.; Baker, Bart M.; and Baker, Benjamin H., 4,550,525, Cl. 43-131.000.

J. Wagner GmbH: *See—*
Kille, Ewald; and Karliner, Rudolf, 4,551,037, Cl. 401-146.000.

Jackson, Denise M.: *See—*
Tsuda, Yoshihisa; and Jackson, Denise M., 4,551,432, Cl. 435-232.000.

Jackson, Michael A., to Envirotech Corporation. Flotation machine and aeration impeller. 4,551,285, Cl. 261-87.000.

Jackson, Winston J., Jr.: *See—*
Morris, John C.; and Jackson, Winston J., Jr., 4,551,520, Cl. 528-302.000.

Jacob, Karl A. Apparatus for operating a high pressure boiler. 4,550,687, Cl. 122-1.00C.

Jacoby, George V.: *See—*
Cohn, Martin; Jacoby, George V.; and Vinding, Jorgen P., 4,551,773, Cl. 360-40.000.

Jacquett, Harold W.: *See—*
Davidescu, Reghina; de Ceglie, Gaetano J.; Jacquett, Harold W.; and Paluzzi, Joseph A., 4,551,345, Cl. 426-594.000.
Jasovsky, George A.; Jacquett, Harold W.; and de Ceglie, Gaetano J., 4,551,344, Cl. 426-594.000.

Jacquin, H. George: *See—*
Douglass, Randle; Jacquin, H. George; Chewey, Paul M.; Galvan, Paul A.; and Naragon, Richard S., 4,550,888, Cl. 244-3.220.

Jagenberg AG: *See—*
Schonmeier, Herbert, 4,550,887, Cl. 242-56.300.

Jamak, Inc.: *See—*
Diehl, Larry F., Jr.; and Gibbon, Robert M., 4,551,293, Cl. 264-150.000.

James, William A.: *See—*
Cook, John R.; and James, William A., 4,551,143, Cl. 604-371.000.

Janssen, Kermit W.: *See—*
Sullivan, Dale W.; Janssen, Kermit W.; and Mitchell, Andrew, 4,550,778, Cl. 166-234.000.

Janusis, Charles: *See—*
Rowen, John B.; Rowen, Christopher M.; and Janusis, Charles, 4,551,028, Cl. 368-204.000.

Japan Tobacco & Salt Public Corporation, The: *See—*
Horie, Motonobu; Hirabayashi, Toshiyasu; and Suzuki, Hisao, 4,550,821, Cl. 198-416.000.

Jasovsky, George A.; Jacquett, Harold W.; and de Ceglie, Gaetano J., to General Foods Corporation. Method for aromatizing soluble coffee. 4,551,344, Cl. 426-594.000.

Jayant, Nuggehally S.: *See—*
Cox, Richard V.; and Jayant, Nuggehally S., 4,551,580, Cl. 179-1.50S.

Jayaraman, Gowri S.: *See—*
Horton, Robert A.; and Jayaraman, Gowri S., 4,550,764, Cl. 164-122.200.

Jeno's, Inc.: *See—*
Schmit, Justin M.; and Luoma, Eugene H., 4,551,337, Cl. 426-94.000.

Jensen, Laurel H.: *See—*
Lundahl, E. Cordell; Wiser, James G.; Thornley, W. Ray; and Jensen, Laurel H., 4,550,554, Cl. 56-294.000.

Jensen, Ove: *See—*
Hansen, Frits U.; and Jensen, Ove, 4,550,746, Cl. 137-461.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Arendt, Paul N.; and Valencia, Vance I., 4,551,844, Cl. 373-12.000.

Jobes, Sam S.: *See—*
Miller, Gary; Jobes, Sam S.; and Benfey, David P., 4,551,657, Cl. 315-399.000.

Johnson, A. David, Jr.; Bachman, Joseph L., Jr.; Ginther, George E., Sr.; Zimmermann, Charles E.; and Johnson, Albert D., Sr., to Wayne Automation Corp. Method of carton flap relaxing. 4,551,126, Cl. 493-453.000.

Johnson, Albert D., Sr.: *See—*
Johnson, A. David, Jr.; Bachman, Joseph L., Jr.; Ginther, George E., Sr.; Zimmermann, Charles E.; and Johnson, Albert D., Sr., 4,551,126, Cl. 493-453.000.

Johnson, Carter F.; Larson, Cheryl L.; and Tepley, Judy M. Exterior insulating flexible glazed surface covering, movable and stowable from indoors. 4,550,758, Cl. 160-271.000.

Johnson, Curtis A.; Renlund, Gary M.; Van Buren, Charles E.; and Prochazka, Svante, to General Electric Company. Fabrication of small dense silicon carbide spheres. 4,551,436, Cl. 501-90.000.

Johnson, Curtis A.: *See—*
Renlund, Gary M.; and Johnson, Curtis A., 4,551,496, Cl. 524-322.000.

Johnson, Elmer C., Jr.: *See—*
Plaas, Jon R.; Parker, Keith E.; Keiser, James D.; and Johnson, Elmer C., Jr., 4,551,139, Cl. 604-290.000.

Johnson, Herbert H.: *See—*
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,551,070, Cl. 417-68.000.

Johnson, Joe P. Electrical resistance heater unit. 4,551,614, Cl. 219-355.000.

Johnson & Johnson Baby Products Company: *See—*
Cook, John R.; and James, William A., 4,551,143, Cl. 604-371.000.

Johnson & Johnson Dental Products Company: *See—*
Panzera, Carlino, 4,551,099, Cl. 433-212.100.

Johnson & Johnson Products Inc.: *See—*
Tunc, Deger C., 4,550,449, Cl. 623-16.000.

Johnson, Joyce E. Doubly elastic cushioned carrying strap. 4,550,869, Cl. 224-202.000.

Johnson Matthey plc: *See—*
McFarlane, Glenton P.; and Swift, Steven G., 4,550,743, Cl. 137-68.100.

Johnson, Nicholas D., to National Research Development Corp. Acoustic lens. 4,550,609, Cl. 73-642.000.

Johnson, Richard H.; and Muma, George A., to Brunswick Corporation. Bowling lane duster. 4,550,467, Cl. 15-228.000.

Johnson, Walter E., Jr., to SCM Corporation. Process for the isomerization of limonene to terpinolene. 4,551,570, Cl. 585-355.000.

Johnson, William E. Protective cover for waterfowl callers. 4,551,112, Cl. 446-207.000.

Johnston, Howard; and Troxell, Lillian H., to Dow Chemical Company, The. Herbicidal trifluoromethyl pyridinyloxyphenoxy and pyridinylthiophenoxy propanols and derivatives thereof. 4,551,170, Cl. 71-94.000.

Jones, Gordon H.; Venuti, Michael C.; Alvarez, Robert; and Bruno, John J., to Syntex (U.S.A.) Inc. Method of treating heart failure using

(2-oxo-1,2,3,5-tetrahydroimidazo-[2,1-b]quinazolinyl)oxyalkylamides. 4,551,459, Cl. 514-267.000.
Jones, Harold T.: *See—*
Saverse, Ronald R.; and Jones, Harold T., 4,551,241, Cl. 209-148.000.
Jones, Jesse D.: *See—*
Ragan, Gary S.; and Jones, Jesse D., 4,551,485, Cl. 523-212.000.
Jones, Nigel J.: *See—*
Temple, Stephen; Jones, Nigel J.; and Syrop, Alan N., 4,550,472, Cl. 17-1.00R.
Jones, Robert E. Stop motion switch. 4,551,591, Cl. 200-61.130.
Jones, Wallace R. Sheet construction and method. 4,550,683, Cl. 118-505.000.
Jones, William A. Method of making pictures. 4,551,286, Cl. 264-1.900.
Jonsson, John E.: *See—*
Wall, Lars E.; and Jonsson, John E., 4,551,752, Cl. 358-113.000.
Joshi, Madhusudan: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,550,729, Cl. 128-325.000.
Josselson, Marc; and Henderson, Doug, to Ralston Purina Company. Slicing apparatus. 4,550,636, Cl. 83-743.000.
Jourdan, Jean-Marie; Betelle, Jean; and Bougon, Philippe M. M., to Societe Nationale Industrielle et Aerospatiale. System for producing and distributing electrical energy for vehicles particularly aircraft, as well as an electrical power center for such a system. 4,551,632, Cl. 307-9.000.
Jozepaitis, Charles M.: *See—*
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,551,070, Cl. 417-68.000.
Jung, Eggert, to Dr. Ing. Rudolf Hell GmbH. Color reduction dependent on tone. 4,551,751, Cl. 358-75.000.
Just, Melitta: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,551,454, Cl. 514-252.000.
Juve, Robert J.; and Eagen, Michael J., to McGraw-Edison Company. Micro crane finishing line system. 4,550,682, Cl. 118-425.000.
Kabashima, Katsuhiko: *See—*
Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,551,822, Cl. 365-222.000.
Kabushiki Kaisha AG: *See—*
Sugihara, Hironobu, 4,551,113, Cl. 446-154.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Ishikawa, Takehiro; Yamazawa, Akira; and Kusumoto, Yasuo, 4,551,031, Cl. 374-117.000.
Kabushiki Kaisha Goto Seisakusho: *See—*
Ishigami, Sumiyuki; and Sato, Mitsuru, 4,550,475, Cl. 29-25.350.
Kabushiki Kaisha Honda Rokku: *See—*
Asaka, Urataro; Kanai, Shigeo; Tanaka, Yasuhiro; and Iwamoto, Kazuya, 4,551,074, Cl. 417-366.000.
Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See—*
Tanaka, Akio; and Kamo, Yasuo, 4,550,879, Cl. 241-52.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, 4,550,638, Cl. 84-431.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Abe, Toshio; and Sakurai, Terushige, 4,550,588, Cl. 72-441.000.
Kabushiki Kaisha Meidensha: *See—*
Fushimi, Kazuo; Tsunakawa, Hirokazu; and Yonahara, Kunio, 4,551,267, Cl. 252-511.000.
Kabushiki Kaisha Miyano Tekkosho: *See—*
Yamazaki, Yoshinori; and Ogawa, Tsutomu, 4,550,631, Cl. 74-822.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Aizawa, Hitomi, 4,551,029, Cl. 368-273.000.
Takeda, Koji; Akahane, Masao; Mukaiyama, Fumiaki; and Kudo, Yasuhiko, 4,551,846, Cl. 375-82.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Suzuki, Masaru, 4,551,660, Cl. 318-293.000.
Kabushiki Kaisha Toshiba: *See—*
Nishimura, Nobuichi, 4,551,601, Cl. 219-10.55B.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Tanaka, Akira; Tsunekawa, Takahiko; Seiki, Kazuo; and Nakamura, Haruyoshi, 4,550,560, Cl. 57-261.000.
Kaeser, Charles, to P. F. Cosmetique. Facial massage device. 4,550,718, Cl. 128-57.000.
Kagler, Edmond, Jr., to A-Z International Tool Company. Method of and apparatus for cutting and recovering of submarine surface casing. 4,550,781, Cl. 166-340.000.
Kahn, Marvin L.: *See—*
O'Mahony, John S.; Kahn, Marvin L.; and Adapa, Satya N., 4,551,348, Cl. 426-639.000.
Kaibel, Gerd: *See—*
Bott, Kaspar; Kaibel, Gerd; Hartmann, Horst; Irnich, Rudolf; and Buelow, Horst, 4,551,208, Cl. 203-60.000.
Kain, Alexander S., to Plenty Limited. Rotary vane pump with two axially spaced sets of vanes. 4,551,079, Cl. 418-26.000.
Kakugo, Masahiro: *See—*
Shiga, Akinobu; Kakugo, Masahiro; Kojima, Junpei; and Wakatsuki, Kizuku, 4,551,501, Cl. 525-88.000.
Kalaus, Gyorgy: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.
Kambe, Toshiyuki: *See—*
Kubota, Hiromi; and Kambe, Toshiyuki, 4,551,588, Cl. 200-33.00R.
Kaminaga, Seiji: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,551,009, Cl. 355-15.000.
Kammiller, Neil A., to Reliance Electric Company. Voltage sensing at loads remotely connected to power supplies. 4,551,668, Cl. 323-234.000.
Kamo, Yasuo: *See—*
Tanaka, Akio; and Kamo, Yasuo, 4,550,879, Cl. 241-52.000.
Kamyr, Inc.: *See—*
Wiley, William E., 4,551,198, Cl. 159-47.300.
Kanai, Shigeo: *See—*
Asaka, Urataro; Kanai, Shigeo; Tanaka, Yasuhiro; and Iwamoto, Kazuya, 4,551,074, Cl. 417-366.000.
Kanayama, Kiyoshi; and Asano, Shoji, to Nippon Kokan Kabushiki Kaisha; and Nippon Kokan Koji Kabushiki Kaisha. Pipe end cutting apparatus. 4,550,635, Cl. 82-4.00C.
Kanda, Yohichi: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.
Kaneko, Katsumi: *See—*
Nishikawa, Eiichiro; Shinya, Masuo; Ueda, Kayako; and Kaneko, Katsumi, 4,551,556, Cl. 568-403.000.
Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Portable keyboard-type musical instrument. 4,550,638, Cl. 84-431.000.
Kaneko, Ryoichi: *See—*
Isa, Hitoshi; Kaneko, Ryoichi; and Kashiwahara, Katsuto, 4,550,569, Cl. 60-657.000.
Kaneko, Takeru: *See—*
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.
Kaneko, Yutaka: *See—*
Kimura, Toshihiko; Kaneko, Yutaka; and Sasaki, Takashi, 4,551,422, Cl. 430-551.000.
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, to Canon Kabushiki Kaisha. Process kit and an image forming apparatus using the same. 4,551,000, Cl. 355-3.00R.
Kang, Jung W.; and Davis, James A., to Firestone Tire & Rubber Company, The. Rubber compositions and articles thereof having improved metal adhesion and metal adhesion retention. 4,551,391, Cl. 428-462.000.
Kangaroos U.S.A., Inc.: *See—*
Gamm, Robert J., 4,550,511, Cl. 36-50.000.
Kanpe Katei Toryoo Kabushiki Kaisha: *See—*
Hirao, Katsumi; and Sasaki, Akira, 4,550,865, Cl. 222-402.210.
Kanzawa, Ryosaku: *See—*
Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, 4,550,612, Cl. 73-727.000.
Karliner, Rudolf: *See—*
Kille, Ewald; and Karliner, Rudolf, 4,551,037, Cl. 401-146.000.
Karliner, Rudolf R.; and Carlin, Samuel R., to Wagner Spray Tech Corporation. Paint dispensing system including roller with drip trough. 4,551,036, Cl. 401-131.000.
Karwowski, Jan, to Nabisco Brands, Inc. Process of preparing instant, flaked, wheat farina. 4,551,347, Cl. 426-621.000.
Kasahara, Yasushi: *See—*
Sugiyama, Masami; Shibuya, Hiroko; and Kasahara, Yasushi, 4,551,272, Cl. 260-112.50R.
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, to Nissan Motor Company, Limited. Vehicle panel speaker for automotive audio system utilizing part of a vehicle panel as a sound-producing medium. 4,551,849, Cl. 381-86.000.
Kasai, Masanao: *See—*
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,551,003, Cl. 355-3.00R.
Kasei Optonix, Ltd.: *See—*
Yaguchi, Masachika; Mikami, Tomoki; and Hase, Takashi, 4,551,397, Cl. 428-691.000.
Kashima, Shinji: *See—*
Iizuka, Eiichi; Sando, Tomoji; Kashima, Shinji; and Maki, Masakazu, 4,551,195, Cl. 156-603.000.
Kashiwahara, Katsuto: *See—*
Isa, Hitoshi; Kaneko, Ryoichi; and Kashiwahara, Katsuto, 4,550,569, Cl. 60-657.000.
Kasica, James J.: *See—*
Trubiano, Paolo C.; and Kasica, James J., 4,551,177, Cl. 106-210.000.
Kasparek, Alois; and Burger, Jurgen, to Hauni-Werke Korber & Co. Kg. Apparatus for transporting rod-shaped articles between the discharge ends of pneumatic conveyor pipes and a processing machine. 4,551,040, Cl. 406-28.000.
Kastrup, Eberhard, to Durkoppwerke GmbH. Thread-holding apparatus for buttonhole machine. 4,550,672, Cl. 112-293.000.
Katagiri, Kazuharu: *See—*
Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, 4,551,404, Cl. 430-59.000.

Katayama, Takao. Measuring machine. 4,550,506, Cl. 33-143.00L.
Katayama, Tsutomu: *See—*
Kawasaki, Yoichi; and Katayama, Tsutomu, 4,551,351, Cl. 426-656.000.
Katinka, Michael: *See—*
Danos, Olivier; Katinka, Michael; and Yaniv, Moshe, 4,551,270, Cl. 260-112.50R.
Kato, Kenichi: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.
Katoh, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Oil pressure switch. 4,551,594, Cl. 200-82.00R.
Katz, Irving M., to Merck & Co., Inc. Ophthalmic use of norfloxacin and related antibiotics. 4,551,456, Cl. 514-254.000.
Katzman, Howard A.: *See—*
Gaulin, Camille A.; and Katzman, Howard A., 4,551,487, Cl. 523-215.000.
Kavesh, Sheldon; and Prevorsek, Dusan C., to Allied Corporation. Producing high tenacity, high modulus crystalline article such as fiber or film. 4,551,296, Cl. 264-177.00F.
Kawachi, Takeshi: *See—*
Kita, Daizo; Nakamura, Tsutomu; and Kawachi, Takeshi, 4,551,256, Cl. 252-8.5LC.
Kawagoe, Nobukazu: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Kawagoe, Nobukazu; Naruse, Kazuhiko; and Inaba, Masahito, 4,551,011, Cl. 355-35.000.
Kawaguchi, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Disc brake system with fan means. 4,550,809, Cl. 188-18.00A.
Kawajiri, Masayuki, to Dai Nippon Insatsu Kabushiki Kaisha. Method of offset printing on polypropylene resin cases for video tape cassettes. 4,551,360, Cl. 427-160.000.
Kawakami, Hidehiko: *See—*
Tsuchiya, Hiroyoshi; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Otsuka, Hirotaka, 4,551,768, Cl. 358-283.000.
Kawakami, Hiromi: *See—*
Ogawa, Masumi; Kawakami, Hiromi; and Meguro, Toshiaki, 4,551,756, Cl. 358-197.000.
Kawamoto, Hiromi: *See—*
Hayakawa, Masanori; Yamada, Noriaki; Kawamoto, Hiromi; and Nishimura, Satoshi, 4,551,260, Cl. 252-62.590.
Kawamoto, Mutsumi, to Aisin Warner Kabushiki Kaisha. Continuously variable speed transmission for motor vehicles. 4,550,629, Cl. 74-689.000.
Kawamura, Katsuaki: *See—*
Kurosaki, Masanori; and Kawamura, Katsuaki, 4,551,855, Cl. 455-161.000.
Kawamura, Kunio: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,550,993, Cl. 354-402.000.
Kawano, Junji: *See—*
Kubo, Takeshi; Kawano, Junji; Takahashi, Fumio; and Yamaguchi, Tsutomu, 4,551,729, Cl. 346-1.100.
Kawasaki Steel Corporation: *See—*
Ehiro, Takashi; Tanaka, Teruaki; and Yamanaka, Eisuke, 4,550,582, Cl. 72-234.000.
Kawasaki, Yoichi; and Katayama, Tsutomu, to Fuji Oil Company, Limited. Process for producing meat block-like protein material. 4,551,351, Cl. 426-656.000.
Kawashima, Yutaka: *See—*
Suzuki, Atsushi; Ninomiya, Masakazu; Maeda, Katsuya; and Kawashima, Yutaka, 4,550,701, Cl. 123-436.000.
Kay, John F.: *See—*
Canning, John L.; and Kay, John F., 4,551,390, Cl. 428-431.000.
Keane, James W., to Whirlpool Corporation. Electrical hose swivel connector for canister vacuum cleaner. 4,550,957, Cl. 339-5.00R.
Keeling, Michael R.: *See—*
Lewis, John D.; Keeling, Michael R.; Bowen, David R.; and Paton, Anthony D., 4,551,731, Cl. 346-75.000.
Keiser, James D.: *See—*
Plaas, Jon R.; Parker, Keith E.; Keiser, James D.; and Johnson, Elmer C., Jr., 4,551,139, Cl. 604-290.000.
Keller, George E., II: *See—*
Robson, John H.; and Keller, George E., II, 4,551,566, Cl. 568-867.000.
Kelly, James B.: *See—*
Callahan, David J.; Mazzawy, Robert S.; Stryker, Howard Y.; and Kelly, James B., 4,550,564, Cl. 60-39.093.
Kelly, Lawrence A., to Sandoz, Inc. Processes for the preparation of liposome drug delivery systems. 4,551,288, Cl. 264-4.600.
Ken-Ichi, Sawara: *See—*
Takayuki, Okada; Hisao, Tanaka; Ken-Ichi, Sawara; and Tsutomu, Konaka, 4,551,509, Cl. 526-68.000.
Kenna, Robert V., to Pfizer Hospital Products Group, Inc. Bone prosthesis with porous coating. 4,550,448, Cl. 623-16.000.
Kennametal Inc.: *See—*
Isakov, Edmund, 4,550,791, Cl. 175-410.000.
Kern, Donald L.; Hokanson, Gerard C.; and French, James C., to Warner-Lambert Company. Guanine-N^7-oxide. 4,551,529, Cl. 544-265.000.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Becker, Erwin; Ehrfeld, Wolfgang; Fritz, Wolfgang; Steinhaus, Harald; and Bley, Peter, 4,551,157, Cl. 55-17.000.
Kerns, David V.: *See—*
Kerns, David V., Jr.; and Kerns, David V., 4,551,685, Cl. 330-86.000.
Kerns, David V., Jr.; and Kerns, David V. Programmable gain feedback amplifier. 4,551,685, Cl. 330-86.000.
Kerr, Stanley R. Inflatable packaging material. 4,551,379, Cl. 428-200.000.
Kervagoret, Alain. Method for improving the performance of an internal combustion engine, device for implementing the method, and internal combustion engine equipped with said device. 4,550,707, Cl. 123-669.000.
Kesling, Peter C. Edgewise bracket wire retaining clip. 4,551,094, Cl. 433-8.000.
Kesser Electronics International, Inc.: *See—*
Barnum, Charly, 4,551,654, Cl. 315-159.000.
Kessler, Milton. Lubricated fin pile-type weatherstrip. 4,551,376, Cl. 428-85.000.
Kesson, James, to Scottish & Newcastle Breweries plc. Method of and apparatus for monitoring concentration of gas in a liquid. 4,550,590, Cl. 73-19.000.
Ketchman, Jeffery: *See—*
Storace, Anthony; and Ketchman, Jeffery, 4,551,806, Cl. 364-473.000.
Kettlety, Robert W.: *See—*
McTamaney, Louis S.; Bisbee, Gary W.; Kettlety, Robert W.; and Konsevich, James L., 4,551,730, Cl. 346-33.0WL.
Keyes, Gary S.: *See—*
Riederer, Stephen J.; and Keyes, Gary S., 4,551,800, Cl. 364-414.000.
Khoroshikh, Vladimir M.: *See—*
Axenov, Ivan I.; Bren, Viktor G.; Padalka, Valentin G.; Sablev, Leonid P.; Stupak, Rimma I.; and Khoroshikh, Vladimir M., 4,551,221, Cl. 204-298.000.
Kidani, Yoshinori; and Noji, Masahide, to Yoshinori Kidani. Platinum complexes of glucuronic acid. 4,551,524, Cl. 536-121.000.
Kikuchi, Yasuharu: *See—*
Eda, Kazuo; Kikuchi, Yasuharu; Makino, Osamu; and Matsuoka, Michio, 4,551,268, Cl. 252-519.000.
Kikuchi, Yasuyuki; Matsumoto, Eiichi; and Tanaka, Yoshimasa, to Nissan Motor Company, Limited. Fan device for internal combustion engine. 4,550,695, Cl. 123-41.120.
Kikugawa, Shozo: *See—*
Koyama, Mikio; Kikugawa, Shozo; and Okaniwa, Kenichiro, 4,551,307, Cl. 422-56.000.
Kille, Ewald; and Karliner, Rudolf, to J. Wagner GmbH. Device for applying paint with reciprocating linear motor. 4,551,037, Cl. 401-146.000.
Killian, Edmund F., to Waldes Kohinoor, Inc. Methods and apparatus for installing a radially applied retaining ring into an external groove of a workpiece. 4,550,485, Cl. 29-450.000.
Kilroy, Stanley A. R., to Alpen Dairy Foods Pty. Limited. Method of producing an edible fat emulsion and food product produced thereof. 4,551,346, Cl. 426-602.000.
Kimura, Hiroshi: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,551,009, Cl. 355-15.000.
Kimura, Toshihiko; Kaneko, Yutaka; and Sasaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,551,422, Cl. 430-551.000.
Kinas, Henry, to Societe Anonyme H.K. France. Device for reproducing coded keys. 4,551,046, Cl. 409-82.000.
Kinast, Karlheinz: *See—*
Wiegard, Klaus; Kinast, Karlheinz; Kleinekathofer, Wolfgang; and Tank, Eggert, 4,551,396, Cl. 428-678.000.
King, Arthur S. Liquid treater having hinge-action cleaning brushes. 4,551,217, Cl. 204-212.000.
King-Seeley Thermos Co.: *See—*
Tarozzi, R. A.; and Formhals, C., 4,550,864, Cl. 222-209.000.
King, Wayne: *See—*
Flugger, Ray T., 4,550,799, Cl. 181-244.000.
Kinnett, James G. Total shoulder prosthesis system. 4,550,450, Cl. 623-18.000.
Kinoshita, Kunio, to Olympus Optical Company. Liquid supplying device for endoscope. 4,550,716, Cl. 128-6.000.
Kinoshita, Takao: *See—*
Masunaga, Makoto; and Kinoshita, Takao, 4,551,758, Cl. 358-213.000.
Kirchberger, Peter, to GFM Gesellschaft Fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H. Inserted tooth cutter. 4,551,043, Cl. 407-43.000.
Kirin Beer Kabushiki Kaisha: *See—*
Reich, Frederick R., 4,551,627, Cl. 250-339.000.
Kirk, Norbert A. Vegetable peeler. 4,550,656, Cl. 99-590.000.
Kishimoto, Juji: *See—*
Sado, Ichiro; Kishimoto, Juji; Sasaki, Masayuki; and Cho, Mitsuo, 4,551,818, Cl. 364-900.000.
Kiss, Bela: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.
Kita, Daizo; Nakamura, Tsutomu; and Kawachi, Takeshi, to Ohbayashi-Gumi, Ltd.; and Kuraray Co., Ltd. Slurry excavating method. 4,551,256, Cl. 252-8.5LC.

Kitajima, Nobuo: *See—*
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,551,003, Cl. 355-3.00R.

Kitamura, Kazuo; and Suezawa, Mitsuru, to Toray Industries, Inc. Coating composition and the use thereof. 4,551,516, Cl. 528-18.000.

Klaus, Kaspar. Device for the parking of automobile vehicles. 4,551,054, Cl. 414-229.000.

Klawitter, Ronald R., to Handi-Pac, Inc. Toy computer image processor assembly. 4,550,503, Cl. 33-18.00R.

Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, to Degussa Aktiengesellschaft. Process for the recovery of S-(carboxymethyl)-(R)-cysteine and S-(carboxymethyl)-(S)-cysteine. 4,551,548, Cl. 562-402.000.

Kleemann, Axel: *See—*
Drauz, Karlheinz; and Kleemann, Axel, 4,551,562, Cl. 568-771.000.

Klein, Joseph T.: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,551,474, Cl. 514-309.000.

Kleinekathofer, Wolfgang: *See—*
Wiegard, Klaus; Kinast, Karlheinz; Kleinekathofer, Wolfgang; and Tank, Eggert, 4,551,396, Cl. 428-678.000.

Klosk, Lawrence. Apparatus for transporting wheel and axle assemblies. 4,551,049, Cl. 410-42.000.

Kluth, Hermann: *See—*
Herold, Julius; Kluth, Hermann; Meffert, Alfred; and Leder, Manfred, 4,551,517, Cl. 528-60.000.

Knappe, Wolfgang-Reinhold: *See—*
Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, 4,551,428, Cl. 435-19.000.

Kneitel, Dieter: *See—*
Strack, Hans; Roebke, Wolfgang; Kneitel, Dieter; and Parr, Ehrfried, 4,551,322, Cl. 423-329.000.

Knoch, Darrell G. Heat recovery device for exhaust flues. 4,550,772, Cl. 165-47.000.

Kobayashi, Ryoichi: *See—*
Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, 4,550,612, Cl. 73-727.000.

Kobayashi, Waichi; and Takahata, Satoru, to UBE Industries, Ltd. Aqueous anodizing solution and process for coloring article of magnesium or magnesium-base alloy. 4,551,211, Cl. 204-37.600.

Kobishi Electric Co., Ltd.: *See—*
Ogino, Satoru, 4,550,970, Cl. 339-97.00P.

Kobori, Shigeyuki: *See—*
Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, 4,550,612, Cl. 73-727.000.

Kochert, Wilfried, to Computer Gesellschaft Konstanz mbH. Circuit arrangement for machine character recognition. 4,551,851, Cl. 382-38.000.

Kock, Ronald W.; and Esposito, John A., to Procter & Gamble Company, The. Method for uniformly distributing discrete particles on a moving porous web. 4,551,191, Cl. 156-276.000.

Kodachi, Hideo: *See—*
Okubo, Takeshi; Kodachi, Hideo; and Miyanaka, Masaki, 4,550,488, Cl. 29-568.000.

Koenig, Heribert: *See—*
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Koenig, Robert H.; and Lovell, Walter, to Tapeswitch Corporation of America. Tape switch with corrugated wavy conductor. 4,551,595, Cl. 200-86.00R.

Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Torque detector. 4,550,618, Cl. 73-862.340.

Kohler, Alfred: *See—*
Deutscher, Hans-Christian; Kohler, Alfred; Prohaska, Hans; and Schubert, Karl-Friedrich, 4,550,469, Cl. 15-250.340.

Koichi, Yasushi, to Ricoh Company Ltd. Method of forming images of sensor patterns in effecting image density control of electrophotographic copying apparatus. 4,551,005, Cl. 355-8.000.

Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, to Alps Electric Co., Ltd. Serial electric printer using single unidirectional motor. 4,551,033, Cl. 400-308.000.

Koizumi, Satoru; Furuhara, Hiroshi; and Teshima, Daisuke, to Sharp Kabushiki Kaisha. Tape recorder with two recording/playing mechanisms. 4,551,775, Cl. 360-74.100.

Kojima, Junpei: *See—*
Shiga, Akinobu; Kakugo, Masahiro; Kojima, Junpei; and Wakatsuki, Kizuku, 4,551,501, Cl. 525-88.000.

Kojima, Tetsuro: *See—*
Sugimoto, Naohiko; and Kojima, Tetsuro, 4,551,420, Cl. 430-505.000.

Kokubo, Tadayoshi: *See—*
Ikeda, Tadashi; Kuwabara, Kenichi; Yamamuro, Kiyohiko; and Kokubo, Tadayoshi, 4,551,424, Cl. 430-588.000.

Kolar, Karel: *See—*
Skvara, Frantisek; Kolar, Karel; Zadak, Zdenek; Friml, Zdenek; and Novotry, Jaroslay, 4,551,176, Cl. 106-90.000.

Kollmeyer, Willy D., to Shell Oil Company. Beta-imidazolyl-alpha-(trifluoromethyl)ethenyl phosphates and insecticidal and miticidal use. 4,551,447, Cl. 514-94.000.

Kollmorgen Technologies Corporation: *See—*
Brown, Gerald W., 4,551,646, Cl. 310-242.000.

Leech, Edward J.; and Russo, Frank D., 4,551,488, Cl. 523-427.000.

Kolobow, Theodor; and Ito, Yoichiro, to United States of America, Health and Human Services. Monolithic integrated flow circuit. 4,551,251, Cl. 210-635.000.

Komatsu, Toshiyuki: *See—*
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,551,405, Cl. 430-64.000.

Komatsu, Yoshimi: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,173, Cl. 75-12.000.
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,174, Cl. 75-12.000.

Konagai, Makoto: *See—*
Takahashi, Kiyoshi; Konagai, Makoto; Yoshitomi, Toshihiko; and Omori, Takeshi, 4,551,575, Cl. 136-255.000.

Kondo, Akinobu: *See—*
Nakamura, Kazuharu; Tsuboi, Yoshimasa; and Kondo, Akinobu, 4,550,709, Cl. 126-96.000.

Kondo, Mikio: *See—*
Akiyama, Shoichi; and Kondo, Mikio, 4,551,711, Cl. 340-567.000.

Kondo, Tsuneo: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,173, Cl. 75-12.000
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,174, Cl. 75-12.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kimura, Toshihiko; Kaneko, Yutaka; and Sasaki, Takashi, 4,551,422, Cl. 430-551.000.
Koyama, Mikio; Kikugawa, Shozo; and Okaniwa, Kenichiro, 4,551,307, Cl. 422-56.000.
Moriguchi, Hiroyuki; Matsumoto, Masanori; Nishiwaki, Akira; Morohoshi, Yasuo; and Nomori, Hiroyuki, 4,551,303, Cl. 420-590.000.
Nagatani, Toshio; Chiba, Norio; Hatanaka, Takao; and Saito, Toshio, 4,551,367, Cl. 428-35.000.

Konnai, Makoto: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yunji; and Nakanishi, Akira, 4,551,169, Cl. 71-94.000.

Konneker, Reinhard, to Harley-Davidson Motor Co., Inc. Internal combustion engine mount. 4,550,698, Cl. 123-195.0AC.

Konno, Kazutoshi: *See—*
Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.

Konsevich, James L.: *See—*
McTamaney, Louis S.; Bisbee, Gary W.; Kettlety, Robert W.; and Konsevich, James L., 4,551,730, Cl. 346-33.0WL.

Kopolow, Steven L., to Personal Products Company. Flexible absorbent boards. 4,551,142, Cl. 604-368.000.

Korsunsky, Iosif: *See—*
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,550,959, Cl. 339-9.00E.

Korth, Jurgen, to P.A. Rentrop Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG. Hydraulic fluid distributor. 4,550,750, Cl. 137-868.000.

Kosan Teknova A/S: *See—*
Hansen, Frits U.; and Jensen, Ove, 4,550,746, Cl. 137-461.000.

Kovacena, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., to United States of America, Navy. Bis(pentafluorosulfur)diacetylene polymer therefrom and preparations thereof. 4,551,349, Cl. 427-255.600.

Kovach, Stephen M.; and Palmer, James L., to Ashland Oil, Inc. Ammonia contacting to passivate metals deposited on a cracking catalyst during reduced crude processing. 4,551,231, Cl. 208-120.000.

Kovacs, Carl W.: *See—*
Hadley, Russell F.; and Kovacs, Carl W., 4,551,672, Cl. 324-133.000.

Kovalenko, Igor L.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Koyama, Arata: *See—*
Honma, Ichiro; Koyama, Arata; Amano, Masatoshi; and Takumi, Nobusuke, 4,551,327, Cl. 423-594.000.

Koyama, Koichi; Noguchi, Yasuhiro; and Toriuchi, Masaharu, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material with nucleophilic displacement dye releasers. 4,551,423, Cl. 430-559.000.

Koyama, Mikio; Kikugawa, Shozo; and Okaniwa, Kenichiro, to Konishiroku Photo Industry Co., Ltd. Analytical element. 4,551,307, Cl. 422-56.000.

Koziar, Greg: *See—*
Malcosky, Norman D.; and Koziar, Greg, 4,551,154, Cl. 48-193.000.

Kozlik, Tony J., to Honeywell Inc. Method for initializing a token-passing local-area network. 4,551,721, Cl. 340-825.520.

Kracke, Heinrich: *See—*
Bottcher, Hugo; Heimrich, Klaus; Hildebrandt, Gustav; Kracke, Heinrich; and Richter, Johannes, 4,551,297, Cl. 264-224.000.

Kraft, Derald H.; and Hitchcock, Gary L., to Dyneer Corporation. Manufacture of poly-V sheet metal pulleys and product. 4,551,122, Cl. 474-170.000.

Kraftwerke Union AG: *See—*
Raschke, Klaus; and Exner, Gerhard, 4,551,063, Cl. 415-115.000.

Krag, Mark D., to Dental Preventech, Inc. Device for cleaning teeth to prevent the formation of plaque. 4,550,741, Cl. 132-89.000.

Kreuzenstein, Ronald K.: *See—*
Amdahl, Gene M.; Hanson, Donald L.; Kreuzenstein, Ronald K.; Roshon-Larsen, Gwynne L.; and Woffinden, Gary A., 4,551,797, Cl. 364-200.000.

Krikorian, Donald J., to C. R. Bard, Inc. Adjustable check valve. 4,550,749, Cl. 137-843.000.

Krinitskaya, Ljudmila V.: *See—*
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.

Kritz, Jacob A., to Sperry Corporation. Multiple beam lens transducer with collimator for sonar systems. 4,551,826, Cl. 367-150.000.

KRKA, tovarna zdravil, n.sol.o.: *See—*
Zupancic, Natasa; Sket, Boris; Zupet, Pavel; and Zupan, Marko, 4,551,525, Cl. 544-49.000.

Kronenthal, David: *See—*
Slusarchyk, William A.; and Kronenthal, David, 4,551,276, Cl. 260-239.00A.

Kroner, Holger, to Endress u. Hauser GmbH u. Co. Capacitive sensor. 4,551,785, Cl. 361-284.000.

Krucker, Karl: *See—*
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.

Krude, Werner, to Uni-Cardan Aktiengesellschaft. Drive shaft assembly. 4,551,116, Cl. 464-97.000.

Krug, Herbert: *See—*
Dockner, Toni; and Krug, Herbert, 4,551,528, Cl. 544-242.000.

Krug, Russell R.: *See—*
Pecoraro, Theresa A.; Krug, Russell R.; and Deady, Joanne, 4,551,229, Cl. 208-76.000.

Krumme, John F.; and Hodgson, Darel E., to Alchemia Ltd. Partnership. Stapling device. 4,550,870, Cl. 227-19.000.

Krumwiede, John F.: *See—*
Savolskis, Edward P.; and Krumwiede, John F., 4,551,161, Cl. 65-27.000.

Kubo, Takeshi; Kawano, Junji; Takahashi, Fumio; and Yamaguchi, Tsutomu, to Shinko Electric Co., Ltd. Method of making thermal transfer type multicolor printing. 4,551,729, Cl. 346-1.100.

Kubo, Teruyuki: *See—*
Sekiguchi, Koichi; Takematsu, Hikaru; Yamamoto, Kazuyuki; and Kubo, Teruyuki, 4,551,583, Cl. 179-99.00M.

Kubota, Hiromi; and Kambe, Toshiyuki, to Tokyo Electric Co., Ltd. Timer device. 4,551,588, Cl. 200-33.00R.

Kudo, Yasuhiko: *See—*
Takeda, Koji; Akahane, Masao; Mukaiyama, Fumiaki; and Kudo, Yasuhiko, 4,551,846, Cl. 375-82.000.

Kuhlein, Klaus: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.

Kuhlmann, Erven J., to Texaco Inc. Coal liquefaction process. 4,551,224, Cl. 208-10.000.

Kuhlmann, Gerhard; and Remmele, Bernhard, to Robert Bosch GmbH. Compass saw with a connecting device for a flat saw blade. 4,550,500, Cl. 30-392.000.

Kuhn, Falk; and Buck, Alfred, to Memminger GmbH. Knitting machine with rocking knock-over bits, and method of knitting therewith. 4,550,577, Cl. 66-104.000.

Kuhn, Werner H.: *See—*
Swinehart, Steven L.; and Kuhn, Werner H., 4,551,763, Cl. 358-225.000.

Kuhr, Manfred: *See—*
Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, 4,551,428, Cl. 435-19.000.

Kukes, Simon G.; and Nowack, Gerhard P., to Phillips Petroleum Company. Demetallization of hydrocarbon feed streams with nickel arsenide. 4,551,230, Cl. 208-89.000.

Kukuchek, George S.: *See—*
Haeber, John A.; Rains, John K.; Beitler, Brad D.; and Kukuchek, George S., 4,550,936, Cl. 285-26.000.

Kulesza, Ralph J.; Rosenwinkel, Donald A.; and Disko, Harry, to Marvin Glass & Associates. Sprinkler toy. 4,550,876, Cl. 239-211.000.

Kulig, Constantine W.: *See—*
Duga, Robert J.; Kulig, Constantine W.; Doughty, Robert L.; Douglas, Robert J.; and Andersen, Robert P., 4,551,163, Cl. 65-129.000.

Kumazawa, Satoru: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Kumazawa, Takashi: *See—*
Hironaka, Yoshio; and Kumazawa, Takashi, 4,551,555, Cl. 568-401.000.

Kunert, Heinz, to Saint-Gobain Vitrage. Laminated safety glass. 4,551,372, Cl. 428-38.000.

Kuniya, Keiichi: *See—*
Watanabe, Ryuji; Ando, Hisashi; Kuniya, Keiichi; and Kurosawa, Yukio, 4,551,596, Cl. 200-144.00B.

Kuno, Hiroaki: *See—*
Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, 4,551,082, Cl. 418-55.000.

Kunz Maschinen- und Apparatebau GmbH: *See—*
Kunz, Wolfgang, 4,551,117, Cl. 464-106.000.

Kunz, Wolfgang, to Kunz Maschinen- und Apparatebau GmbH. Device for transmitting torque to a reel or the like. 4,551,117, Cl. 464-106.000.

Kupcikevicius, Vytautas: *See—*
Beckman, John H.; Haettinger, George C.; and Kupcikevicius, Vytautas, 4,550,471, Cl. 17-1.00R.

Kuraray Co., Ltd.: *See—*
Kita, Daizo; Nakamura, Tsutomu; and Kawachi, Takeshi, 4,551,256, Cl. 252-8.5LC.
Matsumoto, Mitsuo; Hirai, Koji; Yoshimura, Noriaki; and Okamura, Takayuki, 4,551,518, Cl. 528-80.000.

Kurata, Masami, to Fuji Xerox Co., Ltd. Color picture reading system. 4,551,750, Cl. 358-75.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Kuroki, Kazuo, to Fuji Electric Company, Ltd. Circuit for driving the base of a transistor. 4,551,635, Cl. 307-254.000.

Kurosaki, Masanori; and Kawamura, Katsuaki, to Pioneer Electronic Corporation. Radio communications system for detecting the coincidence of decoded information. 4,551,855, Cl. 455-161.000.

Kurosawa, Yukio: *See—*
Watanabe, Ryuji; Ando, Hisashi; Kuniya, Keiichi; and Kurosawa, Yukio, 4,551,596, Cl. 200-144.00B.

Kurtz, Robert J.; and LiCausi, Joseph, to BioResearch Inc. Orthopedic foot splint with swivel and stop. 4,550,722, Cl. 128-80.00A.

Kurtz, Rudiger: *See—*
Holik, Herbert; and Kurtz, Rudiger, 4,551,204, Cl. 162-336.000.

Kussy, Frank W. Current limiting circuit breaker mechanism. 4,551,697, Cl. 335-16.000.

Kusumoto, Yasuo: *See—*
Ishikawa, Takehiro; Yamazawa, Akira; and Kusumoto, Yasuo, 4,551,031, Cl. 374-117.000.

Kuwabara, Kenichi: *See—*
Ikeda, Tadashi; Kuwabara, Kenichi; Yamamuro, Kiyohiko; and Kokubo, Tadayoshi, 4,551,424, Cl. 430-588.000.

KV Pharmaceutical Company: *See—*
Riley, Thomas C., Jr.; Tharp, Charles P.; and Lapka, Galen G., 4,551,148, Cl. 604-890.000.

Kyosan Denki Kabushiki Kaisha: *See—*
Ohgaki, Kichio; and Ohshima, Kazuhiro, 4,551,071, Cl. 417-313.000.

Kysor Industrial Corporation: *See—*
Babb, John H., Jr.; and Marotto, Robert A., 4,550,939, Cl. 292-340.000.

L. & C. Steinmuller GmbH: *See—*
Leikert, Klaus; Buttner, Gerhard; and Michelfelder, Sigfrid, 4,551,090, Cl. 431-188.000.

L. P. Systems Corporation: *See—*
Runyon, Wayne; and Hower, Larry, 4,550,728, Cl. 128-303.180.

Laapotti, Jorma, to Valmet Oy. Press section without press suction rollers in a paper machine. 4,551,205, Cl. 162-360.100.

LaBate, Michael D., II. Air cooled refractory lance. 4,550,898, Cl. 266-220.000.

Labeda, David P.: *See—*
Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., 4,551,533, Cl. 546-35.000.

La Bonte, David E.; Richter, Kurt W.; and Goehler, Robert F., to Ingersoll-Rand Company. Plural-amplitude vibration assembly. 4,550,622, Cl. 74-87.000.

Laboratori Baldacci SpA: *See—*
Marsili, Antonio, 4,551,453, Cl. 514-234.000.

Lacy, Sylvia M.: *See—*
Merchant, Philip; and Lacy, Sylvia M., 4,551,239, Cl. 208-188.000.

Ladisch, Stephan, to University of California, The Regents of the. Avoidance of the immunosuppressive and antiproliferative effects of lipid emulsions. 4,551,449, Cl. 514-182.000.

Lake, Connie, to Creative Industries, Inc. Convertible mold. 4,551,084, Cl. 425-185.000.

Lal, Joginder; and Senyek, Michael L., to Goodyear Tire & Rubber Company, The. Preparation of interpolymers of alpha-olefins and nonconjugated alpha, omega-dienes. 4,551,503, Cl. 525-332.100.

Lamarche, Jean L.: *See—*
Buck, Robert; and Lamarche, Jean L., 4,551,637, Cl. 307-308.000.

Lambert Brake Corporation: *See—*
Euler, John W., 4,550,817, Cl. 192-70.230.

Lamoure, Jean F. Industrial building framework formed from prefabricated reinforced concrete elements. 4,550,536, Cl. 52-91.000.

Landis, John M.: *See—*
Asick, John C.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., 4,550,960, Cl. 339-14.00R.

Lane, Edward S.; and Hill, Michael R. H., to United Kingdom Atomic Energy Authority. Electrode preparation. 4,551,358, Cl. 427-126.600.

Lane, Stephen A.: *See—*
Goldstein, Norman P.; and Lane, Stephen A., 4,551,298, Cl. 376-245.000.

Lang, Siegfried: *See—*
Straub, Ferdinand; Sanner, Axel; Seib, Karl; and Lang, Siegfried, 4,551,512, Cl. 526-264.000.

Lange , Francois: *See—*
Cornet, Jean; Lange , Francois; Le Carvennec, Francois; Lehureau, Jean-Claude; and Rascle, Roger, 4,551,733, Cl. 346-137.000.

Lange, Robert E.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,550,657, Cl. 100-43.000.

Langer, Alfred, to Nordson Corporation. Fluid pressure operated piston engine assembly. 4,550,642, Cl. 91-346.000.

Lansinger, Jere R.; Dorr, George D.; and Farago, Paul L., to Chrysler Corporation. Self-adjusting shift indicator for automatic transmission. 4,550,675, Cl. 116-28.100.

Lapka, Galen G.: *See—*
Riley, Thomas C., Jr.; Tharp, Charles P.; and Lapka, Galen G., 4,551,148, Cl. 604-890.000.

Larnerd, John D.: *See—*
Darrow, Russell E.; Ingraham, Glenn J.; Larnerd, John D.; and Nesky, Robert W., 4,550,493, Cl. 29-739.000.

Larsen, Grant: *See—*
Good, Jack E., 4,550,839, Cl. 211-189.000.

Larsen, Marian: *See—*
Good, Jack E., 4,550,839, Cl. 211-189.000.

Larson, Cheryl L.: *See—*
Johnson, Carter F.; Larson, Cheryl L.; and Tepley, Judy M., 4,550,758, Cl. 160-271.000.

La See, Jack, to La See, Jack. Vision panel frame. 4,550,542, Cl. 52-476.000.

Latasiewicz, Leonard, to Motorola, Inc. Multiple contact layer membrane switch. 4,551,586, Cl. 200-5.00A.

Laudat, Pierre: *See—*
Sanchez, Pierre; and Laudat, Pierre, 4,551,319, Cl. 423-316.000.

Laudt, Jurgen, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Switch box and closure therefor. 4,550,852, Cl. 220-327.000.

Lauer, Ernst H.; and Reynolds, Joseph D., to Eaton Corporation. Transmission shifting mechanism. 4,550,627, Cl. 74-475.000.

Laukien, Gunther: *See—*
Biehl, Reinhard; Schmalbein, Dieter; and Laukien, Gunther, 4,551,694, Cl. 333-24.00C.

Lauks, Imants R., to Integrated Ionics, Inc. Method of calibrating conductive metal oxide electrodes. 4,551,209, Cl. 204-1.00T.

Lavallee, Francois A., to Essex Group, Inc. Tetraalkyl titanate modified nylon magnet wire insulation coating. 4,551,398, Cl. 428-383.000.

LaValley, Roger O.: *See—*
Seely, Earle S.; and LaValley, Roger O., 4,551,782, Cl. 361-151.000.

Lawson, John E., to Armco Inc. Method and apparatus for independent support of well pipe hangers. 4,550,782, Cl. 166-382.000.

Lawson & Jones Limited: *See—*
Fleming, James W., 4,550,873, Cl. 229-30.000.

Layson, Alfred M. Fish decoy. 4,550,518, Cl. 43-2.000.

Lazar, Laszlo : *See—*
Pasztor, Emil; Lazar, Laszlo ; Nagy, Jozsef; and Pallosy nee Becker, Katalin, 4,551,132, Cl. 604-52.000.

Lazarus, Harry J. Dual-torque winding and tightening tool. 4,551,097, Cl. 433-39.000.

Leach, Roger J. Layered mirrors including a compressible layer and a polyurethane skin. 4,550,986, Cl. 350-641.000.

Le Carvennec, Francois: *See—*
Cornet, Jean; Lange , Francois; Le Carvennec, Francois; Lehureau, Jean-Claude; and Rascle, Roger, 4,551,733, Cl. 346-137.000.

Lechner, Peter: *See—*
Hofbauer, Edwin; Lechner, Peter; and Exler, Heribert, 4,551,051, Cl. 414-21.000.

Leder, Manfred: *See—*
Herold, Julius; Kluth, Hermann; Meffert, Alfred; and Leder, Manfred, 4,551,517, Cl. 528-60.000.

Lederhose, Edgar K.: *See—*
Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., 4,550,558, Cl. 57-58.520.

Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., to American Cyanamid Company. Antibiotic LL-D42067α. 4,551,533, Cl. 546-35.000.

Leech, Edward J.; and Russo, Frank D., to Kollmorgen Technologies Corporation. Epoxy resin based protective coating composition for printed circuit boards. 4,551,488, Cl. 523-427.000.

Lefebvre, Fredrick L. Cable structure for immersion heaters or the like. 4,551,619, Cl. 219-523.000.

Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, to BASF Aktiengesellschaft. Production of magnetic recording media. 4,551,359, Cl. 427-130.000.

Lehtikoski, Olavi; and Nissinen, Martti. Apparatus for automatic determination of the tensile strength properties of a sheet of paper. 4,550,613, Cl. 73-834.000.

Lehto, Ari: *See—*
Luukkala, Mauri; and Lehto, Ari, 4,551,030, Cl. 374-5.000.

Lehureau, Jean-Claude: *See—*
Cornet, Jean; Lange , Francois; Le Carvennec, Francois; Lehureau, Jean-Claude; and Rascle, Roger, 4,551,733, Cl. 346-137.000.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic vehicle brake system. 4,550,954, Cl. 303-92.000.

Leich, Joseph E.: *See—*
Carson, Donald W.; Penrose, Lee; Leich, Joseph E.; and Caugherty, William C., 4,550,455, Cl. 4-480.000.

Leikert, Klaus; Buttner, Gerhard; and Michelfelder, Sigfrid, to L. & C. Steinmuller GmbH. Burner. 4,551,090, Cl. 431-188.000.

Leitz, Richard: *See—*
Trage, Burghard; Hintzen, Franz-Josef; and Leitz, Richard, 4,550,570, Cl. 60-693.000.

Lemke, James U., to Eastman Kodak Company. Method of manufacturing a multitrack magnetic head. 4,550,492, Cl. 29-603.000.

Lenac, Nevio, to Dorr-Oliver Incorporated. Filter drum for rotary drum vacuum filter. 4,551,248, Cl. 210-404.000.

L'Etat Francais represente par le Ministre des PTT (Centre National d'Etudes des Telecommunications): *See—*
Botrel, Jose ; Harari, Sami; Briere, Joseph; and Louvel, Bernard, 4,551,839, Cl. 371-35.000.

Levin, Michael M., to Cybernetic Data Products. Packet switching system. 4,551,720, Cl. 340-825.520.

Levine, Peter A., to RCA Corporation. Dark-current level regulation in solid-state devices. 4,551,762, Cl. 358-221.000.

Levine, Richard W., to Construction Technology, Inc. Method and apparatus for designing duct work and for producing patterns for conduit sections in the designed duct work. 4,551,810, Cl. 364-475.000.

Levinson, Frank H.; and Schweizer, Rudolph C., to AT&T Bell Laboratories. Optical coupling devices. 4,550,975, Cl. 350-96.180.

Lewis, John D.; Keeling, Michael R.; Bowen, David R.; and Paton, Anthony D., to Cambridge Consultants Limited. Ink jet printing apparatus correctional in drop placement errors. 4,551,731, Cl. 346-75.000.

Ley, Stephen J.: *See—*
Elves, John; and Ley, Stephen J., 4,551,377, Cl. 428-137.000.

Leybold-Heraeus GmbH: *See—*
Reich, Gunter, 4,550,593, Cl. 73-40.700.

Li, Eric K.: *See—*
Hower, Philip L.; and Li, Eric K., 4,551,353, Cl. 427-39.000.

Li, George S., to Standard Oil Company. Permselective membrane compositions for gas separations and process for the separation of gases therewith. 4,551,156, Cl. 55-16.000.

Li, Hsueh M., to Ethyl Corporation. Phosphonitrilic halide polymers. 4,551,317, Cl. 423-300.000.

Liberti, Paul A.; and Pollara, Paul, to Immunicon, Inc. Selective removal of immunospecifically recognizable substances from solution. 4,551,435, Cl. 436-541.000.

LiCausi, Joseph: *See—*
Kurtz, Robert J.; and LiCausi, Joseph, 4,550,722, Cl. 128-80.00A.

Licinvest AG: *See—*
Ackeret, Peter, 4,550,516, Cl. 40-513.000.

Liebl, Helmut, to Max-Planck-Gesellschaft zur Furderung der Wissenschaften e.V. Combined electrostatic objective and emission lens. 4,551,599, Cl. 250-396.00R.

Lienard, Jean-Claude, to U.S. Philips Corporation. Method and system for communicating over an open communication network. 4,551,834, Cl. 370-94.000.

Lim, Wah L.: *See—*
Callaghan, Stephen P.; Callaghan, Timothy J.; Gustafson, Harry A.; and Lim, Wah L., 4,551,021, Cl. 356-350.000.

Lin, Fan-Nan; and Pennella, Filippo, to Phillips Petroleum Company. Catalyst for alcohol synthesis. 4,551,444, Cl. 502-313.000.

Lin, Frank W.: *See—*
Wong, Harvey C.; and Lin, Frank W., 4,551,664, Cl. 318-592.000.

Lincoln Electric Company, The: *See—*
Amata, Mario A., 4,551,610, Cl. 219-146.300.

Linde Aktiengesellschaft: *See—*
Morper, Manfred; and Fuchs, Uwe, 4,551,250, Cl. 210-603.000.

Lindgren, Peter B. Liquid level gauge. 4,550,600, Cl. 73-299.000.

Lininger, Michael A., to Owens-Illinois, Inc. Tamper resistant closure with tear-off band. 4,550,844, Cl. 215-252.000.

Link, Howard D., to Norton Christensen, Inc. Diamond rotating bit. 4,550,790, Cl. 175-329.000.

Linnebach, Richard: *See—*
Schemmel, Gerald; and Linnebach, Richard, 4,551,186, Cl. 148-171.000.

Lischke, Burkhard; and Plies, Erich, to Siemens Aktiengesellschaft. Spectrometer objective for particle beam measurement technique. 4,551,625, Cl. 250-310.000.

Liss, Bernard S.: *See—*
Liss, Saul; and Liss, Bernard S., 4,550,733, Cl. 128-421.000.

Liss, Saul; and Liss, Bernard S., to Pain Suppression Labs, Inc. Electronic dental analgesia apparatus and methodology. 4,550,733, Cl. 128-421.000.

Litton Systems, Inc.: *See—*
Ross, William E., 4,550,983, Cl. 350-376.000.

Liu, John J., to Du Pont de Nemours, E. I., and Company. Process for preparing rimantadine. 4,551,552, Cl. 564-448.000.

Liu, Michael S.: *See—*
Betsch, Regis J.; Liu, Michael S.; and Tufte, Obert N., 4,551,394, Cl. 428-641.000.

Lloyd, Kenneth, to D.A.B. Industries, Inc. Bearing materials. 4,551,395, Cl. 428-677.000.

Lloyd, Owen: *See—*
Cox, Anthony F.; Glanville, Roger; Lloyd, Owen; and Robbins, Keith V., 4,550,591, Cl. 73-28.000.

Lockheed Electronics Company, Inc.: *See—*
Dow, John, Jr.; Oetting, William A.; and Yessian, Richard J., 4,550,859, Cl. 222-26.000.

Loesch, Robert P., to AT&T Technologies, Inc. Methods of and apparatus for making retractile cords. 4,551,185, Cl. 148-150.000.

Lohmeijer, Johannes H. G. M., to General Electric Company. Antistatic polyphenylene ether compositions. 4,551,494, Cl. 524-89.000.

Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., to Union Carbide Corporation. Conversion processes with titanium-containing molecular sieves. 4,551,236, Cl. 208-112.000.

Loktionova, Lidia Y.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Longmore, Paul H.: *See—*
Goegelein, Gerald W.; Longmore, Paul H.; and Fisher, Stan E., 4,551,837, Cl. 371-25.000.

Longo, Walter G., to Nuova Faema S.p.A. Espresso coffee machine control system displaying boiler temperature and pressure. 4,551,611, Cl. 219-308.000.

Lopez, Benjamin L.: *See—*
Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., 4,551,719, Cl. 340-825.360.

Lord Corporation: *See—*
Hsich, Henry S. Y.; and Ambrose, Richard J., 4,551,807, Cl. 364-473.000.

Lorenz, Jurgen W., to Georg Wagner KG. Sterilizer container. 4,551,311, Cl. 422-300.000.

Louvel, Bernard: *See—*
Botrel, Jose ; Harari, Sami; Briere, Joseph; and Louvel, Bernard, 4,551,839, Cl. 371-35.000.

Lovell, Walter: *See—*
Koenig, Robert H.; and Lovell, Walter, 4,551,595, Cl. 200-86.00R.

Lowe, Richard S.: *See—*
Vella, Paul J.; Garel-Jones, Philip M.; and Lowe, Richard S., 4,551,019, Cl. 356-73.100.

Lu, James W. B. Inclined radially louvered fin heat exchanger. 4,550,776, Cl. 165-151.000.

Lucas Industries public limited company: *See—*
Price, Anthony G.; and Campbell, Roy, 4,550,810, Cl. 188-71.400.

Luckfiel, Karl-Heinz: *See—*
Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, 4,551,183, Cl. 148-12.00R.

Ludlow Industries, Inc.: *See—*
Gruber, George E., 4,551,663, Cl. 318-482.000.

Lukens, Fred E., to United States of America, National Aeronautics and Space Administration. Amplifier for measuring low-level signals in the presence of high common mode voltage. 4,551,687, Cl. 330-258.000.

Lummus Industries, Inc.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,550,657, Cl. 100-43.000.

Lundahl, E. Cordell; Wiser, James G.; Thornley, W. Ray; and Jensen, Laurel H., to Ezra C. Lundahl, Inc. Crop processor. 4,550,554, Cl. 56-294.000.

Luoma, Eugene H.: *See—*
Schmit, Justin M.; and Luoma, Eugene H., 4,551,337, Cl. 426-94.000.

Luukkala, Mauri; and Lehto, Ari. Procedure and means for examining the surface quality of materials in solid state. 4,551,030, Cl. 374-5.000.

Lynch, Henry W.: *See—*
Finney, Roy P.; Trick, Robert E.; and Lynch, Henry W., 4,550,719, Cl. 128-79.000.

Lynch, India M. Tire changing rack. 4,550,835, Cl. 211-24.000.

Lynn, Merrill: *See—*
Gardner, Robert W.; Guile, Donald L.; and Lynn, Merrill, 4,551,295, Cl. 264-177.00R.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, 4,551,328, Cl. 423-607.000.

M & W Gear Company: *See—*
Meiners, Elmo R., 4,550,556, Cl. 56-341.000.

Maag Gear-Wheel and Machine Company Limited: *See—*
Spaeth, Hans, 4,550,508, Cl. 33-179.50C.

Maan, Cornelis: *See—*
Compen, Johannes M. A. A.; and Maan, Cornelis, 4,551,652, Cl. 313-466.000.

Macander, Rudolph F.: *See—*
Herberg, Michael J.; Macander, Rudolph F.; and Stegman, Todd R., 4,551,515, Cl. 528-18.000.

MacDonald, Scott A.: *See—*
Hult, Anders; Ito, Hiroshi; MacDonald, Scott A.; and Willson, Carlton G., 4,551,418, Cl. 430-325.000.

Machida, Yukihiko; Nakano, Kenji; and Takahashi, Takao, to Sony Corporation. Method and apparatus for recording digital information in alternate recording tracks. 4,551,771, Cl. 360-19.100.

MacIsaac, William L. Vehicle suspension system. 4,550,926, Cl. 280-112.00A.

Macovski, Albert. Selective region NMR projection imaging system. 4,551,680, Cl. 324-309.000.

Maeda, Katsuya: *See—*
Suzuki, Atsushi; Ninomiya, Masakazu; Maeda, Katsuya; and Kawashima, Yutaka, 4,550,701, Cl. 123-436.000.

Maeda Metal Industries Ltd.: *See—*
Fujita, Masahiro; and Uemura, Yukio, 4,550,633, Cl. 81-56.000.

Maeda, Osamitsu: *See—*
Shimamura, Hayato; and Maeda, Osamitsu, 4,550,751, Cl. 138-93.000.

Maeno, Tsuyoshi: *See—*
Tsuda, Tadashi; Hiramatsu, Seiichiro; Ohtsuka, Mitsugi; and Maeno, Tsuyoshi, 4,551,722, Cl. 340-904.000.

Magnegic Peripherals: *See—*
Ericson, Charles P.; and Shadzi, Bahram, 4,551,355, Cl. 427-48.000.

Mahawili, Imad, to Genus, Inc. Cooled optical window for semiconductor wafer heating. 4,550,684, Cl. 118-724.000.

Maher, Robert J.; and Tooson, Ronald, to Douthitt Corporation. Vacuum printer. 4,551,016, Cl. 355-91.000.

Mahon, Joseph J., to Eaton Corporation. Appliance control and programmer timer therefor. 4,551,590, Cl. 200-38.00R.

Mahoney, Thomas P.: *See—*
Campbell, James R., 4,551,604, Cl. 219-78.120.

Mai, Khuong H. X.; and Patil, Ghanshyam, to American Hospital Supply Corporation. Synthesis of alpha-aminonitriles. 4,551,526, Cl. 544-163.000.

Mai, Khuong H. X.; and Patil, Ghanshyam, to American Hospital Supply Corporation. Synthesis of alpha-aminonitriles. 4,551,537, Cl. 546-330.000.

Maida, Osamu: *See—*
Ishizaka, Sunao; and Maida, Osamu, 4,550,991, Cl. 354-21.000.

Maier, Alfred E., to Westinghouse Electric Corp. Molded case circuit breaker with adjustable stationary lower electrical contact. 4,551,597, Cl. 200-249.000.

Maiese, William M.: *See—*
Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., 4,551,533, Cl. 546-35.000.

Maietta, Michael G.: *See—*
Sutryn, Caroll S.; and Maietta, Michael G., 4,550,825, Cl. 206-222.000.

Makhteshim Chemical Works, Ltd.: *See—*
Bracha, Peretz; and Massil, Solomon, 4,551,458, Cl. 514-259.000.

Maki, Masakazu: *See—*
Iizuka, Eiichi; Sando, Tomoji; Kashima, Shinji; and Maki, Masakazu, 4,551,195, Cl. 156-603.000.

Makino, Osamu: *See—*
Eda, Kazuo; Kikuchi, Yasuharu; Makino, Osamu; and Matsuoka, Michio, 4,551,268, Cl. 252-519.000.

Malcosky, Norman D.; and Koziar, Greg, to Columbia Gas System Service Corporation. Gas tracer composition and method. 4,551,154, Cl. 48-193.000.

Maldonado, Juan R.: *See—*
Di Milia, Vincent; Maldonado, Juan R.; Speidell, James L.; and Warlaumont, John M., 4,551,192, Cl. 156-345.000.

Mallinckrodt, Inc.: *See—*
Inskip, Ervin B., 4,551,551, Cl. 564-430.000.

Manabe, Katsuhide; and Tsutsui, Masatoshi, to Toyoda Gosei Kabushiki Kaisha. Colored resinous articles with concealed metallic luster. 4,551,387, Cl. 428-336.000.

Manders, Petrus G. J., to Ruti-te Strake B.V. Method for conveying a flexible thread by means of pressurized gas. 4,550,752, Cl. 139-435.000.

Mandl, Joseph P., to Medex, Inc. Pressure infusor. 4,551,136, Cl. 604-141.000.

Manis, Paul A.: *See—*
Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., 4,551,350, Cl. 427-389.900.

Manitowoc Company, Inc., The: *See—*
Schulze-Berge, Carl J., 4,550,572, Cl. 62-138.000.

Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., to General Electric Co.; and Rensselaer Polytechnic Institute. Laser doppler velocimeter for measuring torsional vibration. 4,551,017, Cl. 356-28.500.

Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., to General Electric Co.; and Rensselaer Polytechnic Institute. Acoustic emission analyzer. 4,551,018, Cl. 356-28.500.

Mannesmann Aktiengesellschaft: *See—*
Bitsch, Harald; Donner, Klaus; Hasselmann, Heinz; and Horbach, Rainer, 4,550,664, Cl. 105-180.000.
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Manning, Maurice; and Sawyer, Wilbur H., to Medical College of Ohio, The; and Columbia University, The Trustees of. Derivatives of arginine vasopressin antagonists. 4,551,445, Cl. 514-9.000.

Mansfield, George F. Quick-loading device for muzzle-loading rifles. 4,550,517, Cl. 42-90.000.

Manville Service Corp.: *See—*
Hoke, Merle C.; Armstrong, Richard G.; and Penn, James E., 4,551,792, Cl. 362-362.000.

Marcantonio, Paul J., to Chevron Research Company. Recovering vanadium values from ammonium bicarbonate solution. 4,551,315, Cl. 423-67.000.

Marchand, William C. Gas turbine combustion system utilizing renewable and non-critical solid fuels with residue remover to minimize environmental pollution. 4,550,563, Cl. 60-39.060.

Marchetti, Augusto. Taping machine for cartons of variable width. 4,551,194, Cl. 156-468.000.

Marcinowski, Stefan: *See*—
Tschang, Chung-Ji; and Marcinowski, Stefan, 4,551,482, Cl. 521-53.000.

Marco Seattle, Inc.: *See*—
Hagedorn, Stanley R.; and Roach, Stewart W., 4,551,042, Cl. 406-93.000.

Marconi Avionics Limited: *See*—
Ellis, Stafford M., 4,550,836, Cl. 211-41.000.

Marcus, Bonita K.: *See*—
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,551,236, Cl. 208-112.000.

Mard, Kenneth C., to United Technologies Corporation. Fixed position, fixed frequency pendular-type vibration absorber with frequency linearization. 4,550,812, Cl. 188-379.000.

Marendaz, Georges-Andre , to Ateliers des Charmilles S.A. Apparatus and method for monitoring the machining conditions of an EDM apparatus. 4,551,809, Cl. 364-474.000.

Marfat, Anthony, to Pfizer Inc. Anti-inflammatory 2-methyl-2H-1,2-benzo-(or -thieno-)thiazine-3-carboxamide 1,1-dioxide derivatives, compositions, and method of use therefor. 4,551,452, Cl. 514-222.000.

Marghinotti, Daniele: *See*—
Canella, Marco; Marghinotti, Daniele; Bernardi, Adriano; and Sodini, Giancarlo, 4,551,335, Cl. 426-44.000.

Mariano, Kenneth E.; and Spector, George. Attic staircase. 4,550,534, Cl. 52-19.000.

Marion Laboratories, Inc.: *See*—
Plaas, Jon R.; Parker, Keith E.; Keiser, James D.; and Johnson, Elmer C., Jr., 4,551,139, Cl. 604-290.000.

Mark, Seymour, to Standard Oil Company, The. Coal-aqueous mixtures. 4,551,179, Cl. 106-277.000.

Markham, John D. Trackside-controlled electric railway systems. 4,551,659, Cl. 318-258.000.

Marks, Charles E., to Mobil Oil Corporation. Method and apparatus for pressure-cascade separation and stabilization of mixed phase hydrocarbonaceous products. 4,551,238, Cl. 208-340.000.

Marosi, Laszlo; Schlimper, Hans-Ulrich; Schwarzmann, Matthias; and Stabenow, Joachim. Preparation of zeolites. 4,551,321, Cl. 423-329.000.

Marotto, Robert A.: *See*—
Babb, John H., Jr.; and Marotto, Robert A., 4,550,939, Cl. 292-340.000.

Marple, Elwood: *See*—
Burke, William L., Sr.; Marple, Elwood; and Suisman, A. Eileen, 4,550,602, Cl. 73-428.000.

Marshall, Lloyd B.; and Ghebrid, Faycal, to Etudes et Fabrication Dowell Schlumberger. Quick-release coupling. 4,550,935, Cl. 285-18.000.

Marsili, Antonio, to Laboratori Baldacci SpA. 2-(ω-Alkylaminoalkyl)- and 2-(ω-dialkylaminoalkyl-3-(4-X-benzylidene)-phthalimidines. 4,551,453, Cl. 514-234.000.

Martens, Jurgen: *See*—
Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,551,548, Cl. 562-402.000.

Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., to SWS Silicones Corporation. Textile finishing with durable press resin composition. 4,551,350, Cl. 427-389.900.

Martin, George; and Broucksou, Robert H., to Eaton Corporation. Electrically controlled shift actuator. 4,550,625, Cl. 74-335.000.

Martin, Gerald L., to EER Products Inc. Heat exchanger. 4,550,773, Cl. 165-54.000.

Martin, James R., Sr.: *See*—
Aicher, Frederick T.; Martin, James R., Sr.; and Flanagan, William T., 4,550,961, Cl. 339-14.00R.

Martin, John H., to Energy Cycle, Inc. Anaerobic digester. 4,551,243, Cl. 210-180.000.

Martorana, Piero A.: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,551,454, Cl. 514-252.000.

Maruhashi, Yoshitsugu; and Hirata, Sadao, to Toyo Seikan Kaisha, Ltd. Composite vessel excellent in preservability and process for preparation thereof. 4,551,366, Cl. 428-35.000.

Maruta, Keiichi; and Yuyama, Yukihiro, to Ricoh Company, Ltd. Thermosensitive recording material. 4,551,738, Cl. 346-200.000.

Maruyama, Takashi, to Chinon Kabushiki Kaisha. Focusing control device. 4,550,994, Cl. 354-402.000.

Marvin Glass & Associates: *See*—
Ferris, Michael J.; and Breslow, Jeffrey D., 4,550,917, Cl. 273-246.000.
Hanson, Steven P., 4,551,109, Cl. 446-95.000.
Kulesza, Ralph J.; Rosenwinkel, Donald A.; and Disko, Harry, 4,550,876, Cl. 239-211.000.

Marzocchi, Alfred: *See*—
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,551,178, Cl. 106-273.00N.

Mascitti, Albert A.: *See*—
Sulkowski, Theodore S.; Silver, Paul J.; Mascitti, Albert A.; and Bender, Reinhold H. W., 4,551,534, Cl. 546-123.000.

Maslak, Samuel H.; and Wright, John N., to Acuson. Phased array acoustic imaging system. 4,550,607, Cl. 73-626.000.

Mason, Charles W. Attachment of Herbst mechanism to maxillary arch. 4,551,095, Cl. 433-19.000.

Massil, Solomon: *See*—
Bracha, Peretz; and Massil, Solomon, 4,551,458, Cl. 514-259.000.

Masunaga, Makoto; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Image pick-up device and system. 4,551,758, Cl. 358-213.000.

Masuyama, Kenichi: *See*—
Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,551,386, Cl. 428-323.000.

Materazzi, Mario: *See*—
De Luca, Giovanna; Di Stazio, Giovanni; Politi, Vincenzo; and Materazzi, Mario, 4,551,471, Cl. 514-419.000.

Matheson, Frederick A.: *See*—
Gurr, George P.; and Matheson, Frederick A., 4,551,812, Cl. 364-492.000.

Mathew, Chempolil T.; and Ulmer, Harry E., to Allied Corporation. Preparation of alcoholic hydroxylamine solution from hydroxylammonium sulfate. 4,551,323, Cl. 423-387.000.

Mathew, Chempolil T.; and Ulmer, Harry E., to Allied Corporation. Preparation from hydroxylammonium sulfate of other hydroxylammonium salts via alcoholic hydroxylamine. 4,551,324, Cl. 423-387.000.

Mathiasen, Herluf S., to Bang & Olufsen A/S. Earphone set. 4,551,584, Cl. 179-156.00R.

Mathieu, Bernd; and Weber, Wolfram, to Fresenius AG. Apparatus for running off liquids from sealed vessels. 4,551,147, Cl. 604-405.000.

Mathieu, Julien C., to Dayco Corporation. Method of making brake system assembly for railway vehicle. 4,550,484, Cl. 29-434.000.

Matsuda, Kouichi; and Sato, Youichi, to Pioneer Electronic Corporation. Television bandwidth correcting system. 4,551,755, Cl. 358-188.000.

Matsumoto, Eiichi: *See*—
Kikuchi, Yasuyuki; Matsumoto, Eiichi; and Tanaka, Yoshimasa, 4,550,695, Cl. 123-41.120.

Matsumoto, Hiroshi: *See*—
Sanbayashi, Takeshi; and Matsumoto, Hiroshi, 4,551,813, Cl. 364-569.000.

Matsumoto, Masakazu: *See*—
Kaneko, Kenkichi; Hattori, Takeshi; Hakamata, Kensaku; Hayashi, Satoru; Goshima, Takayuki; and Matsumoto, Masakazu, 4,550,638, Cl. 84-431.000.

Matsumoto, Masanori: *See*—
Moriguchi, Hiroyuki; Matsumoto, Masanori; Nishiwaki, Akira; Morohoshi, Yasuo; and Nomori, Hiroyuki, 4,551,303, Cl. 420-590.000.

Matsumoto, Mitsuo; Hirai, Koji; Yoshimura, Noriaki; and Okamura, Takayuki, to Kuraray Co., Ltd. Process for production of polyurethane. 4,551,518, Cl. 528-80.000.

Matsuo, Kenji; and Abou, Shouji, to Tokyo Shibaura Denki Kabushiki Kaisha. Switched capacitor filter circuit. 4,551,683, Cl. 328-167.000.

Matsuo, Nobuo, to Nitsuko Limited. Circuit for automatically releasing holding state of telephone system. 4,551,582, Cl. 179-81.00R.

Matsuoka, Michio: *See*—
Eda, Kazuo; Kikuchi, Yasuharu; Makino, Osamu; and Matsuoka, Michio, 4,551,268, Cl. 252-519.000.

Matsushima, Noboru, to Nippon Oil Seal Industry Co., Ltd. Oil seal with main lip, subsidiary lip and dust lip. 4,550,920, Cl. 277-134.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Eda, Kazuo; Kikuchi, Yasuharu; Makino, Osamu; and Matsuoka, Michio, 4,551,268, Cl. 252-519.000.
Miyagawa, Junichi; and Hirai, Yukio, 4,551,600, Cl. 219-10.49R.
Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, 4,551,757, Cl. 358-212.000.
Tsuchiya, Hiroyoshi; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Otsuka, Hirotaka, 4,551,768, Cl. 358-283.000.

Matsushita Electric Works, Ltd.: *See*—
Akiyama, Shoichi; and Kondo, Mikio, 4,551,711, Cl. 340-567.000.
Takasaki, Shuichi, 4,551,579, Cl. 174-88.00R.
Wada, Sumio; and Inakagata, Satoru, 4,551,666, Cl. 320-20.000.

Matsuura, Hiromi, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Dynamic RAM integrated circuit device. 4,551,820, Cl. 365-189.000.

Mattel, Inc.: *See*—
Rich, Hubert A.; Saffer, Gary M.; and Sestito, William F., 4,551,127, Cl. 493-462.000.

Mattle, Hans P., to International Standard Electric Corporation. Measuring head for determining the color purity and the convergence in a color picture tube. 4,551,748, Cl. 358-10.000.

Mauri Brothers & Thomson (Aust.) Pty. Limited: *See*—
Zentner, Harry, 4,551,334, Cl. 426-26.000.

Max-Planck-Gesellschaft zur Furderung der Wissenschaften e.V.: *See*—
Liebl, Helmut, 4,551,599, Cl. 250-396.00R.

Max-Planck-Gesellshaft zur Forderung der Wissenschaften e.V.: *See*—
Asmussen, Frithjof; Sotobayashi, Hideto; Chen, Jiang-Tsun; and Schnabel, Wolfram, 4,551,414, Cl. 430-270.000.

Maxcap, Inc.: *See*—
Nolan, Robert L., 4,550,843, Cl. 215-252.000.

Mayer, Karl: *See*—
Zimmer, Johannes; and Mayer, Karl, 4,550,681, Cl. 118-410.000.

Mayo Foundation: *See*—
Gilbert, Barry K.; and Schwab, Daniel J., 4,551,746, Cl. 357-74.000.
Gilbert, Barry K.; and Schwab, Daniel J., 4,551,747, Cl. 357-74.000.

Mazzawy, Robert S.: *See*—
Callahan, David J.; Mazzawy, Robert S.; Stryker, Howard Y.; and Kelly, James B., 4,550,564, Cl. 60-39.093.

McAuliffe, Gerald N., to Outboard Marine Corporation. Gas controlled battery charging system using a gas detector. 4,551,667, Cl. 320-46.000.

McCallister, John. Golf club head with visual swing-directing cues. 4,550,914, Cl. 273-183.00D.

McConnell, Richard L.; Cox, Abraham J.; and Darnell, William R., to Eastman Kodak Company. Low-melting copolyester adhesives. 4,551,521, Cl. 528-302.000.

McCulloch Corporation: *See*—
Ruzicka, Alan V., 4,550,499, Cl. 30-276.000.

McDonald, John F.: *See*—
Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,017, Cl. 356-28.500.
Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,018, Cl. 356-28.500.

McDonald, William E., II. Modular water heater connection apparatus and method for fabricating same. 4,550,710, Cl. 126-362.000.

McDonnell Douglas Corporation: *See*—
Grossman, Jack J., 4,551,628, Cl. 250-503.100.

McDonough, Stephen L. Boat dolly. 4,550,925, Cl. 280-47.13B.

McEwen, James A. Method and apparatus for detection of breathing gas interruptions. 4,550,726, Cl. 128-202.220.

McFarlane, Glenton P.; and Swift, Steven G., to Johnson Matthey plc. Bursting disc orientation device. 4,550,743, Cl. 137-68.100.

McGraw-Edison Company: *See*—
Juve, Robert J.; and Eagen, Michael J., 4,550,682, Cl. 118-425.000.

McIntyre, John: *See*—
Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and Rogers, Charles J., 4,551,218, Cl. 204-240.000.

McMullen, Carl R.; and Campbell, Marshall S., to Foundry Technology, Inc. Compactability measurement method and apparatus for sand casting. 4,550,768, Cl. 164-456.000.

McNeil, Charles B., to Surgidyne Inc. Method and apparatus for removing liquids from a drainage device. 4,551,141, Cl. 604-317.000.

McTamaney, Louis S.; Bisbee, Gary W.; Kettlety, Robert W.; and Konsevich, James L., to FMC Corporation. Method and apparatus for entering control points relative to a dynagraph of a well pumping unit. 4,551,730, Cl. 346-33.0WL.

McWade, Duncan R. Fuel supply system for internal combustion engines. 4,550,691, Cl. 123-3.000.

Mead Corporation, The: *See*—
Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,551,407, Cl. 430-138.000.

Mechatron Systems, Inc.: *See*—
Wong, Harvey C.; and Lin, Frank W., 4,551,664, Cl. 318-592.000.

Medex, Inc.: *See*—
Mandl, Joseph P., 4,551,136, Cl. 604-141.000.

Medical College of Ohio, The: *See*—
Manning, Maurice; and Sawyer, Wilbur H., 4,551,445, Cl. 514-9.000.

Medical Engineering Corporation: *See*—
Finney, Roy P.; Trick, Robert E.; and Lynch, Henry W., 4,550,719, Cl. 128-79.000.
Trick, Robert E., 4,550,720, Cl. 128-79.000.

Medical Research Associates, Ltd. #2: *See*—
Rexroth, Frederick W., 4,550,727, Cl. 128-303.140.

Meeder, Edward A., Jr., to Allied Corporation. Cathode ray tube vibration isolator. 4,551,765, Cl. 358-248.000.

Meffert, Alfred: *See*—
Herold, Julius; Kluth, Hermann; Meffert, Alfred; and Leder, Manfred, 4,551,517, Cl. 528-60.000.

Meguro, Toshiaki: *See*—
Ogawa, Masumi; Kawakami, Hiromi; and Meguro, Toshiaki, 4,551,756, Cl. 358-197.000.

Mehnert, Walter. Method and apparatus for the measurement of the length of a straight line or an arc. 4,550,504, Cl. 33-125.00C.

Mehra-Palta, Asha; and Gross, Kimnaja, to International Paper Company. Asexual propagation of pine trees. 4,550,528, Cl. 47-58.000.

Meier, Hans-Jurgen, to Carl-Zeiss-Stiftung. Testing apparatus including a vacuum-tight radiation window. 4,550,979, Cl. 350-321.000.

Meier, Jacques, to Ferag AG. Apparatus for transporting flat products, especially printed products arriving in an imbricated formation. 4,550,822, Cl. 198-461.000.

Meiners, Elmo R., to M & W Gear Company. System for injection of liquid or granular material into a round hay bale. 4,550,556, Cl. 56-341.000.

Meinzer, Karl. Method and device for displaying graphic information, in particular for braille reading. 4,551,102, Cl. 434-114.000.

Meise, William H.; and Dischert, Robert A., to RCA Corporation. Compatible wide-screen color television system. 4,551,754, Cl. 358-180.000.

Meli, Alberto: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, 4,551,451, Cl. 514-217.000.

Melillo, Anthony; and Gabriele, Louis. Exercising appliance. 4,550,907, Cl. 272-93.000.

Mellema, Sybe J., to U.S. Philips Corporation. Road illumination luminaire for pole-mounting. 4,551,793, Cl. 362-370.000.

Memminger GmbH: *See*—
Kuhn, Falk; and Buck, Alfred, 4,550,577, Cl. 66-104.000.

Menges, John R.: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,550,729, Cl. 128-325.000.

Merchant, Kamal; and Schmitt, Claude, to Siemens Aktiengesellschaft. Integrable digital/analog converter. 4,551,709, Cl. 340-347.0DA.

Merchant, Philip; and Lacy, Sylvia M., to Exxon Research & Engineering Co. Water based demulsifier formulation and process for its use in dewatering and desalting crude hydrocarbon oils. 4,551,239, Cl. 208-188.000.

Merck & Co., Inc.: *See*—
Katz, Irving M., 4,551,456, Cl. 514-254.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Eidenschink, Rudolf; Romer, Michael; and Weber, Georg, 4,551,264, Cl. 252-299.620.

Mericle, Robert W.: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,550,729, Cl. 128-325.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Bey, Philippe, 4,551,550, Cl. 564-215.000.

Merten, Rudolf: *See*—
Schellhammer, Karl-Wolfgang; Rottmaier, Ludwig; Merten, Rudolf; and Schimmel, Ulrich, 4,551,263, Cl. 252-186.390.

Mesch, William G.: *See*—
Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., 4,551,719, Cl. 340-825.360.

Messick, George H., Jr.: *See*—
Fletcher, George R., Jr.; Messick, George H., Jr.; Roby, Charles K.; and Huey, Cecil O., Jr., 4,550,532, Cl. 51-288.000.

Messing, Horst, to Mr. Wash Auto-Service AG. Device for cleaning the wheels particularly the rims of a vehicle in a carwash. 4,550,464, Cl. 15-53.00B.

Metallgesellschaft Aktiengesellschaft: *See*—
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Metropolitan Wire Corporation: *See*—
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,550,956, Cl. 312-250.000.

Metz, Arthur J., to Tektronix, Inc. Oscilloscope having dual time base system for accurate differential time measurement. 4,551,656, Cl. 315-392.000.

Meyer, William D. Game with triangular shaped playing elements. 4,550,915, Cl. 273-272.000.

Meyer, Willy; Gass, Karl; Topfl, Werner; Schurter, Rolf; and Pissiotas, Georg, to Ciba Geigy Corporation. 4-Difluoromethoxy-2-aminopyrimidines. 4,551,531, Cl. 544-320.000.

Meyers, Grahame A. Safe having concealed hinges. 4,550,667, Cl. 109-70.000.

Meynard, Paul: *See*—
Fournier, Jean; Patron, Henri; and Meynard, Paul, 4,550,777, Cl. 165-162.000.

Michaud, Horst: *See*—
Behnke, Horst; Michaud, Horst; Seeholzer, Joseph; and Solansky, Svatoplug, 4,551,166, Cl. 71-30.000.

Michel, Lorraine M. Foot support. 4,550,721, Cl. 128-80.00E.

Michel, Thomas J.: *See*—
Harris, Joan; and Michel, Thomas J., 4,551,329, Cl. 424-22.000.

Michelfelder, Sigfrid: *See*—
Leikert, Klaus; Buttner, Gerhard; and Michelfelder, Sigfrid, 4,551,090, Cl. 431-188.000.

Michl, Josef; and Puebla-Ponce, Claudio G., to University of Utah. Optical recording method and apparatus utilizing polymeric birefringent materials. 4,551,819, Cl. 365-120.000.

Middleton, Michael L.: *See*—
Elam, Edward U.; and Middleton, Michael L., 4,551,523, Cl. 536-119.000.

Mikami, Tomoki: *See*—
Yaguchi, Masachika; Mikami, Tomoki; and Hase, Takashi, 4,551,397, Cl. 428-691.000.

Miles, Clive; and Schneiderman, Gary, to Thoratec Laboratories Corporation. Autotransfusion system with anticoagulant delivery system. 4,551,131, Cl. 604-31.000.

Miles Laboratories, Inc.: *See*—
Bouwman, Dale W.; and Clayborn, Harold K., 4,551,306, Cl. 422-56.000.

Milford, George N., Jr., to Du Pont de Nemours, E. I., and Company. Preparation and use of nitroterephthalamic acids. 4,551,549, Cl. 562-437.000.

Miller, Alan H.: *See*—
Swartz, Henry D.; and Miller, Alan H., 4,550,798, Cl. 181-201.000.

Miller, Gabriel L., to AT&T Bell Laboratories. Noncontacting conductivity type determination and surface state spectroscopy of semiconductor materials. 4,551,674, Cl. 324-158.00R.

Miller, Gary; Jobes, Sam S.; and Benfey, David P., to General Electric Company. Format reconfigurable CRT display. 4,551,657, Cl. 315-399.000.

Miller, Jeffrey T.; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Process for reacting aromatic compounds. 4,551,572, Cl. 585-454.000.

Miller, John E., to Dresser Industries, Inc. Method and arrangement for retaining cylinder liners in a reciprocating pump. 4,550,646, Cl. 92-128.000.

Miller, R. Craig, to Miller, R. Craig; and Pro/Pak Industries, Inc., a part interest. Continuous filter screen system for removing particles from a liquid. 4,551,255, Cl. 210-770.000.

Miller, Robert E.; and Vervacke, Steven L., to Appleton Papers Inc. Record member. 4,551,739, Cl. 346-216.000.

Miller, Stephen J., to Chevron Research Company. Oligomerization of liquid olefin over a nickel-containing silicaceous crystalline molecular sieve and hydrocarbyl aluminum halide. 4,551,438, Cl. 502-62.000.

Minakata, Matsuo: *See—*
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,550,578, Cl. 68-5.00E.

Mindlin, Richard B.: *See—*
Haynes, Joel, 4,550,651, Cl. 99-279.000.

Minnesota Mining and Manufacturing Company: *See—*
Bell, Vivien L., 4,551,413, Cl. 430-270.000.
Carey, Patrick H., Jr., 4,551,378, Cl. 428-198.000.
Chung, Chi H., 4,551,828, Cl. 369-275.000.

Mino, Hisashi; and Iizima, Takeshi, to Sanyo-Kokusaku Pulp Co., Ltd. Color image forming method and color image forming photo-sensitive material to be used therefor. 4,551,408, Cl. 430-141.000.

Minolta Camera Kabushiki Kaisha: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,550,993, Cl. 354-402.000.
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Kawagoe, Nobukazu; Naruse, Kazuhiko; and Inaba, Masahito, 4,551,011, Cl. 355-35.000.

Mintz, Michael D., to International Technidyne Corp. Apparatus for analyzing the influence of additive reagents upon the coagulation of blood and related methods. 4,551,308, Cl. 422-58.000.

Mirto, Nicholas. Snow remover for automobiles and the like. 4,550,943, Cl. 294-54.500.

Mr. Wash Auto-Service AG: *See—*
Messing, Horst, 4,550,464, Cl. 15-53.00B.

Misumi, Teruo: *See—*
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,551,405, Cl. 430-64.000.

Misuzu Machineries & Engineering Ltd.: *See—*
Shimamura, Hayato; and Maeda, Osamitsu, 4,550,751, Cl. 138-93.000.

Mita Industrial Co., Ltd.: *See—*
Hayashi, Kiyoshi, 4,550,985, Cl. 350-6.300.
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,551,403, Cl. 430-58.000.
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,551,009, Cl. 355-15.000.
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Mitchell, Andrew: *See—*
Sullivan, Dale W.; Janssen, Kermit W.; and Mitchell, Andrew, 4,550,778, Cl. 166-234.000.

Mitchell, Brian: *See—*
Riches, Arthur J.; and Mitchell, Brian, 4,550,967, Cl. 339-88.00R.

Mitsubishi Chemical Industries Limited: *See—*
Takahashi, Kiyoshi; Konagai, Makoto; Yoshitomi, Toshihiko; and Omori, Takeshi, 4,551,575, Cl. 136-255.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fukada, Koichi; and Sugimoto, Hiroshi, 4,550,603, Cl. 73-587.000.
Shimoda, Michio; and Watanabe, Fumio, 4,551,805, Cl. 364-469.000.
Shimotori, Kazuhiro; and Ozaki, Hideyuki, 4,551,741, Cl. 357-23.600.
Sugimoto, Hiroshi; and Fukada, Koichi, 4,550,604, Cl. 73-587.000.
Taniguti, Ryosuke, 4,551,811, Cl. 364-481.000.

Mitsubishi Mining & Cement Co., Ltd.: *See—*
Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, 4,551,571, Cl. 585-440.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Inoue, Masao; and Suzuki, Shingo, 4,550,977, Cl. 350-128.000.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Imada, Nobuyuki; and Okada, Toshiteru, 4,551,254, Cl. 210-688.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,551,478, Cl. 514-603.000.

Mittal, Faquir C.; and Solis, Charles R., to Sperry Corporation. Apparatus for use in cooling integrated circuit chips. 4,551,787, Cl. 361-387.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Nishikata, Goro, 4,550,507, Cl. 33-164.00R.

Miya, Shinya: *See—*
Harada, Masato; Miya, Shinya; Yamada, Sadahiko; and Iijima, Makoto, 4,551,439, Cl. 502-107.000.

Miyagawa, Junichi; and Hirai, Yukio, to Matsushita Electric Industrial Co., Ltd. Ventilated cooking appliance unit. 4,551,600, Cl. 219-10.49R.

Miyahara, Kingo, to Dowa Company, Ltd. Evaporation burner. 4,551,089, Cl. 431-116.000.

Miyajima, Mikio: *See—*
Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, 4,551,033, Cl. 400-308.000.

Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, to Mita Industrial Co., Ltd. Photosensitive material for electrophotography. 4,551,403, Cl. 430-58.000.

Miyake, Hideo: *See—*
Sakamoto, Junichi; Fujimoto, Hiroshi; and Miyake, Hideo, 4,551,215, Cl. 204-159.230.

Miyanaka, Masaki: *See—*
Okubo, Takeshi; Kodachi, Hideo; and Miyanaka, Masaki, 4,550,488, Cl. 29-568.000.

Miyao, Masanobu: *See—*
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.

Miyasaka, Kingo: *See—*
Sumiyoshi, Kikuo; Sato, Eiji; Hirai, Kazuo; Miyasaka, Kingo; and Izumi, Masayoshi, 4,551,393, Cl. 428-609.000.

Miyashita, Kiyoshi; Ozeki, Fumitaka; and Tsuda, Hiroshi, to Olympus Optical Co., Ltd. Original conveying apparatus for electrophotographic copying machines. 4,551,010, Cl. 355-25.000.

Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, to UBE Industries, Ltd. Process for the production of ethylene glycol and/or glycollic acid esters, and catalyst therefor. 4,551,565, Cl. 568-864.000.

Mizell, James A. Method of fabricating hollow plastic objects and apparatus therefor. 4,551,290, Cl. 264-46.600.

Mizuno, Takao: *See—*
Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, 4,551,082, Cl. 418-55.000.

Mizutani, Morikazu: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, 4,551,000, Cl. 355-3.00R.

Mizutani, Yasukazu: *See—*
Ubukata, Susumu; and Mizutani, Yasukazu, 4,551,701, Cl. 337-97.000.

Mobay Chemical Corporation: *See—*
Yeater, Robert P.; Pantone, Richard S.; and Rieck, James N., 4,551,498, Cl. 524-424.000.

Mobeck, William L.: *See—*
Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., 4,551,719, Cl. 340-825.360.

Mobil Oil Corporation: *See—*
Braid, Milton, deceased, 4,551,259, Cl. 252-48.200.
Horodysky, Andrew G., 4,551,257, Cl. 252-32.70E.
Marks, Charles E., 4,551,238, Cl. 208-340.000.
Ramella, Amilcare; and Wang, Hsin-Ju, 4,551,228, Cl. 208-65.000.
Rohn, Charles L., 4,551,514, Cl. 526-348.100.

Mocella, Michael T.: *See—*
Taylor, Paul D.; and Mocella, Michael T., 4,551,553, Cl. 568-311.000.

Moore, Bernard S., to Pfizer Inc. Regeneration of 6-fluoro-4-chromanone from 6-fluoro-4-ureidochroman-4-carboxylic acid. 4,551,542, Cl. 549-401.000.

Moore, Donald W.; and Verstraete, Rick A., to Aerojet-General Corporation. Functionally redundant logic network architectures. 4,551,814, Cl. 364-716.000.

Moore, Donald W.; and Verstraete, Rick A., to Aerojet-General Corporation. Functionally redundant logic network architectures with logic selection means. 4,551,815, Cl. 364-716.000.

Moore, Kenneth P., to Xerox Corporation. Sheet feeding apparatus and valve therefor. 4,550,903, Cl. 271-98.000.

Moore, Lawrence F. Ocular dispenser. 4,550,866, Cl. 222-420.000.

Moore, William H. Mold coating. 4,550,761, Cl. 164-14.000.

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Moors, Johannes H., to U.S. Philips Corporation. Electrical connector. 4,550,963, Cl. 339-31.00R.

Moravnik, Zvi, to Solar Power Laboratories, Ltd. Solar water heating apparatus and solar concentrator useful therewith. 4,550,712, Cl. 126-439.000.

Moraw, Roland: *See—*
Schaedlich, Gunther; and Moraw, Roland, 4,551,406, Cl. 430-119.000.

Morgan, Tommie J.; and Willcott, M. Robert. Phantom for nuclear magnetic resonance machine. 4,551,678, Cl. 324-300.000.

Mori, Mikio: *See—*
Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, 4,551,571, Cl. 585-440.000.

Mori, Takaro: *See—*
Fujii, Yasuhiko; Owaki, Isao; Saito, Susumu; Mori, Takaro; and Nakamura, Shinji, 4,551,840, Cl. 371-38.000.

Moriguchi, Hiroyuki; Matsumoto, Masanori; Nishiwaki, Akira; Morohoshi, Yasuo; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Method of using an evaporation source. 4,551,303, Cl. 420-590.000.

Morimoto, Takeshi: *See—*
Oda, Yoshio; and Morimoto, Takeshi, 4,551,220, Cl. 204-294.000.

Morinaka, Hideo: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yunji; and Nakanishi, Akira, 4,551,169, Cl. 71-94.000.

Morohoshi, Yasuo: *See—*
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Morper, Manfred; and Fuchs, Uwe, to Linde Aktiengesellschaft. Process for the anaerobic biological purification of wastewater. 4,551,250, Cl. 210-603.000.

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Morris, John C.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Polyesters of trans-4,4-stilbenedicarboxylic acid, terephthalic acid and 1,4-cyclohexanedimethanol. 4,551,520, Cl. 528-302.000.

Morrison, Ward D.: *See—*
Hibbard, George A.; and Morrison, Ward D., 4,550,785, Cl. 173-134.000.

Morton, Ted W. Live bait vending apparatus. 4,550,522, Cl. 43-55.000.

Moschensky, Anatoly D.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Mosher, Oren A.; Mosher, Oren G.; and Douglas, Ellwood S., to Eagle Machinery Company. Combination weighing system. 4,550,792, Cl. 177-25.000.

Mosher, Oren G.: *See—*
Mosher, Oren A.; Mosher, Oren G.; and Douglas, Ellwood S., 4,550,792, Cl. 177-25.000.

Mosher, Ralph S., to Robotics, Inc. Low cost articulating/articulating and rotating wrist mechanism for automatic machine tool and automatic machine tool employing the same. 4,551,058, Cl. 414-735.000.

Mosier, John E.; Surjaatmadja, Jim B.; and Penn, Jack C., to Halliburton Company. Optical reader. 4,551,766, Cl. 358-256.000.

Motornetics Corporation: *See—*
Welburn, Ross D., 4,551,708, Cl. 340-347.0SY.

Motorola, Inc.: *See—*
Czarnocki, Wlodzimierz S., 4,550,611, Cl. 73-708.000.
Latasiewicz, Leonard, 4,551,586, Cl. 200-5.00A.
Moutrie, Michael F.; Sokola, Raymond L.; and Choi, Charles, 4,551,696, Cl. 333-204.000.
Pelley, Perry H., III, 4,551,641, Cl. 307-530.000.
Victor, Alan M.; and Davids, Darrell E., 4,551,856, Cl. 455-183.000.

Motsenbocker, Harold F. Target array. 4,550,918, Cl. 273-385.000.

Mott, Donna: *See—*
Halpern, Yuval; and Mott, Donna, 4,551,527, Cl. 544-214.000.

Mott, James D., to Hydril Company. Pressure operated safety valve with lock means. 4,550,780, Cl. 166-323.000.

Mott, Richard C., to Honeywell Inc. Pneumatic flow station. 4,550,616, Cl. 73-861.740.

Mottershead, Frank R., to Cross Company, The. Mechanism for preloading bearings. 4,551,032, Cl. 384-517.000.

Mount Isa Mines Limited: *See—*
Greenwood-Smith, Robin, 4,551,848, Cl. 378-045.000.

Moutrie, Michael F.; Sokola, Raymond L.; and Choi, Charles, to Motorola, Inc. Narrow bandwidth microstrip filter. 4,551,696, Cl. 333-204.000.

Mowry, Donald E., to Don Mowry Flexo Parts, Inc. Corrugated box machine glue apparatus. 4,551,124, Cl. 493-128.000.

Moy, Alexander, to Beltone Electronics Corporation. Electrical film resistor. 4,551,607, Cl. 219-121.0LJ.

Mroz, Andrzej; and Wronski, Stanislaw, to Politechnika Warszawska. Apparatus for dynamic classification of suspensions of solid bodies in liquids. 4,551,242, Cl. 209-211.000.

MTU-Motoren-und Turbinen-Union Friedrichshafen GmbH: *See—*
Deutschmann, Herbert; and Wolters, Gerd-Michael, 4,550,568, Cl. 60-612.000.

MTU Motoren-und Turbinen-Union Muenchen GmbH: *See—*
Thoma, Martin, 4,551,434, Cl. 436-5.000.

Muchisky, Thomas P.; and Young, James V. Portable adjustable body tilt board. 4,550,901, Cl. 269-328.000.

Mueller, Richard A.; and Partis, Richard A., to G. D. Searle & Co. Protease inhibitors. 4,551,279, Cl. 260-404.000.

Muench, Volker: *See—*
Blinne, Gerd; and Muench, Volker, 4,551,493, Cl. 524-89.000.

Muenzel, Wolf-Dietrich: *See—*
Andres, Rudolf; Grantz, Helmut; Muenzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,550,774, Cl. 165-104.210.

Muhlratzer, August: *See—*
Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, 4,551,328, Cl. 423-607.000.

Mukaiyama, Fumiaki: *See—*
Takeda, Koji; Akahane, Masao; Mukaiyama, Fumiaki; and Kudo, Yasuhiko, 4,551,846, Cl. 375-82.000.

Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Antithrombotic sulfoximino carbostyrils. 4,551,464, Cl. 514-312.000.

Muller, Franz: *See—*
Fischer, Kurt; and Muller, Franz, 4,550,765, Cl. 164-194.000.

Muller, Max: *See—*
Grabher, Erich; Muller, Max; Wetzel, Horst; and Schultschik, Robert, 4,550,955, Cl. 308-6.00C.

Multinorm B.V.: *See—*
Vissers, Hermanus H.; and Wondergem, Jan, 4,550,557, Cl. 56-341.000.

Muma, George A.: *See—*
Johnson, Richard H.; and Muma, George A., 4,550,467, Cl. 15-228.000.

Munks, R. Leonard. Animal sling. 4,550,686, Cl. 119-102.000.

Munro, Frederick G.: *See—*
Permut, Ronald; Cope, Robert; Apple, James; Epina, August P.; and Munro, Frederick G., 4,550,884, Cl. 242-189.000.

Murai, Toshiyuki: *See—*
Ootuka, Takayuki; and Murai, Toshiyuki, 4,550,703, Cl. 123-478.000.

Murakami, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor integrated circuit with isolation region made of dielectric material. 4,551,743, Cl. 357-50.000.

Murakami, Koichi; and Oguro, Takeshi, to Nissan Motor company, Limited. Semiconductor switching circuit with an overcurrent protection. 4,551,779, Cl. 361-86.000.

Murakami, Masahiro: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Murakami, Yoshiaki: *See—*
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,551,849, Cl. 381-86.000.

Murase, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Air guide arrangement for a drum-type drier. 4,550,509, Cl. 34-133.000.

Murata Kikai Kabushiki Kaisha: *See—*
Fujiwara, Michiaki; and Ikeda, Toshiharu, 4,550,886, Cl. 242-35.60E.

Murayama, Akira: *See—*
Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, 4,551,082, Cl. 418-55.000.

Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 4,551,481, Cl. 521-52.000.

Murphy, Kent A., to International Telephone and Telegraph Corporation. Low loss fused biconical taper optic coupler. 4,550,974, Cl. 350-96.150.

Murray, Robert J.: *See—*
Davidson, Thomas A.; and Murray, Robert J., 4,551,535, Cl. 546-121.000.

N.Y. Patent Development Corp.: *See—*
Grenthe, Bo, 4,551,253, Cl. 210-680.000.

Naab, Jakob, to Zoller-Kipper GmbH. Device for emptying containers into a collector. 4,551,057, Cl. 414-420.000.

Nabisco Brands, Inc.: *See—*
Gellman, Gary; Erburt, George A.; and Roe, James E., 4,551,343, Cl. 426-549.000.
Karwowski, Jan, 4,551,347, Cl. 426-621.000.

Nady, Louie A.: *See—*
Alesandrini, Carlo G., Jr.; and Nady, Louie A., 4,551,325, Cl. 423-488.000.

Nagano, Masami; Atago, Takeshi; and Yoshida, Tatsuya, to Hitachi, Ltd. Electrical fuel injector. 4,550,705, Cl. 123-488.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Front derailleur for a bicycle. 4,551,121, Cl. 474-140.000.

Nagao, Kenichi: *See—*
Saito, Tomotaka; and Nagao, Kenichi, 4,551,716, Cl. 340-711.000.

Nagatani, Toshio; Chiba, Norio; Hatanaka, Takao; and Saito, Toshio, to Konishiroku Photo Industry Co., Ltd. Packaged photographic product. 4,551,367, Cl. 428-35.000.

Nagy, Jozsef: *See—*
Pasztor, Emil; Lazar, Laszlo ; Nagy, Jozsef; and Pallosy nee Becker, Katalin, 4,551,132, Cl. 604-52.000.

Nahara, Akira: *See—*
Arai, Yoshihiro; and Nahara, Akira, 4,551,778, Cl. 360-131.000.

Nakadate, Toshihiko: *See—*
Numata, Morikuni; and Nakadate, Toshihiko, 4,551,605, Cl. 219-86.310.

Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Image forming process employing member with a depletion layer. 4,551,405, Cl. 430-64.000.

Nakahama, Ryoji: *See—*
Iwashita, Takashi; Atsumi, Shinya; and Nakahama, Ryoji, 4,551,104, Cl. 440-56.000.

Nakai, Masaaki: *See—*
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.

Nakamura, Akira: *See—*
Ikeda, Makoto; and Nakamura, Akira, 4,551,258, Cl. 252-32.70E.

Nakamura, Haruyoshi: *See—*
Tanaka, Akira; Tsunekawa, Takahiko; Seiki, Kazuo; and Nakamura, Haruyoshi, 4,550,560, Cl. 57-261.000.

Nakamura, Kazuharu; Tsuboi, Yoshimasa; and Kondo, Akinobu, to Toyotomi Kogyo Co., Ltd. Construction for preventing oil leakage in oil burner. 4,550,709, Cl. 126-96.000.

Nakamura, Koki: *See—*
Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, 4,551,419, Cl. 430-445.000.
Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, 4,551,421, Cl. 430-509.000.

Nakamura, Shinji: *See—*
Fujii, Yasuhiko; Owaki, Isao; Saito, Susumu; Mori, Takaro; and Nakamura, Shinji, 4,551,840, Cl. 371-38.000.

Nakamura, Shuzo: *See—*
Sato, Hiroshi; and Nakamura, Shuzo, 4,551,568, Cl. 568-939.000.

Nakamura, Taku: *See—*
Ogawa, Masashi; Nakamura, Taku; Urata, Yukihide; and Yamauchi, Shingo, 4,551,412, Cl. 430-265.000.

Nakamura, Tsutomu: *See—*
Kita, Daizo; Nakamura, Tsutomu; and Kawachi, Takeshi, 4,551,256, Cl. 252-8.5LC.

Nakamura, Yasuo: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,551,565, Cl. 568-864.000.

Nakanishi, Akira: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yunji; and Nakanishi, Akira, 4,551,169, Cl. 71-94.000.

Nakanishi, Hitoshi; and Ogura, Hiroyuki, to Yotsuami Limited. Fishing line knot. 4,550,938, Cl. 289-1.200.

Nakanishi, Kiyoshi: *See—*
Okumura, Takeshi; Warashina, Tomio; and Nakanishi, Kiyoshi, 4,550,699, Cl. 123-308.000.

Nakanishi, Tsugio: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Nakano, Kenji: *See—*
Machida, Yukihiko; Nakano, Kenji; and Takahashi, Takao, 4,551,771, Cl. 360-19.100.

Nakao, Etsuro: *See—*
Tamura, Tadashi; Nakao, Etsuro; and Yamazaki, Hiroaki, 4,551,402, Cl. 429-254.000.

Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, to Nippon Kokan Kabushiki Kaisha. Method for adjusting composition of molten steel in arc process. 4,551,173, Cl. 75-12.000.

Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, to Nippon Kokan Kabushiki Kaisha. Method of refining molten steel by arc process. 4,551,174, Cl. 75-12.000.

Nakatomi, Yoshisugu; Uchida, Kohachi; and Hashimoto, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Original carrier for use with an image forming device. 4,551,014, Cl. 355-75.000.

Nakauchi, Kenji, to Fuji Photo Film Co., Ltd. System for recording information on photographic image density and process. 4,551,023, Cl. 356-444.000.

Nakazato, Katsuo: *See—*
Tsuchiya, Hiroyoshi; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Otsuka, Hirotaka, 4,551,768, Cl. 358-283.000.

Nakazawa, Takahiro: *See—*
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.

Nakel, Gunther M.; and Heckert, David C., to Procter & Gamble Company, The. Beverages containing specific cation-edible acid mixtures for improved flavor impression. 4,551,342, Cl. 426-548.000.

Naragon, Richard S.: *See—*
Douglass, Randle; Jacquin, H. George; Chewey, Paul M.; Galvan, Paul A.; and Naragon, Richard S., 4,550,888, Cl. 244-3.220.

Narita, Seiichi: *See—*
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,550,618, Cl. 73-862.340.

Narita, Takato, to Sony Corporation. Circuit to vary the phase of the color burst signal. 4,551,749, Cl. 358-28.000.

Narr, Berthold: *See—*
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,551,464, Cl. 514-312.000.

Naruse, Kazuhiko: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Kawagoe, Nobukazu; Naruse, Kazuhiko; and Inaba, Masahito, 4,551,011, Cl. 355-35.000.

Nash Engineering Company, The: *See—*
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,551,070, Cl. 417-68.000.

Nashimoto, Toshiyuki: *See—*
Beppu, Masaru; Agawa, Setsuo; Hazeyama, Takeshi; and Nashimoto, Toshiyuki, 4,551,240, Cl. 209-143.000.

Nathan, Walter; and Zucker, Armand S., to RTC Industries, Inc. Modular display rack. 4,550,838, Cl. 211-128.000.

National Research Development Corporation: *See—*
Hall, Timothy J.; and Tridgell, Eric J., 4,550,527, Cl. 47-58.000.
Johnson, Nicholas D., 4,550,609, Cl. 73-642.000.
Warner, Anne, 4,551,165, Cl. 71-24.000.

National Starch and Chemical Corporation: *See—*
Trubiano, Paolo C.; and Kasica, James J., 4,551,177, Cl. 106-210.000.

National Steel Corporation: *See—*
Bell, John R.; Scoville, Robert E.; and Whitt, Joade, 4,550,867, Cl. 222-607.000.

Naumann, Ted F., Jr.: *See—*
Carnes, Ronald C.; and Naumann, Ted F., Jr., 4,550,608, Cl. 73-633.000.

Nausedas, Joseph A., to Union Carbide Corporation. Shirred casing stick article with end closure and method for making the same. 4,551,370, Cl. 428-36.000.

NCR Corporation: *See—*
Heys, George; and Coon, Dennis R., 4,551,675, Cl. 324-158.00F.

NDM Corporation: *See—*
Aicher, Frederick T.; Martin, James R., Sr.; and Flanagan, William T., 4,550,961, Cl. 339-14.00R.

NEC Corporation: *See—*
Oka, Hideo, 4,551,786, Cl. 361-306.000.
Suzuki, Masayoshi; and Saigo, Kazuhide, 4,551,417, Cl. 430-316.000.

Nehring, Rudolf: *See—*
Otte, Werner; Nehring, Rudolf; and zur Hausen, Manfred, 4,551,564, Cl. 568-834.000.

Neiman S.A.: *See—*
Neyret, Guy, 4,550,580, Cl. 70-370.000.

Nelson, Marguerite D. Mop. 4,550,468, Cl. 15-229.00A.

Nelson, Randall B., to International Telephone and Telegraph Corporation. Reduction of organic waste odors. 4,551,305, Cl. 422-5.000.

Neri, Michael A. Method of producing freeze dried fish eggs. 4,551,333, Cl. 426-1.000.

Nesky, Robert W.: *See—*
Darrow, Russell E.; Ingraham, Glenn J.; Larnerd, John D.; and Nesky, Robert W., 4,550,493, Cl. 29-739.000.

Neumann, Jacques, to Ateliers de Constructions Electriques de Charleroi (ACEC)-Societe Anonyme. Simulator for training airplane pilots. 4,551,101, Cl. 434-55.000.

Neumann, Stephen M.: *See—*
Brust, David P.; Neumann, Stephen M.; and Weissberger, Edward, 4,551,411, Cl. 430-216.000.

Neyret, Guy, to Neiman S.A. Rotatable connection device. 4,550,580, Cl. 70-370.000.

NGK Insulators, Ltd.: *See—*
Takeuchi, Yukihisa, 4,551,357, Cl. 427-96.000.

Nicholson, Chris G.: *See—*
Bykerk, Rocky S., 4,551,781, Cl. 361-143.000.

Nickl, Josef: *See—*
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,551,464, Cl. 514-312.000.

Nicolai, Daniel W.: *See—*
Stiefel, Werner K.; and Nicolai, Daniel W., 4,551,480, Cl. 514-680.000.

Niederer, Kurt W., to Belmont Textile Machinery Company. Method and apparatus for detecting the position of a take-up package during an automatic doffing and donning cycle. 4,550,880, Cl. 242-18.0DD.

Nifco Inc.: *See—*
Omata, Nobuaki, 4,550,470, Cl. 16-85.000.

Nikolov, Ivan D., to Institute po Metaloznanie I Technologia na Metalite. Method and machine for pressure diecasting. 4,550,763, Cl. 164-119.000.

Ninomiya, Masakazu: *See—*
Suzuki, Atsushi; Ninomiya, Masakazu; Maeda, Katsuya; and Kawashima, Yutaka, 4,550,701, Cl. 123-436.000.

Nippon Electric Co., Ltd.: *See—*
Higashiguchi, Toshiaki; and Sonoda, Michiaki, 4,551,767, Cl. 358-257.000.
Hirai, Yoshihiko, 4,550,982, Cl. 350-357.000.

Nippon Hoso Kyokai: *See—*
Nishizawa, Taiji; and Tanaka, Yutaka, 4,551,753, Cl. 358-140.000.

Nippon Kogaku K.K.: *See—*
Ishizaka, Sunao; and Maida, Osamu, 4,550,991, Cl. 354-21.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Kanayama, Kiyoshi; and Asano, Shoji, 4,550,635, Cl. 82-4.00C.
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,173, Cl. 75-12.000.
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,551,174, Cl. 75-12.000.

Nippon Kokan Koji Kabushiki Kaisha: *See—*
Kanayama, Kiyoshi; and Asano, Shoji, 4,550,635, Cl. 82-4.00C.

Nippon Oil Seal Industry Co., Ltd.: *See—*
Matsushima, Noboru, 4,550,920, Cl. 277-134.000.
Yarimizu, Kenichi, 4,550,486, Cl. 29-451.000.

Nippon Soken, Inc.: *See—*
Igashira, Toshihiko; Sakakibara, Yasuyuki; Yoshinaga, Toru; Abe, Seiko; and Watanabe, Kazuhide, 4,550,744, Cl. 137-80.000.
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,550,618, Cl. 73-862.340.

Nippon Steel Corporation: *See—*
Akisue, Osamu; Yamada, Teruaki; Ueda, Shigeru; Tokunaga, Yoshikuni; and Yamada, Masato, 4,551,182, Cl. 148-12.00C.

Nippondenso Co., Ltd.: *See—*
Itoh, Hiroyasu; Suzuki, Yasutoshi; Horiuchi, Yasuhiro; and Hara, Kunihiko, 4,551,669, Cl. 323-268.000.
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,550,618, Cl. 73-862.340.
Suzuki, Atsushi; Ninomiya, Masakazu; Maeda, Katsuya; and Kawashima, Yutaka, 4,550,701, Cl. 123-436.000.

Tsuda, Tadashi; Hiramatsu, Seiichiro; Ohtsuka, Mitsugi; and Maeno, Tsuyoshi, 4,551,722, Cl. 340-904.000.

Nishi, Hiroyuki; Hayashi, Mitsuji; and Tomizu, Motoyuki, to Omron Tateisi Electronics, Co. Push-button switch. 4,551,592, Cl. 200-67.00D.

Nishi, Kohichi; and Takahashi, Akira, to Ricoh Company, Ltd. Automatic exposure control circuit. 4,550,997, Cl. 354-459.000.

Nishikata, Goro, to Mitutoyo Mfg. Co., Ltd. Thread construction in length measuring instrument and method for manufacturing thread construction. 4,550,507, Cl. 33-164.00R.

Nishikawa, Eiichiro; Shinya, Masuo; Ueda, Kayako; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing carbonyl compounds. 4,551,556, Cl. 568-403.000.

Nishikawa, Masaji, to Olympus Optical Company Limited. Toner concentration detecting device. 4,550,998, Cl. 355-3.0DD.

Nishimori, Eiji; Tsuchiya, Chikara; and Sano, Yoshiaki, to Fujitsu Limited. Field effect transistor gate circuit for analog signals. 4,551,644, Cl. 307-573.000.

Nishimura, Nobuichi, to Kabushiki Kaisha Toshiba. Heat cooking apparatus with temperature operating system. 4,551,601, Cl. 219-10.55B.

Nishimura, Satoshi: *See—*
Hayakawa, Masanori; Yamada, Noriaki; Kawamoto, Hiromi; and Nishimura, Satoshi, 4,551,260, Cl. 252-62.590.

Nishino, Fumio: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, 4,551,000, Cl. 355-3.00R.

Nishiwaki, Akira: *See—*
Moriguchi, Hiroyuki; Matsumoto, Masanori; Nishiwaki, Akira; Morohoshi, Yasuo; and Nomori, Hiroyuki, 4,551,303, Cl. 420-590.000.

Nishizawa, Taiji; and Tanaka, Yutaka, to Nippon Hoso Kyokai. Picture signal processing system including spatio-temporal filter. 4,551,753, Cl. 358-140.000.

Nissan Motor Co., Ltd.: *See—*
Fujita, Masahiro; and Uemura, Yukio, 4,550,633, Cl. 81-56.000.
Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, 4,551,803, Cl. 364-431.050.
Iida, Hideo, 4,550,754, Cl. 139-452.000.
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,551,849, Cl. 381-86.000.
Kikuchi, Yasuyuki; Matsumoto, Eiichi; and Tanaka, Yoshimasa, 4,550,695, Cl. 123-41.120.
Murakami, Koichi; and Oguro, Takeshi, 4,551,779, Cl. 361-86.000.

Nisshin Steel Company, Ltd.: *See—*
Hoshino, Kazuo; Tanaka, Teruo; and Ito, Kenjiro, 4,550,487, Cl. 29-527.700.

Nissinen, Martti: *See—*
Lehtikoski, Olavi; and Nissinen, Martti, 4,550,613, Cl. 73-834.000.

Nisus Video Incorporated: *See—*
Swinehart, Steven L.; and Kuhn, Werner H., 4,551,763, Cl. 358-225.000.

Nitanda, Hiroshi: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, 4,551,000, Cl. 355-3.00R.

Nitowski, Ronald: *See—*
Donais, Norman; and Nitowski, Ronald, 4,550,964, Cl. 339-44.00M.

Nitsch, Klaus D.: *See—*
Borchert, Werner; and Nitsch, Klaus D., 4,551,247, Cl. 210-304.000.

Nitsuko Limited: *See—*
Matsuo, Nobuo, 4,551,582, Cl. 179-81.00R.

Nittetsu Mining Co., Ltd.: *See—*
Beppu, Masaru; Agawa, Setsuo; Hazeyama, Takeshi; and Nashimoto, Toshiyuki, 4,551,240, Cl. 209-143.000.

Nitto Boseki Co., Ltd.: *See—*
Sato, Masanori; and Iizima, Kazuo, 4,551,375, Cl. 428-57.000.

Nitz, Rolf-Eberhard: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,551,454, Cl. 514-252.000.

Niwa, Masatake: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.

NKG Insulators, Ltd.: *See—*
Nozaki, Hiroshi, 4,551,578, Cl. 174-182.000.

Noda, Tamotsu; Tamura, Hifumi; and Okano, Hiroshi, to Hitachi, Ltd. Field-emission ion source with spiral shaped filament heater. 4,551,650, Cl. 313-362.100.

Noel, Gapp: *See—*
Vilain, Claude; and Noel, Gapp, 4,550,932, Cl. 280-689.000.

Noguchi, Yasuhiro: *See—*
Koyama, Koichi; Noguchi, Yasuhiro; and Toriuchi, Masaharu, 4,551,423, Cl. 430-559.000.

Noji, Masahide: *See—*
Kidani, Yoshinori; and Noji, Masahide, 4,551,524, Cl. 536-121.000.

Nolan, Robert L., to Maxcap, Inc. Bottle caps. 4,550,843, Cl. 215-252.000.

Nomori, Hiroyuki: *See—*
Moriguchi, Hiroyuki; Matsumoto, Masanori; Nishiwaki, Akira; Morohoshi, Yasuo; and Nomori, Hiroyuki, 4,551,303, Cl. 420-590.000.

Nomoto, Isami: *See—*
Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Nomura, Akihiro: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, 4,551,000, Cl. 355-3.00R.

Nomura, Hiroaki: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,551,532, Cl. 546-22.000.

Nomura, Hirokazu: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.

Nonaka, Yunji: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yunji; and Nakanishi, Akira, 4,551,169, Cl. 71-94.000.

Noomen, Pieter J., to Dowe Egberts Koninklijke Tabaksfabrier Koffiebranderijen Theehandel N.V. Timed-dispensing method and apparatus. 4,550,858, Cl. 222-1.000.

Nordson Corporation: *See—*
Langer, Alfred, 4,550,642, Cl. 91-346.000.

Norman, Howard M., to Norman, Marion E., a part interest. Compact, portable drain to empty and clean a recreational vehicle holding tank. 4,550,453, Cl. 4-323.000.

Norman, Marion E.: *See—*
Norman, Howard M., 4,550,453, Cl. 4-323.000.

Noro, Yoshihiko: *See—*
Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.

Northern Telecom Limited: *See—*
Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., 4,550,558, Cl. 57-58.520.
Pan, Ali; and Cohrs, Karl S., 4,551,087, Cl. 425-466.000.
Vella, Paul J.; Garel-Jones, Philip M.; and Lowe, Richard S., 4,551,019, Cl. 356-73.100.

Norton Christensen, Inc.: *See—*
Link, Howard D., 4,550,790, Cl. 175-329.000.

Novatome: *See—*
Zuber, Thierry; and Traiteur, Rene , 4,550,688, Cl. 122-360.000.

Novotry, Jaroslay: *See—*
Skvara, Frantisek; Kolar, Karel; Zadak, Zdenek; Friml, Zdenek; and Novotry, Jaroslay, 4,551,176, Cl. 106-90.000.

Nowack, Gerhard P.: *See—*
Kukes, Simon G.; and Nowack, Gerhard P., 4,551,230, Cl. 208-89.000.

Nozaki, Hiroshi, to NKG Insulators, Ltd. Ball and socket type suspension insulator. 4,551,578, Cl. 174-182.000.

Numata, Morikuni; and Nakadate, Toshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Gun arm apparatus for resistance welding gun. 4,551,605, Cl. 219-86.310.

Nunez, Chris E., to Warner-Lambert Company. Fluid flow regulating unit for intravascular catheter systems. 4,550,748, Cl. 137-605.000.

Nunokawa, Hideo: *See—*
Takahashi, Hitoshi; Yamaguchi, Satoru; and Nunokawa, Hideo, 4,551,634, Cl. 307-243.000.

Nuova Faema S.p.A.: *See—*
Longo, Walter G., 4,551,611, Cl. 219-308.000.

Nussdorfer, William R.; Brancheau, Harry A.; and Clark, Steven C., to White Consolidated Industries, Inc. Reverse cycle room air conditioner with auxilliary heat actuated at low and high outdoor temperatures. 4,550,770, Cl. 165-29.000.

Nuvatec, Inc.: *See—*
Slavik, William H.; and Huber, William B., 4,551,134, Cl. 604-67.000.

N.V. Nederlandsche Apparatenfabriek Nedap: *See—*
Fockens, Tallienco W. H., 4,551,712, Cl. 340-572.000.

Obayashi, Hideki: *See—*
Kohama, Tokio; Obayashi, Hideki; Ina, Toshikazu; and Narita, Seiichi, 4,550,618, Cl. 73-862.340.

Ochirov, Nikolai I.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Oda, Yoshio; and Morimoto, Takeshi, to Asahi Glass Company, Ltd. Gas diffusion electrode material. 4,551,220, Cl. 204-294.000.

Oddi, Michael J.: *See—*
Gulla, Michael; Taylor, Paul; and Oddi, Michael J., 4,551,409, Cl. 430-192.000.

Odebrecht, Wolfgang: *See—*
Andres, Rudolf; Grantz, Helmut; Muenzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,550,774, Cl. 165-104.210.

Oetting, William A.: *See—*
Dow, John, Jr.; Oetting, William A.; and Yessian, Richard J., 4,550,859, Cl. 222-26.000.

Ogawa, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Hysteresis circuit with small hysteresis amplitude and oscillator using the hysteresis circuit. 4,551,691, Cl. 331-111.000.

Ogawa, Hisashi; Tanaka, Yasushi; and Sato, Yoshimitsu, to Toyota Jidosha Kabushiki Kaisha. Fuel supplying means installed on a lateral cross member of a vehicle. 4,550,923, Cl. 280-5.00A.

Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Video camera. 4,551,764, Cl. 358-228.000.

Ogawa, Masashi; Nakamura, Taku; Urata, Yukihide; and Yamauchi, Shingo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material for photomechanical process and method of reduction treatment therefore. 4,551,412, Cl. 430-265.000.

Ogawa, Masataka: *See—*
Takahashi, Yoshiteru; and Ogawa, Masataka, 4,551,645, Cl. 310-46.000.

Ogawa, Masumi; Kawakami, Hiromi; and Meguro, Toshiaki, to Sony Corporation. Intercarrier sound detecting apparatus for a television receiver. 4,551,756, Cl. 358-197.000.

Ogawa, Tsutomu: *See—*
Yamazaki, Yoshinori; and Ogawa, Tsutomu, 4,550,631, Cl. 74-822.000.

Ogino, Satoru, to Kobishi Electric Co., Ltd. Electric terminal. 4,550,970, Cl. 339-97.00P.

OGRAD s.r.l.: *See—*
Grati, Giorgio, 4,550,853, Cl. 220-416.000.

Ogura, Hiroyuki: *See—*
Nakanishi, Hitoshi; and Ogura, Hiroyuki, 4,550,938, Cl. 289-1.200.

Oguro, Takeshi: *See—*
Murakami, Koichi; and Oguro, Takeshi, 4,551,779, Cl. 361-86.000.

Ohba, Shiya: *See—*
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.

Ohbayashi-Gumi, Ltd.: *See—*
Kita, Daizo; Nakamura, Tsutomu; and Kawachi, Takeshi, 4,551,256, Cl. 252-8.5LC.

Ohgaki, Kichio; and Ohshima, Kazuhiro, to Kyosan Denki Kabushiki Kaisha. Diaphragm-type fuel pump. 4,551,071, Cl. 417-313.000.

Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, to Matsushita Electric Industrial Co., Ltd. Method for driving solid-state image sensor. 4,551,757, Cl. 358-212.000.

Ohlgren, Eilef J. Building construction lift apparatus. 4,550,807, Cl. 187-10.000.

Ohnishi, Yutaka, to Tachikawa Spring Co., Ltd. Fillet-welding equipment for pipe materials. 4,550,872, Cl. 228-48.000.

Ohshima, Kazuhiro: *See—*
Ohgaki, Kichio; and Ohshima, Kazuhiro, 4,551,071, Cl. 417-313.000.

Ohtake, Etsuo; and Yamazaki, Kazuhiro, to Daicel Chemical Industries, Ltd. Porous spherical cellulose acetate particles. 4,551,389, Cl. 428-402.000.

Ohtsuka, Masanori; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Motor drive control circuit. 4,550,992, Cl. 354-173.110.

Ohtsuka, Mitsugi: *See—*
Tsuda, Tadashi; Hiramatsu, Seiichiro; Ohtsuka, Mitsugi; and Maeno, Tsuyoshi, 4,551,722, Cl. 340-904.000.

Ohya, Shizuko: *See—*
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.

Oiles Industry Co., Ltd.: *See—*
Sumiyoshi, Kikuo; Sato, Eiji; Hirai, Kazuo; Miyasaka, Kingo; and Izumi, Masayoshi, 4,551,393, Cl. 428-609.000.

Oka, Hideo, to NEC Corporation. Unencapsulated solid electrolytic capacitor and method for manufacturing the same. 4,551,786, Cl. 361-306.000.

Okada, Toshiteru: *See—*
Imada, Nobuyuki; and Okada, Toshiteru, 4,551,254, Cl. 210-688.000.

Okamoto, Kiyohide: *See—*
Fukuyama, Toshifumi; and Okamoto, Kiyohide, 4,551,640, Cl. 307-471.000.

Okamura, Takayuki: *See—*
Matsumoto, Mitsuo; Hirai, Koji; Yoshimura, Noriaki; and Okamura, Takayuki, 4,551,518, Cl. 528-80.000.

Okaniwa, Kenichiro: *See—*
Koyama, Mikio; Kikugawa, Shozo; and Okaniwa, Kenichiro, 4,551,307, Cl. 422-56.000.

Okano, Hiroshi: *See—*
Noda, Tamotsu; Tamura, Hifumi; and Okano, Hiroshi, 4,551,650, Cl. 313-362.100.

Okawa, Susumu: *See—*
Sugaya, Masami; Sawada, Daisaku; and Okawa, Susumu, 4,551,119, Cl. 474-28.000.

Oki Electric Industry Co., Ltd.: *See—*
Yokouchi, Hiroshi; and Iketani, Ryuichi, 4,551,821, Cl. 365-203.000.

Okubo, Takeshi; Kodachi, Hideo; and Miyanaka, Masaki, to Honda Giken Kogyo Kabushiki Kaisha. Gang head type machine tool. 4,550,488, Cl. 29-568.000.

Okumura, Takeshi; Warashina, Tomio; and Nakanishi, Kiyoshi, to Toyota Jidosha Kabushiki Kaisha. Intake device of an internal combustion engine. 4,550,699, Cl. 123-308.000.

Okutu, Toshimitu: *See—*
Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,551,386, Cl. 428-323.000.

Olcott, Robert S., Jr., to Armstrong World Industries, Inc. Two-ply spinning cots. 4,550,478, Cl. 29-130.000.

Olenick, Ralph W. Flexible, extensible robot arm. 4,551,061, Cl. 414-735.000.

Olin Corporation: *See—*
Cash, Gordon G., 4,551,200, Cl. 162-135.000.
Cash, Gordon G., 4,551,201, Cl. 162-158.000.
Parthasarathi, Arvind, 4,551,210, Cl. 204-28.000.

Oliver, Ronald A. Replacement spool for rotating line vegetation cutter. 4,550,498, Cl. 30-276.000.

Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., to Nash Engineering Company, The. Noise control for conically ported liquid ring pumps. 4,551,070, Cl. 417-68.000.

Olson, Jay. Method and apparatus for obtaining a concentrated extract from liquid smoke. 4,551,339, Cl. 426-384.000.

Olson, Roy E., to Rockwell International Corporation. Rounded-end protuberances for field-emission cathodes. 4,551,649, Cl. 313-336.000.

Olsson, Frank C.: *See—*
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,550,956, Cl. 312-250.000.

Olympus Optical Company: *See—*
Kinoshita, Kunio, 4,550,716, Cl. 128-6.000.

Olympus Optical Co., Ltd.: *See—*
Miyashita, Kiyoshi; Ozeki, Fumitaka; and Tsuda, Hiroshi, 4,551,010, Cl. 355-25.000.
Nishikawa, Masaji, 4,550,998, Cl. 355-3.0DD.

Omae, Masanori: *See—*
Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, 4,551,757, Cl. 358-212.000.

O'Mahony, John S.; Kahn, Marvin L.; and Adapa, Satya N., to Rich Products Corporation. Sugar infusion of fruit. 4,551,348, Cl. 426-639.000.

Omaki, Takanobu: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.

Omata, Nobuaki, to Nifco Inc. Combined rotary damper device including a stored energy mechanism and braking mechanism. 4,550,470, Cl. 16-85.000.

Omniglass Ltd.: *See—*
Davies, Lawrence W., 4,551,364, Cl. 428-34.000.

Omori, Takeshi: *See—*
Takahashi, Kiyoshi; Konagai, Makoto; Yoshitomi, Toshihiko; and Omori, Takeshi, 4,551,575, Cl. 136-255.000.

Omron Tateisi Electronics Co.: *See—*
Fukuyama, Toshifumi; and Okamoto, Kiyohide, 4,551,640, Cl. 307-471.000.
Nishi, Hiroyuki; Hayashi, Mitsuji; and Tomizu, Motoyuki, 4,551,592, Cl. 200-67.00D.

Omura, Takashi: *See—*
Otake, Katsumasa; Ikeda, Takashi; Omura, Takashi; and Imada, Kunihiko, 4,551,150, Cl. 8-496.000.

Onahama Sakai Kagaku Kabushiki Kaisha: *See—*
Shinozuka, Kiyoshi; Otu, Koichi; and Fukumoto, Hiroshi, 4,551,497, Cl. 524-423.000.

Onoda, Shigeyoshi: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Nishino, Fumio; Nomura, Akihiro; Mizutani, Morikazu; and Nitanda, Hiroshi, 4,551,000, Cl. 355-3.00R.

Onoue, Makoto: *See—*
Inoue, Kiyoshi; Onoue, Makoto; and Sano, Sadao, 4,551,602, Cl. 219-69.00D.

Onuki, Katsuhiro: *See—*
Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Oosaka, Kuniaki: *See—*
Hamada, Makoto; Hasegawa, Junji; and Oosaka, Kuniaki, 4,550,948, Cl. 296-202.000.

Ootuka, Takayuki; and Murai, Toshiyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Continous method of fuel injection in electronically controlled engine. 4,550,703, Cl. 123-478.000.

Opower, Hans, to W.C. Heraeus GmbH. Material working apparatus. 4,551,608, Cl. 219-121.00L.

Orcutt, Donald E.: *See—*
Coleman, D. Jackson; Orcutt, Donald E.; and Berkowitz, Herbert, 4,551,129, Cl. 604-21.000.

Ortiz, Ralph O. Cube game of skill and chance. 4,550,916, Cl. 273-239.000.

Osborne, Thomas A., to Cook Incorporated. Flexible sheath assembly for an indwelling catheter. 4,551,137, Cl. 604-171.000.

Oshiage, Katsunori: *See—*
Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, 4,551,803, Cl. 364-431.050.

Osypka, Peter. Intravenously implantable electrode lead for use with cardiac pacemakers. 4,550,737, Cl. 128-785.000.

Otake, Katsumasa; Ikeda, Takashi; Omura, Takashi; and Imada, Kunihiko, to Sumitomo Chemical Company, Limited. Method for dyeing cellulose fiber material using fiber-reactive disazo dye and finishing the same. 4,551,150, Cl. 8-496.000.

Otis Elevator Company: *See—*
DeViaris, Guy, 4,550,663, Cl. 104-119.000.

Otsuka, Hirotaka: *See—*
Tsuchiya, Hiroyoshi; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Otsuka, Hirotaka, 4,551,768, Cl. 358-283.000.

Otsuka, Tsuneo: *See—*
Inoue, Kazuo; and Otsuka, Tsuneo, 4,550,794, Cl. 180-219.000.

Otte, Werner; Nehring, Rudolf; and zur Hausen, Manfred, to Chemische Werke Huels, AG. Process for the production of 2- and 4-tert-butylcyclohexanols with high proportions of cis-isomers by catalytic-hydrogenation of the corresponding tert-butylphenols. 4,551,564, Cl. 568-834.000.

Ottestad, Jack B.; and Duehr, Bernard W., Jr. Tool mounting means for a hydraulically powered impact hammer. 4,550,784, Cl. 173-114.000.

Otu, Koichi: *See—*
Shinozuka, Kiyoshi; Otu, Koichi; and Fukumoto, Hiroshi, 4,551,497, Cl. 524-423.000.

Ouhayoun, Michel; and Robert, Alain, to Societe Anonyme de Telecommunications. Gas wave-guide laser generator. 4,551,843, Cl. 372-87.000.

Outboard Marine Corporation: *See—*
DuBois, Chester G., 4,551,076, Cl. 417-395.000.
Ehrlich, Josef, 4,550,696, Cl. 123-73.00D.
Hall, Charles B., 4,551,105, Cl. 440-61.000.
Hansen, Loren F., 4,550,783, Cl. 172-21.000.
McAuliffe, Gerald N., 4,551,667, Cl. 320-46.000.
West, James C.; and Gesell, Elmer G., 4,550,762, Cl. 164-98.000.

Ovanin, George J.: *See—*
Hall, William E.; Gailey, Edward D.; and Ovanin, George J., 4,550,922, Cl. 279-119.000.

Owaki, Isao: *See—*
Fujii, Yasuhiko; Owaki, Isao; Saito, Susumu; Mori, Takaro; and Nakamura, Shinji, 4,551,840, Cl. 371-38.000.

Owens-Corning Fiberglas Corporation: *See—*
Canning, John L.; and Kay, John F., 4,551,390, Cl. 428-431.000.
Frailey, Richard C.; and Symborski, Alex P., 4,551,160, Cl. 65-2.000.
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,551,178, Cl. 106-273.00N.

Owens-Illinois, Inc.: *See—*
Burzynski, Alfred J.; and Tillman, James J., 4,551,361, Cl. 427-164.000.
Lininger, Michael A., 4,550,844, Cl. 215-252.000.
Rhoads, Roger R., 4,550,824, Cl. 206-150.000.

Owensby, Joseph E.; Rupp, Jody W.; Dobbins, Frederick A.; and Waldrop, Thomas E., to W. R. Grace & Co., Cryovac Div. Method and apparatus for vacuum packaging with preshrinking. 4,550,548, Cl. 53-434.000.

Oxenrider, Bryce C., to Allied Corporation. Process for the production of fluorinated pyromellitate containing mixtures useful as surfactants. 4,551,519, Cl. 528-296.000.

Ozaki, Hideyuki: *See—*
Shimotori, Kazuhiro; and Ozaki, Hideyuki, 4,551,741, Cl. 357-23.600.

Ozaki, Toshifumi: *See—*
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.

Ozeki, Fumitaka: *See—*
Miyashita, Kiyoshi; Ozeki, Fumitaka; and Tsuda, Hiroshi, 4,551,010, Cl. 355-25.000.

Ozono, Jiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas turbine control systems. 4,550,565, Cl. 60-39.182.

P.A. Rentrop Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG: *See—*
Korth, Jurgen, 4,550,750, Cl. 137-868.000.

P. F. Cosmetique: *See—*
Kaeser, Charles, 4,550,718, Cl. 128-57.000.

Pacht, Amos, to Butterworth Inc. High pressure pump. 4,551,077, Cl. 417-454.000.

Pacific Scientific Company: *See—*
Wright, William S., Jr., 4,550,589, Cl. 73-11.000.

Padalka, Valentin G.: *See—*
Axenov, Ivan I.; Bren, Viktor G.; Padalka, Valentin G.; Sablev, Leonid P.; Stupak, Rimma I.; and Khoroshikh, Vladimir M., 4,551,221, Cl. 204-298.000.

Padeiskaya, Elena N.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.

Paguba, Alexandr I.: *See—*
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.

Pain Suppression Labs, Inc.: *See—*
Liss, Saul; and Liss, Bernard S., 4,550,733, Cl. 128-421.000.

Pallosy nee Becker, Katalin: *See—*
Pasztor, Emil; Lazar, Laszlo ; Nagy, Jozsef; and Pallosy nee Becker, Katalin, 4,551,132, Cl. 604-52.000.

Palmer, James L.: *See—*
Kovach, Stephen M.; and Palmer, James L., 4,551,231, Cl. 208-120.000.

Palmer, Richard C.; and Plotnick, Michael A., to RCA Corporation. Video disc encoding and decoding system providing intra-field track error correction. 4,551,770, Cl. 358-342.000.

Palosi, Eva: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.

Paluzzi, Joseph A.: *See—*
Davidescu, Reghina; de Ceglie, Gaetano J.; Jacquett, Harold W.; and Paluzzi, Joseph A., 4,551,345, Cl. 426-594.000.

Pan, Ali; and Cohrs, Karl S., to Northern Telecom Limited. Extrusion apparatus. 4,551,087, Cl. 425-466.000.

Pander, Peter: *See—*
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Pankove, Jacques I., to RCA Corporation. Method of making P-type hydrogenated amorphous silicon. 4,551,352, Cl. 427-39.000.

Pantone, Richard S.: *See—*
Yeater, Robert P.; Pantone, Richard S.; and Rieck, James N., 4,551,498, Cl. 524-424.000.

Panush, Sol, to Inmont Corporation. Pearlescent automotive paint compositions. 4,551,491, Cl. 524-31.000.

Panzera, Carlino, to Johnson & Johnson Dental Products Company. Ceramic dental restorative. 4,551,099, Cl. 433-212.100.

Paraskevopoulos, Demetris E., to Xerox Corporation. Toner concentration sensor. 4,551,004, Cl. 355-3.0DD.

Parikh, Kamal I., to GTE Automatic Electric Incorporated. Crosscopy arrangement for synchronizing error detection clock signals in a duplex digital system. 4,551,836, Cl. 371-1.000.

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Schwab, Erwin; Parisi, Graziano; and Pander, Peter, 4,551,289, Cl. 264-23.000.

Park, Duk-Won, to University of Alabama, The Board of Trustees of the. Roof bolt hole groover. 4,550,788, Cl. 175-173.000.

Parker, Keith E.: *See—*
Plaas, Jon R.; Parker, Keith E.; Keiser, James D.; and Johnson, Elmer C., Jr., 4,551,139, Cl. 604-290.000.

Parlex Corporation: *See—*
Rich, Donald S., 4,551,576, Cl. 174-36.000.

Parr, Ehrfried: *See—*
Strack, Hans; Roebke, Wolfgang; Kneitel, Dieter; and Parr, Ehrfried, 4,551,322, Cl. 423-329.000.

Parrish, J. Gid: *See—*
Bykerk, Rocky S., 4,551,781, Cl. 361-143.000.

Parry, Keith P.; Worthington, Paul A.; and Rathmell, William G., to Imperial Chemical Industries PLC. Antifungal triazole ethanol derivatives. 4,551,469, Cl. 514-383.000.

Parthasarathi, Arvind, to Olin Corporation. Dendritic treatment of metallic surfaces for improving adhesive bonding. 4,551,210, Cl. 204-28.000.

Partis, Richard A.: *See—*
Mueller, Richard A.; and Partis, Richard A., 4,551,279, Cl. 260-404.000.

Pask, George, to Rolls-Royce Limited. Turbine shroud and turbine shroud assembly. 4,551,064, Cl. 415-116.000.

Passarotti, Carlo: *See—*
Doria, Gianfederico; Passarotti, Carlo; Arcari, Giuliana; and Buttinoni, Ada, 4,551,457, Cl. 514-258.000.
Faustini, Franco; Passarotti, Carlo; Ceserani, Roberto; and Gandolfi, Carmelo, 4,551,476, Cl. 514-461.000.

Pasztor, Emil; Lazar, Laszlo ; Nagy, Jozsef; and Pallosy nee Becker, Katalin. Pharmaceutically acceptable silicon rubber and therapeutical set and the use thereof for surgical embolization. 4,551,132, Cl. 604-52.000.

Patel, Rohit A.: *See—*
Herbert, William B.; and Patel, Rohit A., 4,551,130, Cl. 604-32.000.

Pater, Arnold R.: *See—*
Fehrenkamp, William; Pater, Arnold R.; and Brummel, Arthur D., 4,551,824, Cl. 367-76.000.

Paterson, Alan J. F., to Air Products and Chemicals, Inc. Method for reducing the volume of atmosphere needed to inhibit ingress of ambient oxygen into the furnace chamber of a continuous heat treatment furnace. 4,551,091, Cl. 432-23.000.

Paterson, Noel S., to Sundstrand Data Control, Inc. Excessive descent rate warning system for rotary wing aircraft. 4,551,723, Cl. 340-946.000.

Patil, Ghanshyam: *See—*
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,551,526, Cl. 544-163.000.
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,551,537, Cl. 546-330.000.

Paton, Anthony D.: *See—*
Lewis, John D.; Keeling, Michael R.; Bowen, David R.; and Paton, Anthony D., 4,551,731, Cl. 346-75.000.

Patron, Henri: *See—*
Fournier, Jean; Patron, Henri; and Meynard, Paul, 4,550,777, Cl. 165-162.000.

Pattarozzi, Domenico, to B.S.P. Packaging Systems di Pattarozzi D. & C.s.a.s. Device for forming, from the top downwards, articles into a stack of orderly layers. 4,551,052, Cl. 414-81.000.

Pattern Processing Technologies, Inc.: *See—*
Werth, Larry J.; and Paulson, Larry G., 4,551,850, Cl. 382-18.000.

Patterson, Michael, to ASE (UK) Limited. Adjustable anchorage. 4,550,933, Cl. 280-808.000.

Paulson, Larry G.: *See—*
Werth, Larry J.; and Paulson, Larry G., 4,551,850, Cl. 382-18.000.

Payne, Thomas R., to General Electric Company. Cooking appliance incorporating heater energy counter means. 4,551,618, Cl. 219-510.000.

Peacock Investments (Proprietary) Limited: *See—*
Raubenheimer, Johann N., 4,550,463, Cl. 15-1.700.
Pecoraro, Theresa A.; Krug, Russell R.; and Deady, Joanne, to Chevron Research Company. Cracking of heavy hydrocarbons with improved yields of valuable liquid products. 4,551,229, Cl. 208-76.000.
PEI, Inc.: *See—*
Englehardt, Paul, 4,550,945, Cl. 296-100.000.
Pelley, Perry H., III, to Motorola, Inc. Sense amplifier. 4,551,641, Cl. 307-530.000.
Penn, Jack C.: *See—*
Mosier, John E.; Surjaatmadja, Jim B.; and Penn, Jack C., 4,551,766, Cl. 358-256.000.
Penn, James E.: *See—*
Hoke, Merle C.; Armstrong, Richard G.; and Penn, James E., 4,551,792, Cl. 362-362.000.
Pennella, Filippo: *See—*
Lin, Fan-Nan; and Pennella, Filippo, 4,551,444, Cl. 502-313.000.
Pennwalt Corporation: *See—*
Davidson, Thomas A.; and Murray, Robert J., 4,551,535, Cl. 546-121.000.
Penrose, Lee: *See—*
Carson, Donald W.; Penrose, Lee; Leich, Joseph E.; and Caugherty, William C., 4,550,455, Cl. 4-480.000.
Pensa, Inc.: *See—*
Stubblefield, Jerry D., 4,550,510, Cl. 36-32.00R.
Perkin-Elmer Corporation, The: *See—*
Hufnagel, Robert E., 4,550,973, Cl. 350-3.720.
Permut, Ronald; Cope, Robert; Apple, James; Epina, August P.; and Munro, Frederick G., to Storage Technology Corporation. Tape drive having swing arm buffers and automatic threading. 4,550,884, Cl. 242-189.000.
Pershin, Gely G.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.
Pershin, Grigory N.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.
Personal Products Company: *See—*
Kopolow, Steven L., 4,551,142, Cl. 604-368.000.
Pesa, Frederick A.; and Graham, Anne M., to Standard Oil Company (Ohio), The. Catalyst for upgrading synthesis gas. 4,551,442, Cl. 502-178.000.
Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, to A. Menarini S.a.S. Tricyclic derivatives of 5,6-dihydro-11H-dibenzo (b,e) azepin-6-one having pharmacological activity. 4,551,451, Cl. 514-217.000.
Peterson, Francis C., to Illinois Tool Works Inc. Friction welded fastener system. 4,551,189, Cl. 156-73.500.
Petoia, Salvatore R., to United States of America, Navy. Multi-directional straddle-lift carrier. 4,551,059, Cl. 414-459.000.
Petry, Eston F.: *See—*
Coon, Julian B.; and Petry, Eston F., 4,551,041, Cl. 406-85.000.
Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, to Hoffmann-La Roche Inc. Liquid crystalline esters and mixtures. 4,550,981, Cl. 350-350.00R.
Pezzana, Francesco; and Quacquarella, Cesare, to W. R. Grace & Co., Cryovac Div. Apparatus for making multi-walled plastic bags. 4,551,125, Cl. 493-217.000.
Pfaff Industriemaschinen GmbH: *See—*
Dusch, Albert, 4,550,671, Cl. 112-235.000.
Pfister, Gustav: *See—*
Troup, Alan P.; Guttinger, Hannes; and Pfister, Gustav, 4,551,710, Cl. 340-505.000.
Pfizer Hospital Products Group, Inc.: *See—*
Kenna, Robert V., 4,550,448, Cl. 623-16.000.
Pfizer Inc.: *See—*
Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., 4,551,468, Cl. 514-339.000.
Flick, Gary D.; and Reinshagen, John H., 4,551,219, Cl. 204-290.00R.
Marfat, Anthony, 4,551,452, Cl. 514-222.000.
Moore, Bernard S., 4,551,542, Cl. 549-401.000.
Pfoertner, Karlheinz: *See—*
Hansen, Hans-Jurgen; and Pfoertner, Karlheinz, 4,551,214, Cl. 204-159.000.
Phillip P. Rogers & Faye Rogers Living Trust: *See—*
Rogers, Phillip P., 4,551,146, Cl. 604-403.000.
Phillips, Donald W. Shoe apparatus and method. 4,550,462, Cl. 12-17.00R.
Phillips, Edwin D. Non-stick stopper with easy removal structure. 4,550,846, Cl. 215-296.000.
Phillips, James D.; and Sheets, Robert L., to J. D. Phillips Corporation. Milling machine. 4,551,048, Cl. 409-197.000.
Phillips Petroleum Company: *See—*
Cobb, Raymond L., 4,551,573, Cl. 585-459.000.
Kukes, Simon G.; and Nowack, Gerhard P., 4,551,230, Cl. 208-89.000.
Lin, Fan-Nan; and Pennella, Filippo, 4,551,444, Cl. 502-313.000.
Pierce, Phyllis J., 4,551,431, Cl. 435-176.000.
Porter, Randall A.; and Reed, Larry E., 4,551,227, Cl. 208-48.0AA.
Rush, Elton E., 4,550,621, Cl. 74-2.000.
Sadhukhan, Pasupati, 4,551,223, Cl. 208-8.00R.
Wishman, Marvin, 4,550,725, Cl. 128-155.000.
Pierce, Phyllis J., to Phillips Petroleum Company. The use of gallium and indium salts for the immobilization of proteins. 4,551,431, Cl. 435-176.000.
Pilot Man-Nen-Hisu Kabushiki Kaisha: *See—*
Sato, Morio; and Igawa, Tatsuya, 4,550,660, Cl. 101-128.210.
Pinckard, R. Neal: *See—*
Hanahan, Donald J.; and Pinckard, R. Neal, 4,551,446, Cl. 514-77.000.
Pioneer Electronic Corporation: *See—*
Aizawa, Koki; and Haeno, Akira, 4,551,642, Cl. 307-552.000.
Kurosaki, Masanori; and Kawamura, Katsuaki, 4,551,855, Cl. 455-161.000.
Matsuda, Kouichi; and Sato, Youichi, 4,551,755, Cl. 358-188.000.
Sakaguchi, Shouzaburou; and Ueki, Yoshiharu, 4,551,774, Cl. 360-72.100.
Tomita, Shuichi, 4,550,796, Cl. 181-141.000.
Piontkowski, Carl F. Combustor unit for woodburning stove. 4,550,668, Cl. 110-210.000.
Pipa, William; Warren, Robert F.; and Russack, Harvey, to Russack, Harvey. Device for producing decorative patterns on clothing. 4,550,679, Cl. 118-52.000.
Pirio, Marcel R.; and Singh, Prithipal, to Syntex (U.S.A.) Inc. Desmethylimipramine derivatives and poly(amino acid) conjugates. 4,551,275, Cl. 260-239.00D.
Pissiotas, Georg: *See—*
Meyer, Willy; Gass, Karl; Topfl, Werner; Schurter, Rolf; and Pissiotas, Georg, 4,551,531, Cl. 544-320.000.
Plaas, Jon R.; Parker, Keith E.; Keiser, James D.; and Johnson, Elmer C., Jr., to Marion Laboratories, Inc. Method and apparatus for burn wound treatment. 4,551,139, Cl. 604-290.000.
Plastic Systems, Inc.: *See—*
Cohen, Lenard; and Gordon, Michael E., 4,551,783, Cl. 361-223.000.
Plastofilm Industries, Inc.: *See—*
Simmons, Richard J., 4,550,837, Cl. 211-126.000.
Plenty Limited: *See—*
Kain, Alexander S., 4,551,079, Cl. 418-26.000.
Plessey Overseas Limited: *See—*
Reid, Douglas C. J.; and Stewart, William J., 4,551,020, Cl. 356-73.100.
Plies, Erich: *See—*
Lischke, Burkhard; and Plies, Erich, 4,551,625, Cl. 250-310.000.
Plotnick, Michael A.: *See—*
Palmer, Richard C.; and Plotnick, Michael A., 4,551,770, Cl. 358-342.000.
Pohl, Karl-Heinz, to Siemon Company, The. Wire connector with cutting edge. 4,550,969, Cl. 339-98.000.
Pointud, Bernard: *See—*
Gagne, Pierre; Girardeau, Yvette; and Pointud, Bernard, 4,551,382, Cl. 428-258.000.
Polaroid Corporation: *See—*
Biber, Conrad H., 4,551,825, Cl. 367-101.000.
Hicks, John W., Jr., 4,551,162, Cl. 65-4.200.
Polifarma S.p.A.: *See—*
De Luca, Giovanna; Di Stazio, Giovanni; Politi, Vincenzo; and Materazzi, Mario, 4,551,471, Cl. 514-419.000.
Politechnika Warszawska: *See—*
Mroz, Andrzej; and Wronski, Stanislaw, 4,551,242, Cl. 209-211.000.
Politi, Vincenzo: *See—*
De Luca, Giovanna; Di Stazio, Giovanni; Politi, Vincenzo; and Materazzi, Mario, 4,551,471, Cl. 514-419.000.
Pollara, Paul: *See—*
Liberti, Paul A.; and Pollara, Paul, 4,551,435, Cl. 436-541.000.
Polukhina, Lidia M.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,550,723, Cl. 128-92.00B.
Porco, Frank, to Exquisite Form Industries, Inc. Brassiere. 4,550,734, Cl. 128-460.000.
Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Antifoulants for thermal cracking processes. 4,551,227, Cl. 208-48.0AA.
Potage, Jean: *See—*
Deman, Pierre; and Potage, Jean, 4,551,853, Cl. 455-72.000.
Power Components Inc.: *See—*
Holley, David M., 4,550,899, Cl. 267-119.000.
PPG Industries, Inc.: *See—*
Retsch, William H.; and Zdziarski, Stanley F., 4,550,900, Cl. 269-87.000.
Savolskis, Edward P.; and Krumwiede, John F., 4,551,161, Cl. 65-27.000.
Prager, Irwin D. Life preserving equipment. 4,551,106, Cl. 441-94.000.
Precision Engineering Products Limited (Suffolk): *See—*
Giles, Alan F., 4,550,793, Cl. 177-145.000.
Precision Grinding Limited: *See—*
Fisher, John H.; and Ferdinandi, Frank, 4,551,795, Cl. 364-139.000.
Preston, Stephen W. Element removal tool for system carrying fluid under pressure. 4,550,481, Cl. 29-213.00R.

Prevorsek, Dusan C.: *See—*
Kavesh, Sheldon; and Prevorsek, Dusan C., 4,551,296, Cl. 264-177.00F.
Price, Anthony G.; and Campbell, Roy, to Lucas Industries public limited company. Disc brakes for vehicles. 4,550,810, Cl. 188-71.400.
Price, Dalby L. Router device. 4,551,047, Cl. 409-182.000.
Price, William J. Coin crossing game device. 4,550,913, Cl. 273-126.00R.
Pro/Pak Industries, Inc.: *See—*
Miller, R. Craig, 4,551,255, Cl. 210-770.000.
Pro-Tex Limited Partnership: *See—*
Fay, James P., Sr.; and Fay, James P., Jr., 4,550,861, Cl. 222-78.000.
Prochazka, Svante: *See—*
Johnson, Curtis A.; Renlund, Gary M.; Van Buren, Charles E.; and Prochazka, Svante, 4,551,436, Cl. 501-90.000.
Procter & Gamble Company, The: *See—*
Barker, Dale E.; Bettle, Griscom, III; and Van Coney, Robert H., 4,550,862, Cl. 222-109.000.
Gosselink, Eugene P., 4,551,506, Cl. 525-417.000.
Kock, Ronald W.; and Esposito, John A., 4,551,191, Cl. 156-276.000.
Nakel, Gunther M.; and Heckert, David C., 4,551,342, Cl. 426-548.000.
Proffit, John D. Golf caddy. 4,550,930, Cl. 280-655.000.
Prohaska, Hans: *See—*
Deutscher, Hans-Christian; Kohler, Alfred; Prohaska, Hans; and Schubert, Karl-Friedrich, 4,550,469, Cl. 15-250.340.
Prokopp, Manfred: *See—*
Barth, Hans; and Prokopp, Manfred, 4,551,673, Cl. 324-158.00F.
Prop, Gerrit: *See—*
Hilboll, Gerd; Doppelfeld, Ille-Stephanie; and Prop, Gerrit, 4,551,455, Cl. 514-252.000.
Pruett, Roy L.: *See—*
Doyle, Gerald; Eriksen, Kenneth A.; and Pruett, Roy L., 4,551,543, Cl. 556-14.000.
Puebla-Ponce, Claudio G.: *See—*
Michl, Josef; and Puebla-Ponce, Claudio G., 4,551,819, Cl. 365-120.000.
Punja, Nazim, to Imperial Chemical Industries PLC. Halogenated esters. 4,551,546, Cl. 560-124.000.
Pyramid Optical, Inc.: *See—*
Buckley, Galen L.; and Fox, Paul L., 4,550,482, Cl. 29-412.000.
Quacquarella, Cesare: *See—*
Pezzana, Francesco; and Quacquarella, Cesare, 4,551,125, Cl. 493-217.000.
Quartztronics, Inc.: *See—*
EerNisse, Errol P., 4,550,610, Cl. 73-702.000.
Quercy, Alexandre P. L., to Societe Anonyme des Usines Chausson. Device for raising various loads, particularly trolleys for handicapped persons, on vehicles. 4,551,060, Cl. 414-541.000.
Quickie Manufacturing Corporation: *See—*
Strahs, Martin P., 4,550,829, Cl. 206-361.000.
Quist, Eric, to Branson Ultrasonics Corporation. Automatic tuning circuit for use in an ultrasonic apparatus. 4,551,690, Cl. 331-36.00L.
Radisch, Helmer; and Scholz, Werner, to Saint-Gobain Vitrage. Transparent, antifogging coating comprised of a plastic material containing a surface active agent. 4,551,484, Cl. 523-169.000.
Raffenberg, Bruno. Track clearing device for pushing apart rail vehicles. 4,550,897, Cl. 254-93.00R.
Ragan, Gary S.; and Jones, Jesse D., to Ethyl Corporation. Poly(ethylene terephthalate) blends. 4,551,485, Cl. 523-212.000.
Rainin Instrument Co. Inc.: *See—*
Shackelford, Carl L.; and Rainin, Kenneth, 4,551,249, Cl. 210-198.200.
Rainin, Kenneth: *See—*
Shackelford, Carl L.; and Rainin, Kenneth, 4,551,249, Cl. 210-198.200.
Rains, John K.: *See—*
Haeber, John A.; Rains, John K.; Beitler, Brad D.; and Kukuchek, George S., 4,550,936, Cl. 285-26.000.
Raley, Garland E.; and Goodrum, Richard W., to Ethyl Corporation. Sterilizable perforated packaging material. 4,550,546, Cl. 53-425.000.
Ralston Purina Company: *See—*
Josselson, Marc; and Henderson, Doug, 4,550,636, Cl. 83-743.000.
Shen, Jerome L., 4,551,274, Cl. 260-123.500.
Ramella, Amilcare; and Wang, Hsin-Ju, to Mobil Oil Corporation. Method for improving reformer yield selectivity. 4,551,228, Cl. 208-65.000.
Ramsden, Hugh E.; and Henry, Michael, to J. T. Baker Chemical Co. Acylated polyethylenimine bound chromatographic packing. 4,551,245, Cl. 210-198.200.
Rannenberg, George C., to United Technologies Corporation. Multiple load, high efficiency air cycle air conditioning system. 4,550,573, Cl. 62-172.000.
Rao, Srinivas T.; and Trager, Louis, to RCA Corporation. Bath and process for the electrodeposition of micromachinable copper and additive for said bath. 4,551,212, Cl. 204-52.00R.
Raschke, Klaus; and Exner, Gerhard, to Kraftwerke Union AG. Medium-pressure steam turbine. 4,551,063, Cl. 415-115.000.
Rascle, Roger: *See—*
Cornet, Jean; Lange , Francois; Le Carvennec, Francois; Lehureau, Jean-Claude; and Rascle, Roger, 4,551,733, Cl. 346-137.000.
Rashev, Michael. Biorhythms analog computer-calendar. 4,551,620, Cl. 235-1.00C.
Rasmussen, Robert, to Industrial Parts Depot. Replaceable wear-edge router bit. 4,550,513, Cl. 37-141.00R.
Rath, Gero: *See—*
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.
Rathmell, William G.: *See—*
Parry, Keith P.; Worthington, Paul A.; and Rathmell, William G., 4,551,469, Cl. 514-383.000.
Ratton, Serge; and Bougeois, Jean-Luc, to Rhone-Poulenc Specialites Chimiques. Bromination of substituted benzaldehydes. 4,551,557, Cl. 568-433.000.
Ratton, Serge; and Bougeois, Jean-Luc, to Rhone-Poulenc Specialites Chimiques. Bromination of substituted benzaldehydes. 4,551,558, Cl. 568-433.000.
Rau, Gunter: *See—*
Trispel, Stephan; and Rau, Gunter, 4,550,990, Cl. 351-243.000.
Raubenheimer, Johann N., to Peacock Investments (Proprietary) Limited. Steering device for a suction cleaning appliance. 4,550,463, Cl. 15-1.700.
Raue, Roderich: *See—*
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,551,265, Cl. 252-301.170.
Rawlings, David L., to International Hydron Corporation. Device for centrifugally casting articles. 4,551,086, Cl. 425-425.000.
RCA Corporation: *See—*
Bendell, Sidney L., 4,551,760, Cl. 358-213.000.
Derendinger, Max, 4,550,680, Cl. 118-308.000.
Gange, Robert A., 4,551,648, Cl. 313-37.000.
Levine, Peter A., 4,551,762, Cl. 358-221.000.
Meise, William H.; and Dischert, Robert A., 4,551,754, Cl. 358-180.000.
Palmer, Richard C.; and Plotnick, Michael A., 4,551,770, Cl. 358-342.000.
Pankove, Jacques I., 4,551,352, Cl. 427-39.000.
Rao, Srinivas T.; and Trager, Louis, 4,551,212, Cl. 204-52.00R.
Russell, John P.; and Goodman, Alvin M., 4,551,643, Cl. 307-570.000.
Rea, Samuel N.: *See—*
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., 4,551,291, Cl. 264-104.000.
REB Manufacturing, Inc.: *See—*
Risner, Melvin G., 4,551,056, Cl. 414-539.000.
Recognition Equipment Incorporated: *See—*
Dreher, Carl T., 4,551,717, Cl. 340-712.000.
Redfield, James W.: *See—*
Charpentier, Albert J.; Redfield, James W.; and DiOrio, David W., 4,551,682, Cl. 328-22.000.
Redland Technology Limited: *See—*
Aston, Geoffrey W.; Smith, Susan; Chapman, Paul; and Barker, Howard A., 4,551,384, Cl. 428-312.600.
Redman, James; and Ellison, Joseph E., to Redman, James. Pipe hanger. 4,550,890, Cl. 248-59.000.
Redpath, James: *See—*
Savage, David S.; and Redpath, James, 4,551,479, Cl. 514-657.000.
Reed, Anthony R.: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.
Reed, Larry E.: *See—*
Porter, Randall A.; and Reed, Larry E., 4,551,227, Cl. 208-48.0AA.
Reese, Edward W.: *See—*
Fletcher, Bruce W.; Rydell, Mark A.; and Reese, Edward W., 4,551,292, Cl. 264-139.000.
Reese, Vernon E.; and Schwierking, Roger A., to Henny Penny Corporation. Sifter for breading apparatus. 4,550,677, Cl. 118-31.000.
Rehmann, Robert, to Ems-Inventa AG. Safety device for ammunition. 4,550,661, Cl. 102-251.000.
Reich, Frederich R., to Kirin Beer Kabushiki Kaisha. Methods and apparatus for detecting residual liquid in containers. 4,551,627, Cl. 250-339.000.
Reich, Gunter, to Leybold-Heraeus GmbH. Turbomolecular pump suitable for performing counterflow leakage tests. 4,550,593, Cl. 73-40.700.
Reichmanis, Elsa: *See—*
Chandross, Edwin A.; Reichmanis, Elsa; and Wilkins, Cletus W., Jr., 4,551,416, Cl. 430-311.000.
Reid, Douglas C. J.; and Stewart, William J., to Plessey Overseas Limited. Optical apparatus for determining the index profile of an optical fibre. 4,551,020, Cl. 356-73.100.
Reinfeld, Nyles V.; and Valentine, Michael J. Apparatus and method of packing articles. 4,550,549, Cl. 53-447.000.
Reinicke, Raymond C. Nail clipper receptacle. 4,550,496, Cl. 30-124.000.
Reinshagen, John H.: *See—*
Flick, Gary D.; and Reinshagen, John H., 4,551,219, Cl. 204-290.00R.
Reiss, Gerald; and Schneider, Rudolf. Steam iron. 4,550,514, Cl. 38-77.810.
Reith, Walter: *See—*
Walter, Lothar; and Reith, Walter, 4,550,479, Cl. 29-148.40C.
Reliance Electric Company: *See—*
Kammiller, Neil A., 4,551,668, Cl. 323-234.000.
Remmele, Bernhard: *See—*
Kuhlmann, Gerhard; and Remmele, Bernhard, 4,550,500, Cl. 30-392.000.
Remus, Casimer F., to Allied Corporation. Hermetically sealed drive. 4,550,630, Cl. 74-800.000.

Renlund, Gary M.; and Johnson, Curtis A., to General Electric Company. Thermoplastic molding of sinterable silicon carbide. 4,551,496, Cl. 524-322.000.

Renlund, Gary M.: *See—*
Johnson, Curtis A.; Renlund, Gary M.; Van Buren, Charles E.; and Prochazka, Svante, 4,551,436, Cl. 501-90.000.

Rensselaer Polytechnic Institute: *See—*
Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,017, Cl. 356-28.500.
Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,018, Cl. 356-28.500.

Resele, Peter, to Steyr-Daimler-Puch Aktiengesellschaft. Frame for two-wheeled vehicles. 4,550,927, Cl. 280-281.00R.

Retsch, William H.; and Zdziarski, Stanley F., to PPG Industries, Inc. Holding device for segmenting a workpiece. 4,550,900, Cl. 269-87.000.

Reuter, William: *See—*
Scala, John; and Reuter, William, 4,551,689, Cl. 331-2.000.

Rexroth, Frederick W., to Medical Research Associates, Ltd. #2. Electrosurgical generator. 4,550,727, Cl. 128-303.140.

Rey, Pierre: *See—*
De Raco, Maurice; and Rey, Pierre, 4,551,593, Cl. 200-81.00R.

Reymond, Jean C., to Thomson CSF. Head-mounted or helmet-mounted sighting device. 4,550,984, Cl. 350-404.000.

Reynolds, Joseph D.: *See—*
Lauer, Ernst H.; and Reynolds, Joseph D., 4,550,627, Cl. 74-475.000.

RFL Industries, Inc.: *See—*
Seely, Earle S.; and LaValley, Roger O., 4,551,782, Cl. 361-151.000.

Rhee, Byung Y. D.C. Motor with centrifugal separation starting brush. 4,551,658, Cl. 318-254.000.

Rhein-Chemie Rheinau GmbH: *See—*
Sauerbier, Michael; and Ehrend, Helfried, 4,551,505, Cl. 525-346.000.

Rheinmetall GmbH: *See—*
Bethmann, Karl W., 4,551,287, Cl. 269-3.00R.

Rhoads, Roger R., to Owens-Illinois, Inc. Bottle carrier. 4,550,824, Cl. 206-150.000.

Rhone-Poulenc, Inc.: *See—*
Theissen, Robert J., 4,551,171, Cl. 71-121.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Gagne, Pierre; Girardeau, Yvette; and Pointud, Bernard, 4,551,382, Cl. 428-258.000.
Ratton, Serge; and Bougeois, Jean-Luc, 4,551,557, Cl. 568-433.000.
Ratton, Serge; and Bougeois, Jean-Luc, 4,551,558, Cl. 568-433.000.

Riba-Pruftechnik GmbH: *See—*
Barth, Hans; and Prokopp, Manfred, 4,551,673, Cl. 324-158.00F.

Rice, Ivan G. Method of steam cooling a gas generator. 4,550,562, Cl. 60-39.020.

Rich, Donald S., to Parlex Corporation. Flat embedded-shield multi-conductor signal transmission cable, method of manufacture and method of stripping. 4,551,576, Cl. 174-36.000.

Rich, Hubert A.; Saffer, Gary M.; and Sestito, William F., to Mattel, Inc. Toy structural member roller. 4,551,127, Cl. 493-462.000.

Rich Products Corporation: *See—*
O'Mahony, John S.; Kahn, Marvin L.; and Adapa, Satya N., 4,551,348, Cl. 426-639.000.

Richard, Henry J.: *See—*
Gidge, Kenneth N.; and Richard, Henry J., 4,550,760, Cl. 160-328.000.

Richards, Alwyn H.: *See—*
Whitlam, Joseph E.; and Richards, Alwyn H., 4,550,541, Cl. 52-309.800.

Riches, Arthur J.; and Mitchell, Brian, to Allied Corporation. Electrical connector member. 4,550,967, Cl. 339-88.00R.

Richey, Daniel D.: *See—*
Stahura, Daniel W.; and Richey, Daniel D., 4,551,630, Cl. 290-38.00R.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.

Richter, Johannes: *See—*
Bottcher, Hugo; Heimrich, Klaus; Hildebrandt, Gustav; Kracke, Heinrich; and Richter, Johannes, 4,551,297, Cl. 264-224.000.

Richter, Kurt W.: *See—*
La Bonte, David E.; Richter, Kurt W.; and Goehler, Robert F., 4,550,622, Cl. 74-87.000.

Ricoh Company Ltd.: *See—*
Anderson, Carl P., 4,550,999, Cl. 355-3.0TR.
Inokuchi, Toshiyuki, 4,551,737, Cl. 346-161.000.
Koichi, Yasushi, 4,551,005, Cl. 355-8.000.
Maruta, Keiichi; and Yuyama, Yukihiro, 4,551,738, Cl. 346-200.000.
Nishi, Kohichi; and Takahashi, Akira, 4,550,997, Cl. 354-459.000.

Rieck, James N.: *See—*
Yeater, Robert P.; Pantone, Richard S.; and Rieck, James N., 4,551,498, Cl. 524-424.000.

Rieder, Heinz; and Schwaiger, Max. Instrument for measuring lengths. 4,550,505, Cl. 33-125.00C.

Riederer, Stephen J.; and Keyes, Gary S., to General Electric Company. Integrated hybrid image remasking in a subtraction angiography method. 4,551,800, Cl. 364-414.000.

Riegel, Ulrich: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.

Riehl, Tilford F., Jr., to Brown & Williamson Tobacco Corporation. Mouthpiece for a cigarette and a cigarette having same. 4,550,740, Cl. 131-336.000.

Riley, Roy C., to J & R Manufacturing, Inc. Electrical cable connectors. 4,550,966, Cl. 339-84.000.

Riley, Thomas C., Jr.; Tharp, Charles P.; and Lapka, Galen G., to KV Pharmaceutical Company. Vaginal delivery systems and their methods of preparation and use. 4,551,148, Cl. 604-890.000.

Risner, Melvin G., to REB Manufacturing, Inc. Automatic handrail for platform lift. 4,551,056, Cl. 414-539.000.

Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
Laudt, Jurgen, 4,550,852, Cl. 220-327.000.

Rittersdorf, Walter: *See—*
Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, 4,551,428, Cl. 435-19.000.

Ritz, Josef: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,551,318, Cl. 423-265.000.

Rizkalla, Nabil M., to Halcon SD Group, Inc., The. Thermally-induced hydrolysis of acetal. 4,551,560, Cl. 568-465.000.

Roach, Stewart W.: *See—*
Hagedorn, Stanley R.; and Roach, Stewart W., 4,551,042, Cl. 406-93.000.

Roalson, Howard J., to International Business Machines Corporation. Automatic reference adjustment for position error signal on disk file servo system. 4,551,776, Cl. 360-77.000.

Robbart, Edward. Method for printing cellulosic substrates using modified reactive siloxanes to form an oleophilic layer thereon and impregnating thereafter with an ink. 4,551,385, Cl. 428-323.000.

Robbins, Gordon B., to Du Pont de Nemours, E. I., and Company. Titanium ester compositions having depressed freezing points. 4,551,544, Cl. 556-40.000.

Robbins, Keith V.: *See—*
Cox, Anthony F.; Glanville, Roger; Lloyd, Owen; and Robbins, Keith V., 4,550,591, Cl. 73-28.000.

Robert, Alain: *See—*
Ouhayoun, Michel; and Robert, Alain, 4,551,843, Cl. 372-87.000.

Robert Bosch GmbH: *See—*
Barho, Hans; and Denz, Helmut, 4,550,704, Cl. 123-481.000.
Kuhlmann, Gerhard; and Remmele, Bernhard, 4,550,500, Cl. 30-392.000.
Leiber, Heinz, 4,550,954, Cl. 303-92.000.

Roberts, John T., to UOP Inc. Bis-(p-amino-heteroarylmethyl)anilines as antioxidants. 4,551,536, Cl. 546-264.000.

Robotics, Inc.: *See—*
Mosher, Ralph S., 4,551,058, Cl. 414-735.000.

Robson, John H.; and Keller, George E., II, to Union Carbide Corporation. Process for the production of alkylene glycols. 4,551,566, Cl. 568-867.000.

Roby, Charles K.: *See—*
Fletcher, George R., Jr.; Messick, George H., Jr.; Roby, Charles K.; and Huey, Cecil O., Jr., 4,550,532, Cl. 51-288.000.

Roch, Josef: *See—*
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,551,464, Cl. 514-312.000.

Rock-Tenn Co.: *See—*
Fletcher, Richard J.; and Wischusen, Henry, III, 4,550,834, Cl. 206-611.000.

Rocklin, Isadore J. Device and method for surfacing a workpiece. 4,551,603, Cl. 219-76.130.

Rockwell International Corporation: *See—*
Craiglow, Robert L., 4,551,688, Cl. 330-280.000.
Huffman, Charles E., 4,551,830, Cl. 370-15.000.
Olson, Roy E., 4,551,649, Cl. 313-336.000.

Roe, James E.: *See—*
Gellman, Gary; Erburt, George A.; and Roe, James E., 4,551,343, Cl. 426-549.000.

Roebke, Wolfgang: *See—*
Strack, Hans; Roebke, Wolfgang; Kneitel, Dieter; and Parr, Ehrfried, 4,551,322, Cl. 423-329.000.

Roeder, Robert S.; and Sterghos, Peter M., to Sperry Corporation. Apparatus for rapid switch conical scan feed. 4,551,728, Cl. 343-761.000.

Roemer, Karl H.: *See—*
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.

Roemmele, Carl F.; and Ekland, Joseph D., to Federal-Mogul Corporation. Abrasive cutting wheel for cutting rock-like material. 4,550,708, Cl. 125-15.000.

Rogers, Charles J.: *See—*
Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and Rogers, Charles J., 4,551,218, Cl. 204-240.000.

Rogers, Jerrold J., to Tektronix, Inc. Method and apparatus for modulating the recording rate of an image on the recording media of a line scan graphic recorder with the velocity of the recording media. 4,551,732, Cl. 346-110.00R.

Rogers, Phillip P., to Phillip P. Rogers & Faye Rogers Living Trust; and Uatar DTD., Phillip P. Rogers & Faye Rogers, co-trustees. Connector for ambulatory dialysis system. 4,551,146, Cl. 604-403.000.

Rohlik, John W. Crop guiding attachment for a combine divider. 4,550,555, Cl. 56-314.000.

Rohn, Charles L., to Mobil Oil Corporation. Biaxially oriented films of butene-1 homopolymer and copolymers. 4,551,514, Cl. 526-348.100.

Rolls-Royce Inc.: *See—*
Szuminski, Gary F., 4,550,877, Cl. 239-265.350.

Rolls-Royce Limited: *See—*
Geary, Alan P., 4,551,062, Cl. 415-115.000.
Pask, George, 4,551,064, Cl. 415-116.000.

Romak, Paul E., to AMP Incorporated. Cylindrical socket contact. 4,550,972, Cl. 339-256.00R.

Romer, Michael: *See—*
Eidenschink, Rudolf; Romer, Michael; and Weber, Georg, 4,551,264, Cl. 252-299.620.

Roper, Colleen F. Footstool with inclined ramp. 4,550,802, Cl. 182-113.000.

Rosback, Martin D.: *See—*
Causley, Gary C.; and Rosback, Martin D., 4,551,734, Cl. 346-140.00R.

Rose, Jochen, to International Standard Electric Corporation. Rotary switch for printed circuit boards. 4,551,587, Cl. 200-11.00R.

Rosenberg, Avner: *See—*
Rosenberg, Peretz; and Rosenberg, Avner, 4,550,878, Cl. 239-542.000.

Rosenberg, Peretz; and Rosenberg, Avner. Drip irrigator with pressure responsive flow regulator. 4,550,878, Cl. 239-542.000.

Rosenbluth, Robert F.: *See—*
Seiler, Louis, Jr.; and Rosenbluth, Robert F., 4,550,447, Cl. 623-1.000.

Rosenquist, Joel C.: *See—*
Thompson, Kenneth J.; Rosenquist, Joel C.; and Foster, Wayne G., 4,550,670, Cl. 112-121.110.

Rosenstock, Winfried. Method of driving steel profiles into a rock substratum. 4,550,786, Cl. 175-2.000.

Rosenwinkel, Donald A.: *See—*
Kulesza, Ralph J.; Rosenwinkel, Donald A.; and Disko, Harry, 4,550,876, Cl. 239-211.000.

Roshon-Larsen, Gwynne L.: *See—*
Amdahl, Gene M.; Hanson, Donald L.; Kreuzenstein, Ronald K.; Roshon-Larsen, Gwynne L.; and Woffinden, Gary A., 4,551,797, Cl. 364-200.000.

Ross, William E., to Litton Systems, Inc. Magneto-optic device for the control of electromagnetic radiation. 4,550,983, Cl. 350-376.000.

Rotaque (Proprietary) Limited: *See—*
Brouwer, Cornelis, 4,550,665, Cl. 105-241.200.

Rottler, Donald; and Engnell, David, to Rottler Manufacturing Co. Short-stroking honing machine. 4,550,530, Cl. 51-34.00R.

Rottler Manufacturing Co.: *See—*
Rottler, Donald; and Engnell, David, 4,550,530, Cl. 51-34.00R.

Rottmaier, Ludwig: *See—*
Schellhammer, Karl-Wolfgang; Rottmaier, Ludwig; Merten, Rudolf; and Schimmel, Ulrich, 4,551,263, Cl. 252-186.390.

Roussel Uclaf: *See—*
Frank-Neumann, Michel; Sedrati, Madjid; Vigneron, Jean-Pierre; and Bloy, Vincente, 4,551,545, Cl. 560-124.000.

Rowen, Christopher M.: *See—*
Rowen, John B.; Rowen, Christopher M.; and Janusis, Charles, 4,551,028, Cl. 368-204.000.

Rowen, John B.; Rowen, Christopher M.; and Janusis, Charles. Disposable electronic watch. 4,551,028, Cl. 368-204.000.

Rozsi, Donald J.: *See—*
Smith, Stanley K.; and Rozsi, Donald J., 4,551,808, Cl. 364-474.000.

RTC Industries, Inc.: *See—*
Nathan, Walter; and Zucker, Armand S., 4,550,838, Cl. 211-128.000.

Rudin, Richard E., to S. C. Johnson & Son, Inc. Easily dispersible dietary fiber product and method for producing the same. 4,551,331, Cl. 424-195.100.

Rudolf, Peter: *See—*
Lehner, August; Hack, Joachim; Krucker, Karl; Balz, Werner; Roemer, Karl H.; Rudolf, Peter; Falk, Roland; and Eckert, Guenter, 4,551,359, Cl. 427-130.000.

Rumsey, Steven C., to American Standard Inc. Manually releasable parking brake device. 4,550,811, Cl. 188-170.000.

Runyon, Wayne; and Hower, Larry, to L. P. Systems Corporation. Epilator. 4,550,728, Cl. 128-303.180.

Rupp, Jody W.: *See—*
Owensby, Joseph E.; Rupp, Jody W.; Dobbins, Frederick A.; and Waldrop, Thomas E., 4,550,548, Cl. 53-434.000.

Ruppel, Peter: *See—*
Schaut, Josef; and Ruppel, Peter, 4,551,012, Cl. 355-50.000.

Rush, Elton E., to Phillips Petroleum Company. Container piercing device. 4,550,621, Cl. 74-2.000.

Russack, Harvey: *See—*
Pipa, William; Warren, Robert F.; and Russack, Harvey, 4,550,679, Cl. 118-52.000.

Russell, John P.; and Goodman, Alvin M., to RCA Corporation. Power switching circuitry. 4,551,643, Cl. 307-570.000.

Russo, Frank D.: *See—*
Leech, Edward J.; and Russo, Frank D., 4,551,488, Cl. 523-427.000.

Ruston, Donald A.: *See—*
Campbell, James R., 4,551,604, Cl. 219-78.120.

Ruti-te Strake B.V.: *See—*
Manders, Petrus G. J., 4,550,752, Cl. 139-435.000.

Rutili, Renzo N.: *See—*
Hamilton, Lawrence E.; and Rutili, Renzo N., 4,551,598, Cl. 200-314.000.

Rutty, John G.; and Arndt, Alfred. Anti-blocking device including stuck microphone reliever for aircraft voice communication system. 4,551,854, Cl. 455-78.000.

Ruzicka, Alan V., to McCulloch Corporation. String trimmer with cut line retention pocket. 4,550,499, Cl. 30-276.000.

Ryan, Charles P.; and Guenthner, Russell W., to Honeywell Information Systems Inc. Verification of real page numbers of stack stored prefetched instructions from instruction cache. 4,551,799, Cl. 364-200.000.

Ryan, Lizabeth L. Sanitary napkin. 4,551,145, Cl. 604-389.000.

Rydell, Mark A.: *See—*
Fletcher, Bruce W.; Rydell, Mark A.; and Reese, Edward W., 4,551,292, Cl. 264-139.000.

S. C. Johnson & Son, Inc.: *See—*
Francis, Alan W., 4,550,676, Cl. 116-206.000.
Rudin, Richard E., 4,551,331, Cl. 424-195.100.

S-P Manufacturing Corporation, The: *See—*
Hall, William E.; Gailey, Edward D.; and Ovanin, George J., 4,550,922, Cl. 279-119.000.

Sabacky, Bruce J.; and Hepworth, Malcolm T., to Amax Inc. Flash sublimation and purification of molybdenum oxide. 4,551,313, Cl. 423-59.000.

Sablev, Leonid P.: *See—*
Axenov, Ivan I.; Bren, Viktor G.; Padalka, Valentin G.; Sablev, Leonid P.; Stupak, Rimma I.; and Khoroshikh, Vladimir M., 4,551,221, Cl. 204-298.000.

Sach, George S.: *See—*
Cooper, David G.; and Sach, George S., 4,551,466, Cl. 514-318.000.

Sadhukhan, Pasupati, to Phillips Petroleum Company. Thermal flashing of carbonaceous materials. 4,551,223, Cl. 208-8.00R.

Sado, Ichiro; Kishimoto, Juji; Sasaki, Masayuki; and Cho, Mitsuo, to Canon Kabushiki Kaisha. Electronic apparatus for translating one language into another. 4,551,818, Cl. 364-900.000.

Saffer, Gary M.: *See—*
Rich, Hubert A.; Saffer, Gary M.; and Sestito, William F., 4,551,127, Cl. 493-462.000.

Saigo, Kazuhide: *See—*
Suzuki, Masayoshi; and Saigo, Kazuhide, 4,551,417, Cl. 430-316.000.

Saint-Gobain Vitrage: *See—*
Kunert, Heinz, 4,551,372, Cl. 428-38.000.
Radisch, Helmer; and Scholz, Werner, 4,551,484, Cl. 523-169.000.

Saito, Susumu: *See—*
Fujii, Yasuhiko; Owaki, Isao; Saito, Susumu; Mori, Takaro; and Nakamura, Shinji, 4,551,840, Cl. 371-38.000.

Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, to Hitachi, Ltd. Tracking servo system for magnetic recording and reproducing apparatus using flexible magnetic disk. 4,551,777, Cl. 360-77.000.

Saito, Tomotaka; and Nagao, Kenichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Display control for electronic calculator. 4,551,716, Cl. 340-711.000.

Saito, Toshio: *See—*
Nagatani, Toshio; Chiba, Norio; Hatanaka, Takao; and Saito, Toshio, 4,551,367, Cl. 428-35.000.

Sajic, Branko: *See—*
Wagman, Julius; and Sajic, Branko, 4,551,330, Cl. 424-59.000.

Sakaguchi, Shouzaburou; and Ueki, Yoshiharu, to Pioneer Electronic Corporation. Method for selecting desired piece of information recorded in magnetic tape mounted in magnetic tape recorder and/or reproducer. 4,551,774, Cl. 360-72.100.

Sakakibara, Yasuyuki: *See—*
Igashira, Toshihiko; Sakakibara, Yasuyuki; Yoshinaga, Toru; Abe, Seiko; and Watanabe, Kazuhide, 4,550,744, Cl. 137-80.000.

Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling stall speed for an electromagnetic clutch. 4,550,816, Cl. 192-0.052.

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Sakamoto, Takao, to Tachikawa Spring Co., Ltd. Lumbar support device. 4,550,949, Cl. 297-284.000.

Sakurai, Terushige: *See—*
Abe, Toshio; and Sakurai, Terushige, 4,550,588, Cl. 72-441.000.

Salansky, Werner, to Stabeg Apparatebaugesellschaft m.b.H. Recessed lamp. 4,551,791, Cl. 362-296.000.

Salihar, Mark W., to Dearborn Chemical Co. Dust suppression with elastomer-containing foam. 4,551,261, Cl. 252-88.000.

Salls, David J.: *See—*
Bolton, Joseph A.; and Salls, David J., 4,551,202, Cl. 162-198.000.

Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yarochenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M. Composition for preventing deposition of inorganic salts. 4,551,262, Cl. 252-181.000.

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Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.

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Sanchez, Pierre; and Laudat, Pierre, to CdF Chimie Azote et Fertilisants, S.A. Two-stage concentration for superphosphoric acid. 4,551,319, Cl. 423-316.000.

Sancier, Kenneth M.: *See*—
Wood, Bernard J.; Brittain, Robert D.; and Sancier, Kenneth M., 4,551,155, Cl. 48-197.00R.

Sandell, Sven. Imitation candle with magnetic pendulum. 4,551,794, Cl. 362-392.000.

Sanden Corporation: *See*—
Hiraga, Masaharu, 4,551,078, Cl. 418-16.000.
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Sanders, Eugene T., to Southwire Company. Quick adjusting rolling mill. 4,550,583, Cl. 72-247.000.

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Sandhaus, Jeffrey. Closure having integral formed sealing means. 4,550,841, Cl. 215-211.000.

Sandherr Packungen AG: *See*—
Schellenberg, Walter, 4,550,854, Cl. 220-468.000.

Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,550,578, Cl. 68-5.00E.

Sando, Tomoji: *See*—
Iizuka, Eiichi; Sando, Tomoji; Kashima, Shinji; and Maki, Masakazu, 4,551,195, Cl. 156-603.000.

Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, to Sando Iron Works Co., Ltd. Apparatus for low-temperature plasma treatment of a textile product. 4,550,578, Cl. 68-5.00E.

Sandoz, Inc.: *See*—
Kelly, Lawrence A., 4,551,288, Cl. 264-4.600.

Sanner, Axel: *See*—
Straub, Ferdinand; Sanner, Axel; Seib, Karl; and Lang, Siegfried, 4,551,512, Cl. 526-264.000.

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Tsuchiya, Hiroyoshi; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Otsuka, Hirotaka, 4,551,768, Cl. 358-283.000.

Sano, Sadao: *See*—
Inoue, Kiyoshi; Onoue, Makoto; and Sano, Sadao, 4,551,602, Cl. 219-69.00D.

Sano, Yoshiaki: *See*—
Nishimori, Eiji; Tsuchiya, Chikara; and Sano, Yoshiaki, 4,551,644, Cl. 307-573.000.

Sano, Yumiko: *See*—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,551,403, Cl. 430-58.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Iwashita, Takashi; Atsumi, Shinya; and Nakahama, Ryoji, 4,551,104, Cl. 440-56.000.

Santangelo, John A.; and DiGiantommaso, Michael, to Codman & Shurtleff, Inc. Endoscope insertion cannula assembly. 4,550,715, Cl. 128-4.000.

Santarelli, Paul: *See*—
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,550,956, Cl. 312-250.000.

Sanyo-Kokusaku Pulp Co., Ltd.: *See*—
Mino, Hisashi; and Iizima, Takeshi, 4,551,408, Cl. 430-141.000.

Sapi, Janos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.

Sapru, Krishna; Hong, Kuochih; Fetcenko, Michael A.; and Venkatesan, Srinivasan, to Energy Conversion Devices, Inc. Hydrogen storage materials and methods of sizing and preparing the same for electrochemical applications. 4,551,400, Cl. 429-94.000.

Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, to Mitsubishi Petrochemical Co., Ltd. Production of alkenylbenzenes. 4,551,571, Cl. 585-440.000.

Sasaki, Akira: *See*—
Hirao, Katsumi; and Sasaki, Akira, 4,550,865, Cl. 222-402.210.

Sasaki, Haruyoshi: *See*—
Sasaki, Makoto; Sasaki, Haruyoshi; and Sato, Hisato, 4,551,280, Cl. 260-465.00D.

Sasaki, Makoto; Sasaki, Haruyoshi; and Sato, Hisato, to Dainippon Ink and Chemicals, Inc. Nematic liquid crystalline compounds. 4,551,280, Cl. 260-465.00D.

Sasaki, Masayuki: *See*—
Sado, Ichiro; Kishimoto, Juji; Sasaki, Masayuki; and Cho, Mitsuo, 4,551,818, Cl. 364-900.000.

Sasaki, Naoyoshi. Device for holding a workpiece in a press. 4,550,585, Cl. 72-351.000.

Sasaki, Takashi: *See*—
Kimura, Toshihiko; Kaneko, Yutaka; and Sasaki, Takashi, 4,551,422, Cl. 430-551.000.

Sasakura, Kazuyuki: *See*—
Sugasawa, Tsutomu; Toyoda, Tatsuo; and Sasakura, Kazuyuki, 4,551,554, Cl. 568-322.000.

Sase, Masatoshi; and Yamanaka, Seisuke, to Sony Corporation. Signal processing circuit including image sensor. 4,551,761, Cl. 358-213.000.

Satake, Keigo: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Satake, Masaki: *See*—
Tomiyama, Hideki; and Satake, Masaki, 4,551,410, Cl. 430-215.000.

Sato, Eiji: *See*—
Sumiyoshi, Kikuo; Sato, Eiji; Hirai, Kazuo; Miyasaka, Kingo; and Izumi, Masayoshi, 4,551,393, Cl. 428-609.000.

Sato, Hideo: *See*—
Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, 4,550,612, Cl. 73-727.000.

Sato, Hiroshi; and Nakamura, Shuzo, to Sumitomo Chemical Company, Limited. Process for nitration of benzene. 4,551,568, Cl. 568-939.000.

Sato, Hisato: *See*—
Sasaki, Makoto; Sasaki, Haruyoshi; and Sato, Hisato, 4,551,280, Cl. 260-465.00D.

Sato, Masanori; and Iizima, Kazuo, to Nitto Boseki Co., Ltd. Glass cloth with thin reinforced joints. 4,551,375, Cl. 428-57.000.

Sato, Minoru: *See*—
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, 4,550,480, Cl. 29-156.40R.

Sato, Mitsuru: *See*—
Ishigami, Sumiyuki; and Sato, Mitsuru, 4,550,475, Cl. 29-25.350.

Sato, Morio; and Igawa, Tatsuya, to Pilot Man-Nen-Hisu Kabushiki Kaisha. Stencil. 4,550,660, Cl. 101-128.210.

Sato, Tadashi; and Hiraga, Masaharu, to Sanden Corporation. Pulley mechanism for fluid displacement apparatus. 4,551,081, Cl. 418-55.000.

Sato, Takeshi: *See*—
Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Sato, Yoshimitsu: *See*—
Ogawa, Hisashi; Tanaka, Yasushi; and Sato, Yoshimitsu, 4,550,923, Cl. 280-5.00A.

Sato, Youichi: *See*—
Matsuda, Kouichi; and Sato, Youichi, 4,551,755, Cl. 358-188.000.

Satoh, Masato, to Fuji Xerox Co., Ltd. Picture image processing magnetic disc controlling method and apparatus therefor. 4,551,769, Cl. 358-296.000.

Satonaka, Shinobu: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,551,009, Cl. 355-15.000.

Sauerbier, Michael; and Ehrend, Helfried, to Rhein-Chemie Rheinau GmbH. Process for crosslinking chlorinated polyethylene. 4,551,505, Cl. 525-346.000.

Saur, Roland, to Behr-Thomson Dehnstoffregler GmbH. Temperature control arrangement for combustion engine. 4,550,693, Cl. 123-41.100.

Savage, David S.; and Redpath, James, to Akzo N.V. Compounds with anti-convulsive properties. 4,551,479, Cl. 514-657.000.

Saverse, Ronald R.; and Jones, Harold T., to Sturtevant, Inc. Particle classifier. 4,551,241, Cl. 209-148.000.

Savolskis, Edward P.; and Krumwiede, John F., to PPG Industries, Inc. Organic wetting of glass batch. 4,551,161, Cl. 65-27.000.

Sawada, Daisaku: *See*—
Sugaya, Masami; Sawada, Daisaku; and Okawa, Susumu, 4,551,119, Cl. 474-28.000.

Sawyer, Wilbur H.: *See*—
Manning, Maurice; and Sawyer, Wilbur H., 4,551,445, Cl. 514-9.000.

Sayler, William M., to United States of America, Army. Jet engine decontamination system. 4,551,092, Cl. 432-32.000.

Scala, John; and Reuter, William, to Comtech Telecommunications Corp. RF Local oscillator with low phase noise. 4,551,689, Cl. 331-2.000.

Scanes, Malcolm K.: *See*—
Hodges, Michael J.; and Scanes, Malcolm K., 4,550,868, Cl. 223-43.000.

Scarton, Henry A.: *See*—
Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,017, Cl. 356-28.500.
Mannava, Seetha R.; McDonald, John F.; and Scarton, Henry A., 4,551,018, Cl. 356-28.500.

Schadt, Martin: *See*—
Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, 4,550,981, Cl. 350-350.00R.

Schaedlich, Gunther; and Moraw, Roland, to Hoechst Aktiengesellschaft. Electrophotographic recording process and photoconductive coating suitable for use therein. 4,551,406, Cl. 430-119.000.

Schaefer, Ernst-Dieter, to ITT Industries Incorporated. Tandem master cylinder for hydraulically operated vehicular brakes. 4,550,567, Cl. 60-562.000.

Schaffer, Rudolf, to Compagnie des Montres Longines Francillon S.A. System for identification and determination of the moment of passage of a multiple number of moving bodies at a given point on their path. 4,551,725, Cl. 343-6.5SS.

Schaty, Harald, to USM Corporation. Plastic pipe clip. 4,550,891, Cl. 248-68.100.

Schatzka, Richard L.: *See*—
Cookson, John A.; Schatzka, Richard L.; Echard, Richard A.; and Scheer, Gary W., 4,551,718, Cl. 340-825.160.

Schaut, Josef; and Ruppel, Peter. Microfilm camera for filming punch cards. 4,551,012, Cl. 355-50.000.

Scheer, Gary W.: *See*—
Cookson, John A.; Schatzka, Richard L.; Echard, Richard A.; and Scheer, Gary W., 4,551,718, Cl. 340-825.160.

Schellenberg, Walter, to Sandherr Packungen AG. Deep-drawn conical plastic container and method of making. 4,550,854, Cl. 220-468.000.

Schellhammer, Karl-Wolfgang; Rottmaier, Ludwig; Merten, Rudolf; and Schimmel, Ulrich, to Bayer Aktiengesellschaft. Triazolidine-3,5-diones as activators for per-compounds. 4,551,263, Cl. 252-186.390.

Schemmel, Gerald; and Linnebach, Richard, to International Standard Electric Corporation. Method of making GaInAsP layers for photodetectors. 4,551,186, Cl. 148-171.000.

Schering Corporation: *See*—
Sherlock, Margaret H., 4,551,463, Cl. 514-300.000.

Schettler, Helmut; and Stadler, Ewald, to International Business Machines Corporation. Multilayer ceramic substrates with several metallization planes. 4,551,789, Cl. 361-406.000.

Scheurer, Robert S.; and Scheurer, Stephen M. Flotation garment. 4,551,107, Cl. 441-112.000.

Scheurer, Stephen M.: *See*—
Scheurer, Robert S.; and Scheurer, Stephen M., 4,551,107, Cl. 441-112.000.

Schieder, Rudolf: *See*—
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,551,265, Cl. 252-301.170.

Schimmel, Ulrich: *See*—
Schellhammer, Karl-Wolfgang; Rottmaier, Ludwig; Merten, Rudolf; and Schimmel, Ulrich, 4,551,263, Cl. 252-186.390.

Schipper, Edgar S.: *See*—
Shalaby, Shalaby W.; and Schipper, Edgar S., 4,550,730, Cl. 128-335.500.

Schiwiora, Harry: *See*—
Wagner, Rudolph; and Schiwiora, Harry, 4,551,302, Cl. 420-464.000.

Schlademan, James A., to Atlantic Richfield Company. Acrylic hot melt pressure sensitive adhesive coated sheet material. 4,551,388, Cl. 428-355.000.

Schlimper, Hans-Ulrich: *See*—
Marosi, Laszlo; Schlimper, Hans-Ulrich; Schwarzmann, Matthias; and Stabenow, Joachim, 4,551,321, Cl. 423-329.000.

Schmalbein, Dieter: *See*—
Biehl, Reinhard; Schmalbein, Dieter; and Laukien, Gunther, 4,551,694, Cl. 333-24.00C.

Schmeitz, Axel W.: *See*—
Harms, Engelbert G.; Schmeitz, Axel W.; and Thomaschewski, Hubertus P., 4,551,362, Cl. 427-180.000.

Schmit, Justin M.; and Luoma, Eugene H., to Jeno's, Inc. Fried pizza product and process for preparing same. 4,551,337, Cl. 426-94.000.

Schmitt, Claude: *See*—
Merchant, Kamal; and Schmitt, Claude, 4,551,709, Cl. 340-347.0DA.

Schmitz, Gunther, to Taprogge Gesellschaft mbH. Cleaning elements for inside cleaning of the tubes of tube-type heat exchangers and method of manufacturing same. 4,550,466, Cl. 15-104.06R.

Schnabel, Wolfram: *See*—
Asmussen, Frithjof; Sotobayashi, Hideto; Chen, Jiang-Tsun; and Schnabel, Wolfram, 4,551,414, Cl. 430-270.000.
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Schneider, Rudolf: *See*—
Reiss, Gerald; and Schneider, Rudolf, 4,550,514, Cl. 38-77.810.

Schneiderman, Gary: *See*—
Miles, Clive; and Schneiderman, Gary, 4,551,131, Cl. 604-31.000.

Schnell, Axel: *See*—
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,551,269, Cl. 252-520.000.

Schoenberg, Julian H., to W. R. Grace & Co., Cryovac Div. Oriented heat-sealable multilayer packaging film. 4,551,380, Cl. 428-218.000.

Scholz, Werner: *See*—
Radisch, Helmer; and Scholz, Werner, 4,551,484, Cl. 523-169.000.

Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, to Cassella Aktiengesellschaft. 3-(4-Alkoxycarbonylpiperazin-1-yl)-sydnonimines, a process for their preparation and use. 4,551,454, Cl. 514-252.000.

Schonmeier, Herbert, to Jagenberg AG. Apparatus for the separate winding of slit webs. 4,550,887, Cl. 242-56.300.

Schossow, George W. Method of inhibiting snoring and obstructive sleep apnea. 4,551,473, Cl. 514-305.000.

Schreinemacher, Herbert: *See*—
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,551,269, Cl. 252-520.000.

Schreiner, Horst, to Siemens Aktiengesellschaft. Sintered compound material for electrical contacts and method for its production. 4,551,301, Cl. 419-21.000.

Schubert, Karl-Friedrich: *See*—
Deutscher, Hans-Christian; Kohler, Alfred; Prohaska, Hans; and Schubert, Karl-Friedrich, 4,550,469, Cl. 15-250.340.

Schultschik, Robert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Radially adjustable tool head of a cutting machine. 4,551,044, Cl. 408-185.000.

Schultschik, Robert: *See*—
Grabber, Erich; Muller, Max; Wetzel, Horst; and Schultschik, Robert, 4,550,955, Cl. 308-6.00C.

Schulz, Hans-Werner, to Siemens Aktiengesellschaft. Ventilation inset for shielding cabins and room screening devices. 4,550,545, Cl. 52-799.000.

Schulze-Berge, Carl J., to Manitowoc Company, Inc., The. Ice machine anti-block control. 4,550,572, Cl. 62-138.000.

Schulze, Wolfgang, to Francotyp-Postalia GmbH. Device for lifting the flaps of letters or envelopes. 4,551,188, Cl. 156-441.500.

Schurter, Rolf: *See*—
Meyer, Willy; Gass, Karl; Topfl, Werner; Schurter, Rolf; and Pissiotas, Georg, 4,551,531, Cl. 544-320.000.

Schwab, Daniel J.: *See*—
Gilbert, Barry K.; and Schwab, Daniel J., 4,551,746, Cl. 357-74.000.
Gilbert, Barry K.; and Schwab, Daniel J., 4,551,747, Cl. 357-74.000.

Schwab, Erwin; Parisi, Graziano; and Pander, Peter, to Battenfeld Extrusionstechnik GmbH. Method of and apparatus for maintaining a constant wall thickness for an extruded article. 4,551,289, Cl. 264-23.000.

Schwab, Walter. Pump for liquid and gaseous fluids, especially blood. 4,551,073, Cl. 417-352.000.

Schwabe, Kenneth R.: *See*—
El-Hag, Nabil A.; Cochran, Stuart A.; Schwabe, Kenneth R.; Carricato, Louis; and Shanbhag, Sudhakar P., 4,551,340, Cl. 426-437.000.

Schwaiger, Max: *See*—
Rieder, Heinz; and Schwaiger, Max, 4,550,505, Cl. 33-125.00C.

Schwartzenberger, Julius W., to Duo-Fast Corporation. Fastener driving tool. 4,550,643, Cl. 91-356.000.

Schwarzmann, Matthias: *See*—
Marosi, Laszlo; Schlimper, Hans-Ulrich; Schwarzmann, Matthias; and Stabenow, Joachim, 4,551,321, Cl. 423-329.000.

Schweikert, Glen E. Pallet-bar lift and support apparatus. 4,550,940, Cl. 294-67.400.

Schweizer, Rudolph C.: *See*—
Levinson, Frank H.; and Schweizer, Rudolph C., 4,550,975, Cl. 350-96.180.

Schwierking, Roger A.: *See*—
Reese, Vernon E.; and Schwierking, Roger A., 4,550,677, Cl. 118-31.000.

Sciarra, Michael: *See*—
Sciarra, Michael J., 4,551,149, Cl. 623-4.000.

Sciarra, Michael J., to Sciarra, Michael. Prosthetic vision system. 4,551,149, Cl. 623-4.000.

SCM Corporation: *See*—
Johnson, Walter E., Jr., 4,551,570, Cl. 585-355.000.

Scott, Peter T., to CertainTeed Corporation. Automated mineral wool roll-unit processing system. 4,550,550, Cl. 53-529.000.

Scottish & Newcastle Breweries plc: *See*—
Kesson, James, 4,550,590, Cl. 73-19.000.

Scoville, Robert E.: *See*—
Bell, John R.; Scoville, Robert E.; and Whitt, Joade, 4,550,867, Cl. 222-607.000.

Seal Company of New England, The: *See*—
Champlin, George B., 4,550,639, Cl. 87-7.000.

Sedrati, Madjid: *See*—
Frank-Neumann, Michel; Sedrati, Madjid; Vigneron, Jean-Pierre; and Bloy, Vincente, 4,551,545, Cl. 560-124.000.

Seeholzer, Joseph: *See*—
Behnke, Horst; Michaud, Horst; Seeholzer, Joseph; and Solansky, Svatoplug, 4,551,166, Cl. 71-30.000.

Seeley, Robert L., to United States of America, Interior. Magnetic susceptibility well-logging unit with single power supply thermoregulation system. 4,551,681, Cl. 324-333.000.

Seely, Earle S.; and LaValley, Roger O., to RFL Industries, Inc. Method and apparatus for degaussing magnetic storage media. 4,551,782, Cl. 361-151.000.

Segarra, Gerard, to U.S. Philips Corporation. Error-protected data transmission device and communication network. 4,551,842, Cl. 371-69.000.

Seib, Karl: *See*—
Straub, Ferdinand; Sanner, Axel; Seib, Karl; and Lang, Siegfried, 4,551,512, Cl. 526-264.000.

Seidel, Michael: *See*—
Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, 4,551,183, Cl. 148-12.00R.

Seiki, Kazuo: *See*—
Tanaka, Akira; Tsunekawa, Takahiko; Seiki, Kazuo; and Nakamura, Haruyoshi, 4,550,560, Cl. 57-261.000.

Seiler, Louis, Jr.; and Rosenbluth, Robert F., to Shiley Incorporated. Vascular graft prosthesis. 4,550,447, Cl. 623-1.000.

Sekida, Minoru: *See*—
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, 4,550,996, Cl. 354-416.000.

Sekiguchi, Koichi; Takematsu, Hikaru; Yamamoto, Kazuyuki; and Kubo, Teruyuki, to Telegraph & Telephone Pub. Corp.; and Iwasaki Tsushinki Kabushiki Kaisha. Control signal transmission system for key telephone system. 4,551,583, Cl. 179-99.00M.

Selvage, Craig C.; and Ventura, Frank D., to CPG Products Corp. Rotatable cam for use in a toy construction set. 4,551,110, Cl. 446-118.000.

Senyek, Michael L.: *See*—
Lal, Joginder; and Senyek, Michael L., 4,551,503, Cl. 525-332.100.

Seppelt, Wolfgang: *See*—
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,551,448, Cl. 514-130.000.

Serbent, Harry: *See—*
Formanek, Lothar; Hirsch, Martin; Serbent, Harry; Schnabel, Wolfram; Fritzsche, Klaus-Dietrich; Koenig, Heribert; and Rath, Gero, 4,551,172, Cl. 75-11.000.

Sestito, William F.: *See—*
Rich, Hubert A.; Saffer, Gary M.; and Sestito, William F., 4,551,127, Cl. 493-462.000.

Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Fluoroethoxyphenyl (di)thiophosphates, a process for their preparation and their use for controlling pests. 4,551,448, Cl. 514-130.000.

Sexton-Espec, Inc.: *See—*
Hohman, John E., 4,550,574, Cl. 62-197.000.

Shackelford, Carl L.; and Rainin, Kenneth, to Rainin Instrument Co. Inc. Modular liquid chromatography column apparatus. 4,551,249, Cl. 210-198.200.

Shadzi, Bahram: *See—*
Ericson, Charles P.; and Shadzi, Bahram, 4,551,355, Cl. 427-48.000.

Shaffer, Donald U. Ram construction for oil well blow out preventer apparatus. 4,550,895, Cl. 251-1.300.

Shalaby, Shalaby W.; and Schipper, Edgar S., to Ethicon, Inc. Flexible monofilament surgical sutures comprising poly(polymethylene terephthalate, isophthalate or cyclohexane-1,4-dicarboxylate-co-dimerate). 4,550,730, Cl. 128-335.500.

Shanbhag, Sudhakar P.: *See—*
El-Hag, Nabil A.; Cochran, Stuart A.; Schwabe, Kenneth R.; Carricato, Louis; and Shanbhag, Sudhakar P., 4,551,340, Cl. 426-437.000.

Sharon, Harold M., to United Technologies Corporation. Tool to produce a new angle on a fan blade. 4,550,497, Cl. 30-169.000.

Sharp Kabushiki Kaisha: *See—*
Koizumi, Satoru; Furuhara, Hiroshi; and Teshima, Daisuke, 4,551,775, Cl. 360-74.100.

Sheets, Robert L.: *See—*
Phillips, James D.; and Sheets, Robert L., 4,551,048, Cl. 409-197.000.

Shell Oil Company: *See—*
Blauwhoff, Petrus M. M.; and Cornelissen, Anton E., 4,551,233, Cl. 208-106.000.
Hudson, Henry C., 4,551,443, Cl. 502-313.000.
Kollmeyer, Willy D., 4,551,447, Cl. 514-94.000.

Shen, Jerome L., to Ralston Purina Company. Electrolytic treatment of vegetable protein. 4,551,274, Cl. 260-123.500.

Sherlock, Margaret H., to Schering Corporation. Composition containing 1-phenyl-1,8-naphthridin-2(1H)-ones and a non-steroidal anti-inflammatory drug. 4,551,463, Cl. 514-300.000.

Sherman, Benjamin F., Jr. Ball-like construction for a toy or the like. 4,551,111, Cl. 446-120.000.

Sherman, Guy J., to Sherman Laboratories, Inc. Soft contact lens ambient temperature disinfectant and rinsing solution and method. 4,551,461, Cl. 514-275.000.

Sherman Laboratories, Inc.: *See—*
Sherman, Guy J., 4,551,461, Cl. 514-275.000.

Sherwood, Donald G.: *See—*
Veronesi, Luciano; and Sherwood, Donald G., 4,550,941, Cl. 294-86.400.

Shibuya, Hiroko: *See—*
Sugiyama, Masami; Shibuya, Hiroko; and Kasahara, Yasushi, 4,551,272, Cl. 260-112.50R.

Shida, Takafumi: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Shields, Edward P., to Westinghouse Electric Corp. Multiple fuel rod gripper. 4,551,299, Cl. 376-261.000.

Shiga, Akinobu; Kakugo, Masahiro; Kojima, Junpei; and Wakatsuki, Kizuku, to Sumitomo Chemical Company, Limited. Crystalline propylene polymer composition. 4,551,501, Cl. 525-88.000.

Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,551,009, Cl. 355-15.000.

Shiley Incorporated: *See—*
Seiler, Louis, Jr.; and Rosenbluth, Robert F., 4,550,447, Cl. 623-1.000.

Shimada, Satoshi: *See—*
Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, 4,550,612, Cl. 73-727.000.

Shimamura, Hayato; and Maeda, Osamitsu, to Misuzu Machineries & Engineering Ltd.; and Toner Tanker K.K. Ballast exhaust pipe closing appliance for a ship. 4,550,751, Cl. 138-93.000.

Shimano Industrial Company Limited: *See—*
Nagano, Masashi, 4,551,121, Cl. 474-140.000.

Shimizu, Susumu: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Shimoda, Michio; and Watanabe, Fumio, to Mitsubishi Denki Kabushiki Kaisha. Control system for strip configuration. 4,551,805, Cl. 364-469.000.

Shimotori, Kazuhiro; and Ozaki, Hideyuki, to Mitsubishi Denki Kabushiki Kaisha. Dram with polysi bit lines and added junction capacitance. 4,551,741, Cl. 357-23.600.

Shin-Etsu Chemical Co., Ltd.: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.

Shingu, Hiroshi, to Epson Corporation. Liquid crystal composition and display element including same. 4,550,980, Cl. 350-349.000.

Shinkawa, Hiroyasu: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Shinko Electric Co., Ltd.: *See—*
Kubo, Takeshi; Kawano, Junji; Takahashi, Fumio; and Yamaguchi, Tsutomu, 4,551,729, Cl. 346-1.100.

Shinmura, Sadayuki: *See—*
Yoshida, Takumori; Yamada, Akira; and Shinmura, Sadayuki, 4,550,700, Cl. 123-432.000.

Shino, Akimitsu: *See—*
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,551,849, Cl. 381-86.000.

Shinohara, Shuichi, to Terumo Kabushiki Kaisha. Cannula device and medical bag having the same. 4,551,138, Cl. 604-262.000.

Shinohara, Shuichi, to Terumo Kabushiki Kaisha. Tube for medical instruments and medical bag device having the same. 4,551,140, Cl. 604-262.000.

Shinozuka, Kiyoshi; Otu, Koichi; and Fukumoto, Hiroshi, to Onahama Sakai Kagaku Kabushiki Kaisha. Method of producing surface-treated barium sulfate. 4,551,497, Cl. 524-423.000.

Shinya, Masuo: *See—*
Nishikawa, Eiichiro; Shinya, Masuo; Ueda, Kayako; and Kaneko, Katsumi, 4,551,556, Cl. 568-403.000.

Shionogi & Co., Ltd.: *See—*
Sugasawa, Tsutomu; Toyoda, Tatsuo; and Sasakura, Kazuyuki, 4,551,554, Cl. 568-322.000.

Shipley Company Inc.: *See—*
Gulla, Michael; Taylor, Paul; and Oddi, Michael J., 4,551,409, Cl. 430-192.000.

Shirato, Moritoshi: *See—*
Fujita, Kouichi; and Shirato, Moritoshi, 4,551,841, Cl. 371-66.000.

Showa Denko Kabushiki Kaisha: *See—*
Iizuka, Eiichi; Sando, Tomoji; Kashima, Shinji; and Maki, Masakazu, 4,551,195, Cl. 156-603.000.
Iizuka, Eiichi, 4,551,316, Cl. 423-290.000.

Shuert, Lyle. Palletized container. 4,550,830, Cl. 206-386.000.

Sides, Daniel H.: *See—*
Moores, Robert G., Jr.; Sides, Daniel H.; and Burnside, Howard L., 4,550,501, Cl. 30-393.000.

Siecor Corporation: *See—*
Cooper, Stephen M.; and Sooudi, Saeed K., 4,550,976, Cl. 350-96.230.

Siemens Aktiengesellschaft: *See—*
Aidn, Martin, 4,551,698, Cl. 335-78.000.
Argyo, Wilhelm, 4,551,216, Cl. 204-192.00C.
Falk, Gertrud, 4,551,609, Cl. 219-121.0PR.
Lischke, Burkhard; and Plies, Erich, 4,551,625, Cl. 250-310.000.
Merchant, Kamal; and Schmitt, Claude, 4,551,709, Cl. 340-347.0DA.
Schreiner, Horst, 4,551,301, Cl. 419-21.000.
Schulz, Hans-Werner, 4,550,545, Cl. 52-799.000.

Siemon Company, The: *See—*
Donais, Norman; and Nitowski, Ronald, 4,550,964, Cl. 339-44.00M.
Pohl, Karl-Heinz, 4,550,969, Cl. 339-98.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.P.A.: *See—*
Cavazza, Claudio; and Tinti, Maria O., 4,551,477, Cl. 514-547.000.

Silver, Paul J.: *See—*
Sulkowski, Theodore S.; Silver, Paul J.; Mascitti, Albert A.; and Bender, Reinhold H. W., 4,551,534, Cl. 546-123.000.

Simmons, Billy R.: *See—*
Simmons, Harold J.; and Simmons, Billy R., 4,550,519, Cl. 43-15.000.

Simmons, Harold J.; and Simmons, Billy R. Fishing rod holder with automatic hook setter. 4,550,519, Cl. 43-15.000.

Simmons, Lacy W. Poultry processing method and apparatus. 4,550,473, Cl. 17-11.000.

Simmons, Richard J., to Plastofilm Industries, Inc. Stackable shipping and display container. 4,550,837, Cl. 211-126.000.

Simmons, Robert N. X-Ray and photographic viewer. 4,550,515, Cl. 40-362.000.

Simon, Frederick A.; and Forcey, Thomas H., to Ford Motor Company. Retainer for radio receiver. 4,550,944, Cl. 296-70.000.

Simpson Industries, Inc.: *See—*
Ferguson, Robert J., 4,551,115, Cl. 464-83.000.

Simpson, Roger A., to Emhart Industries, Inc. Fire alarm pull station. 4,551,707, Cl. 340-287.000.

Singh, Gurdip, to Combustion Engineering, Inc. Liquid level control system for vapor generator. 4,551,796, Cl. 364-148.000.

Singh, Prithipal: *See—*
Pirio, Marcel R.; and Singh, Prithipal, 4,551,275, Cl. 260-239.00D.

Siniscalchi, Luciano. Process for the production of padding for clothing or furnishings and product. 4,551,383, Cl. 428-286.000.

Sisbarro, Frederick P., to Carter-Wallace Inc. Production of a solid stick in a container. 4,551,093, Cl. 432-59.000.

Sket, Boris: *See—*
Zupancic, Natasa; Sket, Boris; Zupet, Pavel; and Zupan, Marko, 4,551,525, Cl. 544-49.000.

SKF Kugellagerfabriken GmbH: *See—*
Walter, Lothar; and Reith, Walter, 4,550,479, Cl. 29-148.40C.

Skvara, Frantisek; Kolar, Karel; Zadak, Zdenek; Friml, Zdenek; and Novotry, Jaroslav. Rapidly binding high-strength cement binding agent and a method of its preparation. 4,551,176, Cl. 106-90.000.

SKW Trostberg Aktiengesellschaft: *See—*
Behnke, Horst; Michaud, Horst; Seeholzer, Joseph; and Solansky, Svatoplug, 4,551,166, Cl. 71-30.000.

Slavik, William H.; and Huber, William B., to Nuvatec, Inc. Intravenous set. 4,551,134, Cl. 604-67.000.

Sliger, David E., to Storage Technology Corporation. Write drive with current mirrors which reduce feed-through. 4,551,772, Cl. 360-46.000.

Sloan Valve Company: *See—*
Berg, Arthur A., 4,550,928, Cl. 280-421.000.

Slocum, Chester D.: *See—*
Batty, John R., Jr.; and Slocum, Chester D., 4,550,732, Cl. 128-419.0PG.

Slusarchyk, William A.; and Kronenthal, David, to E. R. Squibb & Sons, Inc. 2-Oxoazetidin-1-yloxymethyl sulfonic acid and analogs. 4,551,276, Cl. 260-239.00A.

Smallbrook, Henry C.; and Spicer, William E. Air brake slack adjustment and measurement tools. 4,550,460, Cl. 7-164.000.

Smead, Robert G.: *See—*
Demeny, Gary L.; and Smead, Robert G., 4,550,678, Cl. 118-630.000.

Smith, Arnold M. Ring joint gasket. 4,550,921, Cl. 277-167.500.

Smith, Barry L., to UMC Industries, Inc. Coin apparatus. 4,550,819, Cl. 194-1.00N.

Smith, Dwight D.; and Cranfill, Leonard J., to Stant Inc. Canister roll seam. 4,550,850, Cl. 220-253.000.

Smith, James A.; and Murphy, Betty J., to Creative Products Resource Associates, Ltd. Floor cleaning composition. 4,551,481, Cl. 521-52.000.

Smith Kline & French Laboratories Limited: *See—*
Cooper, David G.; and Sach, George S., 4,551,466, Cl. 514-318.000.

Smith, Lawrence A., Jr., to Chemical Research & Licensing Company. Deetherification process. 4,551,567, Cl. 568-907.000.

Smith, Orbert S., to Whirlpool Corporation. Electrical hose swivel connector for canister vacuum cleaner. 4,550,958, Cl. 339-5.00R.

Smith, Peter W., to United Technologies Corporation. Monolithic polarizer grating. 4,551,692, Cl. 333-21.00A.

Smith, Richard R.; and Wilson, John R., to Goodyear Tire & Rubber Company, The. Polyester melt blends having high gas barrier properties. 4,551,368, Cl. 428-35.000.

Smith, Robert D.: *See—*
Crossley, Peter W.; and Smith, Robert D., 4,551,617, Cl. 219-464.000.

Smith, Stanley K.; and Rozsi, Donald J., to Eaton Corporation. Tool wear sensors. 4,551,808, Cl. 364-474.000.

Smith, Susan: *See—*
Aston, Geoffrey W.; Smith, Susan; Chapman, Paul; and Barker, Howard A., 4,551,384, Cl. 428-312.600.

Smith, Wallace R. Monuments for graves. 4,550,537, Cl. 52-103.000.

Smolnikov, Nikolai V.: *See—*
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.

Smucker, Willard. Implement for contact application of liquid herbicides to crops. 4,550,526, Cl. 47-1.500.

Smyth, Robert R., to Eaton Corporation. Automatic transmission control method. 4,551,802, Cl. 364-424.100.

Snetting, Mark; West, Dan; and Hacker, John R., to Wagner Spray Tech Corporation. Seal for a power fed roller. 4,550,919, Cl. 277-23.000.

Snow, Arthur W.: *See—*
Kovacena, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., 4,551,349, Cl. 427-255.600.

Snyder, Clair W., Jr.: *See—*
Asick, John C.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., 4,550,960, Cl. 339-14.00R.

Societe Anonyme Automobiles Citroen: *See—*
Vilain, Claude; and Noel, Gapp, 4,550,932, Cl. 280-689.000.

Societe Anonyme Automobiles Peugeot: *See—*
Vilain, Claude; and Noel, Gapp, 4,550,932, Cl. 280-689.000.

Societe Anonyme de Telecommunications: *See—*
ab der Halden, Charles H.; and Berenguier, Pierre H., 4,551,845, Cl. 375-40.000.
Ouhayoun, Michel; and Robert, Alain, 4,551,843, Cl. 372-87.000.

Societe Anonyme des Usines Chausson: *See—*
Quercy, Alexandre P. L., 4,551,060, Cl. 414-541.000.

Societe Anonyme H.K. France: *See—*
Kinas, Henry, 4,551,046, Cl. 409-82.000.

Societe Chimique des Charbonnages S.A.: *See—*
Takayuki, Okada; Hisao, Tanaka; Ken-Ichi, Sawara; and Tsutomu, Konaka, 4,551,509, Cl. 526-68.000.

Societe d'Etudes de Machines Thermiques (SEMT): *See—*
Coulin, Jean-Paul, 4,550,647, Cl. 92-157.000.

Societe d'Exploitation du Laboratoire Abadie: *See—*
Benquey, Jean; and Benquey, Louisa F., 4,551,790, Cl. 362-23.000.

Societe Industrielle de Transports Automobiles "SITA": *See—*
Demenais, Claude, 4,551,055, Cl. 414-293.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Fraignier, Bernard; and Gery, Daniel E., 4,550,617, Cl. 73-862.040.

Societe Nationale Industrielle et Aerospatiale: *See—*
Jourdan, Jean-Marie; Betelle, Jean; and Bougon, Philippe M. M., 4,551,632, Cl. 307-9.000.

Sodini, Giancarlo: *See—*
Canella, Marco; Marghinotti, Daniele; Bernardi, Adriano; and Sodini, Giancarlo, 4,551,335, Cl. 426-44.000.

Sokol, David G., to Dickey-john Corporation. Modular vehicular monitoring system. 4,551,801, Cl. 364-424.000.

Sokola, Raymond L.: *See—*
Moutrie, Michael F.; Sokola, Raymond L.; and Choi, Charles, 4,551,696, Cl. 333-204.000.

Solansky, Svatoplug: *See—*
Behnke, Horst; Michaud, Horst; Seeholzer, Joseph; and Solansky, Svatoplug, 4,551,166, Cl. 71-30.000.

Solar Power Laboratories, Ltd.: *See—*
Moravnik, Zvi, 4,550,712, Cl. 126-439.000.

Solis, Charles R.: *See—*
Mittal, Faquir C.; and Solis, Charles R., 4,551,787, Cl. 361-387.000.

Sommer, Reinhold. Tennis racket frame. 4,550,909, Cl. 273-73.00G.

Sone, Yoshiaki: *See—*
Ohkubo, Yoshio; Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; Omae, Masanori; and Hiramoto, Masao, 4,551,757, Cl. 358-212.000.

Sonoda, Michiaki: *See—*
Higashiguchi, Toshiaki; and Sonoda, Michiaki, 4,551,767, Cl. 358-257.000.

Sony Corporation: *See—*
Machida, Yukihiko; Nakano, Kenji; and Takahashi, Takao, 4,551,771, Cl. 360-19.100.
Narita, Takato, 4,551,749, Cl. 358-28.000.
Ogawa, Masumi; Kawakami, Hiromi; and Meguro, Toshiaki, 4,551,756, Cl. 358-197.000.
Sase, Masatoshi; and Yamanaka, Seisuke, 4,551,761, Cl. 358-213.000.
Wachi, Shigeaki, 4,551,661, Cl. 318-314.000.

Sooudi, Saeed K.: *See—*
Cooper, Stephen M.; and Sooudi, Saeed K., 4,550,976, Cl. 350-96.230.

Sotobayashi, Hideto: *See—*
Asmussen, Frithjof; Sotobayashi, Hideto; Chen, Jiang-Tsun; and Schnabel, Wolfram, 4,551,414, Cl. 430-270.000.

Southwire Company: *See—*
Sanders, Eugene T., 4,550,583, Cl. 72-247.000.

Spaeth, Hans, to Maag Gear-Wheel and Machine Company Limited. Double-flank composite error tester. 4,550,508, Cl. 33-179.50C.

Spangler, Glenn E.; and Cox, John N., to Allied Corporation. Ion mobility spectrometer system with improved specificity. 4,551,624, Cl. 250-287.000.

Spector, George: *See—*
Mariano, Kenneth E.; and Spector, George, 4,550,534, Cl. 52-19.000.

Spectra-Physics, Inc.: *See—*
Bernhardt, Anthony F., 4,551,684, Cl. 330-4.300.

Speegle, Robert W. Seam pulling tool for tearing out welded seams of containers. 4,550,634, Cl. 81-418.000.

Speidell, James L.: *See—*
Di Milia, Vincent; Maldonado, Juan R.; Speidell, James L.; and Warlaumont, John M., 4,551,192, Cl. 156-345.000.

Spencer-Watkins, Harry C.: *See—*
Stratford, Michael G.; and Spencer-Watkins, Harry C., 4,550,745, Cl. 137-99.500.

Sperry Corporation: *See—*
Clark, Thomas R.; and Griffith, Carl D., 4,551,804, Cl. 364-434.000.
Cohn, Martin; Jacoby, George V.; and Vinding, Jorgen P., 4,551,773, Cl. 360-40.000.
de Jong, Joannes N. M.; and Earle, Richard L., 4,551,699, Cl. 336-135.000.
Kritz, Jacob A., 4,551,826, Cl. 367-150.000.
Mittal, Faquir C.; and Solis, Charles R., 4,551,787, Cl. 361-387.000.
Roeder, Robert S.; and Sterghos, Peter M., 4,551,728, Cl. 343-761.000.

Spicer, William E.: *See—*
Smallbrook, Henry C.; and Spicer, William E., 4,550,460, Cl. 7-164.000.

Spiller, Robert S. Disposable or reusable animal trap. 4,550,523, Cl. 43-61.000.

Spisz, Albert S., to Burroughs Corporation. Coupled drive shaft. 4,551,118, Cl. 464-182.000.

Sprague, William H. Wall-contained electric water heating tank. 4,551,612, Cl. 219-312.000.

Spruck, George T. Device for determining time of sunrise and sunset. 4,551,027, Cl. 368-15.000.

SRI International: *See—*
Wood, Bernard J.; Brittain, Robert D.; and Sancier, Kenneth M., 4,551,155, Cl. 48-197.00R.

Stabeg Apparatebaugesellschaft m.b.H.: *See—*
Salansky, Werner, 4,551,791, Cl. 362-296.000.

Stabenow, Joachim: *See—*
Marosi, Laszlo; Schlimper, Hans-Ulrich; Schwarzmann, Matthias; and Stabenow, Joachim, 4,551,321, Cl. 423-329.000.

Stadler, Ewald: *See—*
Schettler, Helmut; and Stadler, Ewald, 4,551,789, Cl. 361-406.000.

Stahura, Daniel W.; and Richey, Daniel D., to General Motors Corporation. Electric starting system. 4,551,630, Cl. 290-38.00R.

Stammely, Thomas E.: *See—*
Annunziata, Eugene J.; and Stammely, Thomas E., 4,551,671, Cl. 324-51.000.

Stanadyne, Inc.: *See—*
Djordjevic, Ilija, 4,550,702, Cl. 123-450.000.

Standard Oil Company: *See—*
Li, George S., 4,551,156, Cl. 55-16.000.
Mark, Seymour, 4,551,179, Cl. 106-277.000.

Standard Oil Company (Indiana): *See—*
Miller, Jeffrey T.; and Hensley, Albert L., Jr., 4,551,572, Cl. 585-454.000.

Standard Oil Company (Ohio), The: *See—*
Pesa, Frederick A.; and Graham, Anne M., 4,551,442, Cl. 502-178.000.

Stant Inc.: *See—*
Smith, Dwight D.; and Cranfill, Leonard J., 4,550,850, Cl. 220-253.000.

Staron, James S.: *See—*
Asick, John C.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., 4,550,960, Cl. 339-14.00R.

Stearman, William L., to UOP Inc. Corrosion prevention and cleaning of air-cooled heat exchangers. 4,551,181, Cl. 134-22.110.

Stearns, Stanley D. Variable tensioning system for shear seal valves. 4,550,742, Cl. 137-14.000.

Stefan, Alexander. Earth boring machine and working crane. 4,550,787, Cl. 175-88.000.

Stegman, Todd R.: *See—*
Herberg, Michael J.; Macander, Rudolph F.; and Stegman, Todd R., 4,551,515, Cl. 528-18.000.

Stein Industrie: *See—*
Fournier, Jean; Patron, Henri; and Meynard, Paul, 4,550,777, Cl. 165-162.000.

Steinhaus, Harald: *See—*
Becker, Erwin; Ehrfeld, Wolfgang; Fritz, Wolfgang; Steinhaus, Harald; and Bley, Peter, 4,551,157, Cl. 55-17.000.

Sterghos, Peter M.: *See—*
Roeder, Robert S.; and Sterghos, Peter M., 4,551,728, Cl. 343-761.000.

Sterling Drug Inc.: *See—*
Gorman, William G.; and Byron, David A., 4,551,135, Cl. 604-82.000.
Harrison, Thomas S., 4,550,855, Cl. 221-63.000.

Stevecleave Limited: *See—*
Whitlam, Joseph E.; and Richards, Alwyn H., 4,550,541, Cl. 52-309.800.

Stewart-Warner Corporation: *See—*
Hamilton, Lawrence E.; and Rutili, Renzo N., 4,551,598, Cl. 200-314.000.

Stewart, William J.: *See—*
Reid, Douglas C. J.; and Stewart, William J., 4,551,020, Cl. 356-73.100.

Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Resele, Peter, 4,550,927, Cl. 280-281.00R.

Stiefel Laboratories, Inc.: *See—*
Stiefel, Werner K.; and Nicolai, Daniel W., 4,551,480, Cl. 514-680.000.

Stiefel, Werner K.; and Nicolai, Daniel W., to Stiefel Laboratories, Inc. Compositions for the treatment of psoriasis. 4,551,480, Cl. 514-680.000.

Stiff, Rodney A., to Toft Bros. Industries Ltd. Sugar cane harvesting method and apparatus. 4,550,552, Cl. 56-13.900.

Stillman, Theodore. Vitamin E compositions and methods. 4,551,332, Cl. 424-195.100.

Stoepel, Kurt: *See—*
Wehinger, Egbert; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 4,551,467, Cl. 514-334.000.

Stojek, Dieter, to Ford Motor Company. Carburetor with a slidable throttle member controlling the air induction passage. 4,551,284, Cl. 261-44.00B.

Stone & Webster Engineering Corp.: *See—*
Bhojwani, Arju H.; and Woebcke, Herman N., 4,550,769, Cl. 165-1.000.

Storace, Anthony; and Ketchman, Jeffery, to AMF Inc. Method and apparatus for the simulation of the build up of the tread on a tire carcass. 4,551,806, Cl. 364-473.000.

Storage Technology Corporation: *See—*
Permut, Ronald; Cope, Robert; Apple, James; Epina, August P.; and Munro, Frederick G., 4,550,884, Cl. 242-189.000.
Sliger, David E., 4,551,772, Cl. 360-46.000.

Stough, Donald M., to Westinghouse Electric Corp. Combustion control system. 4,551,088, Cl. 431-76.000.

Stoutamore, James F.: *See—*
Woodworth, Raymond D.; Stoutamore, James F.; and Vanderhoek, Philip S., 4,550,747, Cl. 137-487.500.

Strack, Hans; Roebke, Wolfgang; Kneitel, Dieter; and Parr, Ehrfried, to Degussa Aktiengesellschaft; and Henkel Kommandelgesellschaft auf Aktien. Process for preparing zeolite powder of type A (IV). 4,551,322, Cl. 423-329.000.

Strahs, Martin P., to Quickie Manufacturing Corporation. Spring clip for push broom. 4,550,829, Cl. 206-361.000.

Stratford, Michael G.; and Spencer-Watkins, Harry C., to Burroughs Wellcome Co. Device for discharging a mixture of two liquids. 4,550,745, Cl. 137-99.500.

Straub, Ferdinand; Sanner, Axel; Seib, Karl; and Lang, Siegfried, to BASF Aktiengesellschaft. Water-soluble polymers having a low hygroscopicity. 4,551,512, Cl. 526-264.000.

Stryker, Howard Y.: *See—*
Callahan, David J.; Mazzawy, Robert S.; Stryker, Howard Y.; and Kelly, James B., 4,550,564, Cl. 60-39.093.

Stuaffer Chemical Company: *See—*
Alesandrini, Carlo G., Jr.; and Nady, Louie A., 4,551,325, Cl. 423-488.000.

Stubblefield, Jerry D., to Pensa, Inc. Basketball shoe sole. 4,550,510, Cl. 36-32.00R.

Stuhler, Herbert, to Hoechst Aktiengesellschaft. Process for the preparation of polyglycerols. 4,551,561, Cl. 568-619.000.

Stupak, Rimma I.: *See—*
Axenov, Ivan I.; Bren, Viktor G.; Padalka, Valentin G.; Sablev, Leonid P.; Stupak, Rimma I.; and Khoroshikh, Vladimir M., 4,551,221, Cl. 204-298.000.

Sturtevant, Inc.: *See—*
Saverse, Ronald R.; and Jones, Harold T., 4,551,241, Cl. 209-148.000.

Sucato, Edward. Baffle for canteens to prevent liquid splashing sounds. 4,550,848, Cl. 220-22.000.

Suezawa, Mitsuru: *See—*
Kitamura, Kazuo; and Suezawa, Mitsuru, 4,551,516, Cl. 528-18.000.

Sugasawa, Tsutomu; Toyoda, Tatsuo; and Sasakura, Kazuyuki, to Shionogi & Co., Ltd. Process for production of 2-haloacetylphenols. 4,551,554, Cl. 568-322.000.

Sugaya, Masami; Sawada, Daisaku; and Okawa, Susumu, to Toyota Jidosha Kabushiki Kaisha. Hydraulic apparatus for a continuously variable transmission. 4,551,119, Cl. 474-28.000.

Sugihara, Hironobu, to Kabushiki Kaisha AG. Radio controlled yacht and sail for the latter. 4,551,113, Cl. 446-154.000.

Sugimoto, Hiroshi; and Fukada, Koichi, to Mitsubishi Denki Kabushiki Kaisha. Abnormal noise detector for inspecting gear units. 4,550,604, Cl. 73-587.000.

Sugimoto, Hiroshi: *See—*
Fukada, Koichi; and Sugimoto, Hiroshi, 4,550,603, Cl. 73-587.000.

Sugimoto, Naohiko; and Kojima, Tetsuro, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,551,420, Cl. 430-505.000.

Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, to Fuji Photo Film Co., Ltd. Method of developing silver halide photographic material. 4,551,419, Cl. 430-445.000.

Sugimoto, Tadao; Ikeda, Hideo; and Nakamura, Koki, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 4,551,421, Cl. 430-509.000.

Sugiyama, Masami; Shibuya, Hiroko; and Kasahara, Yasushi, to Fujirebio Kabushiki Kaisha. Derivatives of dipeptide and their use in determining the activity of carboxypeptidase A. 4,551,272, Cl. 260-112.50R.

Suisman, A. Eileen: *See—*
Burke, William L., Sr.; Marple, Elwood; and Suisman, A. Eileen, 4,550,602, Cl. 73-428.000.

Sulkowski, Theodore S.; Silver, Paul J.; Mascitti, Albert A.; and Bender, Reinhold H. W., to American Home Products Corporation. Aralkyl or aryloxyalkyl 1,7-naphthyridine-3-carboxylic acid esters. 4,551,534, Cl. 546-123.000.

Sullivan, Dale W.; Janssen, Kermit W.; and Mitchell, Andrew, to CertainTeed Corporation. Well screen. 4,550,778, Cl. 166-234.000.

Sulzer Brothers Ltd.: *See—*
Holik, Herbert; and Kurtz, Rudiger, 4,551,204, Cl. 162-336.000.

Sumitomo Chemical Company, Limited: *See—*
Otake, Katsumasa; Ikeda, Takashi; Omura, Takashi; and Imada, Kunihiko, 4,551,150, Cl. 8-496.000.
Sato, Hiroshi; and Nakamura, Shuzo, 4,551,568, Cl. 568-939.000.
Shiga, Akinobu; Kakugo, Masahiro; Kojima, Junpei; and Wakatsuki, Kizuku, 4,551,501, Cl. 525-88.000.

Sumiyosii, Kikuo; Sato, Eiji; Hirai, Kazuo; Miyasaka, Kingo; and Izumi, Masayoshi, to Oiles Industry Co., Ltd. Heat-resistant shift member. 4,551,393, Cl. 428-609.000.

Sun Refining and Marketing Company: *See—*
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,551,559, Cl. 568-454.000.

Sundstrand Corporation: *See—*
Beck, Richard, Jr., 4,550,645, Cl. 91-499.000.

Sundstrand Data Control, Inc.: *See—*
Paterson, Noel S., 4,551,723, Cl. 340-946.000.

Sung, Rodney L., to Texaco Inc. Alcohol fuel anti-wear additive. 4,551,152, Cl. 44-78.000.

Superior Plastic Products Corp.: *See—*
Whitford, Alan, 4,550,831, Cl. 206-439.000.

Surgidyne Inc.: *See—*
McNeil, Charles B., 4,551,141, Cl. 604-317.000.

Surjaatmadja, Jim B.: *See—*
Mosier, John E.; Surjaatmadja, Jim B.; and Penn, Jack C., 4,551,766, Cl. 358-256.000.

Sutryn, Caroll S.; and Maietta, Michael G., to West Company, The. Multicompartment medicament container. 4,550,825, Cl. 206-222.000.

Suzuki, Atsushi; Ninomiya, Masakazu; Maeda, Katsuya; and Kawashima, Yutaka, to Nippondenso Co., Ltd. Air-fuel ratio control in an internal combustion engine. 4,550,701, Cl. 123-436.000.

Suzuki, Eiichi, to Canon Kabushiki Kaisha. Ink-jet recording method. 4,551,736, Cl. 346-140.00R.

Suzuki, Hidetsugu: *See—*
Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Suzuki, Hirokazu: *See—*
Takeda, Hirofumi; and Suzuki, Hirokazu, 4,551,639, Cl. 307-455.000.

Suzuki, Hisao: *See—*
Horie, Motonobu; Hirabayashi, Toshiyasu; and Suzuki, Hisao, 4,550,821, Cl. 198-416.000.

Suzuki, Kensuke, to Hitachi, Ltd. High switching speed semiconductor device containing graded killer impurity. 4,551,744, Cl. 357-64.000.

Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, to Victor Company of Japan; and Mitsubishi Mining & Cement Co., Ltd. Loudspeaker diaphragm made of a molded, sintered ceramic body. 4,550,797, Cl. 181-167.000.

Suzuki, Masami: *See—*
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, 4,550,480, Cl. 29-156.40R.

Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Motor controlling switch device. 4,551,660, Cl. 318-293.000.

Suzuki, Masayoshi; and Saigo, Kazuhide, to NEC Corporation. Method of forming patterns in manufacturing microelectronic devices. 4,551,417, Cl. 430-316.000.

Suzuki, Shingo: *See—*
Inoue, Masao; and Suzuki, Shingo, 4,550,977, Cl. 350-128.000.

Suzuki, Tetsuo; and Tazaki, Shigemitsu, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 4,551,735, Cl. 346-140.00R.

Suzuki, Yasutoshi: *See—*
Itoh, Hiroyasu; Suzuki, Yasutoshi; Horiuchi, Yasuhiro; and Hara, Kunihiko, 4,551,669, Cl. 323-268.000.

Svoboda Entwicklung AG, Firma: *See—*
Svoboda, Rudolf, 4,550,666, Cl. 108-96.000.

Svoboda, Rudolf, to Svoboda Entwicklung AG, Firma. Equipment stand. 4,550,666, Cl. 108-96.000.

Swartz, Henry D.; and Miller, Alan H., to Anechoic Systems Company, Inc. Acoustic panel and enclosure. 4,550,798, Cl. 181-201.000.

Swift, Steven G.: *See—*
McFarlane, Glenton P.; and Swift, Steven G., 4,550,743, Cl. 137-68.100.

Swinehart, Steven L.; and Kuhn, Werner H., to Nisus Video Incorporated. Diagonal sweep shutter mechanism for video tape camera. 4,551,763, Cl. 358-225.000.

SWS Silicones Corporation: *See—*
Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., 4,551,350, Cl. 427-389.900.

Symborski, Alex P.: *See—*
Frailey, Richard C.; and Symborski, Alex P., 4,551,160, Cl. 65-2.000.

Syntex (U.S.A.) Inc.: *See—*
Jones, Gordon H.; Venuti, Michael C.; Alvarez, Robert; and Bruno, John J., 4,551,459, Cl. 514-267.000.
Pirio, Marcel R.; and Singh, Prithipal, 4,551,275, Cl. 260-239.00D.

Syrop, Alan N.: *See—*
Temple, Stephen; Jones, Nigel J.; and Syrop, Alan N., 4,550,472, Cl. 17-1.00R.

Szabo, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, 4,551,462, Cl. 514-283.000.

Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Palosi, Eva; Kiss, Bela; Ezer, Elemer; and Hajos, Gyorgy, to Richter Gedeon Vegyeszeti Gyar Rt. Ebumane derivatives, process for their preparation and pharmaceutical compositions containing them. 4,551,462, Cl. 514-283.000.

Szeberenyi, Szabolcs: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.

Szmadzinski, John A.: *See—*
Wiersema, Delbert; and Szmadzinski, John A., 4,550,893, Cl. 248-222.400.

Szporny, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.

Szuminski, Gary F., to Rolls-Royce Inc. Streamlined nozzle for turbomachines. 4,550,877, Cl. 239-265.350.

Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, to Eisai Co., Ltd. Analgesic peptide and process for the preparation thereof. 4,551,273, Cl. 260-112.50E.

Tachihara, Satoru, to Asahi Optical Co., Ltd. Small size telephoto lens. 4,550,987, Cl. 350-454.000.

Tachikawa Spring Co., Ltd.: *See—*
Ohnishi, Yutaka, 4,550,872, Cl. 228-48.000.
Sakamoto, Takao, 4,550,949, Cl. 297-284.000.

Tadokoro, Eiichi: *See—*
Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,551,386, Cl. 428-323.000.

Tagaya, Ryosaku, to Eisai Co., Ltd. Testing method by a spectroscopic photometry using three wavelengths of light and a device for said method. 4,551,022, Cl. 356-406.000.

Takahashi, Akira: *See—*
Nishi, Kohichi; and Takahashi, Akira, 4,550,997, Cl. 354-459.000.

Takahashi, Fumio: *See—*
Kubo, Takeshi; Kawano, Junji; Takahashi, Fumio; and Yamaguchi, Tsutomu, 4,551,729, Cl. 346-1.100.

Takahashi, Hideyuki: *See—*
Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, 4,551,404, Cl. 430-59.000.

Takahashi, Hitoshi; Yamaguchi, Satoru; and Nunokawa, Hideo, to Fujitsu Limited. Multiplexing input circuit. 4,551,634, Cl. 307-243.000.

Takahashi, Kiyoshi; Konagai, Makoto; Yoshitomi, Toshihiko; and Omori, Takeshi, to Mitsubishi Chemical Industries Limited. Substrate for amorphous silicon semiconductor material. 4,551,575, Cl. 136-255.000.

Takahashi, Mineo: *See—*
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, 4,550,480, Cl. 29-156.40R.

Takahashi, Takao: *See—*
Machida, Yukihiko; Nakano, Kenji; and Takahashi, Takao, 4,551,771, Cl. 360-19.100.

Takahashi, Yoshiteru; and Ogawa, Masataka, to Fuji Photo Film Co., Ltd. Disc type brushless motor. 4,551,645, Cl. 310-46.000.

Takahata, Satoru: *See—*
Kobayashi, Waichi; and Takahata, Satoru, 4,551,211, Cl. 204-37.600.

Takasaki, Shuichi, to Matsushita Electric Works, Ltd. Construction of a connection for flat cables. 4,551,579, Cl. 174-88.00R.

Takasawa, Yoshio: *See—*
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,551,478, Cl. 514-603.000.

Takasu, Yoshio: *See—*
Hiro, Masaaki; Takasu, Yoshio; Ishikawa, Shozo; Katagiri, Kazuharu; and Takahashi, Hideyuki, 4,551,404, Cl. 430-59.000.

Takayuki, Okada; Hisao, Tanaka; Ken-Ichi, Sawara; and Tsutomu, Konaka, to Societe Chimique des Charbonnages S.A. Process for manufacturing homopolymers and copolymers of ethylene. 4,551,509, Cl. 526-68.000.

Takeda Chemical Industries, Ltd.: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,551,532, Cl. 546-22.000.

Takeda, Hirofumi; and Suzuki, Hirokazu, to Fujitsu Limited. Emitter coupled logic circuit controlled by a set input signal. 4,551,639, Cl. 307-455.000.

Takeda, Koji; Akahane, Masao; Mukaiyama, Fumiaki; and Kudo, Yasuhiko, to Kabushiki Kaisha Suwa Seikosha. FSK Demodulation circuit. 4,551,846, Cl. 375-82.000.

Takekoshi, Yashitaka: *See—*
Amemiya, Yoichi; Ishida, Hiroshi; Takekoshi, Yashitaka; and Ushiyama, Shigeyuki, 4,551,676, Cl. 324-208.000.

Takemae, Yoshihiro; and Kabashima, Katsuhiko, to Fujitsu Limited. Dynamic semiconductor memory device. 4,551,822, Cl. 365-222.000.

Takematsu, Hikaru: *See—*
Sekiguchi, Koichi; Takematsu, Hikaru; Yamamoto, Kazuyuki; and Kubo, Teruyuki, 4,551,583, Cl. 179-99.00M.

Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yunji; and Nakanishi, Akira, to Toyo Soda Manufacturing Company, Limited. Metamethoxy aryl carbamate derivatives and herbicides. 4,551,169, Cl. 71-94.000.

Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, to Hitachi, Ltd. Solid-state imaging device. 4,551,742, Cl. 357-31.000.

Takeuchi, Shuhei: *See—*
Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, 4,551,033, Cl. 400-308.000.

Takeuchi, Yukihisa, to NGK Insulators, Ltd. Process of manufacturing ceramic circuit board. 4,551,357, Cl. 427-96.000.

Takumi, Nobusuke: *See—*
Honma, Ichiro; Koyama, Arata; Amano, Masatoshi; and Takumi, Nobusuke, 4,551,327, Cl. 423-594.000.

Talish, Roger J.; and Banko, Victor F., to Electro-Biology, Inc. Electromagnetic coil insert for an orthopedic cast or the like. 4,550,714, Cl. 128-1.500.

Talley, John J., to General Electric Company. Method for making polymethylated phenols. 4,551,563, Cl. 568-804.000.

Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, to VEB Stahl-und Walzwerk "Wilhelm Florin". Method for improving the straightness of rolled steel. 4,551,183, Cl. 148-12.00R.

Tamura, Hifumi: *See—*
Noda, Tamotsu; Tamura, Hifumi; and Okano, Hiroshi, 4,551,650, Cl. 313-362.100.

Tamura, Masao: *See—*
Takemoto, Iwao; Ohba, Shiya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Tamura, Masao; and Miyao, Masanobu, 4,551,742, Cl. 357-31.000.

Tamura, Tadashi; Nakao, Etsuro; and Yamazaki, Hiroaki, to Carl Freudenberg, Firma. Electrode separator for an electric cell. 4,551,402, Cl. 429-254.000.

Tamura, Takahiro: *See—*
Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, 4,551,082, Cl. 418-55.000.

Tanaka, Akio; and Kamo, Yasuo, to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Vertical type pulverizing and classifying apparatus. 4,550,879, Cl. 241-52.000.

Tanaka, Akira; Tsunekawa, Takahiko; Seiki, Kazuo; and Nakamura, Haruyoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method for piecing fasciated yarn. 4,550,560, Cl. 57-261.000.
Tanaka, Itsuo: *See*—
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,550,578, Cl. 68-5.00E.
Tanaka, Shuji: *See*—
Aoki, Matsuyuki; and Tanaka, Shuji, 4,551,002, Cl. 355-3.0DD.
Tanaka, Teruaki: *See*—
Ehiro, Takashi; Tanaka, Teruaki; and Yamanaka, Eisuke, 4,550,582, Cl. 72-234.000.
Tanaka, Teruo: *See*—
Hoshino, Kazuo; Tanaka, Teruo; and Ito, Kenjiro, 4,550,487, Cl. 29-527.700.
Tanaka, Yasuhiro: *See*—
Asaka, Urataro; Kanai, Shigeo; Tanaka, Yasuhiro; and Iwamoto, Kazuya, 4,551,074, Cl. 417-366.000.
Tanaka, Yasushi: *See*—
Ogawa, Hisashi; Tanaka, Yasushi; and Sato, Yoshimitsu, 4,550,923, Cl. 280-5.00A.
Tanaka, Yoshimasa: *See*—
Kikuchi, Yasuyuki; Matsumoto, Eiichi; and Tanaka, Yoshimasa, 4,550,695, Cl. 123-41.120.
Tanaka, Yutaka: *See*—
Nishizawa, Taiji; and Tanaka, Yutaka, 4,551,753, Cl. 358-140.000.
Tang, Yui K.: *See*—
Chan, Lo K.; Tang, Yui K.; and Chang, Jui, 4,550,871, Cl. 228-4.500.
Taniguchi, Mitsuyuki: *See*—
Ishida, Hiroshi; and Taniguchi, Mitsuyuki, 4,551,662, Cl. 318-316.000.
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, to Minolta Camera Kabushiki Kaisha. Device for providing a camera system with an information for a focus adjustment. 4,550,993, Cl. 354-402.000.
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Hosomizu, Hiroshi; Niwa, Masatake; Inoue, Toru; and Sekida, Minoru, to Minolta Camera Kabushiki Kaisha. Flash photography system. 4,550,996, Cl. 354-416.000.
Taniguti, Ryosuke, to Mitsubishi Denki Kabushiki Kaisha. Ground detection arrangement for an A.C. generator. 4,551,811, Cl. 364-481.000.
Tanikawa, Minoru; Imaizumi, Yutaka; Suzuki, Masami; Aiba, Kazumi; Sato, Minoru; and Takahashi, Mineo, to Hitachi, Ltd. Method of producing scroll type compressor. 4,550,480, Cl. 29-156.40R.
Tanji, Shigeo; and Wakatsuki, Noboru, to Fujitsu Limited. Surface acoustic device having multistrip coupler comprised of alternate coupled and uncoupled strips. 4,551,695, Cl. 333-195.000.
Tank, Eggert: *See*—
Wiegard, Klaus; Kinast, Karlheinz; Kleinekathofer, Wolfgang; and Tank, Eggert, 4,551,396, Cl. 428-678.000.
Tapeswitch Corporation of America: *See*—
Koenig, Robert H.; and Lovell, Walter, 4,551,595, Cl. 200-86.00R.
Taprogge Gesellschaft mbH: *See*—
Schmitz, Gunther, 4,550,466, Cl. 15-104.06R.
Tarabout, Alain: *See*—
Grauel, Christoph; Duplessis, Philippe; and Tarabout, Alain, 4,551,852, Cl. 455-33.000.
Tarozzi, R. A.; and Formhals, C., to King-Seeley Thermos Co. Leakproof dispensing container. 4,550,864, Cl. 222-209.000.
Tate, Ralph, Jr.; and Woods, John T., to Whirlpool Corporation. Center rail assembly for refrigerator. 4,550,576, Cl. 62-441.000.
Tateosian, Louis H.; and Wilson, W. Donald, to Dentsply Research & Development Corp. Interpenetrating polymer network compositions. 4,551,486, Cl. 523-212.000.
Taylor, Paul: *See*—
Gulla, Michael; Taylor, Paul; and Oddi, Michael J., 4,551,409, Cl. 430-192.000.
Taylor, Paul D.; and Mocella, Michael T., to Atlantic Richfield Company. Decomposition of hydroperoxides in the presence of homogeneous binary catalysts. 4,551,553, Cl. 568-311.000.
Tazaki, Shigemitsu: *See*—
Suzuki, Tetsuo; and Tazaki, Shigemitsu, 4,551,735, Cl. 346-140.00R.
Teague, James R.: *See*—
Dragoo, Robert E.; Teague, James R.; Burberry, Lee M.; Bailey, David C.; Bardos, Andrew M.; and Grossman, Barry G., 4,551,829, Cl. 370-3.000.
Tecumseh Products Company: *See*—
Campen, Kenneth W., 4,550,697, Cl. 123-149.00D.
Teerman, Richard F.; Bosch, Russell H.; and Wirth, Ricky C., to General Motors Corporation. Electromagnetic unit fuel injector with piston assist solenoid actuated control valve. 4,550,875, Cl. 239-88.000.
Tektronix, Inc.: *See*—
Andrews, Roland E.; and Addis, John L., 4,551,636, Cl. 307-264.000.
Causley, Gary C.; and Rosback, Martin D., 4,551,734, Cl. 346-140.00R.
Metz, Arthur J., 4,551,656, Cl. 315-392.000.
Rogers, Jerrold J., 4,551,732, Cl. 346-110.00R.
Telediffusion de France: *See*—
Botrel, Jose ; Harari, Sami; Briere, Joseph; and Louvel, Bernard, 4,551,839, Cl. 371-35.000.
Telefonaktiebolaget LM Ericsson: *See*—
Ingre, Lars P., 4,550,483, Cl. 29-416.000.
Wall, Lars E.; and Jonsson, John E., 4,551,752, Cl. 358-113.000.
Telegraph & Telephone Pub. Corp.: *See*—
Sekiguchi, Koichi; Takematsu, Hikaru; Yamamoto, Kazuyuki; and Kubo, Teruyuki, 4,551,583, Cl. 179-99.00M.
Telle, Helmut: *See*—
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,551,265, Cl. 252-301.170.
Temple, Stephen; Jones, Nigel J.; and Syrop, Alan N., to Devro, Inc. Apparatus for and method of shirring a tubular casing. 4,550,472, Cl. 17-1.00R.
Tenzer, Abraham I., to Bio-Organics, Inc. Microbial plant growth promoter. 4,551,164, Cl. 71-6.000.
Tepley, Judy M.: *See*—
Johnson, Carter F.; Larson, Cheryl L.; and Tepley, Judy M., 4,550,758, Cl. 160-271.000.
Terumo Kabushiki Kaisha: *See*—
Shinohara, Shuichi, 4,551,138, Cl. 604-262.000.
Shinohara, Shuichi, 4,551,140, Cl. 604-262.000.
Teshima, Daisuke: *See*—
Koizumi, Satoru; Furuhara, Hiroshi; and Teshima, Daisuke, 4,551,775, Cl. 360-74.100.
Teshima, Hitoshi, to Toyota Jidosha Kabushiki Kaisha. Exhaust support system. 4,550,795, Cl. 180-296.000.
Testa, Raymond T.: *See*—
Lee, Taikwang M.; Borders, Donald B.; Goodman, Joseph J.; Testa, Raymond T.; Maiese, William M.; and Labeda, David P., 4,551,533, Cl. 546-35.000.
Tetragenics, Inc.: *See*—
Cookson, John A.; Schatzka, Richard L.; Echard, Richard A.; and Scheer, Gary W., 4,551,718, Cl. 340-825.160.
Tettke, Wolfgang: *See*—
Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, 4,551,183, Cl. 148-12.00R.
Texaco Inc.: *See*—
Kuhlmann, Erven J., 4,551,224, Cl. 208-10.000.
Sung, Rodney L., 4,551,152, Cl. 44-78.000.
Textron Inc.: *See*—
DeCaro, Charles J., 4,550,476, Cl. 29-26.00A.
Thaden, Theron J.: *See*—
Watts, George T.; and Thaden, Theron J., 4,550,827, Cl. 206-304.000.
Tharp, Charles P.: *See*—
Riley, Thomas C., Jr.; Tharp, Charles P.; and Lapka, Galen G., 4,551,148, Cl. 604-890.000.
Theissen, Robert J., to Rhone-Poulenc, Inc. 2-Nitro-5-(substituted-phenoxy) phenylalkanone oxime and imine derivatives as herbicides. 4,551,171, Cl. 71-121.000.
Therma-Tru Corp.: *See*—
Thorn, John E., 4,550,540, Cl. 52-309.400.
Thielscher-Electronic GmbH: *See*—
Benzinger, Hans, 4,551,686, Cl. 330-100.000.
Thoeny, Theodore T. Method for forming structures. 4,550,544, Cl. 52-741.000.
Thoma, Martin, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Method for recognizing structural inhomogeneities in titanium alloy test samples including welded samples. 4,551,434, Cl. 436-5.000.
Thomas & Betts Corporation: *See*—
Izraeli, Hyman, 4,550,965, Cl. 339-47.00R.
Thomas, Erwin: *See*—
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,551,318, Cl. 423-265.000.
Thomas, Geoffrey N.: *See*—
Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., 4,551,468, Cl. 514-339.000.
Thomaschewski, Hubertus P.: *See*—
Harms, Engelbert G.; Schmeitz, Axel W.; and Thomaschewski, Hubertus P., 4,551,362, Cl. 427-180.000.
Thomey, Henry W., to Dyneer Corporation. Belt tensioner. 4,551,120, Cl. 474-135.000.
Thompson, John A. Process for preparing alkali metal ferrates. 4,551,326, Cl. 423-594.000.
Thompson, Kenneth J.; Rosenquist, Joel C.; and Foster, Wayne G., to Consolidated Foods Corporation. Material handling system. 4,550,670, Cl. 112-121.110.
Thompson, Randall D.: *See*—
Carlin, John A.; Mesch, William G.; Mobeck, William L.; Thompson, Randall D.; Henthorn, Jules B.; and Lopez, Benjamin L., 4,551,719, Cl. 340-825.360.
Thomson-CSF: *See*—
Bossaert, Jean, 4,551,679, Cl. 324-309.000.
Cornet, Jean; Lange , Francois; Le Carvennec, Francois; Lehureau, Jean-Claude; and Rascle, Roger, 4,551,733, Cl. 346-137.000.
Deman, Pierre; and Potage, Jean, 4,551,853, Cl. 455-72.000.
Depey, Maurice, 4,550,491, Cl. 29-577.00C.
Guidevaux, Jacques, 4,551,693, Cl. 333-22.00R.
Reymond, Jean C., 4,550,984, Cl. 350-404.000.
Thomson, Ian M., to Cable Belt Limited. Cables and process for forming cables. 4,550,559, Cl. 57-223.000.
Thoratec Laboratories Corporation: *See*—
Miles, Clive; and Schneiderman, Gary, 4,551,131, Cl. 604-31.000.
Thorn Emi Domestic Appliances Limited: *See*—
Buttery, Michael H. C., 4,551,616, Cl. 219-460.000.
Crossley, Peter W.; and Smith, Robert D., 4,551,617, Cl. 219-464.000.

Thorn, John E., to Therma-Tru Corp. Compression molded door assembly. 4,550,540, Cl. 52-309.400.
Thornley, W. Ray: *See*—
Lundahl, E. Cordell; Wiser, James G.; Thornley, W. Ray; and Jensen, Laurel H., 4,550,554, Cl. 56-294.000.
Tihanyi, Bela: *See*—
Erben, Edwin; Muhlratzer, August; Bertinger, Roland; Cornils, Boy; Tihanyi, Bela; and DeWin, Werner, 4,551,328, Cl. 423-607.000.
Tilley, Jefferson W., to Hoffmann-La Roche Inc. Pyrido[2,1-b]quinazoline derivatives useful as agents for treatment of allergic conditions and vascular disorders involving thrombosis. 4,551,460, Cl. 514-267.000.
Tillman, James J.: *See*—
Burzynski, Alfred J.; and Tillman, James J., 4,551,361, Cl. 427-164.000.
Timmermans, Franciscus W. A.; and Van Roessel, Frederik J., to U.S. Philips Corporation. Television line deflection circuit. 4,551,655, Cl. 315-370.000.
Tinti, Maria O.: *See*—
Cavazza, Claudio; and Tinti, Maria O., 4,551,477, Cl. 514-547.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; and Ueno, Hiroshi, 4,551,440, Cl. 502-119.000.
Nishikawa, Eiichiro; Shinya, Masuo; Ueda, Kayako; and Kaneko, Katsumi, 4,551,556, Cl. 568-403.000.
Toft Bros. Industries Ltd.: *See*—
Stiff, Rodney A., 4,550,552, Cl. 56-13.900.
Tohkai, Masaie: *See*—
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.
Tokuda, Ryuji: *See*—
Ohtsuka, Masanori; and Tokuda, Ryuji, 4,550,992, Cl. 354-173.110.
Tokunaga, Yoshikuni: *See*—
Akisue, Osamu; Yamada, Teruaki; Ueda, Shigeru; Tokunaga, Yoshikuni; and Yamada, Masato, 4,551,182, Cl. 148-12.00C.
Tokyo Denpa Kabushiki Kaisha: *See*—
Ishigami, Sumiyuki; and Sato, Mitsuru, 4,550,475, Cl. 29-25.350.
Tokyo Electric Co., Ltd.: *See*—
Kubota, Hiromi; and Kambe, Toshiyuki, 4,551,588, Cl. 200-33.00R.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Matsuo, Kenji; and Abou, Shouji, 4,551,683, Cl. 328-167.000.
Murakami, Kenji, 4,551,743, Cl. 357-50.000.
Murase, Koji, 4,550,509, Cl. 34-133.000.
Nakatomi, Yoshisugu; Uchida, Kohachi; and Hashimoto, Shinichi, 4,551,014, Cl. 355-75.000.
Ogawa, Atsushi, 4,551,691, Cl. 331-111.000.
Ozono, Jiro, 4,550,565, Cl. 60-39.182.
Saito, Tomotaka; and Nagao, Kenichi, 4,551,716, Cl. 340-711.000.
Sanbayashi, Takeshi; and Matsumoto, Hiroshi, 4,551,813, Cl. 364-569.000.
Tomita, Shuichi, to Pioneer Electronic Corporation. Mount for loudspeaker on vehicle panel. 4,550,796, Cl. 181-141.000.
Tomiyama, Hideki; and Satake, Masaki, to Fuji Photo Film Co., Ltd. Photographic element for color diffusion transfer with two neutralizing layers. 4,551,410, Cl. 430-215.000.
Tomizu, Motoyuki: *See*—
Nishi, Hiroyuki; Hayashi, Mitsuji; and Tomizu, Motoyuki, 4,551,592, Cl. 200-67.00D.
Toner Tanker K.K.: *See*—
Shimamura, Hayato; and Maeda, Osamitsu, 4,550,751, Cl. 138-93.000.
Tooson, Ronald: *See*—
Maher, Robert J.; and Tooson, Ronald, 4,551,016, Cl. 355-91.000.
Topfl, Werner: *See*—
Meyer, Willy; Gass, Karl; Topfl, Werner; Schurter, Rolf; and Pissiotas, Georg, 4,551,531, Cl. 544-320.000.
Toray Industries, Inc.: *See*—
Kitamura, Kazuo; and Suezawa, Mitsuru, 4,551,516, Cl. 528-18.000.
Toriuchi, Masaharu: *See*—
Koyama, Koichi; Noguchi, Yasuhiro; and Toriuchi, Masaharu, 4,551,423, Cl. 430-559.000.
Torley, Jozsef: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,551,465, Cl. 514-317.000.
Toroid Transformator AB: *See*—
Waldemar, Anders, 4,551,700, Cl. 336-192.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Piperidine derivatives and pharmaceutical compositions containing them. 4,551,465, Cl. 514-317.000.
Toyama, Masamichi, to Canon Kabushiki Kaisha. Automatic focus adjusting device. 4,550,995, Cl. 354-403.000.
Toyo Aerosol Industry Co., Ltd.: *See*—
Hirao, Katsumi; and Sasaki, Akira, 4,550,865, Cl. 222-402.210.
Toyo Boseki Kabushiki Kaisha: *See*—
Sakamoto, Junichi; Fujimoto, Hiroshi; and Miyake, Hideo, 4,551,215, Cl. 204-159.230.
Toyo Seikan Kaisha, Ltd.: *See*—
Maruhashi, Yoshitsugu; and Hirata, Sadao, 4,551,366, Cl. 428-35.000.
Toyo Soda Manufacturing Company, Limited: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yunji; and Nakanishi, Akira, 4,551,169, Cl. 71-94.000.
Toyoda Gosei Kabushiki Kaisha: *See*—
Manabe, Katsuhide; and Tsutsui, Masatoshi, 4,551,387, Cl. 428-336.000.
Toyoda, Tatsuo: *See*—
Sugasawa, Tsutomu; Toyoda, Tatsuo; and Sasakura, Kazuyuki, 4,551,554, Cl. 568-322.000.
Toyosu, Yasuhiro: *See*—
Akamatsu, Norio; and Toyosu, Yasuhiro, 4,550,735, Cl. 128-639.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Hamada, Makoto; Hasegawa, Junji; and Oosaka, Kuniaki, 4,550,948, Cl. 296-202.000.
Ogawa, Hisashi; Tanaka, Yasushi; and Sato, Yoshimitsu, 4,550,923, Cl. 280-5.00A.
Okumura, Takeshi; Warashina, Tomio; and Nakanishi, Kiyoshi, 4,550,699, Cl. 123-308.000.
Sugaya, Masami; Sawada, Daisaku; and Okawa, Susumu, 4,551,119, Cl. 474-28.000.
Teshima, Hitoshi, 4,550,795, Cl. 180-296.000.
Ueda, Masahiro, 4,550,596, Cl. 73-117.300.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Ootuka, Takayuki; and Murai, Toshiyuki, 4,550,703, Cl. 123-478.000.
Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; Tsuboi, Yoshimasa; and Kondo, Akinobu, 4,550,709, Cl. 126-96.000.
Trage, Burghard; Hintzen, Franz-Josef; and Leitz, Richard, to Balcke-Durr Aktiengesellschaft. Forced-air cooled condenser system. 4,550,570, Cl. 60-693.000.
Trager, Louis: *See*—
Rao, Srinivas T.; and Trager, Louis, 4,551,212, Cl. 204-52.00R.
Traiteur, Rene : *See*—
Zuber, Thierry; and Traiteur, Rene , 4,550,688, Cl. 122-360.000.
Traumuller, Otfried; and Weinberg, Gerd, to Furnier -u. Sperrholzwerk; and J. F. Werz Jr. KG Werzalit-Pressholzwerk. Stackable box with adjustable cover. 4,550,832, Cl. 206-509.000.
Traumuller, Otfried; and Weinberg, Gerd, to Furnier- u. Sperrholzwerk; and J. F. Werz Jr. KG Werzalit-Pressholzwerk. Stackable box. 4,550,847, Cl. 220-4.00F.
Traxler, Peter, to Ciba-Geigy Corporation. Rifamycin hydrazones, pharmaceutical compositions containing them and their use. 4,551,450, Cl. 514-183.000.
Treuner, Uwe D., to E. R. Squibb & Sons, Inc. 4-(3-Acylamino-2-oxo-1-azetidinyl)-4-oxo-2-butenoic acid. 4,551,277, Cl. 260-239.00A.
Trick, Robert E., to Medical Engineering Corporation. Capacitance device for medical implant. 4,550,720, Cl. 128-79.000.
Trick, Robert E.: *See*—
Finney, Roy P.; Trick, Robert E.; and Lynch, Henry W., 4,550,719, Cl. 128-79.000.
Tridgell, Eric J.: *See*—
Hall, Timothy J.; and Tridgell, Eric J., 4,550,527, Cl. 47-58.000.
Trigilio, Gaetano T. Wind and solar electric generating plant. 4,551,631, Cl. 290-55.000.
Trispel, Stephan; and Rau, Gunter, to Forschungsgesellschaft fur Biomedizinische Technik e.V. Arrangement for the carrying out of eye examination. 4,550,990, Cl. 351-243.000.
Triumph-Adler Aktiengesellschaft fur Buro- und Informationstechnik: *See*—
Fischer, Dieter, 4,551,622, Cl. 250-211.00R.
Trochoid Power Corporation: *See*—
Hoffmann, Ralph M., 4,551,083, Cl. 418-61.00A.
Trolle, Sten. Device for sorting and compressing packagings, principally beverage cans, in several stages. 4,550,658, Cl. 100-215.000.
Troup, Alan P.; Guttinger, Hannes; and Pfister, Gustav, to Cerberus AG. Method and apparatus for reporting dangerous conditions. 4,551,710, Cl. 340-505.000.
Troxell, Lillian H.: *See*—
Johnston, Howard; and Troxell, Lillian H., 4,551,170, Cl. 71-94.000.
Trubiano, Paolo C.; and Kasica, James J., to National Starch and Chemical Corporation. Compressible starches as binders for tablets or capsules. 4,551,177, Cl. 106-210.000.
TRW Inc.: *See*—
Drutchas, Gilbert H.; and Borza, John S., 4,550,597, Cl. 73-118.000.
Horton, Robert A.; and Jayaraman, Gowri S., 4,550,764, Cl. 164-122.200.
Tschang, Chung-Ji; and Marcinowski, Stefan, to BASF Aktiengesellschaft. Macroporous, hydrophilic enzyme carrier. 4,551,482, Cl. 521-53.000.
Tsuboi, Yoshimasa: *See*—
Nakamura, Kazuharu; Tsuboi, Yoshimasa; and Kondo, Akinobu, 4,550,709, Cl. 126-96.000.
Tsuchie, Takanori: *See*—
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,551,565, Cl. 568-864.000.
Tsuchiya, Chikara: *See*—
Nishimori, Eiji; Tsuchiya, Chikara; and Sano, Yoshiaki, 4,551,644, Cl. 307-573.000.
Tsuchiya, Hiroyoshi; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Otsuka, Hirotaka, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for processing image signal. 4,551,768, Cl. 358-283.000.
Tsuda, Hiroshi: *See*—
Miyashita, Kiyoshi; Ozeki, Fumitaka; and Tsuda, Hiroshi, 4,551,010, Cl. 355-25.000.

Tsuda, Tadashi; Hiramatsu, Seiichiro; Ohtsuka, Mitsugi; and Maeno, Tsuyoshi, to Nippondenso Co., Ltd. Apparatus and method for detecting obstacles in the path of a moving vehicle. 4,551,722, Cl. 340-904.000.

Tsuda, Yoshihisa; and Jackson, Denise M., to UOP Inc. *Paracoccus denitrificans*, FUM-14: a fumarase overproducer. 4,551,432, Cl. 435-232.000.

Tsudakoma Kogyo Kabushiki Kaisha: *See*—
Tsuji, Kanji, 4,550,753, Cl. 139-435.000.

Tsuji, Kanji, to Tsudakoma Kogyo Kabushiki Kaisha. Weft transfer control system in an air jet loom. 4,550,753, Cl. 139-435.000.

Tsunakawa, Hirokazu: *See*—
Fushimi, Kazuo; Tsunakawa, Hirokazu; and Yonahara, Kunio, 4,551,267, Cl. 252-511.000.

Tsunekawa, Takahiko: *See*—
Tanaka, Akira; Tsunekawa, Takahiko; Seiki, Kazuo; and Nakamura, Haruyoshi, 4,550,560, Cl. 57-261.000.

Tsutomu, Konaka: *See*—
Takayuki, Okada; Hisao, Tanaka; Ken-Ichi, Sawara; and Tsutomu, Konaka, 4,551,509, Cl. 526-68.000.

Tsutsui, Eiji: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Tsutsui, Masatoshi: *See*—
Manabe, Katsuhide; and Tsutsui, Masatoshi, 4,551,387, Cl. 428-336.000.

Tufte, Obert N.: *See*—
Betsch, Regis J.; Liu, Michael S.; and Tufte, Obert N., 4,551,394, Cl. 428-641.000.

Tufts, Wesley M., to Control Fluidics, Inc. Toilet system. 4,550,452, Cl. 4-319.000.

Tunc, Deger C., to Johnson & Johnson Products Inc. Absorbable bone fixation device. 4,550,449, Cl. 623-16.000.

Tungsten Industries, Inc.: *See*—
Fletcher, George R., Jr.; Messick, George H., Jr.; Roby, Charles K.; and Huey, Cecil O., Jr., 4,550,532, Cl. 51-288.000.

Turner, Jonathan S., to AT&T Bell Laboratories. Distributed monitoring of packet transmission delay. 4,551,833, Cl. 370-60.000.

Turnpaugh, George F.: *See*—
Anders, James V.; Anderson, Thomas W.; Geiger, Daniel D.; and Turnpaugh, George F., 4,551,670, Cl. 323-281.000.

Uatar DTD.: *See*—
Rogers, Phillip P., 4,551,146, Cl. 604-403.000.

UBE Industries, Ltd.: *See*—
Kobayashi, Waichi; and Takahata, Satoru, 4,551,211, Cl. 204-37.600.
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,551,565, Cl. 568-864.000.

Ubukata, Susumu; and Mizutani, Yasukazu, to Ubukata, Susumu. Thermally actuated switching device. 4,551,701, Cl. 337-97.000.

Uchida, Kohachi: *See*—
Nakatomi, Yoshisugu; Uchida, Kohachi; and Hashimoto, Shinichi, 4,551,014, Cl. 355-75.000.

Uchikawa, Naoshi: *See*—
Hazaki, Eiichi; Kuno, Hiroaki; Uchikawa, Naoshi; Tamura, Takahiro; Murayama, Akira; and Mizuno, Takao, 4,551,082, Cl. 418-55.000.

Uda, Taizo: *See*—
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,551,565, Cl. 568-864.000.

Ueda, Kayako: *See*—
Nishikawa, Eiichiro; Shinya, Masuo; Ueda, Kayako; and Kaneko, Katsumi, 4,551,556, Cl. 568-403.000.

Ueda, Masahiro, to Toyota Jidosha Kabushiki Kaisha. Apparatus for indicating an optimum shift position for a manual transmission installed in a vehicle. 4,550,596, Cl. 73-117.300.

Ueda, Shigeru: *See*—
Akisue, Osamu; Yamada, Teruaki; Ueda, Shigeru; Tokunaga, Yoshikuni; and Yamada, Masato, 4,551,182, Cl. 148-12.00C.

Ueki, Yoshiharu: *See*—
Sakaguchi, Shouzaburou; and Ueki, Yoshiharu, 4,551,774, Cl. 360-72.100.

Uematsu, Hiroaki; and Aoki, Junji, to Horiba, Ltd. Flow through system liquid membrane type electrode. 4,551,222, Cl. 204-417.000.

Uemura, Yukio: *See*—
Fujita, Masahiro; and Uemura, Yukio, 4,550,633, Cl. 81-56.000.

Ueno, Hiroshi: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; and Ueno, Hiroshi, 4,551,440, Cl. 502-119.000.

Ueno, Susumu: *See*—
Imada, Kiyoshi; Ueno, Susumu; Nomura, Hirokazu; Tohkai, Masaie; Hata, Yoshitada; and Kato, Kenichi, 4,551,310, Cl. 422-186.050.

Ulmer, Harry E.: *See*—
Mathew, Chempolil T.; and Ulmer, Harry E., 4,551,323, Cl. 423-387.000.
Mathew, Chempolil T.; and Ulmer, Harry E., 4,551,324, Cl. 423-387.000.

Ultradent, Inc.: *See*—
Fischer, Dan E., 4,551,100, Cl. 433-218.000.

UMC Industries, Inc.: *See*—
Smith, Barry L., 4,550,819, Cl. 194-1.00N.

Umemoto, Mitsumasa: *See*—
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,551,478, Cl. 514-603.000.

Uni-Cardan Aktiengesellschaft: *See*—
Krude, Werner, 4,551,116, Cl. 464-97.000.

Union Carbide Corporation: *See*—
Agrawal, Balkishan, 4,551,175, Cl. 75-513.000.
Barnabeo, Austin E., 4,551,504, Cl. 525-333.900.
Beckman, John H.; Haettinger, George C.; and Kupcikevicius, Vytautas, 4,550,471, Cl. 17-1.00R.
D'Silva, Themistocles D. J., 4,551,472, Cl. 514-477.000.
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,551,236, Cl. 208-112.000.
Nausedas, Joseph A., 4,551,370, Cl. 428-36.000.
Robson, John H.; and Keller, George E., II, 4,551,566, Cl. 568-867.000.
Wheeler, Thomas N., 4,551,547, Cl. 560-255.000.

Union, Elias J., to J. C. & D Enterprises, Inc. Paper support bar with rotation resistant support fingers. 4,550,904, Cl. 271-198.000.

Union Oil Company of California: *See*—
Deering, Roland F.; and Duir, John H., 4,551,206, Cl. 202-99.000.
Fenton, Donald M., 4,551,237, Cl. 208-251.00R.
Young, Donald C.; and Green, James A., II, 4,551,167, Cl. 71-64.100.

Uniroyal Englebert Reifen GmbH: *See*—
Harms, Engelbert G.; Schmeitz, Axel W.; and Thomaschewski, Hubertus P., 4,551,362, Cl. 427-180.000.

United Kingdom Atomic Energy Authority: *See*—
Lane, Edward S.; and Hill, Michael R. H., 4,551,358, Cl. 427-126.600.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Elliott, Charles T.; and White, Anthony M., 4,551,623, Cl. 250-211.00R.

U.S. Clinical Products, Inc.: *See*—
Cummings, Robert, 4,550,842, Cl. 215-232.000.

United States of America
Agriculture: *See*—
Heiland, Wolfgang K., 4,550,905, Cl. 271-202.000.
Army: *See*—
Sayler, William M., 4,551,092, Cl. 432-32.000.
Health and Human Services: *See*—
Kolobow, Theodor; and Ito, Yoichiro, 4,551,251, Cl. 210-635.000.
Interior: *See*—
Seeley, Robert L., 4,551,681, Cl. 324-333.000.
National Aeronautics and Space Administration: *See*—
Bankston, Benjamin F., 4,551,677, Cl. 324-226.000.
Coffinberry, George A., 4,550,561, Cl. 60-39.020.
Goldstein, Richard M.; Caro, Edward R.; and Wu, Chialin, 4,551,724, Cl. 343-5.0CM.
Lukens, Fred E., 4,551,687, Cl. 330-258.000.
Navy: *See*—
Crabtree, Daniel L., 4,551,759, Cl. 358-213.000.
Evans, Alan G., 4,550,601, Cl. 73-382.00R.
Kovacena, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., 4,551,349, Cl. 427-255.600.
Petoia, Salvatore R., 4,551,059, Cl. 414-459.000.

U.S. Philips Corporation: *See*—
Capper, Peter; and Gosney, John J., 4,551,196, Cl. 156-616.00R.
Compen, Johannes M. A. A.; and Maan, Cornelis, 4,551,652, Cl. 313-466.000.
Da Silva, Artur F., 4,550,652, Cl. 99-279.000.
Grauel, Christoph; Duplessis, Philippe; and Tarabout, Alain, 4,551,852, Cl. 455-33.000.
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,551,269, Cl. 252-520.000.
Lienard, Jean-Claude, 4,551,834, Cl. 370-94.000.
Mellema, Sybe J., 4,551,793, Cl. 362-370.000.
Moors, Johannes H., 4,550,963, Cl. 339-31.00R.
Segarra, Gerard, 4,551,842, Cl. 371-69.000.
Timmermans, Franciscus W. A.; and Van Roessel, Frederik J., 4,551,655, Cl. 315-370.000.
van der Ven, Robert F. L. M., 4,551,651, Cl. 313-402.000.

United Technologies Corporation: *See*—
Callahan, David J.; Mazzawy, Robert S.; Stryker, Howard Y.; and Kelly, James B., 4,550,564, Cl. 60-39.093.
Carll, Richard T.; Fastaia, Anthony J.; and von Nieda, Kurt, 4,551,832, Cl. 370-58.000.
Mard, Kenneth C., 4,550,812, Cl. 188-379.000.
Rannenberg, George C., 4,550,573, Cl. 62-172.000.
Sharon, Harold M., 4,550,497, Cl. 30-169.000.
Smith, Peter W., 4,551,692, Cl. 333-21.00A.

Unitrode Corporation: *See*—
Hower, Philip L.; and Li, Eric K., 4,551,353, Cl. 427-39.000.

University of Alabama, The Board of Trustees of the: *See*—
Park, Duk-Won, 4,550,788, Cl. 175-173.000.

University of California, The Regents of the: *See*—
Ladisch, Stephan, 4,551,449, Cl. 514-182.000.

University of Pennsylvania, Trustees of the: *See*—
Zemel, Jay N., 4,551,425, Cl. 435-4.000.

University of Utah: *See*—
Michl, Josef; and Puebla-Ponce, Claudio G., 4,551,819, Cl. 365-120.000.

UOP Inc.: *See*—
Carson, Don B., 4,551,235, Cl. 208-100.000.
Hafner, Edmund W., 4,551,430, Cl. 435-94.000.
Imai, Tamotsu; and Hung, Chi-wen, 4,551,574, Cl. 585-660.000.
Roberts, John T., 4,551,536, Cl. 546-264.000.
Stearman, William L., 4,551,181, Cl. 134-22.110.
Tsuda, Yoshihisa; and Jackson, Denise M., 4,551,432, Cl. 435-232.000.

Urasaki, Takanori, to Agency of Industrial Science and Technology. Polyglycidyl ethers, process for production thereof, and cured products thereof. 4,551,508, Cl. 525-507.000.

Urata, Yukihide: *See*—
Ogawa, Masashi; Nakamura, Taku; Urata, Yukihide; and Yamauchi, Shingo, 4,551,412, Cl. 430-265.000.

USDATA Corporation: *See*—
Vaughn, Mitchell D., 4,551,831, Cl. 370-58.000.

Ushiyama, Shigeyuki: *See*—
Amemiya, Yoichi; Ishida, Hiroshi; Takekoshi, Yashitaka; and Ushiyama, Shigeyuki, 4,551,676, Cl. 324-208.000.

USM Corporation: *See*—
Schaty, Harald, 4,550,891, Cl. 248-68.100.

Utsumi, Masahiro: *See*—
Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,551,386, Cl. 428-323.000.

Valencia, Vance I.: *See*—
Arendt, Paul N.; and Valencia, Vance I., 4,551,844, Cl. 373-12.000.

Valentine, Michael J.: *See*—
Reinfeld, Nyles V.; and Valentine, Michael J., 4,550,549, Cl. 53-447.000.

Valenzano, Marcello. Construction forms. 4,550,543, Cl. 52-309.700.

Vallourec S.A.: *See*—
Duret, Jean, 4,550,937, Cl. 285-334.000.

Valmet Oy: *See*—
Eskelinen, Pekka, 4,551,203, Cl. 162-202.000.
Laapotti, Jorma, 4,551,205, Cl. 162-360.100.

Van Buren, Charles E.: *See*—
Johnson, Curtis A.; Renlund, Gary M.; Van Buren, Charles E.; and Prochazka, Svante, 4,551,436, Cl. 501-90.000.

Van Coney, Robert H.: *See*—
Barker, Dale E.; Bettle, Griscom, III; and Van Coney, Robert H., 4,550,862, Cl. 222-109.000.

Vanderhoek, Philip S.: *See*—
Woodworth, Raymond D.; Stoutamore, James F.; and Vanderhoek, Philip S., 4,550,747, Cl. 137-487.500.

Vanderkooi, Nicholas, Jr.: *See*—
Haylock, John C.; and Vanderkooi, Nicholas, Jr., 4,551,507, Cl. 525-437.000.

Vandermeulen, Meine: *See*—
Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and Rogers, Charles J., 4,551,218, Cl. 204-240.000.

van der Ven, Robert F. L. M., to U.S. Philips Corporation. Color display tube including a shadow mask sheet with a bulged portion. 4,551,651, Cl. 313-402.000.

Van Deursen, Aad. Clothes drying device. 4,550,840, Cl. 211-197.000.

Van Dijk, Cornelis; and De Jongh, Rudolph O., to Internationale Octrooi Maatscappij "Octropa" B.V. Nickel boride-polymer in-oil catalyst. 4,551,441, Cl. 502-159.000.

Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., to Lummus Industries, Inc. Baling chamber assembly. 4,550,657, Cl. 100-43.000.

van Gelderen, Guido: *See*—
Breedyk, Frans N.; and van Gelderen, Guido, 4,550,598, Cl. 73-146.000.

van Leusen, Adriaan M.: *See*—
van Leusen, Albert M.; and van Leusen, Adriaan M., 4,551,278, Cl. 260-397.400.

van Leusen, Albert M.; and van Leusen, Adriaan M., to Gist-Brocades N.V. Preparation of 20-keto-Δ^{16}-steroids. 4,551,278, Cl. 260-397.400.

Van Roessel, Frederik J.: *See*—
Timmermans, Franciscus W. A.; and Van Roessel, Frederik J., 4,551,655, Cl. 315-370.000.

Varadarajan, Hemmige D., to Advanced Micro Devices, Inc. ECL Gate with switched load current source. 4,551,638, Cl. 307-455.000.

Varwig, Juergen: *See*—
Seufert, Walter; Varwig, Juergen; Husslein, Gerd; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,551,448, Cl. 514-130.000.

Vater, Wulf: *See*—
Wehinger, Egbert; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 4,551,467, Cl. 514-334.000.

Vaughn, Mitchell D., to USDATA Corporation. Time division multiplexed system for non real time digital switching. 4,551,831, Cl. 370-58.000.

VEB Stahl-und Walzwerk "Wilhelm Florin": *See*—
Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, 4,551,183, Cl. 148-12.00R.

Vella, Paul J.; Garel-Jones, Philip M.; and Lowe, Richard S., to Northern Telecom Limited. Measuring chromatic dispersion of fibers. 4,551,019, Cl. 356-73.100.

Venema, Harry J., to Borg-Warner Corporation. Torque measurement circuit and method. 4,550,595, Cl. 73-116.000.

Venkatesan, Srinivasan: *See*—
Sapru, Krishna; Hong, Kuochih; Fetcenko, Michael A.; and Venkatesan, Srinivasan, 4,551,400, Cl. 429-94.000.

Ventura, Frank D.: *See*—
Selvage, Craig C.; and Ventura, Frank D., 4,551,110, Cl. 446-118.000.

Venuti, Michael C.: *See*—
Jones, Gordon H.; Venuti, Michael C.; Alvarez, Robert; and Bruno, John J., 4,551,459, Cl. 514-267.000.

Verne, Stefan, to BICC Public Limited Company. Telecommunication cable filling composition. 4,551,569, Cl. 585-6.600.

Vernier, Claude: *See*—
Blanie, Paul; and Vernier, Claude, 4,551,341, Cl. 426-489.000.

Veronesi, Luciano; and Sherwood, Donald G., to Westinghouse Electric Corp. Hydraulic drive mechanism. 4,550,941, Cl. 294-86.400.

Verstraete, Rick A.: *See*—
Moore, Donald W.; and Verstraete, Rick A., 4,551,814, Cl. 364-716.000.
Moore, Donald W.; and Verstraete, Rick A., 4,551,815, Cl. 364-716.000.

Vervacke, Steven L.: *See*—
Miller, Robert E.; and Vervacke, Steven L., 4,551,739, Cl. 346-216.000.

Vetco Offshore, Inc.: *See*—
Haeber, John A.; Rains, John K.; Beitler, Brad D.; and Kukuchek, George S., 4,550,936, Cl. 285-26.000.

Victor, Alan M.; and Davis, Darrell E., to Motorola, Inc. Synthesized multiple conversion receiver system with provision for avoiding receiver self-quieting spurious response. 4,551,856, Cl. 455-183.000.

Victor Company of Japan: *See*—
Suzuki, Kiyoaki; Suzuki, Hidetsugu; Onuki, Katsuhiro; Nomoto, Isami; Fukuda, Yoshiaki; and Sato, Takeshi, 4,550,797, Cl. 181-167.000.

Victor Company of Japan, Limited: *See*—
Fujii, Yasuhiko; Owaki, Isao; Saito, Susumu; Mori, Takaro; and Nakamura, Shinji, 4,551,840, Cl. 371-38.000.

Vigneron, Jean-Pierre: *See*—
Frank-Neumann, Michel; Sedrati, Madjid; Vigneron, Jean-Pierre; and Bloy, Vincente, 4,551,545, Cl. 560-124.000.

Vilain, Claude; and Noel, Gapp, to Societe Anonyme Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Device for transversely maintaining an anti-roll bar. 4,550,932, Cl. 280-689.000.

Villiger, Alois: *See*—
Petrzilka, Martin; Schadt, Martin; and Villiger, Alois, 4,550,981, Cl. 350-350.00R.

Vincent, Jan G.: *See*—
Engstrom, Nils M. L., 4,550,594, Cl. 73-61.10C.

Vinding, Jorgen P.: *See*—
Cohn, Martin; Jacoby, George V.; and Vinding, Jorgen P., 4,551,773, Cl. 360-40.000.

Vissers, Hermanus H.; and Wondergem, Jan, to Multinorm B.V. Device to form crop into round bales. 4,550,557, Cl. 56-341.000.

Vitale, Vincent J., to Green, Mickey. Farm products agricultural game. 4,551,103, Cl. 434-225.000.

Voest-Alpine Aktiengesellschaft: *See*—
Hofbauer, Edwin; Lechner, Peter; and Exler, Heribert, 4,551,051, Cl. 414-21.000.

Volk, Joseph A.: *See*—
Volk, Joseph A., Jr.; and Volk, Joseph A., 4,550,619, Cl. 73-862.620.

Volk, Joseph A., Jr.; and Volk, Joseph A., to Beta II, Incorporated. Suspension for a linear force transducer. 4,550,619, Cl. 73-862.620.

Volkamer, Klaus: *See*—
Wagner, Eckhart; Volkamer, Klaus; Hefner, Werner; and Wagner, Ulrich, 4,551,158, Cl. 55-46.000.

Volterra, Giovanna: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giolitti, Alessandro; Volterra, Giovanna; Furio, Martino; and Meli, Alberto, 4,551,451, Cl. 514-217.000.

von Halasz, Sigmar: *See*—
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,551,513, Cl. 526-307.100.

von Nieda, Kurt: *See*—
Carll, Richard T.; Fastaia, Anthony J.; and von Nieda, Kurt, 4,551,832, Cl. 370-58.000.

Vredenburg, Edric W., Sr. Vacuum bag filler. 4,550,755, Cl. 141-59.000.

W.C. Heraeus GmbH: *See*—
Opower, Hans, 4,551,608, Cl. 219-121.00L.

W. R. Grace & Co., Cryovac Div.: *See*—
Owensby, Joseph E.; Rupp, Jody W.; Dobbins, Frederick A.; and Waldrop, Thomas E., 4,550,548, Cl. 53-434.000.
Pezzana, Francesco; and Quacquarella, Cesare, 4,551,125, Cl. 493-217.000.
Schoenberg, Julian H., 4,551,380, Cl. 428-218.000.

Wachi, Shigeaki, to Sony Corporation. Driving apparatus for a recording medium. 4,551,661, Cl. 318-314.000.

Wada, Sumio; and Inakagata, Satoru, to Matsushita Electric Works, Ltd. Quick charging apparatus. 4,551,666, Cl. 320-20.000.

Wagman, Julius; and Sajic, Branko, to Helene Curtis Industries, Inc. Skin and hair conditioner compositions and conditioning method. 4,551,330, Cl. 424-59.000.

Wagner, Bill L., Sr., to Bio Clinic Company. Method and apparatus for rolling and packaging convoluted foam pads. 4,550,547, Cl. 53-430.000.

Wagner, Eckhart; Volkamer, Klaus; Hefner, Werner; and Wagner, Ulrich, to BASF Aktiengesellschaft. Removal of CO_2 and/or H_2S from gases. 4,551,158, Cl. 55-46.000.

Wagner, Rudolph; and Schiwiora, Harry, to Degussa Aktiengesellschaft. Dental alloy based on palladium for the production of fixed and removable dental constructions. 4,551,302, Cl. 420-464.000.

Wagner Spray Tech Corporation: *See*—
Karliner, Rudolf R.; and Carlin, Samuel R., 4,551,036, Cl. 401-131.000.
Snetting, Mark; West, Dan; and Hacker, John R., 4,550,919, Cl. 277-23.000.

Wagner, Ulrich: *See*—
Wagner, Eckhart; Volkamer, Klaus; Hefner, Werner; and Wagner, Ulrich, 4,551,158, Cl. 55-46.000.

Wakabayashi, Manabu: *See*—
Saito, Tadashi; Higuchi, Shigemitsu; Konno, Kazutoshi; Sampei, Tohru; Hayashi, Kenji; Noro, Yoshihiko; and Wakabayashi, Manabu, 4,551,777, Cl. 360-77.000.

Wakatsuki, Kizuku: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Kojima, Junpei; and Wakatsuki, Kizuku, 4,551,501, Cl. 525-88.000.

Wakatsuki, Noboru: *See*—
Tanji, Shigeo; and Wakatsuki, Noboru, 4,551,695, Cl. 333-195.000.

Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., to Atlantic Richfield Company. Surface improvement of semiconductors in high speed casting. 4,551,291, Cl. 264-104.000.

Wakikaido, Takahiro: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,551,013, Cl. 355-55.000.

Waldemar, Anders, to Toroid Transformator AB. Toroidal power transformer. 4,551,700, Cl. 336-192.000.

Waldes Kohinoor, Inc.: *See*—
Killian, Edmund F., 4,550,485, Cl. 29-450.000.

Waldner Laboreinrichtungen GmbH & Co.: *See*—
Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, 4,550,650, Cl. 98-115.300.

Waldrop, Thomas E.: *See*—
Owensby, Joseph E.; Rupp, Jody W.; Dobbins, Frederick A.; and Waldrop, Thomas E., 4,550,548, Cl. 53-434.000.

Wall, Lars E.; and Jonsson, John E., to Telefonaktiebolaget LM Ericsson. Method and apparatus for correcting distortion in an image which is recorded electronically and built up along lines. 4,551,752, Cl. 358-113.000.

Wallace, Charles H. Method for changing the internal temperature of meat by the use of gas. 4,551,338, Cl. 426-281.000.

Walles, Erik W.: *See*—
Howell, Bobby A.; and Walles, Erik W., 4,551,502, Cl. 525-326.900.

Walsh, Thomas J.: *See*—
Wiese, John R.; and Walsh, Thomas J., 4,550,620, Cl. 73-864.550.

Walter, Lothar; and Reith, Walter, to SKF Kugellagerfabriken GmbH. Process for the production of a heat treated bearing ring. 4,550,479, Cl. 29-148.40C.

Wang, Hsin-Ju: *See*—
Ramella, Amilcare; and Wang, Hsin-Ju, 4,551,228, Cl. 208-65.000.

Warashina, Tomio: *See*—
Okumura, Takeshi; Warashina, Tomio; and Nakanishi, Kiyoshi, 4,550,699, Cl. 123-308.000.

Warlaumont, John M.: *See*—
Di Milia, Vincent; Maldonado, Juan R.; Speidell, James L.; and Warlaumont, John M., 4,551,192, Cl. 156-345.000.

Warner, Anne, to National Research Development Corporation. Mycorrhizal seed pellets. 4,551,165, Cl. 71-24.000.

Warner-Lambert Company: *See*—
Butler, Donald E., 4,551,470, Cl. 514-413.000.
Kern, Donald L.; Hokanson, Gerard C.; and French, James C., 4,551,529, Cl. 544-265.000.
Nunez, Chris E., 4,550,748, Cl. 137-605.000.

Warren, Robert F.: *See*—
Pipa, William; Warren, Robert F.; and Russack, Harvey, 4,550,679, Cl. 118-52.000.

Watanabe, Akikazu: *See*—
Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, 4,551,571, Cl. 585-440.000.

Watanabe, Fumio: *See*—
Shimoda, Michio; and Watanabe, Fumio, 4,551,805, Cl. 364-469.000.

Watanabe, Hisashi, to Fujitsu Limited. Package for semiconductor device. 4,551,745, Cl. 357-72.000.

Watanabe, Kazuhide: *See*—
Igashira, Toshihiko; Sakakibara, Yasuyuki; Yoshinaga, Toru; Abe, Seiko; and Watanabe, Kazuhide, 4,550,744, Cl. 137-80.000.

Watanabe, Ryuji; Ando, Hisashi; Kuniya, Keiichi; and Kurosawa, Yukio, to Hitachi, Ltd. Surge-absorberless vacuum circuit interrupter. 4,551,596, Cl. 200-144.00B.

Watanabe, Takeo: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.

Watanabe, Tatsuya: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,551,849, Cl. 381-86.000.

Watts, George T.; and Thaden, Theron J., to Goodyear Tire & Rubber Company, The. Tire packaging. 4,550,827, Cl. 206-304.000.

Wayne Automation Corp.: *See*—
Johnson, A. David, Jr.; Bachman, Joseph L., Jr.; Ginther, George E., Sr.; Zimmermann, Charles E.; and Johnson, Albert D., Sr., 4,551,126, Cl. 493-453.000.

Webb, Tommy W.: *See*—
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,550,657, Cl. 100-43.000.

Weber, Georg: *See*—
Eidenschink, Rudolf; Romer, Michael; and Weber, Georg, 4,551,264, Cl. 252-299.620.

Weber, Wolfram: *See*—
Mathieu, Bernd; and Weber, Wolfram, 4,551,147, Cl. 604-405.000.

Webers, Vincent J.: *See*—
Cohen, Abraham B.; and Webers, Vincent J., 4,551,415, Cl. 430-281.000.

Weeder, Ralph E. Planter population reduction drive unit. 4,550,860, Cl. 222-615.000.

Wehinger, Egbert; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Vasodilating cyanoalkyl esters of 1,4-dihydropyridines. 4,551,467, Cl. 514-334.000.

Wei, Peter H. L.; and Carlson, Richard P., to American Home Products Corporation. Phenylpyrazolidine acetic acid derivatives. 4,551,538, Cl. 548-367.000.

Weigel, Horst: *See*—
Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,551,548, Cl. 562-402.000.

Weinberg, Gerd: *See*—
Traumuller, Otfried; and Weinberg, Gerd, 4,550,832, Cl. 206-509.000.
Traumuller, Otfried; and Weinberg, Gerd, 4,550,847, Cl. 220-4.00F.

Weindl, Alfred: *See*—
Wottka, Bernhard; and Weindl, Alfred, 4,551,294, Cl. 264-175.000.

Weisenberger, Johannes M.: *See*—
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,551,464, Cl. 514-312.000.

Weishaupt, Walter: *See*—
Bourauel, Fritz; and Weishaupt, Walter, 4,551,703, Cl. 340-52.00D.

Weiss, Franz-Josef: *See*—
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,551,318, Cl. 423-265.000.

Weissberger, Edward: *See*—
Brust, David P.; Neumann, Stephen M.; and Weissberger, Edward, 4,551,411, Cl. 430-216.000.

Welburn, Ross D., to Motornetics Corporation. Reactance-commutated high resolution servo motor system. 4,551,708, Cl. 340-347.0SY.

Weldon, Scott B., to Crown Zellerbach Corporation. Apparatus and process for treating web material. 4,551,199, Cl. 162-109.000.

Welfle, Kurt: *See*—
Tamm, Franz; Horicke, Bernhard; Welfle, Kurt; Seidel, Michael; Tettke, Wolfgang; and Luckfiel, Karl-Heinz, 4,551,183, Cl. 148-12.00R.

Wellington, Charles H.: *See*—
Carmichael, Jerry H.; and Wellington, Charles H., 4,551,823, Cl. 367-35.000.

Werkzeugmaschinenfabrik Oerlikon-Buehrle AG: *See*—
Harter, Robert R., 4,550,640, Cl. 89-1.806.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Bruderer, Werner; Brieger, Hans; and Hurlemann, Ernst, 4,550,641, Cl. 89-12.000.
Grabher, Erich; Muller, Max; Wetzel, Horst; and Schultschik, Robert, 4,550,955, Cl. 308-6.00C.
Schultschik, Robert, 4,551,044, Cl. 408-185.000.

Werner, Wolfgang: *See*—
Berger, Dieter; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; Rittersdorf, Walter; and Werner, Wolfgang, 4,551,428, Cl. 435-19.000.

Werth, Larry J.; and Paulson, Larry G., to Pattern Processing Technologies, Inc. Response detector for pattern processing system. 4,551,850, Cl. 382-18.000.

West Company, The: *See*—
Sutryn, Caroll S.; and Maietta, Michael G., 4,550,825, Cl. 206-222.000.

West, Dan: *See*—
Snetting, Mark; West, Dan; and Hacker, John R., 4,550,919, Cl. 277-23.000.

West, James C.; and Gesell, Elmer G., to Outboard Marine Corporation. Die casting process using disposable inserts during warm up. 4,550,762, Cl. 164-98.000.

Westinghouse Electric Corp.: *See*—
Goldstein, Norman P.; and Lane, Stephen A., 4,551,298, Cl. 376-245.000.
Maier, Alfred E., 4,551,597, Cl. 200-249.000.
Shields, Edward P., 4,551,299, Cl. 376-261.000.
Stough, Donald M., 4,551,088, Cl. 431-76.000.
Veronesi, Luciano; and Sherwood, Donald G., 4,550,941, Cl. 294-86.400.
Wilks, Robert S., 4,550,494, Cl. 29-838.000.

Westvaco Corporation: *See*—
Dilling, Peter, 4,551,151, Cl. 8-524.000.

Wetzel, Horst: *See*—
Grabher, Erich; Muller, Max; Wetzel, Horst; and Schultschik, Robert, 4,550,955, Cl. 308-6.00C.

Wheeler, Thomas N., to Union Carbide Corporation. Biocidal 2-aryl-1, 3-cyclopentanedione enol ester compounds. 4,551,547, Cl. 560-255.000.

Whirlpool Corporation: *See*—
Keane, James W., 4,550,957, Cl. 339-5.00R.
Smith, Orbert S., 4,550,958, Cl. 339-5.00R.
Tate, Ralph, Jr.; and Woods, John T., 4,550,576, Cl. 62-441.000.

White, Anthony M.: *See*—
Elliott, Charles T.; and White, Anthony M., 4,551,623, Cl. 250-211.00R.

White Consolidated Industries, Inc.: *See*—
Nussdorfer, William R.; Brancheau, Harry A.; and Clark, Steven C., 4,550,770, Cl. 165-29.000.

White, Robert: *See*—
Baker, Hugh W. B.; and White, Robert, 4,551,035, Cl. 401-104.000.

White, Robert M.: *See*—
Batina, William P.; and White, Robert M., 4,550,731, Cl. 128-419.0PT.

Whitford, Alan, to Superior Plastic Products Corp. Strip of detachably connected bags for medical supplies. 4,550,831, Cl. 206-439.000.

Whiting, Graham J.: *See*—
Baker, Hugh W. B.; and Whiting, Graham J., 4,551,038, Cl. 401-265.000.

Whitlam, Joseph E.; and Richards, Alwyn H., to Stevecleave Limited. Scaffolding. 4,550,541, Cl. 52-309.800.

Whitley, Ray D. Hose holding device. 4,550,892, Cl. 248-90.000.

Whitt, Joade: *See*—
Bell, John R.; Scoville, Robert E.; and Whitt, Joade, 4,550,867, Cl. 222-607.000.

Wiegard, Klaus; Kinast, Karlheinz; Kleinekathofer, Wolfgang; and Tank, Eggert, to Daimler-Benz Aktiengesellschaft. Sliding material for seals on rotary regenerative heat exchangers with a ceramic core. 4,551,396, Cl. 428-678.000.

Wiersema, Delbert; and Szmadzinski, John A., to Herman Miller, Inc. Hanger clip for retaining a component to a slotted upright. 4,550,893, Cl. 248-222.400.

Wiese, John R.; and Walsh, Thomas J., to General Signal Corporation. End-filling sampler for molten metals. 4,550,620, Cl. 73-864.550.

Wiley, William E., to Kamyr, Inc. Method of flashing black liquor. 4,551,198, Cl. 159-47.300.

Wilkins, Cletus W., Jr.: *See*—
Chandross, Edwin A.; Reichmanis, Elsa; and Wilkins, Cletus W., Jr., 4,551,416, Cl. 430-311.000.

Wilkinson, Robert E.: *See*—
Epel, Joseph N.; and Wilkinson, Robert E., 4,551,085, Cl. 425-405.00R.

Wilks, Robert S., to Westinghouse Electric Corp. Automated printed circuit board assembly method. 4,550,494, Cl. 29-838.000.

Willcott, M. Robert: *See*—
Morgan, Tommie J.; and Willcott, M. Robert, 4,551,678, Cl. 324-300.000.

Willson, Carlton G.: *See*—
Hult, Anders; Ito, Hiroshi; MacDonald, Scott A.; and Willson, Carlton G., 4,551,418, Cl. 430-325.000.

Wilson, Alex T., to Duval Corporation. Recovery of gold. 4,551,213, Cl. 204-111.000.

Wilson, Frank, to Chloride, Inc. Method of suppressing lead dust. 4,551,401, Cl. 429-122.000.

Wilson, John R.: *See*—
Smith, Richard R.; and Wilson, John R., 4,551,368, Cl. 428-35.000.

Wilson, Peter H., to Black & Decker Inc. Guard for hot air gun. 4,551,615, Cl. 219-373.000.

Wilson, W. Donald: *See*—
Tateosian, Louis H.; and Wilson, W. Donald, 4,551,486, Cl. 523-212.000.

Winter, David F.; and Dick, William K., to ITT Corporation. Electronic grounding system for electrical distribution systems. 4,551,633, Cl. 307-147.000.

Wirth, Ricky C.: *See*—
Teerman, Richard F.; Bosch, Russell H.; and Wirth, Ricky C., 4,550,875, Cl. 239-88.000.

Wischusen, Henry, III: *See*—
Fletcher, Richard J.; and Wischusen, Henry, III, 4,550,834, Cl. 206-611.000.

Wiser, James G.: *See*—
Lundahl, E. Cordell; Wiser, James G.; Thornley, W. Ray; and Jensen, Laurel H., 4,550,554, Cl. 56-294.000.

Wishman, Marvin, to Phillips Petroleum Company. Method and apparatus for absorbing moisture. 4,550,725, Cl. 128-155.000.

Woebcke, Herman N.: *See*—
Bhojwani, Arju H.; and Woebcke, Herman N., 4,550,769, Cl. 165-1.000.

Woffinden, Gary A.: *See*—
Amdahl, Gene M.; Hanson, Donald L.; Kreuzenstein, Ronald K.; Roshon-Larsen, Gwynne L.; and Woffinden, Gary A., 4,551,797, Cl. 364-200.000.

Wolfe, Susan V.: *See*—
Cranfield, Brain A.; Fothergill, John C.; and Wolfe, Susan V., 4,551,499, Cl. 524-487.000.

Wolter, Gerry. Gas instantaneous water heater. 4,550,689, Cl. 122-448.00R.

Wolters, Gerd-Michael: *See*—
Deutschmann, Herbert; and Wolters, Gerd-Michael, 4,550,568, Cl. 60-612.000.

Won, Vann Y. Fuel vapor generator. 4,551,153, Cl. 48-102.00R.

Wondergem, Jan: *See*—
Vissers, Hermanus H.; and Wondergem, Jan, 4,550,557, Cl. 56-341.000.

Wong, Harvey C.; and Lin, Frank W., to Mechatron Systems, Inc. Velocity-position servo with improved gain control. 4,551,664, Cl. 318-592.000.

Wood, Bernard J.; Brittain, Robert D.; and Sancier, Kenneth M., to SRI International. In situ formation of coal gasification catalysts from low cost alkali metal salts. 4,551,155, Cl. 48-197.00R.

Woodall, Jerry M.: *See*—
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,550,489, Cl. 29-571.000.

Woods, John T.: *See*—
Tate, Ralph, Jr.; and Woods, John T., 4,550,576, Cl. 62-441.000.

Woodworth, Raymond D.; Stoutamore, James F.; and Vanderhoek, Philip S., to Digital Hydraulics, Inc. Digital fluid pressure flow rate and position control system. 4,550,747, Cl. 137-487.500.

Worthington, Paul A.: *See*—
Parry, Keith P.; Worthington, Paul A.; and Rathmell, William G., 4,551,469, Cl. 514-383.000.

Wottka, Bernhard; and Weindl, Alfred, to Heochst Aktiengesellschaft. Molding composition based on vinyl chloride polymers, and process for the manufacture of films from these molding compositions for the production of forgery-proof valuable documents. 4,551,294, Cl. 264-175.000.

Wright, John N.: *See*—
Maslak, Samuel H.; and Wright, John N., 4,550,607, Cl. 73-626.000.

Wright, Richard F.: *See*—
Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,551,407, Cl. 430-138.000.

Wright, Robert C.: *See*—
Guilmette, Joseph G.; and Wright, Robert C., 4,551,197, Cl. 156-642.000.

Wright, William S., Jr., to Pacific Scientific Company. System for monitoring snubber loads. 4,550,589, Cl. 73-11.000.

Wronski, Stanislaw: *See*—
Mroz, Andrzej; and Wronski, Stanislaw, 4,551,242, Cl. 209-211.000.

Wu, Chialin: *See*—
Goldstein, Richard M.; Caro, Edward R.; and Wu, Chialin, 4,551,724, Cl. 343-5.0CM.

Xerox Corporation: *See*—
Banton, Martin E., 4,551,008, Cl. 355-14.00E.
DiNatale, Ernest L.; and Yax, Robert J., 4,551,784, Cl. 361-225.000.
Elter, Michael R., 4,551,007, Cl. 355-14.0FU.
Goemans, Hermanus I., 4,551,015, Cl. 355-75.000.
Moore, Kenneth P., 4,550,903, Cl. 271-98.000.
Paraskevopoulos, Demetris E., 4,551,004, Cl. 355-3.0DD.

Yada, Isao: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,551,009, Cl. 355-15.000.

Yaguchi, Masachika; Mikami, Tomoki; and Hase, Takashi, to Kasei Optonix, Ltd. Zinc silicate phosphor and electron excited fluorescent display device using the phosphor. 4,551,397, Cl. 428-691.000.

Yamada, Akira: *See*—
Yoshida, Takumori; Yamada, Akira; and Shinmura, Sadayuki, 4,550,700, Cl. 123-432.000.

Yamada, Kazuji; Kobori, Shigeyuki; Shimada, Satoshi; Kanzawa, Ryosaku; Kobayashi, Ryoichi; and Sato, Hideo, to Hitachi, Ltd. Integrated pressure sensor. 4,550,612, Cl. 73-727.000.

Yamada, Masato: *See*—
Akisue, Osamu; Yamada, Teruaki; Ueda, Shigeru; Tokunaga, Yoshikuni; and Yamada, Masato, 4,551,182, Cl. 148-12.00C.

Yamada, Noriaki: *See*—
Hayakawa, Masanori; Yamada, Noriaki; Kawamoto, Hiromi; and Nishimura, Satoshi, 4,551,260, Cl. 252-62.590.

Yamada, Sadahiko: *See*—
Harada, Masato; Miya, Shinya; Yamada, Sadahiko; and Iijima, Makoto, 4,551,439, Cl. 502-107.000.

Yamada, Teruaki: *See*—
Akisue, Osamu; Yamada, Teruaki; Ueda, Shigeru; Tokunaga, Yoshikuni; and Yamada, Masato, 4,551,182, Cl. 148-12.00C.

Yamaguchi, Nobutaka; Iida, Shinobu; Utsumi, Masahiro; Okutu, Toshimitu; Masuyama, Kenichi; and Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording materials. 4,551,386, Cl. 428-323.000.

Yamaguchi, Satoru: *See*—
Takahashi, Hitoshi; Yamaguchi, Satoru; and Nunokawa, Hideo, 4,551,634, Cl. 307-243.000.

Yamaguchi, Tsutomu: *See*—
Kubo, Takeshi; Kawano, Junji; Takahashi, Fumio; and Yamaguchi, Tsutomu, 4,551,729, Cl. 346-1.100.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Yoshida, Takumori; Yamada, Akira; and Shinmura, Sadayuki, 4,550,700, Cl. 123-432.000.

Yamamoto, Akito: *See*—
Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, 4,551,803, Cl. 364-431.050.

Yamamoto, Kazuyuki: *See*—
Sekiguchi, Koichi; Takematsu, Hikaru; Yamamoto, Kazuyuki; and Kubo, Teruyuki, 4,551,583, Cl. 179-99.00M.

Yamamoto, Tadashi: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; and Ueno, Hiroshi, 4,551,440, Cl. 502-119.000.

Yamamuro, Kiyohiko: *See*—
Ikeda, Tadashi; Kuwabara, Kenichi; Yamamuro, Kiyohiko; and Kokubo, Tadayoshi, 4,551,424, Cl. 430-588.000.
Yamanaga, Nobuki, to Ye Data Inc. Hammer driving circuit for a dot system line printer. 4,550,659, Cl. 101-93.040.
Yamanaka, Eisuke: *See*—
Ehiro, Takashi; Tanaka, Teruaki; and Yamanaka, Eisuke, 4,550,582, Cl. 72-234.000.
Yamanaka, Seisuke: *See*—
Sase, Masatoshi; and Yamanaka, Seisuke, 4,551,761, Cl. 358-213.000.
Yamatsu, Kiyomi: *See*—
Tachibana, Shinro; Ohya, Shizuko; Arakawa, Yoshihiro; Nakazawa, Takahiro; Kaneko, Takeru; Ikeda, Masuhiro; and Yamatsu, Kiyomi, 4,551,273, Cl. 260-112.50E.
Yamauchi, Shingo: *See*—
Ogawa, Masashi; Nakamura, Taku; Urata, Yukihide; and Yamauchi, Shingo, 4,551,412, Cl. 430-265.000.
Yamazaki, Hideo: *See*—
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,551,478, Cl. 514-603.000.
Yamazaki, Hiroaki: *See*—
Tamura, Tadashi; Nakao, Etsuro; and Yamazaki, Hiroaki, 4,551,402, Cl. 429-254.000.
Yamazaki, Kazuhiro: *See*—
Ohtake, Etsuo; and Yamazaki, Kazuhiro, 4,551,389, Cl. 428-402.000.
Yamazaki, Shiro: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Shimizu, Susumu; Kanda, Yohichi; Satake, Keigo; Yamazaki, Shiro; Shinkawa, Hiroyasu; Chida, Tsuneaki; Arabori, Hideo; and Watanabe, Takeo, 4,551,168, Cl. 71-90.000.
Yamazaki, Yoshinori; and Ogawa, Tsutomu, to Kabushiki Kaisha Miyano Tekkosho. Indexing system of machine tools and the like. 4,550,631, Cl. 74-822.000.
Yamazawa, Akira: *See*—
Ishikawa, Takehiro; Yamazawa, Akira; and Kusumoto, Yasuo, 4,551,031, Cl. 374-117.000.
Yanagishima, Takayuki: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,551,849, Cl. 381-86.000.
Yanagita, Hirohisa: *See*—
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,551,478, Cl. 514-603.000.
Yaniv, Moshe: *See*—
Danos, Olivier; Katinka, Michael; and Yaniv, Moshe, 4,551,270, Cl. 260-112.50R.
Yarimizu, Kenichi, to Nippon Oil Seal Industry Co., Ltd. Method and apparatus for mounting oil seal in machine housing. 4,550,486, Cl. 29-451.000.
Yarnell, James A., to Dana Corporation. Transmission interlock system. 4,550,628, Cl. 74-477.000.
Yaroshenko, Galina F.: *See*—
Samakaev, Rafail K.; Paguba, Alexandr I.; Smolnikov, Nikolai V.; Dytjuk, Leonid T.; Gusev, Vladimir I.; Dyatlova, Nina M.; Yaroshenko, Galina F.; Barsukov, Anatoly V.; Krinitskaya, Ljudmila V.; and Balashova, Taisia M., 4,551,262, Cl. 252-181.000.
Yashfe, Yechiel. Rapid-heating electric water boiler. 4,551,613, Cl. 219-316.000.
Yasumoto, Hidetoshi: *See*—
Yuasa, Yoshio; Yasumoto, Hidetoshi; Kawagoe, Nobukazu; Naruse, Kazuhiko; and Inaba, Masahito, 4,551,011, Cl. 355-35.000.
Yax, Robert J.: *See*—
DiNatale, Ernest L.; and Yax, Robert J., 4,551,784, Cl. 361-225.000.
Ye Data Inc.: *See*—
Yamanaga, Nobuki, 4,550,659, Cl. 101-93.040.
Yeater, Robert P.; Pantone, Richard S.; and Rieck, James N., to Mobay Chemical Corporation. Polyether polyurethane prepolymers containing finely divided inorganic particles and cast elastomers made therefrom. 4,551,498, Cl. 524-424.000.
Yeh, An-I: *See*—
Berg, Lloyd; and Yeh, An-I, 4,551,207, Cl. 203-56.000.
Yessian, Richard J.: *See*—
Dow, John, Jr.; Oetting, William A.; and Yessian, Richard J., 4,550,859, Cl. 222-26.000.
Yglesia, Larry: *See*—
Daniel, Robert P.; and Yglesia, Larry, 4,551,788, Cl. 361-403.000.
Yokota, Takashi. Recording apparatus using a recording member in endless belt form. 4,551,001, Cl. 355-3.0BE.
Yokouchi, Hiroshi; and Iketani, Ryuichi, to Oki Electric Industry Co., Ltd. Data bus precharging circuits. 4,551,821, Cl. 365-203.000.
Yonahara, Kunio: *See*—
Fushimi, Kazuo; Tsunakawa, Hirokazu; and Yonahara, Kunio, 4,551,267, Cl. 252-511.000.
Yoshida Kogyo K.K.: *See*—
Iai, Kenichiro, 4,550,477, Cl. 29-33.200.
Yoshida, Takumori; Yamada, Akira; and Shinmura, Sadayuki, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for multi-intake valve type engine. 4,550,700, Cl. 123-432.000.
Yoshida, Tatsuya: *See*—
Nagano, Masami; Atago, Takeshi; and Yoshida, Tatsuya, 4,550,705, Cl. 123-488.000.
Yoshimoto, Tekeo; Umemoto, Mitsumasa; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, to Mitsui Toatsu Chemicals, Inc. 3-Nitrobenzene sulfonanilide derivatives and fungicidal compositions for the control of plant diseases containing same. 4,551,478, Cl. 514-603.000.
Yoshimura, Noriaki: *See*—
Matsumoto, Mitsuo; Hirai, Koji; Yoshimura, Noriaki; and Okamura, Takayuki, 4,551,518, Cl. 528-80.000.
Yoshinaga, Toru: *See*—
Igashira, Toshihiko; Sakakibara, Yasuyuki; Yoshinaga, Toru; Abe, Seiko; and Watanabe, Kazuhide, 4,550,744, Cl. 137-80.000.
Yoshino, Yasuo: *See*—
Sarumaru, Kohei; Iwakura, Tomoatsu; Yoshino, Yasuo; Ito, Toshimichi; Watanabe, Akikazu; and Mori, Mikio, 4,551,571, Cl. 585-440.000.
Yoshinori Kidani: *See*—
Kidani, Yoshinori; and Noji, Masahide, 4,551,524, Cl. 536-121.000.
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, to Mita Industrial Co., Ltd. Electrostatic copying process. 4,551,013, Cl. 355-55.000.
Yoshioka, Yoshio: *See*—
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,551,532, Cl. 546-22.000.
Yoshitomi, Toshihiko: *See*—
Takahashi, Kiyoshi; Konagai, Makoto; Yoshitomi, Toshihiko; and Omori, Takeshi, 4,551,575, Cl. 136-255.000.
Yotsuami Limited: *See*—
Nakanishi, Hitoshi; and Ogura, Hiroyuki, 4,550,938, Cl. 289-1.200.
Young, Donald C.; and Green, James A., II, to Union Oil Company of California. Method of soil nitrification inhibition by application of a stabilized fumigant composition. 4,551,167, Cl. 71-64.100.
Young, James V.: *See*—
Muchisky, Thomas P.; and Young, James V., 4,550,901, Cl. 269-328.000.
Young, John S.: *See*—
Daniels, William R.; and Young, John S., 4,551,585, Cl. 179-175.30R.
Yu, Ho; and Ai, Daniel K., to Aluminum Company of America. Roll caster apparatus having uniform flow of molten metal into novel nozzle tip assembly. 4,550,767, Cl. 164-428.000.
Yu, Ho: *See*—
Ai, Daniel K.; and Yu, Ho, 4,550,766, Cl. 164-428.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Kawagoe, Nobukazu; Naruse, Kazuhiko; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Light source for exposure. 4,551,011, Cl. 355-35.000.
Yui, George M. Toilet-bowl bidet apparatus. 4,550,454, Cl. 4-420.400.
Yuill, William A., to Atlantic Richfield Company. Process for converting molybdenite to molybdenum oxide. 4,551,312, Cl. 423-53.000.
Yuyama, Yukihiro: *See*—
Maruta, Keiichi; and Yuyama, Yukihiro, 4,551,738, Cl. 346-200.000.
Zadak, Zdenek: *See*—
Skvara, Frantisek; Kolar, Karel; Zadak, Zdenek; Friml, Zdenek; and Novotry, Jaroslay, 4,551,176, Cl. 106-90.000.
Zakiewicz, Bohdan M. Process for the recovery of hydrocarbons for mineral oil deposits. 4,550,779, Cl. 166-248.000.
Zambolin, Marco. Process and apparatus for reducing the temperature gradient in buildings. 4,550,649, Cl. 98-39.100.
Zatek, Kazimierz. Boat hull planking method. 4,550,674, Cl. 114-358.000.
Zdziarski, Stanley F.: *See*—
Retsch, William H.; and Zdziarski, Stanley F., 4,550,900, Cl. 269-87.000.
Zegers de Beyl, Rene H.; and Coble, Stephen J., to American Hospital Supply Corporation. Patient controlled medication infusion system. 4,551,133, Cl. 604-66.000.
Zemel, Jay N., to University of Pennsylvania, Trustees of the. Pyroelectric gas sensor. 4,551,425, Cl. 435-4.000.
Zentner, Harry, to Mauri Brothers & Thomson (Aust.) Pty. Limited. Dough improver. 4,551,334, Cl. 426-26.000.
Zepell, June R. G.: *See*—
Zepell, Nathan A., 4,551,034, Cl. 401-104.000.
Zepell, Nathan A., to Zepell, June R. G. Clip mount insert. 4,551,034, Cl. 401-104.000.
Ziaylek, Theodore, Jr. Wheeled container, especially for use by firefighting and rescue squads. 4,550,931, Cl. 280-655.000.
Ziegenhorn, Joachim: *See*—
Draeger, Brigitte; and Ziegenhorn, Joachim, 4,551,427, Cl. 435-14.000.
Zimmer, Johannes; and Mayer, Karl, to Zimmer, Johannes. Applicator for uniformly distributing a flowable material over a receiving surface. 4,550,681, Cl. 118-410.000.
Zimmerman, Gregory L. Hydrostatic lubrication system for a walking beam. 4,550,805, Cl. 184-18.000.
Zimmermann, Charles E.: *See*—
Johnson, A. David, Jr.; Bachman, Joseph L., Jr.; Ginther, George E., Sr.; Zimmermann, Charles E.; and Johnson, Albert D., Sr., 4,551,126, Cl. 493-453.000.
Zoller-Kipper GmbH: *See*—
Naab, Jakob, 4,551,057, Cl. 414-420.000.
Zuber, Thierry; and Traiteur, Rene , to Novatome; and Commissariat a l'Energie Atomique. Steam outlet connection for a steam generator. 4,550,688, Cl. 122-360.000.

Zucker, Armand S.: *See*—
Nathan, Walter; and Zucker, Armand S., 4,550,838, Cl. 211-128.000.
Zupan, Marko: *See*—
Zupancic, Natasa; Sket, Boris; Zupet, Pavel; and Zupan, Marko, 4,551,525, Cl. 544-49.000.
Zupancic, Natasa; Sket, Boris; Zupet, Pavel; and Zupan, Marko, to KRKA, tovarna zdravil, n.sol.o. Process for preparing N-(2-pyridyl)-2-methyl-4-hydroxy-2H-1,2-benzothiazine-3-carboxamide-1,1-dioxide. 4,551,525, Cl. 544-49.000.
Zupet, Pavel: *See*—
Zupancic, Natasa; Sket, Boris; Zupet, Pavel; and Zupan, Marko, 4,551,525, Cl. 544-49.000.
zur Hausen, Manfred: *See*—
Otte, Werner; Nehring, Rudolf; and zur Hausen, Manfred, 4,551,564, Cl. 568-834.000.
Zwaskis, William J.: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,550,729, Cl. 128-325.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abel, Helmut. Multiple-purpose saw blade suspension arrangement for reciprocating saws. Re. 32,020, Cl. 83-783.000.

AHI Operations Limited: *See—*
Phillips, Dougald S. M.; and Phillips, Peter A. J., Re. 32,019, Cl. 73-304.00R.

America's Cup, Inc.: *See—*
Harr, Robert G.; and Soli, Gaylord T., Re. 32,023, Cl. 441-112.000.

Calvert, Edmund, administrator: *See—*
Parker, Clive; Pearl, Antony, deceased; and Calvert, Edmund, administrator, Re. 32,022, Cl. 356-307.000.

Domke, Klaus; and Saur, Walter, to Robert Bosch GmbH. Method of producing sealed packaging containers. Re. 32,018, Cl. 53-480.000.

Globol-Werk GmbH: *See—*
Hautmann, Horst; and Schimanski, Georg, Re. 32,017, Cl. 4-231.000.

Greig, John H., to MSI Electronics Inc. Mercury probe. Re. 32,024, Cl. 324-158.00F.

Harr, Robert G.; and Soli, Gaylord T., to America's Cup, Inc. Flotation vest. Re. 32,023, Cl. 441-112.000.

Hautmann, Horst; and Schimanski, Georg, to Globol-Werk GmbH. Toilet flush water colorizer. Re. 32,017, Cl. 4-231.000.

Lone Star Medical Products, Inc.: *See—*
Scott, Frank B., Jr., Re. 32,021, Cl. 128-20.000.

MSI Electronics Inc.: *See—*
Greig, John H., Re. 32,024, Cl. 324-158.00F.

Parker, Clive; Pearl, Antony, deceased; and by Calvert, Edmund, administrator, to Varian Associates, Inc. Atomic absorption spectroscopy. Re. 32,022, Cl. 356-307.000.

Pearl, Antony, deceased: *See—*
Parker, Clive; Pearl, Antony, deceased; and Calvert, Edmund, administrator, Re. 32,022, Cl. 356-307.000.

Phillips, Dougald S. M.; and Phillips, Peter A. J., to AHI Operations Limited. Methods of and/or means for indicating the levels of liquids. Re. 32,019, Cl. 73-304.00R.

Phillips, Peter A. J.: *See—*
Phillips, Dougald S. M.; and Phillips, Peter A. J., Re. 32,019, Cl. 73-304.00R.

Robert Bosch GmbH: *See—*
Domke, Klaus; and Saur, Walter, Re. 32,018, Cl. 53-480.000.

Saur, Walter: *See—*
Domke, Klaus; and Saur, Walter, Re. 32,018, Cl. 53-480.000.

Schimanski, Georg: *See—*
Hautmann, Horst; and Schimanski, Georg, Re. 32,017, Cl. 4-231.000.

Scott, Frank B., Jr., to Lone Star Medical Products, Inc. Surgical retractor utilizing elastic tubes frictionally held in spaced notches. Re. 32,021, Cl. 128-20.000.

Soli, Gaylord T.: *See—*
Harr, Robert G.; and Soli, Gaylord T., Re. 32,023, Cl. 441-112.000.

Varian Associates, Inc.: *See—*
Parker, Clive; Pearl, Antony, deceased; and Calvert, Edmund, administrator, Re. 32,022, Cl. 356-307.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

A.G. fur industrielle Elektronik AGIE Losone b. Locarno: *See—*
Ulmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, B1 3,928,163, Cl. 204-206.000.

Dentsply Research & Development Corp.: *See—*
Dougherty, Emery W.; and Welsh, Richard E., B1 4,330,280, Cl. 433-90.000.

Dougherty, Emery W.; and Welsh, Richard E., to Dentsply Research & Development Corp. Ejector holder for capsule-like cartridge. B1 4,330,280, 11-5-85, Cl. 433-90.000.

Emhart Industries, Inc.: *See—*
Perry, Leroy A.; and Scott, Charles E., B1 4,370,566, Cl. 307-141.000.

Fenner, Hans-Ueli: *See—*
Ulmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, B1 3,928,163, Cl. 204-206.000.

Keeri-Szanto, Michael. Device for monitoring and controlling self-administered intravenous drug dosage. B1 4,275,727, 11-5-85, Cl. 604-66.000.

Kohaut, John E., to Raceway Components, Inc. Apparatus for sealing passages through a concrete floor and about a conductor. B1 4,099,020, 11-5-85, Cl. 174-48.000.

Mattei, Silvano: *See—*
Ulmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, B1 3,928,163, Cl. 204-206.000.

Perry, Leroy A.; and Scott, Charles E., to Emhart Industries, Inc. Appliance control system. B1 4,370,566, 11-5-85, Cl. 307-141.000.

Raceway Components, Inc.: *See—*
Kohaut, John E., B1 4,099,020, Cl. 174-48.000.

Schumacher, Bernd: *See—*
Ulmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, B1 3,928,163, Cl. 204-206.000.

Scott, Charles E.: *See—*
Perry, Leroy A.; and Scott, Charles E., B1 4,370,566, Cl. 307-141.000.

Sieg, Arno: *See—*
Ulmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, B1 3,928,163, Cl. 204-206.000.

Ulmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, to A.G. fur industrielle Elektronik AGIE Losone b. Locarno. Spark discharge and electro-chemical erosion machining apparatus. B1 3,928,163, 11-5-85, Cl. 204-206.000.

Welsh, Richard E.: *See—*
Dougherty, Emery W.; and Welsh, Richard E., B1 4,330,280, Cl. 433-90.000.

LIST OF DESIGN PATENTEES

Aebersold, Larry A.: *See—*
Johnson, David E.; Aebersold, Larry A.; and McCall, Kenneth E., 281,250, Cl. D15-144.000.

Akiyama, Kunio, to Sharp Corporation. POS (Point-of-sales) cash register. 281,254, 11-5-85, Cl. D18-4.000.

Amabili, Arnaldo. Egg container. 281,226, 11-5-85, Cl. D9-341.000.

Amba Marketing Systems, Inc.: *See—*
Schimmel, Otto K., 281,201, Cl. D3-53.000.

AMC Appliances, division of Algonquin Mercantile Corporation: *See—*
Lastuck, Leonard V., 281,215, Cl. D7-363.000.

American Cyanamid Co.: *See—*
Morgan, John H.; and Grip, John A., 281,228, Cl. D9-404.000.

Appleby, Joan. Food chopping board. 281,212, 11-5-85, Cl. D7-46.000.

Aqua-Leisure Industries, Inc.: *See—*
Fireman, Simon C., 281,224, Cl. D9-337.000.

Arcair Company: *See—*
Johnson, David E.; Aebersold, Larry A.; and McCall, Kenneth E., 281,250, Cl. D15-144.000.

Armbruster, Joseph M., to Eagle-Picher Industries, Inc. Cabinet for video cassettes or the like. 281,207, 11-5-85, Cl. D6-407.000.

Artwick, Kert E., to Leslie-Locke, Inc. Self-closing ventilation louver. 281,273, 11-5-85, Cl. D23-151.000.

Aspen Ribbons, Inc.: *See—*
Schiffmacher, William M., 281,258, Cl. D18-22.000.

Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., to Singer Company, The. Router. 281,218, 11-5-85, Cl. D8-67.000.

Beach, Wilma R., to Daniel E. Gelles Associates, Inc. Article display bracket. 281,211, 11-5-85, Cl. D6-572.000.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Printing ribbon cartridge. 281,257, 11-5-85, Cl. D18-22.000.

Best, Melvin H., to Glastar Corporation. Strip cutter. 281,219, 11-5-85, Cl. D8-98.000.

Bieger, Walter I.: *See—*
Olson, David V.; and Bieger, Walter I., 281,230, Cl. D9-434.000.

Bio-Support Industries Ltd: *See—*
Roberts, Frank L., 281,210, Cl. D6-502.000.

Blankenship, Larry K.; and Manno, Joseph, to Vitalmetrics, Inc. Electronic urine monitor. 281,278, 11-5-85, Cl. D24-17.000.

Burke, Bradley: *See—*
Schosser, John F.; Gleason, Roger K.; Dole, Charles M.; Us, Max; and Burke, Bradley, 281,280, Cl. D26-46.000.

Burlington Industries, Inc.: *See—*
Cochran, James A., 281,231, Cl. D9-456.000.

Burns, Edward M. Stand for computer disks. 281,209, 11-5-85, Cl. D6-468.000.

Busse, Rido, to Soehnle-Waagen GmbH & Co. Household scale. 281,235, 11-5-85, Cl. D10-91.000.

Canon Kabushiki Kaisha: *See—*
Nibley, Richard; and Kondo, Hiroatsu, 281,255, Cl. D18-12.000.

Cazier, Monty N. Insect cage. 281,283, 11-5-85, Cl. D30-1.000.

Christie, Cornelius W., to SCM Corporation. Typewriter. 281,253, 11-5-85, Cl. D18-1.000.

Citizen Watch Co., Ltd.: *See—*
Ohtsu, Yutaka, 281,244, Cl. D14-77.000.

Cochran, James A., to Burlington Industries, Inc. Divider for separating stacked articles. 281,231, 11-5-85, Cl. D9-456.000.

Craft, Hugh R.: *See—*
Cutliff, Norman J., Jr.; and Craft, Hugh R., 281,216, Cl. D8-26.000.

Cutliff, Norman J., Jr.; and Craft, Hugh R. Fireman's tool. 281,216, 11-5-85, Cl. D8-26.000.

Daniel E. Gelles Associates, Inc.: *See—*
Beach, Wilma R., 281,211, Cl. D6-572.000.

Dearing, Timothy, to E. R. Howard Limited. Bottle or the like. 281,223, 11-5-85, Cl. D19-322.000.

Deflecto Corporation: *See—*
Meyer, Stephen T.; and Meyer, C. Rodger, 281,271, Cl. D23-149.000.

Dole, Charles M.: *See—*
Schosser, John F.; Gleason, Roger K.; Dole, Charles M.; Us, Max; and Burke, Bradley, 281,280, Cl. D26-46.000.

Doman, Donald W., to Kohler Co. Urinal. 281,270, 11-5-85, Cl. D23-68.000.

Duracell Inc.: *See—*
Schosser, John F.; Gleason, Roger K.; Dole, Charles M.; Us, Max; and Burke, Bradley, 281,280, Cl. D26-46.000.

E. R. Howard Limited: *See—*
Dearing, Timothy, 281,223, Cl. D19-322.000.

Eagle-Picher Industries, Inc.: *See—*
Armbruster, Joseph M., 281,207, Cl. D6-407.000.

Edmiston, Robert G. Hose bracket. 281,221, 11-5-85, Cl. D8-356.000.

Faidide, Christian, to S.A.R.L. Wichard. Snap hook. 281,222, 11-5-85, Cl. D8-367.000.

Farrer, Peter B., to Kemtron Properties Pty. Ltd. Portable fan. 281,276, 11-5-85, Cl. D23-155.000.

Felix, Gary; and Rivell, Thomas. Anemometric wind vane. 281,232, 11-5-85, Cl. D10-59.000.

Feuz, Timothy A. Rotatable chimney cowl. 281,275, 11-5-85, Cl. D23-154.000.

Fireman, Simon C., to Aqua-Leisure Industries, Inc. Mask and snorkel package. 281,224, 11-5-85, Cl. D9-337.000.

Firestone Tire & Rubber Company, The: *See—*
Hinrichsen, Silvana, 281,238, Cl. D12-147.000.

Fiskars Oy AB: *See—*
Johde, Reijo, 281,248, Cl. D15-29.000.

Gamefield Concept, Inc., The: *See—*
Irvine, Robert H.; and Gutkin, Peter, 281,268, Cl. D21-191.000.

Givler, Omar, to Portage Electric Products, Inc. Housing for a thermostatic switch. 281,240, 11-5-85, Cl. D13-34.000.

Glass Dimensions, Inc.: *See—*
Perkins, David R., 281,279, Cl. D26-10.000.

Glastar Corporation: *See—*
Best, Melvin H., 281,219, Cl. D8-98.000.

Gleason, Roger K.: *See—*
Schosser, John F.; Gleason, Roger K.; Dole, Charles M.; Us, Max; and Burke, Bradley, 281,280, Cl. D26-46.000.

Griffioen, Jan. Puppet. 281,265, 11-5-85, Cl. D21-153.000.

Grip, John A.: *See—*
Morgan, John H.; and Grip, John A., 281,228, Cl. D9-404.000.

Groetzner, Kurt; and Wurst, Bert, to Robert Bosch GmbH. Circuit board testing equipment. 281,233, 11-5-85, Cl. D10-75.000.

Groetzner, Kurt; and Wurst, Bert, to Robert Bosch GmbH. Circuit board testing equipment. 281,234, 11-5-85, Cl. D10-75.000.

Gutkin, Peter: *See—*
Irvine, Robert H.; and Gutkin, Peter, 281,268, Cl. D21-191.000.

Halsall, W. Norman. Flexible swing. 281,206, 11-5-85, Cl. D6-347.000.

Hamasaki, Benny T.: *See—*
Nall, Lawson H.; and Hamasaki, Benny T., 281,249, Cl. D15-129.000.

Health Enterprises, Inc.: *See—*
Leman, Arthur L., 281,225, Cl. D9-341.000.

Hensley, Heinz H., to Lillian Hensley Unternehmensberatungs GmbH. Game accessory holder. 281,259, 11-5-85, Cl. D21-54.000.

Hinrichsen, Silvana, to Firestone Tire & Rubber Company, The. Tire. 281,238, 11-5-85, Cl. D12-147.000.

Hirtle, Michael O.: *See—*
Volpe, Leo S.; and Hirtle, Michael O., 281,262, Cl. D21-108.000.
Volpe, Leo S.; and Hirtle, Michael O., 281,263, Cl. D21-108.000.

Hova, Mordechi. Telephone. 281,242, 11-5-85, Cl. D14-53.000.

Howard, Gale V. Sit-up exercise device. 281,267, 11-5-85, Cl. D21-191.000.

Independent Products Company, Inc.: *See—*
Rogahn, Gunther, 281,204, Cl. D6-328.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Bellini, Mario, 281,257, Cl. D18-22.000.

Insetta, Diane. Unicorn doll. 281,266, 11-5-85, Cl. D21-165.000.

International Business Machines: *See—*
Lenzi, Louis E., Jr., 281,246, Cl. D14-100.000.

International Business Machines Corporation: *See—*
Lahey, Donald F.; and Molerin, Dallas G., 281,247, Cl. D14-111.000.

Irvine, Robert H.; and Gutkin, Peter, to Gamefield Concept, Inc., The. Exercise bench. 281,268, 11-5-85, Cl. D21-191.000.

James, George E.: *See—*
James, Monica F.; and James, George E., 281,213, Cl. D7-81.000.

James, Monica F.; and James, George E. Cabinet for storing, measuring and dispensing food staples, such as coffee, sugar, flour, or the like. 281,213, 11-5-85, Cl. D7-81.000.

Johde, Reijo, to Fiskars Oy AB. Coil tine for a harrow. 281,248, 11-5-85, Cl. D15-29.000.

Johnson, David E.; Aebersold, Larry A.; and McCall, Kenneth E., to Arcair Company. Combined electrode drive and nozzle unit for an automatic air carbon-arc cutting and gouging torch. 281,250, 11-5-85, Cl. D15-144.000.

Kato, Shigemasa; and Takada, Sanae, to Tokyo Juki Industrial Co., Ltd. Electronic typewriter. 281,251, 11-5-85, Cl. D18-1.000.

Kato, Shigemasa; and Takada, Sanae, to Tokyo Juki Industrial Co., Ltd. Electronic typewriter. 281,252, 11-5-85, Cl. D18-1.000.

Kawachi, Manabu, to Pioneer Electronic Corporation. Loudspeaker. 281,241, 11-5-85, Cl. D14-30.000.

Kemtron Properties Pty. Ltd.: *See—*
Farrer, Peter B., 281,276, Cl. D23-155.000.

Kohler Co.: *See—*
Doman, Donald W., 281,270, Cl. D23-68.000.

Kondo, Hiroatsu: *See—*
Nibley, Richard; and Kondo, Hiroatsu, 281,255, Cl. D18-12.000.

Koon, Randy G.: *See—*
Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., 281,218, Cl. D8-67.000.

Lahey, Donald F.; and Molerin, Dallas G., to International Business Machines Corporation. Passbook printer. 281,247, 11-5-85, Cl. D14-111.000.

Lassiter, Will M. Trailer lock. 281,220, 11-5-85, Cl. D8-331.000.

Lastuck, Leonard V., to AMC Appliances, division of Algonquin Mercantile Corporation. Table top cooking grill. 281,215, 11-5-85, Cl. D7-363.000.

Laughon, Thomas C.: *See—*
Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., 281,218, Cl. D8-67.000.

Lazarus, Wayne P. Razor assembly or the like. 281,282, 11-5-85, Cl. D28-47.000.

Leman, Arthur L., to Health Enterprises, Inc. Pill box. 281,225, 11-5-85, Cl. D9-341.000.

Lenzi, Louis E., Jr., to International Business Machines. Keyboard. 281,246, 11-5-85, Cl. D14-100.000.

Leslie-Locke, Inc.: *See—*
Artwick, Kert E., 281,273, Cl. D23-151.000.

Lever Brothers Company: *See—*
Tyler, Frank S., 281,229, Cl. D9-425.000.

Lewis, Barbara K., to Qume Corporation. Computer housing. 281,245, 11-5-85, Cl. D14-100.000.

Lillian Hensley Unternehmensberatungs GmbH: *See—*
Hensley, Heinz H., 281,259, Cl. D21-54.000.

LoJacono, Francis X.: *See—*
Smith, Ronald R., 281,260, Cl. D21-66.000.

Lynch, Patrick E., Jr., to Pyramid Products, Inc. Vehicle air purifier. 281,272, 11-5-85, Cl. D23-149.000.

Manno, Joseph: *See—*
Blankenship, Larry K.; and Manno, Joseph, 281,278, Cl. D24-17.000.

Manufacture Metallurgique de Tournus, S.A.: *See—*
Schaller, Pierre A., 281,214, Cl. D7-356.000.

Matalon, Norma. Fragrance container. 281,281, 11-5-85, Cl. D28-5.000.

McCall, Kenneth E.: *See—*
Johnson, David E.; Aebersold, Larry A.; and McCall, Kenneth E., 281,250, Cl. D15-144.000.
Meyer, C. Rodger: *See—*
Meyer, Stephen T.; and Meyer, C. Rodger, 281,271, Cl. D23-149.000.
Meyer, Stephen T.; and Meyer, C. Rodger, to Deflecto Corporation. Lint trap. 281,271, 11-5-85, Cl. D23-149.000.
Molerin, Dallas G.: *See—*
Lahey, Donald F.; and Molerin, Dallas G., 281,247, Cl. D14-111.000.
Morgan, John H.; and Grip, John A., to American Cyanamid Co. Combined dispensing container and cap. 281,228, 11-5-85, Cl. D9-404.000.
Muller, Ronald L.; and Rakocy, William J., to North American Philips Corporation. Digital scale. 281,236, 11-5-85, Cl. D10-92.000.
Nall, Lawson H.; and Hamasaki, Benny T., to Tri Tool, Inc. Tube cutter. 281,249, 11-5-85, Cl. D15-129.000.
Nibley, Richard; and Kondo, Hiroatsu, to Canon Kabushiki Kaisha. Ink ribbon cartridge for electronic typewriter. 281,255, 11-5-85, Cl. D18-12.000.
Norman S. Wright & Co.: *See—*
Wright, Norman S., Jr., 281,274, Cl. D23-153.000.
North American Philips Corporation: *See—*
Muller, Ronald L.; and Rakocy, William J., 281,236, Cl. D10-92.000.
Nottingham, John R.: *See—*
Spirk, John W., Jr.; and Nottingham, John R., 281,264, Cl. D21-130.000.
Nystrom, Susan T. Wall mounted valet. 281,203, 11-5-85, Cl. D6-324.000.
Ohtsu, Yutaka, to Citizen Watch Co., Ltd. Portable television set. 281,244, 11-5-85, Cl. D14-77.000.
Okano, Katsuhiko, to Ryobi Limited. Combined packaging and display container. 281,227, 11-5-85, Cl. D9-347.000.
Olson, David V.; and Bieger, Walter I. Household magnet for kitchen use. 281,230, 11-5-85, Cl. D9-434.000.
Perkins, David R., to Glass Dimensions, Inc. Combined oil lamp, vase or similar article. 281,279, 11-5-85, Cl. D26-10.000.
Pioneer Electronic Corporation: *See—*
Kawachi, Manabu, 281,241, Cl. D14-30.000.
Portage Electric Products, Inc.: *See—*
Givler, Omar, 281,240, Cl. D13-34.000.
Portavideo Entertainment Group, Inc.: *See—*
Thrush, Ted K., 281,200, Cl. D3-33.000.
Pyramid Products, Inc.: *See—*
Lynch, Patrick E., Jr., 281,272, Cl. D23-149.000.
Qume Corporation: *See—*
Lewis, Barbara K., 281,245, Cl. D14-100.000.
Raftery, William B., to Steelcase Inc. Table. 281,208, 11-5-85, Cl. D6-449.000.
Rakocy, William J.: *See—*
Muller, Ronald L.; and Rakocy, William J., 281,236, Cl. D10-92.000.
Reichenstein, Kenneth. Large button telephone. 281,243, 11-5-85, Cl. D14-53.000.
Reuter, Edward J., to Reuter, Inc. Refuse container. 281,284, 11-5-85, Cl. D34-5.000.
Reuter, Inc.: *See—*
Reuter, Edward J., 281,284, Cl. D34-5.000.
Ricoh Company, Ltd.: *See—*
Yamamoto, Toshio, 281,256, Cl. D18-13.000.
Rivell, Thomas: *See—*
Felix, Gary; and Rivell, Thomas, 281,232, Cl. D10-59.000.
Robert Bosch GmbH: *See—*
Groetzner, Kurt; and Wurst, Bert, 281,233, Cl. D10-75.000.
Groetzner, Kurt; and Wurst, Bert, 281,234, Cl. D10-75.000.
Roberts, Frank L., to Bio-Support Industries Ltd. Back rest. 281,210, 11-5-85, Cl. D6-502.000.
Rogahn, Gunther, to Independent Products Company, Inc. Anti-theft hanger ring. 281,204, 11-5-85, Cl. D6-328.000.
Ryobi Limited: *See—*
Okano, Katsuhiko, 281,227, Cl. D9-347.000.
S.A.R.L. Wichard: *See—*
Faidide, Christian, 281,222, Cl. D8-367.000.
Schaller, Pierre A., to Manufacture Metallurgique de Tournus, S.A. Stackable cookpot. 281,214, 11-5-85, Cl. D7-356.000.
Schiffmacher, William M., to Aspen Ribbons, Inc. Printer ribbon cartridge. 281,258, 11-5-85, Cl. D18-22.000.
Schimmel, Otto K., to Amba Marketing Systems, Inc. Handbag. 281,201, 11-5-85, Cl. D3-53.000.
Schosser, John F.; Gleason, Roger K.; Dole, Charles M.; Us, Max; and Burke, Bradley, to Duracell Inc. Compact light. 281,280, 11-5-85, Cl. D26-46.000.
SCM Corporation: *See—*
Christie, Cornelius W., 281,253, Cl. D18-1.000.
Sharp Corporation: *See—*
Akiyama, Kunio, 281,254, Cl. D18-4.000.
Singer Company, The: *See—*
Barrett, Michael E.; Koon, Randy G.; and Laughon, Thomas C., 281,218, Cl. D8-67.000.
Smith, Ronald R., to Weisenberg, Louis A.; and LoJacono, Francis X. Toy balance walker. 281,260, 11-5-85, Cl. D21-66.000.
Snyder, Kirk D. Fly swatter blade. 281,269, 11-5-85, Cl. D22-20.000.
Soehnle-Waagen GmbH & Co.: *See—*
Busse, Rido, 281,235, Cl. D10-91.000.
Spirk, John W., Jr.; and Nottingham, John R. Toy boat or similar article. 281,264, 11-5-85, Cl. D21-130.000.
Stachler, Thomas H. Tab opener for easy-open cans. 281,217, 11-5-85, Cl. D8-33.000.
Steelcase Inc.: *See—*
Raftery, William B., 281,208, Cl. D6-449.000.
Stevens, Julius J., to Teledyne Industries, Inc. Starter motor for an engine. 281,239, 11-5-85, Cl. D15-5.000.
Stubbmann, Albert. Inflatable riding toy. 281,261, 11-5-85, Cl. D21-74.000.
Takada, Sanae: *See—*
Kato, Shigemasa; and Takada, Sanae, 281,251, Cl. D18-1.000.
Kato, Shigemasa; and Takada, Sanae, 281,252, Cl. D18-1.000.
Teledyne Industries, Inc.: *See—*
Stevens, Julius J., 281,239, Cl. D15-5.000.
Thompson, Paul H. Toothbrush. 281,202, 11-5-85, Cl. D4-104.000.
3 Z Novelty Company, Inc.: *See—*
Zusman, Lawrence A., 281,237, Cl. D11-160.000.
Thrush, Ted K., to Portavideo Entertainment Group, Inc. Tamper-proof carrying case for a video cassette recorder. 281,200, 11-5-85, Cl. D3-33.000.
Timmers, Richard E. Auxiliary seat. 281,205, 11-5-85, Cl. D6-336.000.
Tokyo Juki Industrial Co., Ltd.: *See—*
Kato, Shigemasa; and Takada, Sanae, 281,251, Cl. D18-1.000.
Kato, Shigemasa; and Takada, Sanae, 281,252, Cl. D18-1.000.
Tri Tool, Inc.: *See—*
Nall, Lawson H.; and Hamasaki, Benny T., 281,249, Cl. D15-129.000.
Tyco Industries, Inc.: *See—*
Volpe, Leo S.; and Hirtle, Michael O., 281,262, Cl. D21-108.000.
Volpe, Leo S.; and Hirtle, Michael O., 281,263, Cl. D21-108.000.
Tyler, Frank S., to Lever Brothers Company. Packaging container. 281,229, 11-5-85, Cl. D9-425.000.
Us, Max: *See—*
Schosser, John F.; Gleason, Roger K.; Dole, Charles M.; Us, Max; and Burke, Bradley, 281,280, Cl. D26-46.000.
Vitalmetrics, Inc.: *See—*
Blankenship, Larry K.; and Manno, Joseph, 281,278, Cl. D24-17.000.
Volpe, Leo S.; and Hirtle, Michael O., to Tyco Industries, Inc. Toy building block. 281,262, 11-5-85, Cl. D21-108.000.
Volpe, Leo S.; and Hirtle, Michael O., to Tyco Industries, Inc. Toy building block. 281,263, 11-5-85, Cl. D21-108.000.
Weisenberg, Louis A.: *See—*
Smith, Ronald R., 281,260, Cl. D21-66.000.
Wimsatt, James M. Fan. 281,277, 11-5-85, Cl. D23-155.000.
Wright, Norman S., Jr., to Norman S. Wright & Co. Solar powered ventilator. 281,274, 11-5-85, Cl. D23-153.000.
Wurst, Bert: *See—*
Groetzner, Kurt; and Wurst, Bert, 281,233, Cl. D10-75.000.
Groetzner, Kurt; and Wurst, Bert, 281,234, Cl. D10-75.000.
Yamamoto, Toshio, to Ricoh Company, Ltd. Laser printer. 281,256, 11-5-85, Cl. D18-13.000.
Zusman, Lawrence A., to 3 Z Novelty Company, Inc. Novelty figurine. 281,237, 11-5-85, Cl. D11-160.000.

LIST OF PLANT PATENTEES

Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de La Londe. Carnation named Lontrelos. 5,580, 11-5-85, Cl. 71.000.
Ducloux, Yves: *See—*
Barberet, Nicole; and Ducloux, Yves, 5,580, Cl. 71.000.
Jolly, Betty J.; and Jolly, Nelson F., to Jolly's Rosehill Farm of Kent, Inc. Rose plant 'Snow Bride'. 5,579, 11-5-85, Cl. 8.000.
Jolly, Nelson F.: *See—*
Jolly, Betty J.; and Jolly, Nelson F., 5,579, Cl. 8.000.
Jolly's Rosehill Farm of Kent, Inc.: *See—*
Jolly, Betty J.; and Jolly, Nelson F., 5,579, Cl. 8.000.
Laboratoire de Physiologie Vegetale de La Londe: *See—*
Barberet, Nicole; and Ducloux, Yves, 5,580, Cl. 71.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Dellian, Kurt A. Apparatus for the electrolytic generation of alkali on both sides of a substrate. T106,001, 11-5-85, Cl. 204-212.000.
Mair, Alexander D.; and Soroczak, Myra M. Single float step phosphate ore beneficiation. T106,002, 11-5-85, Cl. 209-9.000.
Soroczak, Myra M.: *See—*
Mair, Alexander D.; and Soroczak, Myra M., T106,002, Cl. 209-9.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 5, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

181.6 4,550,445
239 4,550,446

CLASS 4

192 4,550,451
231 Re.32,017
319 4,550,452
323 4,550,453
420.4 4,550,454
480 4,550,455

CLASS 5

98 B 4,550,456
414 4,550,457
434 4,550,458
437 4,550,459

CLASS 7

164 4,550,460

CLASS 8

496 4,551,150
524 4,551,151

CLASS 12

1 R 4,550,461
17 R 4,550,462

CLASS 15

1.7 4,550,463
53 B 4,550,464
84 4,550,465
104.06 R 4,550,466
228 4,550,467
229 A 4,550,468
250.34 4,550,469

CLASS 16

85 4,550,470

CLASS 17

1 R 4,550,471
4,550,472
11 4,550,473

CLASS 24

633 4,550,474

CLASS 29

25.35 4,550,475
26 A 4,550,476
33.2 4,550,477
130 4,550,478
148.4 C 4,550,479
156.4 R 4,550,480
213 R 4,550,481
412 4,550,482
416 4,550,483
434 4,550,484
450 4,550,485
451 4,550,486
527.7 4,550,487
568 4,550,488
571 4,550,489
4,550,490
577 C 4,550,491
603 4,550,492
739 4,550,493
838 4,550,494

CLASS 30

120.3 4,550,495
124 4,550,496
169 4,550,497
276 4,550,498
4,550,499
392 4,550,500
393 4,550,501

CLASS 33

1 B 4,550,502
18 R 4,550,503
125 C 4,550,504
4,550,505
143 L 4,550,506
164 R 4,550,507
179.5 C 4,550,508

CLASS 34

133 4,550,509

CLASS 36

32 R 4,550,510
50 4,550,511

CLASS 37

117.5 4,550,512
141 R 4,550,513

CLASS 38

77.81 4,550,514

CLASS 40

362 4,550,515
513 4,550,516

CLASS 42

90 4,550,517

CLASS 43

2 4,550,518
15 4,550,519
21.2 4,550,520
41 4,550,521
55 4,550,522
61 4,550,523
75 4,550,524
131 4,550,525

CLASS 44

78 4,551,152

CLASS 47

1.5 4,550,526
58 4,550,527
4,550,528

CLASS 48

102 R 4,551,153
193 4,551,154
197 R 4,551,155

CLASS 49

348 4,550,529

CLASS 51

34 R 4,550,530
125 4,550,531
288 4,550,532

CLASS 52

2 4,550,533
19 4,550,534
60 4,550,535
91 4,550,536
103 4,550,537
169.7 4,550,538
236.1 4,550,539
309.4 4,550,540
309.7 4,550,543
309.8 4,550,541
476 4,550,542
741 4,550,544
799 4,550,545

CLASS 53

425 4,550,546
430 4,550,547
434 4,550,548
447 4,550,549
480 Re.32,018
529 4,550,550
534 4,550,551

CLASS 55

16 4,551,156
17 4,551,157
46 4,551,158

CLASS 56

13.9 4,550,552
202 4,550,553
294 4,550,554
314 4,550,555
341 4,550,556
4,550,557

CLASS 57

58.52 4,550,558
223 4,550,559
261 4,550,560

CLASS 60

39.02 4,550,561
4,550,562
39.06 4,550,563
39.093 4,550,564
39.182 4,550,565
554 4,550,566
562 4,550,567
612 4,550,568
657 4,550,569
693 4,550,570

CLASS 62

6 4,550,571
138 4,550,572
172 4,550,573
197 4,550,574
308 4,550,575
441 4,550,576
541 4,551,159

CLASS 65

2 4,551,160
4.2 4,551,162
27 4,551,161
129 4,551,163

CLASS 66

104 4,550,577

CLASS 68

5 C 4,550,579
5 E 4,550,578

CLASS 70

370 4,550,580
422 4,550,581

CLASS 71

6 4,551,164
24 4,551,165
30 4,551,166
64.1 4,551,167
90 4,551,168
94 4,551,169
4,551,170
121 4,551,171

CLASS 72

234 4,550,582
247 4,550,583
273 4,550,584
351 4,550,585
389 4,550,586
402 4,550,587
441 4,550,588

CLASS 73

11 4,550,589
19 4,550,590
28 4,550,591
37.5 4,550,592
40.7 4,550,593
61.1 C 4,550,594
116 4,550,595
117.3 4,550,596
118 4,550,597
146 4,550,598
151 4,550,599
299 4,550,600
304 R Re.32,019
382 R 4,550,601
428 4,550,602
587 4,550,603
4,550,604
622 4,550,605
626 4,550,606
4,550,607
633 4,550,608
642 4,550,609
702 4,550,610
708 4,550,611
727 4,550,612
834 4,550,613
861.19 4,550,614
861.21 4,550,615
861.74 4,550,616
862.04 4,550,617
862.34 4,550,618
862.62 4,550,619
864.55 4,550,620

CLASS 74

2 4,550,621
87 4,550,622
89.2 4,550,623
110 4,550,624
335 4,550,625
409 4,550,626
475 4,550,627
477 4,550,628
689 4,550,629
800 4,550,630
822 4,550,631

CLASS 75

11 4,551,172
12 4,551,173
4,551,174
513 4,551,175

CLASS 76

86 4,550,632

CLASS 81

56 4,550,633
418 4,550,634

CLASS 82

4 C 4,550,635

CLASS 83

743 4,550,636
783 Re.32,020

CLASS 84

384 4,550,637
431 4,550,638

CLASS 87

7 4,550,639

CLASS 89

1.806 4,550,640
12 4,550,641

CLASS 91

346 4,550,642
356 4,550,643
486 4,550,644
499 4,550,645

CLASS 92

128 4,550,646
157 4,550,647

CLASS 98

37 4,550,648
39.1 4,550,649
115.3 4,550,650

CLASS 99

279 4,550,651
4,550,652
348 4,550,653
4,550,654
450.4 4,550,655
590 4,550,656

CLASS 100

43 4,550,657
215 4,550,658

CLASS 101

93.04 4,550,659
128.21 4,550,660

CLASS 102

251 4,550,661
509 4,550,662

CLASS 104

119 4,550,663

CLASS 105

180 4,550,664
241.2 4,550,665

CLASS 106

90 4,551,176
210 4,551,177
273 N 4,551,178
277 4,551,179

CLASS 108

96 4,550,666

CLASS 109

70 4,550,667

CLASS 110

210 4,550,668
245 4,550,669

CLASS 112

121.11 4,550,670
235 4,550,671
293 4,550,672

CLASS 114

56 4,550,673
358 4,550,674

CLASS 116

28.1 4,550,675
206 4,550,676

CLASS 118

31 4,550,677
52 4,550,679
308 4,550,680
410 4,550,681
425 4,550,682
505 4,550,683
630 4,550,678
724 4,550,684

CLASS 119

71 4,550,685
102 4,550,686

CLASS 122

1 C 4,550,687
360 4,550,688
448 R 4,550,689
510 4,550,690

CLASS 123

3 4,550,691
41.02 4,550,694
41.1 4,550,692
4,550,693
41.12 4,550,695
73 D 4,550,696
149 D 4,550,697
195 AC 4,550,698
308 4,550,699
432 4,550,700
436 4,550,701
450 4,550,702
478 4,550,703
481 4,550,704
488 4,550,705
549 4,550,706
669 4,550,707

CLASS 125

15 4,550,708

CLASS 126

96 4,550,709
362 4,550,710
391 4,550,711
439 4,550,712

CLASS 128

1 R 4,550,713
1.5 4,550,714
4 4,550,715
6 4,550,716
16 4,550,717
20 Re.32,021
57 4,550,718
79 4,550,719
4,550,720
80 A 4,550,722
80 E 4,550,721
92 B 4,550,723
133 4,550,724
155 4,550,725
202.22 4,550,726
303.14 4,550,727
303.18 4,550,728
325 4,550,729
335.5 4,550,730
419 PG 4,550,732
419 PT 4,550,731
421 4,550,733
460 4,550,734
639 4,550,735
731 4,550,736
785 4,550,737

CLASS 131

236 4,550,738
247 4,550,739
336 4,550,740

CLASS 132

89 4,550,741

CLASS 134

9 4,551,180
22.11 4,551,181

CLASS 136

255 4,551,575

CLASS 137

14 4,550,742
68.1 4,550,743
80 4,550,744
99.5 4,550,745
461 4,550,746
487.5 4,550,747
605 4,550,748
843 4,550,749
868 4,550,750

CLASS 138

93 4,550,751

CLASS 139

435 4,550,752
4,550,753
452 4,550,754

CLASS 141

59 4,550,755

CLASS 148

12 C 4,551,182
12 R 4,551,183
127 4,551,184
150 4,551,185
171 4,551,186
411 4,551,187

CLASS 152

209 R 4,550,756
228 4,550,757

CLASS 156

73.5 4,551,189
159 4,551,190
276 4,551,191
345 4,551,192
423 4,551,193
441.5 4,551,188
468 4,551,194
603 4,551,195
616 R 4,551,196
642 4,551,197

CLASS 159

47.3 4,551,198

CLASS 160

176 R 4,550,759
271 4,550,758
328 4,550,760

CLASS 162

109 4,551,199
135 4,551,200
158 4,551,201
198 4,551,202
202 4,551,203
336 4,551,204
360.1 4,551,205

CLASS 164

14 4,550,761
98 4,550,762
119 4,550,763
122.2 4,550,764
194 4,550,765
428 4,550,766
4,550,767
456 4,550,768

CLASS 165

1 4,550,769
29 4,550,770
47 4,550,771
4,550,772
54 4,550,773
104.21 4,550,774
111 4,550,775
151 4,550,776
162 4,550,777

CLASS 166

234 4,550,778
248 4,550,779

323 4,550,780
340 4,550,781
382 4,550,782

CLASS 172

21 4,550,783

CLASS 173

114 4,550,784
134 4,550,785

CLASS 174

36 4,551,576
48 B1 4,099,020
57 4,551,577
88 R 4,551,579
182 4,551,578

CLASS 175

2 4,550,786
88 4,550,787
173 4,550,788
297 4,550,789
329 4,550,790
410 4,550,791

CLASS 177

25 4,550,792
145 4,550,793

CLASS 179

1.5 S 4,551,580
2 A 4,551,581
81 R 4,551,582
99 M 4,551,583
156 R 4,551,584
175.3 R 4,551,585

CLASS 180

219 4,550,794
296 4,550,795

CLASS 181

141 4,550,796
167 4,550,797
201 4,550,798
244 4,550,799

CLASS 182

3 4,550,800
7 4,550,801
113 4,550,802
129 4,550,803
233 4,550,804

CLASS 184

18 4,550,805

CLASS 187

10 4,550,806
4,550,807

CLASS 188

1.12 4,550,808
18 A 4,550,809
71.4 4,550,810
170 4,550,811
379 4,550,812

CLASS 190

18 A 4,550,813

CLASS 192

0.052 4,550,816
18 B 4,550,814
30 W 4,550,815
70.23 4,550,817

CLASS 194

1 D 4,550,818
1 N 4,550,819

CLASS 198

389 4,550,820
416 4,550,821
461 4,550,822
805 4,550,823

CLASS 200

5 A 4,551,586
11 R 4,551,587
33 R 4,551,588
38 A 4,551,589
38 R 4,551,590
61.13 4,551,591
67 D 4,551,592
81 R 4,551,593
82 R 4,551,594
86 R 4,551,595
144 B 4,551,596
249 4,551,597
314 4,551,598

CLASS 202

99 4,551,206

CLASS 203

56 4,551,207
60 4,551,208

CLASS 204

1 T 4,551,209
28 4,551,210
37.6 4,551,211
52 R 4,551,212
111 4,551,213
159 4,551,214
159.23 4,551,215
192 C 4,551,216
206 B1 3,928,163
212 4,551,217
240 4,551,218
290 R 4,551,219
294 4,551,220
298 4,551,221
417 4,551,222

CLASS 206

150 4,550,824
222 4,550,825
259 4,550,826
304 4,550,827
349 4,550,828
361 4,550,829
386 4,550,830
439 4,550,831
509 4,550,832
527 4,550,833
611 4,550,834

CLASS 208

8 R 4,551,223
10 4,551,224
43 4,551,225
48 AA 4,551,226
4,551,227
65 4,551,228
76 4,551,229
89 4,551,230
92 4,551,232
100 4,551,235
106 4,551,233
112 4,551,236
120 4,551,231
179 4,551,234
188 4,551,239
251 R 4,551,237
340 4,551,238

CLASS 209

143 4,551,240
148 4,551,241
211 4,551,242

CLASS 210

180 4,551,243
198.1 4,551,244
198.2 4,551,245
4,551,249
221.2 4,551,246
304 4,551,247
404 4,551,248
603 4,551,250
635 4,551,251
638 4,551,252
680 4,551,253
688 4,551,254
770 4,551,255

CLASS 211

24 4,550,835
41 4,550,836
126 4,550,837
128 4,550,838
189 4,550,839
197 4,550,840

CLASS 215

211 4,550,841
232 4,550,842
252 4,550,843
4,550,844
4,550,845
296 4,550,846

CLASS 219

10.49 R 4,551,600
10.55 B 4,551,601
69 D 4,551,602
76.13 4,551,603
78.12 4,551,604
86.31 4,551,605
121 EA 4,551,606
121 L 4,551,608
121 LJ 4,551,607
121 PR 4,551,609
146.3 4,551,610
308 4,551,611
312 4,551,612
316 4,551,613
355 4,551,614
373 4,551,615
460 4,551,616
464 4,551,617
510 4,551,618
523 4,551,619

CLASS 220

4 F 4,550,847
22 4,550,848
71 4,550,849
253 4,550,850
277 4,550,851
327 4,550,852
416 4,550,853
468 4,550,854

CLASS 221

63 4,550,855
4,550,856
70 4,550,857

CLASS 222

1 4,550,858
26 4,550,859
78 4,550,861
109 4,550,862
145 4,550,863
209 4,550,864
402.21 4,550,865
420 4,550,866
607 4,550,867
615 4,550,860

CLASS 223

43 4,550,868

CLASS 224

202 4,550,869

CLASS 227

19 4,550,870

CLASS 228

4.5 4,550,871
48 4,550,872

CLASS 229

30 4,550,873

CLASS 235

1 C 4,551,620
117 R 4,551,621

CLASS 236

1 G 4,550,874

CLASS 239

88 4,550,875
211 4,550,876
265.35 4,550,877
542 4,550,878

CLASS 241

52 4,550,879

CLASS 242

18 DD 4,550,880
35.6 E 4,550,886
56 R 4,550,881
56.3 4,550,887
56.6 4,550,882
59 4,550,883
189 4,550,884
204 4,550,885

CLASS 244

3.22 4,550,888

CLASS 246

28 R 4,550,889

CLASS 248

59 4,550,890
68.1 4,550,891
90 4,550,892
222.4 4,550,893
346 4,550,894

CLASS 250

211 R 4,551,622
4,551,623
287 4,551,624
310 4,551,625
327.2 4,551,626
339 4,551,627
396 R 4,551,599
503.1 4,551,628
578 4,551,629

CLASS 251

1.3 4,550,895
84 4,550,896

CLASS 252

8.5 LC 4,551,256
32.7 E 4,551,257
4,551,258
4,551,259
4,551,260
88 4,551,261
181 4,551,262
186.39 4,551,263
299.62 4,551,264
301.17 4,551,265
400 R 4,551,266

511 4,551,267
519 4,551,268
520 4,551,269

CLASS 254

93 R 4,550,897

CLASS 260

112 R 4,551,271
112.5 E 4,551,273
112.5 R 4,551,270
4,551,272
123.5 4,551,274
239 A 4,551,276
4,551,277
239 D 4,551,275
397.4 4,551,278
404 4,551,279
465 D 4,551,280
4,551,281
501.18 4,551,282
508 4,551,283

CLASS 261

44 B 4,551,284
87 4,551,285

CLASS 264

1.9 4,551,286
4.6 4,551,288
23 4,551,289
46.6 4,551,290
104 4,551,291
139 4,551,292
150 4,551,293
175 4,551,294
177 F 4,551,296
177 R 4,551,295
224 4,551,297

CLASS 266

220 4,550,898

CLASS 267

119 4,550,899

CLASS 269

3 R 4,551,287
87 4,550,900
328 4,550,901

CLASS 271

10 4,550,902
98 4,550,903
198 4,550,904
202 4,550,905

CLASS 272

73 4,550,906
93 4,550,907
130 4,550,908

CLASS 273

73 G 4,550,909
86 B 4,550,910
94 4,550,911
113 4,550,912
126 R 4,550,913
183 D 4,550,914
239 4,550,916
246 4,550,917
272 4,550,915
385 4,550,918

CLASS 277

23 4,550,919
134 4,550,920
167.5 4,550,921

CLASS 279

119 4,550,922

CLASS 280

5 A 4,550,923
5.28 4,550,924
47.13 B 4,550,925
112 A 4,550,926
281 R 4,550,927
421 4,550,928
614 4,550,929
655 4,550,930
4,550,931
689 4,550,932
808 4,550,933

CLASS 283

37 4,550,934

CLASS 285

18 4,550,935
26 4,550,936
334 4,550,937

CLASS 289

1.2 4,550,938

CLASS 290

38 R 4,551,630

55 4,551,631

CLASS 292

340 4,550,939

CLASS 294

54.5 4,550,943
67.4 4,550,940
86.4 4,550,941
102.2 4,550,942

CLASS 296

70 4,550,944
100 4,550,945
156 4,550,946
181 4,550,947
202 4,550,948

CLASS 297

284 4,550,949
440 4,550,950
480 4,550,951

CLASS 299

64 4,550,952

CLASS 303

15 4,550,953
92 4,550,954

CLASS 307

9 4,551,632
141 B1 4,370,566
147 4,551,633
243 4,551,634
254 4,551,635
264 4,551,636
308 4,551,637
455 4,551,638
4,551,639
471 4,551,640
530 4,551,641
552 4,551,642
570 4,551,643
573 4,551,644

CLASS 308

6 C 4,550,955

CLASS 310

46 4,551,645
242 4,551,646
335 4,551,647

CLASS 312

250 4,550,956

CLASS 313

37 4,551,648
336 4,551,649
362.1 4,551,650
402 4,551,651
466 4,551,652

CLASS 315

10 4,551,653
159 4,551,654
370 4,551,655
392 4,551,656
399 4,551,657

CLASS 318

254 4,551,658
258 4,551,659
293 4,551,660
314 4,551,661
316 4,551,662
482 4,551,663
592 4,551,664
696 4,551,665

CLASS 320

20 4,551,666
46 4,551,667

CLASS 323

234 4,551,668
268 4,551,669
281 4,551,670

CLASS 324

51 4,551,671
133 4,551,672
158 F Re.32,024
4,551,673
4,551,675
158 R 4,551,674
208 4,551,676
226 4,551,677
300 4,551,678
309 4,551,679
4,551,680
333 4,551,681

CLASS 328

22 4,551,682
167 4,551,683

CLASS 330

4.3 4,551,684

86 4,551,685
100 4,551,686
258 4,551,687
280 4,551,688

CLASS 331

2 4,551,689
36 L 4,551,690
111 4,551,691

CLASS 333

21 A 4,551,692
22 R 4,551,693
24 C 4,551,694
195 4,551,695
204 4,551,696

CLASS 335

16 4,551,697
78 4,551,698

CLASS 336

135 4,551,699
192 4,551,700

CLASS 337

97 4,551,701
347 4,551,702

CLASS 339

5 R 4,550,957
4,550,958
9 E 4,550,959
14 R 4,550,960
4,550,961
17 LC 4,550,962
31 R 4,550,963
44 M 4,550,964
47 R 4,550,965
84 4,550,966
88 R 4,550,967
91 R 4,550,968
97 P 4,550,970
98 4,550,969
99 R 4,550,971
256 R 4,550,972

CLASS 340

52 D 4,551,703
287 4,551,707
347 AD 4,551,704
347 DA 4,551,705
4,551,709
347 DD 4,551,706
347 SY 4,551,708
505 4,551,710
567 4,551,711
572 4,551,712
666 4,551,713
671 4,551,715
711 4,551,716
712 4,551,717
825.16 4,551,718
825.36 4,551,719
825.52 4,551,720
4,551,721
825.72 4,551,714
904 4,551,722
946 4,551,723

CLASS 343

5 CM 4,551,724
6.5 SS 4,551,725
18 C 4,551,726
418 4,551,727
761 4,551,728

CLASS 346

1.1 4,551,729
33 WL 4,551,730
75 4,551,731
110 R 4,551,732
137 4,551,733
140 R 4,551,734
4,551,735
4,551,736
161 4,551,737
200 4,551,738
216 4,551,739
218 4,551,740

CLASS 350

3.72 4,550,973
6.3 4,550,985
96.15 4,550,974
96.18 4,550,975
96.23 4,550,976
128 4,550,977
138 4,550,978
321 4,550,979
349 4,550,980
350 R 4,550,981
357 4,550,982
376 4,550,983
404 4,550,984
454 4,550,987

584 4,550,988
641 4,550,986

CLASS 351

103 4,550,989
243 4,550,990
4,550,991
173.11 4,550,992
402 4,550,993
4,550,994
403 4,550,995
416 4,550,996
459 4,550,997

CLASS 355

3 BE 4,551,001
3 DD 4,550,998
4,551,002
4,551,004
3 R 4,551,000
4,551,003
3 TR 4,550,999
8 4,551,005
14 E 4,551,008
14 FU 4,551,006
4,551,007
15 4,551,009
25 4,551,010
35 4,551,011
50 4,551,012
55 4,551,013
75 4,551,014
4,551,015
91 4,551,016

CLASS 356

28.5 4,551,017
4,551,018
73.1 4,551,019
4,551,020
307 Re.32,022
350 4,551,021
406 4,551,022
444 4,551,023

CLASS 357

23.6 4,551,741
31 4,551,742
50 4,551,743
64 4,551,744
72 4,551,745
74 4,551,746
4,551,747

CLASS 358

10 4,551,748
28 4,551,749
75 4,551,750
4,551,751
113 4,551,752
140 4,551,753
180 4,551,754
188 4,551,755
197 4,551,756
212 4,551,757
213 4,551,758
4,551,759
4,551,760
4,551,761
221 4,551,762
225 4,551,763
228 4,551,764
248 4,551,765
256 4,551,766
257 4,551,767
283 4,551,768
296 4,551,769
342 4,551,770

CLASS 360

19.1 4,551,771
40 4,551,773
46 4,551,772
72.1 4,551,774
74.1 4,551,775
77 4,551,776
4,551,777
131 4,551,778

CLASS 361

86 4,551,779
113 4,551,780
143 4,551,781
151 4,551,782
223 4,551,783
225 4,551,784
284 4,551,785
306 4,551,786
387 4,551,787
403 4,551,788
406 4,551,789

CLASS 362

23 4,551,790
296 4,551,791
362 4,551,792

370 4,551,793
392 4,551,794

CLASS 364

139 4,551,795
148 4,551,796
200 4,551,797
4,551,798
4,551,799
414 4,551,800
424 4,551,801
424.1 4,551,802
431.05 4,551,803
434 4,551,804
469 4,551,805
473 4,551,806
4,551,807
474 4,551,808
4,551,809
475 4,551,810
481 4,551,811
492 4,551,812
569 4,551,813
716 4,551,814
4,551,815
724 4,551,816
811 4,551,817
900 4,551,818

CLASS 365

120 4,551,819
189 4,551,820
203 4,551,821
222 4,551,822

CLASS 366

40 4,551,024
144 4,551,025
149 4,551,026

CLASS 367

35 4,551,823
76 4,551,824
101 4,551,825
150 4,551,826

CLASS 368

15 4,551,027
204 4,551,028
273 4,551,029

CLASS 369

101 4,551,827
275 4,551,828

CLASS 370

3 4,551,829
15 4,551,830
58 4,551,831
4,551,832
60 4,551,833
94 4,551,834
110.1 4,551,835

CLASS 371

1 4,551,836
25 4,551,837
4,551,838
35 4,551,839
38 4,551,840
66 4,551,841
69 4,551,842

CLASS 372

87 4,551,843

CLASS 373

12 4,551,844

CLASS 374

5 4,551,030
117 4,551,031

CLASS 375

40 4,551,845
82 4,551,846

CLASS 376

245 4,551,298
261 4,551,299
364 4,551,300

CLASS 377

24 4,551,847

CLASS 378

045 4,551,848

CLASS 381

86 4,551,849

CLASS 382

18 4,551,850
38 4,551,851

CLASS 384

517 4,551,032

CLASS 400

308 4,551,033

CLASS 401

104 4,551,034
4,551,035
131 4,551,036
146 4,551,037
265 4,551,038

CLASS 402

60 4,551,039

CLASS 406

28 4,551,040
85 4,551,041
93 4,551,042

CLASS 407

43 4,551,043

CLASS 408

185 4,551,044
206 4,551,045

CLASS 409

82 4,551,046
182 4,551,047
197 4,551,048

CLASS 410

42 4,551,049

CLASS 411

436 4,551,050

CLASS 414

21 4,551,051
81 4,551,052
114 4,551,053
229 4,551,054
293 4,551,055
420 4,551,057
459 4,551,059
539 4,551,056
541 4,551,060
735 4,551,058
4,551,061

CLASS 415

115 4,551,062
4,551,063
116 4,551,064
219 R 4,551,065

CLASS 416

119 4,551,066
140 4,551,067

CLASS 417

8 4,551,068
13 4,551,069
68 4,551,070
313 4,551,071
318 4,551,072
352 4,551,073
366 4,551,074
383 4,551,075
395 4,551,076
454 4,551,077

CLASS 418

16 4,551,078
26 4,551,079
28 4,551,080
55 4,551,081
4,551,082
61 A 4,551,083

CLASS 419

21 4,551,301

CLASS 420

464 4,551,302
590 4,551,303

CLASS 422

4 4,551,304
5 4,551,305
56 4,551,306
4,551,307
58 4,551,308
135 4,551,309
186.05 4,551,310
300 4,551,311

CLASS 423

53 4,551,312
54 4,551,314
59 4,551,313
67 4,551,315
265 4,551,318
290 4,551,316
300 4,551,317
316 4,551,319
321 R 4,551,320
329 4,551,321
4,551,322

387 4,551,323
4,551,324
488 4,551,325
594 4,551,326
4,551,327
607 4,551,328

CLASS 424

22 4,551,329
59 4,551,330
195.1 4,551,331
4,551,332

CLASS 425

185 4,551,084
405 R 4,551,085
425 4,551,086
466 4,551,087

CLASS 426

1 4,551,333
26 4,551,334
44 4,551,335
83 4,551,336
94 4,551,337
281 4,551,338
384 4,551,339
437 4,551,340
489 4,551,341
548 4,551,342
549 4,551,343
594 4,551,344
4,551,345
602 4,551,346
621 4,551,347
639 4,551,348
656 4,551,351

CLASS 427

39 4,551,352
4,551,353
46 4,551,354
48 4,551,355
64 4,551,356
96 4,551,357
126.6 4,551,358
130 4,551,359
160 4,551,360
164 4,551,361
180 4,551,362
255.6 4,551,349
389.9 4,551,350

CLASS 428

28 4,551,363
34 4,551,364
35 4,551,365
4,551,366
4,551,367
4,551,368
36 4,551,369
4,551,370
4,551,371
38 4,551,372
43 4,551,373
4,551,374
57 4,551,375
85 4,551,376
137 4,551,377
198 4,551,378
200 4,551,379
218 4,551,380
240 4,551,381
258 4,551,382
286 4,551,383
312.6 4,551,384
323 4,551,385
4,551,386
336 4,551,387
355 4,551,388
383 4,551,398
402 4,551,389
431 4,551,390
462 4,551,391
495 4,551,392
609 4,551,393
641 4,551,394
677 4,551,395
678 4,551,396
691 4,551,397

CLASS 429

27 4,551,399
94 4,551,400
122 4,551,401
254 4,551,402

CLASS 430

58 4,551,403
59 4,551,404
64 4,551,405
119 4,551,406
138 4,551,407
141 4,551,408
192 4,551,409
215 4,551,410
216 4,551,411
265 4,551,412

270 4,551,413
4,551,414
281 4,551,415
311 4,551,416
316 4,551,417
325 4,551,418
445 4,551,419
505 4,551,420
509 4,551,421
551 4,551,422
559 4,551,423
588 4,551,424

CLASS 431

76 4,551,088
116 4,551,089
188 4,551,090

CLASS 432

23 4,551,091
32 4,551,092
59 4,551,093

CLASS 433

8 4,551,094
19 4,551,095
24 4,551,096
39 4,551,097
90 B1 4,330,280
171 4,551,098
212.1 4,551,099
218 4,551,100

CLASS 434

55 4,551,101
114 4,551,102
225 4,551,103

CLASS 435

4 4,551,425
7 4,551,426
14 4,551,427
19 4,551,428
68 4,551,429
94 4,551,430
176 4,551,431
232 4,551,432
253 4,551,433

CLASS 436

5 4,551,434
541 4,551,435

CLASS 440

56 4,551,104
61 4,551,105

CLASS 441

94 4,551,106
112 Re.32,023
4,551,107
116 4,551,108

CLASS 446

95 4,551,109
118 4,551,110
120 4,551,111
154 4,551,113
207 4,551,112
397 4,551,114

CLASS 455

33 4,551,852
72 4,551,853
78 4,551,854
161 4,551,855
183 4,551,856

CLASS 464

83 4,551,115
97 4,551,116
106 4,551,117
182 4,551,118

CLASS 474

28 4,551,119
135 4,551,120
140 4,551,121
170 4,551,122

CLASS 493

108 4,551,123
128 4,551,124
217 4,551,125
453 4,551,126
462 4,551,127

CLASS 501

90 4,551,436

CLASS 502

5 4,551,437
62 4,551,438
107 4,551,439
119 4,551,440
159 4,551,441
178 4,551,442
313 4,551,443

4,551,444

CLASS 514

9 4,551,445
77 4,551,446
94 4,551,447
130 4,551,448
182 4,551,449
183 4,551,450
217 4,551,451
222 4,551,452
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4,551,460
275 4,551,461
283 4,551,462
300 4,551,463
305 4,551,473
309 4,551,474
312 4,551,464
317 4,551,465
318 4,551,466
334 4,551,467
339 4,551,468
383 4,551,469
408 4,551,475
413 4,551,470
419 4,551,471
461 4,551,476
477 4,551,472
547 4,551,477
603 4,551,478
657 4,551,479
680 4,551,480

CLASS 521

52 4,551,481
53 4,551,482
103 4,551,483

CLASS 523

169 4,551,484
212 4,551,485
4,551,486
215 4,551,487
427 4,551,488
501 4,551,489

CLASS 524

22 4,551,490
31 4,551,491
40 4,551,492
89 4,551,493
4,551,494
94 4,551,495
322 4,551,496
423 4,551,497
424 4,551,498
487 4,551,499

CLASS 525

71 4,551,500
88 4,551,501
326.9 4,551,502
332.1 4,551,503
333.9 4,551,504
346 4,551,505
417 4,551,506
437 4,551,507
507 4,551,508

CLASS 526

68 4,551,509
4,551,510
204 4,551,511
264 4,551,512
307.1 4,551,513
348.1 4,551,514

CLASS 528

18 4,551,515
4,551,516
60 4,551,517
80 4,551,518
296 4,551,519
302 4,551,520
4,551,521
351 4,551,522

CLASS 536

119 4,551,523
121 4,551,524

CLASS 544

49 4,551,525
163 4,551,526
214 4,551,527
242 4,551,528
265 4,551,529
281 4,551,530
320 4,551,531

CLASSIFICATION OF PATENTS

CLASS 546			401	4,551,542	**CLASS 564**			771	4,551,562	660	4,551,574
22	4,551,532		**CLASS 556**		215	4,551,550		804	4,551,563	**CLASS 604**	
35	4,551,533		14	4,551,543	430	4,551,551		834	4,551,564	9	4,551,128
121	4,551,535		40	4,551,544	448	4,551,552		864	4,551,565	21	4,551,129
123	4,551,534		**CLASS 560**		**CLASS 568**			867	4,551,566	31	4,551,131
264	4,551,536		124	4,551,545	311	4,551,553		907	4,551,567	32	4,551,130
330	4,551,537			4,551,546	322	4,551,554		939	4,551,568	52	4,551,132
CLASS 548			255	4,551,547	401	4,551,555		**CLASS 585**		66	4,551,133
367	4,551,538		**CLASS 562**		403	4,551,556		6.6	4,551,569	B1	4,275,727
412	4,551,539		402	4,551,548	433	4,551,557		355	4,551,570	67	4,551,134
531	4,551,540		437	4,551,549		4,551,558		440	4,551,571	82	4,551,135
CLASS 549					454	4,551,559		454	4,551,572	141	4,551,136
215	4,551,541				465	4,551,560		459	4,551,573	171	4,551,137
					619	4,551,561				262	4,551,138

	290	4,551,140									
	317	4,551,139									
	368	4,551,141									
	371	4,551,142									
	378	4,551,143									
	389	4,551,144									
	403	4,551,145									
	405	4,551,146									
	890	4,551,147									
		4,551,148									
CLASS 623											
	1	4,550,447									
	4	4,551,149									
	16	4,550,448									
		4,550,449									
	18	4,550,450									

CLASSIFICATION OF DESIGNS

D3—	33	281,200		363	281,215		434	281,230		100	281,245			281,258		149	281,271
	53	281,201	D8—	26	281,216		456	281,231			281,246	D19—	322	281,223			281,272
D4—	104	281,202		33	281,217	D10—	59	281,232		111	281,247	D21—	54	281,259		151	281,273
D6—	324	281,203		67	281,218		75	281,233	D15—	5	281,239		66	281,260		153	281,274
	328	281,204		98	281,219			281,234		29	281,248		74	281,261		154	281,275
	336	281,205		331	281,220		91	281,235		129	281,249		108	281,262		155	281,276
	347	281,206		356	281,221		92	281,236		144	281,250			281,263			281,277
	407	281,207		367	281,222	D11—	160	281,237	D18—	1	281,251		130	281,264	D24—	17	281,278
	449	281,208	D9—	337	281,224	D12—	147	281,238			281,252		153	281,265	D26—	10	281,279
	468	281,209		341	281,225	D13—	34	281,240			281,253		165	281,266		46	281,280
	502	281,210			281,226	D14—	30	281,241		4	281,254		191	281,267	D28—	5	281,281
	572	281,211		347	281,227		53	281,242		12	281,255			281,268		47	281,282
D7—	46	281,212		404	281,228			281,243		13	281,256	D22—	20	281,269	D30—	1	281,283
	81	281,213		425	281,229		77	281,244		22	281,257	D23—	68	281,270	D34—	5	281,284
	356	281,214															

CLASSIFICATION OF PLANTS

P.—	8	5,579		71	5,580												

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

204—	212	T106,001	209—	9	T106,002												

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,550,519	4,550,908	4,551,708	12 :	Re.32,022	4,550,869	4,551,630				
	4,550,788	4,550,910	4,551,720		4,550,458	4,550,876	4,370,566				
	4,551,677	4,550,911	4,551,724		4,550,521	4,550,896	19 :	4,550,645			
04 :	4,550,522	4,550,914	4,551,730		4,550,600	4,550,902		4,551,603			
	4,550,802	4,550,918	4,551,759		4,550,602	4,550,917		4,551,688			
	4,550,818	4,550,921	4,551,788		4,550,640	4,550,928		4,551,713			
	4,550,848	4,550,936	4,551,797		4,550,706	4,551,076	20 :	4,550,708			
	4,550,912	4,550,940	4,551,814		4,550,719	4,551,084		4,550,856			
	4,551,213	4,550,950	4,551,815		4,550,727	4,551,105		4,550,934			
	4,551,312	4,550,951	4,551,816		4,550,731	4,551,109		4,551,217			
	4,551,721	4,550,983	4,551,828		4,550,732	4,551,112	21 :	4,550,553			
	4,551,727	4,550,999	08 :	4,550,455	4,550,738	4,551,134		4,550,625			
	4,551,799	4,551,034	4,550,801		4,550,849	4,551,143		4,550,740			
	4,551,804	4,551,045	4,550,805		4,550,866	4,551,235		4,551,231			
	4,551,812	4,551,061	4,550,884		4,550,913	4,551,261		4,551,234			
	4,551,836	4,551,066	4,551,313		4,551,164	4,551,279		4,551,589			
	4,551,837	4,551,127	4,551,314		4,551,246	4,551,330		4,551,618			
05 :	4,551,332	4,551,131	4,551,681		4,551,326	4,551,354	22 :	4,550,450			
06 :	Re.32,023	4,551,133	4,551,687		4,551,329	4,551,370		4,551,068			
	4,550,447	4,551,146	4,551,719		4,551,480	4,551,430		4,551,317			
	4,550,451	4,551,153	4,551,772		4,551,570	4,551,432		4,551,461			
	4,550,453	4,551,155	4,551,847		4,551,619	4,551,526		4,551,485			
	4,550,461	4,551,167	09 :	4,550,497	4,551,685	4,551,527	23 :	4,550,537			
	4,550,481	4,551,170	4,550,564		4,551,728	4,551,537		4,550,855			
	4,550,482	4,551,199	4,550,573		4,551,829	4,551,551		4,551,507			
	4,550,492	4,551,206	4,550,668		4,551,856	4,551,572	24 :	4,550,501			
	4,550,499	4,551,226	4,550,694	13 :	4,550,473	4,551,574		4,550,601			
	4,550,513	4,551,229	4,550,702		4,550,550	4,551,581		4,551,092			
	4,550,523	4,551,237	4,550,812		4,550,583	4,551,585		4,551,251			
	4,550,539	4,551,249	4,550,864		4,550,624	4,551,586		4,551,624			
	4,550,544	4,551,255	4,550,964		4,550,642	4,551,590		4,551,697			
	4,550,547	4,551,275	4,550,968		4,550,657	4,551,598		4,551,835			
	4,550,589	4,551,285	4,550,973		4,550,877	4,551,607	25 :	4,550,452			
	4,550,607	4,551,290	4,551,070	16 :	4,550,623	4,551,670		4,550,571			
	4,550,608	4,551,291	4,551,145	17 :	4,550,456	4,551,696		4,550,639			
	4,550,634	4,551,315	4,551,163		4,550,471	4,551,714		4,550,674			
	4,550,636	4,551,325	4,551,189		4,550,496	4,551,801		4,550,715			
	4,550,651	4,551,433	4,551,210		4,550,515	4,551,833		4,550,769			
	4,550,684	4,551,438	4,551,248		4,550,518	18 :	4,550,474		4,550,798		
	4,550,690	4,551,447	4,551,452		4,550,526		4,550,524		4,550,828		
	4,550,741	4,551,449	4,551,483		4,550,595		4,550,546		4,551,028		
	4,550,747	4,551,459	4,551,539		4,550,611		4,550,576		4,551,162		
	4,550,784	4,551,487	4,551,540		4,550,616		4,550,581		4,551,197		
	4,550,792	4,551,604	4,551,542		4,550,626		4,550,692		4,551,241		
	4,550,799	4,551,628	4,551,690		4,550,643		4,550,850		4,551,353		
	4,550,800	4,551,629	4,551,692		4,550,656		4,550,874		4,551,365		
	4,550,808	4,551,638	4,551,796		4,550,678		4,551,094		4,551,385		
	4,550,851	4,551,647	4,551,806		4,550,710		4,551,096		4,551,409		
	4,550,857	4,551,649	4,551,832		4,550,762		4,551,137		4,551,699		
	4,550,870	4,551,664	10 :	4,550,834	4,550,837		4,551,243		4,551,773		
	4,550,888	4,551,680	4,551,426		4,550,838		4,551,306		4,551,783		
	4,550,895	4,551,684	4,551,552		4,550,840		4,551,342		4,551,825		
	4,550,906	4,551,705	4,330,280		4,550,867		4,551,398	26 :	4,550,467		

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41 : 4,550,460
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4,551,075
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4,550,686
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4,551,612
4,551,627
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4,551,800
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DESIGN PATENTS

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04 : 281,200
281,201
281,232
05 : 281,212
06 : 281,219
281,221
281,245
281,247
281,249

281,260
281,268
281,274
281,278
08 : 281,258
281,272
09 : 281,236
281,280
12 : 281,207
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281,266
13 : 281,273
18 : 281,209
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24 : 281,203
25 : 281,224
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26 : 281,283

27 : 281,205
281,230
281,284
29 : 281,267
32 : 281,277
34 : 281,228
281,237
281,261
281,262
281,263

36 : 281,211
281,242
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281,246
281,253
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37 : 281,220
281,231
39 : 281,217
281,240

281,250
281,264
42 : 281,204
45 : 281,218
48 : 281,208
281,216
50 : 281,202
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PLANT PATENTS

34 : 5,579

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

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37 : T106,001

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November 12, 1985

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Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*

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November 12, 1985 Volume 1060 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1060 OG 10
Notice of Maintenance Fees Payable	1060 OG 10
Reissue Applications Filed	1060 OG 10
Requests for Reexaminations Filed	1060 OG 11
Service by Publication	1060 OG 11
Errata	1060 OG 12
Patents Available for License or Sale	1060 OG 12
Patent Certificates of Correction	1060 OG 13
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1060 OG 14
Condition of Patent Applications	1060 OG 15
Reexaminations	499
Reissue Patents Granted (32,025)	501
Plant Patents Granted (5,581)	505
Patents Granted	
General and Mechanical (4,551,857)	507
Chemical (4,552,562)	753
Electrical (4,552,987)	877
Design Patents Granted (281,285)	975
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 53
Classification of	
Patents (Including Reissues and Reexaminations)	PI 57
Designs and Plants	PI 60
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 61
Designs and Plants	PI 62
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Oct. 21, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 9, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,357,714 through 4,358,858
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

Re. 31,396, Re. S.N. 780,516, Filed Sept. 26, 1985, Cl. 260/112.5R, A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION, Robert L. Hamill, et al., Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 157

4,206,872, Re. S.N. 780,412, Filed Sept. 26, 1985, Cl. 236/046, ELECTRONIC THERMOSTAT, Michael R. Levine, Owner of Record: *Inventor,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 234

4,374,347, Re. S.N. 702,182, Filed Feb. 15, 1985, Cl. 318/138, BRUSHLESS D-C MOTOR SYSTEM, Rolf Muller, Owner of Record: *Papst-Motoren KG., St. Georgen, Germany,* Attorney or Agent: Theodore J. Koss, Jr., Ex. Gp.: 217

4,396,543, Re. S.N. 780,130, Filed Sept. 25, 1985, Cl. 260/112.50R, DERIVATIVES OF A-21978C CYCLIC PEPTIDES, Manuel Debono, Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,399,067, Re. S.N. 779,372, Filed Sept. 23, 1985, Cl. 260/112.50R, DERIVATIVES OF A-21978C PEPTIDES, Manuel Debono, Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,403,572, Re. S.N. 775,661, Filed Sept. 13, 1985, Cl. 122/20.00B, COMBUSTION PRODUCT CONDENSING WATER HEATER, Joseph Gerstmann, et al., Owner of Record: *Advanced Mechanical Technology, Inc., Newton, Mass.,* Attorney or Agent: David E. Brook, et al., Ex. Gp.: 344

4,405,336, Re. S.N. 777,540, Filed Sept. 18, 1985, Cl. 44/056, FUEL COMPOSITION, Stephen L. Badger, Owner of Record: *Tandy Wansley, Valley Park, Miss.,* Attorney or Agent: E. Mickey Hubbard, et al., Ex. Gp.: 116

4,409,896, Re. S.N. 777,719, Filed Sept. 19, 1985, Cl. 91/491, PRESSURIZED FLUID ENGINE EQUIPPED WITH MEANS FOR SELECTING ITS SPEED OF ROTATION, Bernard R. Allart, et al., Owner of Record: *Poclain Hydraulics, Verberie, France,* Attorney or Agent: Thomas B. Van Poole, et al, Ex. Gp.: 342

4,418,919, Re. S.N. 777,481, Filed Sept. 18, 1985, Cl. 272/040, MECHANICAL SEALS WITH SETTING BLOCK FOR USE WITH SLURRY PUMPS, Robert S. Wentworth, Owner of Record: *Borg-Warner Corp., Chicago, Ill.,* Attorney or Agent: R. L. Zieg, et al., Ex. Gp.: 246

4,452,462, Re. S.N. 776,262, Filed Sept. 16, 1985, Cl. 277/105, TEMPERATURE RESISTANT JOINT PACKING WITH E-SHAPED SPRING SEAL, Michael A. Karr, Jr., Owner of Record: *Gray Tool Co., Houston, Tex.,* Attorney or Agent: Richard H. Berneike, et al., Ex. Gp.: 246

4,531,382, Re. S.N. 776,622, Filed Sept. 16, 1985, Cl. 62/375, SPIN COOLER, Donald L. Butler, et al., Owner of Record: *Aeroglide Corp., Raleigh, N.C.,* Attorney or Agent: John G. Mills, III, et al., Ex. Gp.: 344

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,388,009, Reexam. No. 90/000,856, Requested: Sept. 16, 1985, Cl. 148/1.5, METHOD OF FORMING A P-N JUNCTION BY AN IONIC BEAM, William J. King, Owner of Record: *General Instrument Corp., New York, N.Y.,* Attorney or Agent: James and Franklin, Ex. Gp.: 114, Requester: General Instrument Corp., New York, N.Y.

3,415,374, Reexam. No. 90/000,865, Requested: Sept. 17, 1985, Cl. 209/211, METHOD AND APPARATUS FOR VORTICAL SEPARATION OF SOLIDS, Nils Anders L. Wikdahl, Owner of Record: *Inventor, Djursholm, Sweden,* Attorney or Agent: Leydig, Voit, et al., Ex. Gp.: 130, Requester: Hydrocyclone Technology, Inc., Stone Mountain, Ga.

3,613,887, Reexam. No. 90/000,863, Requested: Sept. 17, 1985, Cl. 209/211, CYCLONE SEPARATOR TO BE BUILT — IN A CASING OR SIMILAR, Nils Anders L. Wikdahl, Owner of Record: *Inventor, Djursholm, Sweden,* Attorney or Agent: Leydig, Voit, et al., Ex. Gp.: 130, Requester: Hydrocyclone Technology, Inc., Stone Mountain, Ga.

3,937,893, Reexam. No. 90/000,876, Requested: Oct. 4, 1985, Cl. 179/6.14, AUTOMATIC TELEPHONE ANSWERING DEVICE, Willy Muller, et al., Owner of Record: *Uhag Uebersee-Handel AG., Zurich, Switzerland,* Attorney or Agent: J. Gibson Semmes, Ex. Gp.: 261, Requester: Chittaranjan N. Nirmel, Alexandria, Va.

4,298,551, Reexam. No. 90/000,873, Requested: Oct. 4, 1985, Cl. 261/121, APPLIANCE FOR MAKING AN AERATED BEVERAGE, Rune F. R. Adolfsson, Owner of Record: *Thorn Emi Domestic Appliances, Ltd., London, England,* Attorney or Agent: Fleit, Jacobson, et al., Ex. Gp.: 130, Requester: Owner

4,429,885, Reexam. No. 90/000,871, Requested: Oct. 2, 1985, Cl. 277/140, SPACER AND EXPANDER MEMBER FOR HOLDING AND BIASING PISTON RING RAILS, Ko Chiba, et al., Owner of Record: *Kabushiki Kaisha Riken, Tokyo, Japan,* Attorney or Agent: Arthur Garrett, Ex. Gp.: 240, Requester: TRW Automotive Products, Inc., Cleveland, Ohio

4,451,913, Reexam. No. 90/000,870, Requested: Sept. 30, 1985, Cl. 369/110, VIDEO DISC READ BACK SCANNER, James E. Elliott, Owner of Record: *Discovision Associates, Costa Mesa, Calif.,* Attorney or Agent: Ronald J. Clark, Ex. Gp.: 235, Requester: Discovision Associates, Costa Mesa, Calif.

4,500,753, Reexam. No. 90/000,875, Requested: Oct. 4, 1985, Cl. 179/6.03, TELEPHONE ANSWERING APPARATUS WITH RECORDED TIME OF DAY AND DATE, Luther Plunkett, Jr., Owner of Record: *Lanier Business Products, Inc., Atlanta, Ga.,* Attorney or Agent: Jones & Askew, Ex. Gp.: 260, Requester: Chittaranjan N. Nirmel, Alexandria, Va.

4,503,304, Reexam. No. 90/000,869, Requested: Sept. 30, 1985, Cl. 219/10.49R, INDUCTIVE HEATING DEVICE HAVING A PLURALITY OF HEATING COIL UNITS, Toru Hoshikawa, et al., Owner of Record: *Mitsubishi Denki Kabushiki Toyo Tanso Co., Ltd., Osaka, Japan,* Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 210, Requester: Ajax Magnethermic Corp., Warren, Ohio

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to the registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Spalt Associates Corp., Hanover, Mass., Reg. No. 1,136,079, for the mark "VIKING", Canc. No. 14,907.
Jeffrey Sau-Chi Wong, Ontario, Can., Reg. No. 1,163,865, for the mark "HECK AND DESIGN", Canc. No. 14,635.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Errata

"All reference to Patent No. 4,537,592, to John K. Dysart, et al., of Cincinnati, Ohio for 'COMPOSITE WASTE-CONTAINMENT GARMENT HAVING DISPOSABLE ELASTICIZED INSERT' appearing in the Official Gazette of Aug. 27, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,546,308, to Don F. Widmayer of Maryland for 'CONTROL OF AC POWER TO INDUCTIVE LOADS' appearing in the Official Gazette of Oct. 8, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,547,671, to Robert W. Allington of Lincoln, Nebr. for 'METHOD AND APPARATUS FOR REDUCING SCHLIEREN NOISE IN A LIQUID CHROMATOGRAPH' appearing in the Official Gazette of Oct. 15, 1985, should be deleted since no patent was granted."

Patents Available for License or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patent upon reasonable terms to domestic manufacturers.

Applications for license under the following patents should be addressed to: Division Patent Counsel, Power Delivery Division, General Electric Co., 1016 W. Ninth Ave., King of Prussia, Pa. 19406

4,387,280. HIGH SPEED HYDRAULICALLY-ACTUATED OPERATING SYSTEM FOR AN ELECTRIC CIRCUIT BREAKER.

4,398,255. POLYPHASE ANGLE ESTIMATOR.

4,409,447. GAS BLAST CIRCUIT BREAKER COMBINING A MAGNETICALLY DRIVEN ROTATING ARC AND A PUFFER INDUCED GAS BLAST.

4,410,456. ADDITIVES FOR ENHANCING CORONA STABILIZATION IN ELECTRONEGATIVE GASES.

4,410,585. LAYER INSULATION FOR USE IN HIGH VOLTAGE ELECTRICAL EQUIPMENT.

4,433,221. IMPEDANCE CONTACT ASSEMBLY FOR AN ELECTRIC CIRCUIT BREAKER.

4,459,629. ELECTRIC CIRCUIT BREAKER UTILIZING SEMICONDUCTOR DIODES FOR FACILITATING INTERRUPTION.

4,511,203. DEVICE FOR PROVIDING ATTACHMENT TO SPACED PARALLEL CABLES OR RODS.

4,522,771. METHOD OF FABRICATING LAYER INSULATION FOR USE IN HIGH-VOLTAGE ELECTRICAL EQUIPMENT.

4,479,104. TRANSFORMER CORE HAVING CHARGE DISSIPATION FACILITY.

4,484,247. NONFRAGMENTING STATION ARRESTER.

4,495,459. SURGE ARRESTER DISCHARGE COUNTING APPARATUS.

4,513,534. SHUTTER FOR VENTILATION SYSTEMS. *Peter K. Kontler,* One Landmark Sq., Stamford, Conn. 06901. Phone (203) 348–6719.

4,532,410. LOW VOLTAGE BATTERY OPERATED HEATING BIB. *Betty Wehmeyer,* P.O. Box 118, Ingram, Tex. 78025.

4,461,084. INTERNAL MEASURING GAUGE. *Roger K. Slocum,* c/o Boone, Fox & Jones, P.O. Box 865, Los Altos, Calif. 94023–0865. Phone (408) 255–5124.

4,553,739. FLEXIBLE BARRIER HOLDING AND MANIPULATING MECHANISM. *Richard M. Baines, Rte. 7, Sentry Dr., Cartersville, Ga. 30120.*

PATENT NOTICES

Certificates of Correction for the Week of Nov. 12, 1985

Re. 28,565	4,490,643	4,518,777	4,531,212
D. 278,318	4,491,946	4,518,887	4,531,692
3,783,831	4,495,410	4,519,359	4,531,727
4,240,859	4,498,542	4,519,567	4,531,935
4,304,577	4,501,001	4,520,107	4,532,030
4,314,001	4,501,844	4,520,379	4,532,065
4,314,392	4,502,170	4,520,394	4,532,592
4,321,191	4,502,819	4,521,494	4,532,784
4,321,791	4,503,532	4,521,662	4,532,859
4,352,573	4,503,879	4,522,909	4,532,928
4,365,370	4,504,123	4,523,327	4,532,984
4,389,741	4,504,438	4,524,333	4,533,026
4,390,826	4,504,666	4,524,411	4,533,386
4,410,428	4,506,053	4,524,587	4,533,512
4,425,424	4,506,630	4,524,903	4,533,606
4,435,833	4,506,725	4,525,108	4,533,649
4,441,126	4,507,122	4,525,302	4,533,664
4,441,168	4,507,788	4,525,490	4,533,871
4,444,564	4,509,714	4,525,637	4,534,356
4,448,435	4,509,971	4,525,739	4,534,483
4,453,102	4,510,593	4,526,088	4,534,769
4,455,307	4,510,839	4,526,672	4,534,940
4,455,820	4,511,346	4,526,760	4,535,102
4,459,350	4,511,567	4,526,958	4,535,224
4,464,036	4,512,186	4,527,115	4,535,782
4,464,116	4,513,466	4,527,136	4,536,262
4,468,507	4,513,829	4,527,374	4,536,491
4,472,583	4,514,074	4,528,044	4,536,570
4,472,966	4,515,056	4,528,099	4,536,603
4,474,790	4,515,279	4,528,267	4,536,791
4,475,049	4,515,421	4,528,422	4,537,385
4,475,338	4,515,579	4,528,585	4,537,452
4,476,242	4,515,602	4,528,642	4,537,845
4,480,436	4,516,236	4,529,977	4,537,846
4,482,952	4,516,689	4,530,180	4,538,507
4,483,137	4,517,306	4,530,418	4,538,890
4,483,778	4,518,379	4,530,997	
4,486,285	4,518,584	4,531,088	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
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Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 12, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-07-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-30-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-14-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-27-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,403,406 to 3,408,656, inclusive

Plant Patents ..... Numbers 2,835 to 2,843 inclusive

REEXAMINATIONS

NOVEMBER 12, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,790,476 (416th)

LATICES FOR INDUSTRIAL WASTE COAGULATION

F. Steven Spoerle, Oak Lawn; Elmer W. Palmer, Woodridge; Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Reexamination Request No. 90/000,197, May 10, 1982.

Reexamination Certificate for Patent No. 3,790,476, issued Feb. 5, 1974, Ser. No. 200,848, Nov. 22, 1971.

Continuation-in-part of Ser. No. 92,031, Dec. 15, 1970, Pat. No. 3,624,019.

The portion of the term of this patent subsequent to Nov. 30, 1988, has been disclaimed.

Int. Cl.[4] C02F *1/56*

U.S. Cl. 210—734

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

New claims **11–25** are added and determined to be patentable.

1. In a process for thickening or dewatering solids from industrial waste of the type wherein the following steps are performed:

(A) forming an aqueous solution of a water-soluble polymer or copolymer of acrylamide in water;

(B) adding said aqueous solution of polymer or copolymer of acrylamide in water formed in Step A to industrial wastes under floc forming conditions;

(C) allowing said solids to settle from said industrial wastes to provide a clear aqueous supernatant;

the improvement which comprises using an aqueous solution of polymer or copolymer of acrylamide in water which is prepared by the inversion of a polymeric latex in water, wherein said polymeric latex is produced by the steps of:

(a) forming a water-in-oil emulsion from:

(1) water which contains dissolved therein acrylamide or acrylamide with at least one other water-soluble ethylenic unsaturated monomer, thereby producing a monomer phase which has a concentration of from 30–70% by weight of said emulsion;

(2) a liquid hydrocarbon;

(3) a water-in-oil emulsifying agent in a concentration of from 0.1–10% by weight;

(4) a free radical initiator;

(b) heating said emulsion under free radical forming conditions to polymerize the acrylamide or acrylamide and at least one other water-soluble ethylenic unsaturated monomer which is contained in the emulsion; and

(c) polymerizing said acrylamide or acrylamide and at least one other water-soluble ethylenic unsaturated monomer in the water-in-oil emulsion to produce said polymeric latex.

B1 3,891,819 (417th)

AUTOMATIC SET-UP ELECTROEROSION MACHINING METHOD

Werner Ullmann, Locarno; Bernd Schumacher, Losone; Arno Sieg; Silvano Mattei, both of Locarno; Hans-Ueli Fenner, Ascona; Gottlieb Wettstein, and Herbert Ruh, both of Locarno, all of Switzerland, assignors to A.G. fur industrielle Elektronik AGIE, Losone, Switzerland

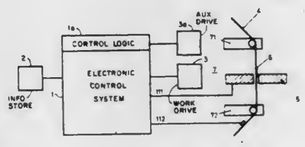
Reexamination Request No. 90/000,695, Dec. 21, 1984.

Reexamination Certificate for Patent No. 3,891,819, issued Jun. 24, 1975, Ser. No. 435,206, Jan. 21, 1974.

Claims priority, application Switzerland, Aug. 15, 1973, 11780/73

Int. Cl.[4] B23P *1/08*

U.S. Cl. 219—69 M



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. Method for electroerosion machining a workpiece having a starting bore by using as the machining tool a long drawn out flexible electrode capable of being gradually dispensed, comprising the steps of:

aligning said starting bore (**9**) of said workpiece (**5**) with an unencumbered straight line path provided for said electrode (**4**) by an electrode drive and guiding system (**7**);

dispensing said electrode (**4**) from an electrode supply by means of said electrode drive and guiding system (**7**);

threading said electrode (**4**) automatically by propelling it by said system in said straight line path into, through and out beyond said bore (**9**) of said workpiece (**5**) until the end of the electrode becomes firmly engaged in transport means (**79**) of a take-up mechanism (**71**) of said electrode drive and guiding system; and then

dispensing said electrode gradually through said workpiece (**5**) and said take-up mechanism (**71**) of said system (**7**) while applying electroerosion voltage thereto relative to said workpiece and subjecting said electrode and workpiece to relative movement under control of an automatic electronic machining drive system to machine a predetermined contour (**8**) in said workpiece.

B1 4,372,974 (418th)

ANTICONVULSIVE COMPOSITIONS AND METHOD OF TREATING CONVULSIVE DISORDERS

Irving Fish, Tenafly, N.J.; Stephen A. Schwartz, Bronx, and Stanley Samuels, White Plains, both of N.Y., assignors to New York University, New York, N.Y.

Reexamination Request No. 90/000,508, Feb. 21, 1984.
Reexamination Certificate for Patent No. 4,372,974, issued Feb. 8, 1983, Ser. No. 269,629, Jun. 2, 1981.
Continuation-in-part of Ser. No. 162,907, Jun. 25, 1980, Pat. No. 4,322,440.
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.
Int. Cl.[4] A61K *31/195*
U.S. Cl. 514—561

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

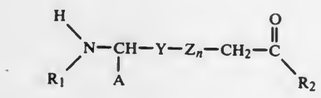
The patentability of claims **1–9** and **12–18** is confirmed.

Claims **19–38** are cancelled.

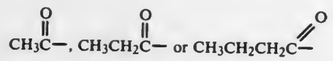
Claim **10** is determined to be patentable as amended.

Claim **11**, dependent on an amended claim, is determined to be patentable.

1. A method for controlling seizures in a mammal in need of such treatment which comprises administering to said mammal prior to the onset of a seizure a composition comprising a solid oral dosage form, said oral dosage form containing a pharmaceutical formulation comprising an effective amount for controlling seizures of a member selected from the group consisting of compounds having the general formula



wherein
R_1 is H,



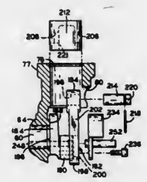
A is H, CH_3, CH_3CH_2—, HO—CH_2, HO—CH_2CH_2, CH_3OCH_2—HS—CH_2—, HS—CH_2CH_2—, CH_3SCH_2—,
Y is C═O, HC—OH or CH—A,
Z is CH—A, O, S; and
R_2 is —OH,
n is 1, and Y is CH—A when n=0, and
A+Y+Z include no more than one Oxygen or Sulfur atom and acid addition salts of such compounds,
said formulation having a pH between about 1.8 and 6.0.

B1 4,406,590 (419th)

HERMETIC COMPRESSOR

Donald L. Kessler, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Reexamination Request No. 90/000,660, Nov. 5, 1984.
Reexamination Certificate for Patent No. 4,406,590, issued Sep. 27, 1983, Ser. No. 158,574, Jun. 11, 1980.
Int. Cl.[4] F04B *35/04, 39/14;* F16J *1/00*
U.S. Cl. 417—360



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

New claims **11–13** are added and determined to be patentable.

11. A compressor comprising: a crankcase with a cylinder therein, the cylinder including a sidewall; a crankshaft rotatably received in the crankcase, the cylinder sidewall including a slot therethrough, said slot being open in a direction generally facing the crankshaft; a piston slideably received in the cylinder; a connecting rod comprising a first closed loop end and a second closed loop end, the second end received over a journal portion of the crankshaft, the slot being dimensioned to receive the first closed loop end of the connecting rod; the connecting rod first end being in registry with the slot when the connecting rod and crankshaft are substantially in their bottom dead center positions, whereby the connecting rod first end can be inserted into the cylinder through the slot at the same time as the second end is slid over one end of the crankshaft; a cylindrical wrist pin journalled in the first closed loop end and journalled in aligned openings in the piston, the wrist pin being completely encircled by the first closed loop end and the openings such that the entire periphery of the openings serve as bearing surfaces for the wrist pin, the wrist pin being in registry with the slot when the connecting rod and crankshaft are substantially in their bottom dead center positions whereby the wrist pin can be inserted through the slot in the cylinder sidewall into the piston; the piston comprising a head portion and a skirt portion extending from the head portion, the skirt portion including an inner sidewall; there being a narrow gap between a first side surface of the connecting rod first end and piston skirt sidewall, a second side surface of the connecting rod first end being closely adjacent said piston skirt sidewall; and retainer means for locking the wrist pin to the piston comprising one only generally C-shaped spring clip disposed in the narrow gap, between the connecting rod first end and the piston skirt sidewall, said spring clip having a larger outer diameter than the diameter of said openings, said clip comprising two spaced apart legs having arcuate inner edges and tapered edges, said legs having a width dimension in the radial direction with respect to the axis of the wrist pin which is substantially larger than the thickness dimension of said legs in the axial direction of said wrist pin, said spring clip further including a resilient distal end interconnecting said legs, said clip being resiliently connected to the wrist pin and retained thereon, the legs straddling the wrist pin and being in engagement with a groove in the wrist pin, the spring clip having an interference fit with said groove between the first side surface of the connecting rod first end and the piston skirt inner sidewall to thereby lock the wrist pin against axial movement and retain the wrist pin within the piston.

REISSUES

NOVEMBER 12, 1985

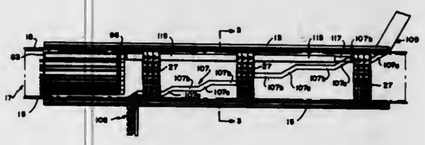
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,025

COCKTAIL FILLING MACHINE AND METHOD

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Original No. 4,304,085, dated Dec. 8, 1981, Ser. No. 93,584, Nov. 13, 1979. Application for reissue Dec. 1, 1983, Ser. No. 556,796
Int. Cl.[4] B65B *1/36*
U.S. Cl. 53—435 **18 Claims**



14. A method for filling containers with a plurality of different kinds of [fruit] *items* comprising the steps of continuously progressing elongated conveyor flights through [fruit] *item* receiving and container filling zones, the flights each extending laterally at right angles to the direction of conveyor movement and each flight having a single row of measuring pockets disposed along the length of the flight, filling the measuring pockets of each flight with [fruit] *items* in the [fruit] *item* receiving zone, with one kind of [fruit] *item* in each pocket and while the lower end of each pocket is closed, progressing the containers to be filled with the different [fruits] *items* through the container filling zone by moving the container at the same speed as the flight and in a zig-zag path of movement being such that a container is successively shifted along the length of the flight to positions below each of the pockets of a flight as it progresses through the filling zone and dwells in each such position to receive [fruit] *items* from the associated pocket, and opening the lower end of each pocket while a container is positioned below the same to drop the [fruit] *items* therein into the container, the lower end of each pocket of a flight being opened successively thereby delivering measured amounts of the different kinds of [fruit] *items* into the container for each such position.

Re. 32,026

STRUCTURE OF WARMER

Iwao Yamashita, and Miyuki Shimizu, both of Oitashi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 3,976,049, dated Aug. 24, 1976, Ser. No. 484,236, Jun. 28, 1974. Application for reissue Apr. 13, 1984, Ser. No. 600,733
Claims priority, application Japan, Jul. 4, 1973, 48-74737; Sep. 8, 1973, 48-101485; Jan. 5, 1974, 49-5652[U]; Jan. 10, 1974, 48-5613; Feb. 27, 1974, 49-22383
Int. Cl.[4] F24J *1/00*
U.S. Cl. 126—263 **15 Claims**



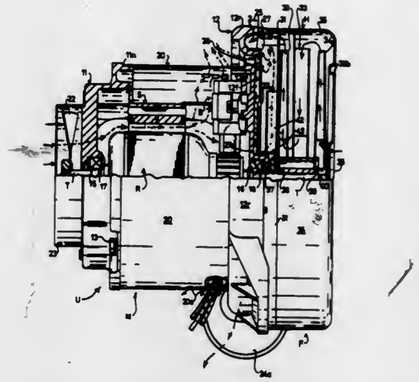
1. A unified structure of a warmer and an air-tight envelope which is used to encapsulate sealingly said warmer at non-service time, said warmer comprising means for enclosing an exothermic composition in contact with water, said means comprising a two layered bag composed of at least one air-permeable cloth layer and at least one impermeable film layer having aeration holes with a predetermined total area and arranged one within the other; said enclosing means being disposed within said air-tight envelope; and said exothermic composition which is activated on contact with air [being selected from the group consisting of iron powder, a chloride and a sulfate of a metal having an ionization tendency greater than iron and active carbon] *comprising iron powder, active carbon and a reaction promoter selected from the group consisting of a chloride and a sulfate of a metal having an ionization tendency greater than iron* filled in said bag, whereby upon opening of said airtight evelope, air contacts said exothermic composition and water to produce heat.

Re. 32,027

WET PICK-UP VACUUM UNIT MOTOR BEARING AIR SEAL

Robert L. Hyatt, Tallmadge, and Norbert H. Niessner, Kent, both of Ohio, assignors to Ametek, Inc., Kent, Ohio

Original No. 4,088,424, dated May 9, 1978, Ser. No. 799,241, May 23, 1977. Continuation of Ser. No. 145,667, May 1, 1980, abandoned. Application for reissue Oct. 28, 1983, Ser. No. 546,420
Int. Cl.[4] F04B *39/06;* A47L *9/22*
U.S. Cl. 417—368 **11 Claims**



1. In a wet pick-up type vacuum cleaner fan unit with a cleaning working air centrifugal fan impeller mounted on a fan shaft supported in a lubricated bearing received in a central socket of a fan housing end wall,
said impeller peripherally discharging to a working air outlet of the housing located adjacent to said end wall,
the improvement comprising:
a centrally apertured disk plate circumferentially engaged and sealed upon and spaced from the fanward inner face of the said end wall;
a plurality of angularly spaced auxiliary or sealing air inlets through said wall from the exterior to an air flow space defined between the disk and end wall face;
an auxiliary centrifugal fan of smaller diameter than, and in back-to-back relation with, said working fan impeller,
said auxiliary fan being clamped on said shaft with its inlet eye facing the central aperture of said disk to receive auxiliary air therefrom;

a shield cup received with circumferential spacing in the auxiliary fan inlet eye and

having a centrally apertured flat bottom conjointly clamped with said fans on said shaft, and

extending through the central aperture of the disk to define with the edge thereof a discharge outlet from said flow space into the auxiliary fan eye;

whereby said shield and disk provide structural screening around said bearing socket and shaft, and

said auxiliary fan, shield and disk further moving auxiliary screening and sealing air axially exterior to the socket and on out to a common discharge of said back-to-back auxiliary and working air fans to prevent foam and working air entrained detergent from approaching said bearing.

Re. 32,028

DYNAMICALLY PARTIALLY CURED THERMOPLASTIC BLEND OF MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN PLASTIC

William K. Fischer, Meaford, Canada, assignor to Uniroyal, Inc., Middlebury, Conn.

Original No. 3,806,558, dated Apr. 23, 1974, Ser. No. 171,328, Aug. 12, 1971. Continuation of Ser. No. 901,400, May 1, 1978, Pat. No. Re. 31,518. Application for reissue Nov. 17, 1983, Ser. No. 552,767

Int. Cl.[4] **C08L** *23/26, 23/32, 23/36, 23/16*

U.S. Cl. 525—194 **12 Claims**

1. A method of making a thermoplastic blend comprising mixing monoolefin copolymer rubber, polyolefin plastic and a curative therefor, [and] masticating and shearing said materials at curing temperature to produce a partial cure insuffieient to render the blend unprocessable *and substantially exhausting the action of the curative so that the thus partially cured blend has little or no tendency for further advancement of cure to take place subsequently* the amount of the said monoolefin copolymer rubber being from [50] *from a major portion of said blend* to 90 parts by weight and the amount of the said polyolefin plastic being correspondingly from [50] *a minor portion of said blend* to 10 parts by weight, the said monoolefin copolymer rubber being a compolymer of at least two different monoolefins, one of which is ethylene and the other or others being alpha-monoolefins of the formula CH_2=CHR where R is an alkyl radical having 1 to 12 carbon atoms, with or without at least one compolymerizable polyene, the resulting partially cured blend having a gel content of from 60 to 93% by weight measured in cyclohexane at 73° F., the said blend being repeatedly reprocessable, and having the characteristics of a thermoplastic elastomer, whereby shaped articles having good physical properties may be made therefrom without requiring vulcanization.

Re. 32,029

PROCESS TO CONTROL THE CURING REACTION BETWEEN A COPOLYESTER RESIN AND AN EPOXIDE COMPOUND, AND A COMPOSITION FORMED FOR THAT PROCESS

Patrick J. Pesata, Jr., Medina; Harlan W. Frerking, Jr., Alliance, and Nelson C. Bletso, Kent, all of Okla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Original No. 4,365,046, dated Dec. 21, 1982, Ser. No. 223,973, Jan. 12, 1981. Application for reissue Dec. 20, 1984, Ser. No. 683,888

Int. Cl.[4] **C08L** *63/00, 67/02*

U.S. Cl. 525—438 **29 Claims**

1. A process to control the activation energy of the curing reaction between a copolyester resin and an epoxide compound, comprising:

mixing with copolyester resin, from about [0.01] *0.001* to about 10 weight percent per copolyester resin weight of an aromatic acid having at least 1 carboxylic acid group and having from 7 to 20 carbon atoms, such that the copolyester resin reaction with the epoxide compound requires a higher activation energy to induce curing of the copolyester resin after compounding with said epoxide compound and during heating of the copolyester resin-epoxide compound mixture;

wherein said polymerization of the copolyester resin comprises an esterification stage, a condensation stage, a reactor compounding stage and a finishing stage; and

wherein said mixing occurs during said reactor compounding stage or said finishing stage.

Re. 32,030

CLOSED LOOP CONTROLLED AUXILIARY AIR DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINE

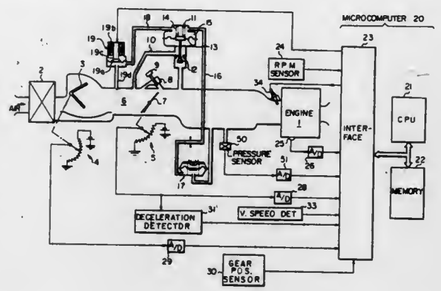
Tsuneomi Yano, Tokyo, and Haruo Yuzawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Original No. 4,240,145, dated Dec. 16, 1980, Ser. No. 965,467, Nov. 30, 1978. Application for reissue Sep. 9, 1982, Ser. No. 416,162

Claims priority, application Japan, Dec. 1, 1977, 52-143309; Dec. 1, 1977, 52-143310

Int. Cl.[4] **G06F** *7/70;* **F02M** *23/06, 23/08*

U.S. Cl. 364—431.04 **14 Claims**



11. A method for controlling an air control valve disposed in an auxiliary passage which is connected to a main intake passage of an internal combustion engine, the auxiliary passage extending between a portion upstream of a throttle valve disposed in the main intake passage and a portion downstream of the throttle valve, the internal combustion engine having means for supplying fuel thereto in response at least to the flow of air passing through the main intake passage, said method comprising the steps of:

detecting a vacuum within the main intake passage downstream of the throttle valve and generating a vacuum indicative signal;

determining that the engine is under deceleration and generating an elapsed time indicative signal indicative of time elapsed from the start of deceleration;

determining a maximum vacuum value for said elapsed time indicative signal and generating a maximum vacuum indicative signal, said maximum vacuum value being variable with variation of time elapsed from the start of deceleration;

comparing said vacuum indicative signal with said maximum vacuum indicative signal and generating a first difference indicative signal indicative of the difference between said vacuum indicative signal and said maximum vacuum indicative signal;

controlling the air control valve in response to said first difference indicative signal, to control the flow of air passing through the auxiliary passage to control the vacuum within the main intake passage downstream of said throttle valve so that the vacuum within the main intake passage downstream of the throttle valve becomes equal to said maximum vacuum value.

14. A control system for controlling an air control valve disposed in an auxiliary passage which is connected to a main intake passage of an internal combustion engine, said auxiliary passage

extending between a portion upstream of a throttle valve disposed in the main intake passage and a portion downstream of the throttle valve, the internal combustion engine having means for supplying fuel thereto in response at least to the flow of air passing through the main intake passage, said control system comprising:

means for detecting a vacuum within the main intake passage downstream of the throttle valve and generating a vacuum indicative signal;

a microcomputer including a memory which stores maximum vacuum values for time elapsed from the start of deceleration, and a central processor unit,

said central processor unit determining that the engine is under deceleration and generating an elapsed time indicative signal indicative of time elapsed from the start of deceleration, determining one maximum vacuum value from said stored maximum vacuum values for said elapsed time indicative signal and generating a maximum vacuum value indicative signal, and comparing said vacuum indicative signal with said maximum vacuum value indicative signal and generating a first difference indicative signal indicative of the difference between said vacuum indicative signal and said maximum vacuum value indicative signal; and

means for controlling the air control valve in response to said first difference indicative value to control the flow of air passing through the auxiliary passage to control the vacuum within the main intake passage downstream of said throttle valve so that the vacuum within the main intake passage downstream of the throttle valve becomes equal to said maximum vacuum value.

PLANT PATENTS

GRANTED NOVEMBER 12, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,581

PEACH TREE, PAMPAIAN'S LATE BABCOCK

James H. Pampaian, 6489 S. Alta Ave., Reedley, Calif. 93654

Filed Feb. 17, 1984, Ser. No. 581,182

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—42 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its bearing of freestone fruit having white flesh and by its general resemblance to the Giant Babcock Peach Tree (U.S. Plant Pat. No. 1,353) from which it is distinguished by its bearing of fruit maturing approximately one month later than that of the Giant Babcock and having a distinctive suture having a dark red coloration radiating through the flesh in the suture plane toward the stone.

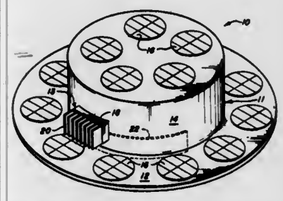
PATENTS

GRANTED NOV. 12, 1985

ERRATA

For CLASS	See PATENT NO.
623–014	4,551,862
623–023	4,551,863
623–006	4,551,864
226–142	4,552,294
226–180	4,552,295
303–007	4,552,398
556–009	4,552,700
514–002	4,552,764
514–513	4,552,765
429–081	4,552,823
455–007	4,552,839
524–219	4,552,926
264–507	4,553,212

4,551,857
HOT WEATHER HAT
Aaron A. Galvin, 15 Barberry Rd., Lexington, Mass. 02173
Filed Dec. 16, 1982, Ser. No. 450,562
Int. Cl.⁴ A42B *1/24*
U.S. Cl. 2—7 **11 Claims**



1. Apparatus for cooling the forehead region of the cranium, comprising:

first means having photovoltaic surfaces operative in response to solar radiation to provide an electrical signal having nominal voltage and current characteristics;

second means connected to said first means and operative in response to said electrical signal having said nominal voltage and current characteristics to provide a cold surface; and

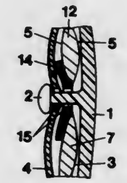
third head piece means coupled to said first and said second means for removably mounting said first and said second means to the cranium;

thermally conductive metallic strip means mounted to said cold surface such that it is in physical contact with said forehead region of the cranium to provide effective thermal communication with the forehead region and cooling thereof when said third head piece means is mounted to the cranium.

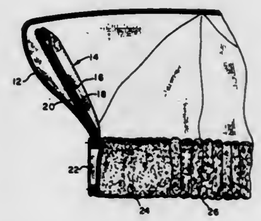
4,551,858
PROTECTIVE HELMET HAVING A COOLING HARNESS
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 30, 1984, Ser. No. 574,993
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302785
Int. Cl.⁴ A42B *3/00*
U.S. Cl. 2—7 **7 Claims**

1. A protective helmet having cooling gear comprising an outer protective helmet shell and a head harness arranged within said shell comprising inner and outer lining walls formed as complimentary segments connected to each other adjacent the tops thereof, said segments being subdivided by longitudinal and transverse webs into mutually communicating cells, a coolant in said cells, a crossband additionally connecting said segments together extending around said helmet, said crossband and said lining having openings therein and a button formation at the interior of said outer protective helmet engaged in the openings.



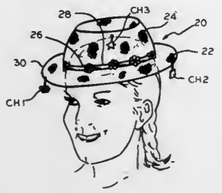


4,551,859
CAP
Gilbert C. Gerhardt, 225 Great Rd., Maple Shade, N.J. 08052
Filed Apr. 30, 1984, Ser. No. 605,162
Int. Cl.⁴ A42D *1/06*
U.S. Cl. 2—172 **12 Claims**



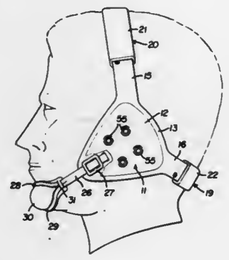
1. A cap comprising a crown, a top, a headband having a width in the vertical direction and extending around said cap below said crown, and a pair of ear flaps each having a retracted condition and an extended condition, each ear flap being attached to and integral with said cap, each said ear flap including a relatively stiff layer, and the proximal end of each said ear flap being affixed to said cap adjacent to and parallel to said headband and making first contact with said headband at the upper edge of said width of said headband, across a substantial portion of the width of said headband, and along a substantial extent of said ear flap running from the proximal toward the distal end thereof, to cause said stiffening layer to tend to extend toward a straight line from said affixed portion to force said earflaps toward said retracted condition.

4,551,860
METAL MESH HEAD COVERING
Helen E. Smit, and Julie A. Smit, both of 1045 Hinman Ave., Evanston, Ill. 60202
Filed Mar. 1, 1982, Ser. No. 353,840
Int. Cl.[4] A42B *1/18*
U.S. Cl. 2—175 **1 Claim**



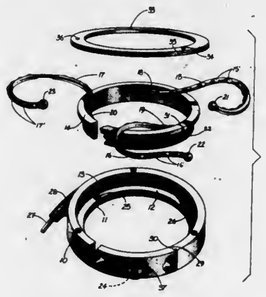
1. A process for making a single layer headcovering comprising the steps of:
a. molding a single piece of a mesh-type of open metal wire or plastic wire fabric material in the form of a desired seamless crown which is fully self-supporting, said crown having a size and a shape which fits around the perimeter of, rests lightly on and is fully supported on the wear's coiffure, whereby said crown does not squeeze a hair style, the crown enclosing and protecting a fluffy, curly hair style from becoming wind blown while ventilating a head to enable air to pass freely through the crown, said open fabric giving an unencumbered view of said hair style;
b. finishing the peripheral edges of said mesh-type material around the open edge of the crown in a hat band region of said crown, said finished edge closing raw ends of said wire fiber so that said mesh will not catch in a person's hair;
c. incorporating a brim or visor onto said crown at said hat band region of said hat band;
d. coloring the mesh-type material any color; and
e. adding a hat band to completely surround and contain said molded mesh crown to preserve a fixed and non-varying periphery for said crown.

4,551,861
WRESTLING HELMET EAR PADS
John L. Marchello, Traverse City, Mich., assignor to Danmar Products, Inc., Ann Arbor, Mich.
Filed Jan. 16, 1984, Ser. No. 570,887
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—425 **6 Claims**



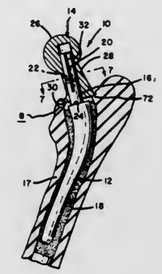
1. An ear pad for a helmet having an ear protective cup-like guard sized and shaped to overlay the wearer's ear and head portion around the ear, with the ear pad fastened within the cup and having a central, depressed, ear receiving pocket, with cushion-forming bulged strips around at least part of the periphery of the pocket for engaging areas of the wearer's head around the ear, the improvement comprising:
said ear pad being formed of a relatively thick, molded sheet of a resilient, rubber-like material, with the sheet having an inner surface adjacent the wearer's head and an outer surface adjacent the wall of the cup-like guard;
the center portion of the sheet forming a resilient ear receiving pocket, and the sheet portions at the periphery of the pocket being inwardly bulged to form peripheral strips of cavities that open towards said wall, with the peripheral edges of the strips shaped to directly engage against said wall, wherein the stips act as resilient air chambers when said pad is assembled to the cup-like guard;
whereby the ear pad absorbs and redistributes impact shocks applied to the helmet ear guard by resilient deformation of the rubber-like material and by compression and distortion of the air filled strips of cavities.

4,551,862
PROSTHETIC SPHINCTER
Terry M. Haber, 25011 Castlewood, Lake Forest, Calif. 92630
Filed Dec. 15, 1982, Ser. No. 435,761
Int. Cl.[4] A61F *1/00*
U.S. Cl. 623—14 **17 Claims**



1. A prosthetic sphincter suitable for implantantion for embracing an elimination passage of a patient to control the movement of material therethrough for realizing continence, said sphincter including, in combination:
(a) a stationary ring;
(b) a rotatable ring axially aligned with said stationary ring to define a ring assembly having an occlusion opening through the rings for surrounding the patient's elimination passage;
(c) occlusion spring means interconnecting said stationary ring and said rotatable ring such that rotation of said rotatable ring relative to said stationary ring from a first position causes said occlusion spring means to enter said occlusion opening to cause a closing of the occlusion opening around the elimination passage and a corresponding application of occlusive pressures to the elimination passage being surrounded by the rings to maintain the passage in an occluded condition until the rotatable ring is rotated back to its first position relative to the stationary ring; and
(d) a tear resistant skin for enclosing said ring assembly and occlusion spring means, said skin having fatigue relief folds on top and bottom surfaces thereof arranged coaxially with the occlusion opening through said rings for accommodating the closing of the occlusion opening when the rotatable ring is moved from its first position, said skin having a pliable filling material located within the enclosure formed thereby for encapsulating said ring assembly and said occlusion spring means.

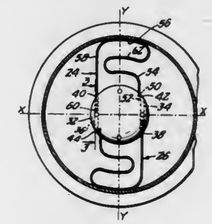
4,551,863
FEMORAL COMPONENT AND METHOD
William M. Murray, 145 Bryce Rd., Camp Hill, Pa. 17011
Continuation of Ser. No. 305,914, Sep. 28, 1981, abandoned. This application Feb. 4, 1985, Ser. No. 698,272
Int. Cl.[4] A61F *1/04*
U.S. Cl. 623—23 **13 Claims**



1. A femoral implant component comprising:
a. a stem element including an elongate cement stem adapted to be cemented into a prepared medullary canal at the proximal end of a live femur, and a shaft on the cement stem extending beyond the proximal end of the cement stem, the cement stem including a distal end to be positioned within the canal, a proximal end to be positioned adjacent the proximal end of the canal, and a cement contact surface surrounding the cement stem between the distal and proximal ends for forming a bond with bone cement in the canal; and
b. a head element mounted on the stem element including a spherical bone joint ball away from the cement stem, a neck on the side of the ball toward the cement stem, a bore extending into the end of the neck toward the ball, and a layer of porous bone ingrowth material on the surface of the neck to lie against resected surface of the femur, the shaft extending into the bore so that the end of the neck surrounds the shaft and is adjacent to the proximal end of the cement stem, the head and stem elements including anti-rotation means preventing rotation of the head element on the shaft;
c. whereby upon implantation of the component in a live femur with the cement stem secured in the medullary canal by a cement connection and the surface of the ingrowth material lying flush against a complementary live bone surface on the proximal end of the femur the cement forms an immediate strong anchorage joining the stem element to the femur and supporting the head element with respect to the complementary surface during growth of live bone into the ingrowth material to form a long term ingrowth anchorage at the head element.

4,551,864
ANTERIOR CHAMBER LENS
David S. Akhavi, Westwood, Calif., assignor to Iolab Corporation, Covina, Calif.
Filed Aug. 18, 1983, Ser. No. 524,276
Int. Cl.[4] A61F *1/16*
U.S. Cl. 623—6 **5 Claims**

1. An anterior chamber intraocular lens comprising:
an optic having an anterior surface, a posterior surface and a surrounding circumferential edge and having first and second bores entering at said edge of said optic at opposite peripheral portions of said edge, said bores extending substantially parallel to each other and extending into said optic generally parallel to the plane which is perpendicular to the optical axis of the optic;
first and second flexible, resilient filamentary haptic means extending from said optic for engaging the peripheral anatomy of the eye;
said first and second haptic means each having a first end and a second end;
said first end of said first haptic means fixed to said optic at a point spaced circumferentially from said first bore an arc distance therealong of less than 180 degrees;
said second end of said first haptic means extending into said first bore;
said first end of said second haptic means fixed to said optic at a point spaced circumferentially from said second bore an arc distance therealong of less than 180 degrees, said second end of said second haptic means extending into said second bore;
each of said first and second haptic means including
(a) a first leg extending from said first end outwardly of said optic;
(b) a second leg extending transversely of said optic for engaging the peripheral anatomy of the eye;
(c) a third leg extending from said second leg to said second end of said haptic means;
said first, second and third legs of each haptic forming a unitary haptic means and having smooth, connecting portions;
each of said first legs of said first and second haptic means including a concave portion extending back toward said respective third leg to provide a greater flexibility to each of said first and second haptic means;



each of said concave portions extending a distance toward said respective third leg so that a plane including the optical axis of said optic and intersecting said concave portion of said first haptic means will also intersect the concave portion of said second haptic means;
further including locking means cooperatively associated with each of said second ends of said first and second haptic means and the respective one of said first and second bores in said optic;
wherein a portion of said optic surrounding the entry area of each of said first and second bores extends thereinto to define a flange for reducing the size thereof in said entry area;
said second end of said first and second filamentary haptic means including an enlarged head larger than the respective first or second bores in said entry area but smaller than the remainder of the respective first or second bores so that said enlarged head may be forced past said flange into the remainder of said respective first or second bores to restrain the removal of said enlarged head of said second end from said respective first or second bores; and
wherein said enlarged head and said flange are sufficiently resilient to permit said enlarged head to contract as it is forced through said flange and then to expand once it passes said flange and enters the remainder of said respective first and second bores.

4,551,865

VENTILATOR FOR A LAVATORY PAN

Dudley G. Waters, 8/47 Victoria Terr., Caloundra Headland, Australia

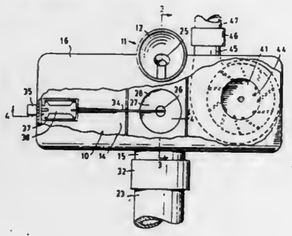
PCT No. PCT/AU84/00026, § 371 Date Oct. 29, 1984, § 102(e) Date Oct. 29, 1984, PCT Pub. No. WO84/03316, PCT Pub. Date Aug. 30, 1984

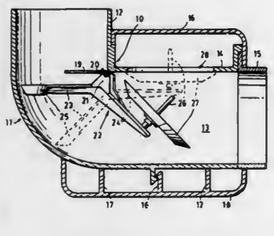
PCT Filed Feb. 24, 1984, Ser. No. 672,268

Claims priority, application New Zealand, Feb. 28, 1983, 203413

Int. Cl.⁴ E03D *9/02*

U.S. Cl. 4—213 **6 Claims**





1. A ventilator for a lavatory pan including:
a duct for connecting the discharge pipe of a lavatory flushing assembly to the flush pipe of the lavatory pan,
an electric extractor fan, having an inlet and an outlet to atmosphere,
an air passage in the duct connected to the extractor fan inlet,
a valve for opening or closing the air passage,
initiating means for operating the extractor fan when the valve is in open position, and
terminating means operated by flow of water from the discharge pipe and duct for automatically closing the valve and stopping the extractor fan.

4,551,866

AUTOMATIC TOILET SEAT LOWERING APPARATUS

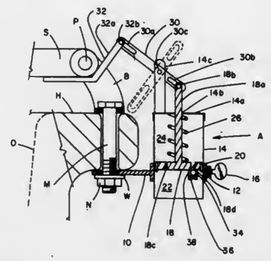
Walter G. Hibbs, 3145 Las Palmas, Houston, Tex. 77027

Filed Aug. 30, 1984, Ser. No. 646,366

Int. Cl.⁴ A47K *13/10*

U.S. Cl. 4—251 **5 Claims**

1. Apparatus for automatically returning a hinged toilet seat to the lower substantially horizontal position after raising to an upper substantially vertical position after passage of a predetermined amount of time, including:
a cylinder;
means for releasably securing said cylinder to a toilet bowl at a desired location;
a piston sealingly disposed in said cylinder for reciprocal movement therein, said piston forming a piston rod having a portion extending from said cylinder;
means for operably linking said portion of said piston rod extending from said cylinder to the hinged toilet seat for moving said toilet seat from the substantially vertical upper position to the lower substantially horizontal position;
biasing means disposed to end said cylinder for urging said piston to move in a direction for operably moving the toilet seat to the lower substantially horizontal position;
said cylinder filled with an operating fluid having preselected flow properties;



said piston having a first flow port formed therethrough to enable passage of operating fluid therethrough at a desired rate to control the speed of movement of said piston from moving the toilet seat to the lower substantially horizontal position.

4,551,867

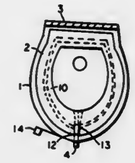
TOILET BOWL WHICH WASHES

Joseph Gurevich, and Alex Gurevich, both of 64-40 99 St., Forest Hills, N.Y. 11374

Filed Nov. 4, 1983, Ser. No. 549,207

Int. Cl.⁴ A47K *4/00, 3/20*

U.S. Cl. 4—420.4 **14 Claims**



1. A toilet bowl unit, comprising
a bowl bounding an interior and having a main part with front and rear parts and an upper rim with an upper bowl opening;
a cover having a cover opening and turnable relative to said bowl between an extended position in which it rests on said rim of said bowl and a retracted position in which it is withdrawn from said rim of said bowl;
water supplying means extending into said interior of said bowl and having a water outlet element arranged in said interior;
said cover opening having a relatively small length in a horizontal plane so as to insure comfortable sitting of a user on said cover in its extended position for defecation and/or urination, without excessive sinking of the lower parts of the user's body into said bowl,
said rim of said bowl being considerably wider than said main part and having an inner surface provided with a bevel to insure comfortable sitting of the user directly on said rim in the retracted position of said cover, for washing the lower parts of the user's body,
said bowl opening being considerably longer in the horizontal plane that said cover opening so that when the user sits directly on said rim for washing a sufficient space remains in said front part of said bowl for introducing the user's hand through said bowl opening into the interior of said bowl in said front part to reach by the user's hand the lower parts of the body and said water outlet element,
said water supplying means having said water outlet element hingedly arranged in said front part of said bowl so as to issue water onto the lower parts of the user's body and also to enable the user to change the direction of a water stream issuing from said water outlet element so as to direct the water stream onto and successively wash the respective lower parts; and
a foot pedal located outside of said bowl in the region of said front part so as to be reachable by a user's foot while sitting on said rim and arranged to adjust under the action of the user's foot the quantity of water issuing from said water outlet element onto the lower parts of the user's body.

4,551,868

WASHING DEVICE FOR PARTS OF BODY

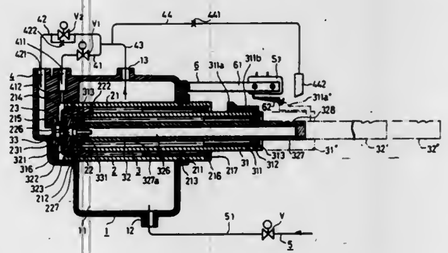
Shinji Kawai, Toyota; Yuji Yamaguchi, Anjo; Kolchi Suzuki, Chiryu, and Hisanobu Takeda, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 6, 1983, Ser. No. 539,751

Claims priority, application Japan, Oct. 6, 1982, 57-175589

Int. Cl.⁴ A61H *35/00*

U.S. Cl. 4—443 **3 Claims**



1. In a washing device for parts of body which comprises:
(1) first cylinder means comprising a first cylinder and a first piston to be operated in the front end direction thereof by introducing pressurized water into said first cylinder;
(2) second cylinder means comprising a second cylinder integrally connected to said first piston and a second piston to be operated in the front end direction thereof by introducing pressurized water into said second cylinder,
said second piston being provided with at least one nozzle at the front end thereof to jet or spout pressurized water for washing parts of the body from a cylinder chamber formed in the second piston;
(3) pressurized water control means for selectively supplying pressurized water to both of said first and second cylinders, or to any one of them; and
(4) pressurized water supply means for supplying pressurized water to said pressurized water control means; the improvement wherein:
said second cylinder means is telescopically disposed within said first cylinder means; and
said pressurized water supply means comprises:
(a) means for selectively causing said pressurized water control means to supply pressurized water to said second cylinder means to extend said nozzle of said second piston to a first washing position;
(b) means for selectively causing said pressurized water control means to supply pressurized water to both of said first and second cylinder means to extend said nozzle of said second piston to a second washing position;
(c) sensor means for detecting extension of one of said first and second cylinders to a given position; and
(d) means responsive to said sensor means for reducing said water supply to said first and second cylinder means upon said detection of said extension.

4,551,869

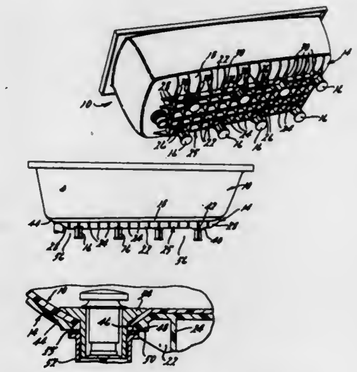
FLOOR SUPPORT FOR A BATHTUB

Thomas H. Whitney, Attica, Mich., assignor to Trayco Inc., Lapeer, Mich.

Filed Mar. 20, 1984, Ser. No. 591,469

Int. Cl.⁴ A47K *3/00, 3/16, 3/02, 3/022*

U.S. Cl. 4—592 **8 Claims**



1. A base support for a plastic bathtub comprising:
a panel section with a top contoured surface shaped to abut the underside of a plastic bathtub;
a first set of substantially parallel ribs integrally formed with said panel section and depending downwardly therefrom;
a second set of substantially parallel ribs integrally formed with said panel section and depending downwardly therefrom;
said second set intersecting said first set at a plurality of intersections; and
a plurality of said intersections having an annular cylindrical wall defining a respective recess therein for receiving a respective support leg.

4,551,870

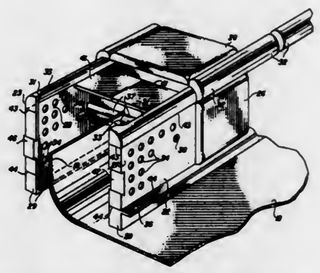
SHOWER STALL THRESHOLD

Francis A. Presti, Jr., 1537 E. Frost, Mesa, Ariz. 85203

Filed Jan. 18, 1985, Ser. No. 692,511

Int. Cl.⁴ A47K *3/22*

U.S. Cl. 4—613 **12 Claims**



1. A shower stall threshold structure comprising oppositely-disposed upright former sections extending longitudinally of

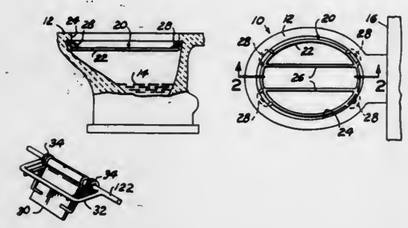
the threshold, means for holding the sections in fixed spatial relationship, a quantity of mortar substantially filling the space between said former sections and tiles covering the top and side face of the threshold, said former sections having openings therein permitting said mortar to extend therethrough for contact with said tiles.

4,551,871

INFANT PROTECTING COMMODE INSERT

Jerry D. West, 702 E. 19, Stillwater, Okla. 74074, and Wayne W. Vinson, 919 N. West, Stillwater, Okla. 74075

Filed Mar. 12, 1985, Ser. No. 710,885
Int. Cl.⁴ A47K *17/00*
U.S. Cl. 4—661 **6 Claims**



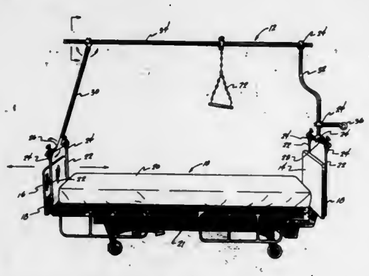
1. In a water closet including a water flushed bowl having a downwardly converging inner wall surface and containing a quantity of water therein for normally closing a bottom outlet of the bowl and having an endless rim inwardly overhanging the bowl wall and defining a horizontal upper limit of the bowl spaced above the water therein, the improvement comprising:
grate means contained by the bowl adjacent its upper limit; and,
resilient members secured to said grate and bearing against the inner wall surfaces of said bowl for normally preventing removal of the grate means.

4,551,872

ORTHOPEDIC TRACTION FRAME

Albert D. Reed, Greenwood, S.C., assignor to Professional Medical Products, Inc., Greenwood, S.C.

Filed Feb. 6, 1984, Ser. No. 577,563
Int. Cl.⁴ A61H *1/02;* **F16M** *13/00*
U.S. Cl. 5—445 **4 Claims**



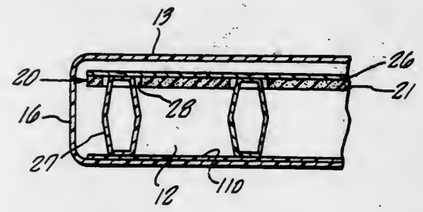
1. In an orthopedic traction frame for an adjustable hospital bed having relatively movable head and foot portions, said frame including a pair of elongate upright support members for attachment to the head and foot portions of the bed, respectively, a generally horizontal support member attached to and interconnecting the upper ends of the upright members for supporting orthopedic equipment thereon, and means for attaching the opposite ends of the upright member at the foot of the bed to the foot of the bed and to the horizontal support member, respectively, for pivotal movement of the ends about respective axes extending perpendicular to the length of the bed to permit variable positioning of the head and foot of the bed toward and away from each other; the improvement wherein said attaching means includes adjustable clamp means for pivotal attachment of the upper end of the upright member at the foot of the bed to the horizontal member, said clamp means including a releasable clamping portion for surroundingly engaging the horizontal member to permit its adjustable positioning along the length of the horizontal member, a base portion for fixed attachment to the upper end of the upright member at the foot of the bed, and means pivotally interconnecting the clamp portion and the base portion for relative movement of the same about an axis perpendicular to the length of the bed to permit relative movement of the head and foot portions of the bed and adjustable positioning of the clamp means along the length of the horizontal member to optimize strength and load support by the frame in various positions of the head and foot of the bed.

4,551,873

WATERBED MATTRESS WITH A BAFFLE

Charles P. Hall, Muir Beach, Calif., assignor to Monterey Manufacturing Co., Carson, Calif.

Continuation of Ser. No. 95,214, Nov. 19, 1979, Pat. No. 4,345,348, which is a continuation-in-part of Ser. No. 949,963, Oct. 10, 1978, Pat. No. 4,247,962. This application Jul. 13, 1982, Ser. No. 397,795
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.⁴ A47C *27/08*
U.S. Cl. 5—450 **35 Claims**



1. An improved waterbed mattress of a type having a flexible water-filled bladder in which said bladder has a recloseable opening for adding and removing water and air from said bladder wherein the improvement comprises:
(a) at least one buoyant, flexible, foam, horizontal plate member, located inside said bladder and unattached to any surface of said bladder;
(b) appendages depending from the lower surface of said horizontal member, wherein said appendages have vertically inclined faces extending to a depth of at least half the distance to the bottom wall of said bladder; and
(c) attachment means for attaching said appendages to said horizontal member.

4,551,874

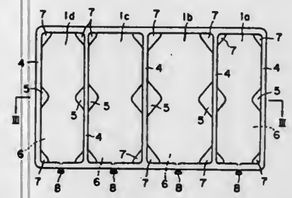
PNEUMATIC MASSAGE MAT

Mitsuma Matsumura; Tadahisa Mogaki, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,388
Int. Cl.⁴ A61H *9/00;* **A61G** *7/04*
U.S. Cl. 5—453 **3 Claims**

1. A pneumatic massage mat comprising:
a plurality of elongated air chambers which are juxtaposed such that, upon being expanded and contracted in given sequence by sequentially feeding and bleeding air under pressure into and out of the respective chambers, said massage mat imparts a massaging action to the body of the user,

wherein the air space of each said air chamber is narrowed in width at a substantially central portion and at opposed end portions thereof with respect to the longitudinal extent of the chamber such that these narrow portions are filled with a smaller volume of air than the remaining portions, and



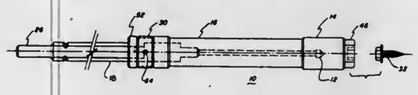
wherein the central narrowed portions of the juxtaposed air chambers extend along substantially a straight line and along the spine of the user.

4,551,875

COMBINATION TOOL

Stephen Getz, and William Fouser, both of Michigan City, Ind., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,949
Int. Cl.⁴ B25F *3/00*
U.S. Cl. 7—138 **3 Claims**



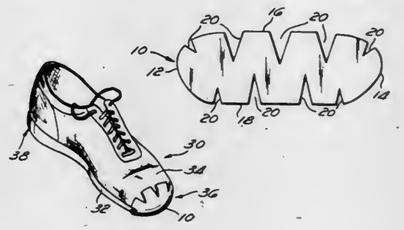
1. A combination tool for selectively exposing a power-driven bit member at one axial end of the tool or a socket member at the one axial end of the tool, comprising a shaft bearing said bit member at its free end and a tube bearing said socket member at the free end thereof, said tube telescopically coupled to the shaft for rotation therewith on the driving of said shaft with either of said members exposed, the invention wherein said tube has a socket member with a configured central opening at the free end thereof and an internally segmented collar at the other end of the tube, a cylindrical bore in the tube between the ends thereof, said shaft being generally cylindrical with an axially elongated segmental flat keywall extending from adjacent the driven end of the shaft to a shoulder adjacent to and spaced from the bit end of the shaft, said shaft keywall shaped to mate with the segmented collar in a planar mating to engage the tube to the shaft for rotation therewith with the bit end of said shaft extending past the one end of the tube, a second flat keywall on said shaft adjacent said shoulder and terminating at a second shoulder spaced from said first mentioned flat keywall, said second keywall positioned on said shaft to mate with the segment of said collar in an advanced position with the free end of the tube advanced axially along the shaft and in which the mating of the second keywall to said collar engages the shaft to the collar for mutual rotation, and in which said second shoulder is positioned to abut against said collar to maintain the tube in said advanced position.

4,551,876

SHOE PATCH DEVICE AND METHOD OF PRESERVING AND REPAIRING SHOES

Dale R. Leslie, 2531 Crestview Dr., Newport Beach, Calif. 92663

Continuation of Ser. No. 445,238, Nov. 29, 1982, abandoned. This application Oct. 5, 1984, Ser. No. 658,421
Int. Cl.⁴ A43B *13/22, 13/12*
U.S. Cl. 12—142 Q **5 Claims**



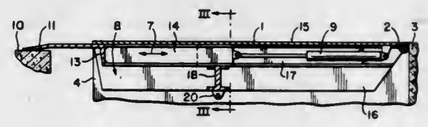
1. A method for preserving an unworn sport shoe without impairing the flexibility thereof, comprising the steps of:
designating any localized area on the sides or upper portion of said unworn sport shoe subject to excessive wear;
selecting a thin generally planar patch member having notched edges and fabricated of sufficiently flexible, wear resistant material which conforms exactly to the shape of said localized area in a size sufficient to extend over said localized area of said unworn sport shoe;
applying an adhesive to one side of said patch member and to said localized area; and
pressing said one side of said patch member onto said localized area to conform the patch member to the shape of the localized area and to affix said patch member in a generally contiguous orientation to said unworn sport shoe to protect said localized area against wear without impairing the original playing characteristics, flexibility, and, construction of said unworn sport shoe.

4,551,877

RAMP BRIDGING DEVICE

Kurt Alten, Ringstr. 14, 3015 Wennigsen, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,256
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221133
Int. Cl.⁴ E01D *1/00*
U.S. Cl. 14—71.7 **7 Claims**



1. A ramp bridging device, comprising:
a bridge plate having a front end and a back end, with said back end being pivotably mounted to a ramp about a horizontal axis; said bridge plate including a continuous cover plate and having longitudinal lateral edges;
first longitudinal members arranged below said cover plate and disposed parallel to one another;
an extension associated with said front end of said bridge plate and adapted to rest, during operation, on a platform which is to be loaded or unloaded; said extension being extendable and retractable necessarily by shifting back and forth relative to said bridge plate, with movement of said extension being effected in the longitudinal direction of said device; said extension including a portion which extends substantially over the width of said device, said

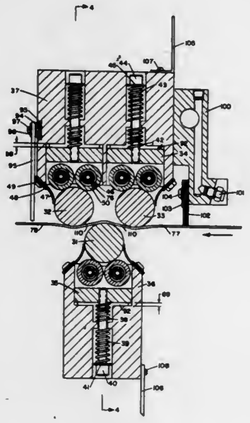
portion, during operation, effecting said resting of said extension on said plateform;

a transverse member having two opposite ends which are rigidly associated with said lateral edges of said bridge plate;

second longitudinal members associated with said extension, said second longitudinal members extending freely from said portion of said extension toward said back end of said bridge plate, and being held and guided between said transverse member and said cover plate of said bridge plate; in an extended state of said extension, said first and second longitudinal members overlap one another above said transverse member, said first and second longitudinal members being steel sections arranged alternately between one another; and

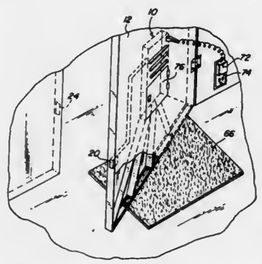
side plate means laterally arranged rigidly on said bridge plate as bridge termination toward the side thereof, said side plate means including substantially vertical side plates connected securely with said lateral edges of said bridge plate and extending freely rearwardly in the direction of said transverse member; said ends of said transverse member being connected with said side plates which extend freely toward the rear as well as being arranged to extend between said cover plate and said transverse member which is rigidly connected with a bridge lateral edge respectively due to fastening via said side plate means which terminate the bridge toward the side and which also serve as support carriers therewith.

4,551,878
STRIP WIPING SYSTEM
John W. Turley, 14 Pine St., Oxford, Conn. 06483, and Michael G. Sendzimir, E. Hill Rd., Woodbury, Conn. 06798
Filed Dec. 3, 1984, Ser. No. 677,491
Int. Cl.[4] B21B *45/02*
U.S. Cl. 15—102 **3 Claims**



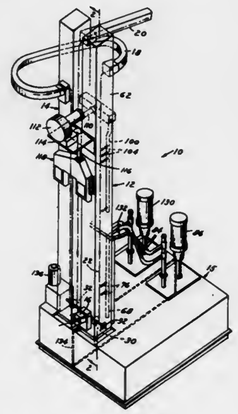
1. A three-roller device for wiping liquids from the surface of metal strip under tension, consisting of three rollers mounted with their axes parallel to the plane of the strip and to each other, and perpendicular to the direction of strip travel, the first two of said rollers being urged against one surface of the strip, the third roller being urged against the other surface of the strip, and each roller is urged by a plurality of pairs of caster bearings, said caster bearings being mounted in carriers which are spring mounted to a rigid frame, said frame being urged towards the strip by means of cylinders powered by fluid under pressure.

4,551,879
ENTRANCE DUST ARRESTER
Isaac Ray, 3700 Bedford Ave., Brooklyn, N.Y. 11229
Filed Oct. 15, 1984, Ser. No. 661,128
Int. Cl.[4] A47L *5/38*
U.S. Cl. 15—301 **9 Claims**



1. An entrance dust arrester, comprising in combination:
(a) a pneumatic vacuum source; and,
(b) a housing communicating with said vacuum source which directs the application of said vacuum in a downward direction such that said vacuum is applied along a downward facing planar surface via at least one aperture, said housing being attached to an entrance door to move therewith, such that said housing sweeps an arc over a flooring surface to which said downward facing planar surface is in close proximity when said door is rotated upon its hinges, thereby vacuuming said arc of said flooring.

4,551,880
VERTICAL WORKPIECE CLEANSER AND DRYER
Gerald E. Johnson, Flint, Mich., assignor to Lamb Technicon Corp., Warren, Mich.
Filed Oct. 20, 1983, Ser. No. 543,629
Int. Cl.[4] A47L *5/14*
U.S. Cl. 15—302 **12 Claims**



1. A vertical workpiece cleanser and dryer comprising a closed walled tower,
an elevator including a plurality of pockets, means for translating said pockets through a closed path within said tower, which path includes at least one portion in which said pockets are translated vertically upwardly, and means for feeding workpieces to be cleansed into said tower to successive ones of said pockets upstream of said one portion,

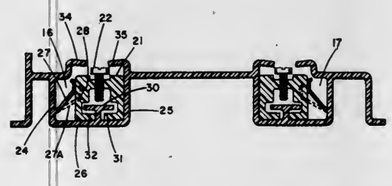
a first plurality of jets spaced from each other along a lower section of said one path portion within said tower and means for directing a cleansing solution through said first plurality of jets onto workpieces carried in said pockets through said lower path section, and

a second plurality of jets spaced from each other along an upper section of said one path portion within said tower directly above said lower section, an air pump connected for directing air under pressure through said second plurality of jets onto workpieces carried in said pockets through said upper path section, air inlet means connected to and opening into said tower at a position spaced from and communicating with said one path portion so as to effect closed circulation of drying air from said second plurality of jets to said inlet means through said tower,

such that cleansing solution removed from the workpieces by said second plurality of jets in said upper path section, and cleansing solution in said lower path section, fall by gravity through said lower section around said pockets and parts in said lower path section thereby flush-cleansing workpieces in said lower path section,

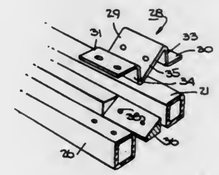
said inlet means being positioned and directed on said tower so as to promote downward flow of drying air from said jets through said lower path section so as to enhance downward flow of cleansing solution in said upper and lower sections.

4,551,881
FRICTION BRAKE FOR A VERTICAL SLIDING WINDOW
Michael K. Hoffman, Cannon Falls, Minn., assignor to Plastic Profiles, Inc., Cannon Falls, Minn.
Filed Apr. 23, 1984, Ser. No. 602,896
Int. Cl.[4] E05D *13/12*
U.S. Cl. 16—199 **17 Claims**



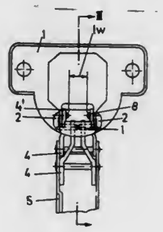
1. For braking a vertically sliding window:
a window jamb liner attached to a vertical side jamb of a window casing, said jamb liner having an elongated "U" shaped channel defined by a channel opening, a side wall located opposite the channel opening and parallel front and back end walls;
a block member slidably engaged in said jamb liner channel;
an elongated resilient wing member unitarily formed with an end wall and extending into the channel along the entire length of the channel from the end wall for contacing said block member and urging said block member toward the other end wall for continuously providing a frictional braking force on said block member while said block member is in said channel; and
means on said block member for releasably engaging a window sash.

4,551,882
SCALE OF FLAT CONSTRUCTION
Burt L. Swersey, and Peter I. Fried, both of Scarsdale, N.Y., assignors to COBE ASDT, Inc., Lakewood, Colo.
Division of Ser. No. 374,177, May 3, 1982, , which is a continuation-in-part of Ser. No. 259,942, May 4, 1981, abandoned. This application May 8, 1984, Ser. No. 608,205
Int. Cl.[4] E05D *7/06*
U.S. Cl. 16—226 **6 Claims**



1. A flexure for securing one element to a second element in relatively movable relations, said flexure having an elongated body of Z-shaped cross-section, a first flange extending from one end of said body for securement to one element and a second flange extending from an opposite end of said body in an opposite direction from said first flange for securement to the second element.

4,551,883
FURNITURE HINGE INCLUDING AXLE MEMBERS MOUNTING HINGE LINKS TO HINGE CASING
Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Mar. 6, 1984, Ser. No. 586,765
Claims priority, application Austria, Mar. 21, 1983, 976/83; Dec. 19, 1983, 4416/83; Dec. 19, 1983, 4417/83
Int. Cl.[4] E05D *3/06*
U.S. Cl. 16—370 **10 Claims**



1. A furniture hinge comprising:
a hinge arm to be mounted on a furniture body;
a hinge casing to be fitted to a furniture door;
inner and outer hinge links having first ends pivoted to said hinge arm and second ends pivoted to said hinge casing; and
means pivotally mounting said second end of said outer hinge link to said hinge casing, said mounting means comprising first and second axle members, each said axle member including first and second pivot pins extending parallel to each other and joined by a transversely extending connecting element, said first pivot pins being shorter than said second pivot pins, said first and second axle members positioned as mirror images of each other with said pivot pins extending through spaced walls of said hinge casing into the interior thereof, with said first pivot pins directed toward each other along substantially the same axis with a space therebetween, and with said second pivot pins directed toward each other along substantially

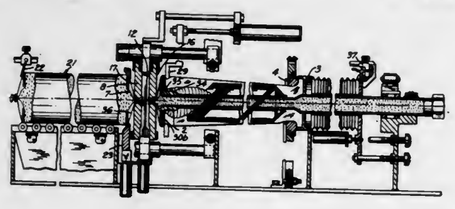
the same axis, said second end of said outer hinge link being pivotally mounted on said first pivot pins, and a holding sleeve fixedly positioned in said interior of said hinge casing, said second pivot pins extending into said sleeve.

4,551,884

METHOD AND APPARATUS FOR USE IN AUTOMATICALLY AND CONTINUOUSLY MAKING SAUSAGES WITH FLAT ENDS

Vytautas Kupcikevicius, and Vytas Raudys, both of Chicago, Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 430,230, Sep. 30, 1982,. This application Nov. 29, 1984, Ser. No. 675,478
Int. Cl.⁴ A22C *11/00*
U.S. Cl. 17—49 **28 Claims**



1. A method for automatically and continuously producing encased food product having a substantially uniform diameter and substantially flat ends which comprises:

(a) mounting a shirred tubular casing and a plurality of flattening annular disks each with a central hole onto a stuffing horn of a food stuffing apparatus, said shirred casing having a closeable unshirred portion extending over the discharge end of said stuffing horn, said stuffing horn extending through said disk central holes and said disks being disposed inside said closeable unshirred portion of said shirred tubular casing;

(b) positioning a first leading flattening disk and a second trailing flattening annular disk of said plurality within the unshirred portion portion of said casing and proximate to the discharge end of said stuffing horn such that the flattening portions of said first and second disks are essentially perpendicular to the longitudinal axis of said stuffing horn;

(c) discharging a pressurized food product from the discharge end of said stuffing horn between said first and second disks in an amount sufficient to move said first leading disk away from said stuffing horn and form an encased food length between said first and second disks;

(d) moving said second disk off said stuffing horn, and gathering and closing an unshirred portion of said casing between the annular second disk and the stuffing horn discharge end to provide a fully closed encased food product having substantially flat ends;

(e) positioning a succeeding pair of said annular flattening disks proximate to the discharge end of said stuffing horn such that the flattening portion of each disk of said succeeding pair of said disks is essentially perpendicular to the longitudinal axis of said stuffing horn, and severing the fully closed encased food product from the casing remaining on the stuffing horn; and

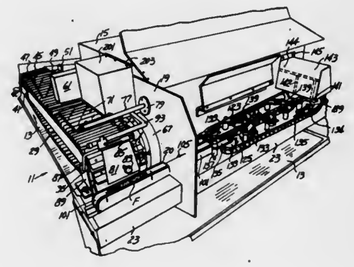
(f) repeating steps (c) through (e) using said succeeding pair of disks instead of said first and second disks to form another encased food length.

4,551,885

FISH DECAPITATOR AND EVISCERATOR

Robert Molnar, Windsor, Canada, assignor to Simnar, Inc., Windsor, Canada

Filed Mar. 21, 1983, Ser. No. 477,101
Int. Cl.⁴ A22C *25/14*
U.S. Cl. 17—59 **7 Claims**



1. In a fish decapitator having a framework including a base, a power driven horizontally disposed continuous conveyor belt mounted upon said framework including a series of flexibly connected open ended containers extending transversely of said belt, each container adapted to receive and transport a fish, an elongated adjustable stop upon said framework spaced from said containers and parallel to said belt, a power rotated brush overlying said belt and mounted upon said framework and rotatable in a plane at right angles to the length of said belt, the brush bristles on rotation frictionally engaging each fish thereunder during feeding of said belt laterally advancing each fish outwardly of its container successively to said stop, and a power rotated knife mounted upon said framework for rotation in a plane parallel to and spaced from said stop laterally outward of said belt, for successively severing the fish heads during longitudinal movement of said belt, each fish lying upon one side with its belly forward, the decapitated fish moving in its container to and downwardly around the end of said conveyor in a horizontal position and dropping from its container with its belly down;

the improvement comprising an elongated fish feed channel upon said framework underlying and extending transversely of the forward end of said belt successively receiving said fish as they drop from said belt guidably retaining each fish horizontally with its belly side down;

a continuous power operated feed sprocket chain centrally underlying said channel along its length for supporting and advancing said fish successively in a line within said channel in a transverse path;

a pair of opposed horizontal coplanar flexible laterally yieldable fish feeder means mounted upon said framework adjacent one end of said channel longitudinally thereof for successively receiving each fish therebetween frictionally and operatively engaging its opposite sides and advancing said fish longitudinally;

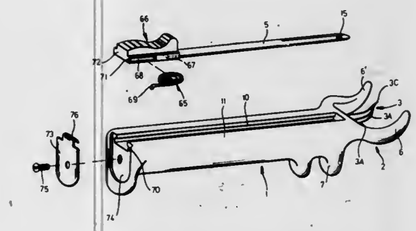
and a power rotated cutter disc journaled upon said framework and arranged in a vertical plane centrally underlying said feeder means and operatively engaging and slitting each fish on its belly side along its length as it is advanced longitudinally over said cutter disc.

4,551,886

OYSTER-OPENING TOOL

Léon Couche, 25 c, rue du Pommerot, 25150 Pond De Roide; Daniel Lacourt, 41, allée de la libération, 57100 Thionville, and Roger Ventavoli, 17, rue de Gaulle, 57440 Algrange, all of France

Filed May 24, 1983, Ser. No. 497,641
Int. Cl.⁴ A22C *29/04*
U.S. Cl. 17—75 **8 Claims**



1. An oyster-opening utensil which comprises:

a utensil body formed with an elongated utensil handle;

a pointed and tapered rigid valve-separating tongue projecting from one end of said handle and engageable in a hinge portion of an oyster to spread the valves thereof apart, said tongue being curved in a longitudinal plane of said handle and said tongue whereby said tongue can be rocked on one of said valves after insertion through said hinge portion to lift the other valve relative to said one valve;

an elongated blade slidably mounted in said handle for movement rectilinearly parallel to said plane and a longitudinal dimension of said handle and displaceable to extend from said end thereof rectilinearly along a side of said tongue toward which said tongue is curved to sever a muscle interconnecting said valves; and

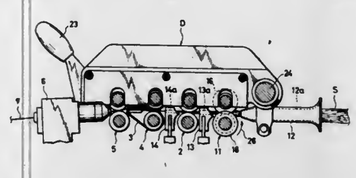
spring means in said handle for retracting said blade into said handle.

4,551,887

DRAFT APPARATUS FOR A SPINNING MACHINE

Ikuzo Uematsu, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 16, 1984, Ser. No. 580,878
Claims priority, application Japan, Feb. 21, 1983, 58-28270
Int. Cl.⁴ D01H *5/72*
U.S. Cl. 19—244 **14 Claims**



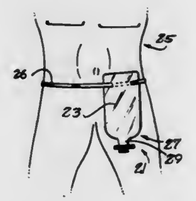
1. A draft apparatus wherein a plurality of pairs of rollers for sandwiching a sliver under pressure therebetween to feed the same for drafting are arranged along a feed path of the sliver such that they have gradually increasing circumferential speeds in the direction of sliver advancement and at least one pair of sliver compressing members disposed on the sliver path upstream of the drafting action, one of said sliver compressing members in the pair having a circumferential recessed groove for receiving the sliver therein while the other of said sliver compressed members in the pair has a circumferential rib disposed in said recessed groove and configured to press against the sliver received in said recessed groove without causing substantial widthwise sliver expansion, and at least one of said sliver compressing members in the pair being rotatable.

4,551,888

BAG SHUT-OFF CLAMP

William H. Beecher, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 23, 1983, Ser. No. 535,121
Int. Cl.⁴ A44B *21/00*
U.S. Cl. 24—30.5 P **5 Claims**



1. A closure device comprising: first and second resilient curved legs connected to one another by an integrally formed hinge, said legs each having a first radius of curvature when said device is in an open position, said legs having a second radius of curvature not equal to said first radius of curvature when said device is in a closed position, said legs having substantially continuously intermeshing clamping surfaces, said legs having generally final radii of curvature in a closed position, said final radii of curvature having a finite value, said device having low-profile fastening means, said means comprising a single finger on at least one end of one of said legs and a pair of shoulders on at least one end of the other of said legs, said shoulders forming a slot dimensioned to snappingly engage said finger and hold said legs in clamping registration, said hinge having reinforcing means comprised of an arcuate prong located on one of said legs and a complimentary slot on the other of said legs, said prong and said slot adapted to engage one another upon closing of said device to prevent sudden failure of said hinge during use, each respective one of said first and second legs is arcuate, said first leg having a concave curvature and said second leg having a convex curvature respectively relative to said surfaces thereof, said first leg having a first radius of curvature, said second leg having a second radius of curvature, said first radius of curvature being relatively greater than said second radius of curvature; and wherein the resiliency of said closure device is such that said first and second legs are urgeable together substantially along said length of said surfaces by normal adult hand pressure thereby causing flexure of said first and second legs together, whereby said first and second legs are both thereby caused to assume a third radius, said third radius of curvature for said second leg having convex curvature along said surface thereof and being greater than said second radius of curvature, said third radius of curvature for said first leg having concave curvature along said surface thereof and being less than said first radius of curvature, said first and second legs when caused to assume said third radius of curvature being biasly urged together substantially continuously along the length of said surfaces thereof.

4,551,889

LOW FRICTION SELF-LOCKING ADJUST TONGUE

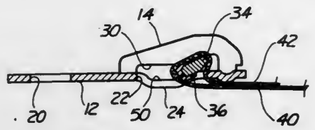
Surendra D. Narayan, and Rudy V. Thomas, both of Sterling Heights, Mich., assignors to Allied Corporation

Filed Nov. 21, 1984, Ser. No. 673,819
Int. Cl.⁴ A44B *11/06*
U.S. Cl. 24—196 **22 Claims**

1. In a safety restraint system having a length of seat belt webbing connected between an anchor point and a seat belt

buckle, a self-locking adjust tongue adapted to connect the length of seat belt to the buckle comprising:

a generally planar tongue plate having at its forward end a tongue portion adapted to be received and locked in the buckle, a centrally disposed web aperture for receiving a loop of the seat belt webbing therethrough, a pair of depressed guide lands provided on the opposite sides of said web aperture forming a lock bar well intermediate the



extremities of said web aperture and a pair of upstanding flanges each having a cutout adjacent to said guide lands, said cutouts in conjunction with said guide lands forming a bi-level lock bar slot extending rearwardly from said lock bar well to a higher level; and

a transverse lock bar having its ends guided in said lock bar slot and passing through the loop of seat belt webbing received through said web aperture.

4,551,890

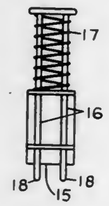
TWIN HOOKED CLAMP FASTENING DEVICE

Walter L. Larsen, P.O. Box 18302, Seattle, Wash. 98118

Division of Ser. No. 28,850, Apr. 10, 1979. This application Apr. 29, 1982, Ser. No. 373,121

Int. Cl.⁴ A43C *11/08*; A44B *13/00*

U.S. Cl. 24—565 **25 Claims**



1. A twin hooked clamp fastening device, said fastening device comprising two distinct fastening members, a relative movement connecting structure to which each of the fastening members are connected for providing for limited relative movement between the two fastening members, and a resilient closing member interposed between the two fastening members, one fastening member having a pair of coacting complementary fastening device hooks arranged in a substantially parallel, spaced-apart orientation, the other fastening member having an opposing clamping member which includes a contacting element, wherein the position and orientation of the two fastening members with respect to each other and to the relative movement connecting structure is such that the contacting element on the opposing clamping member is movable relatively away from and toward the hooked part of the two fastening device hooks with the two fastening device hooks consequently being openable and closable with respect to the contacting element on the opposing clamping member, wherein the contacting element is shaped and positioned for bearing down on, and clamping to, the closest linear member and the pair of coacting fastening device hooks is shaped and positioned for straddling and reaching past the closest linear member and hooking to the second linear member and pulling the second linear member inward and against the closest linear member in opposition to the clamping action of the contacting element, and wherein the resilient closing member is so interposed between the two fastening members that it generally urges relative movement of the two fastening members with respect to each other in the direction of closing the fastening device hooks on the contacting element of the opposing clamping member, whereby the fastening device is adapted to be installed on the two crossing generally linear members so as to clampingly and frictionally fasten them together.

4,551,891

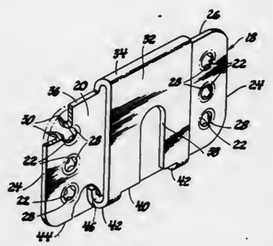
COMPOSITE TRIM FOUNDATION PANEL AND CLIP

Walter P. Kornylo, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1984, Ser. No. 578,123

Int. Cl.⁴ A44B *21/00*

U.S. Cl. 24—669 **1 Claim**



1. A one piece clip for securement to a trim foundation panel during formation of the panel from a densified batten of wood fibers and resin binder,

the clip including a planar base of generally rectangular shape having an inner surface against which the batten of wood fibers and resin binder is densified to adhesively bond the outer surface of the panel to the inner surface of the clip base, the clip further including an outer surface and a plurality of spaced openings adjacent the transverse edges thereof, the material of the openings being formed into a series of anchors extending inwardly of the inner surface of the clip base, the anchors being anchored in the foundation panel as the batten of wood fibers and resin binder is densified against the inner surface of the clip base and the wood fibers and the resin binder are forced within the anchors and between the anchors and the inner surface of the clip base,

the clip further including a retention portion located in spaced overlying relationship to the outer surface of the clip base and having one edge portion thereof integrally secured to one longitudinal edge portion of the clip base,

the retention portion including a free edge portion adjacent the other longitudinal edge portion of the clip base and provided with generally U-shaped return bent tabs loosely receiving such other longitudinal edge portion of the clip base, the return bent tabs being forced against the inner surface of the clip base during the densification of the batten, the retention portion further including a slot opening to the free edge portion thereof for receiving the shank of a headed stud to trap the head of the stud between the retention portion and the outer surface of the clip base.

4,551,892

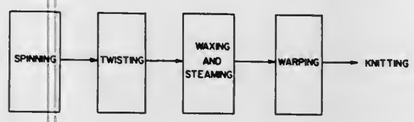
METHODS FOR PREPARING WARP KNITTED FABRICS

Shantilal G. Patel, Clifton, N.J., and William D. Bell, Warwick, N.Y., assignors to International Playtex, Inc., Stamford, Conn.

Continuation of Ser. No. 577,187, Feb. 6, 1984, abandoned, which is a division of Ser. No. 316,799, Oct. 30, 1981, Pat. No. 4,487,040. This application Mar. 29, 1985, Ser. No. 717,591

Int. Cl.⁴ D04B *21/00*

U.S. Cl. 28—166 **4 Claims**



1. A method of preparing a knitted fabric capable of being molded into a garment having improved hand, said method comprising the steps of:

(a) spinning synthetic stable fibers having a denier of less than 2, a staple length in a range of about 1.5 to about 2 inches, and having a size no coarser than 60 single spun count into spun yarn;

(b) twisting said yarn in a range of 24 to 36 twists per inch;

(c) waxing and steaming said yarn;

(d) warping said yarn in an environment having a humidity in a range of 65% to 70% and having a temperature in a range of 70° to 72° Fahrenheit; and

(e) knitting said warped yarn on a 28 guage tricot warp knitting machine.

3. A method of preparing a knitted fabric capable of being molded into a garment having improved hand, said method comprising the steps of:

(a) spinning synthetic stable fibers having a denier of less than 2, a staple length in a range of about 1.5 to about 2 inches, and having a size no coarser than 50 single spun count into spun yarn;

(b) twisting said yarn in a range of 24 to 36 twists per inch;

(c) waxing and steaming said yarn;

(d) warping said yarn in an environment having a humidity in a range of 65% to 70% and having a temperature in a range of 70° to 72° Fahrenheit; and

(e) knitting said warped yarn on a Raschel warp knitting machine.

4,551,893

WIRE PROCESSING APPARATUS

Yuuji Ikeda, Imajuku; Hiroo Abe, Sangenjaya; Tadashi Osaka, Yokosuka, and Katsumi Komuro, Toyoma, all of Japan, assignors to AMP Incorporated, Harrisburg, Pa.

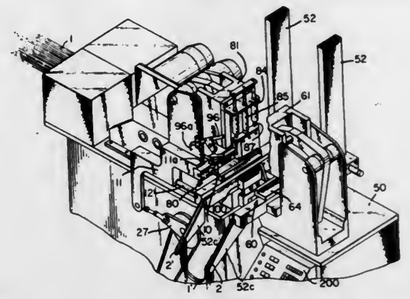
Filed Jun. 25, 1984, Ser. No. 624,435

Claims priority, application Japan, Jul. 5, 1983, 58-120971

Int. Cl.⁴ H01R *43/04*

U.S. Cl. 29—33 M **8 Claims**

1. Wire processing apparatus comprising a base, first and second stations arranged in spaced relationship on the base, a wire delivery shuttle for conveying a plurality of wires in juxtaposed relationship along a wire feed path, through the second station to the first station, means for then securing the wires at the first station, means for driving the shuttle in reciprocating motion along said path to deliver the wires to said stations, means for feeding wires from a wire source for delivery by the shuttle and wire lengthening means disposed upstream of the second station and being actuable to advance the wires longitudinally thereof relative to the shuttle when the wires have been secured at the first station and the shuttle has been retracted from the first station, so that the wires form loops of different lengths between the first and the second stations; wherein wire tensioning rollers comprising a first set of idle rollers and a second set of driven rollers disposed opposite thereto which can be closed about the wires to drive them are disposed downstream of the second station, for paying out the wires as they are advanced by the wire lengthening means



so as to tension the wires between the wire tensioning rollers and the wire lengthening means.

4,551,894

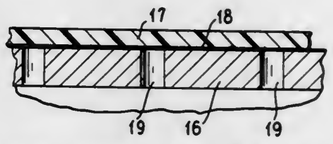
URETHANE COVERED PAPER MACHINE ROLL WITH VENTED INTERFACE BETWEEN ROLL AND COVER

Albert W. Beucker, Factoryville, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 17, 1983, Ser. No. 542,433

Int. Cl.⁴ B60B *7/04*

U.S. Cl. 29—130 **11 Claims**



1. A paper machine press roll for use in a water environment which comprises a metal cylinder, a urethane cover surrounding said cylinder and presenting a continuous imperforate peripheral surface and permitting moisture from said water environment to pass therethrough to an interface between said cover and said cylinder, an adhesive disposed at said interface bonding said cover to said cylinder, and means in direct fluid communication with the interface venting the adhesive to an end of the cylinder for draining moisture from said interface [between the cover and cylinder] for maintaining the adhesive bond between the cylinder and cover.

4,551,895

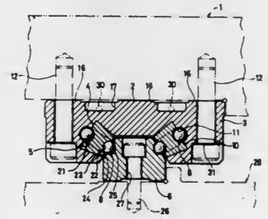
METHOD OF MAKING A LINEAR SLIDE BALL BEARING

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo 158, Japan

Division of Ser. No. 541,640, Oct. 13, 1983, Pat. No. 4,527,841. This application Dec. 21, 1984, Ser. No. 685,014

Int. Cl.⁴ B21D *53/12*

U.S. Cl. 29;148.4 R **2 Claims**



1. A method for manufacturing a linear slide ball bearing comprising the steps, at the time of incorporating a bearing

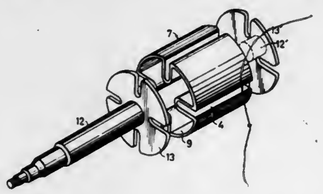
case with a pair of bearing races, a raceway table, a pair of side covers and a number of balls, molding the bearing case and the pair of side covers in synthetic resin, forming recessed grooves by taking out the preplaced core arranged in both the sleeves at the time of molding the bearing case, inserting under pressure the bearing races formed almost the same as the preplaced cores in the recessed grooves, fixing the bearing races in the sleeves of the bearing case while correcting the curve of the bearing case generated by the contraction of the recessed groove when the preplaced core is taken out, and installing the pair of side covers to both the sides of the bearing case subsequently.

4,551,896

METHOD OF MANUFACTURING A ROTOR FOR A ROTARY FLUID PUMP

Hiroshi Sakamaki, Tochigi; Susumu Sugishita, and Yukio Horikoshi, both of Saitama, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1984, Ser. No. 628,212
Claims priority, application Japan, Jul. 16, 1983, 58-129794
Int. Cl.⁴ B23P *15/00*
U.S. Cl. 29—156.4 R **12 Claims**



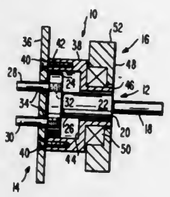
1. A method of forming a rotor for a vane-type rotary fluid pump, said rotor being generally cylindrical with a plurality of vane slots therein, said method comprising the steps of:
(a) providing a tubular member having a plurality of generally flat sections and a plurality of corner portions between said flat sections;
(b) forming slots in said flat sections by deforming said tubular member;
(c) forming said slots into said vane slots by means of a die; and
(d) forming said corner portions into the outer peripheral surface of said rotor by means of a die.

4,551,897

STRING REMOVER

Dewey L. Holt, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 15, 1983, Ser. No. 551,796
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—235 **1 Claim**



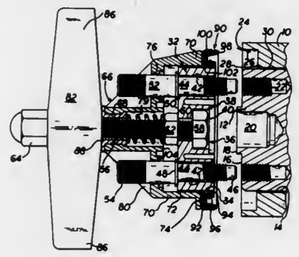
1. A string remover for breaking and coiling a bale encircling length of string, said string remover comprising:
a plurality of spaced, generally parallel, rigid fingers secured at first ends to a first face of a hub and extending forwardly of said hub, said finger adapted to straddle the string to be removed;
a shank having a rearwardly extending shaft at a first end and said hub at a second end;
a push-off plate carried by and slideable along said fingers between a string removal position and a string discarding position to effect separation of the string from said finger, said fingers passing through apertures in said push-off plate;
a sleeve concentric with, and slideable along said shank, said push-off plate being secured at a first end of said sleeve, a second end of said sleeve terminating in a radially inwardly extending web;
a cylinder secured to said web and closely overlying said shank, said cylinder carrying a bearing mounted handwheel; and
means to rotate said shank and said fingers to cause tensioning and breakage of the string and coiling of the broken string about said fingers, movement of said handwheel forwardly along said shank effecting movement of said push-off plate forwardly relative to said fingers to effect separation of said coiled string from said fingers whereby the string may be removed from its bale encircling position.

4,551,898

CRANKSHAFT SEAL INSTALLING TOOL

Lawrence A. Provost, Warren, Mich., assignor to Kent-Moore Corporation, Warren, Mich.

Filed Feb. 6, 1984, Ser. No. 577,159
Int. Cl.⁴ G23P *19/04*
U.S. Cl. 29—235 **5 Claims**



1. A crankshaft seal assembly tool for use with a crankshaft having an axis, a cylindrical end portion and a radial end surface intersected by a pair of axially extending threaded holes located on opposite sides of the crankshaft axis comprising, in combination, an adapter having an axis, a crankshaft mounting end transversely disposed to said axis and a concentric cylindrical guide surface intersecting said mounting end of a diameter substantially equal to the diameter of the crankshaft cylindrical end portion, a pair of axially extending threaded fasteners mounted upon said adapter located on opposite sides of said adapter axis adapted to extend beyond said mounting end and be received within the crankshaft holes when the adapter mounting end engages the crankshaft end surface to attach said adapter to the crankshaft end surface and maintain said adapter guide surface concentric and aligned with the crankshaft end portion, a ram mounted upon said adapter for relative axial movement thereto having an annular seal abutment head radially extending beyond and in radial alignment with said adapter guide surface having an abutment surface substantially perpendicular to said adapter axis, a pair of axially extending openings defined in said ram slidably receiving said threaded fasteners, said fasteners being of such length as to extend through said ram for direct access thereto, a threaded shaft coaxially mounted upon said adapter, and a nut threaded upon said shaft engagable with said ram for axially moving said ram on said threaded shaft from a seal loading position wherein said abutment head is axially retracted away from said adapter mounting end to expose said adapter guide surface permitting an annular seal to be mounted thereon to a seal installed position wherein said head is axially translated across said guide

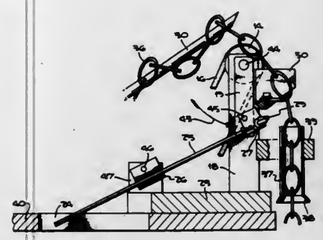
surface to displace the seal therefrom onto the crankshaft cylindrical end portion.

4,551,899

APPARATUS FOR THREADING CHAIN ONTO A LAMP CORD

Richard A. Castillo, Newbury Park, Calif., assignor to Modulite Corporation, Montebello, Calif.

Division of Ser. No. 445,021, Nov. 29, 1982, Pat. No. 4,506,427.
This application Dec. 10, 1984, Ser. No. 667,004
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—241 **3 Claims**



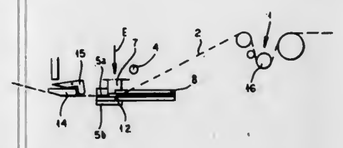
1. Apparatus for threading a lamp cord chain onto a lamp cord comprising:
an elongated, cylindrical crosshead shaft, one end portion of which is slidingly constrained to move in a pivoted crosshead, the other end of which is attached to and constrains the movement and orientation of a pivoted head member;
a driven rotating member pivotally connected to said pivoted head member for driving said pivoted head member in an arc;
chain link engaging fingers attached to said pivoted head member for engaging and releasing links of a lamp cord chain to be threaded;
a chain feed fixture for positioning links of a lamp cord chain to be threaded so as to be engaged by said chain link engaging fingers;
an elongated, cylindrical, hollow lamp cord chute for receiving said lamp cord to be threaded through its hollow interior and positioned so as to receive said links of said lamp cord chain as released from said chain engaging fingers onto its elongated cylindrical exterior;
means for driving said driven rotating member.

4,551,900

METHOD OF AND APPARATUS FOR MOUNTING SEPARABLE SLIDE FASTENER CONNECTORS

Henning Hansen, Aichtal, and Helmut Schneider, Stuttgart, both of Fed. Rep. of Germany, assignors to Dr. Karl F. Nagele Feinmaschinenbau GmbH & Co, Filderstadt, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,273
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3402908
Int. Cl.⁴ B21D *53/50*; A41H *37/06*
U.S. Cl. 29—408 **13 Claims**



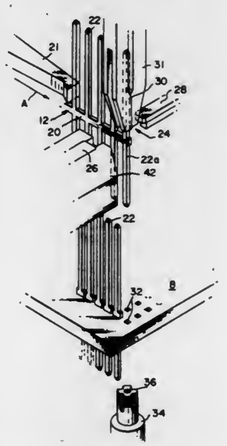
1. A method of mounting box and pin connection elements on an end of a stringer for a separable slide fastener which comprises the steps of:
(a) advancing a stringer band comprising a pair of stringer halves having interdigitating coupling elements and provided with sliders for each of a succession of stringers and T-shaped windows in a direction of advance of said band along a stringer plane so that a shank portion of each window extends in said direction and edges of said shank portion are formed on respective stringer-half tapes;
(b) deflecting said band at a mounting station along a path of the band so that a stretch ahead of each window is inclined at a mounting angle at said plane and said edges are exposed through the window and in a shadow of said stretch; and
(c) inserting through each window in said shadow of said stretch a pin element onto one of said edges and a box element onto the other of said edges and coupling said element onto the respective edges.

4,551,901

COMPONENT INSERTION APPARATUS

George Bonifanti, Hummelstown; Mark F. Jackson, Harrisburg; Karl H. Letsch, Wyomissing; Bruce C. Longenecker, Harrisburg; Phillip E. Loomis, Harrisburg; Hung T. Nguyen, Harrisburg; Leo V. Schuppert, Jr., York; Richard V. Spong, Etters, and Edward J. Paukovits, Jr., Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 24, 1984, Ser. No. 582,996
Int. Cl.⁴ H05K *13/04*
U.S. Cl. 29—564.6 **7 Claims**



1. Apparatus for severing components from a strip of components and inserting each severed component into a workpiece, the apparatus comprising a component insertion tool, means for feeding a strip of components incrementally towards the strip severing station with one of the components leading, means for severing the leading component from the strip at the severing station, a drive electric motor, a camshaft operatively connected to the motor, camming means on the camshaft connected to the insertion tool, to the strip feeding means and to the strip severing means, to cause them to be driven by the motor so that the leading component is fed to the severing station and is there severed from the strip, and is then inserted into the workpiece by the insertion tool; in which apparatus the motor is connected to the camshaft through step-down transmission means, the camshaft having thereon a first disc cam having formed in a face thereof at least one endless first cam track for a cam follower connected to the insertion tool and on its opposite face at least one endless second cam track for a cam follower connected to the severing means, the strip

feeding means being driven by a second cam on the camshaft, which cam is spaced from the first cam in the feed direction of the strip of components and has thereon an endless cam track for a cam follower connected to the strip feeding means, the strip severing means and the insertion tool, being arranged substantially in the same plane.

4,551,902

DEVICE FOR MOUNTING AND REMOVAL OF POLISHING WHEELS IN MACHINES FOR POLISHING STONES OR LIKE MATERIALS

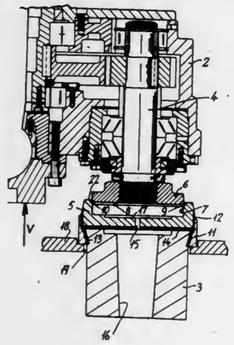
Bernard Thibaut, Vire, France, assignor to Thibaut S.A., Vire, France

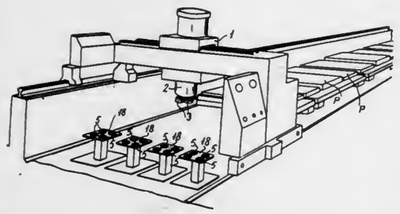
Filed Sep. 5, 1984, Ser. No. 647,696

Claims priority, application France, Sep. 6, 1983, 83 14183; Jun. 19, 1984, 84 09547; European Pat. Off., Aug. 17, 1984, 84401684.0

Int. Cl.⁴ B24D *7/16;* B23Q *3/157;* B24B *45/00*

U.S. Cl. 29—568 **13 Claims**





1. A device for mounting and removal of polishing wheels carried by rotary shafts of the polishing head of a polishing machine by means of two coupling members provided respectively on the free ends of said rotary shafts and on the coupling faces of said polishing wheels, the first coupling member being designed in the form of a disk or plate having a frusto-conical external wall whilst the second coupling member is adapted to clamp the external wall of said plate, wherein:

the second coupling member is formed of material which is at least partly elastic and is designed in the shape of a cup having a frusto-conical internal wall similar in profile to the external wall of the plate which constitutes said first coupling member ;

the bottom wall of said cup-shaped member is provided with:

a bore through which air is discharged at the time of forcible assembly of the two coupling members and through which air under pressure is blown-in between said members in order to separate these latter ;

a recess for constituting a pressure chamber at the time of blowing of air under pressure through the bore for the purpose of separating said two coupling members.

4,551,903

AUTOMATIC TOOL CHANGING MECHANISM FOR INDUSTRIAL ROBOTS

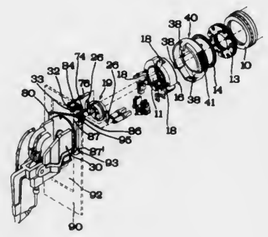
Luciano Bisiach, Strada Comunale San Vito-Revigliasco, 350, 10133 Turin, Italy

Filed May 22, 1984, Ser. No. 612,912

Claims priority, application Italy, Feb. 13, 1984, 67130 A/84

Int. Cl.⁴ B23K *9/12;* B23Q *3/155*

U.S. Cl. 29—568 **12 Claims**



1. An automatic tool changing mechanism for industrial robots with a toolholder head having a plurality of axes of movement and provided with a toolholder end flange, said mechanism comprising

a connection plate firmly secured to a tool and having a projection provided with a plurality of radial lugs and a corresponding plurality of resiliently compressible retainers mounted respectively on each radial lug;

a coupling device for coupling said tool to the robot by means of said connection plate, said coupling device comprising a hollow cylinder firmly anchored to said toolholder end flange of said toolholder head of the robot, and an annular surface adapted to engage said projection of said connection plate of said tool, and a cylindrical outer surface rotatably supporting a segmental crown gear provided forwardly with a plurality of claws adjacent said radial lugs of said connection plate and peripherally with engagement means for rotating said segmental crown gear by means of external actuator means between a first unlocked position and a second locked position;

a toolholder magazine comprising a frame arranged in a predetermined fixed position with respect to the robot and accommodating said tool with said connection plate in a predetermined position and having an actuator member engaging said engagement means on said segmental crown gear when said coupling device is in a position engaging said projection for rotating said segmental crown gear between said unlocked and locked positions;

the arrangement being such that by moving said coupling device forwardly close to said connection plate of said tool located in said toolholder magazine, with said segmental crown gear in said unlocked position, said claws are released by said radial lugs and said engagement means of said segmental crown gear are gripped by said actuator member of said toolholder magazine so that when said segmental crown gear is moved into said locked position by actuation of said actuator member, said claws move behind said radial lugs to grip said resiliently compressible retainers and thus create a reaction pressure between said annular surface of said hollow cylinder and said projection on said connection plate whereas by moving said actuator member in the opposite direction said segmental crown gear is returned to said unlocked position to release said claws and thus said coupling device from said connection plate.

4,551,904

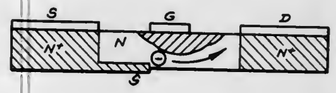
OPPOSED GATE-SOURCE TRANSISTOR

John J. Berenz, Lawndale, Calif.; G. Conrad Dalman, and Charles A. Lee, both of Ithaca, N.Y., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 347,226, Feb. 9, 1982,. This application Jun. 11, 1984, Ser. No. 618,969

Int. Cl.⁴ H01L *29/80*

U.S. Cl. 29—571 **3 Claims**



1. A method for fabricating a field-effect transistor capable of operation at extremely high frequencies, said method comprising:

ion-implanting a source region of relatively short effective length and selected conductivity type in a semi-insulating substrate;

epitaxially growing an active channel region over the substrate and the source region;

ion-implanting drain contact regions at each end of the active channel region;

depositing gate metal over the active channel region;

selectively removing the gate metal to define a gate of desired length located directly opposite the source region and in a symmetrical relationship with it;

depositing ohmic metal over the drain contact regions;

forming an opening in the substrate from beneath, to expose the source region; and

forming a metallic layer on the underside of the substrate, including the opening, to act as a ground plane to which the source region is connected.

4,551,905

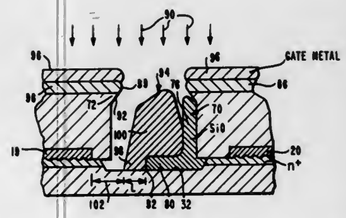
FABRICATION OF METAL LINES FOR SEMICONDUCTOR DEVICES

Pane-Chane Chao, Liverpool, and Walter H. Ku, Ithaca, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 9, 1983, Ser. No. 550,284

Int. Cl.⁴ H01L *21/285*

U.S. Cl. 29—571 **12 Claims**



1. A method of fabricating a submicron metal line for a semiconductor device gate electrode, comprising:

depositing a layer of resist material on a semiconductor surface;

defining a gate pattern in said resist material and producing therein a resist profile which exposes a predetermined area of said semiconductor surface;

forming a gate support wall within and on the surface of said, resist profile by angled deposition of a gate support wall material to produce a gate cavity, said gate cavity having a bottom opening at said semiconductor surface, the dimension of said bottom opening being determined by the thickness of said layer, of resist material and the angle of deposition of said gate support wall material;

forming within said gate cavity a gate electrode by deposition of a gate material, said gate material being deposited on at least a part of said exposed semiconductor surface at said bottom opening of said gate cavity to form a Schottky junction with said semiconductor and being further deposited on the interior surface of said gate support wall within said gate cavity and

removing said layer of resist material to produce a linear gate electrode mounted on said semiconductor surface and supported by said gate support wall.

4,551,906

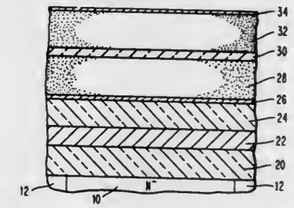
METHOD FOR MAKING SELF-ALIGNED LATERAL BIPOLAR TRANSISTORS

Seiki Ogura, Hopewell Junction; Jacob Riseman, Poughkeepsie; Nivo Rovedo, Poughquag, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,629

Int. Cl.⁴ H01L *21/265, 21/225*

U.S. Cl. 29—571 **10 Claims**



6. The method of forming closely spaced openings to a semiconductor surface comprising:

providing a monocrystalline semiconductor body having said surface;

forming an insulating layer on said surface region;

forming a silicon dioxide layer over said insulating layer;

forming a first silicon nitride layer upon said first silicon dioxide layer;

forming a first polycrystalline silicon layer upon said first silicon nitride layer;

forming a second silicon nitride layer upon said first polycrystalline silicon layer wherein said second silicon nitride layer is substantially thicker than said first silicon nitride layer;

forming a second polycrystalline silicon layer upon said second silicon nitride layer;

forming a third silicon nitride layer upon said second polycrystalline silicon layer;

patterning said third silicon nitride layer and said second polycrystalline silicon layer, and oxidizing the resulting exposed edge of said second polycrystalline silicon layer to produce a first silicon dioxide sidewall above where a designated central region in said semiconductor is to be formed;

removing the remaining said third silicon nitride layer and said second polycrystalline silicon layer which leaves the said first silicon dioxide sidewall;

removing all portions of said first silicon dioxide sidewall except that portion thereof which is over said designated central region;

depositing a first organic polymeric material onto said second silicon nitride layer to planarize the surface with said first sidewall;

removing said first sidewall, second silicon nitride layer thereunder, and said first polycrystalline silicon layer thereunder by anisotropic reactive ion etching and that removing said first polymeric material;

oxidizing the sides of the resulting exposed said first polycrystalline silicon layer to form a second silicon dioxide sidewall over the designated said closely spaced openings over said semiconductor body;

removing the remaining said second silicon nitride layer;

depositing a second organic polymeric material onto the upper surface of said first silicon dioxide layer and to fill said opening within said second sidewall;

removing the portions of said second sidewall, and said first silicon nitride layer, above the designated closely spaced openings by anisotropic reactive ion etching; and

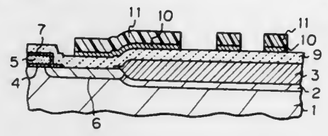
removing said second organic material, the remaining said first polycrystalline silicon layer; and said first silicon dioxide and insulating layers to give said openings having substantially vertical surfaces down to said semiconductor surface while leaving a mesa of said insulating layer between said openings.

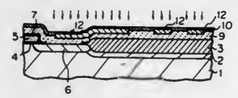
4,551,907

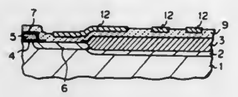
PROCESS FOR FABRICATING A SEMICONDUCTOR DEVICE

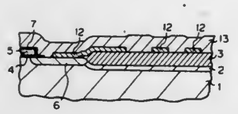
Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 23, 1983, Ser. No. 554,544
Claims priority, application Japan, Nov. 30, 1982, 57-210133
Int. Cl.⁴ H01L *21/24, 21/28*
U.S. Cl. 29—571 **18 Claims**









1. A process for fabricating a semiconductor device, comprising the steps of:

forming a silicon layer on a substrate;

forming a metal silicide layer on only a portion of the surface of the silicon layer, with the remaining portion of said surface of the silicon layer being uncovered by the metal silicide layer; and

oxidizing both the metal silicide layer and said portion of the silicon layer which is not covered by the metal silicide layer, in a direction from the top surface to the inside thereof;

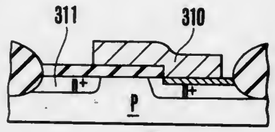
wherein the silicon layer is entirely converted to a silicon dioxide layer and the metal silicide layer sinks in said silicon layer to said substrate.

4,551,908

PROCESS OF FORMING ELECTRODES AND INTERCONNECTIONS ON SILICON SEMICONDUCTOR DEVICES

Eiji Nagasawa; Hidekazu Okabayashi; Mitsutaka Morimoto, and Kohei Higuchi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 388,544, Jun. 15, 1982, abandoned.
This application Oct. 2, 1984, Ser. No. 657,080
Claims priority, application Japan, Jun. 15, 1981, 56-91829; Nov. 11, 1981, 56-180518; Feb. 10, 1982, 57-19923; Feb. 12, 1982, 57-20908; Feb. 12, 1982, 57-20909
Int. Cl.⁴ H01L *21/265, 21/28*
U.S. Cl. 29—571 **7 Claims**



1. A process forming a layer of metal silicide having a high melting point on a major surface of a semiconductive substrate of silicon, comprising the steps of:

forming an insulating film on the major surface of the silicon substrate;

defining an opening in said insulating film;

thereafter depositing a layer of molybdenum over said major surface of the silicon substrate;

implanting ions so as to mix an interface between the molybdenum layer and the silicon substrate;

thereafter heating a resulting structure of said silicon substrate, insulating film and molybdenum layer in a temperature range of from 400 to 650 degrees Celsius to effect a silicide forming reaction for the molybdenum at said opening;

selectively etching away an unreacted layer of said molybdenum on said insulating film so as to self-align the silicide layer of molybdenum with said opening; and

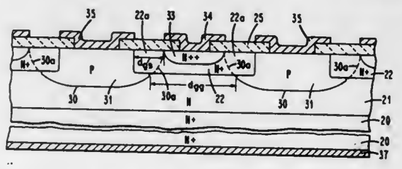
then annealing said silicon layer in a non-reducing gas atmosphere at a temperature ranging from 800 to 1,100 degrees Celsius for repairing damage induced by ion implantation and lowering silicide resistivity.

4,551,909

METHOD OF FABRICATING JUNCTION FIELD EFFECT TRANSISTORS

Adrian I. Cogan, Waltham, and Izak Bencuya, Needham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 29, 1984, Ser. No. 594,613
Int. Cl.⁴ H01L *21/265*
U.S. Cl. 29—571 **10 Claims**



1. The method of fabricating a junction field effect transistor comprising

providing a body of semiconductor material including a substrate of semiconductor material of one conductivity type of relatively low resistivity and a layer of semiconductor material of the one conductivity type of relatively high resistivity contiguous said substrate, said layer having a surface at a surface of the body;

introducing conductivity type imparting material of the one conductivity type into said layer from said surface to form a surface layer of semiconductor material of the one conductivity type of relatively low resistivity adjacent to said surface and an underlying layer of semiconductor material of the one conductivity type of relatively high resistivity between said surface layer and said substrate;

forming a layer of protective material adherent to said surface;

removing portions of said layer of protective material to expose alternating gate surface areas and source surface areas in said surface;

introducing conductivity type imparting material of the opposite conductivity type into said surface and underlying layers from said gate surface areas to produce zones of graded concentration of conductivity type imparting material of the opposite conductivity type with the highest concentration adjacent to said gate surface areas thereby forming gate regions of the opposite conductivity type extending from the gate surface areas for a greater distance into said underlying layer than into said surface layer;

introducing conductivity type imparting material of the one conductivity type into said surface layer from said source surface areas to produce source regions of the one conductivity type of lower resistivity at said source surface areas; and

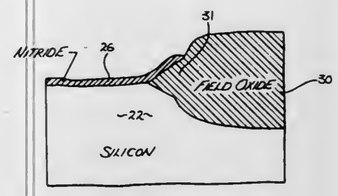
applying conductive material to form source and gate contacts in ohmic contact with said source and gate regions at said source and gate surface areas, respectively, and to form a drain contact with said substrate.

4,551,910

MOS ISOLATION PROCESSING

Elizabeth L. Patterson, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 27, 1984, Ser. No. 675,128
Int. Cl.⁴ H01L *21/76, 21/94*
U.S. Cl. 29—576 W **9 Claims**



1. A process for the isolation of semiconductor elements on a silicon substrate comprising the steps of:

thermally growing a first silicon nitride layer of a first thickness on the surface of said substrate;

depositing a second layer of silicon nitride of a second thickness on said first layer;

exposing predetermined regions of said substrate by removing portion of said first and second layers;

forming an oxide on said exposed regions by subjecting said substrate to an atmosphere of chlorine ambient at a temperature above that of the flow point of silicon dioxide;

further oxidizing said exposed regions in a pressurized atmosphere in the presence of oxygen;

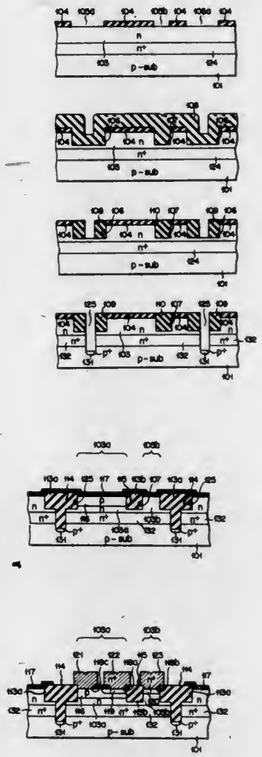
whereby the formation of oxide at the nitride-substrate interface is reduced, and electrical isolation of semiconductor elements is achieved in a reduced area.

4,551,911

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Gen Sasaki, Yokohama, and Shuichi Kameyama, Itami, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 16, 1983, Ser. No. 563,105
Claims priority, application Japan, Dec. 28, 1982, 57-233541
Int. Cl.⁴ H01L *21/82, 21/312, 21/26*
U.S. Cl. 29—576 W **12 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:

forming a first groove in a semiconductor substrate surrounding that section of said semiconductor substrate in which an isolation is to be formed and a second groove narrower than said first groove in said section of said semiconductor substrate which is surrounded by said first groove;

depositing a first layer of isolating material over the entire surface of said semiconductor substrate, said first layer having a thickness less than half the width of said first groove and greater than half the width of said second groove;

anisotropically etching said first layer of isolating material to eliminate substantially its thickness, thus leaving said first layer of isolating material on the side walls of said first groove and entirely in said second groove;

introducing an impurity into the bottom of said first groove, using said first layer of isolating material remaining on said side walls of said first groove as a mask, thereby forming an impurity region;

filling said first groove with a second layer of isolating material, thus leaving said first and second grooves entirely filled with said isolating material; and

forming a semiconductor element in said section of said semiconductor substrate which is surrounded by said impurity region and said isolating material in said first groove.

4,551,912

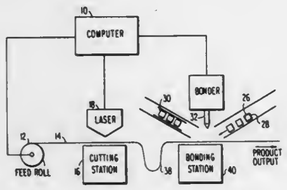
HIGHLY INTEGRATED UNIVERSAL TAPE BONDING

Robert Marks, So. Burlington; Douglas W. Phelps, Jr., Burlington; Sigvart J. Samuelsen, Burlington, and William C. Ward, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 509,507, Jun. 30, 1983, abandoned. This application Apr. 1, 1985, Ser. No. 718,817

Int. Cl.⁴ H01L *21/60*

U.S. Cl. 29—576 S **12 Claims**



1. A method of interconnecting semiconductor devices comprising:

providing at least first and second semiconductor chips having no predefined sequence for bonding;

providing a sheet of a material suitable for forming into metallic leads;

moving said sheet of material to a cutting station having a cutting tool operable under control of a computer;

cutting patterns having no predefined sequence in said sheet at said cutting station by directing movement of said cutting tool in response to control signals from said computer to trace one or more first patterns in said sheet that is personalized for said first semiconductor chip and subsequently moving said cutting tool under computer control to trace one or more second patterns in said sheet that is personalized for said second semiconductor chip and different from said first patterns such that said patterns are created on demand by said cutting section;

moving said one or more first and second patterns in said material to a bonding station having a bonding tool operable under control of said computer;

bonding at least one of said first patterns to said first semiconductor chip and bonding at least one of said second patterns to said second semiconductor chip at said bonding station under control of said computer to form a semiconductor chip assembly; whereby

patterns personalized to respective semiconductor chips can be created and bonded utilizing a single set of cutting and bonding tools.

4,551,913

COMPONENT DELIVERY SYSTEM

Carl Campisi, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 7, 1983, Ser. No. 501,955

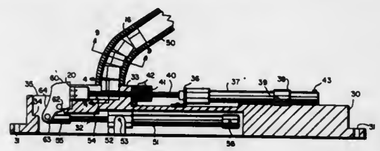
Int. Cl.⁴ H05K *3/30*

U.S. Cl. 29—740 **6 Claims**

1. In an automated assembly system including a plurality of components having first mounting means, conveyer means carrying a circuit board to a work station, second mounting means on said circuit board for cooperating with said first mounting means for mechanically and electrically attaching said components to said circuit board, and insertion means for moving components from said work station into position on said circuit board; means for presenting said components to said insertion means with a precise orientation comprising:

a chute for delivering said components to a platform at said work station with a given orientation;

a pivotably mounted receiver positioned at said work station adjacent said platform and including means cooperating



with said first mounting means for precisely locating said components;

means sequentially moving components from said platform into engagement with said receiver; and

means pivotably moving said receiver and said precisely located component into said precise orientation.

4,551,914

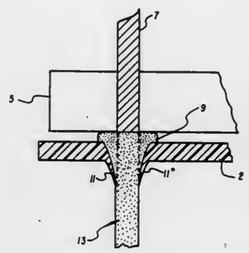
METHOD OF MAKING FLEXIBLE CIRCUIT CONNECTIONS

William A. Stiggelbout, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 5, 1983, Ser. No. 539,345

Int. Cl.⁴ A05K *3/34*

U.S. Cl. 29—837 **5 Claims**



1. A method of providing an electrical connection to a flexible circuit member having an electrical contact pad of solderable material on one side thereof, comprising the steps of: piercing said contact pad and said flexible circuit member with an electrically conductive pin member and producing an opening therein, and causing solder to flow along said pin member and through said opening in said flexible circuit member from the side thereof opposite to that on which said contact pad is disposed to thereby solder said contact pad to said pin member.

4,551,915

METHOD FOR TERMINATING A HIGH VOLTAGE CABLE

Peter L. Larsson, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 6, 1983, Ser. No. 483,007

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—858 **3 Claims**

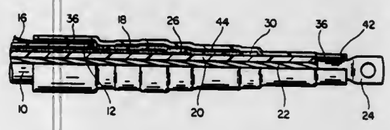
1. A method of terminating a high voltage cable comprising the steps of:

(a) cutting back a cable jacket by a predetermined amount, leaving an exposed shield portion that includes a conductive layer;

(b) cutting back an insulating layer of said cable by a predetermined amount, leaving an exposed length of a cable conductor for connection to a connector;

(c) connecting the exposed length of conductor to a connector;

(d) positioning a layer of semiconductive stress control material having a substantially uniform thickness over an exposed cut back portion of the insulation layer; and



(e) providing an electrically conductive layer of material that overlies and is in contact with the semiconductive stress control material over the exposed shield portion and extending along the stress control material for a predetermined distance; and

(f) applying an insulating layer over the stress control layer.

4,551,916

RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 519,565, Aug. 2, 1983, Pat. No. 4,498,325, which is a continuation-in-part of Ser. No. 419,202, Sep. 17, 1982, Pat. No. 4,492,024. This application Oct. 15, 1984, Ser. No. 660,950

Int. Cl.⁴ B26B *21/22*

U.S. Cl. 30—50 **2 Claims**

1. A razor blade assembly comprising a body member of molded plastic, said body member including a front portion, a back portion, spring finger guard support means, and spring finger blade support means, a guard member mounted on said body member and biased by said spring finger guard support means, blade means mounted on said body member and biased by said spring finger blade support means, said blade means comprising a base portion and a cutter portion, the base and cutter portions being disposed at an obtuse angle to each other, said spring finger blade support means comprising a finger molded integrally with said body member, said finger engaging an underside of said cutter portion and a side of said base portion, said blade means being disposed in slots in end portions of said body member, said finger exercising a bias against said cutter portion underside and simultaneously a bias against said base portion side.

4,551,917

KNIFE WITH LOCKING FOLDING BLADE

Michael L. Walker, Box 2343, Taos, N. Mex. 87571

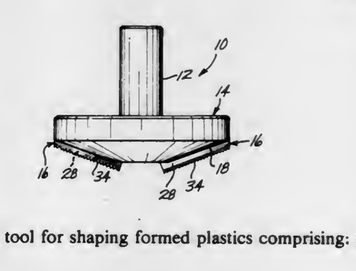
Filed Oct. 29, 1984, Ser. No. 665,739

Int. Cl.⁴ B26B *1/04*

U.S. Cl. 30—161 **12 Claims**

1. A knife comprising generally a handle and a blade wherein the handle is formed by a first parallel plate and a second parallel plate assembled so that the first parallel plate and the second parallel plate are spaced apart along a transverse axis, said parallel plates defining a pocket into which the blade will fold, a means defining a fixed bushing on the first parallel plate along the transverse axis toward the second parallel plate, and the blade having a point end and a butt end, and wherein there is a means for defining a bearing surface through the butt end of the blade, wherein said bearing surface is sized to slideably fit over the fixed bushing, thus enabling the blade when disposed over the fixed bushing between the parallel plates to rotate about the transverse axis and be positioned in the pocket, fully extended, or any intermediate position, and

wherein the fixed bushing and the first parallel plate have a slide hole along the transverse axis and the first parallel plate has adjacent to the fixed bushing a positioning hole and wherein in the butt end of the blade, adjacent to the bearing surface, there are a multiplicity of lock pin holes, and wherein the centers of the lock pin holes, one at a time, and the center of the positioning hole are on a line parallel to the transverse axis as the blade is positioned from folded to extended, and



wherein a locking means slideably inserts into the slide hole and the positioning hole from the exterior of the first parallel plate and wherein a biasing means bears against a spring plate affixed to the exterior of the first parallel plate, and the biasing means biases the locking means along the transverse axis toward the second parallel plate, and wherein the locking means is able to engage, through the positioning hole, an aligned lock pin hole in the butt end of the blade, and

wherein the second parallel plate has along the transverse axis a button hole through which a lock release means passes and the lock release means engages the locking means whereby the lock release means may be activated against the biasing means removing the locking means from the lock pin hole allowing the blade to be freely repositioned, and wherein releasing the lock release means enables the biasing means to insert the locking means into any aligned lock pin hole.

4,551,918

HONEYCOMB CORE CUTTING TOOL AND METHOD OF USING

Dudley G. Smithberg, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 26, 1984, Ser. No. 592,774

Int. Cl.⁴ D27G *13/00*

U.S. Cl. 30—347 **2 Claims**

1. A cutting tool for shaping formed plastics comprising: a

shank, a cylindrical base having a tapered outer end, a pair of aligned radially extending cutting units along the tapered outer end of the base with each cutting unit having means for piercing and removing material including piercing cutting points for piercing and removing material from a formed plastic part, spacing between piercing points on each of the two cutting units are matching but uniformly offset with respect to each other to provide a burrless machined surface when the cutting tool is used on the formed plastic, and the means for piercing and removing material from the plastic part comprises: each cutting unit having a radial rake of at least 60 degrees, a clearance angle, and serrations normal to and extending along the length of the cutting unit.

4,551,919

MEASURING INSTRUMENT

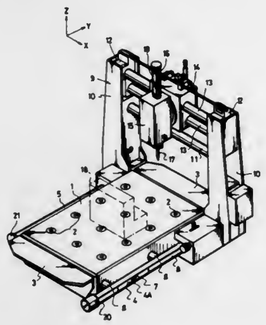
Hideo Sakata, and Yukiji Yoda, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1983, Ser. No. 539,361

Claims priority, application Japan, Oct. 27, 1982, 57-188750; Oct. 27, 1982, 57-188751

Int. Cl.⁴ G01B *7/03*

U.S. Cl. 33—1 M **13 Claims**



1. A measuring instrument, comprising:

a measuring element support member supporting a measuring element and being reciprocatingly mounted on a guide rail;

a scale affixed onto said guide rail in the longitudinal direction thereof;

a displacement detection unit secured to said measuring element support member, for detecting a displacement value of said measuring element support member relative to said scale; and

scale protection devices provided on opposite sides of said measuring element support member in the longitudinal direction of said scale, respectively, each of which is formed of a belt-like member, one end of which is secured to an end portion of said guide rail and the other end of which wound onto a retractor provided on said measuring element support member, said retractor comprising a support shaft for at least one roller allowing said measuring element support member to move back and forth on said guide rail, and a cylindrical surfaces thereon and along the length thereof, one of said planar side surfaces being disposed on the outer side with respect to said bedplate and has a groove along the length thereof;

an elongated scale secured in said groove and being vertically oriented;

a measuring element support member including a pair of supports movably mounted on said guide rails by rollers and a spindle support member movably provided on shafts extending between said two supports;

a displacement detecting unit provided in one of said supports on the side of said guide rail having said scale, for detecting a displacement value of said measuring element support member relative to said scale; and

a pair of spiral constant load springs fixedly secured at the ends on one side of said measuring element support member to shock absorbers provided at opposite end portions of said guide rail having the scale, and wound at the other ends onto a retractor having a cylindrical member rotatably provided in said support member, and disposed in parallel relation to a surface on said scale thereby covering the same.

4,551,920

REAR SIGHT FOR FIREARMS

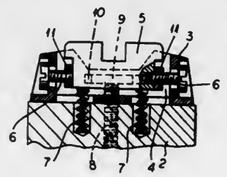
Satish K. Mahotra, Steyr, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed May 11, 1984, Ser. No. 609,190

Claims priority, application Austria, May 20, 1983, 1851/83

Int. Cl.⁴ F41G *1/16*

U.S. Cl. 33—257 **7 Claims**



1. In a rear sight for a firearm, comprising

a sight plate carrier having two mutually opposite end faces and an open-topped groove extending along said sight plate carrier between said end faces.

a sight plate, which is mounted in said groove and is guided in said groove for adjustment and along said groove and is vertically adjustable,

two transverse adjusting screws, which are parallel to said groove and extend from respective ones of said end faces into said sight plate carrier and are screwed into said sight plate and operable to adjust said sight plate along said groove, and

vertical adjusting means for vertically adjusting said sight plate,

the improvement residing in that

said sight plate is guided in said groove for a vertical adjustment in said groove,

said sight plate is formed with a generally horizontally extending, slotlike opening, and

said vertical adjusting means comprise a vertical adjusting screw, which crosses said transverse adjusting screws at right angles thereto and has a head extending into said slotlike opening and is adapted to be screwed into said firearm.

4,551,921

APPARATUS FOR MEASURING THE GRADIENT OR INCLINATION OF A SURFACE OR OF A LINE

Philippe Puyo, Bordeaux, and Lucien Bouvet, Pessac, both of France, assignors to A.B.F. Industrie S.A., Bordeaux, France

PCT No. PCT/FR83/00020, § 371 Date Sep. 27, 1983, § 102(e) Date Sep. 27, 1983, PCT Pub. No. WO83/02662, PCT Pub. Date Aug. 4, 1983

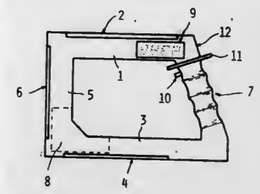
PCT Filed Jan. 26, 1983, Ser. No. 541,341

Claims priority, application France, Jan. 27, 1982, 82 01385; Sep. 8, 1982, 82 15320

Int. Cl.⁴ G01C *9/06*

U.S. Cl. 33—366 **18 Claims**

1. Apparatus for measuring a gradient with respect to a pre-determined reference plane, said apparatus comprising a frame having at least three outer bearing surfaces disposed at right angles to each other along there sides of said frame, a device integrally connected with said frame and comprising means for sensing and measuring variations in the spatial position of said apparatus and for emitting a signal proportional to the measured angular deviation between one of said bearing surfaces and said reference plane, and means for displaying the value of the measurement taken by said sensing device, said frame being quadrilateral, said three frame sides supporting



said three outer bearing surfaces and said frame having a fourth side comprising a handle which is integrally connected to two of said three sides, said sensing and measuring means further comprising a display device disposed adjacent to said handle, said handle further comprising means for activating said measuring and sensing device and displaying said angular deviation on said display device, said measuring and sensing device being positioned within at least one of said three frame sides.

4,551,922

LINE MARKING DEVICE

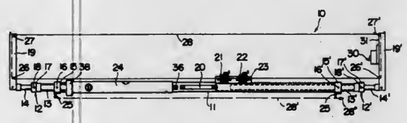
Yoshihiro Someya, 1-27-2, Naka-machi, Musashino-shi, Tokyo, Japan

Filed Aug. 2, 1984, Ser. No. 636,955

Claims priority, application Japan, Aug. 2, 1983, 58-119853[U]

Int. Cl.⁴ B44D *3/38*

U.S. Cl. 33—414 **5 Claims**



1. A line marking device comprising:

an extensible pipe assembly;

first and second arm members pivoted to the opposite ends of said pipe assembly;

an ink pad assembly mounted on one of said first and second arm members;

first and second guide wheels rotatably mounted at the opposite ends of said first arm member;

first and second guide wheels rotatably mounted at the opposite ends of said second arm member;

first and second reels rotatably mounted on said pipe assembly in spaced positions along the length of the pipe assembly;

a line marking string anchored at the opposite ends to said first and second reels and guided along a path defined by said guide wheels;

said first and second guide wheels being adapted to alternately pay out thereof and wind thereabout said line marking string;

a spirit level mounted on said pipe assembly between one end of the pipe assembly and one of said first and second reels;

angle members secured to the opposite ends of said pipe assembly; and

a weighted line marking string having one end anchored to one of said angle members and the other end carrying a weight thereon.

4,551,923

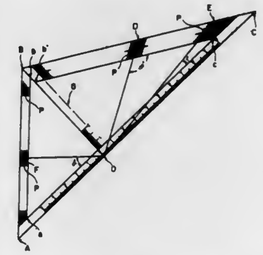
DRAWING TRIANGLE

Sam C. Y. Sung, Taipei, Taiwan, assignor to Hou Sheng Chiang, Taipei, Taiwan

Filed May 24, 1984, Ser. No. 613,578

Int. Cl.⁴ B43L *13/00*

U.S. Cl. 33—476 **10 Claims**



7. A drawing triangle comprising a transparent plate having one obtuse angle and first and second acute angles is characterized in that

a perpendicular starting from the vertex of said obtuse angle meets the base edge of said drawing triangle that opposes said obtuse angle at a right angle at a first point;

from said first point a first line leads to a first edge that opposes said second acute angle and meets said first edge at a second point, said first line making an angle of 30 degrees with respect to said base edge and an angle of 60 degrees with respect to said first edge;

a second line is parallel to said base edge;

a third line is parallel to said first edge;

a fourth line is parallel to said second edge;

a first set of parallel lines is provided between and parallel to said first edge and said third line; and

a second set of parallel lines is provided between and parallel to said second edge and said fourth line.

4,551,924

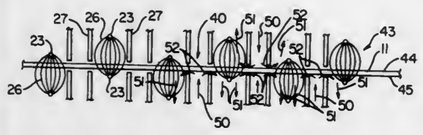
ELECTROSTATIC METHOD FOR TREATING MATERIAL

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation of Ser. No. 548,646, Nov. 4, 1983, abandoned, which is a continuation of Ser. No. 401,078, Jun. 23, 1982, abandoned, which is a division of Ser. No. 386,703, Jun. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 319,114, Nov. 9, 1981, Pat. No. 4,404,754, which is a continuation-in-part of Ser. No. 261,784, May 8, 1981, Pat. No. 4,338,729, which is a division of Ser. No. 124,224, Feb. 25, 1980, Pat. No. 4,283,862, which is a division of Ser. No. 50,807, Jun. 2, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned. This application Jun. 25, 1984, Ser. No. 624,006

Int. Cl.[4] F26B *3/34*; B01D *57/02*

U.S. Cl. 34—1 22 Claims



1. In a method for drying material comprising the steps of disposing said material in a heating means to have said heating means heat at least part of the liquid particles of said material, disposing charged electrode means so as to be adjacent one side of said material when said material is disposed in said heating means and to define a plurality of electrostatic fields that are serially arranged in substantially a like repeating pattern and that are substantially constant and non-oscillating so that said electrostatic fields at least partially extend through said material while said material is disposed in said heating means, and moving said material in one direction through said heating means to cause at least a portion of said material to have the particles of liquid thereof serially moved through said electrostatic fields while said portion of said material is being heated in said heating means whereby said electrostatic fields augment the drying effect of said heating means on said material, the improvement comprising the steps of disposing nozzle means between each pair of adjacent electrostatic fields, and directing a fluid flow through said nozzle means disposed between each pair of adjacent electrostatic fields so as to impinge against said material.

4,551,925

DRIER

Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

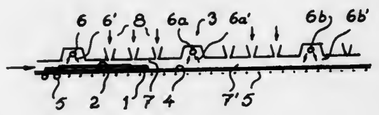
Filed Mar. 2, 1981, Ser. No. 239,587

Claims priority, application Sweden, Feb. 3, 1981, 8100788

Int. Cl.[4] F26B *23/04*

U.S. Cl. 34—4 3 Claims

1. A drier, intended principally for drying printing ink applied to a material by a printing machine, the drier comprising a conveyor device including means for supporting the material as the material passes through the drier, more than two, separately arranged organs which emit ultra-violet radiation for drying and/or hardening the printing ink, the organs which emit UV radiation being spaced a distance of 0.5 to 1.5 meters from each other such that a material which passes beneath a first organ, where the material has been exposed to both UV



radiation for hardening the printing ink and to the heat emitted by the organ which emits UV radiation, passes through a section of the drier between the organs, and a plurality of nozzles arranged above said section for directing cooling air toward the material such that the temperature of the material falls substantially before the material passes beneath a second organ, the cooling air being chilled air.

4,551,926

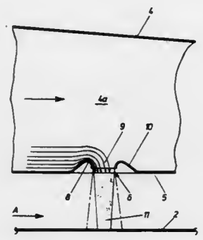
NOZZLE BOX FOR HEAT TREATMENT OF VENEERING

Herbert Aufderhaar, Ibbenbüren, Fed. Rep. of Germany, assignor to C. Keller GmbH u. Co. KG Maschinenfabrik, Ibbenbüren-Laggenbeck, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,364

Int. Cl.[4] F26B *3/04, 13/10*

U.S. Cl. 34—23 14 Claims



1. A nozzle box for the heat treatment of veneer in a dryer for veneers comprising

a bevel at the side of the box facing the veneering and located at the edge where the veneering is approaching; annular recesses on the side of the box facing the veneering with a first portion of the recesses extending into the box and a second portion adjoining the first portion in the box and reverting to the outside to define a funnel-shaped hole in the middle of the annular recess for guiding hot air to treat the veneering.

4,551,927

HANDLING OF TEXTILE YARN

William E. A. Shelton, Oadby, England, assignor to Alan Shelton Limited, Croft, England

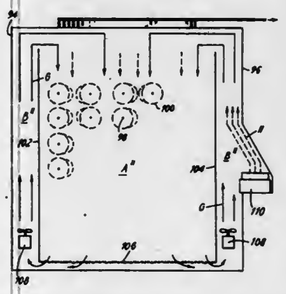
Filed Nov. 9, 1981, Ser. No. 319,414

Claims priority, application United Kingdom, Nov. 19, 1980, 8037021; Aug. 12, 1981, 8124631

Int. Cl.[4] F26B *21/06*

U.S. Cl. 34—82 5 Claims

1. Enclosure means for the control of loose lint or fly released by textile yarns during travel between stations in a textile manufacturing process, comprising a completely enclosed housing, a plurality of interconnected compartments within the housing, at least one of which compartments is traversed by a yarn during its travel, air circulation means within said housing to circulate essentially the same air in a continuous path through the entire cross sectional areas of said compartments with the air first passing through said one compartment and then an other of said compartments, and a partition provided within the other of said compartments comprising a filter screen capable of trapping fly or lint carried by air passing therethrough, and means contained within said completely enclosed housing for conditioning said circulating air, said housing enclosing a plurality of yarn bobbin supports comprising a creel arrangement.



4,551,928

FIBER REMOVING SIEVE FOR TEXTILE DRYERS

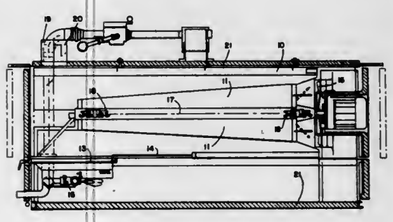
Karl-Heinz Gottschalk, Hamburg, Fed. Rep. of Germany, assignor to Babcock Textilmaschinen GmbH, Seevetal, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 603,198

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 3315755

Int. Cl.[4] F26B *13/02*

U.S. Cl. 34—82 6 Claims



1. In a device for removing fibers or slubs transported in a stream of treatment means in treatment devices, such as dryers or fixation devices for textile goods or the like using circulating air, in which the treatment means is blown repeatedly onto the textile goods to be treated and, after the treatment process, the treatment means is removed therefrom of the type having a housing and a fiber removing sieve mounted in said housing for movement between an operative position in which it is in the path of said stream of treatment means for removing fibers and an inoperative position where it is withdrawn from said stream for cleaning, the improvement comprising:

said fiber removing sieve including two sieve elements disposed in tandem, and connected to one another by entrainment means so that in pushing on one sieve element the other element is pushed, and in pulling on one sieve element the other element is pulled, whereby as one of said sieve elements is moved into the operative position, the other of said sieve elements is moved into said inoperative position, said entrainment means including sealing means for cooperating with said dryer housing to prevent outside air from entering into the stream of treatment means when one of said sieve elements is disposed in said operative position.

4,551,929

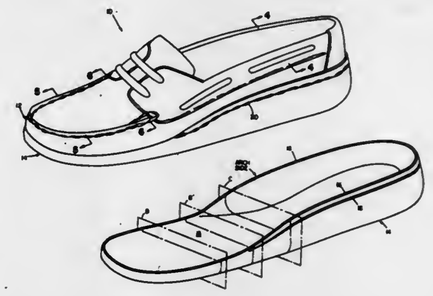
UNIT-SOLED SHOE

John Paris, Apt. 6, 180 Andover St., Andover, Mass. 01810

Filed Feb. 16, 1983, Ser. No. 466,972

Int. Cl.[4] A43B *3/14*

U.S. Cl. 36—11 9 Claims



1. A shoe comprising a sole having

a ground-contacting surface,

a top surface generally parallel to said ground-contacting surface, and

a peripheral wall extending generally transverse to said ground-contacting and top surfaces, upwardly from said top surface, and along the periphery of the heel portion of said sole, said wall extending only around the rear portion of said sole and

an upper having rearward and forward portions and attached at its rearward portion to an inside surface of said wall, and, at its forward portion, attached only to said top surface.

4,551,930

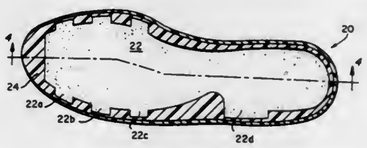
SOLE CONSTRUCTION FOR FOOTWEAR

Kenneth W. Graham, Wakefield; Edward J. Norton, Ipswich, both of Mass., and Shuhei Kurata, Fukuoka, Japan, assignors to New Balance Athletic Shoe, Inc., Lawrence, Mass.

Filed Sep. 23, 1983, Ser. No. 535,288

Int. Cl.[4] A43B *13/14, 13/18, 13/04*

U.S. Cl. 36—30 R 25 Claims



1. For use in footwear, a midsole including an integral heel wedge portion, said midsole formed by a core of a first plastic material having a characteristic of springiness, and a shell of a second, different, more dense plastic material molded about said core to at least substantially encapsulate said core within said shell, and wherein the wall of said shell has a thickness of at least about 0.5 mm.

4,551,931

SOLE FOR A CROSS-COUNTRY SKI BOOT AND ASSOCIATED BINDING BASE PLATE

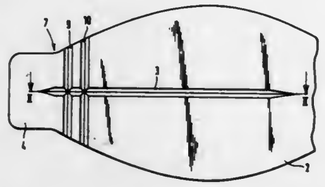
Alfred Bente, Herzogenaurach, Fed. Rep. of Germany, assignor to Adi Dassler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Jan. 26, 1984, Ser. No. 574,051

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304538

Int. Cl.⁴ A43B *5/04*

U.S. Cl. 36—117 **7 Claims**



1. In a cross-country ski boot, a sole comprising a front sole portion, a rear sole portion, a front extension portion extending forwardly from said front sole portion and having a rearward end connecting to said front sole portion and a forward end adapted to engage a ski binding means, a groove extending in the lengthwise direction of said sole in said front sole portion, rearwardly from a position at said rearward end of said extension portion, and at least one groove extending transversely in said front sole portion adjacent to said rearward end of said extension portion, said grooves being adapted to receive corresponding ribs on a ski to which said boot is to be fitted.

4,551,932

SKI BOOT CONSTRUCTION

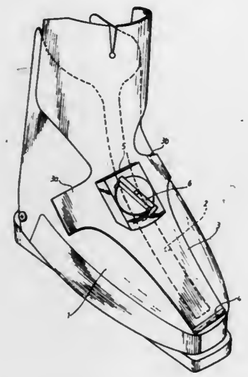
Robert Schoch, Hilzingen, Fed. Rep. of Germany, assignor to Weinmann GmbH & Co. KG, Singen, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,193

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3315071; May 16, 1983, 3317771

Int. Cl.⁴ A43B *5/04;* **A43C** *11/20*

U.S. Cl. 36—117 **12 Claims**



1. In a ski boot constuction having an outer boot provided with a frontal opening, a closure tongue overlying said opening and extending beyond both sides of said opening, a movable operating member carried by said tongue, a pair of fastening members connected to said operating member and extending in opposite directions therefrom beyond both sides of said opening, said fastening members being movable transversely of said opening in response to movement of said operating member, and anchor members carried by said boot on opposite sides of said opening for releasable latching engagement by the respective fastening members, the improvement wherein said tongue has a dimension sufficient to overlie wholly said fastening members and both of said anchor members when said fastening members are in latching engagement with said anchor members.

4,551,933

SKI BOOT

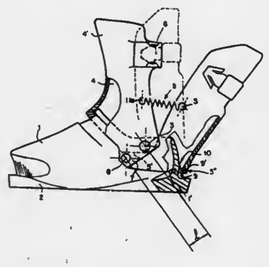
Joseph Morell, Annecy; Jean Paris, Sevrier, and Roland Petrini, Chambery, all of France, assignors to Salomon S.A., Annecy, France

Filed Feb. 9, 1984, Ser. No. 578,428

Claims priority, application France, Feb. 9, 1983, 83 02437

Int. Cl.⁴ A43B *5/04*

U.S. Cl. 36—120 **56 Claims**



1. A ski boot comprising:
(a) a shell base;
(b) an upper, at least partially journalled on said shell base, comprising:
(i) a cuff; and
(ii) a rear spoiler, wherein said rear spoiler is adapted to move from an open position to a closed position; and
(c) means for automatically closing said spoiler in response to forward flexion of said cuff.

4,551,934

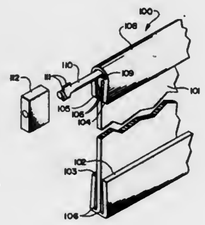
VISIBLE FILE POCKET SUPPORT PANEL

Alan F. Davies, Vancouver, Canada, assignor to Davies Office Equipment, Ltd., Vancouver, Canada

Filed Jan. 27, 1983, Ser. No. 461,538

Int. Cl.⁴ G09F *19/00*

U.S. Cl. 40—535 **13 Claims**



1. A visible file pocket support panel suitable for hingedly mounting "n" (where "n" is any whole integer) visible file pockets each having hinge pin defining means extending across one edge thereof and terminating in a pair of laterally projecting hinge elements on opposite sides of the "n" file pockets, and for supporting the "n" file pockets in a flush overlapped array with freedom for pivotal movement about their individual hinge axes and wherein the front free pocket tips on all of the "n" file pockets are visible when all of the "n" file pockets

are flush with the said support panel; comprising, in combination:
(a) means defining a rectangular central base member having front, rear and side edges;
(b) a ramp surface extending rearwardly and downwardly from said base member front edge and terminating short of said base member rear edge;
(c) a flange formed on and extending laterally from at least the front and side edges of said base member;
(d) means defining an edge channel member having an E-shaped cross-sectional configuration including lower, intermediate and upper legs defining lower and upper longitudinally extending slots, and a vertical flange extending upwardly from the free inner end of the upper leg, said laterally extending flange on said base member being received within said lower longitudinally extending slot in said E-shaped channel member and being bonded thereto, and said ramp surface overlying and blocking said upper slot in all areas of said E-shaped channel member forward of the rear edge of said ramp surface with said upper slot being open and exposed on the two sides of said base member rearward of said ramp surface rear edge; and,
(e) means comprising a stop element positioned in said upper slot and spaced rearwardly from said ramp surface rear edge on each side of said support panel by a distance sufficient to accommodate "n" hinge elements on "n" file pockets in the exposed open portion of each of said upper slots between said stop elements and the rear edge of said ramp surface.

4,551,935

DISPLAY PANEL FOR VENDING MACHINES

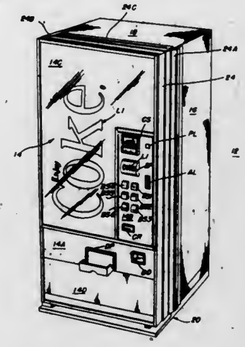
G. Merle Bachmann, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 244,818, Mar. 17, 1981, Pat. No. 4,380,130. This application Feb. 8, 1983, Ser. No. 464,897

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.⁴ G09F *7/00*

U.S. Cl. 40—584 **8 Claims**



1. Display means for an obverse face of a vending machine comprising:
a plurality of panel means defining a like plurality of display fields within a defined display area;
selected ones of said panel means being of contrasting surface characteristics to the remaining said panel means in the provision of selected display configurations in said display area;
one of said selected panel means being a discharge panel means having discharge port means therein for presenting vended products, said discharge panel means extending horizontally across said obverse face of said vending means and dividing said obverse face into upper and lower sections;
another selected one of said panel means being disposed in said upper section and being configured with a substantially rectangular outline with the longest dimension of the rectangle extending vertically of said machine and including logo means so disposed thereon as to suggest the representation by said display panel means of the rectangular front elevational outline of an upright can of product with said logo means thereon; and
control means in a remaining said panel means for controlling the vending of products from said vending machine, said control means including,
secondary product selector button means in a vertical array for selecting secondary products to be vended, each having a secondary product display area thereon bearing indicia representative of a given secondary product to be vended,
a primary product selector button means positioned above said vertical array so shaped and so proportioned as to present a primary product display area thereon larger than a said secondary product display area to provide a dominant pressure thereon in said control means,
said primary product display area being substantially the same primary product logo as said another selected one of said panel means for inducing, in conjunction therewith, the predominant selection of said primary product over said secondary product by an observer of said display means.

4,551,936

IMPROVED TRIGGER MECHANISM FOR SHOTGUNS HAVING SUPERPOSED BARRELS

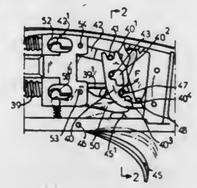
Pierre Chauvet, St. Etienne, France, assignor to Societe d'Exploitation Cooperative de la Manufacture d'Armes et Cycles de St. Etienne (S.C.O.P.D. Manufrance), France, a part interest

Filed May 3, 1983, Ser. No. 490,980

Claims priority, application France, May 5, 1982, 82 08116

Int. Cl.⁴ F41C *19/00*

U.S. Cl. 42—42 R **5 Claims**



1. In a trigger mechanism for shot guns having superposed barrels, said trigger mechanism including a frame (**44**), said mechanism having parallel hammers (**39,52**) for the upper and lower barrels cooperating, upon cocking, with the noses of pivotal sears (**42,52**), said lower hammer (**39**) being extended by a rear tail (**39¹**) for acting upon a pivotally and vertically movable cam (**40**); said cam having an upper end (**40¹**) coacting with a pivot pin (**41**) on the sear (**42**) for the upper barrel and a lower end engagable by the trigger (**45¹**) of the shot gun, said cam being pivoted rearwardly (**F**) about said pivot pin (**41**) to a first position by coaction with said rear tail (**39¹**) and pivoted forwardly (**F1**) to a second position by a spring (**49**) mounted in said frame (**44**) and bearing on said cam, said cam (**40**) having a right-angle opening (**40²**) receiving a first transverse pin (**43**) mounted in said frame (**44**), the rearward pivotal movement of said cam (**40**) moving said transverse pin (**43**) into the horizontal leg of said right-angle opening (**40²**) for preventing vertical movement of said cam (**40**) for blocking firing of the second shot, the forward pivotal movement of said cam by said spring (**49**) following firing of the first shot and retraction of the rear tail (**39¹**) of said lower hammer moving said transverse pin (**43**) into alignment with the vertical leg of said right-angle opening (**40²**) to permit vertical movement of said cam to actuate said upper sear (**42**) upon subsequent manipulation of said trigger (**45**) to fire the second shot from the upper barrel; the improvement comprising:

a generally horizontal arcuate sot (40[4]) in the rear surface of said cam and proximate to said lower end thereof, said slot being concentric with said pivot pin (41) on said upper sear (42); and

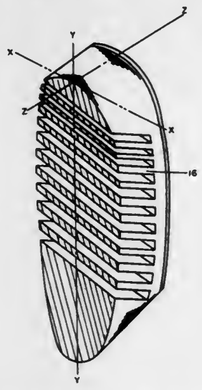
a second transverse pin (47) integrally mounted in said trigger mechanism frame (44) and insertable in said slot when said cam is in said first position to provide a double locking of said cam in addition to that provided by said first pin (43) and said right-angle opening (40[2]) against a vertical movement following firing of said first shot to prevent firing of said second shot without a subsequent manipulation of said trigger mechanism, said second transverse pin (47) being freed from said slot when said cam is in said second position to permit firing of said second shot by a subsequent manipulation of the trigger.

4,551,937

RECOIL PAD UTILIZING STRUTS DISPOSED AT A COMPOUND ANGLE AND HAVING ADJUSTABLE ENERGY-ABSORBING CHARACTERISTICS

Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 577,263, Feb. 6, 1984, abandoned. This application Apr. 2, 1985, Ser. No. 719,223
Int. Cl.[4] F41C *23/00*
U.S. Cl. 42—74 **20 Claims**



1. An adjustable shoulder pad for use on the end of the stock of a rifle or shotgun, said pad being particularized for use on a designated shoulder and containing a number of generally parallel, elongate slots extending from side to side through said pad, said slots angling downwardly with respect to two orthogonal directions, and being of an essentially consistent size and configuration, such that into said slots, a selected amount of material of a nature to absorb energy may be inserted, a plurality of elongate struts defined by the slots, which struts tend to bend and buckle somewhat at the time the shooter places the pad firmly against his shoulder so as to cause the pad to conform to the configuration of this shoulder, said struts then buckling to a significantly greater extent at the time the gun is fired, said struts, by their placement and angle, causing a significant amount of movement of the stock down as well as away from the shooter's face at the time the gun is fired.

4,551,938

RETRIEVAL OF LOBSTERS AND OTHER OBJECTS

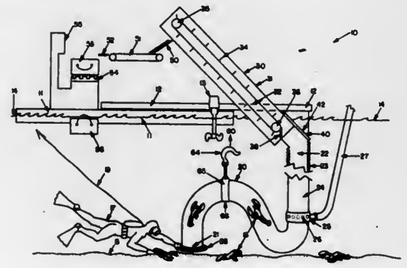
William W. Sheldon, R.F.D. #2, Box 292, Ellsworth, Me. 04605, and Theodore G. Axford, Milbridge, Me., assignors to William W. Sheldon, Ellsworth, Me.

Division of Ser. No. 246,599, Mar. 23, 1981, Pat. No. 4,434,572. This application Feb. 16, 1984, Ser. No. 580,811
Int. Cl.[4] A01K *80/00*
U.S. Cl. 43—4.5 **5 Claims**

1. A method for lifting lobsters and similar objects from the bottom or floor of a lobster pound or other shallow water body to a support deck floating above the surface of the water comprising:

establishing a flow of water at low pressure upward from the bottom to the surface of the water in a passageway having a lower flexible portion with an inlet opening end and an upper substantially rigid vertical portion with an outlet opening end positioned adjacent to the surface by injecting air at low pressure in the rigid vertical portion for establishing an air lift, said passageway being of size sufficient to accommodate lobsters and similar objects to be lifted without injury;

drawing the lobsters or similar objects to be lifted from the bottom into the established flow of water and to the surface by selectively moving the lower flexible portion and upward flow of water along the bottom while spacing the inlet opening end above the floor of the water body hovering over the bottom;



maintaining air and water pressure in said passageway at sufficiently low level for lifting the lobsters or similar objects in the flow of water to the surface without blasts of air and without impacts which may be injurious to lobsters;

guiding and deflecting the lobsters as they rise to the surface, by means of in the water flow onto conveying means by positioning an angled surface of the conveying means adjacent to the outlet opening end of the passageway said outlet opening end and said conveying means being located at the surface of the water so that lobsters are guided onto the conveying means as they reach the water surface;

shedding water away from the lobsters or other similar objects by passing water through openings in a direction away from the deflecting lobsters; and

conveying the lobsters or similar objects to the support deck floating above the water surface.

4,551,939

BASS FISHING ORGANIZER

Doyle W. Kitchens, 120 Meandering Way, Del Rio, Tex. 78840

Filed Sep. 22, 1983, Ser. No. 534,969
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 **7 Claims**

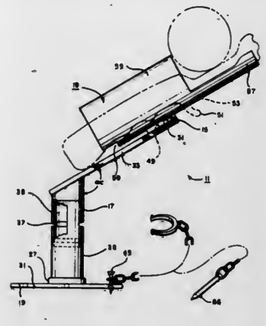
1. A bass fishing organizer for holding a plurality of pre-arranged in the sense of pre-organized and pre-fitted fishing rods and respective associated accessories, comprising:

a. at least one mounting base for being affixed to a surface and adapted for supporting the plurality of fishing rods and accessories;

b. a bank member having sufficient length and strength to hold in place the plurality of fishing rods and accessories and holders therefor; said bank member having a central support adjacent its center;

c. said central support and said mounting base having coengaging means for supporting said fishing rods and accessories, said coengaging means including at least one respective throat and shaft that will matingly engage and having respective slots and a groove in the respective throat and shaft; said groove extending through 360° around said at least one shaft such that the bass organizer is rotatable for convenience; there is provided a retainer means that is removable and said removable retainer means includes a retainer C-clamp for snapping in place into said slot and engaging said groove to hold said central support rotatably coengaging said mounting base by way of said throat and coengaging shaft;

d. respective holders for said fishing rods and accessories; said holders comprising one each for each fishing rod and



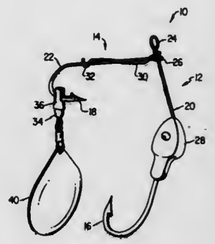
accessory; said holders being connected to said bank member; each said holder having a tubular member adapted to receive a respective handle of a respective said fishing rod to hold it releasably in place and having a top to prevent slipping downwardly of its respective handle of said fishing rod and having a bottom aperture for receiving a trigger member on its said handle to prevent rotation of said fishing rod with respect to said holder.

4,551,940

FISHING LURE

David S. East, Garland, Tex., assignor to Knight Manufacturing Company, Inc., Tyler, Tex.

Filed Apr. 30, 1984, Ser, No. 605,128
Int, Cl.[4] A01K *85/00*
U.S, Cl. 43—42.11 **12 Claims**



1. A fishing lure comprising:

a first fishhook member having a barbed hook, a wire lead integrally connected to said barbed hook and extending therefrom, and an aperture formed at the terminal end of said wire lead for attachment to a fishing line;

a second fishhook member having a barbed hook and being secured to said first fishhook member proximate said aperture and disposed relative to said first fishhook member at a predetermined angle, said second fishhook member being further disposed relative to said first fishhook member so that said barbed hook of said second fishhook member faces said barbed hook of said first fishhook member;

a sinker positioned on said wire lead of said first fishhook member such that said first fishhook member is maintained below said second fishhook member during towing through the water while fishing;

a swivel member positioned on said barbed hook of said second fishhook member; and

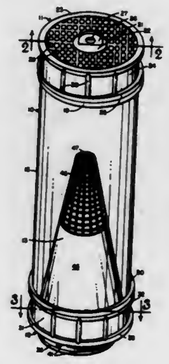
a spinner blade secured to said swivel member and adapted to rotate as the lure is drawn through water.

4,551,941

INSECT TRAP SELECTIVE FOR WASPS

Rodney G. Schneidmiller, 8604 S. Riverway, Spokane, Wash. 99212

Filed Feb. 16, 1984, Ser. No. 580,934
Int. Cl.[4] A01M *1/02*
U.S. Cl. 43—107 **2 Claims**



1. An insect trap selective to wasps comprising, in combination:

a peripheral cylindrical body defining an entrapment chamber and being formed of transparent material that transmits radiant heat and light;

a top element defining a plurality of orifices of size to prevent the passage of wasps therethrough;

a bottom element formed of semi-opaque material having a yellow color attractive to wasps and having;

an undercut lower portion defining a plurality of entryways therein for access therethrough,

a disc-like bottom plate with a diameter greater than that of the undercut portion, immediately therebelow to form a horizontal perch adjacent each entryway and

an attractant well on the upper surface of the bottom plate containing a volatile substance that is a specific olfactory attractant to wasps;

a peripherally defined entry element, interposed between the bottom element and the entrapment chamber defined by the cylindrical body, comprising an upright truncated conic structure defining an orifice into the entrapment chamber at its upper truncated portion, a solid lower portion defining internal ridges to aid wasp crawling thereover and a screen-like upper portion defining plural spaced orifices small enough to prevent the passage of wasps therethrough and allow their crawling thereover.

4,551,942

SPROUT GROWING SYSTEM

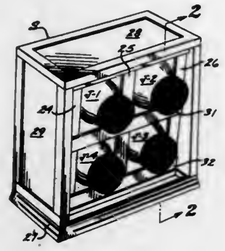
James E. Brown, Palm Springs, Calif., assignor to Debra Kay Rinker, Pogosa Springs, Colo.

Filed Mar. 12, 1984, Ser. No. 588,717
Int. Cl.[4] A01C *1/00*
U.S. Cl. 47—14 **12 Claims**

1. A sprout growing method utilizing a plurality of open wide-mouth, screened jar means, such system comprising the steps of:

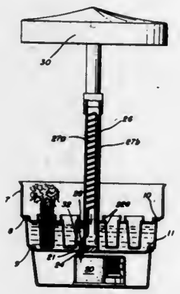
(a) providing a support for said jar means having a plurality

of jar means-receiving space means wherein said jar means are removably supported in a generally horizontal position;
(b) partially filling the first of said jar means with sprout seeds and water for a predetermined time period, screening the mouth of said jar means and draining the water from said jar means;
(c) depositing said first jar means in the first of said space means for a predetermined time period;
(d) repeating step b with second jar means;
(e) moving said first jar means from said first space means into second space means and concurrently replacing said first jar means with said second jar means in said first space means;
(f) repeating step b with third jar means;



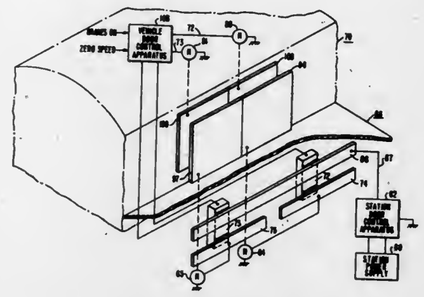
(g) moving said first jar means from said second space means into third space means and concurrently moving said third jar means into said first space means and said second jar means into said second space means;
(h) repeating step b with fourth jar means;
(i) moving said first jar means from said third space means into fourth space means and concurrently moving said second jar means into said third space means, said third jar means into said second space means, and said fourth jar means into said first space means;
(j) removing said first jar means from said support for harvesting sprouts and concurrently advancing said second jar means to said fourth space means, said third jar means to said third space means, said fourth jar means to said second space means; and
(k) repeating step b with said first jar means to start a second sprout growing cycle.

4,551,943
FLOWER MERCHANDISING DISPLAY
Rene J. T. M. Pas, Kapellenberglaan 44, Rozendaal, Netherlands
Filed Jul. 30, 1984, Ser. No. 635,663
Int. Cl.[4] A01G *7/00*
U.S. Cl. 47—41 R **15 Claims**



1. A flower merchandising display comprising a first container, liquid contained in said first container, means to elevate at least a portion of said liquid above the top of said first container, means to return said liquid downwardly to said first container, said means to elevate said liquid comprising enveloping means, said enveloping means extending above said liquid, gas contained in said enveloping means, said means to elevate and said means to return said liquid at least partially disposed in said enveloping means, and means for allowing escape of said gas from said enveloping means being formed in said enveloping means and disposed above the upper level of said liquid.

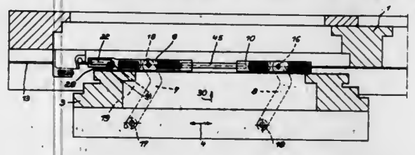
4,551,944
DOOR CONTROL APPARATUS
George W. Donaldson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 17, 1984, Ser. No. 571,611
Int. Cl.[4] E05F *15/20*
U.S. Cl. 49—31 **7 Claims**



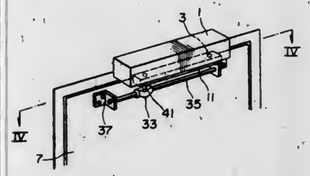
1. In apparatus for controlling at least one passenger door of a transit vehicle movable along a roadway track in relation to at least one passenger door of a station, with the station including a passenger platform and a power supply, the combination of:
first motor means coupled to move the one station door for opening and closing said station door,
second motor means coupled to move the one vehicle door for opening and closing said vehicle door,
first conductor means positioned along said platform and coupled with the power supply,
second conductor means positioned along said first conductor means and coupled with the first motor means, and
connection means coupled with the second motor means and carried by said vehicle for providing an electrical connection between the first and second conductor means and energizing the first and second motor means for operating said station door and said vehicle door.

4,551,945
HARDWARE FOR MOVING A SASH INTO LATERALLY DISPLACED PARALLEL POSITIONS
Julius M. von Resch, Stuttgart, Fed. Rep. of Germany, assignor to Gretsch-Unitas GmbH Baubeschläge, Ditzingen, Fed. Rep. of Germany
Filed Sep. 15, 1983, Ser. No. 532,582
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234677
Int. Cl.[4] E05D *15/10*
U.S. Cl. 49—221 **12 Claims**

1. Apparatus for a window or the like comprising a sash and hardware engageable with said sash for moving said sash from a closed first position into a second position parallel to the first position, said hardware comprising swing arms disposed in spaced relation and pivotally connected to said sash, means for linearly displacing said sash in the second position, said means comprising at least one movable carriage, means engageable with at least one of said swing arms for securing said sash in the second position and said securing means being disengageable, said securing means comprises an elongated control arm pivotally secured to one of said swing arms, a locking member mounted on said control arm and spaced from the pivotal connection of said control arm to said swing arm, and arresting means in said carriage for receiving and holding said locking member for positioning said control arm and swing arm so that said sash is maintained in the second position.

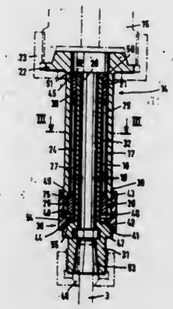


4,551,946
DOOR SWINGING DEVICE FOR AUTOMATICALLY SWINGING DOORS
Kei Yoshida, and Yoichiro Saotome, both of Tokyo, Japan, assignors to Chikura Kogyo Kabushiki Kaisha, Japan
Filed Jan. 16, 1984, Ser. No. 570,759
Claims priority, application Japan, Feb. 8, 1983, 58-16959[U]
Int. Cl.[4] E05F *11/24*
U.S. Cl. 49—340 **3 Claims**



1. A door swinging device for automatically swinging a door hinged to a door supporting frame so as to be angularly movable about a vertical axis, comprising:
means for rotating;
an arm member adapted to be attached at one end thereof to the rotating means so as to be rotated in a plane;
a slider rotatably connected to the other end of the arm member; and
means, adapted to be attached to one of the door and the door supporting frame, for guiding slidably the slider in a direction parallel with the plane, the guiding means including an elongated guide member and a pair of bracket members for supporting respective ends of the guide member on the one of the door and the door supporting frame so that the guide member extends in the direction parallel with the plane, the slider including a first sleeve member adapted to be slidably fitted around the elongated guide member, the slide being further provided with a connecting shaft extending perpendicularly to the axis of the first sleeve member, the arm member being provided at the other end with a second sleeve member for slidably and rotatably fitting the connecting shaft thereinto so that the connecting shaft is perpendicular to the plane, the arm member being provided at the other end with a recess and a through hole formed centrally through the recess, the through hole having a circumferential shoulder formed at one end thereof adjacent to the recess, the second sleeve member being provided at one end thereof with a flange radially outwardly projected from the one end, the flange being tightly fitted into the shoulder, the second sleeve member further including a clamping planar member fitted into and screwed to the recess for clamping the flange of the second sleeve member with the shoulder of the through hole.

4,551,947
DEVICE FOR HONING WORKPIECES
Hans Grimm, Esslingen-Berkheim, and Hermann Fingerle, Lenningen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Gehring Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Ostfildern, Fed. Rep. of Germany
Filed Jul. 25, 1983, Ser. No. 516,881
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1982, 3227924
Int. Cl.[4] B24B *33/02*
U.S. Cl. 51—34 H **19 Claims**



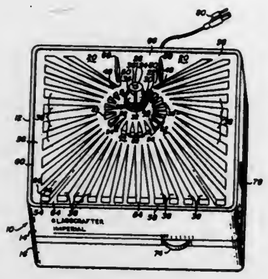
1. A device for honing workpieces, comprising:
a workholding fixture;
bearings associated with said workholding fixture;
a rotatable and axially reciprocable honing tool having upper and lower end sections which are respectively guided in one of said bearings which are associated with said workholding fixture;
a machine spindle; and
a drive rod disposed between and connected to said honing tool and said machine spinlde, said drive rod for radial mobility in equalization of axial misalignment between said machine spindle and said honing tool being at least partially movable transverse to its axial direction, and being flexible in the radial direction; said drive rod comprising at least two telescopically interlocking tubular pieces which are connected to one another with zero-play universal-joint-like mobility in such a way that they cannot move axially and cannot turn with respect to one anothr although a great radial yielding capability is attained so that radial mobility exists whereby greater axial misalignment between said machine spindle and said honing tool can be equalized, with one of said tubular pieces being connected to said machine spindle, and another of said tubular pieces being connected to said honing tool; said tubular pieces including an inner tube, an intermediate tube, and an outer tube, with said inner and outer tubes being interconnected by means of said intermediate tube; said intermediate tube effecting said interconnection of said inner and outer tubes by means of a predetermined connection, with said intermediate tube having ends provided with fastening means which mate with corresponding fastening sections of said outer and inner tubes.

4,551,948

GLASS SHAPING MACHINE

Morris L. Kindig, 255-58 S. Rengstorff, Mountain View, Calif. 94040; Cleon V. Kindig, deceased, late of San Jose, Calif., and by Eunice L. Kindig, executrix, 1904 Serge Ave., San Jose, Calif. 95130

Filed Oct. 28, 1983, Ser. No. 546,403
Int. Cl.⁴ B24B *9/08*
U.S. Cl. 51—98 R **7 Claims**



1. A glass shaping machine comprising, in combination:

a housing means having a top portion supporting a sloping horizontal member with an offset center penetration through said sloping horizontal member, a bottom portion, and a means for connecting said top portion to said bottom portion;

a work surface integrally formed to said sloping horizontal member for supporting a glass being shaped wherein the integral work surface includes a first partial ring of wedge-shaped segments rising above and partially circumscribing said offset center penetration, a first partial arcuate channel uniformly separating said first partial ring from said offset center penetration, said first partial ring being concentric within and non-congruent with a second partial ring of wedge-shaped segments, said first partial ring uniformly separated from said second partial ring by a second partial arcuate channel described by a circular path with a set of terminal ends, said second partial arcuate channel interrupted at each of said terminal ends by a wedge-shaped segment common to each of said first and said second partial rings, said wedge-shaped segments comprised of a narrow edge and a broad edge, said broad edge terminating in a flush vertical outer surface; said broad edges of said first partial ring of wedge-shaped segments extending radially from said offset center penetration and said broad edges of said second partial ring of wedge-shaped segments extending radially from said second arcuate channel, said flush vertical outer surfaces of said second partial ring of wedge-shaped segments forming a continuous outer channel with a peripheral vertical wall of said top portion of the housing means and further including a groove formed between each adjacent segment of said first and second partial rings and wherein each alternate groove formed between the second partial ring aligns with each corresponding groove formed between said first partial ring and wherein said grooves formed between each segment of said second partial ring lead into said continuous outer channel;

a driving means for rotating a driving shaft protruding through said offset center penetration, the driving means having a variable speed capability and mounted within the housing means;

a grinding support head located external to the housing means above the integral work surface and in mechanical communication with said driving shaft;

a grinding surface shaped to fit and permanently affixed to the grinding support head for finishing and shaping a plurality of glass surfaces;

a speed control means for providing a variable voltage input to the driving means, said speed control means mounted within the housing means; and

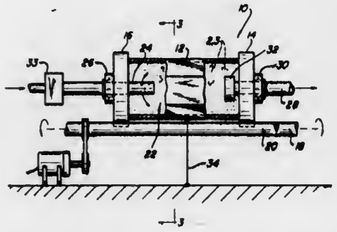
a rectifying means for translating an alternative current signal to a variable direct current signal and transmitting said variable direct current signal to the driving means, said rectifying means mounted within the housing means.

4,551,949

METHOD AND APPARATUS FOR DISSIPATING STATIC CHARGE FROM AN ABRASIVE TUMBLING OPERATION

David S. Akhavi, Westwood; Richard W. Cudworth, Upland, and John R. Kniffin, Mira Loma, all of Calif., assignors to Iolab Corporation, Covina, Calif.

Filed Jun. 13, 1984, Ser. No. 620,237
Int. Cl.⁴ B24B *31/02*
U.S. Cl. 51—164.1 **22 Claims**



11. In an apparatus for smoothing tiny plastic parts by tumbling in an abrasive medium having a chamber of polyhedronal cross-section and having first and second ends attached to said chamber, said ends having a generally circular cross-section, and having roller bars adapted to operatively engage said first and second ends to rotate said chamber,

the improvement comprising:

inlet means extending through and coaxially aligned with said first end;

sealed bearing means for permitting said chamber and said ends to rotate while said inlet remains fixed;

means in fluid communication with said inlet for introducing into the chamber a flow of ionized fluid to dissipate a static electrical charge which builds up on said parts and said medium during tumbling causing said parts to be repelled from said medium;

exhaust means from said chamber.

4,551,950

TRUING APPARATUS FOR A GRINDING WHEEL WITH ROUNDED CORNERS

Kunihiko Unno; Toshio Tsujiuchi, and Yukio Oda, all of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 26, 1984, Ser. No. 634,430
Claims priority, application Japan, Aug. 2, 1983, 58-141296
Int. Cl.⁴ B24B *53/14*
U.S. Cl. 51—165.87 **3 Claims**

1. A truing apparatus for truing a grinding wheel having a rounded corner, comprising:

(a) truing tool;

(b) tool support means for suppoting said truing tool and movable radially and axially of the grinding wheel;

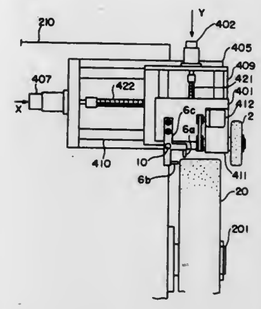
(c) feed drive means for moving said tool support means radially and axially of the grinding wheel;

(d) first feed control means for controlling said feed drive means to move said truing tool along a predetermined path;

(e) contact means attached to said tool support means for contacting said grinding wheel in radial and axial directions thereof;

(f) contact detecting means for detecting a contact between said contact means and said grinding wheel;

(g) second feed control means for controlling said feed drive means to move said contact means to approach outer peripheral and end surfaces of the grinding wheel until said contact detecting means is actuated immediately after one truing process and immediately before a next truing process;



(h) grinding wheel position detecting means for detecting radial and axial positions of the grinding wheel when said contact detecting means is actuated immediately after said one truing process and immediately before said next truing process; and

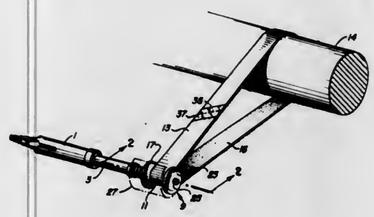
(i) correcting means for correcting said path given by said first feed control means based on the radial and axial positions of the grinding wheel which are detected by said grinding wheel position detecting means.

4,551,951

DETACHABLE PORTABLE CONTINUOUS-BELT DRIVING HEAD

Robert J. Nace, Kingsville, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 24, 1984, Ser. No. 603,275
Int. Cl.⁴ B24B *21/02, 23/06*
U.S. Cl. 51—170 EB **4 Claims**



1. A detachable portable rotatable driving head for driving a continuous grinding belt over a shaft surface comprising:

(a) a cylindrical rotatable drive head concentrically connected to a rotatable spindle, the drive head including:

(i) a cylindrical rubber-coated drum portion threadably connected to the spindle;

(ii) a first sideguard concentrically spaced about the spindle between one end of the drum and a stop flange on the spindle;

(iii) a washer between the drum and first side guard;

(iv) a second sideguard threadably fastened to another end of the drum; and

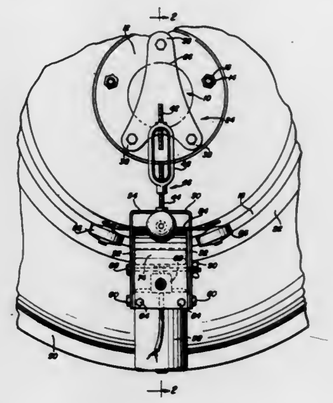
(v) a continuous grinding belt carried on the drum and around the shaft.

4,551,952

TIRE SIDE WALL CLEANER

James C. West, Galveston, Tex., assignor to Joe Collis Cochrane, Galveston, Tex., a part interest

Filed Jun. 9, 1983, Ser. No. 502,605
Int. Cl.⁴ B24B *19/00*
U.S. Cl. 51—241 S **9 Claims**



1. A tire side wall cleaner-buffer including a mount provided with support means for support of said mount from a vehicle wheel having a tire mounted thereon, elongated arm means, connecting means mounting one end of said arm means from said mount for angular displacement relative thereto about an axis extending transverse to said arm means and for at least limited angular displacement of said arm means relative to said mount about an axis transverse to said arm means and the first-mentioned axis, rotary abrasive wheel means journalled from the other end of said arm means for rotation about an axis generally parallelling said arm means, said arm means including adjustment means for adjusting the effective length of said arm means intermediate said connecting means and rotary abrasive wheel means.

4,551,953

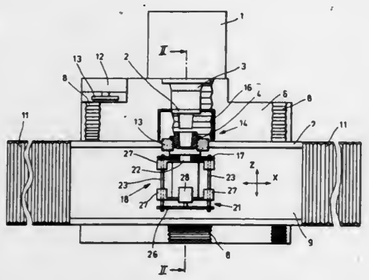
MACHINE TOOL WITH DETACHABLE TOOL SHIELDING MEANS

Willi Lewandowski, Glinde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,048
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3320952
Int. Cl.⁴ B24B *55/04*
U.S. Cl. 51—268 **17 Claims**

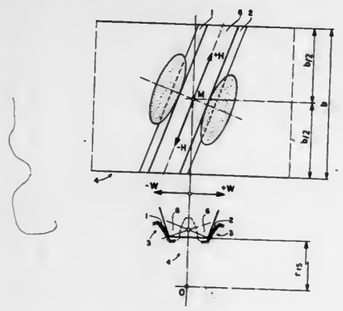
1. In a machine tool, such as a grinding machine, the combination of a frame; a tool holder in said frame; a protective enclosure provided on the frame for the tool on said holder; a tool changing device provided on said frame; means for effecting a relative movement between said device and said holder so that said device can assume with reference to said holder a tool changing position in which a tool can be transferred between said device and said holder; and means for temporarily

supporting at least a portion of said enclosure during transfer of tools between said device and said holder in a predetermined



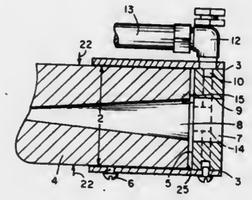
position such as to afford access to said holder, said supporting means being provided on said device.

4,551,954
METHOD FOR CONTROLLING A GRINDING STROKE IN A GEAR TOOTH FLANK GRINDING MACHINE
Peter Bloch, Mutschellen, and Robert Wydler, Zürich, both of Switzerland, assignors to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland
Filed Mar. 5, 1984, Ser. No. 586,327
Claims priority, application Switzerland, Mar. 11, 1983, 1338/83
Int. Cl.[4] B24B *55/02*
U.S. Cl. 51—287 **6 Claims**



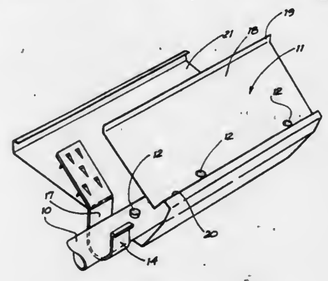
1. A method for controlling a grinding stroke (H) of a gear tooth flank grinding machine operating on an indexing generating principle and having at least one dished grinding wheel with an effective radius (R_S) reciprocatably movable in grinding strokes along generatrices of involute gear tooth flanks to perform a machining of each such gear tooth flank and wherein a grinding stroke (H) is greater than lengths of the generatrices by the amount of a supplemental dimension, comprising the steps of:
   performing a measurement of said effective radius (R_S) of said at least one grinding wheel at least once during said machining of each gear tooth flank; and
   reducing said grinding stroke (H) of said at least one grinding wheel in correspondence to a gradual reduction of said effective radius (R_S) detected by said measurement.

4,551,955
SAND BLASTING APPARATUS
Henry E. Zion, Jr., 31 Bedford St., Middleboro, Mass. 02346
Filed Oct. 11, 1983, Ser. No. 540,844
Int. Cl.[4] B24C *5/04*
U.S. Cl. 51—439 **4 Claims**



1. An improved sand blasting apparatus of the type fitted over the end of a sand blasting tool for forming around a sand jet coming from the tool a thin water cocoon to eliminate sand dust during sand blasting operations, wherein the improvement comprises:
   a hollow casing having an outside, an inside and two ends, one end into which a sand blasting tool is inserted, and said casing having an inner diameter approximately equal to the outer diameter of the sand blasting tool;
   a water fitting mounted on the outside of said casing at the end opposite to that end of the casing into which the sand blasting tool is inserted, penetrating through to the inside of the casing, and adapted to receive a convenient conduit for supplying water to the inside of the casing;
   a disk concentrically mounted within the said casing at the end with the said water fitting, having an axial bore through which the sand jet from the sand blasting tool passes, having an annular, concentric groove about its circumference aligned with the water fitting, having a plurality of chamber cavities juxtaposed on either side of the disk's axial bore and opening onto the face of the disk which nearly touches the sand blasting tool and having a depth sufficient to reach the side of the groove farthest away from the sand blasting tool, and to which the sand blasting tool is so inserted in the casing that it nearly touches; and
   a plurality of holes in the casing located generally at the junction of the disk and the sand blasting tool.

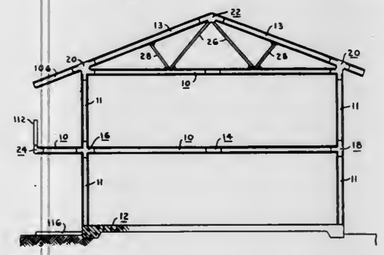
4,551,956
GUTTERING SYSTEM
Wayne L. Axford, 19 Blanch St., Oatley, New South Wales, 2223, Australia
Filed Jul. 18, 1983, Ser. No. 514,880
Claims priority, application Australia, Jul. 19, 1982, 4937
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—12 **11 Claims**



1. A gutter system comprising: a plurality of support brack-

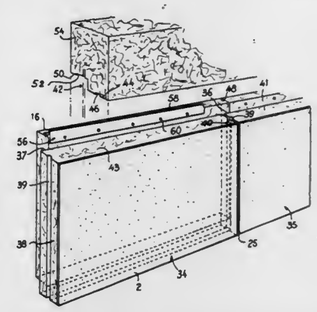
ets each including an attachment portion at one end for attachment to roof structure, a support edge at the other end and a generally "U"-shaped support portion therebetween in proximate said other end; a conduit for liquid transportation supported by said support brackets within said "U"-shaped support portions; a sheet metal outer shell portion wrapping around said support brackets and conduit and supported at an outer longitudinally running ridge by said support brackets at least at their support edges; a shallow channel portion formed longitudinally along an upper portion of said outer shell portion and adapted to receive water runoff from a building roof and to channel the water therealong between a plurality of substantially spaced apart liquid communication means providing drainage of water from said shallow channel portion to said conduit.

4,551,957
BUILDING CONSTRUCTION
Herbert R. Madray, P.O. Box 712, Okeechobee, Fla. 33472
Filed May 23, 1983, Ser. No. 496,960
Int. Cl.[4] E04B *7/02*
U.S. Cl. 52—90 **18 Claims**



1. An improved system for constructing primary load-bearing frame structures for buildings and the like on a foundation, with prefabricated sets of interconnectable girder members, connecting plate members and attachment members for selectively securing the girder and plate members to one another, the improvement comprising:
   the girder members being prefabricated in a plurality of incrementally different lengths and having flanges and webs forming channel-shaped cross-sections of uniform web width, at least some of the girder members being vertically-oriented;
   each of the connecting plate members being prefabricated with flanges to form at least two angularly related receiving channels of uniform web width and cross-section and in a plurality of relative angles, the respective web widths of each girder and each receiving channel being dimensioned to enable portions of each to nest snugly one inside the other, primary loads being borne by and transmitted between the girder and plate members in planes defined by the nested webs, the flanges of the nested ends bearing against one another to provide high rotational rigidity and overall frame stiffness;
   the set of attachment members being insertable through apertures in and engageable with nested portions of both the girder and plate members to provide full surface engagement of the nested web portions, whereby a plurality of frame structures for buildings, of varied size and shape, may be easily constructed from sets of prefabricated girder members and prefabricated connecting plate members secured together by a set of standard attachment members; and,
   means for securing the vertically-oriented girder members to the foundation.

4,551,958
EXTERIOR INSULATING ELEMENT AND CLADDING EMPLOYING SUCH ELEMENTS
Patrick Reneault, Garches, and Francis Ovaert, Paris, both of France, assignors to SMAC Acieroid, Paris, France
Filed Jan. 19, 1983, Ser. No. 459,245
Claims priority, application France, Jan. 22, 1982, 82 00980
Int. Cl.[4] E04C *2/20*
U.S. Cl. 52—309.4 **18 Claims**



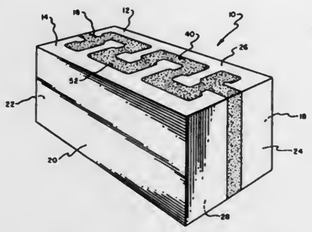
1. An assembly of adjacent similar elements in a substantially vertical plane, each element providing an exterior insulation for a wall, said element comprising a rectangular panel composed of a heat insulating foam material substantially impermeable to water and water vapour and having a good strength and good thermal performances in a humid environment, the element having two sides and four edges, a facing layer which resists penetration of running water but is not necessarily fully impermeable to humidity and is provided on a first of said sides, which first side is for constituting an outer side of said element when said element is combined with said wall, the four edges of the element each comprising a longitudinal groove and having, in the vicinity of a rear side of said element opposedto said first side, a length (A, C) exceeding to a given extent the length (B, D) of said first side, whereby each edge is in fluidtight contact with the edge of an adjacent similar element adjacent said rear side but said given extent being such that the edge remains spaced from the edge of said adjacent similar element adjacent said first side and forms gaps which are narrow relative to a depth of the gaps,measured from said facing layer and the grooves are all open through said gaps between said similar elements only on said first side, and means defining decompression chambers provided in said edges defining said gaps between adjoining ones of said similar elements and spaced from said first side of each of said similar elements.

4,551,959
BUILDING BLOCK
Donald T. Schmid, 10835 Park Ave., Clarence, N.Y. 14031
Filed Oct. 19, 1983, Ser. No. 543,175
Int. Cl.[4] E04C *1/00*
U.S. Cl. 52—309.12 **9 Claims**

1. A building block having two opposite and parallel sidewalls and two opposite and parallel ends, said sidewalls and said ends being generally perpendicular to one another, said building block comprising:
   two spaced block parts extending along the length of the block sidewalls so that each block part defines at least a portion of a corresponding one of the block sidewalls, each of said parts having an inner surface defining a side of the space between said block parts and including at least three substantially planar projections projecting toward the inner surface of the other of said two parts so that the plane of each projection is oriented substantially parallel to the block ends and so that portions of the inner surfaces of said block parts are defined by the surfaces of said

projections, each projection of said block part being spaced from an adjacent projection of its corresponding block part a distance no greater than about one-third the length of each block sidewall and defining an enlarged end portion, said projecting portions of each of said parts being so arranged in relationship to the projecting portions of the other of said parts that the space defined therebetween is generally serpentined in cross section as viewed in a plane oriented perpendicular to the block ends and sidewalls; and

an insulating portion positioned within and substantially filling the space between said two block parts so that said enlarged end portions of said projections are in interlocking relationship with said insulating portion and said block parts are thereby securely interconnected with one another, the inner surface of one block part engaging a corresponding surface of an insulating portion over an area which is at least twice as large as the area of the block sidewall defined by said one block part and the inner surface of the other block part engaging a corresponding surface of an insulating portion over an area which is at least twice as large as the area of the block sidewall defined by said other block part so that the engagement between said block parts and said insulation portion contributes effectively to the structural integrity of said block as a unit.

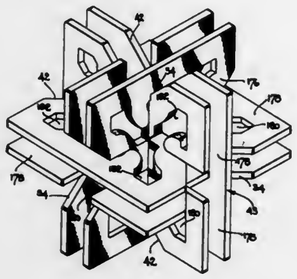


4,551,960

SPACE FRAME STRUCTURAL SYSTEM

Gregg R. Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034

Filed Feb. 14, 1983, Ser. No. 466,102
Int. Cl.⁴ E04H *12/00*
U.S. Cl. 52—648 **41 Claims**



1. A three dimensional nodal connector for securing one or more struts extending between the nodal connector and another like nodal connector, said nodal connector comprising:

(a) six flat plates and each of said plates capable of being identical in size to one another and each having identical peripheral and interior shapes,

(b) each of said plates being shaped for enabling said plates to be interfitted together as three pairs in three substantially mutually perpendicular planes relative to one another and with the plates of each pair being facewise disposed to one another to form a relatively solid and relatively rigid three dimensional nodal connector, and

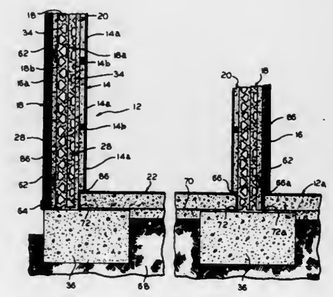
(c) connection means on each of said plates forming connection regions in each of said pairs in said three substantially mutually perpendicular planes to enable struts to be removeably connected to said nodal connector.

4,551,961

METHOD OF CONSTRUCTING A MODULAR UNIT

Donald L. Kiselewski, 4705 Holly Dr., Palm Beach Gardens, Fla. 33410

Filed Feb. 28, 1983, Ser. No. 470,160
Int. Cl.⁴ E04B *1/16*
U.S. Cl. 52—743 **18 Claims**



1. A method of constructing a modular structure, comprising the steps of:

providing an inner and outer panel and a perforated stud having first and second portions including respective engagement means;

securing said inner panel to one of said first and second portions of said perforated stud and securing said outer panel to the other of said first and second portions of said perforated stud;

positioning said inner and outer panels in spaced parallel relationship with said first and second portions of said perforated stud in confronting relatively movable relationship

applying a force to said inner and outer panels of said wall to urge said inner and outer panels apart for engagement of said respective engagement means of said first and second portions of said perforated stud to form a wall having a cavity therein;

maintaining a force on said inner and outer panels of said wall to keep said respective engagement means of said first and second portions of said perforated stud in engagement thereby maintaining said inner and outer panels in spaced apart relationship by a preselected distance to define a stay-in-place form; and

permanently and interlockingly engaging and encasing said first and second portions of said perforated stud by pouring concrete into said cavity to flow through said perforated stud between said inner and outer panels of said wall to rigidize said modular structure;

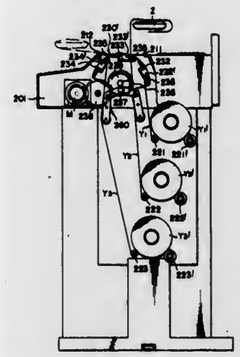
whereby said modular structure may be constructed by performing said securing step at one location, performing said positioning step at another location, and performing said forcing and pouring steps at still another location.

4,551,962

WEIGHING AND PACKING APPARATUS

Kazuto Kawahara, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,719
Claims priority, application Japan, Sep. 25, 1981, 56-142743[U]; Sep. 25, 1981, 56-142744[U]; Sep. 30, 1981, 56-145298[U]; Nov. 30, 1981, 56-178608[U]; Dec. 19, 1981, 56-190129[U]; Dec. 19, 1981, 56-190131[U]; Mar. 5, 1982, 57-31081[U]
Int. Cl.⁴ B65B *61/00*
U.S. Cl. 53—131 **47 Claims**



1. A weighing and packing apparatus comprising:

(a) at least two rolls of film;

(b) a table wherein said table comprises a film outlet for receiving film from one of said rolls;

(c) a weighing mechanism comprising a weighing plate positioned in front of said film outlet in said table, said weighing mechanism being incorporated into said table;

(d) a slack prevention means for preventing any slack in said film as said film is drawn from said roll to said film outlet;

wherein said table further comprises side walls, film retainer comprising a plurality of film receivers for receiving adjacent films from said film rolls, a rotating means for rotating said film retainer, and a positioning means for positioning a desired film receiver to face said film outlet, wherein said film retainer is positioned between said side walls and is provided at its circumference with said plurality of film receivers to receive the end of said film from one of said rolls so that upon rotation of said retainer the distance between at least some of said adjacent films is reduced; wherein said table further comprises a means for enlarging said reduced distance between adjacent films in response to the rotation of said film retainer by said rotating means, wherein said means for enlarging the distance between adjacent films prevents said films from contacting or adhering to each other and enlarges said reduced distance between the adjacent films.

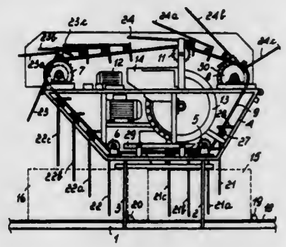
4,551,963

AUTOMATIC SEPARATOR DEVICE FOR FILLING BOXES WITH TUBES

Pierfrancesco Nicolo, Sordevolo, Italy, assignor to C.M.T. San Grato S.r.l., Sordevolo, Italy

Filed Jun. 28, 1982, Ser. No. 393,152
Int. Cl.⁴ B65B *19/34*
U.S. Cl. 53—148 **5 Claims**

1. An automatic transfer device for filling tubular bodies in parallel arrangement into boxes carried by a conveyor unit, comprising a drum-like member arranged above said conveyor unit for rotation around a substantially horizontal rotation axis, said drum-like member having an outer peripheral surface parallel to said rotation axis, said outer peripheral surface having peripheral containment formations extending parallel to each other and to said rotation axis for receiving therein and transferring therefrom said tubular bodies into said boxes, while maintaining said tubular bodies in a substantially horizontal position, endless entrainment means extending around said drum-like member at a distance therefrom and lying in a plane transverse to said horizontal rotation axis, said entrainment means comprising a pair of parallel chains in endless loop configuration each defining an upper stringer extending substantially above said drum-like member and a lower stringer extending substantially underneath and laterally to said drum-like member and inclined stringers connecting said first and second stringers, the chains of said pair of chains extending parallel at a distance from each other, a set of paddles hingedly connected on and between said chains for freely hanging by gravity vertically downwards from said lower stringers and for pivoting over each other at said upper stringers of said parallel chains, support members rigid with said paddles at a peripheral edge thereof, each of said paddles having a hinge mechanism defining a hinge axis extending parallel to said horizontal axis through said support member, each of said paddles having near said support members at least one shoe element rigid therewith in the form of a bar extending transverse to said paddles, means for pivoting said paddles as they move onto said upper stringer, motor means for moving said entrainment means in synchronization with and with said lower stringer chain in the direction of said flat conveyor unit, thereby said vertically hanging paddles at said lower stringer of said parallel chains progressively entering said boxes for dividing said boxes into temporary bins formed between consecutive vertically hanging paddles, each said bin being progressively advanced under said drum-like member untill completion of filling with said tubular bodies, said vertically hanging paddles being progressively removed from said boxes after completion of said filling and pivoting over each other when reaching said upper stringer position.



4,551,964

PACKING CASE TAB SLITTER

Lloyd D. Johnson, Portland, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Division of Ser. No. 254,638, Apr. 16, 1984, , which is a division of Ser. No. 75,324, Sep. 12, 1979, Pat. No. 4,291,518. This application Nov. 30, 1984, Ser. No. 677,317
Int. Cl.⁴ B65B *7/20*
U.S. Cl. 53—374 **8 Claims**



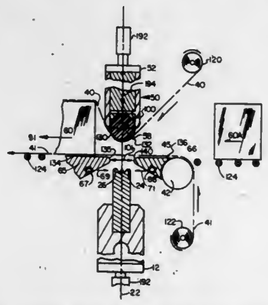
1. In apparatus for moving the front and rear top flaps of an upwardly open packing case away from their folded positions alongside the front and rear end panels of a packing case while the case is moving, said apparatus including conveyor means for moving the case in a horizontal path, the improvement

comprising transversely opposed flap folding chains, said chains provided on either side of said case path, and having active runs moving downstream at the same horizontal speed as that of the cases, at least one flap engageable tucker provided pivotally on each chain and cam track means for engaging portions of said flap tuckers, portions of said tuckers moving upwardly into the path of said cases as the tucker moves in the downstream direction to selectively contact the case front and rear end walls for locating the case therebetween and for folding the front and rear top flaps of the case.

4,551,965
WELDING AND SEPARATING APPARATUS FOR PLASTIC FILMS

Manfred Prottengeier, Norderstedt, Fed. Rep. of Germany, assignor to Doboy Verpackungsmaschinen GmbH, Schenefeld, Fed. Rep. of Germany

Filed Apr. 5, 1984, Ser. No. 597,165
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1983, 3312314
Int. Cl.⁴ B65B *51/14*
U.S. Cl. 53—463 **21 Claims**



1. Apparatus for welding and separating stacked plastic films which have opposite side edges, said apparatus comprising:

a welding and separating strip positioned substantially normal to said stacked plastic films, said strip being formed to have a separating member and two welding members positioned proximate to and on opposite sides of said separating member, said separating member and two welding members extending between opposite side edges of said stacked plastic films, and said strip including means to heat said separating member and said two welding members;

a counterpressure element mounted to be opposite said separating member and two welding members with said stacked plastic films therebetween which element is formed of a resilient material to extend between opposite side edges of said stacked plastic films and which element is sized to contact said separating member and two welding members;

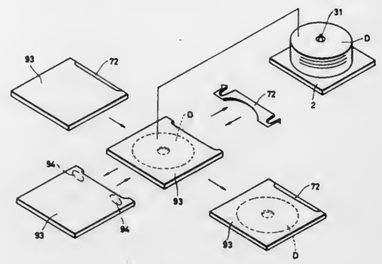
means to move said welding and separating strip and said counterpressure element selectively or together to press said separating member and two welding members against said counterpressure element to cause preselected deformation thereof so that, with said stacked plastic films positioned between said separating member and two welding members and said counterpressure element, said separating member separates said stacked plastic films into sections having transverse edges and substantially simultaneously said two welding members weld the transverse edges of each section of said stacked plastic films into one transverse edge; and

wherein said two welding members are sized and formed to contact said counterpressure element and hold said stacked plastic films substantially immobile thereagainst as said welding members are welding and as said separating member is separating.

4,551,966
APPARATUS FOR STORING INFORMATION STORAGE MEDIUMS INTO CASINGS

Shigeyuki Aoyagi, Yokohama, and Mamoru Watanabe, Sagamihara, both of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Jun. 8, 1982, Ser. No. 386,788
Claims priority, application Japan, Jun. 10, 1981, 56-89367
Int. Cl.⁴ B65B *5/04, 43/44*
U.S. Cl. 53—571 **20 Claims**



1. An apparatus for storing information storage discs in casings, comprising:

(a) first means for picking up and transferring an information storage disc to a storage position;

(b) second means for stocking and transferring a casing composed of a sleeve and a removable lid plate inserted therein to said storage position;

(c) third means for holding said casing in said storage position, said third means comprising a casing holder mechanism for holding said casing as fed to said storage position, a lid plate remover for removing said lid plate from said sleeve as supported by said casing holder mechanism, said lid plate remover comprising a remover plate, engagement means mounted on said remover plate for lockingly engaging said lid plate and actuating means for actuating said engagement means, and pulling means for pulling said lid plate engaged to said engagement means out of said sleeve;

(d) means for moving said first and third means relative to each other for inserting said information storage disc into said sleeve in said storage position with said lid plate removed from said sleeve by said lid plate remover means;

(e) means for moving said casing holder mechanism with respect to said lid plate remover for inserting said lid plate into said sleeve to provide a completed assembly of said casing and said information storage disc contained therein; and

(f) fourth means for stocking and discharging said completed assembly.

4,551,967
COMBINATION LAWNMOWER AND EDGER

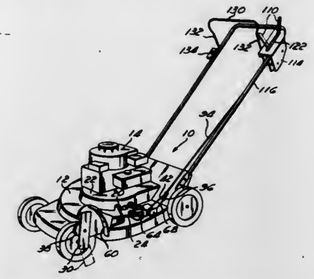
Joseph S. Murcko, 744 Annsway, Vista, Calif. 92083

Filed Mar. 4, 1985, Ser. No. 708,062
Int. Cl.⁴ A01D *53/14*
U.S. Cl. 56—13.7 **14 Claims**

1. In the combination of a lawnmower and edger, the lawnmower having a rotary grass-cutting blade supported by a vertical shaft and the edger having a rotary edging blade supported by a horizontal shaft, a motor powering said shafts, a lawnmower body supporting said shafts, and a guiding handle attached to and rising from said body, the improvement, comprising:

(a) a lever pivotally mounted on an upper portion of said guiding handle and a flexible tension member having its upper end connected to said lever, the lower end of said flexible tension member having edger lowering means and braking and belt tightening means, an arm supporting said horizontal shaft and pivotally movable between a first inoperative upper edger position and a second operative lower edger position and spring means normally biasing said arm to its first inoperative upper edger position and said flexible tension member pulling said arm to said second operative lower edger position as said lever is operated, and

(b) a pulley on said horizontal shaft and a pulley on said vertical shaft and belt means connecting said pulleys and

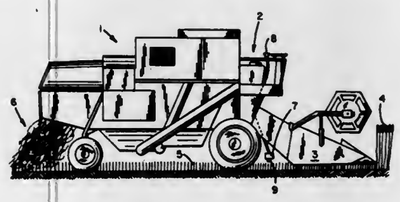


an idler belt tightening pulley engaging said belt means and a brake engageable with said belt means and said braking and belt tightening means being connected to said idler pulley and to said brake and spring means normally biasing said brake to operative position thereof and normally biasing said idler pulley to belt loosening position and said flexible tension member pulling said brake to inoperative position thereof and pulling said idler pulley to belt tightening position thereof as said lever is operated.

4,551,968
METHOD AND APPARATUS FOR KILLING FIELD WEEDS

Bengt A. Samuelsson, Torpa, 590 30 Borensberg, Sweden

PCT No. PCT/SE81/00338, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/01977, PCT Pub. Date Jun. 24, 1982
PCT Filed Nov. 20, 1981, Ser. No. 406,229
Claims priority, application Sweden, Dec. 8, 1980, 8008603
Int. Cl.⁴ A01D *75/18*
U.S. Cl. 56—16.4 **3 Claims**



3. Apparatus for killing field weeds such as root weeds, couch and the like, by means of liquid weed killer during harvesting of crops, said apparatus comprising:

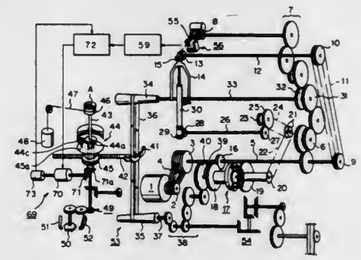
a self-propelled, motor-driven harvester combine having a front cutting device, means for loading the crop onto a conveyor for carrying the crop upwardly to a threshing apparatus, and means for ejecting the threshing residues onto the field rearwardly of the threshing apparatus through a crop residue ejecting opening, and liquid weed killer storage means; and

an elongated liquid weed killer applicator means arranged transversely of the direction of travel of the harvester combine and extending across at least the width of the harvester combine and in communication with said liquid weed killer storage means, said applicator means including a tubular distribution member divided into at least two sections each having discharge nozzles, said distribution member positioned between said front cutting device and said crop residue ejection opening, said tubular sections each extending transversely of the direction of travel of the harvester combine, and control means for selectively engaging and disengaging the applicator means from the liquid weed killer storage means, said control means selectively and intermittently operable to cause liquid weed killer to spray through desired discharge nozzles prior to deposit of crop residue onto the crop field in order to apply to the cut area the liquid weed killer in a check pattern depending on the occurrence of weeds.

4,551,969
APPARATUS FOR CONTROLLING THE WINDING SPEED OF ROVING IN ROVING FRAME

Takashi Kogiso, Mizunami; Katsutoshi Kishi, Gifu, and Hachirou Yokoyama, Aichi, all of Japan, assignors to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 30, 1984, Ser. No. 635,892
Claims priority, application Japan, Aug. 2, 1983, 58-141300; Nov. 22, 1983, 58-220087
Int. Cl.⁴ D01H *1/26, 13/32*
U.S. Cl. 57—264 **5 Claims**



1. An apparatus for controlling the winding speed of a roving in a roving frame during a winding operation, which comprises means for detecting the positions of said roving with respect to the vertical direction during vibration created in the portion of said roving suspended between a front roller of a drafting device of said roving frame which delivers said roving and a top of a flyer which performs said winding operation and outputting signals representing values corresponding to said detected positions, means for computing an average central position of said roving in the vertical direction during vibration from the values output by said roving position detecting means, means for computing a correction amount for the rotation speed of a bobbin associated with said flyer, said correction amount being computed from the difference between said average central position and a desired position for controlling the roving winding speed, means for generating a correction signal corresponding to the correction amount computed, and a device for changing the rotation speed of said bobbin in accordance with said correction signal.

4,551,970

APPARATUS FOR THE FALSE TWISTING OF THREADS USING FRICTION DISKS

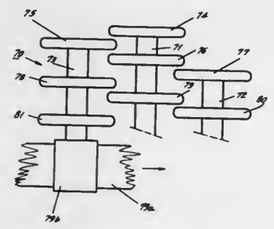
Kirit Patel, Elfershausen, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,151

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323543

Int. Cl.⁴ D01H *7/92*; D02G *1/04*

U.S. Cl. 57—339 **13 Claims**



1. A device for false-twisting thread comprising:

three rotatable parallel shafts, each shaft defining a respective corner of a triangle, each of the shafts having an inlet end disposed in an inlet direction for defining an inlet for entering thread and an outlet end disposed in an outlet direction opposite the inlet direction for defining an outlet for exiting thread; the shafts defining a thread path between them for passing thread from the inlet to the outlet;

drive means for rotating the shafts;

a first inlet guide disk on a first one of the shafts at the inlet end thereof for rotating with the first shaft for guiding the entering thread into the thread path;

a second inlet guide disk on a second one of the shafts at the inlet end thereof for rotating with the second shaft and positioned in the outlet direction from the first guide disk for guiding the thread; and

a first working disk on the first shaft for rotating therewith and positioned in the outlet direction from the second guide disk for receiving the thread from the second guide disk and for false-twisting the thread as the thread passes along the thread path.

4,551,971

BOOSTING APPARATUS FOR TURBO-JET ENGINE

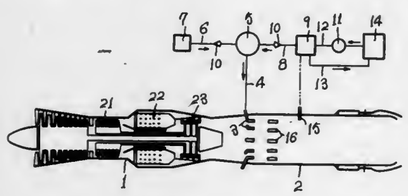
Satoru Suzuki, 1 Mikatabara-Cho 536 Banchi, Hamamatsu-Shi, Shizuoka-pref., Japan

Filed May 4, 1984, Ser. No. 607,236

Claims priority, application Japan, May 14, 1983, 58-72114[U]

Int. Cl.⁴ F02K *3/10*

U.S. Cl. 60—39.53 **2 Claims**



1. In a turbo-jet engine having a gas turbine including a compressor, combustor and a gas turbine rotor, and an after burner connected to the downstream side of said gas turbine as viewed in the direction of flow of the combustion gas,

a boosting apparatus for the turbo-jet engine characterized by comprising a means for atomizing a mixture of a fuel and an aqueous solution of methanol only into said after burner.

4,551,972

ENGINE MANAGEMENT SYSTEM

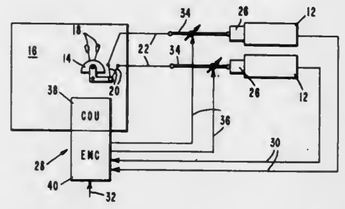
Leon D. Lewis, Rancho Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

PCT No. PCT/US80/01065, § 371 Date Mar. 4, 1982, § 102(e) Date Mar. 4, 1982, PCT Pub. No. WO82/00687, PCT Pub. Date Mar. 4, 1982

Continuation of Ser. No. 358,931, Mar. 4, 1982, abandoned. This PCT application Aug. 21, 1980, Ser. No. 664,949

Int. Cl.⁴ F02C *9/28*

U.S. Cl. 60—39.281 **20 Claims**



1. An engine management system for an aircraft having at least one engine, said engine management system having a plurality of operating modes corresponding to a plurality of flight modes of said aircraft, said engine management system comprising:

throttle means including throttle lever means movable over a range of positions for commanding corresponding rates of fuel flow to said engine;

fuel metering means operably connected to said throttle lever means and responsive thereto for providing said corresponding rates of fuel flow to said engine;

link means having a variable dimension adjustable over a predetermined range, said link means being operably interposed between said throttle means and said fuel metering means for selectively modifying the rate of fuel flow provided by said fuel metering means in response to a position of said throttle lever means, the rate of fuel flow provided by said fuel metering means corresponding to the rate of fuel flow commanded by said throttle lever means whenever said link means dimension is of a preset value in said predetermined range;

means for receiving parametric inputs representing desired engine performance characteristics, said parametric inputs including at least one of engine speed and engine turbine temperature;

means for selecting an operating mode for said engine management system corresponding to one of said flight modes of said aircraft, one of said operating modes being a go around mode;

link control means drivingly connected to said link means for controllably regulating said link means dimension and thereby selectively modifying said rate of fuel flow;

means for energizing said link control means to modify said rate of fuel flow to the extent necessary to achieve at least one of said desired engine performance characteristics, said energizing means energizing said link control means and thereby modifying said rate of fuel flow in response to said parametric inputs, said actual engine and aircraft performance characteristics, and said selected operating mode, said energizing means causing said link control means to bring said link means to said preset value whenever said engine management system is placed in said go around mode.

4,551,973

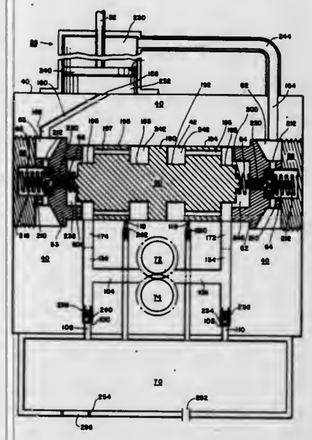
HYDRAULIC POWER SOURCE AND VALVE THEREFOR

James H. Broadhead, Bay Minette, Ala., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 28, 1982, Ser. No. 437,230

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60—477 **13 Claims**



1. A hydraulic power source adaptable for attachment to a motor, a reservoir of hydraulic fluid, and a double-acting piston/cylinder assembly, capable of providing hydraulic power to a selected side of the piston/cylinder assembly solely by selecting the direction of operation of the motor, comprising:

(a) a valve body, having a cylindrical bore therethrough;

(b) a valve assembly, disposed in the cylindrical bore, comprising, in axial alignment:

(i) a double-acting cylindrical plunger, movable axially in the cylindrical bore between a central position and a valve-opening position on either side of the central position, the plunger having a solid central portion, a pair of annularly recessed portions, one on either side of the central portion, a pair of non-recessed portions, one disposed axially outwardly of each recessed portion, and a pair of reduced diameter valve-opening portions, one extending axially outwardly from each non-recessed portion, each of the non-recessed portions having a plunger conduit therethrough connecting a space about the adjacent annularly recessed portion with a headspace about the adjacent valve-opening portion,

(ii) a pair of springs, one associated with and disposed about each valve-opening portion to urge the plunger to its central portion in the bore,

(iii) a pair of spring housings, one associated with and disposed axially outwardly of each spring to retain it and each having a housing conduit axially therethrough, and

(iv) a pair of check valves, one associated with each housing conduit, and each being biased closed to prevent flow axially inwardly through the housing conduit, each being openable by the corresponding valve-opening portion of the plunger when the plunger is in its valve-opening position with respect to that check valve;

(c) a pair of cylinder conduits, one associated with and connected at one end thereof to each housing conduit on that side of the check valve associated therewith remote from the headspace, and adapted to be connected at the other end thereof to one side of the piston/cylinder assembly;

(d) a pair of supply conduits, one associated with and connected at a first end thereof to each headspace through the cylindrical bore such that the conduit is open to the headspace when the plunger is in other than the valve-opening position with respect to the check valve associated with that headspace, and adapted to be connected at a second end thereof to the reservoir, each supply conduit having therein a supply check valve, the supply check valve being normally biased closed to prevent flow through the supply conduit to the reservoir;

(e) a pair of return conduits, one associated with and connected at a first end thereof to the space surrounding each annularly recessed portion through the cylindrical bore such that the conduit is open to the space only when the plunger is in the valve-opening position with respect to the check valve nearer the return conduit, and adapted to be connected at a second end thereof to the reservoir, each return conduit having therein a return check valve, the return check valve being normally biased closed to prevent flowthrough the return conduit away from the reservoir;

(f) a cross-flow conduit joining the pair of supply conduits at a point in each which is between the supply check valve and the first end; and

(g) a reversible pump intersecting the cross-flow conduit and adapted for connection to the motor, the pump being capable of pumping hydraulic fluid in either direction through the cross-flow conduit in response to the direction of operation of the motor;

whereby operation of the motor in a selected direction causes axial displacement of the plunger in the bore from its central position toward a valve-opening position, thereby causing the valve assembly to permit hydraulic fluid flow only in a desired direction and thus operate the piston/cylinder assembly in a direction corresponding to the selected direction.

4,551,974

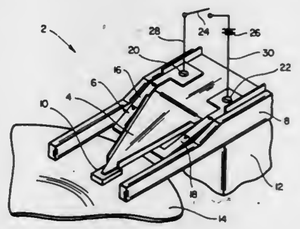
SHAPE MEMORY EFFECT ACTUATOR AND METHODS OF ASSEMBLING AND OPERATING THEREFOR

John R. Yaeger, Sunnyvale, and Robert K. Morgan, Pleasant Hill, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 27, 1984, Ser. No. 604,784

Int. Cl.⁴ F03G *7/06*

U.S. Cl. 60—527 **21 Claims**



10. A shape memory effect actuator comprising:

a biasing means, said biasing means being normally biased in a first position and capable of being moved to a second position;

an actuator element cooperatively engaged with said biasing means;

said actuator element having a first position and a second position corresponding to said first and second positions of said biasing means;

said actuator element comprising a shape memory alloy having a martensitic condition and an austenitic condition;

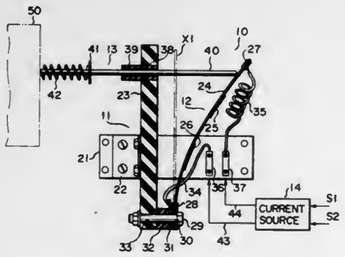
in said first position said actuator element is in the martensitic condition and is biased in said first position by said biasing means;

in said second position said actuator element biases and retains asaid biasing means in said second positon; said actuator element being in the martensitic condition when moved to sáid second position by manual manipulation and in the austenitic condition when moved to said second position by the shape memory effect.

4,551,975
ACTUATOR

Masao Yamamoto, Tokyo, and Tetsuo Fujiwara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1984, Ser. No. 681,126
Claims priority, application Japan, Feb. 23, 1984, 59-31367; Mar. 7, 1984, 59-41907; Sep. 29, 1984, 59-204884
Int. Cl.⁴ F01K *7/06*
U.S. Cl. 60—528 **8 Claims**



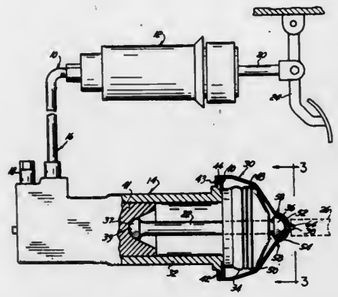
1. An actuator wherein an operation stroke is obtained by a shape memory element having an alloy member made of a shape memory alloy for recovering a memory shape when said alloy member is heated, and shape recovery control of said shape memory element is performed by Joule heat generated by a current supplied to said alloy member, characterized in that said shape memory element comprises means for decreasing an electrical resistance of at least one portion of said alloy member, the electrical resistance of said at least one portion being lower than that of any other portion thereof.

4,551,976
SHIPPING AND INSTALLATION STRAP FOR LINEAR ACTUATOR

Richard Nix, Utica, and Keith V. Leigh-Monstevens, Troy, both of Mich., assignors to Automotive Products plc, Warwickshire, England

Division of Ser. No. 344,495, Feb. 1, 1982, Pat. No. 4,454,632. This application Nov. 28, 1983, Ser. No. 555,602
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.⁴ F15B *7/00*
U.S. Cl. 60—533 **4 Claims**

1. A method of shipping and installing a hydraulic actuator for remotely operating a motor vehicle component, said hydraulic actuator forming part of an apparatus comprising a master cylinder, said hydraulic actuator and a conduit connecting said master cylinder and said hydraulic actuator, said hydraulic actuator having a housing and an output member movable relative to said housing from a first position to a second position, wherein said hydraulic actuator output member is connectable to an operating member of said motor vehicle component while in said first position, said method comprising restraining said hydraulic actuator output member in said first position by means of a strap having an end attached to said hydraulic actuator housing and another end attached to a portion of said hydraulic actuator output member, prefilling said apparatus with hydraulic fluid prior to shipment of said apparatus, shipping said apparatus with said strap maintaining said hydraulic actuator output member in said first position, and installing said apparatus on a motor vehicle while maintaining said hydraulic actuator output member in said first position by means of said strap, whereby said strap is adapted to maintain said hydraulic actuator output member in said first position during shipment of said apparatus and installation of

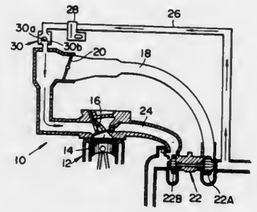


said apparatus on a motor vehicle and to allow normal operation of said hydraulic actuator output member from said first position to said second position after installation of said apparatus on said motor vehicle.

4,551,977
TURBOCHARGED INTERNAL COMBUSTION ENGINE

Motohiro Matsumura, Funabashi, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Oct. 24, 1983, Ser. No. 544,637
Claims priority, application Japan, Oct. 26, 1982, 57-187790
Int. Cl.⁴ F02B *37/00*
U.S. Cl. 60—611 **5 Claims**

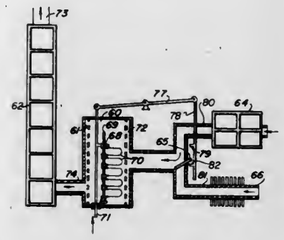


1. A turbocharged internal combustion engine comprising:
means defining an intake air passageway communicable with an engine combustion chamber;
a throttle valve pivotally disposed in said intake air passageway;
a turbocharger having a compressor wheel rotatably disposed in said intake air passageway upstream of said throttle valve;
means defining an intake air bypass passageway connecting a first portion of said intake air passageway upstream of said compressor wheel with a second portion of said intake air passageway downstream of said throttle valve bypassing said throttle valve and said compressor and communicable with the engine combustion chamber;
an air regulator disposed in said intake air bypass passageway and arranged to allow air to flow from said intake air passageway upstream of said compressor wheel into the engine combustion chamber through said intake air bypass passageway only when engine temperature is below a predetermined level; and
a check valve disposed in said intake air bypass passageway to prevent intake air from reverse flow in the direction from said second portion of said intake air passageway downstream of said throttle valve toward said air regulator.

4,551,978
BIMETALLIC SOLAR ENGINE

Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526

Filed Aug. 2, 1982, Ser. No. 404,449
Int. Cl.⁴ F03G *7/02*
U.S. Cl. 60—641.13 **4 Claims**



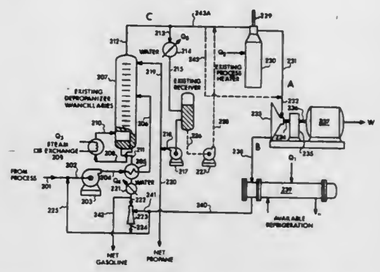
1. A solar heat engine comprising:
a source of heated air provided by a hot air solar collector,
a source of cool air provided by a finned air duct situated in a low temperature region,
a thermal energy converter comprising a plurality of thermally responsive curved bimetallic elements, each of said elements having both ends attached to moveable sliders which slide along at least one guide rod, said bimetallic elements being mounted on said at least one guide rod in a serial manner with one end of the first of said bimetallic elements being fixed such that heating and cooling the serially arranged bimetallic elements produces a compound reciprocable movement, and a drive rod attached to an end opposite said fixed end so that said reciprocable movement may be coupled to an external load,
means for supplying alternate drafts of air from said sources of heated and
cool air across said thermal energy converter comprising a solar heated thermal convection column connected in fluid flow communication with one end of said thermal energy converter and a switching valve in fluid flow communication with the opposite end of said thermal energy converter, said switching valve alternating the fluid flow communication between said sources of heated and cool air and said thermal convection column such that the draft created in said thermal convection column draws air alternately from said sources across said thermal energy converter producing a reciprocating movement in said drive rod.

4,551,979
METHOD AND APPARATUS FOR A THERMODYNAMIC CYCLE BY USE OF DISTILLATION

Joseph Wilensky, Denver, Colo., assignor to Soma Kurtis and Jack C. Sloan, both of Denver, Colo.

Division of Ser. No. 262,783, May 11, 1981, Pat. No. 4,442,675. This application Jun. 20, 1983, Ser. No. 506,707
Int. Cl.⁴ F01K *17/00, 25/06*
U.S. Cl. 60—648 **76 Claims**

1. A process for approximating an isenthalpic compression of a working fluid from a state B (representing a pressure P_2 lower than a pressure P_1 of a state A and a temperature T_2 lower than a temperature T_1 of state A) to a state C (representing a pressure P_3 approximating P_1 and a temperature T_3 intermediate to temperatures T_1 and T_2 such that $T_2<T_3<T_1$) comprising:
pressure energizing the working fluid in state B by,
(a) communicating and mixing the working fluid with a large quantity of a motive liquid solvent selected to reduce the two fluids to a single liquid phase, and thereafter

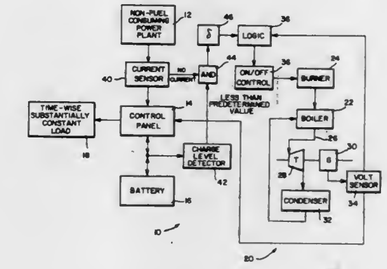


(b) pumping the combined liquid phase to pressure P_3 and temperature T_3 thus achieving state C for the working fluid.

4,551,980
HYBRID SYSTEM FOR GENERATING POWER

Lucien Y. Bronicki, Rehovot, Israel, assignor to Ormat Turbines, Ltd., Yavne, Israel

Filed Mar. 25, 1983, Ser. No. 479,012
Int. Cl.⁴ F03G *7/02*
U.S. Cl. 60—698 **10 Claims**



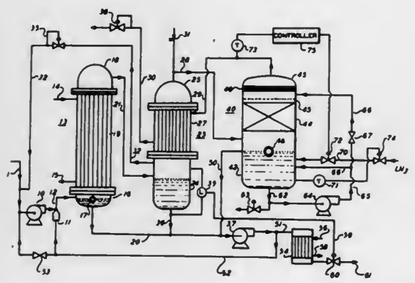
1. A power plant for supplying electricity to an electrical load comprising:
(a) an intermittently operable non-fuel-consuming power generator connected through a control circuit to a battery for charging the latter during operation of the power generator;
(b) an electrical power generator connected to a prime mover in the form of a closed Rankine cycle vapor turbine for charging the battery and supplying current to the electrical load when the prime mover is operated;
(c) a sensor circuit for sensing at least one electrical parameter of the power plant and thereby controlling the operation thereof;
(d) control means responsive to the sensor circuit for operating the turbine, said control means being constructed and arranged to control the operation of the turbine by controlling the fuel supply for the turbine; and
(e) a delay circuit interposed between the sensor circuit and the control means for preventing the sensor circuit from exerting control over the operation of the turbine until the lapse of a predetermined time interval after said at least one electrical parameter is sensed.

4,551,981

HEAT EXCHANGE METHODS AND APPARATUS

Ratan Banerjee, New Brunswick, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Division of Ser. No. 265,264, May 20, 1981, Pat. No. 4,444,016.
This application Feb. 1, 1984, Ser. No. 576,076
Int. Cl.⁴ F17C *1/18*
U.S. Cl. 62—70 **11 Claims**



1. A method of continuously condensing a vapor component of a gas mixture supplied to a reflux heat exchange device containing a body of the liquid phase of said vapor component comprising the steps of:

introducing a flow of a cryogenic liquid, having a boiling point below the boiling point of said vapor component, directly into said liquid phase body thereby chilling said liquid phase and stirring the same to substantially preclude freezing of said liquid phase; and

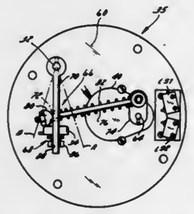
removing said chilled liquid phase from said device and returning said removed chilled liquid phase as reflux to said device and into contact with said gas mixture to thereby condense said vapor component.

4,551,982

ICE-THICKNESS SENSING DEVICE IN REFRIGERATION SYSTEM

Erich J. Kocher, and John K. Kopp, both of Milwaukee, Wis., assignors to Vilter Manufacturing Corporation, Milwaukee, Wis.

Division of Ser. No. 503,806, Jun. 13, 1983, Pat. No. 4,497,181.
This application Nov. 13, 1984, Ser. No. 670,014
Int. Cl.⁴ G01K *13/00*; G01B *3/16*
U.S. Cl. 62—130 **3 Claims**



1. An ice thickness sensing device comprising:

a support;

a probe rotatably mounted on said support;

an electric motor mounted on said support and having a rotatable motor shaft;

a drive linkage connected between said motor shaft and said probe and operable in response to rotation of said motor shaft in one direction to rotate said probe from a starting position and an end position;

a potentiometer mounted on said support and having a rotatable potentiometer shaft;

and drive means connected between said drive linkage and said potentiometer shaft whereby rotation of said probe is accompanied by proportional rotation of said potentiometer shaft;

said drive linkage comprising:

a rigid drive member connected to and extending radially from said probe, said rigid drive member having an aperture therein;

a link connected to and rotatable by said motor shaft;

a drive rod having one end pivotally connected to said link and having its other end extending through said aperture in said rigid drive member in sliding relationship;

abutment means on said drive rod to prevent said other end thereof from being withdrawn from said aperture;

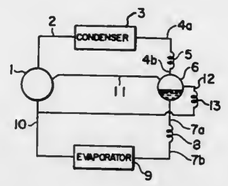
and a helical compression spring around said drive rod between said link and said rigid drive member.

4,551,983

REFRIGERATION APPARATUS

Akira Atsumi; Kensaku Oguni, both of Shimizu; Takao Senshu, Niihari; Hirokiyo Terada, Shizuoka, and Kazuo Yoshioka, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,374
Claims priority, application Japan, Jun. 17, 1983, 58-107655
Int. Cl.⁴ F25B *41/00*
U.S. Cl. 62—174 **14 Claims**



1. A refrigeration apparatus having a refrigerant circuit constituted by a compressor,, a condenser, a first pressure reducer, a gas-liquid separator, a second pressure reducer and an evaporator connected to one another in series, and a gas injection line connected between a gaseous phase portion of said gas-liquid separator and a compression chamber of said compressor, characterized by comprising a liquid refrigerant extracting passage providing a communication between a portion of said gas-liquid separator at a predetermined level and a portion of the low-pressure side of the refrigerant circuit.

4,551,984

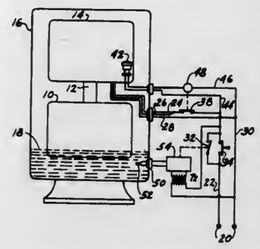
DEGRADATION SENSING AND SHUT-DOWN MEANS FOR REFRIGERATION MOTOR-COMPRESSOR UNITS

Richard E. Vogel, Cincinnati, and Benjamin Bowsky, Maineville, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 499,321, May 31, 1983, Pat. No. 4,490,988.
This application Sep. 21, 1984, Ser. No. 652,840
Int. Cl.⁴ F25B *31/00*
U.S. Cl. 62—193 **3 Claims**

1. In an enclosed motor-compressor unit for air conditioning or heat pump service which includes a refrigerant-oil mixture in the enclosure, primary A.C. electrical power source, circuit connections including a normally open switch connecting the motor of said unit across said A.C. power source, a D.C. relay which when energized closes said normally open switch thereby to complete said motor energizing circuit, a contaminant sensor for sensing conductive particles in said mixture comprising a pair of spaced electrodes immersed in said mixture, a circuit for concurrently imposing an A.C. potential gradient across said electrodes and energizing said D.C. relay comprising circuit connections connecting said electrodes across a second A.C. power source and circuit connections including a voltage dropping resistor and rectifying means

connecting said D.C. relay in parallel with said electrodes, and a fuse connected in series with both said electrodes and said relay and responsive to a predetermined sum of current flow



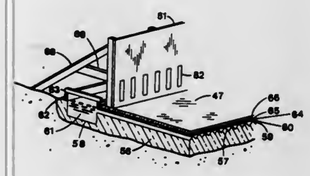
across said electrodes and said relay to open and break said circuit connecting said electrodes and said relay across said second A.C. power source thereby to thereby to continuously shut-down said unit.

4,551,985

RINK COVERING STRUCTURE

Bruce F. Kovach, 5918 Radnor, Detroit, Mich. 48224

Division of Ser. No. 407,031, Aug. 11, 1982, Pat. No. 4,467,619.
This application May 3, 1984, Ser. No. 590,835
Int. Cl.⁴ A63C *19/10*
U.S. Cl. 62—235 **4 Claims**



1. A structure for selectively providing shade for an outdoor ice rink comprising: a waterproof cover having a downward facing surface of aluminum, support posts for supporting said waterproof cover, positioned at selected distances around the periphery of the ice rink, said waterproof cable providing total shade to the ice rink when in a first position, cable means secured to said waterproof cover at one end thereof and to reversible winch means at the other end thereof for moving the waterproof covering to a second position wherein the cover allows sunlight to strike the ice rink, a drain hole in the waterproof cover and means for conveying water away therefrom.

4,551,986

TRANSPORT REFRIGERATION UNIT

Lowell M. Anderson, Bloomington, and Rodney H. Volk, Eden Prairie, both of Minn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

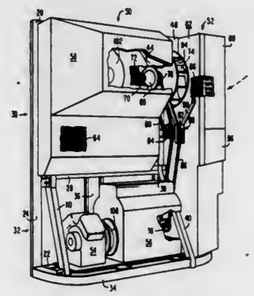
Filed Oct. 17, 1984, Ser. No. 661,556
Int. Cl.⁴ B60H *3/04*
U.S. Cl. 62—239 **11 Claims**

1. In a transport refrigeration unit adapted to be mounted on the front face of a transport trailer or the like and having a power pack including at least an internal combustion engine for driving a refrigerant compressor, and including a plate fin refrigerant condenser and a refrigerant evaporator, a construction and structural arrangement of elements for the unit comprising:

a rectangular planar main frame including top, bottom, and opposite side members and having a horizontal cross member at a level dividing the main frame into an upper major portion area and a lower minor portion area;

forwardly projecting frame means at the base of said main frame for supporting said engine and compressor forwardly of said lower minor portion area, said engine and compressor being disposed with their crankshafts generally horizontal and parallel to the plane of said main frame;

an evaporator plenum and a condenser plenum in generally side-by-side, but spaced apart, relation and projecting forwardly in said upper portion area, said spaced apart



relation defining a forwardly-open channel between the plenums;

a condenser blower and an evaporator blower on a common shaft extending horizontally and in a plane substantially parallel with the plane of said main frame;

a bearing and support housing for said shaft inside said evaporator plenum and supported by the plenum wall defining one side of said channel;

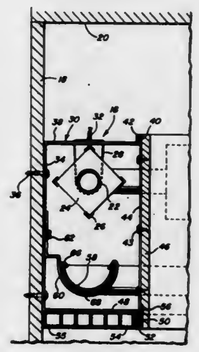
said evaporator blower being located in said evaporator plenum, and said condenser blower being located in said channel and having an inlet in communication with said condenser plenum.

4,551,987

SOLAR ASSISTED HEAT PUMP HEATING AND COOLING SYSTEM

Larry D. Cutlip, Parkersburg, W. Va., assignor to Sol-Chem, Inc., Parkersburg, W. Va.

Filed Dec. 28, 1983, Ser. No. 566,409
Int. Cl.⁴ F25B *13/00*
U.S. Cl. 62—324.5 **15 Claims**



1. A heating and cooling system comprising a heat pump refrigeration system including an exteriorly mounted heat exchanger, an interiorly mounted heat exchanger, a compres-

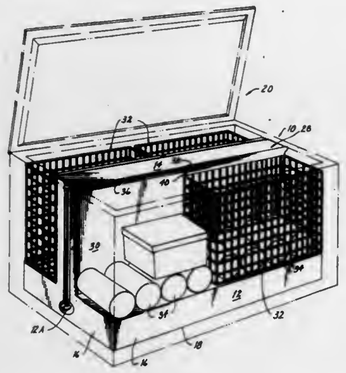
sor assembly, an expansion device associate with each heat exchanger and a reversing valve to control refrigerant flow whereby said heat exchangers may be selectively operated as a condenser and evaporator, said interior heat exchanger being horizontally elongated and extending along at least a portion of the wall of an enclosed space to be conditioned and mounted in spaced but adjacent relation to the wall and in spaced but adjacent relation to a ceiling, a generally rigid valance panel mounted in concealing relation to the interior heat exchanger and in spaced relation to the wall and ceiling to provide convective flow of ambient air over the interior heat exchanger, and condensate collecting and drain means below the interior heat exchanger in concealed relation behind the valance panel, said valance panel having a top edge oriented slightly above the heat exchanger and a bottom edge disposed a short distance below the condensate collecting and drain means.

4,551,988

CHAMBERED COOLER

Joseph Petrantoni, 2549 Keystone Rd., Tarpon Springs, Fla. 33589

Filed Jun. 19, 1984, Ser. No. 622,209
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **9 Claims**



1. A chambered cooler for insertion within a chest or to be integrally therewith, the chest including a chest base having upstanding side walls and a bottom wall forming an open ended chest enclosure, including a chest lid for positioning about the opened end of the chest enclosure, and being dimensioned to receive articles to be cooled or heated when placed therein, the chambered cooler comprising in combination: a watertight primary chamber, said primary chamber including a configuration approximating the interior configuration of the bottom wall of the chest base and being horizontally disposed on the bottom wall within the chest;

a watertight first secondary chamber having a top end opened along substantially the full length thereof, said first secondary chamber being vertically disposed in the chest and being connected in fluid communication with said primary chamber; and

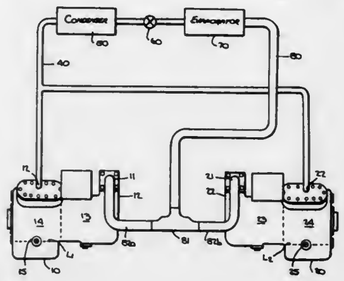
a first cooler lid fitted about said top end of said first secondary chamber for permitting filling of both said first secondary chamber and said primary chamber with the refrigerant whereby, upon placement of the articles within the chest and upon filling said chambers.

4,551,989

OIL EQUALIZATION SYSTEM FOR REFRIGERATION COMPRESSORS

Herbert S. Lindahl, Danville, Ill.; Paul V. Barsteika, Covington, Ind., and Daniel P. Werner, Danville, Ill., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Nov. 30, 1984, Ser. No. 676,919
Int. Cl.⁴ F25B *43/02*
U.S. Cl. 62—468 **9 Claims**



1. In a refrigeration system having a plurality of parallel compressors drawing refrigerant vapor from an evaporator and not having a lubricant separator upstream of said evaporator, an improved lubricant return system for distributing the proper amount of lubricant to each compressor to maintain the proper crankcase level of lubricant for operation comprising:

a compressor suction inlet on each compressor located at an elevation above the maximum crankcase lubricant level,

a common suction header located at an elevation below that of the compressor suction inlet on each of the compressors, said common suction header being connected by a conduit to the outlet of said evaporator, and

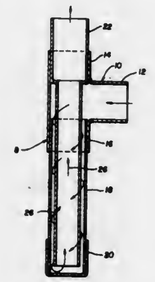
compressor suction branch lines connecting the compressor suction inlets with the common suction header, each said branch line being of a size that, at the minimum operating capacity of the compressor serviced thereby, the mass velocity of the suction gas to the compressor is sufficent to carry lubricant into the compressor as an entrained liquid.

4,551,990

OIL RETURN APPARATUS FOR A REFRIGERATION SYSTEM

John C. Honoshowsky, Rte. 2, Box 361A, Williamsport, Md. 21795

Filed Oct. 18, 1984, Ser. No. 661,993
Int. Cl.⁴ F25B *43/02*
U.S. Cl. 62—468 **4 Claims**



1. An oil return apparatus for a refrigeration system comprising:

an outer tubular element closed on one end thereof and open on the other end;

an inlet along the length of said outer tubular element near said open end thereof that forms an open end portion extending from said inlet;

an inner tubular element;

said inner tubular element having a large diameter portion and a small diameter portion;

said large diameter portion of said inner tubular element having an outer diameter substantially the same as the inner diameter of said open end portion of said outer tubular element and secured within said open end portion of said outer tubular element and sealed to the inner surface thereof on the open end side of said inlet with said small diameter portion of said inner tubular element extending along said inlet coaxially within said outer tubular element toward said closed end with a lower end spaced from said closed end of said outer tubular member;

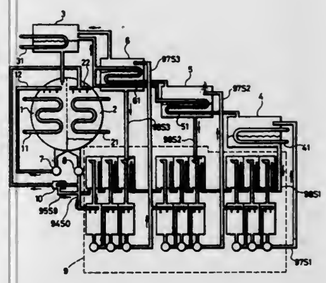
whereby fluid entering said inlet will travel between said outer tubular element and said small diameter portion through the spacing at the closed end and out through said small and larger diameter portions of said inner tubular element.

4,551,991

MULTI-EFFECT ABSORPTION REFRIGERATING MACHINE

Nobutaka Miyoshi, Tokyo; Shigeo Sugimoto, and Michihiko Aizawa, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1985, Ser. No. 702,749
Claims priority, application Japan, Feb. 22, 1984, 59-30236
Int. Cl.⁴ F25B *15/00*
U.S. Cl. 62—476 **6 Claims**



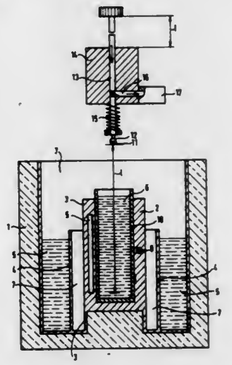
1. In a multi-effect absorption refrigerating machine which is provided with an evaporator, a primary absorber, a condenser and at least two generators which are connected so that refrigerant vapor generated in one generator is used as a heat source for a subsequent generator, a refrigerant generated in each generator is cooled into a liquid by the condenser, the refrigerant liquid thus prepared is introduced into the evaporator and evaporated therein, the refrigerant vapor thus formed is introduced into the absorber and is absorbed therein by the solution returning from the generators, and the solution having absorbed the refrigerant vapor is supplied to the generators, a multi-effect absorption refrigerating machine which is characterized in that auxiliary evaporator-absorber stages composed of auxiliary evaporator stages making the refrigerant vapor vaporize from the solution and auxiliary absorber stages connected with said evaporator stages through vapor passages and absorbing the refrigerant vapor are provided in a plural set; solution passages, each connecting one evaporator stage with the adjacent one are provided between the adjacent ones of the evaporator stages so that the solution may flow serially; solution passages, each connecting one absorber stage with the adjacent one are provided between the adjacent ones of the absorber stages so that the solution may flow serially, the absorber stages of the evaporator-absorber stages are disposed in a solution supply channel from the primary absorber to the generators, the evaporator stages of the evaporator-absorber stages are disposed in a solution return channel from the generators to the primary absorber, and part of the solution taken out of the final absorber stage of each evaporator-absorber stage is supplied to each generator separately.

4,551,992

APPARATUS FOR COOLING A BIOLOGICAL OR MEDICAL SPECIMEN

Hellmuth Sitte, Siefeld, and Heinrich Kleber, Vienna, both of Austria, assignors to C. Reichert Optische Werke, AG., Vienna, Austria

Filed Sep. 17, 1984, Ser. No. 651,400
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332586
Int. Cl.⁴ F25B *19/00*
U.S. Cl. 62—514 R **10 Claims**



1. An apparatus for cooling a biological specimen comprising:

(1) an insulated containment vessel for containing a cryogenic fluid;

(2) a bath for containing a cooling liquid positioned within said vessel, said bath having an open top;

(3) means for cooling the cooling liquid utilizing the cryogenic fluid;

(4) an injection rod positioned above said bath, said injection rod having a specimen carrier rigidly mounted thereon;

(5) means for injecting said injection rod axially into said bath from a first upper position above the bath to a second lower position within the liquid; and

(6) guard means to contain liquid splashed by the injection of the specimen carrier into the liquid whereby cooling liquid is substantially prevented from being thrown out of the cooling bath as a result of said splashing.

4,551,993

NECKLACE WITH SLIDABLY MOUNTED DECORATIVE ELEMENT

Morihiro Nagahori, Tokyo, Japan, assignor to Kabushiki Kaisha Nagahori, Tokyo, Japan

Filed Oct. 15, 1984, Ser. No. 661,298
Claims priority, application Japan, Nov. 2, 1983, 58-170598
Int. Cl.⁴ A44C *25/00*
U.S. Cl. 63—31 **5 Claims**

1. A necklace comprising:

an elongated necklace band which is constructed and arranged to be looped about a wearer's neck so as to at least generally encircle the wearer's neck and hang down in front over the wearer's chest;

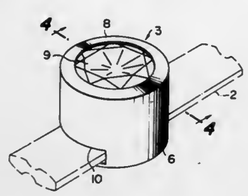
said elongated necklace band effectively having a non-circular transverse cross-sectional shape, at least throughout a portion of substantial longitudinal extent located where

the elongated necklace band will hang down in front over the wearer's chest; and

a slider-mounted decorative element means including a casing having a longitudinal axis and a forwardly-exposed ornament;

said casing having means securing said forwardly exposed ornament thereto at one axial end of said decorative element means, and means defining a slot laterally therethrough behind said forwardly-exposed ornament adjacent the other axial end of said decorative element means;

said slot means, at at least one site along the length thereof being transversely of generally similar non-circular cross-sectional shape to said portion of said elongated necklace band, while being sufficiently larger in transverse cross-section as to permit the slider-mounted decorative element means to slide freely longitudinally along said portion of said elongated necklace band so as to be automatically



self-centering under the influence of gravity, but being insufficiently larger in transverse cross-section to permit said slider-mounted decorative element to rotate significantly angularly of the longitudinal axis of said elongated necklace band;

said decorative element means being so constructed and arranged with respect to said band that when the necklace is worn with one surface of said band portion facing the wearer's chest and with said band portion lying generally in a plane, said decorative element means projects outwardly from the opposite surface of said band portion with said longitudinal axis generally perpendicular to said plane;

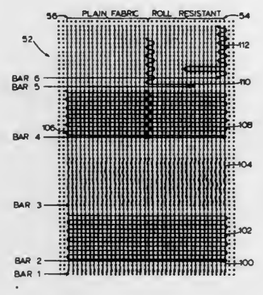
said ornament being thereby superimposed upon said elongated necklace band so as to falsely appear to be mounted to said elongated necklace band by interposition of said casing in said elongated necklace band.

4,551,994

WAISTBAND FABRIC

Tony Vailati, Graham, and Joseph A. Murray, Burlington, both of N.C., assignors to Olympic Narrow Fabrics Company, Inc., Graham, N.C.

Filed Apr. 23, 1984, Ser. No. 602,924
Int. Cl.⁴ D04B *23/08*
U.S. Cl. 66—193 **3 Claims**



1. An elastic waistband comprising an integrally warp knit fabric strip having upper and lower lengthwise extending portions characterised by:

(a) both of said portions being of substantially the same width;

(b) both of said portions incorporating elastic filling threads for the full width thereof and running substantially lengthwise thereof and comprising bare elastic threads prior to the knitting thereof;

(c) both of said portions incorporating at least one multifilament filling thread knitted back and forth across the full width of said strip;

(d) both of said portions providing substantial lengthwise extending elasticity and substantially no widthwise elasticity;

(e) the upper of said portions having at least one additional multifilament filling thread extending across the width thereof and the lower of said portions having at least one additional monofilament filling thread extending across the width thereof;

(f) both of said portions incorporating at least one additional multifilament filling thread which in the knitting thereof follows the sequence of passing back and forth over a major portion of the width of said upper portion followed by passing back and forth over a minor portion of both positions adjacent the join line thereof and connecting said portions together;

(g) said upper portion incorporating a further multifilament filling thread which in the knitting thereof follows the sequence of passing back and forth over a major portion of the width of said upper portion followed by passing back and forth on the selvedge of said upper portion;

(h) said upper portion exhibiting an anti-roll knit construction characteristic in the transverse direction of said strip; and

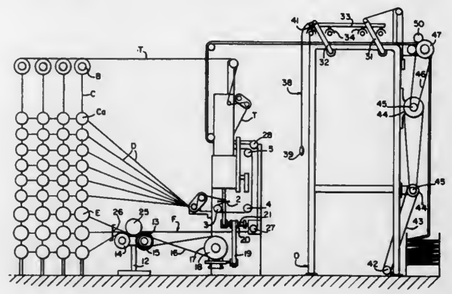
(i) said lower portion exhibiting a plain knit construction and being more flexible transversely than said upper portion.

4,551,995

REGULATING DEVICE FOR THE WARP AND THERMO-FIXING YARNS OF RIBBONS WITH SELF-GRIPPING LOOPS, CAPABLE OF BEING ADAPTED TO A KNITTING MACHINE

Guy Louison, Saint Bonnet les Oules, France, assignor to V. Louison et Cie, France

Filed Oct. 21, 1983, Ser. No. 544,084
Int. Cl.⁴ D04B *23/00*
U.S. Cl. 66—203 **9 Claims**



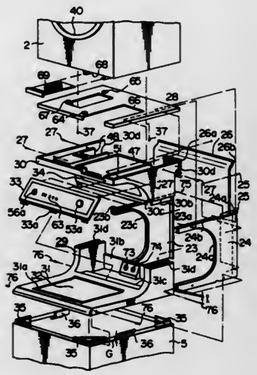
1. Regulating devices for the warp and thermo-fixing yarns of ribbons with self-gripping or self-adhesive loops, capable of being adapted to a knitting machine, characterized in that they include: a creel (C) with anti-twist means for the yarns (F) which are to form the self-gripping female loops of the ribbon; a reacher device for said yarns (F) with distributing rollers (13–14) driven with adjustable speed through the intermediary of a speed reduction gear (18) receiving its motion from the motor shaft (21) of the knitting machine; a thermo-fixing unit for the knitted ribbons at the exit thereof from the knitting machine, with a vertically movable horizontal frame (33) provided with the thermo-fixing elements and maintained in the lower working position by an electromagnet system (41) which is acting when the knitting machine is in operation only; a roller (48) with driving means for the ribbons after the stabilization treatment thereof, and driven at a controlled speed when the knitting machine is in operation.

4,551,996

WASHING MACHINE WITH DRIER

Etsuro Hirose; Kimio Takahashi, both of Hitachi; Toshiro Mori, Katsuta, and Haruyuki Kaito, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 317,844, Nov. 3, 1981, Pat. No. 4,507,942.
This application Oct. 15, 1984, Ser. No. 660,874
Claims priority, application Japan, Nov. 5, 1980, 55-154678
Int. Cl.⁴ D06F *29/02*
U.S. Cl. 68—20 **11 Claims**



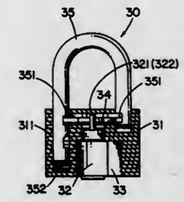
1. A washing machine with a drier comprising: a washing machine body; a drier carrier mounted on said washing machine body; and a drier body carried by said drier carrier; wherein said drier carrier is composed of a left and right side panels made of steel sheets, a rear panel secured to the rear ends of said side panels, a top panel secured to the upper ends of said side panels and a cover covering said side panels, said side panels having an identical form which is symmetrical so that said side panels are replaceable with each other when the other panels are inversed.

4,551,997

LAMINATED PADLOCK

Chung-I Huang, No. 16, Hsing-I Rd., Tainan City, Taiwan

Filed Jan. 17, 1984, Ser. No. 571,593
Int. Cl.⁴ E05B *67/22*
U.S. Cl. 70—38 A **3 Claims**



1. An improved laminated padlock of the type having a lock body made of a plurality of metal plates with a central chamber and a plurality of openings formed therein, a cylindrical lock barrel and a tumbler portion situated in the central chamber, and a U-shaped shackle with a plurality of inwardly facing notches slidingly provided in the openings of the lock body, wherein the improvement comprises:

housing means defined by no more than three adjacent metal plates and including a rectangular space located in the center above the central chamber, a pair of shackle openings in opposing sides of said rectangular space, and a pair of cavities beside said shackle openings;

a pair of lock members each identically formed as an I-shaped structure, each member having a narrow or transverse end and a wider check end in parallel spaced position, said lock members slidingly overlapped in said rectangular space of said housing means for movement in opposite directions therein, each of said I-shaped lock members having a thickness approximately equal to that of said metal plates;

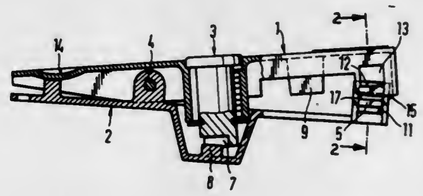
another lower metal plate having an opening in the center aligned with said central chamber and said another plate also defining a pair of openings corresponding to the shackle openings of said housing structure, said another plate defining the bottom side of the said housing structure rectangular space with respect to the front end of the lock barrel.

4,551,998

BAGGAGE CLOSURE

Jacques Ricouard, and Claude Chappoux, both of Sancoins, France, assignors to L.A. Ricouard S.A., Courbevoie and Ronis S.A., Cedex, both of, France

PCT No. PCT/EP83/00003, § 371 Date Aug. 23, 1983, § 102(e) Date Aug. 23, 1983, PCT Pub. No. WO83/02478, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 7, 1983, Ser. No. 530,594
Claims priority, application France, Jan. 12, 1982, 82 00341
Int. Cl.⁴ E05B *65/52*
U.S. Cl. 70—69 **1 Claim**



1. A baggage closure comprising:

a mounting formed with a sliding piece pressed outwardly by a spring and provided at a location spaced from said sliding piece with a lug;

a closing lever pivotally mounted on said mounting and provided with a cutout which, in a closing position of said lever is aligned with an end of said sliding piece located opposite said spring and engaged by said sliding piece; and

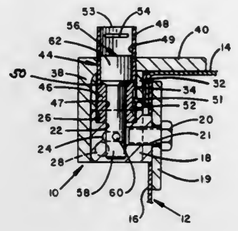
a lock cylinder rotatable on said lever upon insertion of a key in said cylinder for locking said lever in a closing position, said lock cylinder being axially aligned with said lug and being formed with an eccentric part rotatable about said lug upon insertion of said key into said lock cylinder from a position in which said eccentric part engages said lug to prevent pivotal movement of said lever on said mounting into a position in which said eccentric part clears said lug to permit pivotal movement of said lever on said mounting into an opening position of said closure.

4,551,999

LOCK ASSEMBLY FOR ENCLOSURE COVER

Richard S. Guiler, Newton, N.J., assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Feb. 1, 1983, Ser. No. 462,979
Int. Cl.⁴ B65D *55/14*
U.S. Cl. 70—159 **7 Claims**



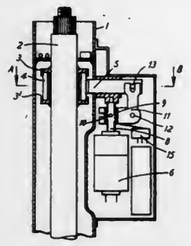
1. A lock housing assembly for attachment to a container having a cover to enable said assembly to retain the cover in the closed condition, said assembly comprising a support for attachment to a side wall of the housing, a cover retainer hinged to the support and being movable between an open and a closed position, said support and said cover retainer having apertures which are aligned when the cover retainer is in the closed position, a shear force resisting member retained in said cover retainer and movable in said retainer when said apertures are aligned, between a locking position in which said member extends into both apertures, and an unlocking position in which it does not extend between both apertures to allow said cover retainer to be moved to the open position to allow the cover to be opened, and removable means for locking the shear force resisting member in the locking position.

4,552,000

STEERING SHAFT ANTI-THEFT DEVICE FOR MOTOR VEHICLE

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Mar. 13, 1984, Ser. No. 588,927
Claims priority, application France, Mar. 25, 1983, 83 04897
Int. Cl.⁴ B60R *25/02*
U.S. Cl. 70—185 **15 Claims**



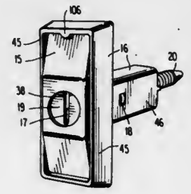
1. A steering shaft anti-theft lock for a motor vehicle comprising:
(a) a hollow annular sleeve for attachment to a steering shaft, said sleeve having an aperture extending around the entire periphery of the sleeve,
(b) a plurality of freely rotatable elements disposed within said sleeves,
(c) a stop member within the sleeve, said rotatable elements not occupying the entire circumferential space within said sleeve, and
(d) a lock bolt movable between first position where the bolt is free of the rotatable elements and a second position where the bolt penetrates the aperture and locates between, said rotatable elements being displaceable by said bolt along the circumferential space within said housing.

4,552,001

HIGH SECURITY T-HANDLE ASSEMBLY

Stevie C. Roop, Dugspur, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Filed Dec. 6, 1983, Ser. No. 558,473
Int. Cl.⁴ E05B *63/00*
U.S. Cl. 70—208 **9 Claims**



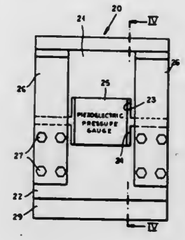
1. A high security pop-out T-handle assembly of the type containing a lock cylinder, the assembly comprising:
(a) a cylinder front handle containing a passage therethrough for key access to the lock cylinder, the handle having an inwardly facing flange at the outer face of the passage,
(b) a separate cylinder/extension housing of elongated hollow shape having connection means on one end of the housing to mate with connection means on the cylinder front handle, the housing including a passageway through its wall for passage of a lock cylinder bolt from the lock cylinder accommodated in the housing,
(c) removable mechanical connection means for securely and rigidly connecting the cylinder front handle and cylinder/extension housing in their assembled position, and to allow disassembly thereof, the assembled position of the cylinder front handle and cylinder/extension housing leaving an annular interstice behind the flange of the cylinder front handle,
(d) a cylinder protector plate positioned and freely rotatably in the interstice to resist drilling and pulling of the lock cylinder,
(e) an extension rod having a head within and a body extending linearly outwardly of an end of the cylinder/extension housing which is opposite the cylinder front handle,
(f) mechanical positively-engaging clutch means connecting the housing and the extension rod to allow the extension rod to be rotated when the lock cylinder is unlocked and the cylinder front handle pops out,
(g) a T-handle housing having a generally cup-shaped head configured to closely accommodate the cylinder front handle, and to cover the mechanical connection means when the cylinder front handle is positioned therein, the T-handle housing further having a hollow shank to accommodate the cylinder/extension housing, the shank having a wall configuration to receive a lock cylinder bolt extendable from a lock cylinder to lock the T-handle assembly, and
(h) a compression spring positioned between the end of the shank of the T-handle housing and the end of the cylinder-/extension housing, the spring being normally compressed to force the cylinder front handle outwardly when the lock cylinder is unlocked.

4,552,002

PLATE BENDING APPARATUS

Eduard Haenni, and Theo Frei, both of Zofingen, Switzerland, assignors to Hammerle, AG, Zofingen, Switzerland

Continuation of Ser. No. 498,517, May 26, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,649
Claims priority, application Austria, Jun. 7, 1982, 2207/82
Int. Cl.⁴ B21B *37/08*
U.S. Cl. 72—19 **3 Claims**



1. An apparatus for bending a plate, comprising:
a bending press having
a die forming a part of bearing points for supporting a plate to be bent,
a movable bottom of said die disposed below said bearing points and movable relative thereto to limit the penetration of a bent edge of said plate to establish a predetermined depth of bending and thereby determining a bending angle for said edge of said plate, and
a bending punch disposed above said die and including:
an upper section displaceable by a hydraulic press,
a lower section directly below said upper section having a bending edge bearing upon said plate between said points,
an electrical pressure gauge having a piezoelectric quartz crystal interposed between said sections, and
guide means between said sections for laterally supporting and guiding said upper section on said lower section whereby a plate-bending force applied to said plate by said punch is registered by said electrical pressure gauge;
a computer connected to said electrical pressure gauge for comparing bending forces registered by said gauge with predetermined forces required for a specific plate material to attain a predetermined bending angle as said punch penetrates into said die; and
a control unit connected to said computer and to said movable bottom for displacing said movable bottom to limit the depth of which said plate is bent by said punch to a value determined by said computer to obtain said predetermined bending angle for said plate and said material.

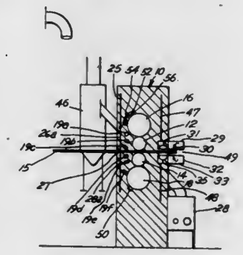
4,552,003

LUBRICANT REMOVAL SYSTEM FOR A COLD ROLLING MILL

Ronald E. Kolecki, Terre Haute, Ind., assignor to Atlantic Richfield Company, Denver, Colo.

Continuation of Ser. No. 521,050, Aug. 8, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 720,456
Int. Cl.⁴ B21B *9/00, 27/10, 45/02*
U.S. Cl. 72—38 **2 Claims**

1. A method for removing coolant liquid from a mill for cold rolling a nonferrous metal after the metal is formed, said mill of the type including a roll stand having a pair of opposed work rolls and an upper and lower backup roll in the stand for rolling metal as the metal passes between the work rolls, and liquid application means in the mill for applying liquid to the metal and rolls during rolling, said liquid application means being positioned upstream from the rolls, said method comprising the steps of:
applying liquid to the rolls and roll form with said liquid application means upstream of the rolls;
removing liquid from the rolls by impinging gas on at least one of said backup rolls on an entrance side of the mill;
removing liquid from the roll form by impinging gas on the roll form passing from the rolls at an exit side of the mill;
withdrawing a gas and liquid mixture from opposite sides of the metal roll form at an exit side of the mill and from the rolls subsequent to the gas impinging steps;



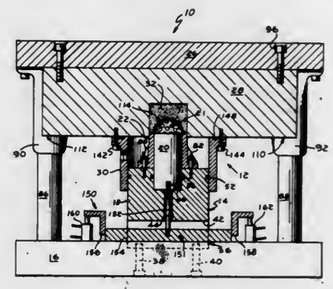
simultaneously at least partially enclosing the roll stand in a hood collection assembly comprising a plurality of shrouds for containing the gas and liquid mixture, said shrouds being positioned on the downstream side of the rolls on both sides of the roll form to define an exit slit for the roll form to pass therethrough during the gas impinging and withdrawal steps at the exit side of the mill;
transporting the withdrawn gas and liquid mixture to means for removing the liquid from the gas and liquid mixture;
removing the liquid from the mixture;
discharging the gas to the atmosphere; and,
recycling the liquid into a sump for the roll stand for reuse as coolant liquid in the mill.

4,552,004

APPARATUS FOR FORMING GOLF BALL MOLDS

Gilbert Barfield, 745 Carroll Street, Perry, Ga. 31069, and Gary J. Hagopian, 32 Brookmont Drive, Wilbraham, Mass. 01095

Filed Dec. 1, 1983, Ser. No. 557,113
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—60 **16 Claims**



1. An apparatus for making dimpled shells for golf ball molds, wherein the apparatus comprises:
(a) top and bottom portions that are adapted to be respectively attached to the upper and lower halves of a hydraulic press for movement toward or away from one another;
(b) said bottom apparatus portion comprising:
(i) a lower die set base to which an upstanding pedestal is fixedly attached;
(ii) a bullet-shaped mounting post fixedly supported by the

pedestal so that it extends from the top of the pedestal in an upright position, wherein the upper end of the post comprises a hemispherical, dimpled master mold for cold working a dimpled mold shell from a smooth hemispherical metal cup placed on top of the master;

(iii) means for removing a finished mold shell from atop the master, said means comprising a spring-biased stripper ring that is attached to the top of the pedestal and which surrounds at least a midsection of the post, wherein said ring is biased away from the top of the pedestal by springs located between it and the pedestal, and its upward travel away from the pedestal is limited by stop members that attach the stripper ring to the pedestal; and,

(c) said top apparatus portion comprising:

(i) an upper die set having a hulk member attached to its underside, wherein said member includes a cavity that faces the post and is complementarily shaped to it for a close mating of the post and cavity when the top and bottom apparatus portions are pushed toward one another;

(ii) a vacuum flange attached to the hulk for mating with the pedestal when the press halves are moved together, wherein the flange has a hollow cylindrical portion that extends from the hulk, surrounds the hulk's cavity, and has an inner surface that is complementarily shaped and sized with the periphery of the top of the pedestal; and,

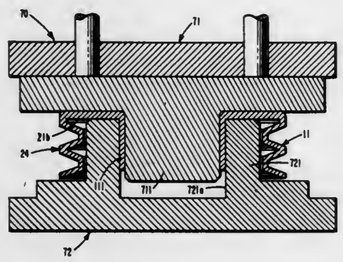
(iii) an insert housed within the hulk's cavity and within the boundary of the flange, wherein the insert has a hemispherical recess for surrounding the master mold and the hemispherical cup placed on top of the master.

4,552,005

METHOD OF MAKING A CLUTCH ROTOR FOR AN ELECTROMAGNETIC CLUTCH

Takashi Matsushita, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Jul. 27, 1983, Ser. No. 517,704
Claims priority, application Japan, Aug. 6, 1982, 57-137690
Int. Cl.⁴ B21D *35/00*
U.S. Cl. 72—68 **9 Claims**



1. A method of making a clutch rotor for use in an electromagnetic clutch consisting of the steps of:

(a) forming a cup-shaped blank with a straight, generally cylindrical flange wall and bottom plate by pressing a piece of sheet metal;

(b) forming an annular outward bulge portion in said flange wall by a pressing operation;

(c) pressing said bulge portion into at least one approximately V-shaped inwardly projecting groove wherein the walls of said V-shaped groove each comprise a single layer of sheet metal;

(d) forming a final V-shaped groove by applying a roller working operation to said approximately V-shaped groove; and

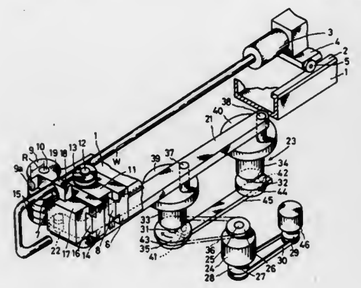
(e) pressing said bottom end plate of said cup-shaped blank to form a radially inwardly projecting inner cylindrical member.

4,552,006

BENDING APPARATUS

Teruaki Yogo, 4423 aza-Johnoh, Ohaza-Ohmori, Moriyama-ku, Nagoya-shi, Japan

Filed Jun. 29, 1983, Ser. No. 509,087
Claims priority, application Japan, Feb. 25, 1983, 58-31135
Int. Cl.⁴ B21D *7/04*
U.S. Cl. 72—149 **4 Claims**



1. In bending apparatus comprising:

(a) a support shaft connected to a frame and extending from said frame in the same direction as an article to be bent is fed;

(b) a substantially circular bending die removable coupled to said support shaft and freely rotatable about the axis of said shaft relative to said frame;

(c) a driven bender arm connected to one end of said support shaft and movable about the axis of said shaft relative to said frame and having a drive pin positioned at a distance from one end thereof, said pin being linked to a drive mechanism for receiving a bending force; the improvement in which:

(I) said drive mechanism includes a pair of rotated shafts spaced apart from each other and rotated by drive means;

(II) a pair of first crankpins respectively connected to said shafts, said crankpins being spaced not only the same distance from each rotated shaft as said drive pin is spaced from said support shaft, but also always oriented at the same angle relative to its shaft as that in which said drive pin is angularly oriented relative to said support shaft;

(III) a drive link is connected to said driven point at one end, to one of said crankpins at its other end and to the other crankpin between its ends, said link being mounted for circular movement; and

(IV) said drive shafts are interconnected to rotate synchronously.

4,552,007

DEVICE FOR REPLACING THE ROLLS OF ROLLING STANDS

Gianfranco Mantovan, Busto Arsizio, Italy, assignor to Pomini Farrel S.p.A., Castellanza, Italy

Filed May 31, 1984, Ser. No. 615,838
Claims priority, application Italy, Jun. 9, 1983, 22073/83[U]
Int. Cl.⁴ B21B *31/10*
U.S. Cl. 72—239 **3 Claims**

1. A device for replacing the rolls of rolling stands comprising:

a base;

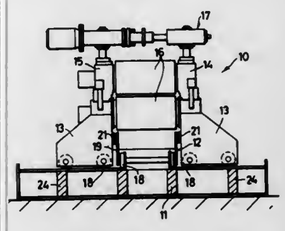
a first carriage, which is mounted for movement along said base in a first path, having at least first and second seats for receiving first and second pairs of rolls whose axes are perpendicular to the first path, and having means for supporting said pairs of rolls;

a second carriage supporting one end of a roll stand housing, which is mounted for movement along said base in a second path perpendicular to the path of said first carriage, for receiving one end of said pairs of rolls; and

a third carriage supporting the other end of said roll stand housing, which is mounted for movement along said base

in a third path perpendicular to the path of said first carriage and aligned with the second path, for receiving the other end of said pairs of rolls;

whereby said second and third carriages with their respective roll stand housings ends are detached from the first



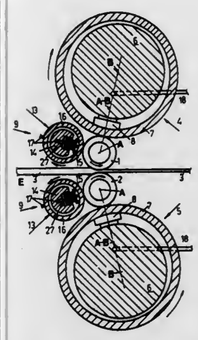
pair of rolls and moved along the second and third paths away from said first carriage, said first carriage is moved along the first path to align said second pair of rolls with said second and third carriages, and said second and third carriages are moved back along the second and third paths to receive said second pair of rolls.

4,552,008

ROLLING MILL FOR SHEET MATERIAL

Beat Schlatter, Mutschellen, and Eugen Schnyder, Ottenbach, both of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zurich, Switzerland

Filed Aug. 18, 1983, Ser. No. 524,331
Claims priority, application Switzerland, Aug. 31, 1982, 5297/82
Int. Cl.⁴ B21B *31/16*
U.S. Cl. 72—243 **9 Claims**



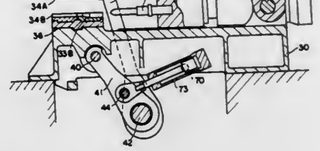
1. A rolling mill comprising a roll stand having two work rolls defining a nip for passage of sheet material to be rolled, and a back up roll associated with each work roll; all of the rolls being rotatable on parallel axes, with the axes of the work rolls lying in a plane offset from the plane containing the axes of the back up rolls; a support device associated with each work roll and including hydrostatic elements which are arranged parallel with the work roll axis and urge the work roll against the associated back up roll to apply pressure on sheet material in the nip; the work rolls and the supporting devices being displaceable in the stand relatively to the back up rolls in a direction generally parallel with the path of sheet material through the nip; positioning means acting on both the work rolls and the support devices for adjusting the position of these parts in said displacement direction to thereby alter the spacing between the plane containing the axes of the work rolls and the plane containing the axes of the back up rolls and adapt the mill to the needs of a particular rolling process; and at least one of the back up rolls being a deflection compensation roll comprising a roll shell which rotates about a support member and is carried by hydraulically operated supporting elements arranged in the support member in a row parallel with the axis thereof, the support member being mounted in the stand for rotational adjustment about its axis so that the line of action of the supporting element can be kept in the plane containing the axes of the support member and the associated work roll regardless of alterations in the spacing between the planes containing the work roll axes and the back up roll axes effected by the positioning means.

4,552,009

UPSETTER

Fuminori Kaneko; Takashige Yamamura, both of Kobe, and Satosi Matsumoto, Toyonaka, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 27, 1982, Ser. No. 343,219
Claims priority, application Japan, Jan. 29, 1981, 56-13494
The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.
Int. Cl.⁴ B21D *7/06, 41/02*
U.S. Cl. 72—316 **11 Claims**



1. An upsetter comprising:

(a) a bed having a front end and a rear end;

(b) a grip tong having a rear end thereof pivotably connected to the rear end of said bed;

(c) a plurality of split dies provided at the front end of said bed and said grip tong, each of said plurality of split dies having an upset die section and a clamp die section;

(d) an upset mechanism mounted on said bed and including a plurality of punches each one of which is extractably protrudable into a corresponding one of said plurality of split dies;

(e) a pair of pull rods pivotably supported on said bed and on said grip tong rearwardly of said dies for imparting a required die closing force to said grip tong;

(f) first means for pivoting said pull rods back and forth between a first position in which said grip tong is pivoted to an open position and a second position in which said grip tong is pivoted to a closed position and said split dies are in their working positions;

(g) second means independent of said first means for adjusting the tensile force exerted by said pull rods when in their second positions; and

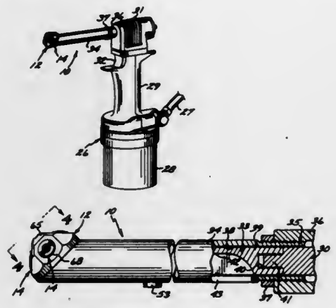
(h) third means for applying a uniform clamping force to each of said clamp die sections during successive upsetting operations regardless of variations in the dimensions of the workpieces clamped therein during the successive upsetting operations.

4,552,010

PULLING HEAD FOR BLIND FASTENERS

James R. Hein, Lakewood, Calif., assignor to Olympic Fastening Systems, Downey, Calif.

Filed Jul. 9, 1984, Ser. No. 628,824
Int. Cl.⁴ B21D *9/05*
U.S. Cl. 72—391 **32 Claims**



1. A pulling head for pulling and setting blind fasteners of a plurality of different types, said pulling head comprising:

an elongated, generally hollow support housing having an opening at a front nose end thereof to permit individual insertion into said housing of the different types of blind fasteners;

a draw bolt assembly slidably carried within said housing and including means for grasping and pulling a blind fastener inserted into said housing through said nose end opening;

a turret cap including a plurality of head inserts shaped for receiving and setting the respective different types of blind fasteners; and

means rotatably mounting said turret cap on said support housing for movement of an interchangeably selected one of said head inserts to an operative position generally overlying and aligned with said nose end opening and the remaining ones of said head inserts to nonoperative positions spaced rearwardly from said selected one of said head inserts.

4,552,011

ESTABLISHING A DIFFERENTIAL PRESSURE ACROSS A CORE SAMPLE OR CALIBRATING A DIFFERENTIAL PRESSURE TRANSDUCER

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 427,258, Sep. 29, 1982, Pat. No. 4,487,056, which is a continuation-in-part of Ser. No. 282,307, Jul. 10, 1981, abandoned. This application Oct. 1, 1984, Ser. No. 655,828
Int. Cl.⁴ G01L *27/00;* **G01N** *15/08*
U.S. Cl. 73—4 R **14 Claims**

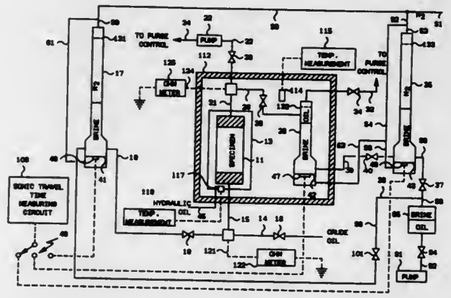
1. A method for establishing a desired differential pressure across a core sample, having first and second faces, wherein said first face of said core sample is in fluid communication with a first column containing a gas and water, wherein said second face of said core sample is in fluid communication with a second column containing a gas and water, wherein said water in said first column is supported by a first diaphragm to which a first sonic transducer is attached on the side of said first diaphragm opposite the water and wherein the water in said second column is supported by a second diaphragm to which a second sonic transducer is attached on the side of said second diaphragm opposite the water, said method comprising the steps of:

actuating said first sonic transducer to transmit a first sonic wave through the water contained in said first column, wherein said first sonic wave is reflected from the water-gas interface in said first column;

measuring the time which elapses between the transmission of said first sonic wave and the reception of the reflected first sonic wave by said first sonic transducer, wherein the elapsed time provides a measurement of the height of the water in said first column;

actuating said second sonic transducer to transmit a second sonic wave through the water contained in said second column, wherein said second sonic wave is reflected from the water-gas interface in said second column;

measuring the time which elapses between the transmission of said second sonic wave and the reception of the reflected second sonic wave by said second sonic transducer, wherein the elapsed time provides a measurement of the height of the water in said second column;



determining the pressure exerted by the water contained in said first column based on the density of the water and the height of the water in said first column;

determining the pressure exerted by the water contained in said second column based on the density of the water and the height of the water contained in said second column, wherein the differential pressure across said core sample is the difference in the pressure exerted by the water contained in said first column and the pressure exerted by the water contained in said second column; and

adjusting the level of the water contained in said first column and said second column until a desired differential pressure is obtained across said core sample.

4,552,012

RHEOMETER FOR ANALYZING THE ELASTIC AND/OR VISCOUS CHARACTERISTICS OF GELS AND LIQUID SYSTEMS

Leif R. Bohlin, Krankesjövägen 12, S-240 15 Södra Sandby, Sweden

PCT No. PCT/SE82/00246, § 371 Date Mar. 15, 1983, § 102(e) Date Mar. 15, 1983, PCT Pub. No. WO83/00387, PCT Pub. Date Feb. 3, 1983
PCT Filed Jul. 19, 1982, Ser. No. 478,558
Claims priority, application Sweden, Jul. 20, 1981, 8104453
Int. Cl.⁴ G01N *11/16*
U.S. Cl. 73—59 **12 Claims**

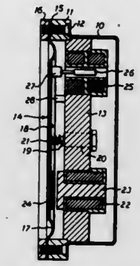
2. A rheometer for analyzing the elastic and viscous characteristics of a medium, comprising:

a casing supporting a movable member, a region of which is in contact with a surface of the medium, said movable member covers an opening of a cup-shaped casing in which there is provided a holder which carries a support in the form of at least one knife-edge member secured in said holder and having a knife edge directed towards an inner side of said member;

a tension spring affixed to an inner surface of said casing for maintaining said inner side of said movable member in rockable engagement with said knife edge;

means for limiting the inward movement of said movable member;

a device affixed to said casing for displacing said region of said movable member substantially perpendicular to said



surface non-destructively against the action of the medium; and

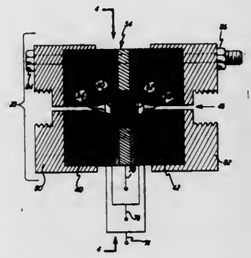
electrical means affixed to an interior surface of said casing for measuring the elastic and viscous characteristics by electrically measuring the resistance to such displacement.

4,552,013

ELECTROCHEMICAL SYSTEM

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 465,786, Feb. 10, 1983, Pat. No. 4,497,199, which is a division of Ser. No. 241,945, Mar. 9, 1981, Pat. No. 4,413,505, and a continuation-in-part of Ser. No. 425,183, Sep. 28, 1982, , which is a division of Ser. No. 111,917, Jan. 14, 1980, Pat. No. 4,404,065. This application Mar. 5, 1984, Ser. No. 586,079
Int. Cl.⁴ G01N *31/06*
U.S. Cl. 73—61.1 C **18 Claims**



1. An electrochemical flow cell for testing or treating a sample solution, said cell comprising:

a holder assembly defining a flow path and having an inlet for directing a stream of said solution into said cell, and an outlet for directing treated solution from said cell; and,

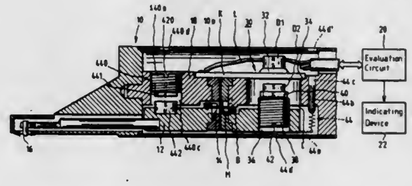
a plurality of electrode elements arranged in said holder, said electrode elements being operatively disposed, electrically insulated from one another, within said flow path, said plurality including at least one reference electrode, at least one counter electrode, and at least one working electrode, said at least one working electrode comprising a packed porous conductive matrix comprising a selected electrically-conductive material in finely divided or powdered form, confined within and restricting a segment of said flow path.

4,552,014

TOOTH FLANK PROFILE MEASURING APPARATUS CONTAINING A FEELER FOR DETERMINING THE SURFACE ROUGHNESS OF A TOOTH FLANK

Nikolaus Berchtold, Zürich, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Dec. 17, 1984, Ser. No. 682,089
Claims priority, application Switzerland, Dec. 21, 1983, 6805/83
Int. Cl.⁴ G01B *5/28, 5/20*
U.S. Cl. 73—105 **7 Claims**



1. A tooth flank profile measuring apparatus for determining the roughness of a tooth flank surface, comprising:

a housing;

a feeler rod pivotably mounted in said housing and said feeler rod defining an end;

a feeler tip for scanning the surface of said tooth flank and provided at said end of said feeler rod;

a measuring system operatively connected to said feeler rod and generating signals responsive to the deflection of said feeler tip while the same scans said surface of the tooth flank;

said measuring system comprising a Hall-effect sensor and means for generating a static magnetic field;

said Hall-effect sensor and said means for generating the static magnetic field being movable relative to each other;

one of said Hall-effect sensor and said means for generating a static magnetic field being mounted either at said housing or at said feeler rod and the other one of said Hall-effect sensor and said means for generating a static magnetic field being mounted either at said feeler rod or at said housing;

an evaluation circuit supplied with said signals generated by said measuring system in response to the deflection of said feeler tip while the same scans said surface of the tooth flank;

a bearing load adjustment device acting upon said feeler rod in order to adjust the bearing load of said feeler tip at said surface of the tooth flank while said feeler tip scans the surface of the tooth flank;

said pivotably mounted feeler rod defining a predetermined fulcrum; and

said bearing load adjustment device being arranged in spaced relationship with respect to said predetermined feeler rod fulcrum.

4,552,015

FUEL CONSUMPTION MEASURING SYSTEM

David P. Emmett, Haslett; Duane D. Muelling, Milford, and Ronald J. Willett, Pinckney, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1984, Ser. No. 578,538
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—113 **1 Claim**

1. A fuel consumption measuring system for use with an internal combustion engine comprising, in combination:

a main fuel reservoir;

an auxiliary fuel reservoir;

engine fuel delivery means;

means effective to supply fuel from the auxiliary fuel reservoir to the engine fuel delivery means and to return unused fuel to the auxiliary fuel reservoir;

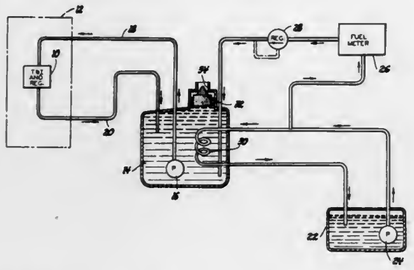
means effective to supply fuel from the main fuel reservoir to

the auxiliary fuel reservoir at a predetermined pressure so that the auxiliary fuel reservoir is maintained full and at the predetermined pressure;

means effective to vent vapors from the auxiliary fuel reservoir so that a constant volume of fuel is maintained in the auxiliary fuel reservoir;

a cooling coil in the auxiliary fuel reservoir;

means effective to circulate fuel from the main fuel reservoir



through the cooling coil so as to cool the fuel in the auxiliary fuel reservoir; and

measuring means effective to measure the fuel flow from the main fuel reservoir to the auxiliary fuel reservoir, the measured flow being equal to the fuel delivered to the engine by the engine fuel delivery means, whereby the pressurized fuel in the auxiliary fuel reservoir allows maximum engine acceleration rates with no delay in the make-up flow from the main fuel reservoir.

4,552,016

SENSOR FOR CURRENTMETER

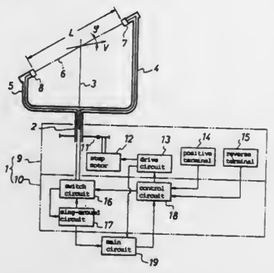
Satoshi Suyama, Hatano, Japan, assignor to The Tsurumi-Seiko Co., Ltd., Yokohama, Japan

Filed Aug. 9, 1983, Ser. No. 522,251

Claims priority, application Japan, Aug. 18, 1982, 57-142189

Int. Cl.⁴ G01P *5/00;* **G01F** *1/66*

U.S. Cl. 73—170 A **7 Claims**



1. A sensor for a currentmeter comprising a pair of supersonic transmitter/receiver units which are arranged in fluid so as to face each other at a predetermined distance, a path therebetween forming a supersonic transmission path, wherein said pair of units are controlled by a sing-around control method and wherein a supporting member is provided to support said pair of transmitter/receiver units and to rotate said pair of units around an axis which intersects said supersonic transmission path, and wherein sing-around signals are output which correspond to an angular position of said supporting member.

4,552,017

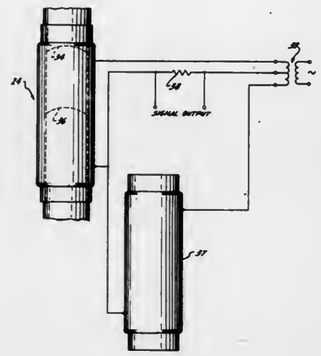
APPARATUS FOR MEASURING FLOW-RATE OF ELECTROMAGNETIC GRANULAR MEDIA

William C. Biehle, Cincinnati, Ohio, assignor to Metal Improvement Company, Inc., Teaneck, N.J.

Continuation-in-part of Ser. No. 439,917, Nov. 8, 1982, abandoned. This application May 16, 1984, Ser. No. 610,832

Int. Cl.⁴ G01F *1/58*

U.S. Cl. 73—198 **15 Claims**



1. Gravity-fed and/or low velocity peening apparatus comprising in combination:

(a) reservoir means supplying ferromagnetic granular media disposed at a suitable elevation to provide head pressure for the media;

(b) filter means disposed below and downstream from the reservoir and communicating therewith to receive the media therefrom and having means stabilizing the flow-rate of the media to provide substantially constant head pressure below the filter means;

(c) metering means disposed below and downstream from the filter means and communicating therewith to receive the media from the filter, said metering means including means for providing a level of media indicative of flow rate therethrough, and having electrical inductive means responsive to the level of media in the metering means and producing an electrical signal responsive to such level; and

(d) nozzle means disposed downstream from the metering means and receiving the media therefrom and discharging the media to a workpiece.

4,552,018

INTERCHANGEABLE SCALE METER CASE

R. H. Legatti, Jr., Belleair, Fla.; H. R. Woolner, Manchester, and R. J. Cushing, Jr., South Alexandria, both of N.H., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 234,212, Feb. 13, 1981, abandoned. This application Feb. 1, 1983, Ser. No. 465,847

Int. Cl.⁴ G01P *1/08;* **G01R** *1/08*

U.S. Cl. 73—431 **1 Claim**

1. A case for encasing a meter movement and its associated pointer, said case comprising:

a. an assembly further comprising:

(1) a faceplate, at least a portion of which is transparent; and

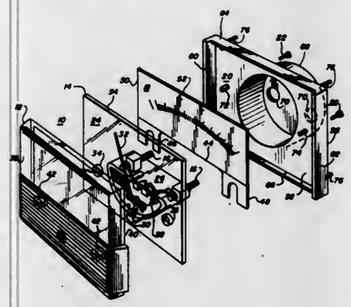
(2) a body, at least a portion formed as a plate, a portion of said plate being transparent, said body carrying said meter movement on protrusion means and said pointer fixedly therein and fixedly engaging said faceplate to form said assembly whereby said assembly completely encases said meter movement and said pointer;

b. connecting means for providing input signals to said meter

movement, said connecting means being connected to said meter movement and penetrating said assembly;

c. a rear cover having at least one opening for receiving said connecting means and proportioned to abut the rear of said assembly and securely attached thereto with said connecting means disposed within at least one of said openings;

d. scale means having at least one depending tab means and being of generally flat dimensions for displaying a parameter to be measured by said meter movement and indicated by said pointer, said scale means arranged to be held



fixedly between said rear cover and said assembly in a position seated on said protrusion means for allowing a sweeping of said pointer across the face of said scale means to indicate a level measurement of said parameter sensed by said meter movement, said arrangement thereby allowing an exchange of said scale means for some second scale means without any possibility of physically engaging said pointer or said meter movement and causing damage thereto; and

e. securing means for fixedly securing said face plate, said body plate portion, said rear cover and said scale means in proper position with respect to each other.

4,552,019

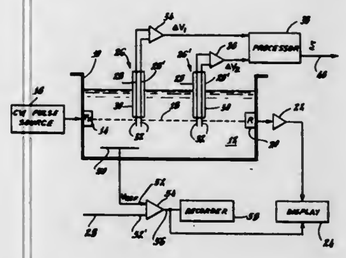
METHOD AND APPARATUS FOR MEASURING A COLLOIDAL POTENTIAL

Mark P. Freeman, deceased, late of Darien, Conn. (by Helen M. Freeman, executrix), assignor to Dorr-Oliver, Incorporated, Stamford, Conn.

Filed May 21, 1984, Ser. No. 612,502

Int. Cl.⁴ D21F *7/06, 11/00;* **G01N** *27/26, 29/00*

U.S. Cl. 73—584 **9 Claims**



5. An apparatus for determining a colloidal potential of a liquid suspension of colloidal particles comprising:

means for directing pulses of ultrasonic energy along a path within said liquid suspension;

a movable probe means for detecting a vibration potential along said path, said probe means being movable along said path between at least a first position and a second position, said probe means producing signals indicative of said vibration potential at said respective positions; and

means for combining said signals so as to derive an indication of a colloidal potential of said liquid suspension.

4,552,020

APPARATUS FOR THE SCANNING OF OBJECTS BY MEANS OF ULTRASOUND ECHOGRAPHY

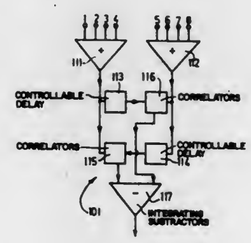
Michel J. Auphan, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,841

Claims priority, application France, Oct. 20, 1982, 82 17550; Sep. 28, 1983, 83 15422

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—602 **5 Claims**



1. Apparatus for scanning objects by ultrasound echography which comprises:

a mosaic of ultrasound transducer elements;

transmitter means connected to the transducer elements which cause the elements to repeatedly transmit ultrasound signals;

receiver means connected to the transducer elements for receiving and processing echo signals which are produced when the transmitted ultrasound signals are reflected; and

display means for displaying images which are processed and reconstructed from the signals produced in the receiver means; wherein, as an improvement:

the elements of the mosaic are grouped into 2^n subwindows, where n is a positive integer greater than one, and each subwindow is a group of adjacent transducer elements which are sufficient to form an echogram of an area of the object, and

the receiver means comprise, in functional series connection:

focusing and image scanning means for controlling directional characteristics of the mosaic;

2^n parallel signal channels, each channel processing signals from a subwindow and comprising controllable delay means and a first memory for storing a delay value correction factor which controls the delay means;

adder means which combine the outputs of the channels;

evaluation circuit means, the output of the evaluation circuit means being connected to the delay stage; and additionally comprising

2^n-1 correlation means which operate to determine correction factors by adaptively correlating signals which are derived from progressive binary subgroupings of subwindows of elements, where a first subset of the 2^n-1 of the correlation means process signals from respective pairings of the subwindows and other correlation means compare signals from progressive pairings of the pairs of subwindows.

4,552,021

ELECTRO-SOUND TRANSDUCER ELIMINATING ACOUSTIC MULTI-REFLECTION, AND ULTRASONIC DIAGNOSTIC APPARATUS APPLYING IT

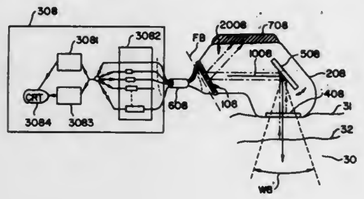
Hirohide Miwa, Kawasaki; Hajime Hayashi, Yamato; Takaki Shimura, Machida; Atsuo Iida, Yokohama; Fumihiro Namiki, Yokohama; Kenji Kawabe, Yokohama, and Narutaka Nakao, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

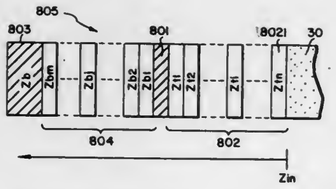
Filed Dec. 30, 1983, Ser. No. 567,372

Claims priority, application Japan, Dec. 30, 1982, 57-234070; Feb. 8, 1983, 58-19182; Mar. 10, 1983, 58-39908

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—644 **26 Claims**





1. An electro-sound transducer for ultrasonic diagnosis of a target comprising:

a piezo-electric device which transduces electric pulse signals to ultrasonic sound waves which are provided to be incident on said target and which transduces reflected sound waves, corresponding to said ultrasonic sound waves, that are incident on a surface of said piezo-electric device to provide respective electric signals;

said piezo-electric device including a plurality of transducer elements having respective surfaces for emitting said sound waves incident on said target as a synthesized sound-beam along at least one main direction, each of said directions being different from the normals to said surfaces of at least a majority of said surfaces of said transducer elements;

wherein errors in the diagnosis are avoided by limiting the transducing of said reflected sound waves which have been reflected at least once from said surface of said piezo-electric device with respect to the others of said reflected sound waves; and

wherein reflection of said respective reflected sound waves from at least the majority of said surfaces of said transducer elements of said piezo-electric device provides said limiting of said transducing.

4,552,022

SOUND DISCRIMINATOR TESTER

Elden E. DuRand, III, Crestwood, Ky., assignor to Bluegrass Electronics Inc., La Grange, Ky.

Filed May 10, 1982, Ser. No. 376,170

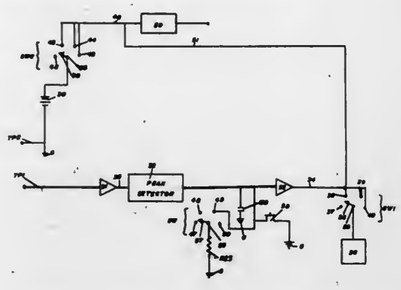
Int. Cl.⁴ G01H *3/14*

U.S. Cl. 73—647 **1 Claim**

1. A testing device to adjust operation of a sound detection device having sound transducer means to provide a signal in response to audible occurrence of said first signal and alarm means actuated by said first signal wherein said testing device includes:

(a) signal peak detector means to receive said first signal;

(b) display means to indicate the magnitude of said first and second signals and to indicate the magnitude of at least one of said first and second signals; and



(c) the invention of claim 1 wherein signal extension means are provided to extend the peak valve of the second signal for a selected time period to allow comparison of the first and second signals.

4,552,023

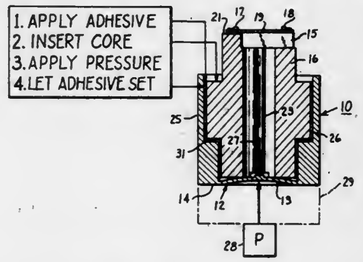
TRANSDUCER SYSTEMS WITH OVERLOAD PROTECTION

Ronald Bowman, Laguna Beach; Michael T. Zimmerman, Arcadia, and Robert A. Rich, Yorba Linda, all of Calif., assignors to Transamerica Delaval Inc., Lawrenceville, N.J.

Filed Sep. 28, 1983, Ser. No. 536,490

Int. Cl.⁴ G01L *7/08*

U.S. Cl. 73—715 **40 Claims**



1. A method of providing overload protection for a diaphragm having a deflectable diaphragm portion surrounded by a stationary diaphragm portion and connectable to a sensor, comprising in combination the steps of:

making a core of insulating material for supporting said sensor and being movable relative to said deflectable diaphragm portion;

supporting said sensor on said core;

inserting said core into said stationary diaphragm portion for connection of said deflectable diaphragm portion to said sensor, but maintaining said core movable in said stationary diaphragm portion;

establishing a mechanical interconnection between said deflectable diaphragm portion and said movable core;

rendering said core stationary relative to said diaphragm; and

removing said mechanical interconnection by establishing between said deflectable diaphragm portion and said core a gap corresponding to a predetermined maximum diaphragm deflection, while maintaining said core stationary relative to said diaphragm.

4,552,024

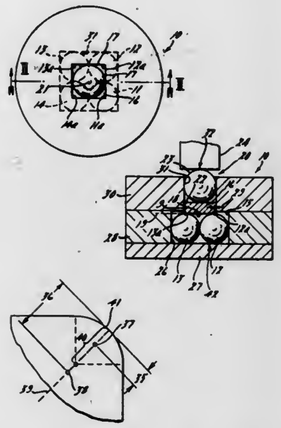
DEVICE FOR DIRECTLY ANALYZING STRENGTH OF CERAMIC TOOL BITS

Robert R. Baker, and Richard L. Allor, both of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 10, 1984, Ser. No. 598,753

Int. Cl.⁴ G01N *3/08*

U.S. Cl. 73—821 **8 Claims**



1. A method of directly testing the strength of a prism shaped ceramic cutting tool bit, said bit having parallelogram sides bounded by opposed polygonal end surfaces greater in dimension than the height of any of said sides, the corners of the polygonal end surfaces each being defined by a curved sector surface of predetermined radius, comprising the steps of:

(a) locating a series of constrained members selected as to size and butted together so that such members make tangential point contact with one bit end surface supported on said members, said point contact being located along a radius bisecting a corner curved sector surface, said point contact being spaced from said curved sector surface a distance of at least one-half said curved sector surface radius but within the dimensional range of 0.01875–0.0312 inches;

(b) laterally restraining said bit supported on said member; and

(c) applying a centralized load to the opposite end surface to induce stress in said bit resulting in edge chipping fracture.

4,552,025

MULTIFUNCTION PROCESSABILITY TESTING METHOD AND APPARATUS

Robert I. Barker, Cuyahoga Falls; David P. King, Akron, and Henry A. Pawlowski, Seville, all of Ohio, assignors to Monsanto Company, St. Louis, Mo.

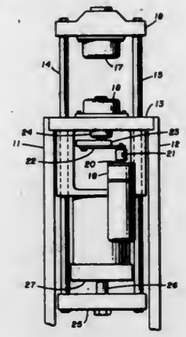
Filed Sep. 6, 1983, Ser. No. 529,255

Int. Cl.⁴ G01N *3/24*

U.S. Cl. 73—846 **31 Claims**

1. The method of testing a sample of viscoelastic material enclosed under pressure between two opposing temperature-controlled dies by oscillatory rotation of one die with respect to the other and measurement of the reaction torque comprising the steps of

A. holding the sample at a predetermined temperature while measuring the reaction torque at two or more oscillatory frequencies, and



B. holding the sample at another predetermined temperature higher than that of step A while measuring the reaction torque at one or more oscillatory frequencies.

4,552,026

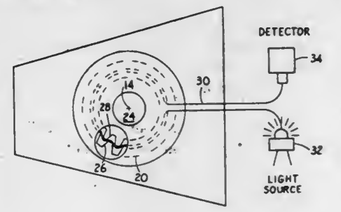
SENSOR FOR A VORTEX SHEDDING FLOWMETER

James K. Knudsen, South Euclid, and Marion A. Keyes, IV, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 22, 1984, Ser. No. 663,113

Int. Cl.⁴ G01F *1/32*

U.S. Cl. 73—861.24 **5 Claims**



1. In a fluid flowmeter, a bluff body adapted to induce vortex shedding when placed in a flowing fluid; means mounting said bluff body for rotation about its center of inertia; a first toothed member attached to said bluff body for rotation therewith; a second toothed member mounted in a stationary position relative to said first toothed member, the teeth of said first and second toothed members being in partial meshing relation; and an optical fiber entrained between the teeth of said first and second toothed members.

4,552,027

FLUID-FLOW TRANSDUCER

Donald A. Larner, Kingston-upon-Thames, England, assignor to Fluid Devices Ltd., England

Filed Mar. 1, 1984, Ser. No. 585,144

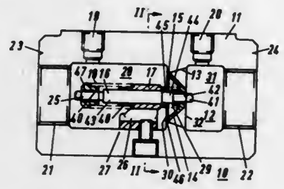
Claims priority, application United Kingdom, Mar. 3, 1983, 8305926

Int. Cl.⁴ G01F *1/26*

U.S. Cl. 73—861.53 **10 Claims**

1. A fluid-flow transducer for producing a pressure differential responsive to rate of at least normally unidirectional fluid flow, comprising: a housing forming a flow passage for the fluid; said passage having formed therein a throat which diverges progressively in the normally downstream direction; a valve member adapted and arranged for obturating the smaller end of the throat when there is no flow or very little flow; the valve member being carried by a spindle which extends in the

normally upstream direction from the throat and is slidably supported by a bearing upstream of but adjacent the throat, the bearing being fixedly supported relative to the housing by a bearing support; and an axially extending compression coil spring for biasing the valve member in the upstream direction relative to the housing to tend to close the throat; the housing having two ports therein, respectively upstream and downstream of the throat, for detection of a pressure differential induced across the throat by fluid flow; characterized in that



the housing is adapted for incorporation into a fluid flow system by having connecting means at an upstream end and a downstream end of the housing; in that the spring is arranged upstream of the valve member and acts upon an upstream end of the spindle; in that there is substantially unobstructed access through the downstream end of the housing to the throat and to the valve member; and in that the bearing engages a substantial length of the spindle closely adjacent the smaller end of the throat for very accurately aligning the valve member, particularly when the valve member is almost closing the throat.

4,552,028

DEVICE FOR MEASURING FORCE

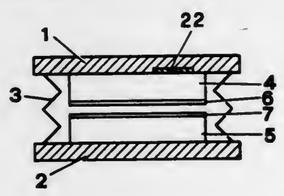
Christof W. Burckhardt, Avenue du Chateau 20, 1020 Renens; Philipp Stauber, Chemin du Saléve 15, 1004 Lausanne, and Gérard Piller, Chemin de la Crésentine 51, 1023 Crissier, all of Switzerland

Filed Feb. 8, 1984, Ser. No. 578,065

Claims priority, application Switzerland, Feb. 23, 1983, 1002/83

Int. Cl.⁴ G01L *1/14, 5/16*

U.S. Cl. 73—862.04 **6 Claims**



1. A device for measuring force comprising:
an upper rigid element and a lower rigid element;
an elastic body linking the upper and lower rigid elements;
measuring means, independent of the elastic body and integral with the rigid elements, consisting of at least one capacitive sensor comprising a first part and a second part, each part presenting a flat surface bearing at least one flat electrode, these parts being so placed that the electrodes of the first part are opposite the electrodes of the second part, separated by a dielectric;
a measuring device connected to the capacitive sensor;
the capacitive sensor including a plurality of flat electrodes, at least one electrode of one of the two parts of the sensor being laterally displaced in comparison with the electrodes of the other part, so that, depending on the combination of electrode associations and connections, the sensor acts either as a differential sensor or as a proximity sensor; and
wherein the measuring device comprises electronic means for processing the signals generated by the various electrode combinations and for measuring all the degrees of freedom of movement relative to the two rigid elements.

4,552,029

PIVOTING DEVICE

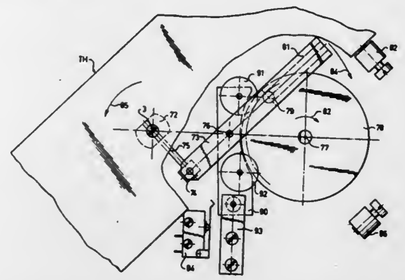
René Lüscher, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,563

Claims priority, application Switzerland, Mar. 10, 1983, 1287/83

Int. Cl.⁴ F16H *21/44*

U.S. Cl. 74—96 **4 Claims**



1. A device for pivoting a transport lever about a pivot axis between two terminal positions, comprising:
a connecting rod connected to the transport lever for rotation therewith and disposed perpendicular to the pivot axis of said transport lever;
a pivotable intermediate lever having a longitudinal slot;
a bearing socket mounted on said intermediate lever and engaged with said connecting rod for axial movement therein, said bearing socket being pivotable about an axis that is parallel to a pivot axis of said intermediate lever; and
a rotatable crank plate having a pin engaged in said slot on said intermediate lever.

4,552,030

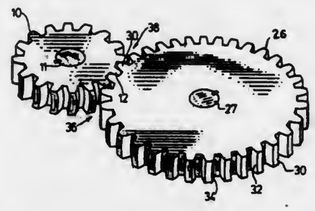
GEAR DRIVE

Joseph Szecsei, 2555-8th Concession Rd., R.R. #3, Windsor, Ontario, N9A 6Z6, Canada

Filed Jun. 23, 1983, Ser. No. 507,242

Int. Cl.⁴ F16H *55/08*

U.S. Cl. 74—462 **3 Claims**



1. A gear train comprising, in combination, a first cylindrical gear wheel having a plurality of teeth formed equispaced therearound, each tooth having a transversely concavo-convex shape with a convex side surface and an opposite concave side surface terminating in a square end surface having a uniform width, and a second cylindrical gear wheel having a plurality of teeth equispaced thereabout with the same circumferential spacing as the spacing of the teeth on the first cylindrical gear wheel, each tooth of said second gear wheel having a concavo-convex shape with a convex side surface and an opposite concave side surface terminating in a square end surface having a uniform width, and the said teeth of the said gear wheels having opposite convex and concave side surfaces with the same radius of curvature and having the same uniform width, the periphery of each of said gear wheels having a square transverse cross-section, and means for rotatably mounting said cylindrical gear wheels for meshing of the gear teeth with each other.

4,552,031

DEVICE FOR CONTROLLING THE TRAVEL OF A VEHICLE

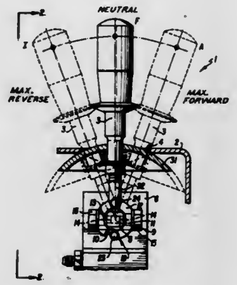
Rino O. Barbagli, Borgaretto, Italy, assignor to Fiatallis Europe S.p.A., Torino, Italy

Filed Apr. 25, 1983, Ser. No. 488,413

Claims priority, application Italy, May 3, 1982, 67579 A/82

Int. Cl.⁴ G05G *5/04, 7/00*

U.S. Cl. 74—473 R **6 Claims**



1. A transmission shifting mechanism for controlling the operation of a vehicle transmission operable through rotational movement of a control shaft by corresponding rotational movement of a shift lever in a predetermined path of movement between forward and reverse vehicle motion-defining directions, including a neutral holding position during normal operation of the vehicle, and adapted to be shifted directly between the forward and reverse vehicle motion-defining directions bypassing the neutral stop position in an emergency upon overcoming a biasing force urging the shift lever to move in the predetermined path of movement, the shifting mechanism comprising
a shift lever operatively connected to a control shaft for effecting movement of a vehicle in accordance with the positioning of the control shaft in response to the movement of said shift lever,
said shift lever having a hub portion connected to said control shaft for effecting rotational movement of said control shaft in response to rotational movement of said shift lever and effecting pivotal movement of said shift lever relative to said control shaft,
said hub portion having formed therein first and second motion-limiting means for limiting the rotational movement of said shift lever,
first and second stop means mutually exclusively positioned adjacent said first and second motion-limiting means and extendable into engagement therewith to stop the rotational movement of said shift lever upon engagement of both of said stop means with both of said motion-limiting means,
said first and second stop means being mutually exclusively released from engagement with said motion-limiting means upon pivotal movement of said shift lever relative to said control shaft thereby allowing rotational movement of said shift lever within the limits defined by the engagement of one of said stop means engaging one of said motion-limiting means.

4,552,032

SHIFT LEVER DEVICE

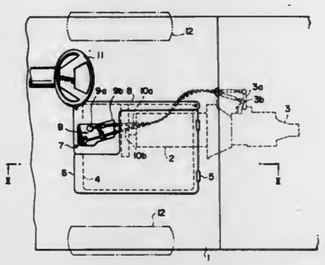
Takao Kanai, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 17, 1983, Ser. No. 476,152

Claims priority, application Japan, Dec. 20, 1982, 57-192364[U]

Int. Cl.⁴ G05G *9/16*

U.S. Cl. 74—473 R **10 Claims**



1. A shift lever device for a motor vehicle having an engine and transmission positioned under a floor panel provided with a service hole for maintenance or inspection of said engine, comprising:
a cover for said service hole allowing access to said transmission and engine;
a shift lever secured to said cover; and
a flexible long means connected to said shift lever to operate said transmission, said cover with said shift lever attached thereon being removable without disengaging said shift lever from said cover.

4,552,033

DRIVE SYSTEM FOR A MICROSCOPE STAGE OR THE LIKE

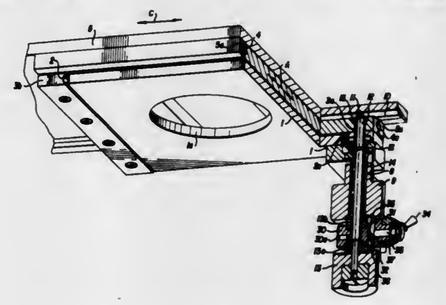
Heinz Märzhäuser, Wetzlar, Fed. Rep. of Germany, assignor to Gebr. Märzhäuser Wetzlar oHG, Wetzlar, Fed. Rep. of Germany

Continuation of Ser. No. 269,787, Jun. 2, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 598,359

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025974; Oct. 6, 1980, 3037710; Oct. 6, 1980, 3037741

Int. Cl.⁴ G05G *11/00;* **F16H** *13/02;* **G02B** *21/26*

U.S. Cl. 74—479 **9 Claims**



1. A drive system for an x-y stage of a microscope or similar instrument having a first displaceable slide and a second slide displaceable at an angle to said first slide, first stationary slide

guide means for said first displaceable slide and a second stationary slide guide means for said second slide comprising:

(a) a friction wheel connection having first and second friction wheels (7,11) and first and second friction tracks (6,10) arranged respectively between said first slide (3) and said first stationary slide guide means (1) on the one hand and between said first slide (3) and said second slide (5);

(b) said first friction wheel (11) having a first actuation knob (13) and a first common solid shaft (12);

(c) said second friction wheel (7) having a second actuation knob and a second common hollow shaft (8) coaxial to said first shaft;

(d) first and second spring force means (15,16) biasing each of said first and second shafts and respective friction wheels into contact with said friction tracks; and

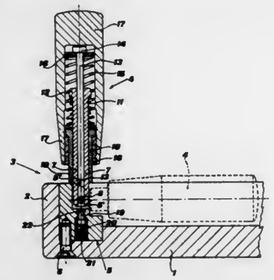
(e) means for displacing each of said shafts (8,12) against said spring force means (15,16) and in the axial direction so that said friction wheels (7,11) connected to them no longer make contact with their associated friction tracks (6,10).

4,552,034

TIPPING HANDLE FOR CONTROL HANDWHEELS

Bertani, Alberto, Milan; Piercarlo Mariani, and Davide Lissoni, both of Monza, all of Italy, assignors to Elesa S.p.A., Milan, Italy

Filed Feb. 7, 1983, Ser. No. 464,714
Claims priority, application Italy, Feb. 12, 1982, 19644 A/82
Int. Cl.⁴ G05G *1/10*
U.S. Cl. 74—547 **3 Claims**



1. A safety handle for a handwheel which is movable between an operating position and a retracted position, comprising:

(a) an elongated handle;

(b) pivoting means for pivotally connecting one end of the handle to the handwheel, including a pin clutch means for locking said handle into said operating position when said handle is pivoted into said operating position and a sufficient force is applied along the longitudinal axis of the handle, wherein said pin clutch includes a resilient element for applying a counter-force when said longitudinally oriented force is applied to said handle, and wherein said pin clutch locks said handle into said operating position when said longitudinal force overcomes the counter-force applied by said resilient element, and wherein said counter-force unlocks said pin clutch when said longitudinal force does not overcome said counter-force, and

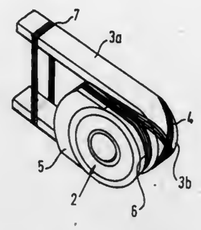
(c) a biasing means for pivoting said handle into said retracted position when said longitudinal force is removed from said handle.

4,552,035

REINFORCED CONNECTING LINK MEANS

John B. Skipper, Lutterworth, England, assignor to Dunlop Limited, London, England

Filed Jun. 24, 1983, Ser. No. 507,730
Claims priority, application United Kingdom, Jul. 1, 1982, 8218980
Int. Cl.⁴ G05G *1/00*
U.S. Cl. 74—581 **30 Claims**



1. Link means for connecting two components comprising a pair of attachment members spaced relative to one another along the longitudinal axis of the link means and a reinforcement structure connecting said attachment members for the transmission of both tension and compression loads therebetween, said reinforcement structure comprising an endless band of reinforcement material extending between said attachment members, said band having two side portions disposed to extend generally in the direction of the longitudinal axis of the link means and two end portions each disposed around a respective attachment member each said attachment member having in a direction perpendicular to said longitudinal axis of the link a length which is greater than the transverse width of said reinforcement structure whereby said attachment member extends beyond either side of a respective end of said reinforcement structure, and respective fastening means comprising reinforcement material extending to either side of said reinforcement structure and wrapped around each attachment member and the adjacent end portion of said band at each side of the reinforcement structure for securing said attachment members to said bank whereby the link means is able to withstand applied tension or compression loads.

4,552,036

AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLES

Toshio Takano, Hamuramachi, and Toshio Kobayashi, Koganei, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,771
Claims priority, application Japan, Sep. 13, 1979, 54-117729
The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.
Int. Cl.⁴ F16H *37/06*; F01N *1/00*; F16D *23/10*
U.S. Cl. 74—705 **9 Claims**

1. An automatic transmission for an automotive vehicle having front wheels and rear wheels comprising

a torque converter connected to a crank shaft of an engine of said automotive vehicle,

an automatic transmission means connected to a turbine shaft of said torque converter, said automatic transmission means having a planetary gear and a plurality of fluid operated means for producing various operational ranges,

a final reduction gear means for transmitting an output of said automatic transmission means to the front wheels of said automotive vehicle,

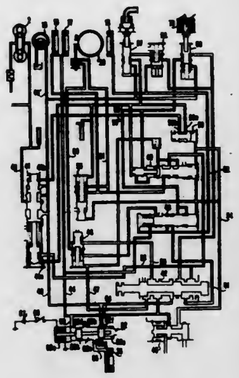
a fluid operated multiple-disk clutch means for transmitting the output of said automatic transmission means to the rear wheels,

a pressure oil control means for operating said fluid operated means in said automatic transmission means,

said pressure oil control means including,

a pressure regulator valve means for producing line pressure according to operational conditions of said engine,

a changeover valve means when actuated for operatively connecting a conduit for the line pressure to said fluid operated multiple-disk clutch means,



a manual operating means for being manually operated and actuating said changeover valve means, and

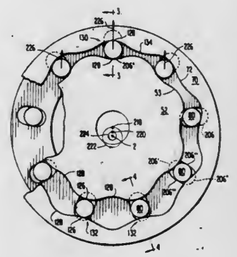
conduit means for applying said line pressure to said changeover valve means for actuating said changeover valve means when said line pressure exceeds a predetermined value.

4,552,037

RETAINER FOR EPICYCLIC TRANSMISSION

Robert G. Distin, Jr., and Thomas J. Lang, both of Louisville, Colo., assignors to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,932
Int. Cl.⁴ F16H *1/28*
U.S. Cl. 74—805 **13 Claims**



1. A retainer (96) for retaining and controlling a plurality of rollers (80) rollingly engaging and transmitting torque between conjugate epitrochoidal-like shaped and hypotrochoicallike shaped races (53, 72) in an epicyclic speed reducing transmission, wherein means (30) are provided for orbiting one of said races (53) and said retainer, said retainer generating a centrifugal force as it orbits, comprising:

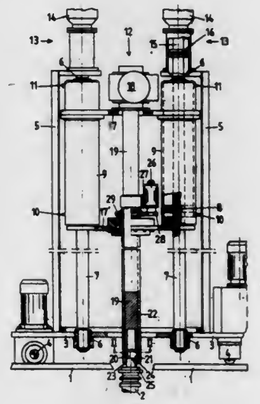
a plurality of bearing surfaces (206', 210) which bearingly load a radial innermost cylindrical surface closest to an axis (2) of said transmission of all of said rollers which are located at and immediately adjacent to a top dead center position of said orbiting means with a portion of said centrifugal force and which maintain a radial outermost cylindrical surface furtherest from said axis of all of said rollers located at an immediately adjacent a bottom dead center position of said orbiting means unloaded from said centrifugal force.

4,552,038

REMOTE CONTROLLED BOLT REMOVING APPARATUS FOR BOLTS SECURING THE HEAD OF A REACTOR PRESSURE VESSEL

Siegfried Heiermann, Waltrop, and Hans Lachner, Herne, both of Fed. Rep. of Germany, assignors to Klockner-Becorit GmbH, Castrop-Rauxel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 285,087, Jul. 9, 1981, abandoned. This application Oct. 14, 1983, Ser. No. 542,045
Int. Cl.⁴ B25B *29/02*
U.S. Cl. 81—57.38 **6 Claims**



1. A bolt removing apparatus for removing bolts securing the head of a reactor pressure vessel, said apparatus comprising:

(a) a vertically moveable bolt rotating device which includes means for gripping and turning a bolt to be removed;

(b) at least one hydraulic cylinder system, including a cylinder, a piston and a piston rod, coupled to said bolt rotating device for vertically moving said device; and

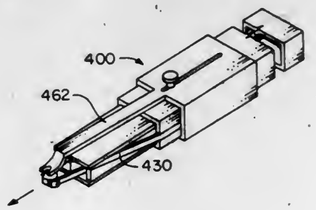
(c) means for causing rotational movement between said cylinder and piston of said hydraulic cylinder system as said bolt rotating device is moved vertically by said hydraulic cylinder system.

4,552,039

NUT AND WASHER HOLDING ADJUSTABLE WRENCH

George W. Fisher, 5915 Daybreak Ter., Baltimore, Md. 21206

Filed Feb. 24, 1984, Ser. No. 583,191
Int. Cl.⁴ B25B *13/52*
U.S. Cl. 81—64 **8 Claims**



1. In a wrench system having means for adjustably holding a nut, means for holding a washer in alignment with the nut for

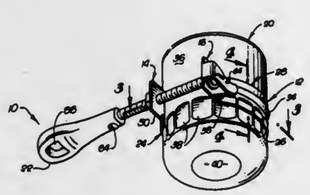
attachment of the washer and nut on a fastener such as a bolt, and a longitudinally extending handle portion, the improvement comprising: the means for adjustably holding a nut including: first and second jaws, means resiliently spacing the first and second jaws relative to each other; said means for holding a washer including: at least a first arm, means for biasing the first arm toward said first and second jaws, said first arm having a slotted end for receiving a said fastener therein, said means for resiliently spacing the first and second jaws relative to each other comprising: said first and second jaws having respective resilient portions thereof extending to and affixed to said longitudinally extending handle portion, a first member slidable relative to said longitudinally extending handle portion, the first member having a protrusion between said respective resilient portions, a respective part of the first member outboard each respective resilient portion; a second member slidable relative to said longitudinally extending handle portion, said means for biasing the first arm toward said first and second jaws, including said first arm being resilient and affixed to said second member; means for fixing the slidable position of said first member and of said second member relative to said longitudinally extending handle portion, the longitudinally extending handle portion substantially surrounding the first member, the second member substantially surrounding the longitudinally extending handle portion, and the means for fixing the slidable position being a headed screw extending through respective slots in said second member and said longitudinally extending handle portion and threaded into said first member.

4,552,040

OIL FILTER WRENCH

Hyo J. Bang, 805 S. Cerritos, Ave., #D-1, Azusa, Calif. 91702

Continuation-in-part of Ser. No. 599,008, Apr. 11, 1984, abandoned. This application Oct. 22, 1984, Ser. No. 663,305
Int. Cl.⁴ B25B *13/52*
U.S. Cl. 81—65 **21 Claims**



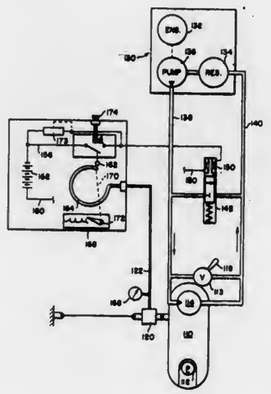
1. An adjustable oil filter wrench, comprising:
a handle;
a threaded shaft securely attached to and extending from said handle, said shaft terminating at an expanded head;
a stationary plate having an enlarged aperture through which a portion of said shaft which is generally adjacent said expanded head freely passes, and an integral retainer strap which forms a retaining space wherein said expanded head is loosely situated;
a traveling plate having an aperture through which said shaft extends;
means for moving said traveling plate along the length of said shaft in response to rotation of said shaft about its longitudinal axis, said traveling plate moving toward or away from said stationary plate depending on the direction of rotation of said shaft; and
a rigid band extending between said stationary plate and said traveling plate, said rigid band including a plurality of sequential and incremental flat surfaces extending generally along one edge thereof, and a file-like inner gripping surface strengthened by a V-shaped ridge forming the remainder of said band.

4,552,041

POWER TONGS CONTROL SYSTEM

William E. Coyle, Sr., Houma, La., assignor to Bilco Tools, Inc., Houma, La.

Filed Apr. 21, 1983, Ser. No. 487,048
Int. Cl.⁴ B25B *23/14*
U.S. Cl. 81—470 **12 Claims**



1. In a power tongs control system of the type including power tongs having a hydraulic motor thereon, and a power unit having a high pressure pump connected to the tongs motor by a pair of hydraulic lines, the system further including a snub line for restraining the tongs against rotation, and a hydraulic load transducer attached to the snub line so that the hydraulic transducer produces a pressure output—proportional to torque developed by the tongs—for selectively opening or closing a shunt valve connected between said hoses, the improvement comprising:
a solenoid actuator for the shunt valve,
torque indicating means including a Bourdon tube supported at one end and connected to said transducer output, and
a limit switch adjustably supported by said means adjacent the free end of the Bourdon tube so that said switch is closed by said tube when the pressure within the tube reaches a predetermined level,
said switch, when closed establishing an electrical connection between a battery and the shunt valve solenoid whereby operation of the tongs is automatically halted when a predetermined torque corresponding to said predetermined pressure is reached.

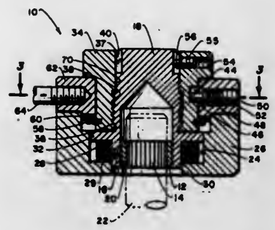
4,552,042

TIGHTENING APPARATUS

Dale A. Beymer, 11 E. Avenida De Las Flores, Thousand Oaks, Calif. 91360

Filed Jul. 30, 1984, Ser. No. 635,800
Int. Cl.⁴ B25B *23/14*
U.S. Cl. 81—476 **6 Claims**

1. A tightening apparatus comprising:
a spindle, said spindle having a socket adapted to be rotatably connected to a shaft;
a housing located about said spindle, said spindle being capable of pivoting relative to said housing;
a spring chamber formed between said spindle and said housing, a spring assembly located within said spring chamber, said spring assembly exerting a force between said spindle and said housing;
a nut threadably mounted on said spindle, said housing being located about said nut, said nut being capable of rotative movement relative to said housing, said nut being lineally fixed in position relative to said housing, rotation of said nut causes lineal movement of said spindle varying the size of said spring chamber hence altering the compression of said spring assembly changing said force; and
handle means attached to said housing, said handle means facilitating manual rotation of said housing which will also cause rotation of said spindle tending to produce a tightening force, upon said tightening force reaching a certain value said housing pivots relative to said spindle.

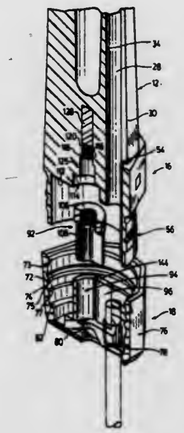


4,552,043

MULTIPLE BIT SCREWDRIVER WITH IMPROVED CHUCK ARRANGEMENT

Antonio Corona, and Franco O. Corona, both of 14 Simcoe Rd., Kettleby, Ontario L0G 1J0, Canada

Filed Dec. 14, 1984, Ser. No. 681,886
Int. Cl.⁴ B25G *1/08*
U.S. Cl. 81—490 **13 Claims**



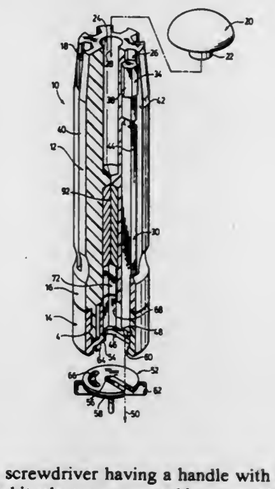
1. In a multibit screwdriver having a handle with a central longitudinal axis, a bit selector cup rotatably mounted at an end of said handle to rotate about said central axis, a plurality of bits provided peripherally of said handle in a circular pattern about said handle axis, each bit being provided in said handle to extend essentially parallel to said handle's axis, a chuck provided at said end of said handle, said chuck being aligned with said handle axis for receiving a bit end and securing it against rotation, said cup having a continuous side wall with an interior surface spaced radially outwardly of the radial location of said circular pattern of bits and a closed cup end, an elongate slot extending from a central portion of said cup and radially outwardly to the location of said bits in said handle, said cup being rotatable to position said slot in register with any desired bit in said handle, said slot in said cup being of sufficient width and length to permit outward withdrawal of a bit shaft from said handle in a direction generally parallel with said handle axis, means for retaining a selected tool bit end in said cup, said bit end being movable along said slot towards said cup center into alignment with said chuck for insertion of said bit end into said chuck, said chuck having a bore formed within said handle, said bore presenting a plurality of internal operative faces for engaging corresponding external operative faces provided on said bit end, the number of said operative faces being equal to or a multiple of the number of bits provided in said handle to facilitate thereby the insertion of a selected bit end into said chuck bore.

4,552,044

MULTIBIT SCREWDRIVER WITH IMPROVED BIT INSERTION

Antonio Corona, and Franco O. Corona, both of 14 Simcoe Rd., Kettleby, Ontario, Canada L0G 1J0

Filed Feb. 12, 1985, Ser. No. 700,830
Int. Cl.⁴ B25G *1/08*
U.S. Cl. 81—490 **20 Claims**



1. In a multibit screwdriver having a handle with a central longitudinal axis, a bit selector cup rotatably mounted at an end of said handle to rotate about said central axis, a plurality of bits provided peripherally of said handle in a generally circular pattern about said handle axis, each bit being provided in said handle to extend essentially parallel to said handle's axis, a chuck provided at said end of said handle, said chuck being aligned with said handle axis for receiving a bit end and securing it against rotation, said cup having a continuous side wall with an interior surface spaced radially outwardly of the radial location of said circular pattern of bits and a closed cup end, an elongate slot extending from a central portion of said cup end and radially outwardly to the location of said bits in said handle, said cup being rotatable to position said slot in register with any desired bit in said handle, said slot in said cup having opposing walls sufficiently spaced apart to permit outward withdrawal through said slot of a bit shaft from said handle in a direction generally parallel with said handle axis, means for retaining a selected tool bit end in said cup, said bit end being movable along said slot towards said cup center into alignment with said chuck for insertion of said bit end into said chuck, said bit shaft having a slot wall engagement means for engaging at least one of said slot walls to prevent thereby any significant rotation of said bit relative to said slot as said withdrawn bit is moved along said cup slot to said cap centre into alignment with said chuck, said handle having a plurality of channels for receiving a corresponding plurality of said bits, each of said channels having means for cooperating with a respective said bit to align said bit slot wall engagement means with corresponding said at least one slot wall when said cup slot is registered with said respective bit to permit withdrawal thereof, said bit slot wall engagement means being positioned on said bit shaft to engage said at least one slot wall on with-

drawal of said bit from said channel prior to said alignment means in said channel disengaging said withdrawn bit, said alignment means predetermining the orientation of said bit end relative to said chuck whereby said slot engagement means maintains said predetermined bit end orientation for direct insertion of said bit end in said chuck, said bit end having integrally formed therewith means for defining a shoulder which contacts said opposing slot walls, said shoulder means being said means for retaining said bit end within said cup, said external operative faces of said bit end projecting outwardly relative to said bit shaft, said channel alignment means comprising recessed portions to receive said bit end outwardly projecting portions, a circular flange depending from said handle end and having a plurality of slots extending therethrough, each of said slots being radially aligned with a respective said recessed portion of said channel, said slot in said flange receiving one of said outwardly projecting portions upon withdrawal of said bit from a corresponding said channel.

4,552,045

POSITIONING DEVICE

Mamoru Inoue; Shoji Hara; Morimichi Hasegawa, all of Hirakata, and Kiyokazu Imanishi, Higashi Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

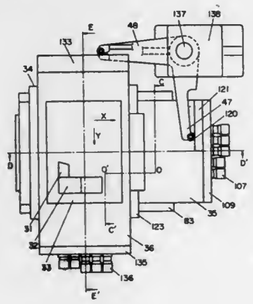
PCT No. PCT/JP82/00267, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/00302, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 14, 1982, Ser. No. 486,292

Claims priority, application Japan, Jul. 15, 1981, 56-111475; Jul. 15, 1981, 56-111476

Int. Cl.⁴ B23B *21/00, 3/28*

U.S. Cl. 82—21 R **4 Claims**



1. A positioning device comprising:

a frame;

a first table mounted on said frame for sliding movement with respect thereto in first and second opposite directions;

a second table mounted on said first table for sliding movement with respect thereto in third and fourth directions perpendicular to said first and second directions;

first and second cams mounted for rotation on said frame;

first and second pivotally mounted levers having respective first ends contacting said first and second cams, respectively, and respective second ends having rollers adapted to abut ends of said first and second tables, respectively;

first means mounted on said frame for biasing said first table in said first direction into abutment with said roller of said second end of said first lever;

first stop means on said frame and said first table and defining a stopping position for limiting the movement of said first table in said first direction;

second means on said first table for biasing said second table in said third direction into abutment with said roller of said second end of said second lever;

second stop means on said first and second tables and defining a stopping position for limiting the movement of said second table in said third direction;

means operatively connected to said first and second cams for rotating said first and second cams and thereby for pivoting said first and second levers, respectively, to control the positions of said first and second tables in said first and second directions and in said third and fourth directions, respectively, under the influence of said first and second biasing means, respectively;

means operatively connected to at least one of said stop means for rendering inoperative said one stop means when the respective said cam allows the respective said table to be moved by the respective said biasing means beyond the respective said stopping position of said one stop means; and

at least one of said biasing means including means for interrupting said one biasing means and for moving the respective said table away from abutment with said roller of the respective said lever.

4,552,046

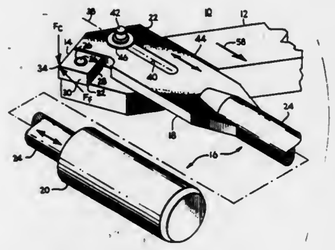
CUTTING TOOL

David M. Dombrowski, Peabody, and Kenneth J. Anastasi, Beverly, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 25, 1984, Ser. No. 613,934

Int. Cl.⁴ B23B *29/04*

U.S. Cl. 82—36 A **25 Claims**



1. A cutting tool comprising:

a shank;

an indexable cutting tool insert having a side surface and a tip;

means rotatably connecting said insert to said shank including a pivot extending between said shank and said insert for allowing said insert to rotate with respect to said shank;

means to index said insert comprising an index member having a locking surface and a cam lobe thereon; and

means movably mounting said index member to said shank;

said indexing means being effective for rotating said insert upon extension of said index member so that said cam lobe pushingly engages said insert side surface at said insert tip, and locking said insert in a stationary cutting position upon retraction of said index member so that said locking surface is securely positioned against said insert side surface.

4,552,047

APPARATUS FOR CUTTING TUBING INTO PREDETERMINED LENGTHS

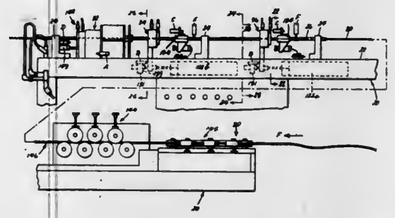
Steven L. Stroup, 602 W. Washington, Bluffton, Ind. 46714

Division of Ser. No. 191,319, Sep. 26, 1980, Pat. No. 4,411,179. This application Jul. 11, 1983, Ser. No. 512,789

Int. Cl.⁴ B23B *5/14*

U.S. Cl. 82—102 **10 Claims**

1. Apparatus for cutting metallic tubing into predetermined lengths comprising a stationary supporting frame, means on said frame for moving a straight length of tubing unidirectionally intermittently along a straight path in alignment with the longitudinal axis of said tubing means for cutting off said tubing while it is stationary between movements; said moving means including two spaced feeder mechanisms mounted for reciprocable movement on said frame, means for reciprocating simultaneously said feeder mechanisms in opposite directions between predetermined limits, said feeder mechanism including means for gripping said tubing during movement of the feeder mechanism in a forward direction and releasing said tubing during movement in the reverse direction; each said feeder mechanism and the gripping means thereof comprising a hollow gripping collet having resilient annularly arranged clamping segments radially movable inwardly to grip tubing received thereby, a clamping sleeve surrounding said collet and movable axially with respect thereto, said sleeve and collet segments having camming means thereon which force said segments inwardly in response to relative movement of said



sleeve and collet in one direction and releases said segments for relative movement in the opposite direction, a clamping block operatively carried by said frame for reciprocating movement, said collet being affixed to said clamping block, said clamping block having a cylinder cavity therein which receives said sleeve for reciprocation, said sleeve being in the form of a piston and defining two opposed variable volume chambers within said cylinder cavity adapted to be connected alternatively to fluid under pressure and exhaust for alternately operating and releasing said collet segments, said reciprocating means including two double acting power cylinders, one for each feeder mechanism, mounted on said frame and each having a piston rod connected to each said clamping block, and a control system for operating said power cylinder and the clamping sleeves of said feeder mechanisms oppositely such that while one feeder mechanism is moving in said forward direction it has its collet clamped onto said tubing while the other feeder mechanism is moving in the reverse direction and has its collet released.

4,552,048

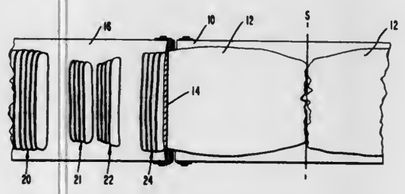
AUTOMATIC TRIMMING FEATURE FOR A SLICING MACHINE

Gary L. Wallace, Jeffersontown, Ky., and Frank S. Kasper, Orland Park, Ill., assignors to AMCA International Corporation, Hanover, N.H.

Filed May 17, 1983, Ser. No. 495,403

Int. Cl.⁴ B26D *5/20*

U.S. Cl. 83—23 **19 Claims**



12. In a slicing machine in which a product is fed to a motor driven slicing blade and sliced product is conveyed away from the blade, a method for visually segregating irregular slices from the leading edge of the product, comprising the steps of:

monitoring the slicing blade motor current;

detecting when the amplitude of said current exceeds a threshold value; and

interrupting the slicing of the product in response to the current exceeding the threshold value while continuing to convey sliced product away from the slicing blade.

4,552,049

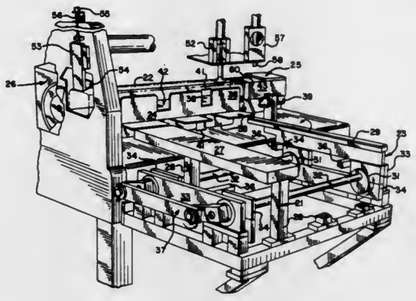
AUTOMATIC FEEDING OF ELONGATED PRODUCTS

Martin J. Matzinger, and Daniel L. Orloff, both of Madison, Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Aug. 26, 1983, Ser. No. 526,715

Int. Cl.⁴ B26D *7/06*

U.S. Cl. 83—27 **22 Claims**



12. A method for hanlding elongated food products, comprising:

receiving one or more elgonated products on a platform surface;

transporting the elongated products along the platform surface by moving the elgonated products with respect to the platform surface and without rotating the elgonated products, said moving being in a direction generally transverse to the respective longitudinal axis of the elongated products, and said movement being in an escapement position wherein said transporting step includes lifting the elongated products and moving same towards said escapement position;

dispensing the elongated products one at a time from said escapement position in a direction generally transverse to their respective longitudinal axis wherein said dispensing step includes rotating said elongated product along an axis that is generally parallel to the longitudinal axis of the elongated product; and

feeding the dispensed elongated product by moving same through a feeding path in a direction generally along the longitudinal axis thereof wherein said feeding step includes gripping the trailing end of the elongated product.

4,552,050

DIE, PLATEN AND JOINING MEANS FOR ATTACHING SAID DIE TO SAID PLATEN

Peter Grefe, Laguna Beach, Calif., assignor to Shur-Lok Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 363,274, Mar. 29, 1982,. This application Feb. 9, 1984, Ser. No. 578,762

Int. Cl.⁴ B26F *1/14*

U.S. Cl. 83—685 **14 Claims**

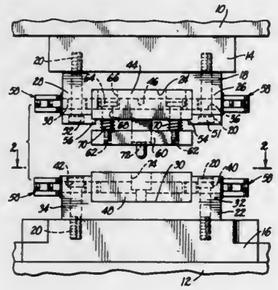
1. In a combination of a die set and set of supports for holding the dies of said die set, means for connecting each die of said die set to one of said supports and means for causing

relative movement between said supports so as to result in relative movement between said dies of said die set the improvement which comprises:

said supports including a first platen and a second platen, each of said platens including a die receiving recess located therein, one of said dies of said set of dies at least partially locatable within said recess of said first platen and the other of said dies of said set of dies at least partially locatable within said recess in the second of said platens;

each of said platens further including a wall, said wall located between the outer periphery of said respective platen and said recess of said respective platen;

said connecting means including said walls on each of said respective platens having a hole extending through said



wall and opening into said recess on each of said respective platens and further including each of said dies of said set of dies having a hole which aligns with the hole in said wall of the respective platen when said die of said set of dies which is at least partially locatable in said recess in said respective platen is located in said respective recess;

said connecting means further including a least two expandable diameter fastener means each having a generally cylindrical shape capable of being manipulated so as to expand to a greater diameter at a point along its length, one of said fastener means extending into said aligned holes in each of said dies and said wall of said respective platens with said fastener means expanded at said point to said greater diameter to tightly fit at said point within said aligned holes to fixedly attach each of said dies to their respective platens.

4,552,051

ELECTRONIC MUSICAL INSTRUMENT WITH KEY TOUCH DETECTOR AND OPERATOR MEMBER

Chifumi Takeuchi, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 25, 1983, Ser. No. 545,067
Claims priority, application Japan, Nov. 2, 1982, 57-193140
Int. Cl.⁴ G10H *1/02*
U.S. Cl. 84—1.24 **25 Claims**

1. An electronic musical instrument comprising:

keyboard means including a plurality of keys;

tone signal generating means for producing a musical tone signal corresponding to a depressed one of said plurality of keys;

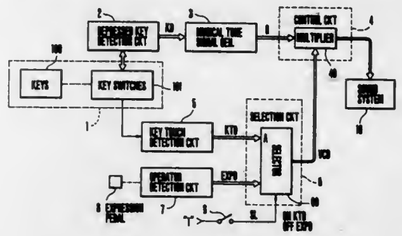
a key touch detector for generating a key touch signal concerning a key depression operation of said depressed key;

an operator member for controlling musical tone characteristics of said musical tone signal;

operator detection means for generating an operator detecting signal concerning said operator member when it is operated;

designating means, controlled separately from said operator detection means, for designating one of said key touch signal and said operator detecting signal to be suppressed;

suppression circuit means for suppressing the signal designated by said designating means, an output resultant from the combination of the designated signal suppressed by



said suppression means and the non-designated other of said key touch and operator detecting signals being used to modify said musical tone signal outputted from said tone signal generating means; and

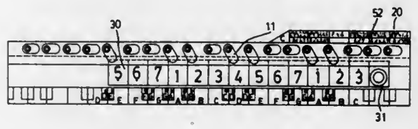
a sound system for producing a musical tone corresponding to said modified musical tone signal.

4,552,052

MODULATION RULE

Chung-Yang Lee, 4th Fl., No. 8, Chung-Yang Rd., Hsin-Tien, Taipei Hsien, Taiwan

Filed Aug. 21, 1984, Ser. No. 642,818
Int. Cl.⁴ G09B *15/02*
U.S. Cl. 84—473 **5 Claims**



1. A modulation rule capable of indicating the scale of a given keynote, which comprises:

a first member including a first portion provided with first divisions, said first divisions being marked with a key or a pair of enharmonic keys and an indication of the notes that should be lowered or raised at said key or pair of enharmonic keys;

a second portion located under said first portion, said second portion being marked with a keyboard having whole-tone keys and semitone keys arranged in a similar manner to that of a keyboard musical instrument;

each of said first division having a whole-tone key corresponding to each whole-tone key of said keyboard;

a third portion disposed between said first portion and said second portion, said third portion having a plurality of adjustable indicating elements provided thereon and positioned to correspond to said whole-tone keys of said keyboard, said indicating element being capable of being adjusted to provide a visual indication of whether the note of the corresponding whole-tone key thereto should be raised or lowered;

a fourth portion; and

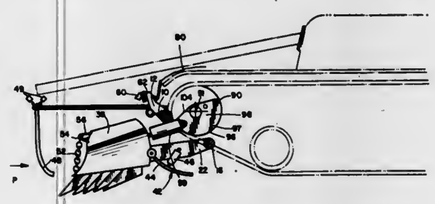
a second member movably mounted on said fourth portion and marked with second divisions, said second divisions align with said first divisions respectively, each of said second divisions being marked with one numeral note of the diatonic scale such that when said second member is moved to a position where a certain second division is aligned with a first division marked with the given key, and said indicating elements are adjusted to provide the visual indication, the scale and positions of notes according to the scale of the given key are shown by the rule.

4,552,053

MINEFIELD CLEARING APPARATUS

Simcha Bar-Nefy, Omer, and Michael V. Tiomkin, Beer-Sheva, both of Israel, assignors to Israel Aircraft Industries, Ltd., Lod, Israel

Filed May 19, 1983, Ser. No. 496,164
Claims priority, application Israel, May 19, 1982, 65824
Int. Cl.⁴ F41H *11/12*
U.S. Cl. 89—1.13 **4 Claims**



1. Apparatus for clearing mines comprising:

a frame mountable onto a tank for selectable positioning in a raised or lowered orientation;

apparatus mounted onto said frame for raising and shunting aside mines including a plow portion and a plurality of vertically disposed blades which during operation are disposed below the ground surface and are operative to raise mines buried in the ground, said blades having the tendency to dig deeper and deeper into the ground surface unless restrained;

a gliding surface supporting said frame in its lowered orientation, for operation of said plow portion and disposition of said blades below the ground surface, said gliding surface being disposed rearwardly of said plow portion and plurality of blades;

hydraulic positioning means for governing the orientation of said gliding surface relative to said frame; and

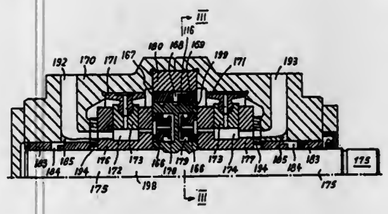
a ground surface sensor mounted on said tank and providing control instructions to said hydraulic positioning means for maintaining the blades at a predetermined operating depth relative to the ground surface.

4,552,054

RADIAL PISTON MACHINE, EMPLOYING A MEDIAL ROTOR BEARING

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Division of Ser. No. 282,990, Jul. 14, 1981, abandoned, and Ser. No. 232,935, Feb. 9, 1981, abandoned, which is a division of Ser. No. 911,246, May 31, 1978, abandoned, and Ser. No. 910,809, May 30, 1978, abandoned. This application Jan. 31, 1984, Ser. No. 575,621
Int. Cl.⁴ F01B *13/06*
U.S. Cl. 91—492 **4 Claims**



1. A radial chamber machine,

wherein fluid flows through the individual working chambers of a plurality of working chamber groups which are provided in at least one rotor, while said rotor is revolvingly borne in a housing,

wherein said rotor includes at least one pair of working chamber groups and a medial rotor portion between the two groups of said pair of working-chamber groups,

wherein a radial bearing is provided on said medial portion of said rotor and kept in said housing to carry the major portion of the radial load of said rotor,

wherein said medial rotor bearing forms a fluid bearing,

wherein said fluid bearing includes an outer body provided and borne in said housing, which forms an inner face and said medial rotor portion is associated to an outer face,

wherein said faces are cylindrical faces of substantially equal diameters but are provided with a respective clearance between then to permit said linner face to revolve in said outer face, while fluid is passed into said clearance to provide the bearing of said inner face on a fluid film between said faces,

wherein a bearing sleeve is provided around said medial rotor portion to be located between said inner face and said medial portion and to form on the outer periphery of said sleeve said outer face, and;

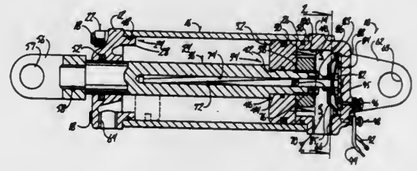
wherein said outer face is interrupted by a plurality of fluid pressure pockets, which extend into said sleeve, which are communicated to respective spaces of respective pressure of the machine, and which are equal in number to the number of said working chambers in one of said working chamber groups whereby said pockets form with surrounding portions of said outer face, which comprise sealing lands, a plurality of individual hydrostatic bearings, corresponding in number to the number of said working chambers in one of said working chamber groups.

4,552,055

POWER CYLINDER WITH INTERNALLY MOUNTED POSITION INDICATOR

W. John Foxwell, Troy, Mich., assignor to Prince Manufacturing Company, Sioux City, Iowa

Division of Ser. No. 232,844, Feb. 9, 1981, Pat. No. 4,386,552, which is a continuation-in-part of Ser. No. 159,735, Jun. 16, 1980, abandoned. This application Jun. 6, 1983, Ser. No. 501,638
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.⁴ F01B *25/26*
U.S. Cl. 92—5 R **17 Claims**



1. An improvement in a power cylinder assembly comprising an elongated cylinder having opposite ends, end cap means closing off said opposite ends of said cylinder, a piston and rod assembly mounted in said cylinder for longitudinal reciprocating movement therein, said piston and rod assembly including a piston and a piston rod affixed to said piston; said improvement comprising:

an elongated cam rod having a camming surface thereon;

mounting means connected to said cam rod for holding said cam rod against longitudinal movement within said cylinder and for permitting rotational movement of said cam rod;

at least one camming element carried by said piston and rod assembly, said camming element being in cooperative

engagement with said camming surface of said cam rod for causing rotation of said cam rod about its longitudinal axis to a plurality of rotational positions corresponding to the longitudinal position of said piston and rod assembly in response to reciprocating longitudinal movement of said piston and rod assembly relative to said cam rod;

rotary potentiometer means mounted within said cylinder and having a rotary wiper element adapted to rotate to a plurality of positions for providing a variable resistance;

mechanism drivingly interconnecting said cam rod to said wiper element for causing said wiper element to rotate to a plurality of positions in response to rotation of said cam rod;

said piston rod including an interior bore formed therein and extending along the longitudinal axis thereof, said cam rod having one end thereof extending into said bore for telescopic sliding movement therein;

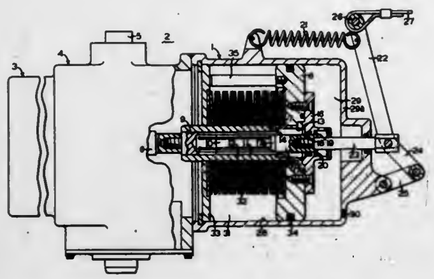
said rotary potentiometer means being positioned completely within said cylinder and being located completely externally of said interior bore of said piston rod.

4,552,056

MANUAL RELEASE AND AUTOMATIC RESET ARRANGEMENT FOR SPRING-APPLIED/AIR-RELEASED BRAKE

Albert A. McKay, Stoney Creek, Canada, assignor to WABCO Ltd., Hamilton, Canada

Filed Dec. 24, 1984, Ser. No. 686,051
Int. Cl.⁴ F01B *9/00, 31/00*
U.S. Cl. 92—29 **12 Claims**



1. A spring-applied, fluid pressure released emergency/parking brake unit comprising:

(a) a cylinder;

(b) a piston operably disposed within said cylinder for axial movement therein;

(c) an actuating spring arranged in said cylinder to exert a force on said piston in a brake application direction;

(d) said cylinder including an end wall, said cylinder and said end wall cooperating with said piston to form a chamber pressurization of which exerts a counteracting force on said piston in a brake release direction;

(e) a push rod connected at one end to said piston, said push rod having a first stepped bore there through in which a first shoulder is formed;

(f) an actuating rod disposed in said first stepped bore having one end projecting from said push rod and the other end forming a flexible sleeve, said sleeve having an outturned lug engageable with said first shoulder, the engageable surfaces between said first shoulder and said lug having an angle of inclination with the axis of movement of said piston so as to exert an inwardly acting force on said flexible sleeve when said piston is actuated in said brake release direction;

(g) a cylindrical plug member carried by said piston and having a normal position in which at least one end thereof is disposed within said flexible sleeve to support said sleeve against deflection in response to said inwardly acting force exerted thereon, thereby maintaining said lug engageable with said first shoulder, whereby the force of said actuating spring is transmitted to said actuating rod via said first shoulder and said lug; and

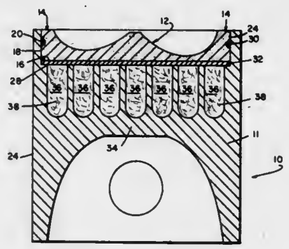
(h) manual release means connected to the other end of said plug member for axially displacing said lug member from said normal position to a release position without said flexible sleeve member to permit said deflection of said flexible sleeve member sufficiently to disengage said lug from said first shoulder and thereby interrupt said transmission of said spring force to said actuating rod.

4,552,057

THERMALLY INSULATED PISTON

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 30, 1983, Ser. No. 567,193
Int. Cl.⁴ F04B *31/08*
U.S. Cl. 92—176 **15 Claims**



1. A piston comprising:

(a) a cap portion having an outer surface and an inner planar and a periphery surface extending from said inner surface to said outer surface, said periphery surface having a brazing alloy receiving groove therein,

(b) a body portion having a substantially circular periphery, said body portion having a recess for receiving said cap portion, said recess having a first surface opposing said inner planar surface of said cap portion, said body portion and said cap portion being joined together by a first brazing alloy positioned in said groove and by a second brazing alloy positioned between said inner planar surface of said cap and said first surface of said recess, said body portion having a cellular portion adjacent to said second brazing alloy comprised of open-ended cells filled with a thermal insulating material said cells being closed by said brazing alloy and said cap portion.

4,552,058

AIR FLOW CONTROL SYSTEM HAVING MINIMUM VARIATION IN VOLUME

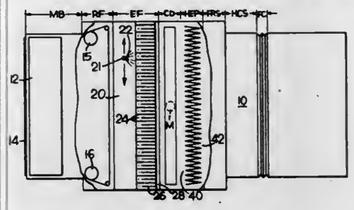
James E. Wooldridge, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 21, 1983, Ser. No. 553,797
Int. Cl.⁴ B64D *13/00*
U.S. Cl. 98—1.5 **10 Claims**

1. In an air volume control ventilation system having a fan (11) for supplying air through ductwork and fixed-resistance filter means (RF,EF) including an electrostatic filter;

a variable resistance control damper (CD) in said system, said control damper including an actuator (M) adapted when energized in first and second directions, respectively, to operate said control damper in opening and in closing directions to increase and to decrease the volume of air flowing in said system, respectively, and thereby adjust the system differential pressure; and

means for monitoring the static pressure differential across said fan including a differential pressure switch (PDPS) connected across said fan having high limit normally open contacts and an air volume increasing relay means (A1) having an operating coil in series with said high limit contacts and with a pair of normally open contacts (A) in parallel with said high limit contacts for completing a first circuit to actuate said control damper in said opening direction when said static pressure differential rises to a



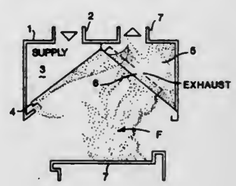
first predetermined limit, and means including a low limit normally open contact which closes only when said static pressure differential falls below a second predetermined limit for completing a second circuit to actuate said control damper in said closing direction to close said damper when said differential pressure decreases below said second predetermined limit.

4,552,059

FLOW MEASUREMENT FOR EXHAUST-TYPE CANOPY AND VENTILATING HOOD

Gary J. Potter, Marthasville, Mo., assignor to Cambridge Engineering, Inc., St. Louis, Mo.

Filed Sep. 18, 1984, Ser. No. 651,795
Int. Cl.⁴ F24C *15/20*
U.S. Cl. 98—115.1 **5 Claims**



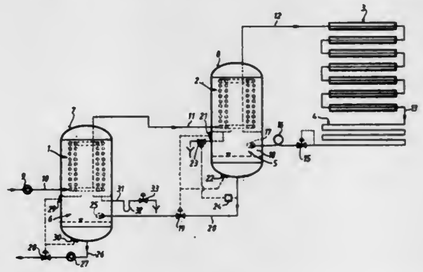
1. A ventilating hood for use in conjunction with a processing apparatus such as a cooker or the like and for attaining through a precalibration of the hood to achieve a most effective ventilation of the fumes and air generated in the region of such a cooker, comprising, a housing, a supply chamber and an exhaust chamber operatively associated with the housing, a supply inlet communicating with said supply chamber for conveying fresh air to the housing, an exhaust outlet also communicating with the exhaust chamber for removing the combined air and fumes passing through the housing and from the region of the cooker apparatus, pressure calibration means operatively associated with at least one of said supply chamber and exhaust chamber and when operative providing means for detecting the pressure drops within the housing and for a determination of the setting required for the capacity of supply or exhaust air flows required for a balanced operation of the ventilating hood, said calibration means including a manometer which when connected with one of said supply chamber and exhaust chamber providing for a reading of the pressure drop resulting from air passing through said chambers, said manometer incorporating a pair of pressure sensors for detecting air pressures at two discrete locations, one of said sensors being connected at one location within one of the supply chamber and exhaust chambers, and with the second of said sensors being installed at a remote location from the first mentioned sensor for sensing air pressure to determine pressure variations in the air flow with respect to one of said supply chamber and exhaust chamber.

4,552,060

APPARATUS FOR THE CONTINUOUS BOILING OF WORT

Simon Redl, Dr. George-Schranner-Str. 6, D-8309 Reichertshausen, and Alfons Wolfseder, Blumenstr. 13, D-8050 Freising, both of Fed. Rep. of Germany

PCT No. PCT/DE84/00026, § 371 Date Sep. 10, 1984, § 102(e) Date Sep. 10, 1984, PCT Pub. No. WO84/03101, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 1, 1984, Ser. No. 650,514
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303671
Int. Cl.⁴ C12C *13/04*
U.S. Cl. 99—278 **8 Claims**



1. Apparatus for the continuous boiling of wort, containing

(a) at least one recuperative heat exchanger for raising the temperature of the wort,

(b) at least one further heat exchanger for raising the temperature of the wort to a boiling temperature higher than 100° C.,

(c) a heat maintaining zone,

(d) at least one separator for depressurisation and lowering of the temperature of the wort and for separating off the vapour,

(e) the vapour being delivered to the recuperative heat exchanger as heating medium,

characterised in that

(f) the separator (6 or 5) and the recuperative heat exchanger (1 or 2 respectively) are combined into one structural unit (7 or 8 respectively).

4,552,061

TRASH COMPACTOR SYSTEM

James W. Brutsman, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,704
Int. Cl.⁴ B30B *15/06*
U.S. Cl. 100—53 **7 Claims**

1. A waste disposal system for receiving and compacting trash deposited by a user comprising:

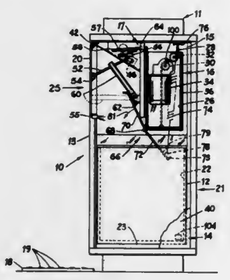
(a) a system frame having an upper and a lower portions and support means associated with the lower portion of said frame for supporting a waste container;

(b) a compactor unit having a ram means adjacent to the waste container, a guide chain attached at one end to said upper portion of said frame and at its opposite end to said lower portion of said frame, a sprocket engaging said chain rotatably mounted on said ram means, means for rotating said sprocket in either rotational direction, a chain follower mounted adjacent to said sprocket on said ram means, said follower brushing said chain on said sprocket so that upon rotation of said sprocket said ram means is moved in a compactor cycle towards and away

from said support means to compact waste in the waste container on said support;

(c) a waste deposit door located in said frame for permitting access to said container on said support;

(d) switch means activated by a user; and



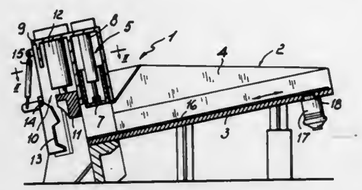
(e) control means for automatically opening said door when said switch means is activated by a user, said control means including timer means responsive to said switch means being activated for imitating operation of the compactor unit towards said support at a predetermined time period after said switch is activated by the user.

4,552,062

SCRAP METAL PRESS FOR PRODUCING COMPACTED SCRAP BLOCKS

Luciano Vezzani, Ovada, Italy, assignor to Officine Vezzani S.p.A., Milan, Italy

Filed Aug. 5, 1983, Ser. No. 520,671
Claims priority, application Italy, Sep. 27, 1982, 23450 A/82
Int. Cl.⁴ B30B *9/32*
U.S. Cl. 100—95 **4 Claims**



1. A scrap metal press for producing compacted scrap blocks comprising:

an inclined feed box having a lowermost end portion and an uppermost opposite end portion and defining a scrap metal advance direction pointing from said uppersmost opposite and portion towards said lowermost end portion;

said inclined feed box having a fixed supporting bottom;

at least one compacting unit located at the lowermost portion of said feed box;

said compacting unit acting in a direction substantially transverse to the scrap metal advance direction;

a guillotine shears unit for separating the compacted scrap blocks; and

a plate resting on said bottom in slidable relationship therewith, means for at least temporarily reciprocating said plate at least in the scrap metal advance direction of said feeder box,

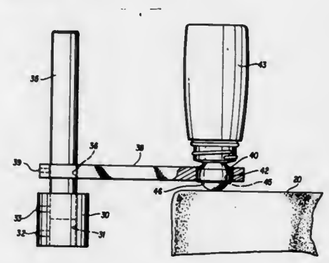
said means comprising a rotable off-center pin having a rotation axis perpendicular to said bottom and said plate and rotably engaging said plate.

4,552,063

LINE CODER SELF-INKING SYSTEM WITH DISPOSABLE INK SUPPLY RESERVOIR

James C. Bronson, P.O. Box 372, Lakeland, Fla. 33802

Filed Nov. 19, 1984, Ser. No. 673,055
Int. Cl.⁴ B41F *17/26*
U.S. Cl. 101—35 **5 Claims**



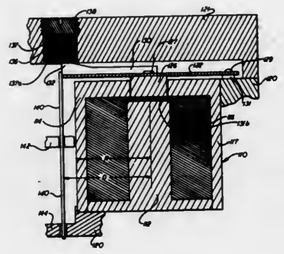
1. In combination with an a first arm carrying a rotatably mounted printing roller, said arm being mounted by support means adjacent to a conveyor which carries articles that engage the printing roller, and a rotatably mounted inking roller reservoir carried by said arm and in continuous engagement with said printing roller for continuously transferring ink thereto in response to rotation of said rollers caused by engagement of said printing roller with articles passing along said conveyor, the improvement comprising, means for continuously replenishing the supply of ink in said reservoir including post means mounted on said support means, a second arm mounted on said post means above said first arm and having a portion in fixed position spaced from said reservoir, an ink supply container removably mounted on said second arm and having a discharge outlet, said discharge outlet having wall structure carrying a ball which extends beyond said wall structure, said ball extending into engagement with the surface of said reservoir whereby rotation of said reservoir causes a feed of ink from the container to the reservoir by means of the ball, which feed is proportional to the rotation of said marking wheel.

4,552,064

DOT MATRIX PRINTERS AND PRINT HEADS THEREFOR

Royden C. Sanders, Jr., Burton Hwy., Wilton, N.H. 03086, and John L. Forsyth, Box 182, Newton Junction, N.H. 03851

Continuation-in-part of Ser. No. 436,950, Oct. 27, 1982, , and a continuation-in-part of Ser. No. 519,880, Aug. 2, 1983. This application Oct. 21, 1983, Ser. No. 544,397
Int. Cl.⁴ B41J *3/12*
U.S. Cl. 101—93.05 **14 Claims**



1. A print head for use in a multihead printing array comprising:

a solenoid case including a sidewall and a pair of opposed

bases axially aligned on and connected with said sidwall, one of said bases having an aperture formed therein, said case being made of a magnetically permeable material,

a core of magnetically permeable material defining a solenoid axis and extending within said case from the non-apertured base to a point adjacent the apertured base, said core defining a pole surface exposed to the exterior of the case by way of said aperture,

a solenoid coil disposed in said case about said core,

a beam, having a mounting end and a print pin support end,

means rigidly mounting said mounting end of said beam relative to said case to overlie said aperture,

an armature mounted to said beam, extending into said aperture and defining a pole surface positioned to form a working magnetic gap with said pole surface of said core, and

a straight print pin rigidly attached to the print pin support end of said beam and extending substantially parallel to the axis of said solenoid, whereby movement of said beam and attached armature toward said solenoid moves said print pin substantially parallel to said axis for printing motion thereof, and

a damper disposed to damp recoil energy of said beam, armature and print pin,

said beam having a resilient portion disposed between said rigid mounting and said armature and being rigid from said armature to said print pin, and

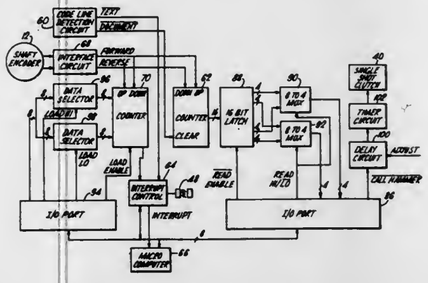
said damper comprising a resilient damper plug provided with means for adjusting the position of the damper relative to the beam and with means between the damper plug and the adjusting means which permits the damper plug to rotate whereby said plug moves during operation to progressively change the location of impact thereon of said print pin beam assembly on recoil.

4,552,065

PRINTING IN REGISTER ON SHEETS

Donald G. Billington, Stoke on Trent; Reginald D. Brooker, Stonehouse; Harry Powell, Congleton; Roger Walker, Nantwich; David R. G. Wilkins, Wistaston, and Stuart Weaver, Whitchurch, all of England, assignors to McCorquodale Machine Systems Limited, London, England

Continuation of Ser. No. 408,435, Aug. 16, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 650,989
Claims priority, application United Kingdom, Aug. 17, 1981, 8125048; Mar. 3, 1982, 8206220
Int. Cl.⁴ B41J *1/48, 13/26*
U.S. Cl. 101—93.33 **6 Claims**



1. Apparatus for printing a line of characters in a desired print line location on each of a series of sheets so that the resulting printed line of each sheet is registered with respect to a feature of the sheet, comprising:

means defining a flow path for the sheets;

a printing station located at a predetermined point along the flow path and comprising impact printing means including individually rotatably adjustable print wheels mounted on a common shaft, the axis of which is transverse and fixed with respect to said flow path, each print wheel having a plurality of character faces spaced around its periphery and individually selectable by rotation of each wheel about the said axis to predetermined print positions, the said axis extending in a direction parallel to the required line of characters on the sheet passing through the apparatus, and a hammer to cause impact printing of a sheet against a type face whereby the print wheels together print a line of characters, one for each wheel, in a single operation, each character printed being determined by the respective rotated position of the corresponding print wheel;

means for locking the print wheels in the positions to which they have been rotated;

sheet feeding means for feeding a succession of sheets the spacing between which may vary, continuously and at a substantially constant speed along the flow path and through the printing station,

sensing means detecting the arrival of the said feature of the sheet at a given point along the flow path and providing a corresponding electric signal; and

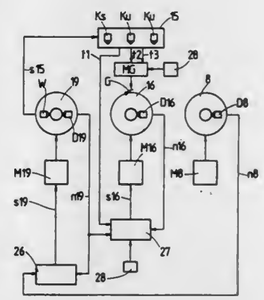
printing control means responsive to said signal from said sensing means and to the speed of travel of the sheet to initiate printing hammer firing when the desired print line location on the sheet reaches the printing station, whereby regardless of the speed of travel of, intervals between the individual sheets, or time of arrival of the sheets at the printing station, printing of a line of characters is effected by the stationary print wheels in register with respect to the said feature of the sheet without substantially changing the speed of the sheets.

4,552,066

COMBINED SHEET FED ROTARY PRINTING MACHINE FOR SECURITIES, IN PARTICULAR BANK-NOTES

Gualtiero Giori, Lonay, Switzerland, and Albrecht J. Germann, Würzburg, Fed. Rep. of Germany, assignors to De La Rue Giori S.A., Switzerland

Filed Nov. 28, 1984, Ser. No. 675,848
Claims priority, application European Pat. Off., Jul. 24, 1984, 84810368.5
Int. Cl.⁴ B41F *9/02, 13/24*
U.S. Cl. 101—152 **9 Claims**



1. Combined sheet fed rotary printing machine for securities, in particular bank-notes, comprising a first printing unit, a second printing unit formed by an intaglio printing unit, and a conveying device connecting the two printing units for transferring the sheets, said printing units each have an independent drive mechanism without a continuous longitudinal shaft, the drive mechanism of the second printing unit being controlled in dependence upon the speed of the first printing unit, a detector system mounted in the conveying zone and being equipped with measuring heads which respond to register marks applied to the sheets in the first printing unit and detect register devia-

tions in the circumferential direction and in the lateral direction, and a register correcting device, located between the detector system and the second printing unit, said device comprises a register drum and is arranged to correct the position of the sheets in dependence upon the measured register deviations.

4,552,067

ROTARY PRINTING MACHINE WITH OFFSET BEARING AND DRIVE FOR AN EXCHANGE CYLINDER

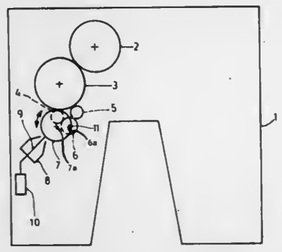
Franz X. Gollinger, Wertingen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,283

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407428

Int. Cl.⁴ B41F *13/20, 13/44*

U.S. Cl. 101—216 **10 Claims**



1. Rotary printing machine having a pair of spaced side walls **(1)**;

opening **(11)** formed in said side walls at predetermined locations to receive bearings for a plurality of printing machine rollers and cylinders **(2, 3, 4, 5, 6)**

and comprising, in accordance with the invention

means for positioning a driven exchange cylinder **(7)** between the side walls **(1)** and a position in which a replacement axis of rotation **(7*a*)** of the exchange cylinder **(7)** is offset **(x)** from the position of a bearing axis **(6*a*)** of an existing opening **(11)** in said side walls including

journal means **(12,13, 14)** fitted in said opening **(11)**;

an auxiliary shaft **(15)** rotatably secured in the journal means rotatable about the bearing axis **(6*a*)** and extending beyond the side walls at least inwardly between the side walls;

a spur gear **(16, 17)** secured to the auxiliary shaft laterally of at least one of the side walls **(1)**;

an inner, inwardly geared gear ring **(22)** meshing with the spur gear **(16)** located inwardly between the side walls,

said ring gear **(22)** being positioned with its center of rotation on said replacement axis **(7*a*)** and hence offset and eccentric with respect to the bearing axis **(6*a*)**;

a shaft **(23)** connected between the ring gear **(22)** and said replacement cylinder **(7)** concentric with said replacement axis **(7*a*)**; and

a bearing **(24, 27)** journalling said inner ring gear **(22)** and locating said inner ring gear in position on the side wall **(1)**.

4,552,068

GRAVURE CYLINDER

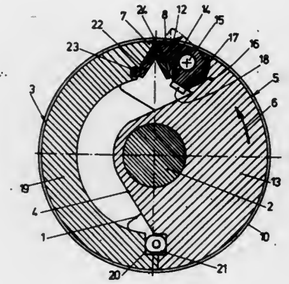
Joachim Bernauer; Joachim Dorow, both of Frankenthal, and Primin Göbel, Lambsheim, all of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Dec. 27, 1983, Ser. No. 565,344

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300678

Int. Cl.⁴ B41F *27/12*

U.S. Cl. 101—415.1 **9 Claims**



1. A gravure cylinder for a gravure printing press, said gravure cylinder having an axial shaft and being capable of accepting an intaglio wrap-on plate having an imprecise length with inwardly turned folds at the circumferential edges thereof, said gravure cylinder comprising:

(a) a first casing means in the form of a segment of said cylinder fixed in relation to the axial shaft of said cylinder and having a beaked rim structure,

(b) a second casing means which together with said first casing means forms a body with an outer cylindrical face corresponding to said cylinder, said second casing means being a plate tensioner forming generally one half of said cylinder supported on said axial shaft for pivoting movement thereabout in relation to said first casing means,

(c) an edge rail with a beaked rim structure pivotally mounted to said plate tensioner about an axis spaced radially from and parallel to said axial shaft, said edge rail having an outer surface being co-cylindrical with said cylinder, said beaked rim structure opposing the beaked rim structure of said first casing means,

(d) means mounted on said cylinder for pivotally moving said plate tensioner to reposition the beaked rim structure thereof circumferentially with respect to the beaked rim structure of said first casing means to thereby accommodate wrap-on plates on said cylinder of imprecise lengths,

(e) a gripping rail associated with each beaked rim structure for gripping each associated fold of said intaglio plate, each said gripping rail being pivotably mounted so as to grip the associated fold of said plate between said beaked rim structure and said gripping rail, each gripping rail including a groove along the length thereof, said grooves being in complementary aligned relationship to one another, and

(f) a resilient sealing strip disposed within the complementary grooves of said gripping rails, said sealing strip and said gripping rails defining a cavity therebetween in which a filling material is inserted to seal the surface of said cylinder.

4,552,069

SMEAR-FREE TRANSFER CYLINDER FOR SHEET-FED ROTARY PRINTING MACHINES

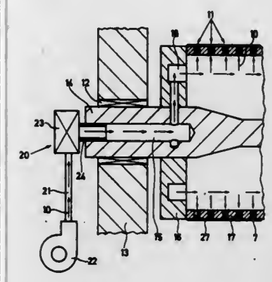
Hans-Georg Jahn, Wiesenbach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,846

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328451

Int. Cl.⁴ B41F *13/08*

U.S. Cl. 101—420 **11 Claims**



1. Smear-free transfer cylinder for sheet-fed rotary printing machines have a cylindrical casing formed with blow holes distributed over the entire sheet-carrying peripheral surface of the cylinder, comprising air distribution elements respectively disposed in the blow holes for influencing blowing air flow out of the blow holes for forming a uniform air cushion, said air distribution elements being formed of air-permeable, elastic and slightly compressible material having a low specific gravity.

4,552,070

INSULATING LAYER FOR SOLID FUEL ROCKET ENGINES

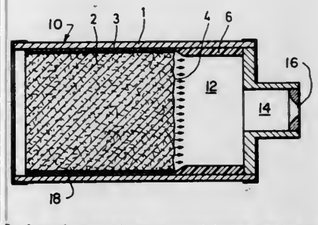
Heinz G. Langer, Gauting, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,514

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133787

Int. Cl.⁴ F42B *15/00*

U.S. Cl. 102—290 **4 Claims**



1. A solid fuel rocket engine, comprising a casing defining a combustion chamber, a solid propellant charge in said combustion chamber and a heat-responsive, expandable insulating layer consisting essentially of fibers and a hydrated alkali silicate which is free of polymer binder, which insulating layer effects an evaporating foam between said casing and said charge.

4,552,071

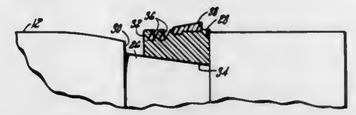
TWO-PIECE DESPIN OBTURATOR

Brian J. Horais, Huntington, Conn., and Joseph S. Kocur, Rockaway, N.J., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1982, Ser. No. 388,551

Int. Cl.⁴ F42B *31/00*

U.S. Cl. 102—527 **5 Claims**



1. A two-piece despin obturator for use on a projectile which is to be discharged from a gun barrel, said gun barrel including conventional spiraled rifling, comprising:

a ring means fabricated from a rigid material, including both an outer surface that has a raised area positioned with respect to said gun barrel to act as a high pressure seal and also an inner surface whose diameter is sized to slidably mate with a forwardly inclined surface located on the sidewall of said projectile;

wiper means positioned on said outer surface of said ring means rearwardly of said raised area, said wiper means being formed from a pliable material which engraves into the rifling of said gun barrel forming a low pressure seal; and

whereby said wiper means engraves into said rifling in said gun barrel during the ramming process for holding said projectile in place before firing, and when said projectile is fired, said raised area of said ring means acts as a high pressure seal, and at the same time said inner surface frictionally engages said forwardly inclined surface of said projectile sidewall thereby imparting some rotational velocity to said projectile.

4,552,072

INSTALLATION FOR DESTINATION ADJUSTMENT OF DESTINATION IDENTIFICATION MARKS FOR RECEPTACLES

Hans-Joachim Kardinal; Herbert Lehmann, and Klaus-Peter Dziggel, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,555

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3022130

Int. Cl.⁴ B61J *3/00*

U.S. Cl. 104—88 **15 Claims**

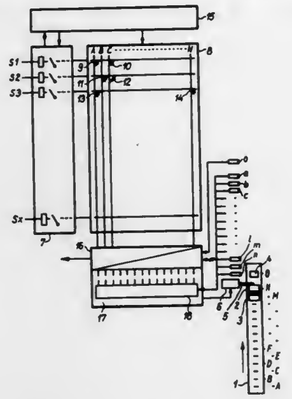
10. A code-setting system for a conveyor wherein a destination or function code is applied to a traveling unit of the conveyor upon movement of the traveling unit past a code-setting station, said system comprising:

at least one coded member shiftable in the direction of travel of said unit and provided on a side thereof facing said station, said at least one coded member being selectively positionable in one of a number of preselected positions along said unit;

a retractable code-setting member at said station aligned with said at least one coded member in said direction in an extended position whereby said code-setting member can engage said at least one coded member to dispose the same at a preselected position on said unit whereby said unit moves past the code-setting member while said code-setting member is extended to selectively position said at least one coded member;

position detecting means at said station and on said unit for signaling each of a plurality of relative positions between said unit and said station as said unit passes said station; and

means responsive to said position detecting means for actuating said code setting member to retract the code setting member upon positioning of said at least one coded member in said



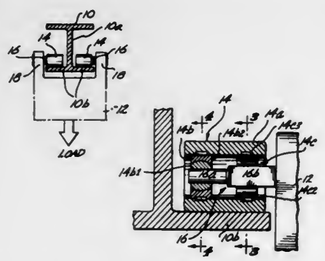
one preselected position along said unit corresponding to the respective detected relative positions of said unit to said station.

4,552,073

SUSPENDED LOAD TRANSPORT APPARATUS

Glenn S. Smith, Issaquah, Wash., assignor to Beebe International, Inc., Seattle, Wash.

Filed Feb. 23, 1984, Ser. No. 582,965
Int. Cl.⁴ B61B *3/00*
U.S. Cl. 105—154 **10 Claims**



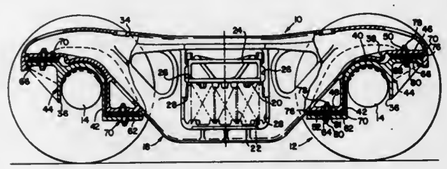
1. A monorail crane carriage adapted to run on the lower web-supported flanges of a generally horizontal H-beam, said carriage including a frame supported by and supporting load-bearing rollers mounted respectively on coaligned opposing support shafts which are frame-cantilevered to project inboard transversely in relation to the beam web, said rollers each comprising annular tread means with relatively inboard and outboard portions having cylindrical tread surfaces in running engagement with an H-beam lower flange, and separate anti-friction bearing means for each roller rotatively supporting the respective inboard and outboard portions of said tread means on a shaft, one such separate bearing means comprising resiliently carriage load-compressed support means interposed between the associated tread means portion and the shaft permitting rocking of such tread means portion accompanied by translational yielding thereof in relation to the shaft for maintaining running contact with the flange of the tread surface of such portion over its full length as flange deflection changes with varying carriage load.

4,552,074

PRIMARY SUSPENSION FOR RAILROAD CAR TRUCK

Harry W. Mulcahy, Griffith, Ind.; Dimitris Garivaltis, Chicago, Ill.; Stanley Karbowniczek, Chicago, Ill., and Horst T. Kaufhold, Chicago, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 21, 1983, Ser. No. 553,824
Int. Cl.⁴ B61F *5/26*
U.S. Cl. 105—224.1 **4 Claims**



1. A railway vehicle truck comprising
a pair of longitudinally extending and laterally spaced side frames, a pair of transversely extending and lengthwise spaced wheel sets each having a wheel axle, means for mounting said side frames on said wheel axles so that said truck assumes a normal rectangular position, said mounting means including a pair of elastomeric pads stressed in shear and disposed between said side frames and said axles on opposite sides of each of said respective axles for applying opposing forces on said respective axles to yieldingly resist yaw, longitudinal and lateral movements of axle relative to said side frame thereof while permitting turning of said axles relative to said side frames when said truck traverses curved tracks, one of said pads prestressed lengthwise in one direction and the other of said pads prestressed lengthwise in the opposite direction to create equal and opposite shear forces acting on said axle when said truck assumes a normal rectangular position.

4,552,075

SECURE CONTAINER, FOR EXAMPLE FOR BANKNOTES

Peter Glasson, Portsmouth, and John Wood, Hampshire, both of England, assignors to De La Rue Systems Limited, London, England

Filed Jun. 2, 1983, Ser. No. 500,437
Claims priority, application United Kingdom, Jun. 4, 1982, 8216326
Int. Cl.⁴ E05B *65/46*
U.S. Cl. 109—52 **4 Claims**



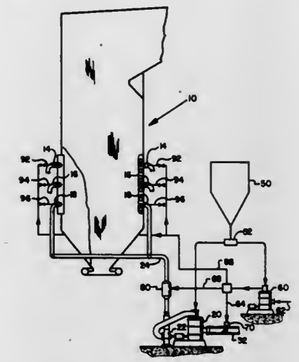
1. A secure container including a casing having an aperture, a closure device and closure-operating means for moving the closure device to cover or uncover the aperture, and actuating means for engagement by a releasing member forming part of a dispensing, loading or unloading apparatus as the container is inserted into the apparatus, the container further comprising;
a locking member mounted in the container and movable between a withdrawn position in which it lies entirely within the casing of the container and a locking position in which a part of the locking member projects through an opening in the casing of the container and prevents withdrawal of the container from the apparatus;
spring means urging the locking member towards one of its said positions;
means controlled by the actuating means for moving the locking member against the spring means to the other of its said positions;
and a lost-motion connection means coupling the actuating means to the closure-operating means for moving, the locking member to its locking position before the closure device is moved by the actuating means, through the closure-operating means, to its uncovering position, and on removal of the container from the apparatus for moving the locking member to its unlocking position after the closure-device has been restored to its covering position.

4,552,076

COAL FIRED FURNACE LIGHT-OFF AND STABILIZATION USING MICROFINE PULVERIZED COAL

Michael S. McCartney, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 19, 1984, Ser. No. 673,051
Int. Cl.⁴ F23D *1/00*
U.S. Cl. 110—347 **2 Claims**



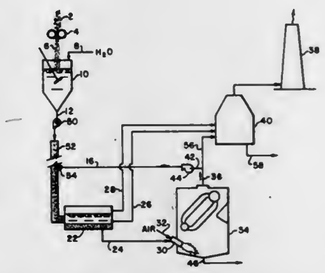
1. A method for the cold start of a pulverized coal-fired furnace system of the type having furnace, a load-carrying burner arranged to direct a stream of pulverized coal and air into the furnace, a load-carrying coal drying and pulverizing mill for providing dried pulverized coal, and conduit means interconnecting the load-carrying mill to the load-carrying burner for conducting the stream of pulverized coal and air from the load-carrying pulverizer to the load-carrying burner, said method comprising:
a. providing a supply of microfine pulverized coal having a mean particle size less than about 10 microns;
b. combusting a first portion of said supply of microfine pulverized coal to generate a supply of hot gas;
c. passing the supply of hot gas generated by the combustion of the first portion of said supply of microfine pulverized coal to the load-carrying mill;
d. supplying raw, coal to be pulverized to the load-carrying mill;
e. pulverizing and drying the raw coal supplied to the load-carrying mill and entraining the resultant pulverized coal therein in the hot gas;
f. conveying the pulverized coal and hot gas from the load-carrying mill through the conduit means to the loading-carrying burners; and
g. igniting the stream of pulverized coal and gas being directed from the load-carrying burner into the furnace thereby establishing a flame within the furnace by combusting a second portion of said supply of microfine pulverized coal in an igniter burner operatively associated with the load-carrying burner so as to cause the subsequent ignition of the stream pulverized coal and gas being directed from the load-carrying burner into the furnace.

4,552,077

INTEGRATED COAL CLEANING PROCESS

Donald C. Borio, New Britain; Richard W. Borio, Somers; Gilbert L. Hale, Granby, all of Conn.; Arun K. Mehta, Los Altos, Calif., and Arnold L. Tyler, Torrington, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 27, 1984, Ser. No. 625,271
Int. Cl.⁴ F23G *5/04*
U.S. Cl. 110—347 **2 Claims**



1. A process for beneficiating a sulfur-bearing coal, comprising the steps of:
comminuting said coal and combining the comminuted coal with water to form a neutral liquid-solid slurry;
pumping the neutral slurry into a conduit for transporting the comminuted coal from a first location to a second location;
injecting an SO_2-bearing gas into the conduit upstream of the second location to form an acidic liquid-solid slurry, said acidic slurry having a pH of 5 or less;
separating, upon arrival at the second location, the liquid portion of said acidic slurry containing any alkali metals dissolved from the comminuted coal from the solid portion of said acidic slurry containing the now-beneficiated coal;
combusting the beneficiated coal in air, oxidizing the sulfur present therein, thereby generating an SO_2-bearing gas; and
using a portion of the SO_2-bearing gas generated by the combustion step for the step of injecting an SO_2-bearing gas into the conduit.

4,552,078

PROCESS AND INSTALLATION FOR RECYCLING SOLID UNBURNT MATERIALS IN A FLUIDIZED BED

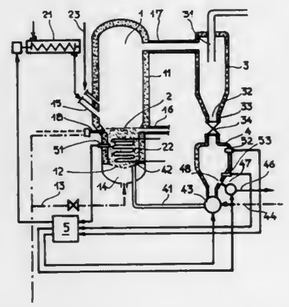
Jean-Xavier Morin, Le Creusot, and Gérard Chrysostome, Montchanin, both of France, assignors to Creusot-Loire, Paris, France

Filed Dec. 1, 1983, Ser. No. 556,870
Claims priority, application France, Dec. 8, 1982, 82 20546
Int. Cl.⁴ F23D *1/00*
U.S. Cl. 110—347 **7 Claims**

1. Process for supplying with combustible material a fluidized bed combustion installation comprising a vessel (1) having therein a fluidized bed for the combustion of a combustible material producing smoke, conduit means (17) for evacuating said smoke carrying along solid particles containing unburned matter, a device (3) for separating out said solid particles carried along by said smoke, and a circuit (41) for recycling to said fluidized bed said solid particles recovered in said separating device, said process comprising two alternating phases for supplying said fluidized bed with combustible material, viz.,
(1) a first phase of normal operation in which said fluidized bed is supplied with combustible material at an adjustable flow rate by supply means (21) so as to produce a predetermined temperature in said fluidized bed, and during which said solid particles recovered in said separating

device (3) are accumulated in a reverse silo (4), said recycling circuit being closed, and

(2) a second periodic recycling phase during which supply from said supply means (21) is halted and said recycling circuit (41) is opened, in order to recycle to said fluidized bed said solid particles accumulated in said reserve silo (4) during said first phase, recycling being so regulated that the combustion of said unburnt matter contained in said solid particles maintains the temperature of said fluidized bed at a desired level, said recycling circuit (41) being



closed as soon as said temperature can no longer be maintained at said level, the accumulated particles being removed during a period sufficiently small not to cause a drop in temperature of said fluidized bed below a predetermined limit, whereupon normal first phase operation resumes;

(3) an exothermic reaction being maintained alternatively by combustion of said combustible material in said first phase and by combustion of said unburnt matter in said second phase.

4,552,079

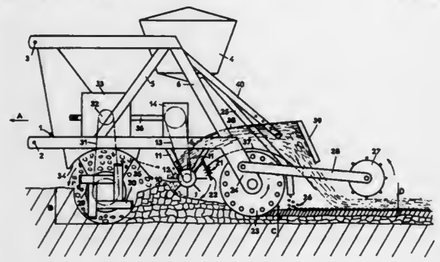
MACHINE FOR PLANTING SEEDS

Anton Werner, Saverne, France, assignor to Kuhn S.A., Saverne, France

Continuation of Ser. No. 410,863, Aug. 23, 1982, abandoned, which is a continuation-in-part of Ser. No. 125,217, Feb. 27, 1980, abandoned. This application Dec. 15, 1983, Ser. No. 562,028

Int. Cl.⁴ A01C *5/00*

U.S. Cl. 111—85 **8 Claims**



1. A machine movable in a forward direction over a ground, and operable for planting seeds into the ground,

comprising in combination

break-up means positioned forwardly for breaking up the ground,

soil conveyance means including a soil lifting device disposed rearwardly of said break-up means operative for moving and lifting a top layer of soil off the thus broken ground, so that a lower layer of the ground is uncovered,

said soil lifting device comprises a plurality of tools, rotatable about an axis transverse to said forward direction,

tamping means located rearwardly of said soil lifting device and including a tamping roller rotatable about an axis transverse to said forward direction, said tamping roller being adapted for providing a tamping of the uncovered lower layer free of any of the top layer immediately previously removed from the soil by said soil conveyance means,

seed emplacement means for placing seeds on the tamped lower layer;

said soil conveyance means conveying the lifted soil upwardly and so as to deposit it on the ground to the rear of said seed emplacement means, and

compacting means rearwardly of said tamping means, for compacting the deposited covering layer, whereby the lifted soil is deposited in the form of a loose-consistency covering layer onto the tamped layer, and onto the seed placed on the tamped surface.

4,552,080

CLOTH CUTTING DEVICE IN BUTTON-HOLE SEWING MACHINE

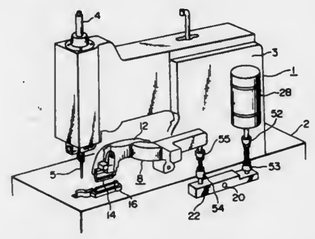
Hiroshi Miyazaki, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,893

Claims priority, application Japan, Apr. 30, 1982, 57-72937

Int. Cl.⁴ D05B *3/06*

U.S. Cl. 112—68 **6 Claims**



1. A cloth cutting device for a button-hole sewing machine comprising:

a stationary knife which is fixedly secured at a position where a piece of cloth is to be placed;

a moveable knife for cooperating with said stationary knife to cut said piece of cloth;

a mechanical linkage for moving said moveable knife in a cloth cutting direction; and

an air drive unit for imparting a driving force to said linkage, said air drive unit including:

an air cylinder for driving said linkage;

control means for controlling the supply of air to said air cylinder;

an air supply pipe and an air exhaust pipe connected between said air cylinder and said control means; a pressure controller for controlling the pressure of air supplied to said control means; a first speed controller provided in said air supply pipe for adjusting the air supply speed and a second speed controller provided in said air exhaust pipe for adjusting the air exhaust speed.

2. A cloth cutting device for a button-hole sewing machine comprising:

a stationary knife fixedly secured to said machine at a position where a piece of cloth is to be placed;

a moveable knife moveably mounted on said machine for cooperation with said stationary knife to cut said piece of cloth, a mechanical linkage for moving said moveable knife in a cloth cutting direction and an air drive unit for imparting a moveable knife driving force to said linkage; said air drive unit comprising an air cylinder for driving said linkage, control means for controlling the supply of air to said cylinder, an air supply pipe and an air exhaust pipe connecting said control means with said air cylinder and speed control means for adjusting the rate of supplying air to said air cylinder to control the operating speed of the moveable knife.

4,552,081

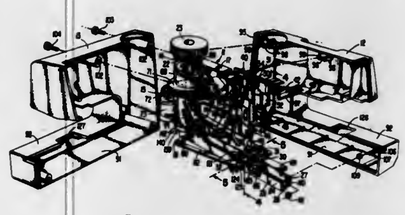
SKELETAL FRAME SEWING MACHINE

Artin G. Vartoukian, Roselle Park, N.J., and Gregoire G. Moussaian, Freneuse, France, assignors to The Singer Company, Stamford, Conn.

Filed Jun. 3, 1985, Ser. No. 740,167

Int. Cl.⁴ D05B *73/04*

U.S. Cl. 112—258 **6 Claims**



1. A sewing machine comprising a skeletal frame formed of an integral sheet metal stamping, said skeletal frame including two vertical substantially planar segments laterally spaced by a horizontal segment offset between said vertical segments, said vertical segments each being formed with a laterally offset flange spaced from said horizontal segment; a main shaft journalled in aligned bearing apertures formed in said horizontal segment and in each of said offset flanges; a sewing head module including a work presser, a needle carrying bar, a needle thread take-up, and a needle thread tensioning device; means for supporting said sewing head module on one of said planar vertical skeletal frame segments; an upwardly open U-shaped shaped shuttle race formed integrally on the other of said substantially planar vertical segments of said skeletal frame; a shuttle carrier reciprocable in said shuttle race; a work engaging feed dog; means locating and supporting said feed dog on said skeletal frame spanning said shuttle race; rotary actuators on said mainshaft; and means carried on said skeletal frame and responsive to said rotary actuators for actuating said needle carrying bar, said take-up, said shuttle carrier and said work feed dog in the formation of lock stitches.

4,552,082

OFFSHORE INCINERATION OF HAZARDOUS WASTE MATERIALS

Vincent G. Grey, R.D. 2, Box 763A, Sussex, N.J. 07461

Continuation-in-part of Ser. No. 382,769, May 27, 1982, abandoned. This application May 7, 1984, Ser. No. 607,606

Int. Cl.⁴ B63B *35/28*

U.S. Cl. 114—26 **30 Claims**



1. A method for disposing of hazardous waste material, comprising transporting said waste material to an offshore burnsite location, incinerating said waste material in an incinerator disposed at an elevation above water level at said burnsite location, and directing the effluent discharge from said incinerator in a generally horizontal stream towards the water to substantially avoid the stream being carried aloft.

4,552,083

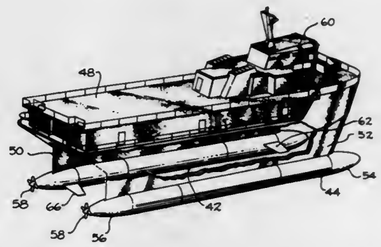
HIGH-SPEED SEMISUBMERGED SHIP MANEUVERING SYSTEM

Terrence W. Schmidt, Cupertino, Calif., assignor to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Nov. 28, 1983, Ser. No. 555,828

Int. Cl.⁴ B63B *1/12*

U.S. Cl. 114—61 **4 Claims**



1. A maneuverable small waterplane-area twin hull watercraft, comprising:

a pair of essentially tubular-shaped parallel hulls, each of said hulls including a rounded bow and a tapered stern,

a vertical strut mounted to each of said hulls for supporting an upper hull, said parallel hulls extending beyond said vertical struts,

an upper hull rigidly attached to the said vertical struts,

a propulsion means mounted on the stern of each of said parallel hulls,

and foil means mounted on the rearward portion inboard on each of said parallel hulls below the centerline of each of said parallel hulls within the length of the said strut,

said foil means being differentially moveable for maneuvering the said watercraft, and wherein said foils are angled downwardly from said parallel hulls at an angle in the range of greater than 0 degrees to 45 degrees.

4,552,084

SUCTION DREDGER

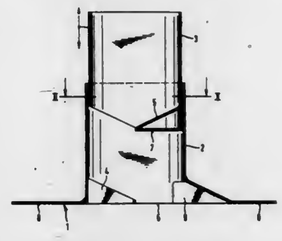
Jukka Laiterä , Turku, Finland, assignor to Oy Wärtsilä Ab, Helsinki, Finland

Filed Feb. 13, 1984, Ser. No. 579,484

Claims priority, application Finland, Feb. 28, 1983, 830656

Int. Cl.⁴ B63B *25/08*

U.S. Cl. 114—74 R **11 Claims**



1. A watercraft for receiving water and solid material produced in a suction dredging operation, the watercraft having a bottom which bounds an interior space of the watercraft, and comprising a generally vertical overflow tube connected to the bottom of the watercraft and defining a passageway for permit-

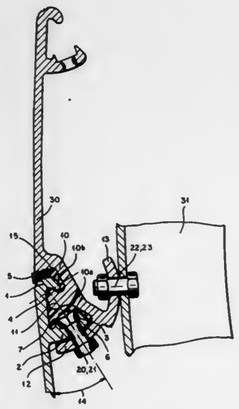
ting water to flow from said interior space downwardly out of the watercraft, said overflow tube comprising an outer tube member which has a lower end and an upper end and defines an opening and is secured rigidly at its lower end to the bottom of the watercraft, a first closure member secured to said outer tube member at the lower end thereof and partially blocking the opening defined thereby, an inner tube member which has a lower end and an upper end and defines an opening and is fitted inside the outer tube member and is movable vertically therein between a lower position and an upper position, and a second closure member secured to said inner tube member at the lower end thereof and blocking a part of the opening defined thereby that corresponds to the part of the opening of the outer tube member that is not blocked by the first closure member.

4,552,085

PLANKING ASSEMBLY AND METHOD OF MAKING SAME

Theodor Eder, Perchtolsdorf, and Jaroslav Koser, Ranshofen, both of Austria, assignors to Theodor Eder and Austria Metall Aktiengesellschaft, both of Vienna, Austria

Filed Jan. 24, 1984, Ser. No. 573,362
Claims priority, application Austria, Jan. 24, 1983, 218/83
Int. Cl.⁴ B63B *3/00*
U.S. Cl. 114—84 **12 Claims**



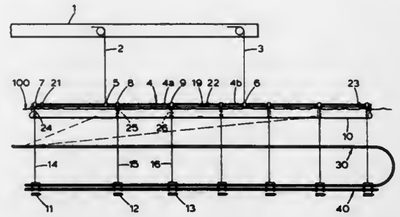
1. A planking assembly for a ship's hull, comprising a pair of doubly curved longitudinally extending planks, one of said planks being formed with a longitudinally extending outer hook, the other of said planks being formed with a longitudinally extending inner hook engaging in said outer hook over the lengths of said planks and only in line contact therewith, said hooks interengaging with angular play about a pivot axis of said inner hook, and means for holding said hooks against one another in said line contact whereby a traction-type junction is formed between said planks over the entire lengths thereof, said planks being of uniform cross section over their entire lengths, each plank being formed with an arcuate flange of circular curvature centered on said axis spaced from each hook, said flanges being juxtaposed with one another, said assembly further comprising bolt means in line with said hooks interconnecting said flanges and drawing same together to hold said hooks in line engagement with one another.

4,552,086

FLOAT ARRANGEMENT

Jan Böe, Bölandet; Tor-Arvid Haugland, Rykkin; Ole-Kristian Selvaer, Selvaer, and Atle Kleiven, Myking, all of Norway, assignors to Geophysical Company of Norway A/S, Hovik, Norway

PCT No. PCT/NO82/00048, § 371 Date May 10, 1983, § 102(e) Date May 10, 1983, PCT Pub. No. WO83/01046, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 3, 1982, Ser. No. 498,195
Claims priority, application Norway, Sep. 28, 1981, 813291
Int. Cl.⁴ B63B *21/16*
U.S. Cl. 114—242 **8 Claims**



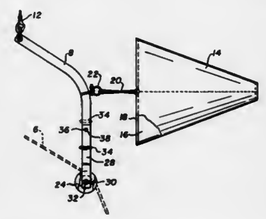
1. Float arrangement for marine seismic prospection comprising an elongate float and at least two submersible seismic sources carried thereby, said float and said seismic sources being adapted to be launched into water and lifted therefrom, respectively, as a unit by means of a hoist above the water surface, and said float being adapted to be towed on the water surface with said seismic sources suspended from the float by a respective suspension wire, further comprising at least two hoisting drums on the float and each with an associated hoisting wire from the hoist, a suspension drum on the float for each suspension wire, said hoisting drums and said suspension drums being rotationally coupled to each other and said wires being arranged in such a way on the drums that the suspension wires are reeled in when the hoisting wires are reeled off from the hoisting drums and vice versa, said seismic sources being adapted to constitute stop members for cooperation with the bottom of the float to arrest the suspension wires against continued reeling when the float is hauled in by means of the hoist, and stop means being provided for stopping said seismic sources when reeled out, at a predetermined distance below the float.

4,552,087

ANCHOR LIFTING DEVICE

Dale G. Van Oene, 305 - 165 W. 6th St., North Vancouver, British Columbia, Canada V7M 1K4

Filed Jan. 24, 1984, Ser. No. 573,484
Int. Cl.⁴ B63B *21/24*
U.S. Cl. 114—297 **7 Claims**



1. Apparatus to allow hauling of a boat anchor attached to an anchor line the apparatus comprising;
a first, elongate limb of general L-shape having an arcuate middle portion;
a sea anchor attached to the first limb generally adjacent said arcuate middle portion;

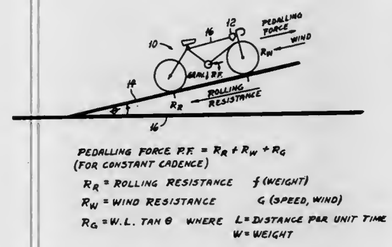
a float attached to the first limb at one end;
first and second branches formed on the first limb at the other end;
means attached to said anchor line to maintain the anchor in a raised position;
a support for the anchor line located between the first and second branches to form a recess to maintain the anchor line, one of the first and second branches adapted to move relative to the other to allow opening of the recess for introduction of the anchor line and means to retain the recess closed whereby with release of the anchor from the bottom moving the boat away from the anchor acts to haul in the anchor line as the elongate limb tends to remain in one place under the influence of the sea anchor.

4,552,088

VEHICLE GEARSHIFT INDICATOR

Thomas R. Morrison, 137 Overlook St., Mount Vernon, N.Y. 10552

Filed Sep. 23, 1981, Ser. No. 304,923
Int. Cl.⁴ G01C *9/12*
U.S. Cl. 116—28.1 **2 Claims**



1. An indicator for indicating an appropriate gear to be used by a rider of a bicycle having at least first and second gears, said bicycle being disposed on a surface having a slope, and said indicator comprising:
a bob weight;
a sector gear on said bob weight;
a pinion engaged with said sector gear;
a pointer;
a scale adjacent said pointer;
means for affixing said pointer to said pinion, said bob weight being effective to displace said pointer to a first position related to said slope; and
first and second means on said scale for indicating which of said at least first and second gears is appropriate for said slope; and
wherein said first indicating means includes a first set of gear indicators for indicating which of said at least first and second gears is appropriate for said rider to use under a first set of operating conditions, said first set of operating conditions including at least one of a first wind condition, a first desired cadence, and a first desired amount of force to be exerted during each stroke by said rider; and
wherein said second indicating means includes a second set of gear indicators for indicating which of said at least first and second gears is appropriate for said rider to use under a second set of operating conditions, said second set of operating conditions including at least one of a second wind condition, a second desired cadence, and a second desired amount of force to be exerted during each stroke by said rider; whereby said rider is guided by said scale and pointer to select the one of said at least first and second gears which is appropriate both for said slope and for the one of said first and second set of operating conditions under which said bicycle is being used.

4,552,089

ROAD WARNING EMERGENCY SYSTEM AND METHOD OF UTILIZING SAME

Thomas P. Mahoney, 5 Collins Isle, Balboa Island, Calif. 92662

Filed Oct. 14, 1983, Ser. No. 541,875
Int. Cl.⁴ G08B *5/00*
U.S. Cl. 116—63 P **8 Claims**



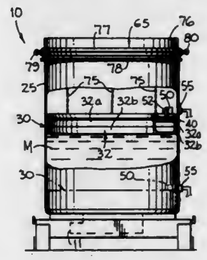
1. A reusable road hazard warning system for indicating the existence of hazardous conditions along a roadway or other surface, comprising: an elongated flexible carrier which, when not in use, is stored in a storage mode from which it can be payed out into a utilization mode on said roadway, said carrier conforming to said roadway configuration and irregularities and being disposable in coplanarity with said roadway and unattached thereto; a plurality of road warning elements normally maintained retracted when said carrier is disposed in its storage mode, said road warning elements being attached to said carrier and disposed in contiguity to said carrier in said storage mode, but being erectable therefrom when said carrier is payed out upon said roadway surface into its utilization mode; and an erecting means interposed between said carrier and said road warning elements to cause the automatic erection of said road warning elements as said carrier is payed out on said roadway surface.

4,552,090

BULK MATERIAL CONTAINER WITH A RIGID FOLLOWER

Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Filed Feb. 29, 1984, Ser. No. 584,744
Int. Cl.⁴ B65D *88/42*; G01F *23/74*
U.S. Cl. 116—204 **10 Claims**



1. A container for bulk material comprising:
(a) a shell for storing bulk material, said shell being formed with a vertical inner surface;
(b) a rigid, floatable follower disposed in said shell in constant contact with the upper surface of the bulk material stored in said shell, said follower comprising rigid members in axial alignment and a disk-shaped yieldable member secured between said rigid members for engaging continuously the inner surface of said shell; and
(c) means on said shell disposed below said follower for removing bulk material from said shell, said yieldable member being a wiper for wiping the inner surface of said shell as bulk material is removed from said shell, said rigid members being in the form of a hollow body and a plate between which said wiper is secured, one of said rigid members being formed with a curved wall at the perimeter thereof for guiding the flexing action of said yieldable

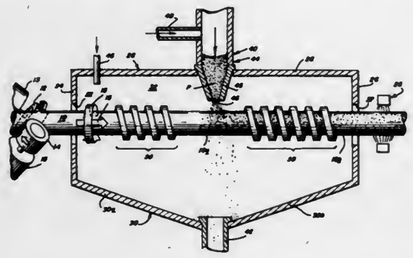
member at the perimeter thereof during the wiping of said inner surface of said shell.

4,552,091

APPARATUS FOR METALIZING METAL BODIES

Darryl Feder, 3134 Maple Leaf Dr., Glenview, Ill. 60025

Division of Ser. No. 374,282, May 3, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,268
Int. Cl.⁴ B05B *5/02*
U.S. Cl. 118—620 **11 Claims**



1. An apparatus for metalizing the exterior of an elongated metal body substrate of finite length, comprising, in combination:

a substantially enclosed treating chamber whose interior is pressurized above atmospheric pressure and filled by a nonoxidizing gas;

a first opening in said chamber through which one end of the elongated body is adapted to enter moving axially of the body, a second opening in said chamber through which the said one end of the elongated body and the body is adapted to leave the chamber, moving axially;

means for moving the entire length of said elongated body axially through said first opening into the chamber, and through the chamber, and then from said chamber outwardly through said second opening, while simultaneously rotating said body;

a first induction heating means in the chamber for locally heating the body to a first elevated temperature at which metalizing powder will adhere to the exterior surface of the substrate body by reason of the heat imparted to the body;

a second induction heating means in the chamber spaced for said first heating means and for locally heating the body to a second elevated temperature greater in degree of heat than said first elevated temperature;

metalizing powder supply means arranged to discharge therefrom, and into said treating chamber, a metalizing powder stream of powder particles entrained in a non-oxidizing gas that moves transversely to the rotating body, and to the body's direction of axial movement, so as to wash over the entire exterior surface of the portion of the body that has been heated to said first elevated temperature, leaving on the exterior of said heated body portion an adherent layer of metalizing powder before the body is subjected to said second elevated temperature; and

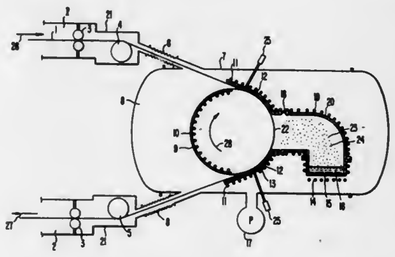
the temperature of the second elevated temperature being selected to be that at which the adherent metalizing powder layer fuses to the body.

4,552,092

VACUUM VAPOR DEPOSITION SYSTEM

Kenichi Yanagi; Toshio Taguchi; Tetsuyoshi Wada; Heisaburo Furukawa, and Kanji Wake, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 652,676
Int. Cl.⁴ C23C *13/10*
U.S. Cl. 118—718 **1 Claim**



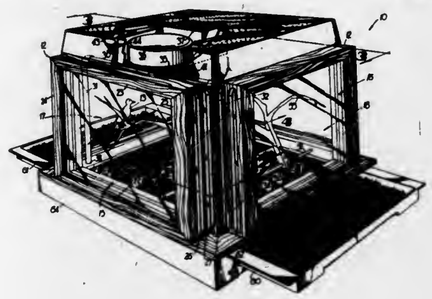
1. A vacuum vapor deposition system including a high-vacuum vapor deposition chamber provided with a rotary cell around which band steel is wound as it is passed through the chamber, a crucible for melting metal, a hood connected to said crucible for guiding vapor of said metal, a vapor deposition port of which is opposed to said rotary cell, and arcuate covers connected to said hood on a band steel entrance side and on a band steel exit side, respectively, of said vapor deposition port as spaced slightly from said rotary cell so that the covers may not come into contact with the band steel wound around said rotary cell; Characterized in that said system comprises means for heating the surface of said rotary cell up to a temperature equal to or higher than a reevaporation temperature of said metal under a vapor pressure of the vapor of said metal in the proximity of said rotary cell so that said metal may not be deposited onto the opposite end portions of said rotary cell around which said band steel is not wound, and means for heating the surfaces of said hood and said covers up to a temperature equal to or higher than a reevaporation temperature of said metal under a vapor pressure of the vapor of said metal in the proximity of said hood and said covers so that said metal may not be deposited onto said hood and said covers.

4,552,093

ANIMAL ENCLOSURE

Paul B. Puckett, Roswell, Ga., assignor to Nature's Window, Inc., Atlanta, Ga.

Filed Oct. 13, 1983, Ser. No. 541,581
Int. Cl.⁴ A01K *31/06*
U.S. Cl. 119—17 **9 Claims**



8. An improved animal enclosure, comprising:

a frame defining a three-dimensional enclosed space for the animal;

a first removable substantially transparent panel member supported in said frame and defining a slidably removable inner wall for the enclosure;

a second removable substantially transparent panel member supported in said frame adjacent to and spaced apart from said first panel member and defining a slidably removable outer wall for the enclosure,

whereby either one of said first or said second panel members can be independently removed for cleaning without removal of the other of said panel members;

a perforated top panel attached to the enclosure; and

air filter means for drawing fresh air into the enclosure and for filtering and exhausting stale air from the enclosure, said air filter means comprising:

an air inlet located within said enclosed space and positioned to draw stale air from the enclosure;

an air pump connected to said air inlet for drawing stale air through said air inlet, said air pump being operative to draw fresh air downwardly through said top panel and through the enclosure and into said air inlet;

a filter connected to said air pump for filtering stale air drawn through said air inlet; and

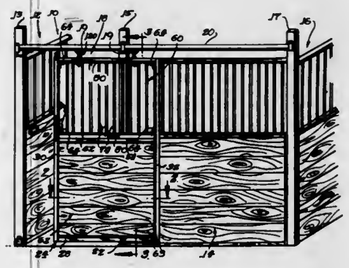
an air outlet located within said enclosure and connected to said air pump and positioned to exhaust filtered air from the enclosure.

4,552,094

HORSE STALL CONSTRUCTION

Larry Johnson, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Feb. 24, 1983, Ser. No. 469,240
Int. Cl.⁴ A01K *1/00*; E06B *3/70*
U.S. Cl. 119—27 **7 Claims**



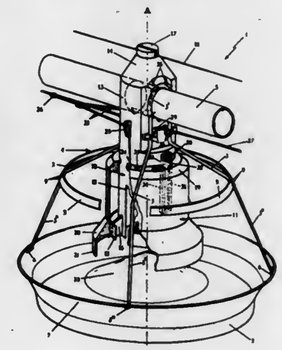
1. A construction for a door or wall of a horse stall, or the like, comprising: vertically spaced upper and lower horizontal frame members; horizontally spaced vertical side frame members coupled with said upper and lower frame members to define a rectangular frame; and panel means coupled with said lower frame member and with each of said side frame members to define a lower door portion; wherein all of said frame members comprise elongate members having substantially identical transverse, U-shaped cross sectional-dimensions; said channel members being oriented with open faces of said U-shaped cross sectional-dimensions; said channel members being oriented with open faces of said U-shaped cross sections thereof facing inwardly with respect to the rectangular frame defined thereby, and dimensioned for embracing at least outer edge portions of said panel means for defining said coupling of said panel means to said lower and said side frame members, and a pair of intermediate horizontal frame members, each comprising an elongate member substantially identical in cross-sectional configuration with said horizontal and vertical frame members, one of said intermediate frame members being oriented for embracing at least a top edge part of said panel means and the other of said intermediate frame members being oriented oppositely for facing said horizontal top frame member; grill means defining an upper door portion; and means for retaining said grill means in position intermediate said upper frame member and said intermediate frame member, said grill means comprising a plurality of vertically oriented, horizontally spaced elongate rods; and wherein said retaining means comprises a pair of elongate, U-shaped retaining channel members dimensioned for embracing and overlying the respective inwardly facing surfaces of said upper frame member and said other intermediate frame member; said retaining channel members further including a plurality of spaced apart sleeves for receiving and retaining opposite end portions of said rods.

4,552,095

FEEDING TROUGH FOR FLYING ANIMALS, PARTICULARLY TURKEYS, CAPABLE OF REGULATING THE LEVEL OF THE FEED

Ruggero Segalla, Vicenza, Italy, assignor to Sky S.p.A., Sandrigo, Italy

Filed Jun. 27, 1984, Ser. No. 625,030
Claims priority, application Italy, Jul. 13, 1983, 84950 A/83
Int. Cl.⁴ A01K *5/00*
U.S. Cl. 119—53 **9 Claims**



1. A feeding trough for the adjustment of the level of the feed for flying animals and particularly turkeys wherein each trough comprises a suspended plate (2), a plurality of arms (3) radially arranged for supporting the plate, a distributing element for the feed (4) located above the plate, which distributing element (4) is internally hollow, an horizontal tubular conduit (5) communicating with said distribution element (4), said conduit (5) transporting the feed from a silo, said distributing element (4) comprising a fixed distributing element (10) and an element for the regulation of the level of the feed (11) in the shape of a sleeve, said regulating element (11) being essentially cylindrical and moveable and being located externally to said fixed distributing element (10), said arms (3) being directly connected with said tubular conduit (5), means for moving vertically said regulating element (11) from a lower position in the proximity of the bottom of said plate to an upper position consisting of ties (2) connected through transmission elements to a main cable (27), said cable (27) being located parallel to and underneath said tubular conduit (5) and having a length corresponding thereto and a centralized actuating device (28) being connected to said tie (23).

4,552,096

SORTING GATE ASSEMBLY

William J. Forrest, 3400 NW. Expressway, Suite 740, Oklahoma City, Okla. 73112

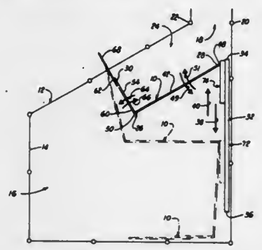
Filed Nov. 19, 1984, Ser. No. 672,940
Int. Cl.⁴ A01K *29/00*
U.S. Cl. 119—155 **16 Claims**

1. A sorting gate assembly adapted for use in cooperation with a holding pen having a holding frame retainingly sur-

rounding an animal holding space and having an exit formed through a portion thereof having a first side and a second side wherein the animal holding space is sized and shaped for accommodating at least two animals and wherein the holding frame is sized and shaped for cooperating to retainingly hold animals within the animal holding space and wherein the exit is sized and shaped to permit an animal to pass therethrough and exit from the animal holding space, the sorting gate assembly comprising:

a sorting gate having a first end and a second end; and

a gate support assembly having a first end and a second end, the first end of the sorting gate being movably connected to the gate support assembly for movement in a first direction generally toward the gate support assembly and for



movement in a second direction generally away from the gate support assembly, the gate support assembly movably supporting the sorting gate for movement of the sorting gate in a first direction generally away from the exit and for movement in a second direction generally toward the exit, the sorting gate being movable in the first direction generally away from the exit and in the second direction generally toward the exit and the sorting gate being movably connected to the gate support assembly for maneuvering the sorting gate to maneuver a selected sorted animal into an exit area portion of the animal holding space generally near the exit wherein the sorting gate cooperates with a portion of the holding frame to confine an animal in the exit area for exiting the animal through the exit in the holding frame.

4,552,097

STEAM GENERATOR WITH A STATIONARY FLUIDIZED-BED HEARTH

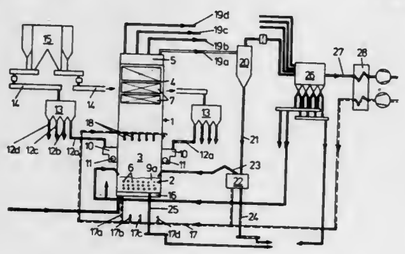
Hans-Georg Jarmuzewski, Oberhausen, Fed. Rep. of Germany, assignor to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jan. 23, 1985, Ser. No. 693,978

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 3406200

Int. Cl.⁴ F22B *1/00*

U.S. Cl. 122—4 D **9 Claims**



1. A steam generator comprising: a stationary fluidizedbed hearth; a combustion chamber and a gas flue containing outlet-side heating surfaces above said fluidized-bed hearth; immersion-type heating surfaces arranged in said fluidized bed; said fluidized bed being divided into a plurality of individually controlled sections; said steam generator comprising further a single-pass boiler; a gas extractor tube and a cyclone connected to said gas extractor tube at the upper end of said boiler above each section of said fluidized bed; said cyclone having discharge means passing cyclone disclosure to a respective predetermined section; belt-charging means associated with each section and having a spread corresponding to the cross-section of a section; and secondary air feeds arranged above each section.

4,552,098

CONVECTION SECTION ASH MONITORING

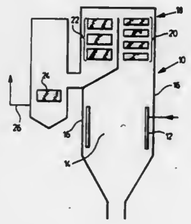
John R. Wynnyckyj, Kitchener; Edward Rhodes, Waterloo, and Robert Marr, Kitchener, all of Canada, assignors to University of Waterloo, Waterloo, Canada

Continuation of Ser. No. 583,573, Feb. 24, 1984,. This application May 15, 1985, Ser. No. 734,175

Claims priority, application Canada,

Int. Cl.⁴ F22B *37/18*

U.S. Cl. 122—379 **15 Claims**



1. A method of controlling a steam generator, which comprises:

combusting fuel in a furnace section of said steam generator to form a flowing hot gas stream which flows out of said furnace section into a convection section of said steam generator, which convection section contains heat exchange surfaces,

flowing said hot gas stream through said convection section over and in contact with said heat exchange surfaces therein, thereby to heat steam flowing within the surfaces,

directly measuring the temperature of the gas stream at two locations in said convection section spaced-apart in the direction of flow of the gas stream and between which is located a selected number of said heat exchange surfaces in said convection section,

calculating the difference in temperature between said two locations as a measure of the build-up of ash on said selected number of heat exchange surfaces in said convection section, and

activating cleaning of said selected number of heat-exchange surfaces in response to a predetermined level of build-up of ash.

4,552,099

ANTICIPATORY BOILER FEEDPUMP SUCTION HEAD CONTROLLER SYSTEM

Alan Martens, Berwyn; Milton M. Hobbs, Marple Township, Delaware County, and Bennie E. Snow, West Chester, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1984, Ser. No. 664,640

Int. Cl.⁴ F22D *5/26*

U.S. Cl. 122—451.1 **7 Claims**

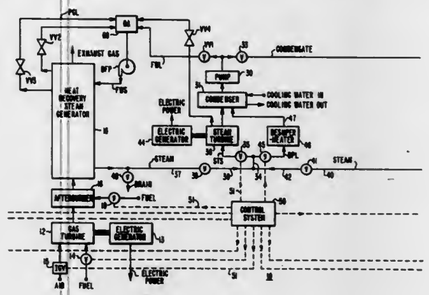
1. In a steam boiler system including:

boiler means having a deaerator comprising a vapor phase section and a liquid phase section for degassing feedwater for said boiler means;

a boiler feedpump having an inlet and a suction head associated thereto for pumping degassed feedwater from an outlet of said liquid phase section to said boiler means, the combination of:

means for deriving a first signal indicative of the temperature at the inlet of said feedpump;

means for deriving a second signal indicative of the temperature at the outlet of said liquid phase section;



means for deriving a third signal indicative of water flow from said outlet to said inlet;

means for combining said third signal with one of said first and second signals for generating an anticipatory signal representative of the desired pressure in said suction head of said feedpump; and

control means responsive to actual pressure in said suction head and to said anticipatory signal for controlling pressure in said suction head.

4,552,100

THROTTLE LEVER DEVICE OF POWER-DRIVEN BACKPACK TYPE MACHINE

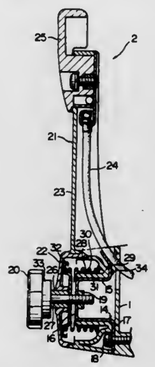
Yukio Kawaharazuka, Ageo, and Giichi Iida, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,446

Claims priority, application Japan, Nov. 17, 1983, 58-176750[U]

Int. Cl.⁴ F02B *63/00*

U.S. Cl. 123—2 **1 Claim**



1. In a power-driven backpack type machine including a main body having an internal combustion engine serving as a power source, a throttle lever device comprising:

a boss pivotably connected to one side of the main body;

an arm extending from the boss;

a throttle lever supported at a forward end of the arm for controlling the operation of the internal combustion engine;

locking means for selectively lockingly securing the boss to the main body in a position in which the arm is upright and substantially parallel to the vertical longitudinal axis of the main body and in a position in which the arm extends forwardly of the main body;

resilient pressing means for forcing the boss against the main body with an adjustable biasing force; and

adjusting means for adjusting the biasing force exerted by the resilient pressing means.

4,552,101

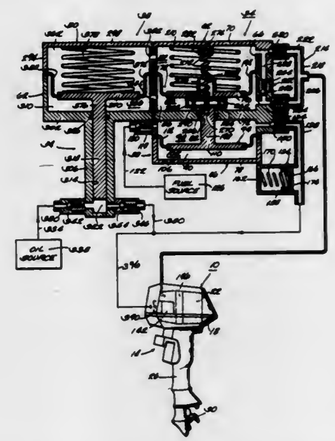
FLUID PRESSURE ACTUATED MOTOR WITH PNEUMATICALLY-COUPLED PISTONS

Gaylord M. Borst, and Frank J. Walsworth, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 7, 1983, Ser. No. 464,197

Int. Cl.⁴ F02B *33/02*

U.S. Cl. 123—73 AD **9 Claims**



1. A fluid actuated motor assembly comprising a first fluid actuated motor including a first reciprocating piston driven through a first stroke length by a pressure differential across said first reciprocating piston, and a second fluid pressure actuated motor in communication with said first fluid pressure actuated motor and including a second reciprocating piston driven through a second stroke length by said pressure differential across said first reciprocating piston, and means for varying said second stroke length relative to said first stroke length in response to variation in the magnitude of said pressure differential across said first piston.

4,552,102

SYSTEM FOR IMPROVING THE STARTING OF DIESEL ENGINES IN COLD WEATHER

Edward J. Egle, 293 S. Circle Dr., Palatine, Ill. 60067

Continuation-in-part of Ser. No. 403,861, Jul. 30, 1982, abandoned, which is a division of Ser. No. 260,179, May 4, 1981, abandoned. This application Oct. 15, 1984, Ser. No. 661,262

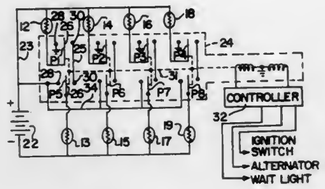
Int. Cl.⁴ F02N *17/00*

U.S. Cl. 123—179 H **7 Claims**

1. A system utilizing glowplugs electrically connectable to a source of potential for heating the fuel provided to an associated diesel engine for facilitating the starting of the engine, particularly in cold weather, and responsive to engine and atmospheric conditions, comprising, in combination:

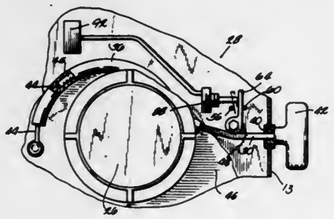
(a) a first group of glowplugs;

(b) a second group of glowplugs;
(c) selectively actuatable switching means having a plurality of movable contacts and at least first and second stationary contacts;
(d) controller responsive to engine and atmospheric conditions as a means for actuating said movable contacts to selectively contact said first and second stationary contacts;



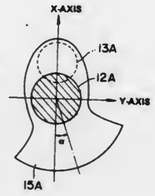
(e) said switch means in a first condition connecting each of said glowplugs in said first and second groups to receive the full voltage of said source of potential thereacross, whereby said glowplugs are heated to a high temperature at a relatively fast rate; and
(f) said switch means in a second condition connecting a glowplug of said first group, respectively in series with a glowplug of said second group to thereby reduce the voltage from said source of potential for maintaining the temperature of the glowplugs at a preselected level.

4,552,103
MANUAL STARTER WITH IGNITION SPARK RETARD
Gene F. Baltz, Lake Villa, Ill., and Donovan K. Jourdan, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.
Continuation of Ser. No. 529,337, Sep. 6, 1983, abandoned. This application Sep. 10, 1984, Ser. No. 649,160
Int. Cl.[4] F02P *5/14*; F02N *3/00*
U.S. Cl. 123—186 **7 Claims**



6. A manual starter for an internal combustion engine including a drive member mounted for rotation and operable to start the engine when rotated, said starter including a flexible pull element mounted for movement between a normally retracted position and an extended position and operably engageable with the drive member to start the engine in response to movement of said flexible pull element to an extended position, said means for retarding ignitiion spark timing in response to movement of said flexible pull element toward an extended position, said means for retarding spark timing, including a movably mounted member in which is located in frictional contact with said pull element and which is movable in response to movement of said pull element toward the extended position, and means responsive to movement of said member for retarding spark timing.

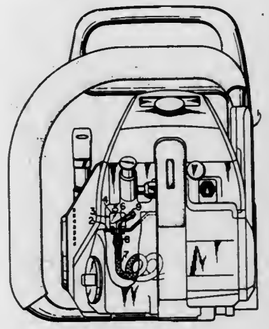
4,552,104
CRANKSHAFT OF V-6 INTERNAL COMBUSTION ENGINE
Kenjiro Hara, Yokohama, and Haruya Shirose, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Japan
Filed Jun. 14, 1984, Ser. No. 620,517
Claims priority, application Japan, Jun. 20, 1983, 58-110412
Int. Cl.[4] F16F *15/26*
U.S. Cl. 123—192 R **3 Claims**



1. A crankshaft of a V-6 internal combustion engine comprising:
first, second, third and fourth main bearing journals disposed successively in a direction from a first end section to a second end section of said crankshaft;
first and second crank pins disposed successively in said direction between said first and second main bearing journals;
third and fourth crank pins disposed successively in said direction between said second and third main bearing journals;
fifth and sixth crank pins disposed successively in said direction between said third and fourth main bearing journals;
first, second, third, fourth, fifth, sixth, seventh, eighth, and ninth crank arms disposed successively in said direction to connect adjacent ones of said main bearing journals and crank pins;
first and second end balance weights connected to said first and ninth crank arms, respectively, the first crank arm connecting said first main bearing journal and said first crank pin, said ninth crank arm connecting said sixth crank pin and said fourth main bearing journal, said first and second end balance weights being located on the opposite side of center axis of said crankshaft from said first and sixth crank pins, respectively;
a first middle balance weight connected to said second crank arm and located on the opposite side of the crankshaft center axis from said first and second crank pins, said second crank arm connecting said first and second crank pins, said first middle balance weight having a center axis offset a first predetermined angle from an extension of a first bisector of an angle formed by a first line which connects center axis of said first crank pin with the crankshaft center axis and a second line which connects center axis of said second crank pin with the crankshaft center axis in a plane to which the crankshaft center axis is perpendicular;
a central balance weight connected to said fifth arm and located on the opposite side of the crankshaft center axis from said third and fourth crank pins, said fifth crank arm connecting said third and fourth crank pins;
a second middle balance weight connected to said eighth crank arm and located on the opposite side of the crankshaft center axis from said forth and sixth crank pins, said eighth crank arm connecting said fifth and sixth crank pins, said second middle balance weight having a center axis offset said first predeterminded angle from an extension of a second bisector of an angle formed by a third line which connects center axis of said fifth crank pin with the crankshaft center axis and a fourth line which connects center axis of said sixth crank pin with the crankshaft center axis in said plane;

said offset of said first predetermined angle of said first and second middle balance weights causing an unbalance of the crankshaft;
said first end balance weight having a center axis offset a second predetermined angle from an extension of a line which connects center axis of said first crank pin and the crankshaft center axis in said plane, said second end balance weight having a center axis thereof offset said second predetermined angle from an extension of a line which connects center axis of said sixth crank pin and the crankshaft center axis in said plane;
said offset of said first and second end balance weights balancing said unbalance of the crankshaft caused by said offset of said first and second middle balance weights.

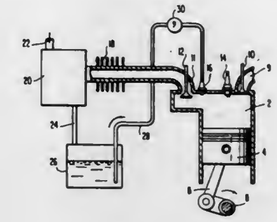
4,552,105
FUEL PIPE JOINT
Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Sep. 4, 1984, Ser. No. 646,928
Claims priority, application Japan, Sep. 9, 1983, 58-139810[U]
Int. Cl.[4] F02B *77/08*
U.S. Cl. 123—198 R **1 Claim**



1. A fuel pipe joint for connecting fuel pipes through which fuel is supplied from a fuel tank to an internal combustion engine, said fuel pipe joint comprising: a main body made of a transparent synthetic resinous material and mounted directly on an upper portion of said fuel tank, said main body having solidly a first pipe connector portion projected from the lower side of said main body into said tank and connected to a fuel pipe for sucking the fuel from said fuel tank, a second pipe connector portion projected from one side of said main body and connected to another fuel pipe leading to said internal combustion engine, and a fuel passage formed in said main body and providing a communication between said first and second pipe connector portions.

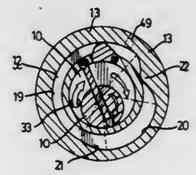
4,552,106
INTERNAL COMBUSTION ENGINE
Lewis C. Spence, Jupiter, Fla., assignor to John P. Ohl, Palm Beach, Fla.
Filed Dec. 3, 1982, Ser. No. 446,502
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—198 A **1 Claim**

1. An internal combustion engine operating on a two-stroke cycle or a four-stroke cycly having a power stroke, comprising:
means for providing a combustible fuel to said engine at the start of the power stroke;
first means for igniting said fuel during the power stroke to produce mechanical power;
means for providing a non-combustible fluid to said engine during the power stroke after said first means has ignited said fuel and after said ignited fuel has substantially reached the point of flame-out in order to transfer thermal energy from said ignited fuel to said non-combustible fluid, thereby causing expansion of said fluid during the power stroke; and
means for converting expansion of said fluid to mechanical power during the power stroke,



wherein said non-combustible fluid comprises a fluid having good temperature expansion characteristics and which condenses at a substantially faster rate than burned combustible fuel exhausted from the engine, and
wherein said non-combustible liquid comprises a halogen.

4,552,107
ROTARY INTERNAL COMBUSTION ENGINE
Chin L. Chen, No. 1, Alley 20, La. 99, Wan-Shou Rd., Sec. 3, Tao-Yuan, Taiwan
Filed Dec. 21, 1983, Ser. No. 564,010
Int. Cl.[4] F02B *53/00*
U.S. Cl. 123—240 **9 Claims**



1. An internal combustion engine of the rotary type comprising,
a housing,
at least one rotor assembly having a first drum rotor and a second cylinder rotor eccentrically mounted for rotation in said housing, said second rotor being located inside said first drum rotor and in contact with the internal surface of said first drum rotor, wherein said first and second rotors bound a first chamber of crescent shape, and the periphery of said first rotor and the inner surfaces of said housing bound a second chamber of annulus shape which includes a first segmented annulus portion, a second segmented annulus portion of greater radial width than and upstream of said first annulus portion, and in which said first rotor has a radial opening for communication between said first and second chambers,
intake means for admitting a gas-fuel mixture communicated with said first chamber,
exhaust means for releasing the combustion gases communicated with said second member,
first vane means pivotally mounted on the wall of said first drum rotor, said first vane means dividing said first chamber into two variable volumes for compressing the gas-fuel mixture during rotation, and second vane means including at least one second vane member pivotally mounted to said first drum rotor in said opening for swinging about an axis parallel to the axes of rotation of said rotors for intermittently interrupting communication be-

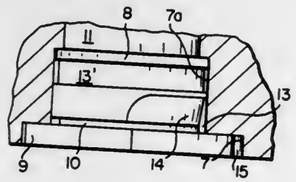
tween said first and second chambers, said second vane having an edge sealingly engaged with the inner surfaces of said housing, said opening being opened when said second vane member runs in said second segmented annulus portion and being closed when said second vane member runs in said first segmented annulus portion.

4,552,108

CYLINDER HEAD OF LIGHT METAL FOR AIR-COMPRESSING, AUTO-IGNITING INTERNAL COMBUSTION ENGINES

Christoph Schausberger, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,809
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220753
Int. Cl.⁴ F02B *19/00*
U.S. Cl. 123—270 **8 Claims**



1. A cylinder head of light metal for diesel internal combustion engines, comprising an auxiliary combustion chamber delimited on a side toward a main combustion chamber by an insert means made of a highly heat-resistant material, said insert means being disposed in a stepped bore disposed in the bottom of the cylinder head with a snug fit over a first portion of its outer surface, a second portion of the outer surface of the insert means defining along with a wall of the stepped bore an air gap which extends part way around the circumference of the insert, the air gap facing a zone in the cylinder head bottom which is hot when the engine is running and which expands under the influence of heat, exposure of said insert means to said main combustion chamber being generally limited to the area of the second portion which faces the hot zone in the cylinder head which expands under the influence of heat, said insert means being in contact with a relatively cool area of the cylinder head bottom diametrically opposite the second portion in a thermally conducting manner.

4,552,109

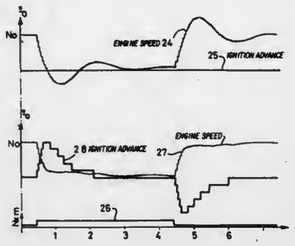
PROCESS FOR STABILIZING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE WITH CONTROLLED IGNITION

Yves Boccadoro, Feucherolles, and Paul Chastagner, Les Clayes sous Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 30, 1983, Ser. No. 567,000
Claims priority, application France, Dec. 30, 1982, 82 22146
Int. Cl.⁴ F02P *5/04*
U.S. Cl. 123—339 **10 Claims**

1. A process for stabilizing the idle speed of an internal combustion engine with controlled ignition, wherein an angle of ignition advance to be generated is determined as a function of predetermined operating parameters of the engine, including engine rotation speed and intake manifold pressure, comprising:

determining at each engine cycle if the engine is in idle condition, and if so, setting the ignition advance by measuring engine speed and producing an engine speed signal related thereto, low-pass filtering the engine speed signal, measuring the intake manifold pressure of the engine, generating a static advance signal (Avs) based on the measured intake manifold pressure and the low-pass filtered engine speed signal, high-pass filtering the measured engine speed signal to form a corrective term in the form



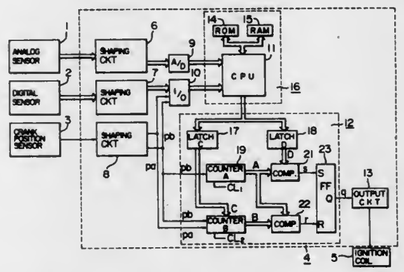
of a dynamic advance signal, algebraically adding the static advance signal to the dynamic advance signal to produce an angle of ignition advance signal (Av), and controlling the ignition advance of the engine based on said signal Av.

4,552,110

ELECTRONIC IGNITION CONTROL SYSTEM

Tatsuya Yoshida, Katsuta, and Hirosi Katada, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,233
Claims priority, application Japan, Nov. 22, 1982, 57-203760
Int. Cl.⁴ F02P *5/08, 5/10, 5/14*
U.S. Cl. 123—416 **6 Claims**



1. An electronic ignition control system wherein a rotational speed of an engine is sensed on the basis of a reference signal indicative of a crank reference position for the purpose of spark advance control, said system comprising a first arithmetic and logic unit for carrying out a computation in synchronism with the rotation of the engine, and a second arithmetic and logic unit for carrying out a computation at intervals of a predetermined period of time, said first arithmetic and logic unit computing a reference ignition position using the sensed rotational speed of the engine as a parameter, said second arithmetic and logic unit correcting said reference ignition position using a plurality of information indicative of the operating condition of the engine including the information of the engine rotational speed as parameters, said crank reference position includes a leading edge and a trailing edge defining a predetermined width therebetween, said reference signal includes a first reference signal indicative of the position of said leading edge and a second reference signal indicative to the position of said trailing edge, and wherein said first arithmetic and logic unit includes a first counter counting a first clock signal having a predetermined frequency applied at its count input and starting to count said first clock signal after being reset by said second reference signal, and a second counter

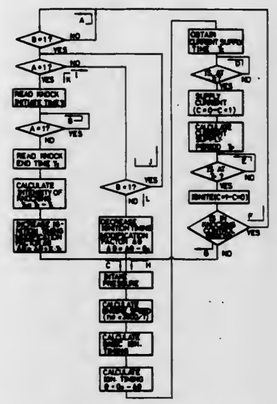
counting a second clock signal having a frequency higher than that of said first clock signal applied as its count input, said second counter starting to count said second clock signal in response to the application of said first reference signal and ceasing to count said second clock signal after being reset by said second reference signal, and a signal indicative of said reference ignition position is generated when coincidence is reached between the data counts of said first and second counters.

4,552,111

ENGINE KNOCKING DETECTING MEANS

Yoshitaka Tahara, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 18, 1983, Ser. No. 514,846
Claims priority, application Japan, Jul. 20, 1982, 57-128190
Int. Cl.⁴ F02P *5/14;* F02D *5/04;* G01I *23/22*
U.S. Cl. 123—425 **7 Claims**



1. Engine knocking detecting device to avoid the superpositioning of succeeding integrated signals during repetitive engine knocking comprising:

engine vibration sensing means for sensing engine vibrations and producing electric signals representing the engine vibrations;

knocking detecting circuit means including:

knocking signal discriminating means for detecting signals representing engine vibrations caused by engine knocking; and,

knocking intensity detecting means for detecting durations of the signals representing the engine knocking vibrations to thereby detect intensity of the engine knocking;

said knocking intensity detecting means including:

means for determining a sampling period in each cycle of engine operation;

means for sensing the signals detected by said discriminating means in said sampling period and determining the duration as a time between start and end of the signals detected by the discriminating means in said sampling period; and,

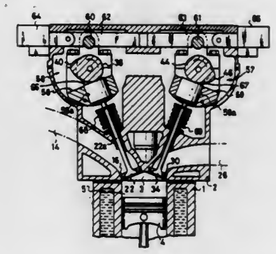
means for producing a knocking intensity signal which increases in response to an increase in the duration of the signals representing the engine knocking.

4,552,112

VALVE TIMING CONTROL FOR INTERNAL COMBUSTION ENGINES

Akihito Nagao; Kouichi Takahashi; Shunji Masuda; Misao Fujimoto, and Toshio Nishikawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 25, 1984, Ser. No. 634,349
Claims priority, application Japan, Jul. 25, 1983, 58-136260
Int. Cl.⁴ F01L *1/34;* F02B *31/02*
U.S. Cl. 123—432 **6 Claims**



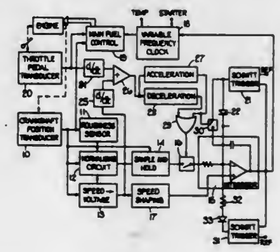
1. An engine intake system including combustion chamber means, first intake port means opening to said combustion chamber means, second intake port means opening to said combustion chamber means, first intake valve means associated with said first intake port means, second intake valve means associated with said second intake port means, first valve actuating means for providing an opening period of said first intake valve means in each engine operating cycle at a first timing, second valve actuating means for providing an opening period of said intake valve means in each engine operating cycle at a second timing, means for preventing intake gas from passing through said second intake port means at least during low speed, light load engine operation, and timing changing means for changing at least said first timing so that an overall valve opening period defined by said first and second timings is changed in accordance with engine operating conditions.

4,552,113

FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Malcolm Williams, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 27, 1980, Ser. No. 125,107
Claims priority, application United Kingdom, Mar. 14, 1979, 7908992
Int. Cl.⁴ F02B *3/00;* F02M *7/00*
U.S. Cl. 123—436 **4 Claims**



1. An internal combustion engine fuel control system comprising a main fuel control sensitive to one or more engine operating parameters scheduling fuel flow to the engine, and a roughness trim control comprising a roughness sensor circuit providing a roughness signal related to the roughness of run-

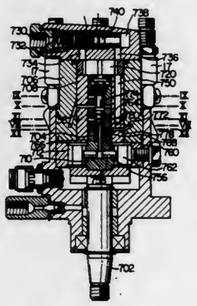
ning of the engine, said roughness trim control including an integrator having an output providing an input signal to the main fuel control so as to vary the fuel flow to the engine to obtain a desired level of roughness, and a first active clamp circuit which has an input and an output connected respectively to an output and input of the integrator, said clamp circuit comprising a means for preventing said integrator output from exceeding a maximum acceptable level of enleanment, and a second active clamp circuit comprising means for preventing said integrator output from exceeding a minimum acceptable level of enleanment, each of said active clamp circuits has its input connected to the output of the integrator and its output connected to the input of the integrator so as to maintain the integrator output at or near a predetermined level when that clamp circuit is in operation, wherein each clamp circuit includes a Schmidt trigger circuit.

4,552,114

APPARATUS FOR CONTROLLING THE NUMBER OF OPERATIVE CYLINDERS OF A DIESEL ENGINE

Yukinori Sano, Katsuta; Yoshikazu Hoshi, Ibaraki, and Ikuo Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 601,654, Apr. 18, 1984, abandoned, which is a continuation of Ser. No. 413,127, Aug. 30, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 685,258
Claims priority, application Japan, Sep. 2, 1981, 56-138845
Int. Cl.⁴ F02M *69/00, 63/02*
U.S. Cl. 123—481 **6 Claims**



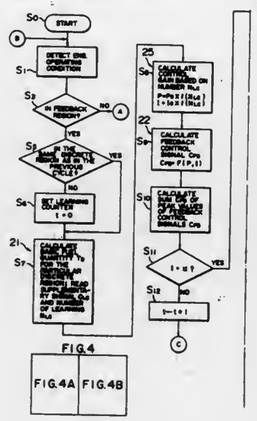
1. A fuel injection arrangement comprising a fuel injection pump, the fuel injection pump including a cylindrical body, a sleeve disposed within said cylindrical body, a rotary distributor means disposed in said sleeve and adapted to be driven by an internal combustion engine, a longitudinal path formed along an axial line of said rotary distributor means, a shuttle slidably disposed in said longitudinal path, a first electromagnetic valve means disposed at one side of said shuttle and adapted to be driven by a signal from a control circuit in order to meter and supply fuel for determining a fuel injection period, a second electromagnetic valve means disposed at the other side of said shuttle means for measuring and supplying fuel to be injected, a compression pump means disposed beneath said rotary distributor means, said compression pump means including a rotor means, roller means, plunger means, and annular cam means for compressing the fuel determining said injection period, and a distributing means disposed above said rotary distributor means for supplying the fuel to a selected fuel injection valve, wherein said shuttle is moved by an action of said compression pump by the rotation of said rotary distributor means to thereby pressurize the injection fuel, and the pressurized fuel is supplied to a selected fuel injection valve by a rotation of said rotary distributor means.

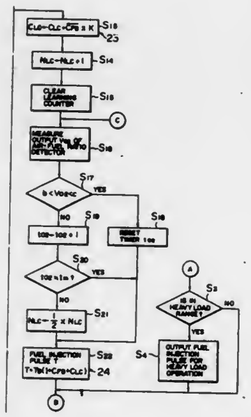
4,552,115

AIR-FUEL RATIO CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Yoshinori Okino, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 13, 1984, Ser. No. 599,973
Claims priority, application Japan, Apr. 14, 1983, 58-66226
Int. Cl.⁴ F02D *5/00*
U.S. Cl. 123—489 **9 Claims**





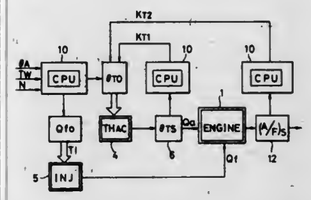
1 An air-fuel ratio control system for an internal combustion engine comprising: air-fuel ratio detecting means for detecting the air-fuel ratio of a mixture supplied to the engine to produce an air-fuel ratio signal, engine operating condition detecting means for detecting an operating condition of the engine to produce an engine operating condition signal, basic fuel quantity setting means responsive to said engine operating condition signal for determining a basic quantity of fuel supply under a specific engine operating condition and producing a basic fuel quantity signal, control gain memorizing means having memories of at least one control gain, feedback control means responsive to said air-fuel ratio signal and the control gain for producing a feedback control signal for modifying the basic fuel quantity signal so that the air-fuel ratio of the mixture is changed toward a desired value, supplementary signal producing means for producing based on said feedback control signal a supplementary signal for supplementing said basic fuel quantity signal, supplementary signal memorizing means for memorizing the supplementary signal, substituting means for substituting for the supplementary signal memorized in the supplementary signal memorizing means of a supplementary signal newly produced by the supplementary signal producing means, fuel supply control means for controlling the quantity of fuel supplied to the engine in accordance with the basic fuel quantity signal, with the feedback control signal and with the supplementary signal which is memorized in the supplementary signal memorizing means, control gain modifying means for decreasing the control gain from said control gain memorizing means in response to an increase in the number of times wherein supplementary signals are substituted for each other.

4,552,116

ENGINE CONTROL APPARATUS

Hiroshi Kuroiwa, Hitachi; Tadashi Kirisawa, Katsuta; Teruo Yamauchi, Katsuta, and Yoshihige Oyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1984, Ser. No. 641,337
Claims priority, application Japan, Aug. 26, 1983, 58-155096
Int. Cl.⁴ F02B *3/00*; F02D *9/00*
U.S. Cl. 123—489 **4 Claims**



1. In an engine control apparatus including means for controlling a rate of fuel supplied to an engine, means for controlling a rate of intake air drawn into the engine by changing an opening of a throttle valve actuated by a throttle actuator, an acceleration pedal position sensor means for detecting a position of an acceleration pedal operated by an operator and providing an output signal of the position of the acceleration pedal, further sensor means for detecting engine conditions and providing output signals of sensed engine conditions, said further sensor means including an engine temperature sensor and an engine rotational speed sensor, and a control circuit means for inputting output signals from said acceleration pedal position sensor means and said further sensor means for producing control signals for determining a rate of fuel supply in accordance with a position of said acceleration pedal, the engine conditions, and an opening of said throttle valve is controlled in accordance with a command opening determined in accordance with the rate of the fuel supply, the control apparatus comprising:

first closed loop control means for detecting the throttle valve opening and for effecting a control to make the throttle valve opening converge at said command opening, said first closed loop control means including a throttle opening sensor means for detecting an opening of said throttle valve, said control circuit means, and said throttle actuator, and

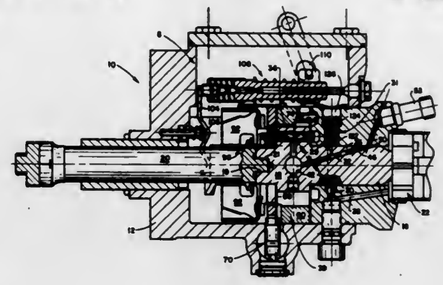
second closed loop control means for detecting the air-fuel ratio of the air-fuel mixture supplied to the engine and for effecting a control to make the air-fuel ratio converge at a command air-fuel ratio, said second closed loop means including an air-fuel ratio sensor means for detecting oxygen concentration in exhaust gas of the engine, said control circuit means, and said throttle actuator.

4,552,117

FUEL INJECTION PUMP WITH SPILL CONTROL MECHANISM

Ilija Djordjevic, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Oct. 9, 1984, Ser. No. 658,887
Int. Cl.⁴ F02M *37/04*
U.S. Cl. 123—506 **29 Claims**



1. In a rotary fuel injection pump for an internal combustion engine, having a housing, a rotor rotatable in the housing, a charge pump having a plurality of radially extending plunger bores in the rotor and a plunger pump for each plunger bore having a pumping plunger reciprocable in the bore, the pumping plungers having outward fuel intake strokes and inward fuel delivery strokes for supplying high pressure charges of fuel for fuel injection, and a cam ring surrounding the rotor and engageable with the plunger pumps to reciprocate the plungers as the rotor rotates, and a spill control mechanism having spill valve means connected to the charge pump for spill control of the said high pressure charges of fuel, the improvement wherein the spill valve means comprises at least one rotary spill valve having a valve bore in the rotor connected to the charge pump and a rotary spill valve member rotatably mounted within the valve bore, and wherein the spill control mechanism comprises first means for rotating each rotary spill valve member in unison with the rotor and in synchronism with the reciprocable movement of the pumping plungers for spill control of the said high pressure charges of fuel.

4,552,118

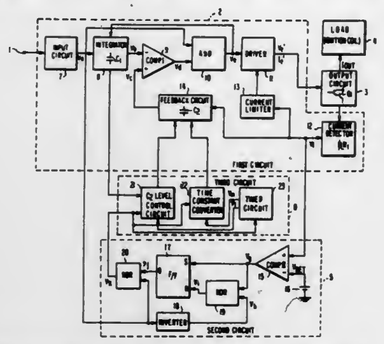
CONTROL CIRCUIT FOR CONTROLLING OUTPUT PULSE WIDTH USING NEGATIVE FEEDBACK SIGNAL

Hirokazu Fukaya, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 19, 1984, Ser. No. 590,662
Claims priority, application Japan, Mar. 17, 1983, 58-44734
Int. Cl.⁴ F02P *3/04*
U.S. Cl. 123—609 **18 Claims**

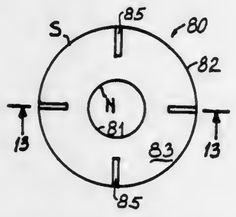
1. A circuit comprising a first circuit generating an output pulse signal in response to an input signal and having a feedback circuit producing a feedback signal in response to said output pulse signal, said output pulse signal having a pulse width controlled by said input and feedback signals, a second circuit detecting said pulse width of said output pulse signal and generating a detection signal when said pulse width is

shorter than a predetermined width, and a third circuit invalidating said feedback signal in response to said detection signal



from said second circuit to broaden the pulse width of said output pulse signal to be longer than said predetermined width.

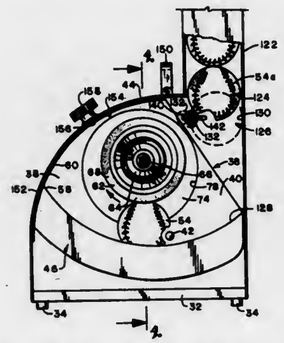
4,552,119
MAGNETIC PULSE TIMER
Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705
Filed Dec. 11, 1984, Ser. No. 680,537
Int. Cl.[4] F02P *5/04*
U.S. Cl. 123—617 **3 Claims**



1. A rotor for a magnetic pulse timer of an ignition system used by a fuel burning engine, characterized by:
a single piece rotor of permanently magnetized material coupled to said engine for rotation about its central cylindrical axis, said rotor having inner and outer peripheral edges of opposite magnetic polarities and regularly spaced slots at the outer edge where the magnetic polarity is the same across the slots at said outer peripheral edge, said slots being generally parallel to the axis and including non-magnetic material retained in said slots, said slots dividing the outer edge into a plurality of segments wherein each of the segments is greater in width than any of the slots.

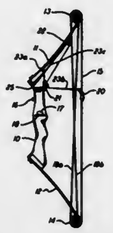
4,552,120
BATTING INSTRUCTION SYSTEM
Kent J. Nall, 4322 Troup, Kansas City, Kans. 66102; W. Christopher Barteldes, Lawrence, Kans.; David W. Payne, Prairie Village, Kans.; Charles P. Rome, Overland Park, Kans., and Wayne A. Abrams, Kansas City, Kans., assignors to Kent J. Nall, Kansas City, Kans.
Filed Sep. 30, 1982, Ser. No. 431,817
Int. Cl.[4] F41B *3/04*
U.S. Cl. 124—1 **2 Claims**

1. A ball toss device for sequentially lofting baseballs or the like at spaced intervals toward a target area such as home plate, said device comprising:
a ball-guiding track having a ball-receiving end and a ball-discharging end;
a rotary impeller adjacent said track and between said opposite ends thereof in disposition for engaging a ball presented thereto in the track and for thereupon propelling the same off said discharge end of the track into the air; and
means for successively delivering a supply of balls to said receiving end of the track at a metered rate of delivery,
said delivering means including a throat through which the balls must pass as they approach said track, said throat having a lateral component thereof shiftable between a first position retaining a ball against passage to the track



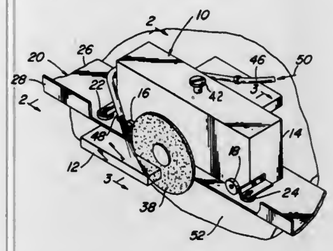
and a second position releasing the ball to the track, said component being provided with means yieldably biasing the same toward said retaining position thereof,
said component being rotatively driven in a direction to engage the periphery of a ball retained by the throat and urge the same through the throat, the reaction force caused by such urging movement by the component being sufficient to progressively shift the component to said releasing position against the action of said yieldable biasing means.

4,552,121
ARCHERY SIGHTS
Mahlon L. Treaster, R.D. 2, Box 288 Cafferty Rd., Harpursville, N.Y. 13787
Filed Sep. 13, 1984, Ser. No. 649,947
Int. Cl.[4] F41B *5/00*
U.S. Cl. 124—87 **5 Claims**



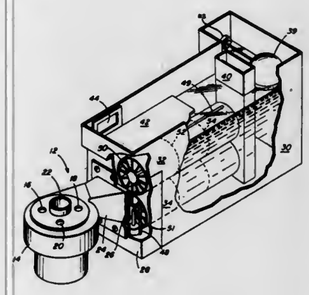
1. In archery apparatus having a bow carrying a front sight, a bowstring, and a back sight carried on said bowstring, the combination of cord means extending between said bow and said back sight, said cord means comprising a resiliently extensible section attached to said bow and an inelastic section attached to said back sight; and line-guiding means for training said resiliently extensible section to lie in a direction angularly displaced from a line between said front sight and back sight when said bowstring is drawn, so that breaking or detachment of any portion of said cord means causes each portion of said resiliently extensible section to move in a direction displaced from said line.

4,552,122
PORTABLE APPARATUS FOR SHAPING GLASS BY ABRASION
John M. Kelly, 131 Sugartown Rd., Devon, Pa. 19333
Filed Dec. 16, 1983, Ser. No. 562,487
Int. Cl.[4] B28D *1/04*
U.S. Cl. 125—14 **17 Claims**



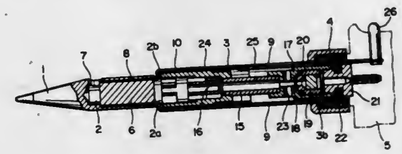
1. A portable apparatus for shaping glass by abrasion, comprising:
a carriage, said carriage being comprised of a first portion and a second portion and being provided with a plurality of guide means;
a track comprising a first member and a second member, said first member being hingedly attached to said second member and adapted to receive the guide means of the first portion of said carriage, said first member being adjustable about said hinge with respect to said second member, said guide means of said carriage engaging said track to move along said track;
a pneumatic motor carried by said carriage;
said first portion of said carriage being adapted to ride on said track, said second portion of said carriage being adapted to carry said pneumatic motor, said second portion of said carriage being movable on said first portion of said carriage in a direction perpendicular to the direction of movement of said first portion of said carriage on said track;
an abrasive blade driven by said pneumatic motor for rotation; and,
fluid coolant spray means carried by said carriage and adapted to spray fluid coolant at the abrading surface of said cutting blade during glass abrading operations.

4,552,123
GAS-FIRED STEAM COOKER
Joseph R. Birkner, West Peabody; Maurice Nunes, Arlington, and James R. Hurley, East Weymouth, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.
Filed Dec. 12, 1984, Ser. No. 681,033
Int. Cl.[4] F24D *1/00*; F28F *21/00*
U.S. Cl. 126—369 **6 Claims**



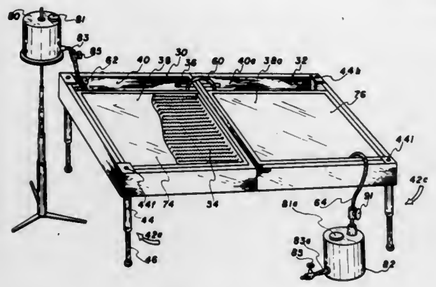
1. A self-contained, compact steamer comprising a compartment for containing food to be cooked by steam, a powered combustion system for generating heated products of combustion, a water chamber, means for maintaining a quantity of water at a predetermined level in said water chamber, at least one tube into which said heated products of combustion are directed, said tube being submerged in said water chamber whereby said water is converted to steam, an exhaust flue for carrying away said products of combustion after their passage through said tube, at least one outlet for steam being formed in said water chamber above said predetermined level, said outlet being in communication with said compartment whereby said food is cooked by said steam.

4,552,124
HEAT PROCESSING APPARATUS
Masahiko Nakajima, Tokyo, Japan, assignor to Nakajima Dokosho Co. Ltd., Tokyo, Japan
Filed Jun. 12, 1984, Ser. No. 620,326
Claims priority, application Japan, Feb. 20, 1984, 59-30064; Feb. 20, 1984, 59-30066
Int. Cl.[4] B23K *3/02*
U.S. Cl. 126—413 **11 Claims**



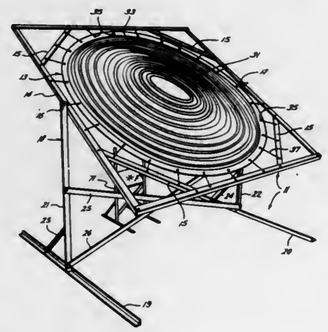
1. A heat processing apparatus using a liquefied gas as a heat source comprising:
a nozzle for jetting out a combustible gas from a liquefied gas tank by way of a gas discharge valve assembly,
a gas mixture generation means disposed at the exit of said nozzle for introducing external air to a stream of said combustible gas jetted out from said nozzle under the ejector effect to thereby generate a gas mixture,
a gas mixture supply means for supplying the thus generated gas mixture to the downstream portion of the apparatus,
means including openings for igniting said gas mixture disposed at the downstream end of said gas mixture supply means surrounding the stream of said gas mixture at the downstream end of said gas mixture supply means for introducing additional external air through said openings and for igniting said gas mixture,
means forming a shutter mechanism to open and close said ignition openings,
means forming a combustion chamber disposed at the downstream end of said ignition openings and having an inlet at its upstream end for receiving the stream of said gas mixture and an exhaust gas port at its downstream end for discharging exhaust gases,
a combustion catalyst disposed to the inside of said combustion chamber, said catalyst being formed with gas flow passages extended continuously from the upstream to the downstream ends of said chamber so as to decrease the flow resistance to said gas mixture passing therethrough, and
an iron tip connected to the downstream end of said combustion chamber for use in the fabrication of a work.

4,552,125
PORTABLE SOLAR WATER HEATER
German Borodulin, 2518 Clement St., #4; Alexander Shkolnik, 4434 Fulton St., #2, and Raphael Baron, 546 25th Ave., all of San Francisco, Calif. 94121
Filed Oct. 9, 1984, Ser. No. 658,811
Int. Cl.⁴ F24J 3/02
U.S. Cl. 126—437 **23 Claims**



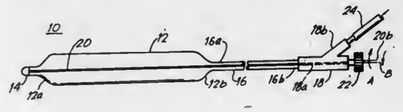
1. A portable solar water heater comprising:
a pair of solar collector panels,
a corresponding pair of rigid casings,
each panel being mounted in a respective casing,
each casing comprising a substantially flat, rigid panel, one side of which is substantially flat, its respective solar panel being joined to the other side of such panel,
means for joining said two panels together for transportation such that said solar panels are adjacent each other in a face-to-face relationship and such that said one sides of said panels face outward and away from each other, and
means for enclosing the side edges of said panels and their solar collector when said panels are joined together.

4,552,126
RADIATION CONCENTRATOR
John O. Boyd, 6611 Burkett St., Houston, Tex. 77021
Filed Apr. 10, 1984, Ser. No. 598,739
Int. Cl.⁴ F24J 3/02
U.S. Cl. 126—451 **15 Claims**



1. Radiation concentrator apparatus comprising:
a plurality of concentric sets of rings;
each ring set including a first ring and a second ring concentric therewith;
one side of each ring having a reflecting surface, and
support means positionable to support the rings in a certain position in which the reflecting surface of the second ring in each set is disposed to receive light reflected from the reflecting surface of the first ring in the respective set, incident on said reflecting surface of the first ring in the respective set in a parallel beam paraxial with the axis of the said rings, and to reflect such light to a common focus;
said common focus for all said ring sets being the same,
said support means when supporting said rings in said certain positions leaving paths between the second rings of the sets for such parallel light beams directed to the first rings of the sets and leaving paths between the first rings of the sets to said focus,
said support means including transparent material between the rings.

4,552,127
PERCUTANEOUS INTRA-AORTIC BALLOON HAVING AN EKG ELECTRODE AND A TWISTING STYLET FOR COUPLING THE EKG ELECTRODE TO MONITORING AND/OR PACING INSTRUMENTATION EXTERNAL TO THE BODY
Peter Schiff, Rte. 7, Cookeville, Tenn. 38501
Filed Apr. 1, 1983, Ser. No. 481,323
Int. Cl.⁴ A61B 5/04; A61M 25/00
U.S. Cl. 128—1 D **21 Claims**



1. An intra-aortic balloon assembly comprising:
an inflatable balloon formed of a nonstretchable plastic material and having a distal end terminating in a tip and having an open proximal end;
an elongated catheter tube having an open distal end communicating with and air-tightly joined to the open proximal end of said balloon, and having a proximal end for receiving positive and negative pressure pulses for selectively inflating and deflating said balloon;
a flexible elongated conductive stylet extending from said balloon distal end and through said balloon and said catheter tube and accessible at the proximal end of said catheter tube and being rotatable about its longitudinal axis to rotate said tip and said balloon to wrap said balloon about said stylet when rotated in a first direction and to unwrap said balloon from said stylet when rotated in the opposite direction;
said tip containing a conductive electrode, the distal end of said stylet being electrically connected to said electrode;
said tip including insulation means covering said electrode and having at least a portion thereof removed to expose a portion of the surface of said electrode;
means coupled to the proximal end of said stylet for coupling the electrical condition at said electrode to an output utilization device.

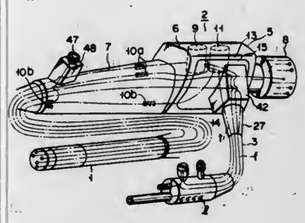
4,552,128
ELASTOMECHANICAL SPHINCTER
Terry M. Haber, 25011 Castlewood, Lake Forest, Calif. 92630
Filed Dec. 29, 1983, Ser. No. 566,486
Int. Cl.⁴ A61B 19/00
U.S. Cl. 128—1 R **25 Claims**

1. An elastomechanical sphincter comprising, in combination:
(1) an articulating structure formed from a resilient material with a spring-like memory and having a normally closed elongated occlusion orifice for surrounding a lumen,
(2) an elastic and manually manipulative pressure relief cuff extending outwardly from a peripheral portion of the articulating structure, said pressure relief cuff comprising a terminal end and an extensible neck portion extending between said terminal end and said articulating structure in a direction generally perpendicular to the direction of the lumen through said occlusion orifice, said pressure relief cuff being implanted at a location within the body of the patient such that said terminal end thereof is manually accessible to the patient so as to be pulled away from said articulating structure in said generally perpendicular direction to stretch said neck portion and thereby and contort the shape of said articulating structure, so that said occlusion orifice opens and in turn, permits the lumen to



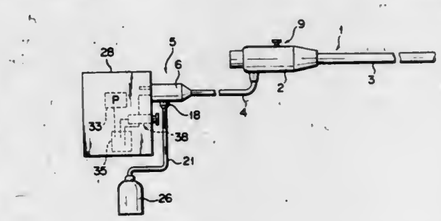
open, the relaxing of said neck portion resulting in the return of said orifice to the normally closed position to thereby close the lumen; and
(3) suture attachment means secured to spaced peripheral areas of said articulating structure and extending for connection to adjacent bone or muscle tissue in a patient to secure the articulating structure within the patient in a position surrounding the lumen.

4,552,129
ENDOSCOPE
Mikio Utsugi, and Tathuya Yamaguchi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 2, 1983, Ser. No. 519,741
Claims priority, application Japan, Aug. 9, 1982, 57-138259; Aug. 19, 1982, 57-143682
Int. Cl.⁴ A61B 1/00
U.S. Cl. 128—4 **7 Claims**



1. An endoscope comprising:
an operating mechanism;
a main body of an operation section holding said operating mechanism and having a base end and a protruded portioon extending in the opposite direction fron the base end; and
a casing within which said main body of the operation section is enclosed,
wherein said casing includes:
a hollow box-like casing body with one of its end portions serving to stabilize said base end of said main body of the operation section and its other end portion having an opening portion permitting said protruded portion of said main body of the operation section to be extended extrinsically of said casing; and
a cylindrical gripping cover having an end portion abutting against said other end portion of said casing body and covering said protruded portion of said main body of the operation section; and wherein said main body of the operating section includes:
a fastening member connected to said protruded portion of said main body of the operation section and engaged with said gripping cover, whereby said fastening member acts to urge said gripping cover toward said casing body and, at the same time, to urge said casing body toward said gripping cover, thereby pressing said end portion of said gripping cover and said other end portion of said casing body against each other.

4,552,130
AIR AND LIQUID SUPPLYING DEVICE FOR ENDOSCOPES
Kunio Kinoshita, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 24, 1984, Ser. No. 583,428
Claims priority, application Japan, Mar. 1, 1983, 58-33574
Int. Cl.⁴ A61B 1/00
U.S. Cl. 128—4 **11 Claims**



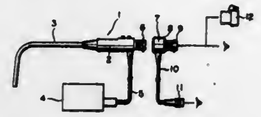
1. An air and liquid supplying device for an endoscope which includes an operating section, an insert section extending from the operating section, and a feed air passage and a feed liquid passage extending from the operating section to the distal end of the insert section, said device comprising;:
an air pump;
a first feed liquid tank containing a first liquid;
first switching means connected to the feed air passage and the feed liquid passage;
connecting means including an air supply passage connecting the pump and the first switching means, a pressurizing passage diverging from the air supply passage and communicating with the first feed liquid tank, and a liquid supply passage containing the first feed liquid tank and the first switching means, said first switching means being capable of being shifted between a first position where the air supply passage and the feed air passage are connected so that air from the pump is fed into the feed air passage, and a second position where the feed air passage is cut off and the liquid supply passage and the feed liquid passage are connected so that the first liquid is fed into the feed liquid passage;
a second feed liquid tank containing a second liquid and connected to the air supply passage between the pump and the pressurizing passage; and
second switching means connected to the air supply passage between the second feed liquid tank and the pressurizing passage, and adapted to switch the device to supply air to the air supply passage and to supply the second liquid to the air supply passage.

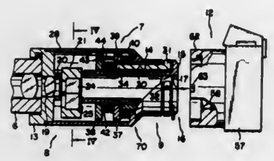
4,552,131

CO-VIEWING DEVICE FOR ENDOSCOPE

Yasuhiko Omagari, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1984, Ser. No. 622,189
Claims priority, application Japan, Jun. 24, 1983, 58-112640; Jun. 24, 1983, 58-112641; Jun. 24, 1983, 58-112642
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—6 **11 Claims**





1. A co-viewing device, which can be connected to the eyepiece section of an endoscope and to which a photographing device can be connected, comprising:

a body having a connecting portion detachably connected to the eyepiece section of the endoscope, and a main eyepiece section to which the photographing device can be attached;

a sub-eyepiece section connected to the body;

light guide means having light dividing and transmitting members and housed in the body to be movable between a first position where the light dividing member is on the optical axis of the beam, which is sent from the endoscope into the body, to divide the beam and guide the divided beams to the main- and sub-eyepiece sections, and a second position where the light transmitting member is on the optical axis to guide all of the beam to the main eyepiece section; and

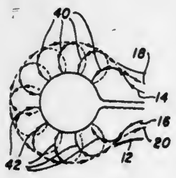
changeover means arragned in the body to engage with the light guide means and to be engageable with the photographing device and serving to switch the light guide means to the second position, in accordance with the operation of attaching the photographing device to the main eyepiece section.

4,552,132

PULSATING HYDROTHERAPY SYSTEM

Harry G. Ruscigno, Orange, Calif., assignor to Advanced Medical Products, Inc., Sherman Oaks, Calif.

Filed Sep. 17, 1984, Ser. No. 650,690
Int. Cl.⁴ A61H *9/00*
U.S. Cl. 128—38 **7 Claims**



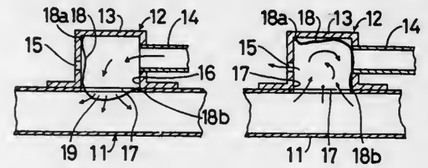
1. A pulsating hydrotherapy system for enhancing the flow of venous blood and lymphatic fluid comprising: a flexible cuff of a generally horseshoe configuration to be fitted over the limbs or cervix of a patient formed of a foam material; first and second tubular coils looped around the cuff, with the first coil positioned at one side of the cuff and with the other coil positioned at the other side of the cuff, the coils being positioned each to have a set of tubular segments adjacent the inner surface of the cuff in spaced parallel relationship parallel to the flow of venous blood of the patient; a source of two streams of pulsating fluid; and tubular leads coupling the source to the coils to introduce a first stream of pulsating fluid to one of the coils and a second stream of pulsating fluid to the other and to return both streams of pulsating fluid from the coils to the source, so that the pulsating fluid flows in a cardiocipetal direction only in said tubular segments.

4,552,133

RAPID EXHAUST VALVE FOR USE IN BLOOD CIRCULATION STIMULATOR

Mamoru Kawaguchi, Arita, Japan, assignor to Kawaei Co., Ltd., Arita, Japan

Filed Aug. 8, 1984, Ser. No. 638,715
Claims priority, application Japan, Aug. 18, 1983, 58-128286; Aug. 18, 1983, 58-128287
Int. Cl.⁴ A61H *23/04*
U.S. Cl. 128—44 **2 Claims**



1. A rapid exhaust valve for use in a blood circulation stimulator, in which the human body is subjected to repeated application and release of external pressure by means of an air bag and the like, characterized by that it comprises a valve box mounted so as to be communicated with said air bag and a flexible band valve diaphragm incorporated in said valve box, said valve box being connected with a compressed-air supply pipe and provided with an exhaust port at one portion of a circumferential wall thereof, said flexible valve diaphragm having almost the same width as the internal width of said valve box, one end of said flexible valve diaphragm being fixed between said compressed-air supply pipe and said exhaust port inside said valve box while another end of said flexible valve diaphragm being fixed between said compressed-air supply pipe and said air bag, and a reflected portion having a length of such a degree of projecting from said valve box into the inside of said air bag.

4,552,134

EQUIPMENT FOR DETERMINING THE POSITION OF A METAL BODY IN A MEDIUM WITH LOW ELECTRIC CONDUCTIVITY

Luc André M. G. Binard, Woluwe Saint Pierre, Belgium, assignor to Studiecentrum voor Kernenergie, S.C.K., Brussels, Belgium

Filed Jun. 10, 1983, Ser. No. 502,936
Claims priority, application Luxembourg, Jun. 17, 1982, 84209
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—1.5 **14 Claims**

1. An apparatus for determining the position of a metal body in a medium with low electric conductivity comprising:

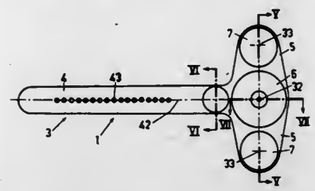
a support means,

a radiating self-induction coil mounted on said support means,

an A.C. current source,

a connecting means connecting the A.C. current source to the radiating self-induction coil, the radiation coil thus generating a radiation,

two receiving self-induction coils mounted on the support, the radiation of the radiation coil generating signals in the receiving coils, the radiation coil and the two receiving coils having parallel axes, the receiving coils being arranged symmetrically relative to the radiating coil, the radiating coil and the receiving coils having symmetry planes at right angle to said axes, said symmetry planes of



the receiving coils coinciding with one another and differing from said symmetry plane of the radiating coil to create an enclosure adapted to receive at least a portion of said medium which contains said metal body and in a space between the receiving coils and facing the radiating coil being free,

and

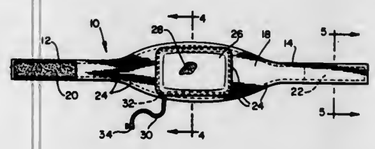
signaling means, the receiving coils being connected to the signaling means and controling said means according to a phase-shift of the signals generated in the receiving coils by the radiation from the radiating coil.

4,552,135

LUMBAR BELT

Gabor B. Racz, 4504 17th St., Lubbock, Tex. 79416, and Royce C. Lewis, Jr., 5233 W. 19th St., Lubbock, Tex. 79407

Filed Mar. 5, 1984, Ser. No. 586,438
Int. Cl.⁴ A61F *5/02*
U.S. Cl. 128—78 **9 Claims**



1. A back support apparatus for supporting the small of one's back, said apparatus is an elongated, circumferentially extending belt which is adapted to be releasably placed about a person's trunk;

said belt apparatus includes a center panel connected to opposed elongated flexible end panels, the end panels have marginal free ends which terminate in a fastener means by which the opposed free ends can be fastened together and thereby girdle the trunk of a person;

said center panel is adapted to be placed at the small of one's back, and has an inside surface which can be brought to bear against a person's trunk, a variable cushion positioned on said inside surface, said cushion is of a size to be received within the small of one's back;

said cushion is in the form of an enclosure which forms a variable chamber, said variable chamber is connected to the atmosphere by a valve means; biasing means contained within said variable chamber for urging the variable chamber walls to expand outwardly and thereby fill the variable chamber with atmospheric air when said valve means is open.

4,552,136

FEMORAL RASP

Robert V. Kenna, Saddle River, N.J., assignor to Howmedica, Inc., New York, N.Y.

Filed Oct. 19, 1983, Ser. No. 543,203
Int. Cl.⁴ A61F *5/04, 17/32*
U.S. Cl. 128—92 E **16 Claims**



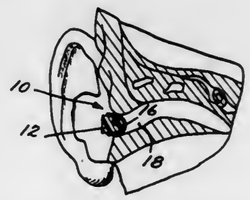
1. A femoral rasp for preparing an intramedullary canal for receiving the stem of a femoral hip prosthesis, the rasp comprising a body section with anterior, posterior, lateral and medial faces and generally divided into a wide proximal portion and a substantially longer narrow distal portion, the body section having a shape that general corresponds to the stem of the femoral hip prosthesis to be inserted into the prepared intramedullary canal; a plurality of spaced apart cutting teeth on selected portions of the outside surface of the body section for removing cancellous tissue and bone, the majority of the cutting teeth extending across each of the four faces of the body section; and a smooth surface on the lateral face of the body section at the free end of the distal portion for preventing violation of the lateral cortex upon insertion of the body section into the intramedullary canal.

4,552,137

EARPLUGS

Richard H. Strauss, 1501 Doone Rd., Columbus, Ohio 43221

Filed Aug. 16, 1983, Ser. No. 523,422
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.⁴ A61F *11/02*
U.S. Cl. 128—152 **6 Claims**



1. An earplug comprised of a preformed self-supporting body of resilient elastomeric material selected from the group consisting of foamed and unfoamed rubber and foamed and unfoamed synthetic plastics material, said body having a front face and a rear face, said front face having a generally convex forward surface adapted to conform to and cover the opening of the ear canal and a rearward surface and said body having a size such that it is adapted to reside within the external ear when said generally convex surface is positioned over the opening of the ear canal, and a layer of pressure sensitive adhesive on said generally convex surface for releasably adhering the body to the periphery of the ear canal opening.

4,552,138

DRESSING MATERIAL BASED ON A HYDROGEL, AND A PROCESS FOR ITS PRODUCTION

Wolfgang Hofeditz; Joachim Hornig, and Werner Karmann, all of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 8, 1983, Ser. No. 502,362

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224382

Int. Cl.⁴ A61L *15/01*

U.S. Cl. 128—156 **17 Claims**

1. A wound dressing material of at least one layer of a polymeric, hydrophilic gel and, where relevant, one or more layers of a carrier material as an intermediate and/or covering layer, wherein the gel comprises 40–50% by weight of a polyvinyl alcohol which is crosslinked and acetalized with formaldehyde and is water-insoluble to the extent of at least 90%, 15–30% by weight of water, and 15–45% by weight of one or more polyhydric alcohols with 2–6 carbon atoms.

4,552,139

NARCOTICS EVAPORATOR HAVING A MONITOR EQUIPPED BY-PASS

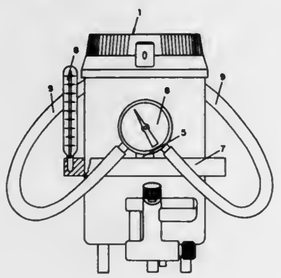
Ulrich Altner, Bad Segeberg; H. Wolfgang Falb, Krumesse, and Carl F. Wallroth, Lubeck, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 4, 1984, Ser. No. 596,584

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315943

Int. Cl.⁴ A61M *11/00*

U.S. Cl. 128—200.14 **3 Claims**



1. In a anaesthetics evaporator having an evaporating chamber with a flow into and out of the chamber, further including by-pass flow means conducted parallel to the interior flow around the exterior of the chamber, the improvement comprising an adapter mounted on the evaporator and having an inlet and an outlet passage for the gas to and from the interior of the chamber, a by-pass flow conduit connected from the inlet passage around the exterior of the chamber to the outlet passage, and including a differential pressure manometer connected in said conduit between said inlet passage and said outlet passage, and a thermometer mounted on said evaporator in heat contact relationship therewith.

4,552,140

EMERGENCY ESCAPE DEVICE

John J. Cowley, Toronto, Canada, and Selby D. Hussey, Vernon Hills, Ill., assignors to Erie Manufacturing Co., Milwaukee, Wis.

Filed Apr. 29, 1983, Ser. No. 490,034

Int. Cl.⁴ A62B *7/00*

U.S. Cl. 128—201.25 **14 Claims**

1. An emergency escape device, comprising:

an inflatable collar having a neck opening sufficiently large to fit over a user's head;

an annular reservoir for containing a supply of pressurized oxygen gas and concentrically positioned on said collar such that, when in use, said collar is located between said reservoir and a user's body so that when said collar is inflated the weight of said reservoir seals said collar around the user's head, said reservoir includes a housing containing a continuous double coil of tubing having an inner coil concentric with an outer coil;



a transparent impervious flexible hood adapted to surround a user's head and having an open end sealingly affixed to said collar around said reservoir and

control means associated with said reservoir and actuatable by the user for delivering oxygen from said reservoir to simultaneously fill said hood and inflate said collar.

4,552,141

ANESTHETIC RESPIRATORY SYSTEM

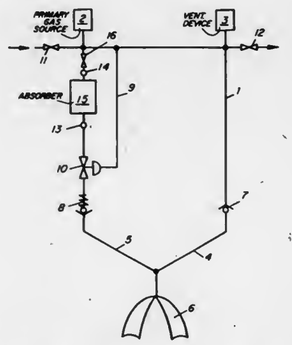
G. Torri, Milan, Italy, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,370

Claims priority, application European Pat. Off., Apr. 9, 1983, 83103470.7

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—205.12 **4 Claims**



1. An anesthesia system for inhalation narcoses which is switchable from partial or total rebreathing to non-rebreathing modes of operation, comprising a ring line connected to a patient outlet forming an inspiration gas branch and an expiration gas branch, one-way valve means in each said inspiratory and expiratory branches for directing gas flow from said inspiratory gas branch to said patient connection and from said patient connection to said expiratory gas branch, a controllable outlet valve mounted in said expiration gas branch downstream of said one-way valve means, a CO_2 absorber mounted in said expiration branch downstream of said outlet valve, said expiration branch having spaced apart connection points, said CO_2 absorber having an inlet and an outlet detachably mounted to said connection points, one connection point being

downstream of said absorber including a shut-off element including means positively actuated by the removal of said absorber from said ring line which thereby interrupts said ring line and establishes separate expiration and inspiration branches of said respiration line, said second point of connection of said absorber being opened upon removal of said absorber and being located upstream of said absorber and downstream of said controllable outlet valve, gas source means connected to said ring line downstream of said one connection point for providing an increased pressure in said ring line during an inspiratory phase and a decreased pressure during an exhalation phase, pressure relief valve means connected to said ring line downstream of said one connection point and means responsive to said increased pressure for closing said controllable outlet valve.

4,552,142

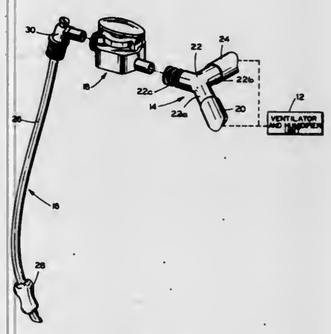
VENTILATOR SYSTEM HAVING A CONTROL VALVE IN THE VENTILATOR CIRCUIT

Allan Hoffman, and Harry Benford, both of Toledo, Ohio, assignors to Ohio Medical Research, Inc., Toledo, Ohio

Filed May 10, 1984, Ser. No. 608,704

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 128—207.16 **5 Claims**



1. A ventilator system comprising, in combination:

ventilator means for providing a supply of air at a predetermined pressure, said ventilator means including means for humidifying the pressurized air;

conduit means having an inlet and an outlet, the inlet of said conduit means connected to said ventilator means to receive the pressurized and humidified air;

tube means for introducing the pressurized and humidified air into a patient;

normally open valve means connected between said tube means and the outlet of said conduit means for providing a normally open flow path therebetween, said valve means operable to close the outlet of said conduit means.

4,552,143

REMOVABLE SWITCH ELECTROCAUTERY INSTRUMENTS

Edward A. Lottick, 789 Wyoming Ave., Kingston, Pa. 18704

Continuation-in-part of Ser. No. 242,746, Mar. 11, 1981, Pat. No. 4,370,980. This application Nov. 22, 1982, Ser. No. 443,517

Int. Cl.⁴ A61B *17/39*

U.S. Cl. 128—303.14 **23 Claims**

1. An electrocautery instrument, comprising:

a conductive member adapted to come into contact with tissue for electrocauterization;

a handle on said conductive member enabling said conductive member to be positioned by surgical personnel;

means for electrically insulating said conductive member from said surgical personnel, said electrical insulating means including enabling means for enabling an electrical connection to said conductive member; and

switch means including at least one electrically conductive spring clamp member releasably attaching said switch means to said handle, said switch means having at least one releasable electrical connection to said conductive



member via said spring clamp member and said enabling means, and said switch means including means for electrically connecting said spring clamp member to a source of electrical energy, whereby said switch means may be readily removed from and replaced on said electrocautery instrument.

4,552,144

BRASSIERE

Victor E. Selvaggi, 11855 NE. 19 Dr., N. Miami, Fla. 33181

Filed Jun. 11, 1984, Ser. No. 619,568

Int. Cl.⁴ A41C *3/00*

U.S. Cl. 128—510 **4 Claims**



1. For use with a gown of the type having deep plunging neckline to meet at about the waistband of the garment,

an improved brassiere 22 comprising:

a first and second brassiere cup 4, 4' each having a pair of generally vertical side edges 14, 14' an a top and bottom edge,

a waistband 25 having a front portion 2, 2', a rear portion 32, and a first and second side portion 5, 5', connecting the front and rear portions together; said waistband having a first and second end and fastening means 7 on said ends for mutual intercooperation to connect the same together to form said band, said fastening means being normally beneath and between said cups,

a first and second back strap, each having an upward end

and a lower end, the lower end of each being secured to the rear portion of said waistband at spaced locations with respect to one another and each location being substantially equispaced from the adjacent side portion,

a brassiere cup support means for each cup, each support means having,

a pair of straps extending substantially vertically from the side edge of the front portion of the waistband below said brassiere cup, and

a first and second generally upwardly extending strap from the top edge adjacent one of the side edges of the cup and converging to a distal end zone,

means on the distal end zone to attach to the upper end of the back strap.

4,552,145

NERVE IDENTIFICATION METHOD

Danny A. Riley, Brookfield, Wis., and James L. W. Bain, Sunnyvale, CA, assignors to The Medical College of Wisconsin, Milwaukee, Wis.

Filed Jun. 29, 1983, Ser. No. 508,854

Int. Cl.⁴ A61N *5/00*

U.S. Cl. 128—630 **5 Claims**

1. A method of identifying the matching nerve fascicles in proximal and distal nerve stumps for reanastomosis which comprises histochemically making a first visible image of the carbonic anhydrase emitted by one severed nerve end and a second visible image of the carbonic anhydrase emitted by the other severed nerve end and comparing the two images to identify which nerve fascicles should be rejoined.

4,552,146

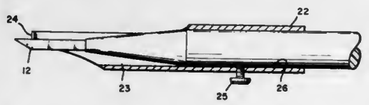
DISPOSABLE OPHTHALMIC INSTRUMENT FOR PERFORMING RADIAL KERATOTOMY ON THE CORNEA

Ronald P. Jensen, and Arthur N. Allcroft, both of Glendale, Calif., assignors to Myocur, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 379,362, May 18, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,263

Int. Cl.⁴ A61B *17/32*; B26B *29/00*

U.S. Cl. 128—305 **3 Claims**



1. An ophthalmic instrument for use in performing radial keratotomy on the cornea of a patient for correcting myopia and/or astigmatism of the patient, the ophthalmic instrument comprising:

a surgical blade having a suitable width for making an incision into the cornea of the patient;

an elongated handle to which the surgical blade is fixedly coupled; and

a depth-guide which is a hollow, cylindrical member slidably coupled to the elongated handle, the member having a pair of a protruding arms, each of which has a first end and a rounded second end and which extend parallel to each other and to the longitudinal axis of the hollow, cylindrical member from the first ends of the protruding arms for most of their length and then sharply converge adjacent, but not contiguous to the rounded second ends of the protruding arms, the second ends of the protruding arms being spaced apart a distance slightly greater than the width of the surgical blade whereby the rounded second ends of the protruding arms slidably rest on the surface of the cornea in order to control the incision depth of the surgical blade.

4,552,147

APPLICATOR FOR LIVESTOCK TAG

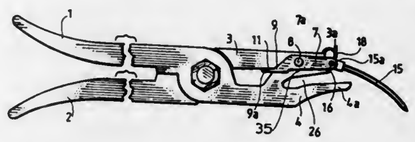
Michael S. Gardner, 108 Waiatarua Rd., Remuera, Auckland, New Zealand

Filed Aug. 30, 1983, Ser. No. 527,831

Claims priority, application New Zealand, May 16, 1983, 204234

Int. Cl.⁴ A01K *11/00*

U.S. Cl. 128—330 **9 Claims**



1. An applicator for a livestock tag, including at least two pivotally connected handle members, extending into or being attached to first and second jaws; pin mounting means being pivotally connected to a first jaw member; an elongate pin being pivotally connected adjacent to an end of said pin mounting means; a pin restraining housing being provided adjacent to an end of said first jaw member; spring biasing means connected between the pin mounting means and the first jaw member for normally urging at least an upper part of said pin to be located within said restraining housing for precluding pivotal movement of the pin; the second jaw member having actuating means for contacting the pin mounting means when the jaws are closed and causing the pin mounting means to pivot about its connection with the first jaw member against the action of the biasing means; such movement causing the pin to move out of the pin restraining housing to thus permit the pin to pivot about and relative to, its pivotal attachment to the pin mounting means.

4,552,148

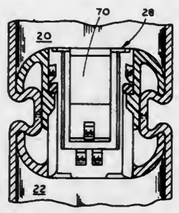
ANASTOMOTIC DEVICE

Thomas G. Hardy, Jr., Columbus; A. L. Kaganov, Stamford, and W. G. Pace, Columbus, all of Ohio, assignors to American Cyanamid Company, Stamford, Conn., a part interest

Continuation of Ser. No. 287,500, Jul. 27, 1981, Pat. No. 4,467,804, which is a continuation-in-part of Ser. No. 198,448, Oct. 20, 1980, abandoned. This application Feb. 27, 1984, Ser. No. 583,956

Int. Cl.⁴ A61B *17/11*

U.S. Cl. 128—334 C **11 Claims**



1. An anastomosis device for use in the surgical joining of the free ends of two tubular members to be anastomosed, said device comprising: a pair of identical ring members for securement to the free end of each of the tubular members to be anastomosed; at least one mating prong and one separate prong integral with and depending from each of said ring members, and prongs cooperatively mating with each other to form an annular coupling tube connecting said ring members; cooperatively connectable engaging pawls and locking slots formed in said separate and mating prongs enabling the securement of said ring members at first and second predetermined distances from each other whereby said tubular member free ends are ultimately positioned contiguous to each other proximate said ring members and said engaged separate and mating prongs; suture means extending around each tubular member free end pulling and holding said free end proximate said ring member and said engaged and separate mating prongs forming said annular coupling tube, and contiguous to the other tubular member free end whereby said engaging pawls engage said locking slots and secure said ring members at a first predetermined distance from each other to enable the positioning of said tubular member free ends proximate said ring members and the placement of said purse-string suture there around and said engaging pawls engage said locking slots and secure said ring members at a second predetermined distance from each other when said ring members are moved toward each other to position said tubular member free ends contiguous to each other without penetrating the tubular member free ends and enable said free ends to grow together and approximate the inner, middle and outer surfaces of the tubular member without necrosis.

4,552,149

HEAD COOLING IMPLEMENT

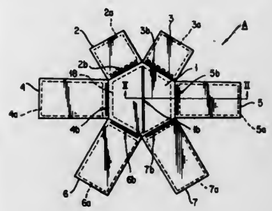
Tokuji Tatsuki, Osaka, Japan, assignor to Kabushiki Kaisha Dunlop Home Products, Kobe, Japan

Filed Mar. 30, 1983, Ser. No. 480,300

Claims priority, application Japan, Nov. 19, 1982, 57-176345[U]; Jan. 17, 1983, 58-5249[U]

Int. Cl.⁴ A61F *7/00*

U.S. Cl. 128—402 **9 Claims**



1. A head cooling implement comrising:

a main body consisting of a first cooling piece for covering the top of the head and a plurality of other cooling pieces radially arranged around said first cooling piece and positioned for covering the front, sides and back of the head, each said cooling piece comprising a sealed bag containing a coolant;

a first stretchable belt means adapted to be applied over the top of the head and under the chin so as to bring said head top cooling piece of said main body into close contact with the top of the head;

a second stretchable belt means adapted to bring said other cooling pieces of said main body into close contact with the skull at suitable places therearound; and

a heat insulating cap which covers said main body.

4,552,150

METHOD AND APPARATUS TO ASSIST CARDIAC MUSCLE FUNCTIONING

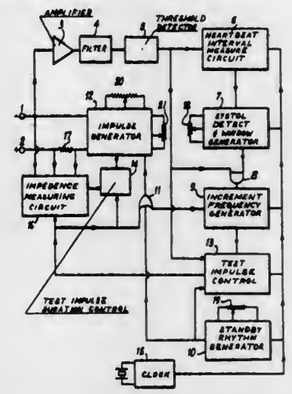
Fred Zacouto, 16 rue de la Convention, 75015 Paris, France

Filed Jun. 14, 1983, Ser. No. 504,170

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **23 Claims**

1. A process for aiding the operation of the heart muscle comprising sensing the heart cycles of the heart, automatically and periodically sending to the heart muscle at a moment before the expected end of a heart cycle, electrical sub-threshold test impulses of a value insufficient to normally produce an electro-systole so long as the heart threshold is greater than a predetermined value, but sufficient to produce an electro-systole if the physiological state of the heart muscle has charged and decreased to a threshold below said predetermined value, and detecting the occurence or non-occurence of this electro-systole during a limited time window consecutive to the impulse and ending before the expected end of said heart cycle.



4,552,151

PROCESS AND MEANS FOR RAPID POINT BY POINT SURVEY OF BODY SCANNING RADIATION FIELD

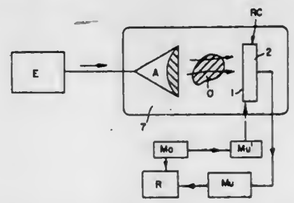
Jean-Charles Bolomey, Sceaux, and Yves Michel, Massy, both of France, assignors to Centre National de la Recherche Scientifique, Paris and Societe d'Etude du Radant, Les Ulis, both of, France

Continuation-in-part of Ser. No. 394,986, Jul. 2, 1982,. This application Dec. 5, 1984, Ser. No. 677,897

Claims priority, application France, Jul. 2, 1981, 81 13005

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—653 **5 Claims**



1. A system for rapid and point by point survey of a UHF radiation field having passed through a body, the system comprising:

an antenna for transmitting UHF radiation to the body undergoing scanning;

a stack of waveguides having coplanar apertures and positioned in radiation alignment with the antenna and at a distance therefrom sufficient for location of the body between the antenna and the stack, adjacent individual waveguides being spaced at a distance less than one wavelength;

a panel having a plurality of parallel alternating columns of conductors and serially connected diodes biased in the same direction, adjacent diode columns being less than one wavelength apart;

the columns being positioned parallel to the component of a radiation field vector to be measured;

means for reverse biasing all of the diode columns except a single selected forward biased diode column thereby polarizing the selected diode column to impinging radiation;

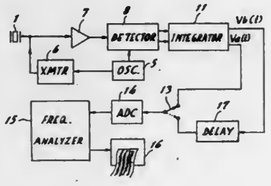
means for producing a signal in relation to the electromagnetic field at the orthogonal crossing of a selected column

in the panel and a selected row in the stack of waveguides, which corresponds to a scanned point which is in registry with the orthogonal crossing.

4,552,152
ULTRASONIC DIAGNOSTIC APPARATUS USING DOPPLER EFFECT

Ryobun Tachita; Tsutomu Yano, both of Kawasaki; Hiroshi Fukukita, Tokyo; Kuniaki Fukaya, Atsugi, and Akira Fukumoto, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Kadoma, Japan

Filed Jul. 13, 1983, Ser. No. 513,323
Claims priority, application Japan, Jul. 14, 1982, 57-122553
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—663 **9 Claims**



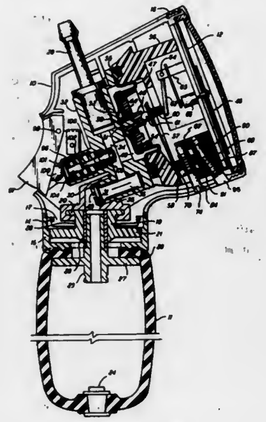
1. An ultrasonic diagnostic apparatus comprising:
an ultrasonic diagnostic probe means for transmitting and receiving ultrasonic pulse signals;
detector means coupled to said ultrasonic diagnostic probe means for detecting phases of signals received by said ultrasonic diagnostic probe means and for producing output signals indicative of said phases;
means coupled to said detector means for integrating said phase indicative signals during a timing period corresponding to one of transmitting and receiving timing of respective said ultrasonic pulse signals by said probe means and for producing integrated signals as output;
means coupled to said integrating means for selecting a plurality of said integrated signals during a said period of integration; and
means coupled to said selecting means for analyzing the frequency of the difference of at least one pair of said plurality of integrated signals selected by said selecting means.

4,552,153
PRESSURE GAUGE

Richard W. Newman; John D. Connors, both of Auburn; Andrew J. Kugler, Camillus, all of N.Y., and Herbert H. Loeffler, Arlington, Mass., assignors to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Nov. 17, 1983, Ser. No. 552,693
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—677 **24 Claims**

1. A fluid pressure measuring device comprising a housing; means connected to the housing for admitting fluid into the housing; a gauge on the housing which indicates the pressure of the fluid, the gauge having a dial and coacting needle; and means responsive to the fluid pressure in the housing for imparting rotational movement to the needle relative to the dial, the last-named means including a piston that is movable linearly in the housing by the fluid pressure, a leaf spring having a free end and an end fixed to the housing, the free end of the leaf spring being operatively engaged by the piston whereby linear movement of the piston causes arcuate movement of the leaf spring free end, means in the housing interconnecting the free end of the leaf spring and the gauge needle whereby the arcuate movement of the spring free end causes the needle to rotate, and movable fulcrum means engaging the leaf spring

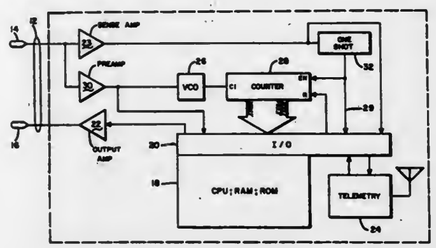


adjacent its fixed end for controlling the spring rate of the leaf spring and zero position of the gauge needle relative to the dial.

4,552,154
WAVEFORM MORPHOLOGY DISCRIMINATOR AND METHOD

Jerome T. Hartlaub, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 12, 1984, Ser. No. 588,277
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—702 **4 Claims**

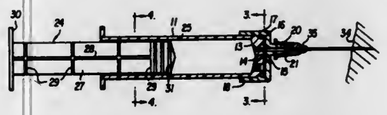


1. Apparatus for comparing intracardiac depolarization waveforms comprising:
means adapted to be coupled to the ventricle of a patient's heart for generating a logic level ventricular sense signal in response to a ventricular depolarization;
means responsive to said sense signal for defining a count window signal;
means for counting a clock signal, responsively enabled by said count window signal, for generating a count index;
means for generating said clock signal, said clock signal having a frequency proportional to the instantaneous value of said ventricular depolarization;
means for defining and storing a reference index; and
means coupled to said means for counting for comparing the value of said count index with said reference index, to discriminate between depolarization waveforms.

4,552,155
DIAGNOSTIC SPECIMEN COLLECTOR

Roger F. Etherington, Newport Beach, and Clayton L. Ester, Sepulveda, both of Calif., assignors to Transmed Corporation, San Diego, Calif.

Division of Ser. No. 35,728, May 3, 1979, Pat. No. 4,320,770.
This application Mar. 22, 1982, Ser. No. 360,438
The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.
Int. Cl.⁴ A61B *5/14, 10/00*
U.S. Cl. 128—766 **7 Claims**



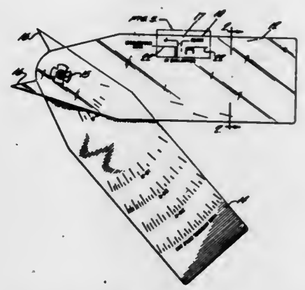
1. A diagnostic specimen collector consisting of:
an elongated hollow body open at one end and closed at the opposite end with a single orifice in said closed end;
a plunger having sealing means on one end which is slidably inserted into, and in sealing relationship with, said body to vary the interior volume of said body;
a closure for said closed end orifice consisting of a one-piece cap having an end wall with a skirt extension exteriorly mounted to encompass said closed end concentrically and rotatable thereabout and a nipple to receive compatible fittings of specimen taking medical devices extending outwardly from the outer surface of said end wall and an orifice in said closure passing axially through said nipple and said end wall, said closure being rotatable from a first position in which both orifices are out of communication and said closed end orifice is in a sealed condition to a second position in which both orifices are in sealed communication for the passage of a specimen upon movement of said plunger and back to said first position after passage of said specimen; and sealing means for the closed end orifice comprising an O-ring positioned concentrically with reference to said closed end orifice in an annular groove on an outer surface of said closed end, a portion of said O-ring extending above said closed end outer surface to create a friction-free space between said outer surface and a inner surface of said closure except for a moving area of sealing contact between said ring portion and the inner surface of the closure, said ring portion providing a bearing surface for said rotation of said closure and an agent for application to said specimen in the interior of said hollow body.

4,552,156
EXERCISE S-T SEGMENT EVALUATOR

Frank W. Jackson, Twillingate, R.D. 3, Mechanicsburg, Pa. 17055, assignor to Frank W. Jackson, Mechanicsburg, Pa.

Filed Jun. 24, 1983, Ser. No. 507,392
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—703 **7 Claims**

1. An overlay device for use with an electrocardiogram to evaluate the normalcy of the S-T segment in an exercise test program, comprising: a transparent overlay base sized to be placed over the electrocardiogram; a reference line on said base positionable to overlay the isoelectric line of said electrocardiogram; a J-point line on said base perpendicularly crossing said reference line, said J-point line being positionable to overlay a J-point on said electrocardiogram; a first point mark on said base locating a point 0.08 seconds after said J-point line and one mm below said reference line; and a second point mark on said base directly below said first mark and locating a point 0.08 seconds after said J-point line and two mm below said reference line; whereby the location of the S-T segment with



respect to the first and second point marks describes the normalcy of the S-T segment.

4,552,157
OPEN CURVE, ATRIAL "J" ELECTRODE

Philip O. Littleford, 2400 Bedford Rd., Orlando, Fla. 32803

Continuation-in-part of Ser. No. 168,742, Jul. 14, 1980, Pat. No. 4,357,947, and Ser. No. 231,103, Feb. 3, 1981, Pat. No. 4,401,127. This application Jun. 17, 1982, Ser. No. 389,170
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—786 **4 Claims**



1. A pacing electrode for insertion through a puncture wound and through the circulatory system into a patient's heart, said electrode comprising
(a) a flexible conductor having an outer insulating sheath, said sheath and conductor including an oblong body portion, a distal portion and a proximal end, said distal portion extending in a direction away from the axial direction of said body portion, said distal portion having sufficient flexibility and elastic memory so as to be straightened for passage through the patient's circulatory system and for reforming the extension in said direction after passage into the patient's heart;
(b) a conductive terminal at the end of said distal portion of said conductor for electrical connection within the heart;
(c) means along said body portion at said proximal end of said conductor for indicating said direction of said distal portion;
(d) means adjacent said proximal end of said sheath for interconnection to a pacemaker pulse generator, said

indicating means including a wing joined to said sheath adjacent said proximal end, said wind extending away from said conductor in a fixed relation to the direction of said distal portion;

(e) said distal portion of said conductor is inserted into the heart with the proximal end and said indicating means extending outside of said puncture wound, whereby said distal portion may be located in a desired position by manipulation of said proximal end with reference to said indicating means; and wherein

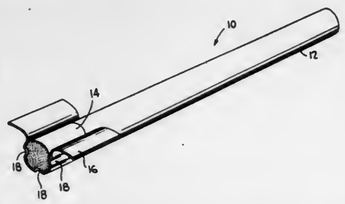
(f) the plane of said distal portion is rotated between 20° and 50° away from a plane which is normal to the direction of said wings.

4,552,158

FREE AIR DILUTION SMOKE FILTER AND METHOD AND APPARATUS FOR FABRICATING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 333,815, Dec. 23, 1981, Pat. No. 4,499,912.
This application Oct. 3, 1984, Ser. No. 657,264
Int. Cl.⁴ A24C *5/52*; A24D *3/02*
U.S. Cl. 131—94 **3 Claims**



1. A method for making filtered cigarettes comprising the steps of:

providing a filtering material including a multiplicity of fibrous members;

defining an elongated bonded zone;

continuously feeding said filtering material through said bonding zone;

feeding a bond activating agent into contact with said filtering material in said bonding zone to bond said fibrous members to each other at spaced contact points to form an elongated, smoke-permeable filter rod defining a tortuous path for passage of smoke therethrough;

joining said filter rod in end-to-end relation with a tobacco rod by wrapping the entire filter rod member and an adjacent portion of the tobacco rod with smoke-impervious tipping material so as to juxtapose portions of the inner surface of the smoke-impervious tipping material with the exterior surface of the rod member to form sealed areas precluding passage of smoke thereacross; and

forming longitudinally continuous grooves in the form of circumferentially spaced recesses in said filter rod and said tipping material throughout a portion of the length of said filter rod extending from an end of said filter rod remote from said tobacco end.

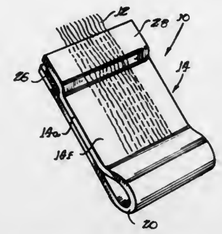
4,552,159

APPARATUS FOR TREATING HAIR

Vittorio E. Fabbri, 8411 Crystal Springs Rd., Woodstock, Ill. 60098, and Jackie D. Bell, 1596 Bedlington Dr., Barrington, Ill. 60010

Filed Jun. 21, 1983, Ser. No. 506,441
Int. Cl.⁴ A45D *7/00, 8/00*
U.S. Cl. 132—9 **7 Claims**

1. A hair treating device comprising a first pliable liquid impermeable sheet adapted to be placed in underlying relation to selected strands of hair during application of a hair treating substance to the selected strands, said first sheet being of sufficient lateral width to extend laterally outwardly from opposite sides of the selected strands, and a second pliable liquid impermeable sheet of substantially similar lateral width as said first sheet and of sufficient length to substantially overlie said first sheet in juxtaposed generally full surface contact when placed thereagainst with said selected strands between said first and second sheets, said first and second sheets having discrete



domains of alternating magnetic polarity defined throughout substantially their full surface areas operative to releasably maintain said sheets in selectively placed juxtaposed relation through magnetic attraction therebetween and establish a liquid seal about substantially the full periphery of said selected strands after application of said treating materials.

4,552,160

ATTACHING AN ARTIFICIAL NAIL

Gloria D. Griggs, Dallas, Tex., assignor to Tip-N-Wrap, Inc., Dallas, Tex.

Continuation of Ser. No. 454,436, Dec. 29, 1982, abandoned.
This application Dec. 3, 1984, Ser. No. 677,319
Int. Cl.⁴ A45D *29/00*
U.S. Cl. 132—73 **9 Claims**



1. A method of applying an artificial nail to a natural nail, comprising the steps of:

(a) attaching the artificial nail to a natural nail using a liquid adhesive material;

(b) buffing the surfaces of the artificial nail and the natural nail until the surface of the artificial nail is substantially flush with that of the natural nail;

(c) placing a precut layer of non-woven, randomly intermingled cellulose fibers over substantially the entire surfaces of the natural and artificial nails without contacting the cuticle of the natural nail, said fibers being oriented substantially along the major axis of the respective surfaces of the natural and artificial nail;

(d) applying the adhesive material to the fibers until said fibers are substantially saturated and allowing the adhesive material to dry such that the fibers become essentially invisible; and,

(e) buffing the surfaces of the natural and artificial nails until said surfaces are substantially smooth.

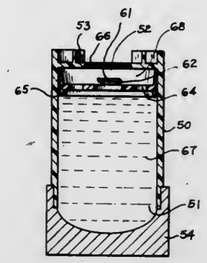
4,552,161

STICK ANTIPERSPIRANT PACKAGE AND PROCESS

John H. Hill, Edison, and Luis S. Lisboa, Newark, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 16, 1983, Ser. No. 532,876
Int. Cl.⁴ A45D *40/30*
U.S. Cl. 132—88.5 **7 Claims**

1. A twist-up type container intended to hold and dispense a solid, wax-like stick product; said container comprising in combination a housing for said proudct, a following, and a threaded spindle having a latch collar threaded thereon; said housing being open at the top and closed at the base except for an opening substantially at the center of said base, said base opening being sufficiently large for said latch collar to pass through, said follower being positioned in said housing and having an opening substantially at the center thereof larger than said threaded spindle and in substantial registration with



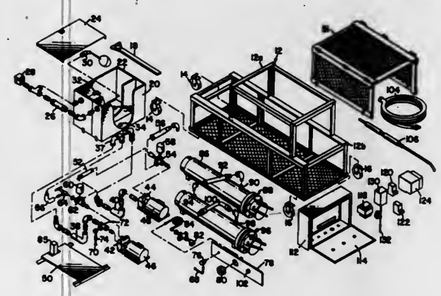
said base opening; said follower further having means to lock it to said latch collar when said spindle is inserted into said housing through said basing opening thereof; said spindle further having means to lock it rotatably in said base opening; whereby said container may be filled with molten product through said base opening and elevator opening, and said spindle maybe inserted and locked to said follower after said container is filled, after which said molten product solidifies in said housing.

4,552,162

ELECTRIC COMBINATION CLEANER

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed May 26, 1983, Ser. No. 498,457
Int. Cl.⁴ F16K *49/00*
U.S. Cl. 134—57 R **4 Claims**



4. A pressure cleaning system, which comprises:

a frame;

wheels for supporting said frame for movement;

a supply tank mounted on said frame, said tank having an inlet and an outlet;

a float valve connected to the inlet of said tank;

a flow sensor connected to the inlet of said tank;

a pump mounted on said frame at a level substantially even with the outlet of said tank, said pump having an inlet and an outlet;

an electric motor drivingly connected to said pump;

a removable shroud enclosing pump and said motor;

a U-shaped conduit interconnecting the outlet of said tank and inlet of said pump;

an elongate, closed electric heater tank mounted on said frame below said pump, said heater tank including an inlet and an outlet positioned in spaced-apart relationship at opposite ends on the upper side of said tank;

an insulating jacket surrounding said electric heater tank;

means for interconnecting the inlet of said heater tank and the outlet of said pump;

a temperature sensor associated with said heater tank;

means defining a discharge outlet connected to the outlet of said heater tank;

a spray wand adapted for connection to said discharge outlet means;

a closed box with an openable front panel mounted on the other end of said frame opposite said supply tank; and

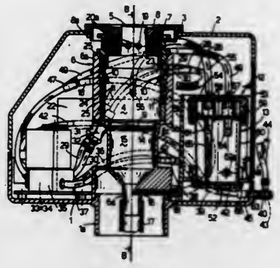
control means within said box and including sealed switches on the panel responsive to said flow and temperature sensors for controlling operation of said pump and heater tank in accordance with predetermined flow and temperature conditions in the system so that sufficient priming is maintained to avoid overheating and premature burnout of said heater tank.

4,552,163

CLEANING DEVICE FOR DENTAL INSTRUMENTS TO BE USED DURING SURGERY AND DENTAL TREATMENTS

Carlo Biancalana, Perugia; Giuseppe Vescovi, Pregassona, and Maurizio Volpini, Varese, all of Italy, assignors to Bitiess Microtecnica S.A., Switzerland

Filed Aug. 3, 1983, Ser. No. 519,907
Int. Cl.⁴ B08B *3/00*
U.S. Cl. 134—100 **7 Claims**



1. A device for cleaning, disinfecting and drying dental instruments, comprising:

a box-like container, in the upper part of which an entrance orifice is located;

a tubular body mounted below the entrance orifice, said body having a body orifice coaxial to the entrance orifice;

said body defining with its interior surfaces a substantially cylindrical treatment chamber;

a removable grate located at the bottom of the chamber;

a first series of nozzles dispensing a mixture of pressurized air and water into the chamber;

an atomizer unit for producing atomized disinfectant;

beneath the first series of nozzles is located a second series of nozzles which supply air mixed with the atomized disinfectant, the disinfectant being supplied by an airtight disposable cylinder;

said tubular body comprising a plurality of tubular coaxial members inserted one in the other, so that they can be disassembled;

wherein the outermost of said coaxial members comprises a first section substantially of the same length as the chamber and in which there is a second of said coaxial tubular members upon which is a third of said coaxial tubular members which has an opening that delimits the body orifice which is to be used for inserting the instruments into the chamber;

the outermost and second coaxial members having facing surfaces which form together a first manifold for receiving the mixture of pressurized air and water, which is dispensed through the first series of nozzles which extend through the second tubular coaxial member;

said facing surfaces also forming a coaxial manifold which receives the disinfectant mixed with air which is dispensed through the second series of nozzles which pass through the second coaxial tubular member;

a pair of sensing elements which produce photoelectric screening rays are mounted in the second tubular coaxial member adjacent openings in the third coaxial tubular member;

the rays form a barrier screen in the body orifice for detecting the presence of dental instruments;

a programming-timing unit being connected to and activated by said sensing elements;

the removable grate being located on a seat formed in said outermost tubular member;

a lower section of said outermost tubular member forms a waste pipe;

an air nozzle dispenses pressurized air into the waste pipe in the same direction in which the mixture flows from the chamber;

first supply pipes being connected to the first series of nozzles for supplying water and air to the nozzles;

first electro-valves for controlling the first supply pipes;

a second supply pipe for supplying pressurized air to the atomizer unit;

a second electro-valve for controlling the second supply pipe;

the electro-valves being normally closed and are opened according to a predetermined time and duration sequence by the programming unit.

4,552,164

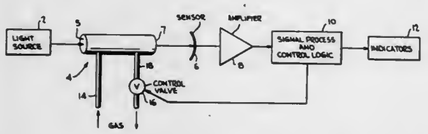
DETECTION METHOD AND APPARATUS

Tony Urella, R.D. #2, Bernville, Pa. 19506

Filed Jul. 31, 1981, Ser. No. 288,747

Int. Cl.⁴ A62B *7/02*

U.S. Cl. 137—2 **12 Claims**



1. An apparatus for use with a system for administration of anesthetics comprising predominantly a mixture of anesthetic gas and oxygen-containing gases, said apparatus comprising a sensor for detecting the presence of anesthetic gas in an oxygen or oxygen-containing gas delivery line prior to mixing said oxygen or oxygen-containing gas with the said anesthetic gas; said sensor being capable of developing a signal upon detection of said anesthetic gas in said oxygen or oxygen-containing gas delivery line, and means responsive to the signal developed for indicating the presence of said anesthetic gas in said oxygen or oxygen-containing gas delivery line which activates a warning or shuts off the oxygen or oxygen-containing gas delivery line.

4,552,165

METHOD AND DEVICE FOR MAINTAINING DENSITY OF A PRINTED COLOR CONSTANT

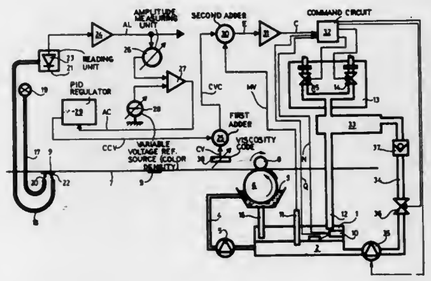
Zdenek Luska, Apples, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Jun. 20, 1984, Ser. No. 622,673

Claims priority, application Switzerland, Jun. 21, 1983, 3387/83

Int. Cl.⁴ B41F *31/00*

U.S. Cl. 137—3 **8 Claims**



1. A method for keeping constant density of a printed color on a medium, comprising the steps of:

receiving light rays reflected by a printed mark on the medium;

transmitting the reflected light rays to a photodiode to generate a signal corresponding to their intensity and thus representative of the density of the printed color;

measuring an amplitude of the signals and comparing a resulting measured value with a reference value to provide a correction signal;

combining the correction signal with a viscosity code signal indicating a viscosity code of an ink/solvent mixture used for printing on the medium in order to generate a corrected viscosity code signal;

combining the corrected viscosity code signal with a viscosity measuring signal derived from viscosity measurement of the ink/solvent mixture in order to provide an error signal; and

using the error signal to command opening or closing of valve means of a mixture for regulating the ink/solvent mixture.

4,552,166

SECONDARY CONTAINMENT SYSTEM AND METHOD

Daniel I. Chadbourne, Sr., and Daniel I. Chadbourne, Jr., both of San Mateo, Calif., assignors to DC Technologies, Inc., Oakland, Calif.

Filed Apr. 6, 1984, Ser. No. 597,614

Int. Cl.⁴ F16K *43/00*

U.S. Cl. 137—15 **18 Claims**

17. A method for retrofitting a rigid storage vessel to provide secondary containment, comprising the following steps:

forming a manhole opening in the rigid vessel;

inspecting the rigid vessel;

repairing the rigid vessel as necessary;

placing a flexible cell inner vessel through the manhole opening and into the rigid outer vessel, the inner vessel sized to generally conform to at least a portion of the interior of the rigid vessel when inflated;

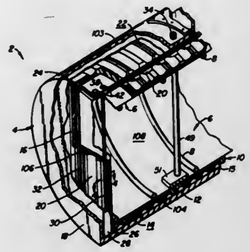
inflating the inner vessel;

securing a portion of the inner vessel, which surrounds an opening in the inner vessel, to the rigid vessel with the inner vessel opening and manhole opening being aligned;

mounting a plurality of inner vessel positioning members within the interior region so the inner vessel substantially fills the interior of the rigid vessel;

mounting an inner cover to the inner vessel opening to seal the interior of the inner vessel; and

mounting a manhole cover over the manhole opening to seal the interior of the rigid vessel so that true secondary containment is achieved whereby the rigid and inner vessels defining a region therebetween so providing access to said region through said manhole opening providing no access to the interior of said inner vessel.



4,552,167

METHOD OF AND DEVICE FOR CLEANING HOLLOW SPACES IN DOUBLE SEAT VALVES

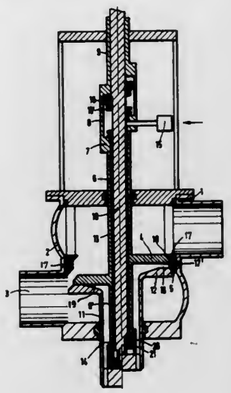
Wolfgang Bräkelmann, Unna-Uelzen, Fed. Rep. of Germany, assignor to Holstein & Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,467

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211692

Int. Cl.⁴ B08B *3/02, 9/02*

U.S. Cl. 137—15 **5 Claims**



1. A method of cleaning double seat valves of the type having two axially movable valve bodies defining an annular leakage space therebetween, and an annular leakage discharge conduit communicating with the leakage space, comprising the steps of ejecting at least three discrete jets of cleaning liquid along an inside wall of the discharge conduit, then bending each jet radially outwardly along the annular wall of the leakage space and spreading each jet into a sector on the periphery of the annular leakage space while mixing the liquid in adjoining sectors, then returning the mixed liquid from the periphery along the opposite wall of the leakage space and discharging the liquid along the opposite wall of the discharge conduit.

4,552,168

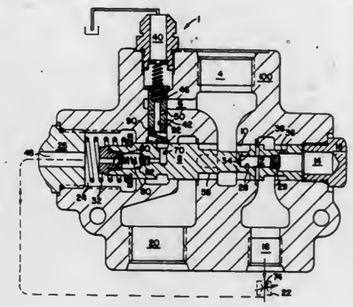
STABILIZER FOR PRIORITY FLOW DIVIDER VALVE

Probir K. Chatterjea, Mount Prospect, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed May 15, 1984, Ser. No. 610,894

Int. Cl.⁴ G05D *11/03*

U.S. Cl. 137—101 **21 Claims**



1. A priority flow divider valve for use with a primary demand control valve comprising:

a housing means including a first inlet, a first outlet for fluid communication with the primary demand valve, a second outlet, a bypass passage having fluid communication with said first inlet, a first bore and a second bore;

a supply valve spool biased within said first bore providing selective fluid communication between said first inlet and said first and second outlets;

means for fluid communication from the demand valve to said second bore;

means for preventing fluid communication from said second bore to the demand valve;

a bypass valve spool mounted within said second bore biased to prevent fluid commuication between said bypass passage and said second bore, said bypass valve spool allowing fluid communication between said bypass passage and said second bore during fluid communication from the demand valve to said second bore; and

means for retarding displacement of said bypass valve spool from a position allowing fluid communication between said bypass passage and said second bore to a position preventing fluid communication between said bypass passage and said second bore.

4,552,169

DEVICE FOR REGULATING THE PRESSURE OF A FLUID SUPPLIED TO A FEEDING CIRCUIT FROM A FLUID SOURCE

André Ecomard, Marly le Roi, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 226,983, Jan. 21, 1981, Pat. No. 4,418,535. This application Sep. 20, 1983, Ser. No. 533,900

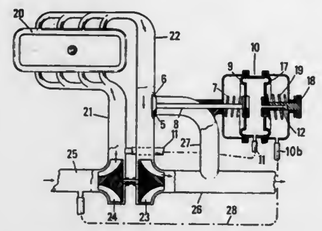
Claims priority, application France, Jan. 21, 1980, 80 01370

Int. Cl.⁴ G05D *11/00*; **F02B** *37/00*

U.S. Cl. 137—115 **6 Claims**

1. In a device for regulating fluid pressure in a utilization circuit having an inlet pipe means and an outlet pipe means, and fed with a fluid under pressure by a fluid source, the device comprising a by-pass fluid conduit connected parallel to said outlet pipe means of said utilization circuit, obturating means adapted for obturating said by-pass conduit, and control means for automatically moving said obturating means in a closed position when the pressure in the utilization circuit is lower than a predetermined value, the improvement wherein said control means comprises a pressure controller connected to said fluid pressure source through a first calibrated aperture and, said pressure controller having a first movable wall and a

second movable wall therein to define a fluid pressure receiving chamber therebetween with an outlet opening on the other side of the second movable wall, calibrated first spring means on said first movable wall, with said obturating means comprising a valve with a valve stem connected to said first movable wall with the first spring means disposed for urging said first movable wall toward said second movable wall and for moving said valve into closed position; a second calibrated spring for urging the second wall toward the fluid pressure receiving chamber, and a second calibrated aperture carried by said second wall and opening into said pressure receiving chamber and into a passageway leading into the other side of said second movable wall for allowing pressurized fluid to pass there-



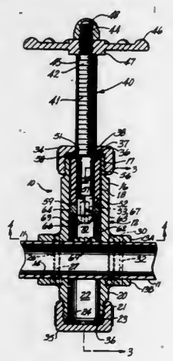
through from the fluid pressure receiving chamber to the outlet opening, and passageway means juxtaposed with said passageway for closing off passage of fluid through said passageway when the pressure in said pressure receiving chamber increases to a level sufficient to displace said second movable wall a distance sufficient to close said passageway, whereby as the fluid pressure in said utilization circuit increases, an initial displacement of said second movable wall closes said passageway, which causes a sudden rise in pressure in the fluid pressure receiving chamber so as to cause a full opening of the valve to thereby lower the pressure against the bias of said first spring means in the utilization circuit by diverting a partial flow through said by-pass conduit.

4,552,170

LINE INSERTABLE VALVE

David L. Margrave, 928 Buena Vista, South Pasadena, Calif. 91030

Filed Sep. 14, 1984, Ser. No. 650,822
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—318 **15 Claims**



1. A valve for insertion in an elongated fluid line, comprising:

a valve body having an opening therethrough to receive the line, the body being configured for fitting over and being sealingly attached to the line, the body defining a bore extending laterally from one side of the line opening, and a receiving chamber extending laterally from the line opening and diametrically opposed to the bore, the body including first and second closures secured thereto to close the bore and receiving chamber respectively;

a shaft extending through the first closure into the bore;

means on the shaft for rotatably advancing the shaft through the first closure toward the receiving chamber;

a cutter secured to an inner end of the shaft and configured to cut rotatably through at least a portion of the line as the shaft is advanced; and

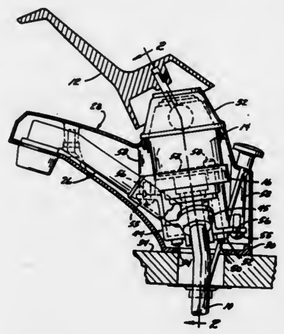
seal means positioned on the shaft between the cutter and first closure to be advanced into and seal against the cut portion of the line by continued advancement of the shaft when the cutter has passed through the line into the receiving chamber when the seal means or the cutter engages a stop means, thereby sealing the line from the receiving chamber.

4,552,171

SUPPLY CONDUIT MOUNTING ASSEMBLY FOR SINGLE LEVER FAUCET

Gerald J. Farrell, Elmhurst, and Rudy Y. Bisonaya, Oaklawn, both of Ill., assignors to Elkay Manufacturing Company, Broadview, Ill.

Filed Apr. 22, 1983, Ser. No. 487,823
Int. Cl.[4] F16L *5/00*
U.S. Cl. 137—359 **7 Claims**



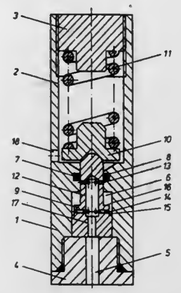
1. A single lever faucet adapted to be supplied by spaced hot and cold water supply conduits, said faucet comprising an escutcheon having support members formed on the interior thereof, a valve body having bores for receiving water from the ends of said water supply conduits, a mounting plate fastened to said support members of said escutcheon, means for securing said valve body to said mounting plate, said valve body providing first sealing surfaces adjacent the bores therein, said ends of said conduits being flared outwardly and forming inside surfaces providing second sealing surfaces facing said first sealing surfaces, said mounting plate having portions engaging sections of said water supply conduits adjacent said flared ends and mechanically gripping said sections to hold said flared ends of said supply conduits adjacent said valve body with the insides of said supply conduits connected to said valve body bores to provide continuous waterways, and sealing means including sealing elements between said first and second sealing surfaces adjacent the junction of said supply conduits and said valve body bores to seal said waterways from said mounting plate to prevent contact thereof with water in said waterways.

4,552,172

PRESSURE-LIMITING HYDRAULIC VALVE

Karl Krieger, Wuppertal, and Werner Reinelt, Bochum, both of Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,457
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245667
Int. Cl.[4] F16K *17/34*
U.S. Cl. 137—484.6 **1 Claim**



1. A pressure-limiting valve for hydraulic fluids subjected to high pressure, which valve comprises

(a) a valve housing having a stepped bore therein providing a first bore portion of smaller diameter leading directly into a second bore portion of larger diameter with an annular step between the two portions;

(b) a stepped switching piston arranged for axial displacement in said bore between a valve-open position and a valve-closed position, said piston having a first portion of smaller diameter for movement in said smaller-diameter bore portion and a second portion of larger diameter, divided by an annular step from said first piston portion, for movement in said larger-diameter bore portion;

(c) an inflow duct leading to said larger-diameter bore portion whereby an end of said larger-diameter portion of said piston is acted on by pressurised fluid supplied through said inflow duct;

(d) a hard piston-closing spring arranged to act on a closed end of the smaller-diameter portion of said piston at all times to oppose the pressure of the pressurised fluid on said end of the larger-diameter portion of said piston, said spring thereby determining the setting pressure of the valve and being arranged to yield only when said piston is displaced;

(e) an O-ring seal located in a circumferential annular groove in the inner wall of the smaller-diameter portion of said housing bore so as to seal off the smaller-diameter portion of said piston in the valve-closed position thereof;

(f) a blind-end axial bore formed in said piston and having an inlet end and an outlet end, said outlet end having a larger cross-sectional area than said inlet end, first transverse bores extending from said outlet end in a star-like formation to the outer surface of the smaller-diameter portion of the piston below the O-ring seal whereby displacement of the piston, when the setting pressure is exceeded, into the valve-open position thereof causes said first transverse bores to moves beyond the O-ring seal and to communicate with a fluid discharge duct, the combined cross-sectional areas of said first transverse bores being at least equal to the cross-sectional area of said outlet end; and

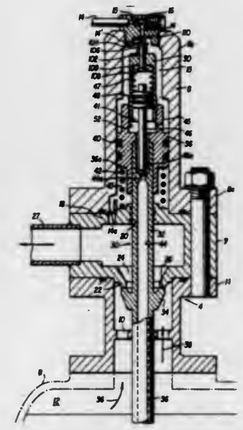
(g) second radially-extending transverse bores spaced axially from the first transverse bores and opening into an annular groove formed circumferentially in the larger-diameter portion of the piston adjacent the step thereof, the second radial bores being arranged to discharge fluid from said axial bore in said piston into a pressure chamber forming part of the housing bore and defined by the larger-diameter portion of the housing bore and the larger-diameter piston portion guided tightly therein, the cross-sectional area of the inflow duct being less than that of the larger-diameter portion of the housing bore and greater than that of the outlet end of said axial bore.

4,552,173

INTEGRATED CONTROL SAFETY VALVE

Jean Vayra, Meyreuil, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 23, 1983, Ser. No. 565,204
Claims priority, application France, Dec. 23, 1982, 82 21663
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—490 **8 Claims**



1. An integrated control safety valve for an enclosure containing a pressurized fluid, the valve incorporating a valve body fixed to a wall of the enclosure, said valve body being provided with an inlet and an outlet for the fluid, the inlet communicating with the pressurized enclosure, whilst the outlet is to the atmosphere, said valve body defining a chamber linking the inlet and the outlet, a valve placed in said chamber interrupting the connection between the inlet and the outlet, said valve comprising a stem, a main flap integral with said stem and able to seal a seat positioned between the inlet and the outlet, and a plunger integral with said stem and sliding in said chamber, elastic means for applying said main flap to its seat, a channel passing axially through said valve, a control flap sealing said channel, elastic means for applying said control flap to its seat, and an orifice connecting said chamber to the atmosphere, wherein said orifice is a metering hole and means are provided for sealing said orifice when the valve is in the closed position, said means being responsive to movement of said valve so that said means opens said orifice after opening of said main flap and closes said orifice before closing of said main flap.

4,552,174

SPRING-LOADED CHECK VALVE

Louis C. Carl, Horseheads, N.Y., and Charles J. Nevadunsky, Gillett, Pa., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 28, 1984, Ser. No. 656,120
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—527.2 **13 Claims**

1. A check valve comprising

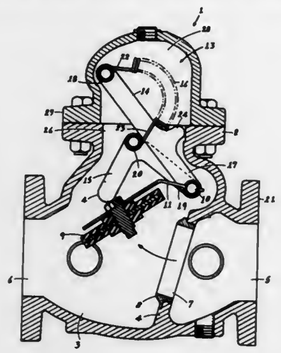
a housing bounding an internal space and including a partitioning portion that subdivides said internal space into an inlet compartment and an outlet compartment and has a

communicating passage therein and a valve seat thereon which extends around said passage and along a valve seat plane;

a supporting pivot mounted in said outlet compartment and having a pivot axis extending parallel to said plane and offset along said plane from said passage;

a valve member mounted on said pivot for pivoting about said pivot axis between a closing position in which it sealingly contacts said valve seat, and an open position in which it is remote from the latter;

a support component having a mounting portion mounted on said pivot, a support portion situated remotely from said pivot behind said valve member as considered in the direction toward said open position, and a contact portion;



a pressing component having a first portion mounted on said pivot for pivoting about said pivot axis, a second portion situated remotely from said pivot between said valve member and said support portion of said support component, and a third portion arranged to contact a predetermined area of said valve member; and

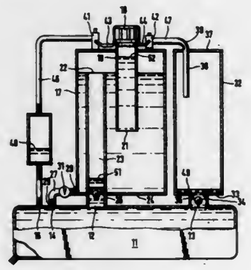
a buckling-type helical spring including one end portion secured to said support portion of said support component and another end portion secured to said second portion of said pressing component for said spring to urge said contact portion of said support component against said housing and said third portion of said pressing component toward contact with said predetermined area of said valve member.

4,552,175

ARRANGEMENT OF FUEL TANKS FOR VEHICLES

Wolfram Schlemann, Eugen-Nagele-Strasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,410
Int. Cl.⁴ F16K *24/00*
U.S. Cl. 137—571 **21 Claims**



1. Arrangements of fuel tanks for vehicles, comprising:

an inlet to the fuel tank;

a first air vent connection, provided on the fuel tank;

a filler pipe;

a piping arrangement leading from the filler pipe to the fuel tank;

a walled reserve tank in the course of the piping arrangement, built into the vehicle and communicating with the filer pipe;

a sleeve, having one end which is open upwards, and extending into the reserve tank, the height of the upwards open end within the reserve tank determining the reserve capacity, said sleeve passing through an opening in a wall of the reserve tank and having another end connected to the inlet of the fuel tank;

a bypass, having an upper open end passing through a wall of the reserve tank below the upwards open end of the sleeve, and a lower end opening into the fuel tank;

a valve in the bypass, which has an open condition and a shut condition and a return device in the valve for automatically returning the valve to the shut condition;

and, the improvement comprising:

(a) an expansion tank with a volume of at least 10% of the tank volume;

(b) a connection on the fuel tank, which lies below the lowest level of the expansion tank and above the maximum filling level in the fuel tank;

(c) a pipe leading from the lowest level of the expansion tank to the connection on the fuel tank;

(d) a second air vent connection, provided on the expansion tank above the lowest level of the expansion tank;

(e) a valve arrangement for alternatively connecting and shutting off the first and second air vent connections to the surrounding atmosphere;

(f) a closure device for the filler pipe, arranged and adapted to actuate the valve arrangement in such a way that, with the filler pipe open, the first air vent connection is open and the second air vent connection is shut; and

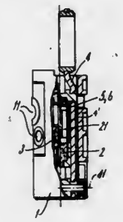
(g) a non-return valve which shuts upon higher rate of outflow, provided in the path extending from the connection on the fuel tank through the expansion tank and into the second air vent connection.

4,552,176

VALVE SLIDE PLATE

William P. Herring, Hemer, and Jan R. Kostorz, Menden, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 556,183
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244119
Int. Cl.⁴ F16K *11/06*
U.S. Cl. 137—625.4 **3 Claims**



1. In a valve including a housing having a fixed valve base plate defining inlet ports for first and second liquids and an outlet port for mixed liquids, a valve slide plate of ceramic oxide material or the like located in said housing and having opposite faces one of which is in sliding contact with a surface of said valve base plate, said valve slide plate being provided with an interior overflow passage extending entirely therethrough from said one face to the other face of said valve slide plate and adapted to communicate with said inlet and outlet ports, and a movable driver element in said housing, said valve slide plate being connected to said driver element for joint movement therewith;

the improvement comprising that:

(a) said driver element includes a plate-shaped member having a surface juxtaposed to said other face of said valve slide plate, said plate-shaped member carrying said valve slide plate; and

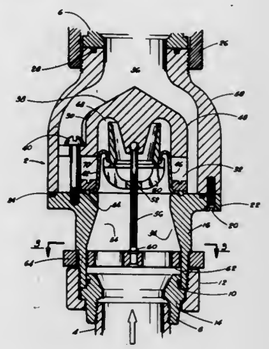
(b) a flexible vulcanized seal member is interposed between said other face of said valve slide plate and said surface of said plate-shaped member, said seal member being vulcanized to said valve slide plate at said other face of the latter around the periphery of said overflow passage and being in engagement with said surface of said plate-shaped member to provide a seal between said drive element and said valve slide plate, said seal member being formed to engage said plate-shaped member with only a minimal contact pressure determined by the prevailing liquid pressure.

4,552,177

HERMETICALLY SEALED VALVE

James M. Lapeyre, New Orleans, La., assignor to Laitram Corporation, Inc., New Orleans, La.

Filed Jun. 13, 1983, Ser. No. 503,717
Int. Cl.⁴ F16K *31/10, 7/18*
U.S. Cl. 137—625.28 **6 Claims**



1. A hermetically sealed valve for the continuous control of the flow of a liquid comprising:

a lower fluid region for intake of a liquid flow;

a plurality of internal flow restriction orifices, each orifice having an inlet and an outlet side, the inlet sides of which are fluidly connected with and form a terminator for the lower fluid region;

an upper fluid region in fluid communicating relationship with the lower fluid region through the flow restriction orifices;

a continuous diaphragm member sealingly connected from below said internal flow restriction orifices, sealing upwardly across said orifices, folding back upon itself, the diaphragm member being connected to an actuating means, the actuating means comprising a moveable cup having a lower driving section through which fluid passes and to which a first edge of the diaphragm member is attached, and an annular diaphragm support wall extending upwardly from the driving section;

said actuating means rollingly actuating said diaphragm between a lower position, wherein said orifices establish fluid communication between said upper and lower region, and an upper position, wherein said orifices are fluidly sealed by the diaphragm member to prevent fluid communication between said lower and upper regions;

screw driving means connected to said actuating means and extending below said actuating means in its lower position, rotation of said screw driving means moving said actuating means between its upper and lower positions;

magnetic rotation means affixed drivably to said screw driving means of the actuating means;

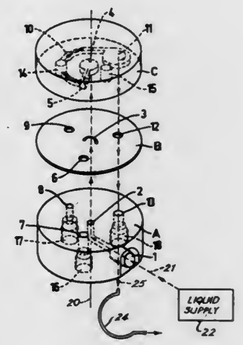
external magnetic field generation means which generates a controlled rotational magnetic field tangentially about said magnetic rotation means for rotating said rotation means and moving said actuating means between its upper and lower positions.

4,552,178

VARIABLE FLUID FLOW RESTRICTING THROTTLE

Aron Olsson, Mölndal, Sweden, assignor to Scanpump AB, Mölndal, Sweden

Filed Jan. 25, 1983, Ser. No. 460,966
Claims priority, application Sweden, Apr. 7, 1982, 8202249
Int. Cl.⁴ F16K *11/07*
U.S. Cl. 137—625.46 **9 Claims**



1. A throttle for restricting the flow of a liquid to be applied from a source of supply to at least one seal or rotary shaft, comprising a connecting member having an inlet connection for receiving the fluid from the source and at least one outlet connection for discharging the fluid to the seal, an inlet channel extending from said inlet connection through said connecting member, a throttling member having an inlet opening and a vortex chamber spaced from said inlet opening therein, said inlet opening of said throttling member being in communication with said inlet channel of said connecting member so as to receive fluid passing therethrough, a fluid passageway connecting said inlet opening in said throttling member with said vortex chamber, said fluid passageway opening substantially tangentially into said vortex chamber, said throttling member being rotatably mounted about a common central axis to said connecting member and being secured substantially in liquid tight engagement thereto, and a return channel within said connecting member extending substantially coaxially with respect to said vortex chamber and connecting said vortex chamber in fluid communication with said outlet connection of said connecting member.

4,552,179

MINIATURE SOLENOID VALVE

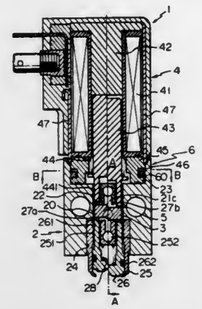
Tetsunobu Tarusawa; Shoiti Kawada, and Ryosuke Senzai, all of Aichi, Japan, assignors to CKD Corporation, Komaki, Japan

Filed Feb. 29, 1984, Ser. No. 585,344

Claims priority, application Japan, Aug. 25, 1983, 58-131329[U]; Sep. 1, 1983, 58-135679[U]

Int. Cl.⁴ F15B *13/044*; F16K *31/06*

U.S. Cl. 137—625.65 **23 Claims**



1. A miniature solenoid valve comprising a valve casing having a valve chest and a plurality of flow passages in communication with said valve chest formed therein; a valve body movably received in said valve chest for controlling the communication between the valve chest and said passages; and a solenoid provided adjacent to said casing for moving said valve body by means of a plunger, said valve being characterized in that said casing is formed with an opening in communication with said valve chest, said solenoid is removably received at one end of the casing in said opening and said valve casing and said solenoid are secured together by means of fixing means including fixing pins passing through the casing and solenoid.

4,552,180

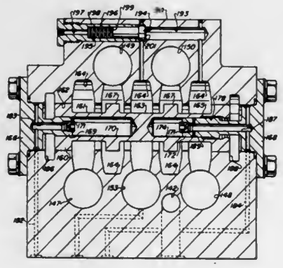
PILOT OPERATED CONTROL VALVE FOR HYDRAULICALLY ACTUATED RECIPROCATING PUMP

James R. Mayer, 7344 S. Alton Way, Englewood, Colo. 80112

Division of Ser. No. 456,597, Jan. 10, 1983, Pat. No. 4,477,232. This application Jul. 25, 1984, Ser. No. 634,355

Int. Cl.⁴ F15B *13/042*

U.S. Cl. 137—625.66 **6 Claims**



2. A pressure fluid distributing valve, said valve including a housing, a spool type valve closure member reciprocably disposed in a bore formed in said housing and movable between first and second positions for alternately valving pressure fluid from a fluid supply port to a working fluid port, and closing off communication between said supply port and said working fluid port, respectively, first and second pilot actuator means for moving said closure member to said first and second positions in response to pilot pressure fluid signals conducted to said valve, said pilot actuator means comprising opposed axially extending bores formed in opposite ends of said closure member, and opposed pilot actuator piston means in said housing and projecting into said bores, respectively, passage means in communication with said bores in said closure member for introducing pilot pressure fluid to respective ones of said bores for shifting said closure member between said first and second positions, and means cooperable with one of said bores and with pilot actuator poston means projecting into said one bore for maintaining said closure member in one of said positions only when said closure member is in said one position and when pilot pressure fluid is being conducted to both of said pilot actuator means at a pressure less than a predetermined pressure in the other of said bores to prevent shifting of said closure member to the other of said positions.

4,552,181

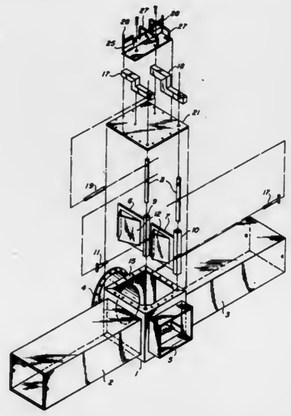
HIGH SPEED DUMP VALVE FOR FIRE FIGHTING APPARATUS

Bruce Hawkins, Route 1, Box 345, Kenai, Ak. 99611

Filed Dec. 14, 1984, Ser. No. 681,955

Int. Cl.⁴ F16K *11/22, 3/04*

U.S. Cl. 137—875 **2 Claims**



1. A fast action fire dump valve for use on tank trucks having an outlet valve comprising:

A. A directional valve portion having an inlet port, a first outlet port located opposite to said inlet port, a second outlet port located purpendicularly to said inlet and outlet ports and a third outlet port being purpendicularly disposed to said inlet and first outlet ports and opposite to said second outlet port, said valve portion forming a generally square configuration;

B. A flange, having bolt holes, fixedly attached to said valve portion at said inlet port, the flange is used to connect said valve portion to the outlet valve of said tank truck;

C. A first door, having hinge means, rotatably attached to said valve portion by said hinge means, being disposed within said valve portion, said first door being positioned so that the door can close off said first outlet port or said second outlet port, depending on its position which is manually controllable;

D. A second door, also having hinge means and also being rotatably attached to said valve portion by said hinge means and also being disposed within said valve portion, said second door being positioned so that it can close off either the first outlet port or the third outlet port, depending on its position, which is manually controllable, said door positions are mutually exclusive in that if the first door is closing off the first outlet port, the second door must be closing off the third outlet port, thereby forcing water through the second outlet port and, if the second door is closing off the first outlet port, the first door must be closing off the second outlet port, thereby forcing water through the third outlet port and, if the first door is closing off the second outlet port and the second door is closing off the third outlet port, water will be forced through the first outlet port;

E. Control means to position said doors in an operative position;

F. Locking means to secure said control means once an operative position has been selected, said locking means prevent inadvertent repositioning of said control means;

G. A first conduit means, fixedly attached to said second outlet port and extending outwardly therefrom; and

H. A second conduit means, fixedly attached to said third outlet port, extending outwardly therefrom.

4,552,182

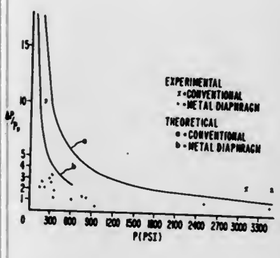
HYDRAULIC PULSE DAMPENER EMPLOYING TWO STIFF DIAPHRAGMS AND NESTING MEMBERS

Stephen H. Graham, Alameda, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 487,371, Apr. 21, 1983, abandoned. This application Aug. 13, 1984, Ser. No. 640,065

Int. Cl.⁴ F16L *55/04*

U.S. Cl. 138—30 **4 Claims**



1. A hydraulic pulse dampener, comprising:

a fluid-tight housing having an inlet port for introduction of a fluid into said housing, an outlet port for discharge of said fluid from said housing, and a first recess and a second recess, and

a first diaphragm and a second diaphragm positioned separately within said housing adjacent respectively said first and second recesses, the region between said first diaphragm and said first recess and the region between said second diaphragm and said second recess being sealed from said fluid, both diaphragms being made of a material that will flex towards said recesses to assume a nesting position therein at some predetermined rise in pressure of said fluid, absorb hydraulic pulse energy of said fluid and store the energy as elastic strain energy,

wherein the diaphragms have different flexibility so that they assume nesting positions at different pressure levels.

4,552,183

REPAIRING LEAKS IN PIPELINES CARRYING FLUENT MEDIUM

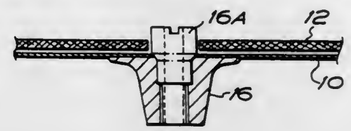
Douglas K. Chick, Hertfordshire, England, assignor to Ready-seal Limited, Northampton, England

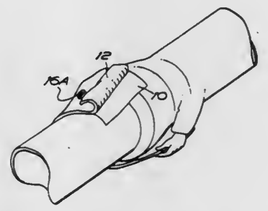
Continuation of Ser. No. 396,616, Jul. 9, 1982, abandoned, and a continuation-in-part of Ser. No. 128,588, Mar. 10, 1980, Pat. No. 4,357,961, which is a continuation-in-part of Ser. No. 900,372, Apr. 26, 1978, abandoned, which is a continuation of Ser. No. 686,334, May 14, 1976, abandoned. This application Jun. 26, 1984, Ser. No. 624,775

Claims priority, application United Kingdom, May 14, 1978, 20248/75

Int. Cl.⁴ F16L *55/16*

U.S. Cl. 138—99 **5 Claims**





1. Apparatus for use in repairing a pipe leak comprising a flat sheet bandage for wrapping around the pipe in the vicinity of the leak, the bandage being flexible and comprising a laminate of an inner flexible first layer of a synthetic resinous material which is adapted to bear directly against the exterior of the pipe and which is of sufficient size to cover the outer circumference of the pipe and which is integrally attached to a vent bush, which is also of synthetic resinous material, and a second flexible layer of a resin absorbent material through which the vent bush passes, said second layer also being dimensioned to cover the outer circumference of the pipe, said first and second layers being coextensive in area.

4,552,184

METHOD AND APPARATUS FOR CONTROLLING A ROTATION DOBBY

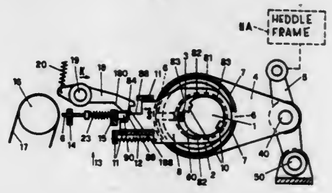
Walter Kleiner, Hirzel-Zurich, Switzerland, assignor to Staeubli Ltd., Zurich, Switzerland

Filed Dec. 2, 1983, Ser. No. 557,765

Claims priority, application Switzerland, Dec. 22, 1982, 7479/82

Int. Cl.⁴ D03C *1/00*

U.S. Cl. 139—66 R **12 Claims**



1. A device for the patternlike control of the key of a rotation dobby, comprising a rotatably supported drive shaft

which has two axially extending grooves, on which drive shaft there is rotatably supported an eccentric ring which has a radially movable control key supported thereon, and on the eccentric ring is rotatably supported a connecting rod having two locking openings which the control key can engage and which lie diametrically opposite one another, wherein the connecting rod acts through a lever arrangement onto a heddle frame of a weaving machine, and including a needle mechanism having at least one movably supported reading member which reads a pattern card and controls an operating lever which in turn controls movement of a key-shifting gate having an opening which is closed peripherally and through which said drive shaft extends, wherein along the edge of the opening there is arranged a projecting collar which operatively engages and serves as a closed cam for controlling radial movement of the key, the key-shifting gate being supported in a rectilinear sliding guide for movement radially with respect to the drive shaft.

4,552,185

HEALD FRAME

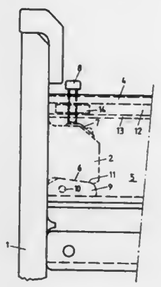
Martin Graf, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Mar. 2, 1984, Ser. No. 585,443

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308371

Int. Cl.⁴ D03C *9/06*

U.S. Cl. 139—91 **2 Claims**



1. A heald frame comprising at least one frame stave having a recess in at least one end thereof, at least one lateral support having a projection protruding from one side thereof adjacent one end of the lateral support and adapted to be inserted in said recess so that said stave and said support are disposed at right angles to each other, said projection having a lower bearing surface, and connecting means for detachably securing said projection within said recess, said connecting means comprising screw means supported by said stave and extending into operative engagement with said projection in said recess to detachably secure said projection therein, a rigid wedge disposed in said recess and affixed to said stave at a side thereof closer to a heald-carrying rods of said stave, an upper surface of said wedge being inclined upwardly toward said one end of said stave and facing toward said bearing surface of said projection, said bearing surface having the same inclination as said upper surface of said wedge, said screw means being disposed in the plane of said frame, lying parallel to said lateral support, and bearing against said projection so that said surfaces of said wedge and said projection are pressed against one another to produce a component of force exerted in said projection parallel to said stave to draw said lateral support against said end of said stave and a component of force exerted on said projection parallel to said support to clamp said projection in said recess of said stave.

4,552,186

WARP LET-OFF MECHANISM OF WEAVING MACHINE

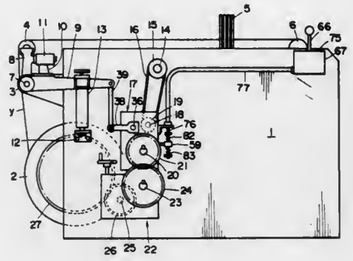
Shuichi Kojima, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1983, Ser. No. 556,692

Claims priority, application Japan, Dec. 2, 1982, 57-210597; Jul. 26, 1983, 58-135125

Int. Cl.⁴ D03D *49/06*

U.S. Cl. 139—100 **23 Claims**



1. A weaving system comprising

driving means,

a weaving mechanism connected with said driving means, said weaving mechanism being driven by said driving means in a forward direction and a reverse direction, said weaving mechanism comprising

a main mechanism, and

a warp let-off mechanism comprising a warp beam, means for sensing warp tension, and speed change means, said speed change means being connected with said driving means, and driven by said driving means in the forward or reverse direction by receiving an input rotation, said speed change means being connected with said warp beam for driving said warp beam by transmitting an output rotation to said warp beam, said speed change means being connected with said warp tension sensing means, and capable of changing a ratio between the input speed of the input rotation and the output speed of the output rotation thereby to change the speed of the warp beam rotation, said speed change means having shift means for changing the direction of the output rotation, said shift means having a forward shift position and a reverse shift position, said speed change means driving said warp beam in the forward direction when said shift means is in the forward shift position irrespective of whether the input rotation is in the forward direction or in the reverse direction, said speed change means driving said warp beam in the reverse direction when said shift means is in the reverse shift position irrespective of whether the input rotation is in the forward direction or in the reverse direction,

operating means connected with said driving means for controlling the operation of said weaving mechanism, said operating means having a forward operation position and a reverse operation position, said driving means driving said weaving mechanism in the forward direction when said operating means is in the forward operation position, and in the reverse direction when said operating means is in the reverse operation position, and

interlock means connected with said operating means and said shift means of said speed change means, said interlock means bringing said shift means to the forward shift position when said operating means is in the forward operation position, and to the reverse shift position when said operating means is in the reverse operation position.

4,552,187

WEAVING MACHINE

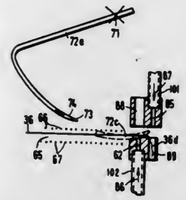
Gotthilf Bertsch, Rüti, and Josef Braun, Seuzach, both of Switzerland, assignors to Maschinenfabrik Sulzer-Rüti AG, Rüti, Switzerland

Filed Jan. 14, 1985, Ser. No. 691,384

Claims priority, application European Pat. Off., Jan. 23, 1984, 84810038.4

Int. Cl.⁴ D03D *47/48*

U.S. Cl. 139—434 **12 Claims**



1. In a weaving machine, comprising:

a weft thread supply cone which remains outside a weaving shed during weft insertion;

weft threads being unwound from said weft thread supply cone during weft insertion;

a selvedge-tucking needle for tucking in successive ends of weft threads which lie outside the weaving shed subsequently to the weft thread being picked;

a threading nozzle separate from said selvedge-tucking needle for transferring said weft thread ends of said weft threads to said selvedge-tucking needle, the improvement which comprises:

a retention nozzle for acting upon said weft thread previous to activation of said threading nozzle for retaining said weft thread end before transfer thereof to said selvedge-tucking needle.

4,552,188

WEFT INSERTING DEVICE

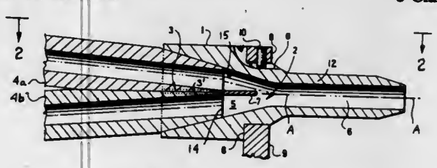
Vladimír Kuda, Blazovice; Vladimír Vasícek, Moravsky Krumlov; Frantisek Vykydal, and Jirí Vystrcil, both of Brno, all of Czechoslovakia, assignors to ZVS Vyzkumnevyvojovy ustav koncernova ucelova organizace, Brno, Czechoslovakia

Filed Mar. 29, 1984, Ser. No. 594,871

Claims priority, application Czechoslovakia, Mar. 29, 1983, 2159-83

Int. Cl.⁴ D03D *47/30*

U.S. Cl. 139—435 **3 Claims**



1. In a weft inserting device adapted to be fixed on the frame of a jet loom or the beat-up motion thereof, said device having a pair of picking nozzles provided with pressure fluid feeds and having inlet portons for feeding weft threads into mixing tubes united at a point of their outlet sides for said weft threads into a single central outlet portion having a single outlet opening, said central outlet portion being followed by a directing portion, the improvement wherein said central outlet portion, starting from the discharge point of said mixing tubes, is divided equally at least in a portion of its length by means of a flat baffle lying in a first plane which is perpendicular to a second plane containing the longitudinal axis of said mixing tubes, the longitudinal central axis of said baffle lying in the central axis of said directing portion.

4,552,189

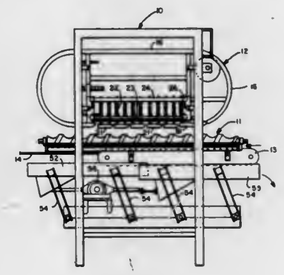
MACHINE AND METHOD FOR CLEANING CAN FLANGES

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Sep. 29, 1982, Ser. No. 427,675

Int. Cl.⁴ B65B *63/00*; **B30B** *1/26*

U.S. Cl. 141—80 **10 Claims**



1. A machine for cleaning the flanges of cans preparatory to can seaming after a food material like whole or french cut green beans has been introduced into open cans, comprising a first means for conveying the cans along a generally horizontal pathway with their open end portions uppermost, the cans containing a quantity of the food material with some of the food material disposed on the can flanges, a second conveying means disposed above the first conveying means, means carried by the second conveying means for applying pressure to the upper flanges of the cans and to sever food material thereon, said last named means comprising pistons carried by the second conveying means, each piston having a cylindrical surface dimensioned closely to fit within the upper portions of the cans, a piston being presented to the upper open end of each of the cans as it moves along the pathway, a lower end of the cylindrical surface of each piston forming a cutting edge, means disposed above the second conveyor for causing each such piston to be advanced downwardly toward and into the upper end portion of an associated can whereby food material on the can flange is severed and the food therein is compressed, and means for subsequently retracting the piston from the can.

4,552,190

FILLING MACHINES

Robert H. Wilson, and Andrew J. Wilson, both of Glasgow, Scotland, assignors to James Hamilton & Sons (Engineering) Ltd., Glasgow, Scotland

Filed May 9, 1984, Ser. No. 608,468

Claims priority, application United Kingdom, May 16, 1983, 8313382

Int. Cl.⁴ B65B *43/42*

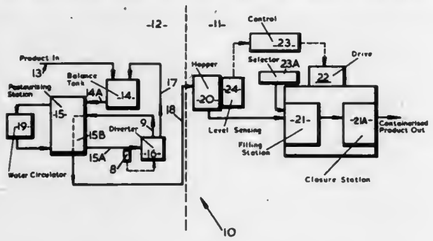
U.S. Cl. 141—82 **3 Claims**

1. An integrated filling and pasteurizing apparatus comprising a filling machine, a pasteurizing machine, and control means for providing synchronous operation of said filling machine and said pasteurizing machine;

said pasteurizing machine including a balance tank for temporary storage of the product to be pasteurized, and a pasteurizing station means coupled for receiving the product from said balance tank and for delivering the pasteurized product to said filling machine;

said filling machine including a hopper coupled for receiving the pasteurized product from said pasteurizing station means, a container-filling station means coupled for sequentially receiving metered quantities of the pasteurized

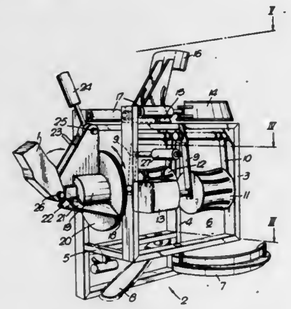
product from said hopper and for sequentially filling containers with the metered quantities of the pasteurized product, container-closure station means for receiving filled containers from said container-filling station means and for closing the containers, and indexing drive means operating at varying rates for sequentially delivering containers to be filled to said container-filling station means and sequentially moving filled containers from said



container-filling station means to said container-closure station means and for controlling the sequential delivery of the metered quantities of the pasteurized product from said hopper to said container-filling station means; and

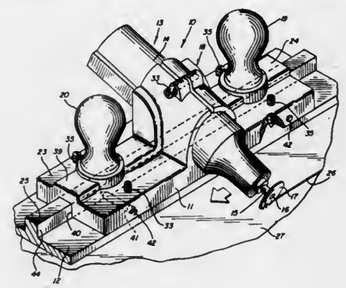
said control means being operatively connected with said drive means for controlling the indexing rate thereof and including liquid level sensor means associated with said hopper for emitting signals to govern the control of the indexing rate of said drive means.

4,552,191
TREE HARVESTING DEVICE
Olavi Kuusilinna, SF-34510 Luode, Finland
Filed Mar. 5, 1984, Ser. No. 586,458
Int. Cl.⁴ A01G *23/08*
U.S. Cl. 144—3 D **7 Claims**



1. Tree harvesting device, which is connectable to a mobile vehicle by means of a jib and has means for cutting, felling and debranching a tree, said device comprising a general U-shaped frame having two side parts, a rear part and an open front side; cutting means, conveying means and debranching means attached to said side parts; a felling frame attached to said rear part by means of a turnable means in order to turn the device in a transversal plane with respect to a vertical plane in the longitudinal direction of the jib; and means for connecting said felling frame to the jib so that said device is turnable in said vertical plane in the longitudinal direction of the jib.

4,552,192
CUTTING TOOL MECHANISM
Thomas P. Eaves, 262 Lake St., Apt. 2-W, Bloomingdale, Ill. 60108
Filed Jun. 9, 1983, Ser. No. 502,688
Int. Cl.⁴ B07D *1/00*
U.S. Cl. 144—136 C **18 Claims**



16. A cutting tool mechanism comprising:

a slide member defining a flat slide plane;

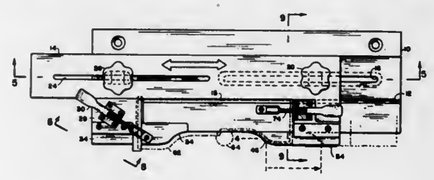
a track member for slidably guiding the slide member along a preselected path;

a saw having a power drive, a drive shaft driven by the power drive, and means at the distal end of the shaft for coaxially mounting a rotary saw blade thereto;

mounting means for mounting the power drive to the slide member with said shaft cantilevered therefrom; and

positioning means for causing a saw blade mounted to the shaft to cut an elongated veneer edge in a workpiece, said positioning means comprising means forming a portion of said mounting means for positioning the axis of said power drive shaft at an angle of approximately 15° to said slide plane and at an angle to the direction of guided movement of the slide member on the track member, said positioning means comprising means for positioning said axis at a single preselected acute angle to the direction of guided movement of the slide member on the track member, said mounting means comprising clamp means permitting axial adjusting of the power drive therein.

4,552,193
PANELLED DOOR FRAME SHAPER TEMPLATE
Joe Armas, Fremont, Calif., assignor to Armas & Harshbarger Manufacturing Co., Hayward, Calif.
Filed Feb. 13, 1984, Ser. No. 579,413
Int. Cl.⁴ B27C *5/10*
U.S. Cl. 144—144.5 **4 Claims**



1. An adjustable template for the shaping of panelled cabinet door rails and stiles, said template comprising:

an elongated base having a substantially plane top surface with a longitudinal slot therein, a substantial length of a first edge on a longitudinal first side of said elongated base being parallel with the axis of said slot;

a longitudinally adjustable elongated slideable member within the slot in the surface of said base, said slideable member having an indexing edge extending to the top surface of said base;

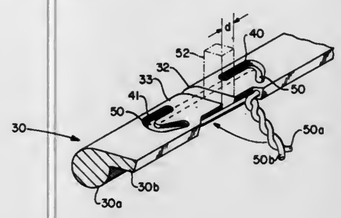
means for locking said slideable member at any desired location within said slot;

a first removeable sub-template secured to a front corner on said first side of said base, said first sub-template haveing a top surface coplanar with the top surface of said base and a working edge corresponding to the desired form of a shaped cabinet door component, said first sub-template extending to that portion of said first edge of said base that is parallel with said longitudinal straight slot;

a second removeable sub-template secured to a forwardly extending corner on said elongated slideable member that overlies the surface of said base, said second sub-template having a top surface coplanar with the surfce of said base and said first sub-template and having a working edge terminating on that portion of the front edge of said base that is parallel with said longitudinal straight slot; and

first and second stock clamping means respectively positioned on said front corner of said base and on said forwardly extending corner of said slideable member for securing a piece of stock to be shaped against said slideable member index edge and between the corner on said base and said slideable member.

4,552,194
LOCKING CONFIGURATION FOR A WHEEL RIM FLANGE RETAINING RING
Richard P. Brown, Selden, N.Y., and Harold E. Correll, Uniontown, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio
Filed Jun. 11, 1984, Ser. No. 619,665
Int. Cl.⁴ B60B *25/18*
U.S. Cl. 152—410 **14 Claims**



1. In a wheel rim assembly having an inboard bead flange and a separable outboard bead flange and a retaining ring having a split defining circumferentially oriented terminal ends, said retaining ring having inboard and outboard facing portions, the inboard facing portion being received within a groove in the rim to secure the separable bead flange on the rim, an improved configuration for a locking retaining ring comprising:

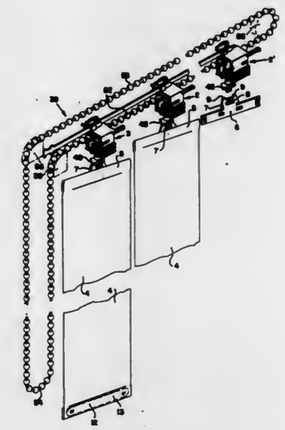
a first bore in each terminal end circumferentially within the inboard portion of the ring;

a second bore in each terminal end in the outboard facing portion of the ring and at an angle with respect to the first bore;

a groove in the outer surface of each terminal end interconnecting each first bore with each second bore; and

a continuous length of steel wire threaded through the bores from one terminal end to the other and retained within the grooves, the ends of the wire exiting from the second bores and twisted together such as to limit the extent of expansion of the retaining ring when subjected to centrifugal forces tending to expand the ring.

4,552,195
STRIP CURTAIN
Heinz Dürig, Ostermundigen; Hans Grützner, Kehrsatz, and Konrad Bratschi, Muri, all of Switzerland, assignors to K. Bratschi, Silent Gliss, Muri, Switzerland
Filed Dec. 7, 1982, Ser. No. 447,698
Claims priority, application Switzerland, Dec. 7, 1981, 7812/81
Int. Cl.⁴ E06B *9/307, 9/26*
U.S. Cl. 160—168 R **27 Claims**

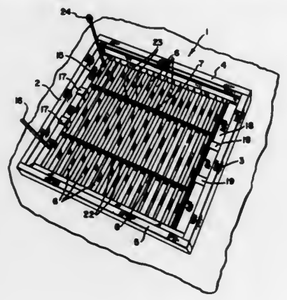


1. A strip curtain having glide elements guided by a curtain rod and connected to each other by separation limiting means, and which support freely hanging curtain strips from vertical pivot axes, each of which is rotatable in limited manner by an operating means including a pinion which is connected through a slip coupling with an associated pivot axis and in which the pinion meshes with a drive means which is slidably carried by the curtain rod, wherein the drive means meshing with the pinion is a bead chain, the pinion is connected with the pivot axis through a worm drive, and the slip coupling is positioned between the pinion and the worm drive.

4,552,196
VENETIAN BLIND ASSEMBLY INCLUDING TENSION MEANS FOR IMPARTING TENSION INTO SLAT SUPPORTING MEANS
Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles
Continuation-in-part of Ser. No. 386,286, Jun. 8, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,367
Int. Cl.⁴ E06B *9/28, 9/307*
U.S. Cl. 160—174 **19 Claims**

17. A venetian blind assembly comprising a plurality of slats wherein the assembly is adapted to be connected at opposite ends extending parallel to the slats to fixed frame members, in which connected position said blind assembly is non-retractable, at least two slat support means for individually tiltably supporting said slats with each slat support means comprising two longitudinal side members and further support members to support said slats on said side members, and slat tilt means connected to one end of each of said slat support means; characterized in having in addition resilient means cooperating, at the other end of said slat support means from said slat tilt means, with the longitudinal side members of said slat support means for imparting tension in at least one of the longitudinal side members of each slat support means in all positions of the slats, a first headrail mounting said slat tilt means adapted to be connected to a fixed frame member, a second headrail into which said resilient means are positioned adapted to be con-

nected to a further frame member, in that one of said headrails is detachably connected to a fixed frame member, a slat moving means connecting said headrails by which the detachably connected headrail and slats may be moved towards the other



headrail on detachment from a fixed frame member, and support portions on the end of said slats adapted to slidably engage fixed side frame members extending between said fixed frame members.

4,552,197

MOULD ASSEMBLY FOR CASTING METAL ARTICLES AND A METHOD OF MANUFACTURE THEREOF

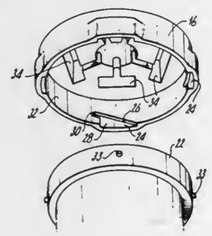
David Mills, Bristol, England, assignor to Rolls-Royce Ltd., London, England

Filed Jun. 30, 1983, Ser. No. 509,813

Claims priority, application United Kingdom, Jul. 3, 1982, 8219294

Int. Cl.⁴ B22C *9/04*

U.S. Cl. 164—34 **10 Claims**



1. A method for the manufacture of a ceramic mould assembly for casting directionally solidified articles, the components of such assembly including a runner and riser system connected to at least one thin-walled mould, comprising the steps of:

separately injection moulding the components of the assembly,

providing features on the components which form or cooperate with interengageable mechanical locking means to hold the separate components of the assembly together,

forming joints between the components of the assembly with the interengageable locking features in engagement to lock the components of the assembly together, and

sealing the joints of the assembly by applying a coating of a ceramic sealant.

4,552,198

REMOVING REFRACTORY MATERIAL FROM COMPONENTS

David Mills, and Alan D. Kington, both of Bristol, England, assignors to Rolls-Royce Ltd., London, England

PCT No. PCT/GB81/00216, § 371 Date Jun. 2, 1982, § 102(e) Date Jun. 2, 1982, PCT Pub. No. WO82/01144, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 2, 1981, Ser. No. 387,890

Claims priority, application United Kingdom, Oct. 4, 1980, 8032060

Int. Cl.⁴ B22D *7/00*

U.S. Cl. 164—122.2 **19 Claims**

1. A method of casting a component having an opening therein comprising the steps of:

inserting into a mold a refractory material of high temperature fired re-crystallized substantially 100% dense pure metal oxides defining the opening;

introducing into the mold molten component material;

solidifying the component; and

removing the refractory material by chemically reacting it with nascent hydrogen produced by immersing the casting in an aqueous solution of a hydroxide or hydride of a metal selected from sodium, potassium and lithium and containing substantially 10–35% W/V of water and leaching the resultant products; all the while heating the solution to a temperature in the range of 150°–370° C.

4,552,199

APPARATUS FOR PRODUCING FLAKE PARTICLES

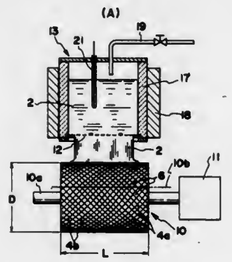
Takashi Onoyama, Yokohama; Osamu Ando, Kawasaki, and Tsuyoshi Minakata, Yokohama, all of Japan, assignors to Nippon Yakin Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,808

Claims priority, application Japan, Apr. 8, 1982, 57-58515; Sep. 7, 1982, 57-155667; Feb. 8, 1983, 58-19170; Feb. 8, 1983, 58-19171

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—423 **28 Claims**



1. An apparatus for producing flake particles from a continuous stream of projected molten material comprising:

a heat extracting member rotatably received on a shaft and having an outer peripheral surface carrying a plurality of heat extracting sections, the heat extracting sections covering the entire outer peripheral surface;

a molten material reservoir for containing the molten material;

at least one nozzle mounted on the reservoir for directing the molten material onto the outer peripheral surface of the heat extracting sections;

means for driving the heat extracting member to rotate the heat extracting sections;

each of the heat extracting sections having a discrete small cooling surface defined by two adjacent parallel and obliquely extending grooves formed on the outer surface of the heat extracting member between and with respect to both axial ends of the heat extracting member and two other parallel grooves extending in a different direction from that of the two adjacent grooves, the heat extracting sections having an essentially planar element on which the molten material solidifies;

the plurality of heat extracting sections being composed of an integrated member consisting of the unit discrete small cooling surfaces being successively arrayed in directions angularly oriented to both the axial and rotational directions of the heat extracting member; and

at least two sides of the discrete small cooling surfaces cross a line parallel to the axis of the heat extracting member.

4,552,200

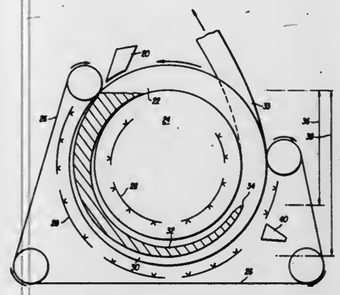
CONTROL IN CONTINUOUS CASTING TO ENHANCE FEEDING

Uday K. Sinha, and Frank A. Peacock, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 431,439, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 220,647, Dec. 29, 1980, abandoned. This application Mar. 22, 1984, Ser. No. 592,198

Int. Cl.⁴ B22D *11/16*

U.S. Cl. 164—454 **7 Claims**



1. A method for optimally operating a wheel-type continuous caster, such that solidification porosity and macrosegregation in the continuous strand thus produced is substantially minimized while casting rate is substantially maximized, comprising the steps:

(a) first, establishing operation of said caster at a condition of steady-state continuous casting, with cooling set at substantially maximum capacity to produce an apex of solidification at a location where the casting completely solidifies;

(b) monitoring the location of the apex of the solidification zone within the solidifying strand being cast;

(c) if said solidification apex is not located downcourse of the lowermost wheel position, then increasing casting speed until the apex is located downcourse of the lowermost wheel position;

(d) monitoring the presence of solidification porosity within said strand downcourse of said solidification apex;

(e) adjusting casting conditions according to the criteria:

(i) if porosity is present, decrease casting speed so as to shift said apex counter to the direction of casting and in the direction of increasing metalostatic pressure until formation of solidification porosity is substantially minimized; further provided that if said apex has been shifted substantially to the lowermost wheel position without achieving said minimization, then decreasing cooling sufficiently to shift said apex downcourse of the lowermost position by a selected distance and then repeating the procedure of this substep; or

(ii) if porosity is not present, increase casting speed so as to shift said apex in the direction of casting until formation of porosity impends; and

(f) maintaining casting conditions within a desired porosity tolerance range about said adjusted conditions.

4,552,201

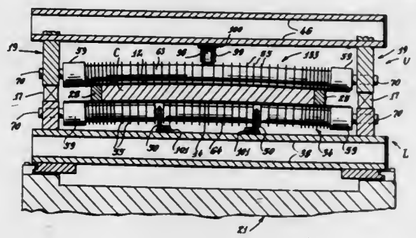
METHODS FOR SHAPING THE CASTING REGION IN A TWIN-BELT CONTINUOUS CASTING MACHINE FOR IMPROVING HEAT TRANSFER AND PRODUCT UNIFORMITY AND ENHANCED MACHINE PERFORMANCE

John F. B. Wood, Burlington, Vt., assignor to Hazelett Strip-Casting Corp., Colchester, Vt.

Continuation of Ser. No. 330,727, Dec. 14, 1981, abandoned. This application May 8, 1984, Ser. No. 608,226

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—481 **10 Claims**



1. In the method of continuously casting metal product directly from molten metal in which the molten metal is confined and solidified in a casting region defined above and below by upper and lower cooled endless, flexible, traveling, casting belts supported by a plurality of upper back-up rollers and a plurality of lower back-up rollers in respective upper and lower belt carriages and laterally defined by first and second traveling side dams, the method of controlling belt shape comprising the step of:

providing at least some bowable back-up rollers in both of said carriages,

adjustably bowing at least some of said bowable back-up rollers in a first carriage and permitting said bowable back-up rollers in the second carriage to bow for urging the upper and lower belts toward contact with the cast metal product.

4,552,202

ALKALI METAL SILICATE SOLUTIONS AND METHOD OF FORMING FOUNDRY PRODUCTS USING THE SOLUTIONS

John W. J. Bugg, Leeds, and Stephen Houlden, Pudsey, both of England, assignors to The White Sea & Baltic Company Limited, England

PCT No. PCT/GB82/00043, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02844, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 19, 1982, Ser. No. 433,132

Claims priority, application United Kingdom, Feb. 20, 1981, 8105434

Int. Cl.⁴ B22C *1/18;* **C01B** *33/32*

U.S. Cl. 164—528 **7 Claims**

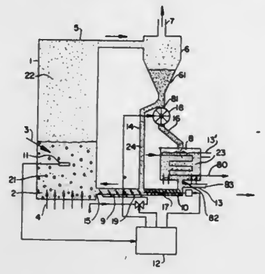
1. In a method of making foundry moulds or cores by mixing sand or other particulate material with an aqueous binder solution, shaping the mix into the desired mould or core and then curing the binder, the improvement consisting of using as a binder an aqueous alkali metal silicate solution which has been made by dissolving silica powder obtained by condensation during the production of ferrosilicon and contains impurities that are insoluble in aqueous alkali and that include carbon, and the impurities are suspended in the solution as a stable suspension by means of from 0.01 to 1% by weight of a suspending agent selected from the group consisting of celluloses and starches.

4,552,203

METHOD AND DEVICE FOR CONTROLLING THE TEMPERATURE OF A REACTION CARRIED OUT IN A FLUIDIZED BED

Gérard Chrysostome, Creusot, and Daniel Borgnat, Montchanin, both of France, assignors to Creusot-Loire, Paris, France

Filed Apr. 22, 1983, Ser. No. 487,672
Claims priority, application France, Apr. 28, 1982, 82 07379
Int. Cl.⁴ F28D *19/02*
U.S. Cl. 165—1 **10 Claims**



1. Method for controlling the temperature of a reaction conducted inside a vessel, in a fluidized bed containing solid particles which can be entrained with smoke and then recovered in a separating device and recycled into said fluidized bed after passage into a heat exchanger where they yield up their heat, said method comprising the steps of

(a) dividing the flow of particles separated from said smoke into two parts, namely, a hot part recycled directly into said fluidized bed and a cooled part constituted by particles taken up at the outlet of said separating device;

(b) passing it into said heat exchanger to constitute a reserve of cold material which can be mixed with said hot part before reinjection into said fluidized bed; and

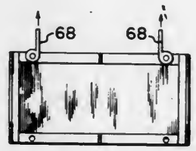
(c) regulating the relative flow rates of hot particles and of cold particles so as to control the flow rate and the average temperature of the flow of particles recycled into said fluidized bed to maintain it at the desired level of the reaction temperature in the midst of the latter.

4,552,204

MEANS FOR LIFTING HEATING ELEMENT BASKETS

Kenneth O. Bellows, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 1, 1983, Ser. No. 557,034
Int. Cl.⁴ F28D *19/04*
U.S. Cl. 165—10 **1 Claim**



1. A basketed heating element for use in a rotary regenerative heat exchanger comprising:

an open ended housing defining a volume;

a plurality of heating element plates disposed in spaced relation within the volume defined by the open ended housing;

an element holding bar extending transversely across each open end of the housing so as to divide each open end of the housing summetrically thereabout and to retain the heating element plates therein;

two spaced apart holes through the element holding bar, the first hole positioned near one end of the element holding bar and the second hold positioned near the opposite end of the element holding bar;

clevis means for spanning the element holding bar about each of said holes; and

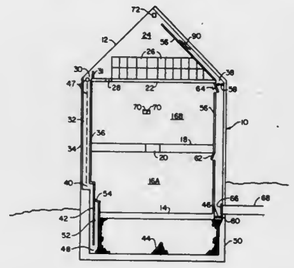
a clevis pin for inserting through each clevis and the hold in the element holding bar which the clevis spans.

4,552,205

DUAL STORAGE HEATING AND COOLING SYSTEM

Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193

Filed Oct. 31, 1983, Ser. No. 546,995
Int. Cl.⁴ F24D *11/00*
U.S. Cl. 165—18 **13 Claims**



1. A heating and cooling system for use in an enclosed structure including an air space, said system comprising, in combination:

first store means for providing a source of heat and including a first heat transfer material for storing excessive heat;

second store means, disposed substantially below said first store means, for providing a heat sink and including a second heat transfer material for absorbing heat from air passing through said second store means; and

temperature control means for maintaining the temperature within said air space substantially within a predetermined temperature range between first and second preselected levels of temperature, said temperature control means including first means for transmitting air through said first store means, means for selectively directing the flow of air either (a) from said first store means into said air space or (b) from said air space into said second store means, second means for transmitting air through said second store means, sensor means for sensing the level of temperature within said air space, wherein said temperature control means is operable in response to said sensor means in (1) a first mode of operation for heating said air space wherein said first means for transmitting air through said first store means and said means for selectively directing the flow of air heated by said first store means into said air space when the temperature sensed by said sensor means drops below said first preselected level; and (2) a second mode of operation for cooling said air space wherein said second means for transmitting air through said second store means and said means for selectively directing the flow of air from said air space to said second store means when the temperature level sensed by said sensor means rises above said second preselected level;

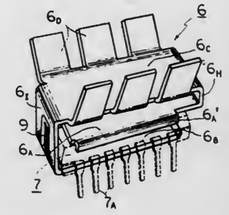
wherein said means for selectively directing the flow of air includes (i) common duct means connected between said first and second store means for transmitting air in said first and second modes of operation, (ii) first damper means adapted to open from said common duct means into said air space during said first mode of operation, and remain closed during said second mode of operation, and (iii) second damper means adapted to remain closed during said first mode of operation and open from said air space into said duct during said second mode of operation.

4,552,206

HEAT SINKS FOR INTEGRATED CIRCUIT MODULES

Philip A. Johnson, Kingston, and Alfred F. McCarthy, Belmount, both of N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.

Filed Jan. 17, 1983, Ser. No. 458,322
Int. Cl.⁴ H01L *23/02*
U.S. Cl. 165—80.3 **1 Claim**



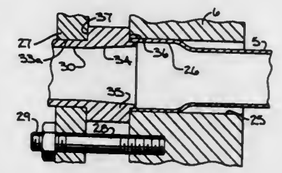
1. One-piece heat-sink apparatus for a dual-in-line pin (DIP) electronics package the body of which has the general form of a thin elongated rectangular parallepiped with pin terminals depending from opposite sides thereof, comprising a first elongated thin and flat sheet-metal heat-transfer clasp element proportioned to abut closely and substantially coextensively directly under and against the lower surface of the package, said first clasp element being no wider than the body of the electronics package and thereby allowing dual-in-line pin terminals of the body to project downwardly therefrom without interference from said first clasp element, a second elongated heat-transfer clasp element of the same thin sheet metal disposed in substantially parallel spaced alignment with said first clasp element for direct engagement with the upper surface of the package, a third elongated heat-radiating element of the same sheet metal disposed in spaced substantially parallel and coextensive alignment with said first and second clasp elements and having heat-radiating projections exposed to the ambient atmosphere for release of heat thereto, first connection means integral with one end of each of said first clasp element and third heat-radiating element and holding said first clasp elements in spaced substantially parallel alignment with one side of said third heat-radiating element at a first distance therefrom, and second connection means integral with one end of said second clasp element and the end of said third heat-radiating element opposite the said one end thereof and holding said second clasp element and third heat-radiating element in a spaced substantially parallel alignment with said one side of said third heat-radiating element at a second distance therefrom which is less than said first distance, said first and second clasp elements having their free ends extending in opposite directions from their integral cantilevered connections with said third heat-radiating element by way of said first and second connection means, whereby the body of such a package may be admitted into the space between the free end of said first clasp element and the nearby second clasp element and slid into a nested position therebetween, with the downwardly-projecting pin terminals of the body straddling said first clasp element, for conduction of its internally-generated heat independently and directly through said end connection means to said third heat-radiating element for convective dissipation therefrom.

4,552,207

BASKET RETAINER FOR HEAT EXCHANGER TUBE CLEANING ELEMENT

Walter J. Baron, Milwaukee, and Laird C. Cleaver, Mequon, both of Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Continuation of Ser. No. 350,286, Feb. 18, 1982, Pat. No. 4,398,592. This application Jun. 16, 1983, Ser. No. 505,077
Int. Cl.⁴ F28G *1/12, 15/02*
U.S. Cl. 165—95 **9 Claims**



1. In combination in a heat exchanger having a housing, and having a plurality of longitudinally extending fluid flow tubes disposed within said housing, and having tube sheets disposed within said housing and with said tube sheets having openings in communication with the ends of said tubes, and further having longitudinally extending baskets for receiving shuttling tube cleaning elements connected in telescoping relationship to the ends of said tubes:

(a) a retaining plate fixedly disposed adjacent to the outer face of said tube sheet,

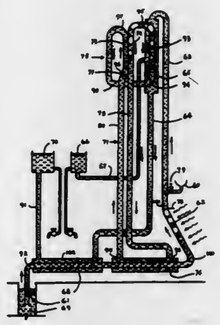
(b) and means, including said retaining plate, mounting a said basket in fixed relationship to said tube sheet and to an end of a said tube.

4,552,208

HEAT ACTUATED SYSTEM FOR CIRCULATING HEAT TRANSFER FLUIDS

Wilfred Sorensen, 26 Center St., Kingston, Ontario, Canada (K7L 4E6)

Filed Jun. 22, 1981, Ser. No. 275,917
Claims priority, application Canada, Jun. 26, 1980, 354,838
Int. Cl.⁴ F28D *15/00;* **F24J** *3/02*
U.S. Cl. 165—104.22 **3 Claims**



1. Apparatus for autogenously circulating heat transfer liquids from a heat collector to a heat exchanger located at a level below that of the heat collector, comprising:

(a) a collector **93** comprising a plurality of fluid passage means, for a fluid to be vaporized at least partially therein by a heat source **65**, inclined upwardly from a lower inlet **94** toward an upper outlet **95** thereof;

(b) means **73** for condensing vapour in said fluid passage means **72** located adjacent said upper outlet of said collector, sur-

rounding said fluid passage means, and having an inlet **96** and an outlet **97**;

(c) heat exchanger means **74**, at a level below said collector, having an inlet **98** and an outlet **99** thereto;

(d) first conduit means **78** providing a fluid flowpath between said fluid passage means and said inlet **98** to said heat exchanger means;

(e) second conduit means **80** providing a fluid flowpath between the outlet **99** of said heat exchanger means and the inlet **96** of said condenser;

(f) third conduit means **90** providing a fluid flowpath between the outlet **97** of said condenser and the inlet **94** to said collector;

(g) a second heat collector **62** including a plurality of fluid passage means, for a second fluid to be vaporized at least partially therein by a second heat source, inclined upwardly from a lower inlet **100** toward an upper outlet **101** thereof, and means **65** for condensing vapour of said second fluid above the upper end of said second collector, said condensing means providing the first said heat source for heating said fluid;

(h) conduit means **67** to convey at least a portion of condensed said second fluid to a hot storage means **66**;

(i) conduit means **91** to convey at least a portion of condensed said second fluid to a cold fluid storage means **70**; and

(j) fluid passage means between said inlet to second collector means and a source of said second fluid located at a level below said second collector in heat relationship to said heat exchange means, to draw said second fluid into said second collector as vaporization occurs in said second collector.

4,552,209

ARRANGEMENT OF DISCRETE STRUCTURAL PARTS, ESPECIALLY HEAT EXCHANGER

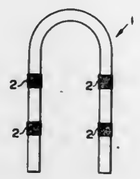
Georg Breitmoser, Groebenzell, and Wilhelm Vogel, Aystetten, both of Fed. Rep. of Germany, assignors to MTU-Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 522,642, Aug. 11, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 716,507

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230377

Int. Cl.⁴ F28F *19/02*

U.S. Cl. 165—133 **5 Claims**



1. A heat exchanger, comprising a plurality of parallel tubes each having a given tube length and arranged in a package, each of said tubes comprising at least one sprayed-on spacer collar made of a metal or ceramic powder, each spacer collar having a collar length which is substantially shorter than said given tube length for covering only a portion of said given tube length for leaving the tube length outside said spacer collar free, all of said sprayed-on spacer collars of all tubes being located to substantially face each other, said neighboring spacer collars directly contacting each other, said spacer collars having a thickness which together with said collar length forms gaps along said tube length outside said spacer collars and between said tubes forming said package whereby one fluid can pass through the tubes and another fluid can pass through said gaps.

4,552,210

DEVICE FOR PRODUCING STEAM BY HEAT EXCHANGE BETWEEN A HEAT-TRANSFER LIQUID METAL AND FEED WATER

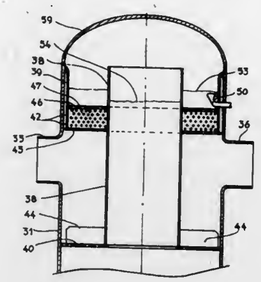
Claude Malaval, Antony, France, assignor to Novatome, Le Plessis Robinson, France

Filed Oct. 29, 1982, Ser. No. 437,642

Claims priority, application France, Dec. 18, 1981, 81 23667

Int. Cl.⁴ F28F *19/00*

U.S. Cl. 165—134.1 **3 Claims**



1. A device for producing steam by heat exchange between a heat-transfer liquid metal and feed water, comprising an elongate cylindrical casing (**31**) disposed with its axis vertical, closed top and bottom by an upper end (**59**) and a lower end respectively, said casing receiving liquid metal in its upper part through at least one nozzle (**35, 36**) traversing said casing (**31**) and emerging in a space bounded by a central sleeve (**38**) coaxial with said casing and extending a certain distance above and below said at least one liquid metal entry nozzle (**35, 36**) and by a lower perforated annular plate (**40**) situated between said casing (**31**) and said central sleeve (**38**) and at the lower part of said sleeve, in such manner that an upper level of liquid metal (**53, 54**) is maintained above said at least one nozzle (**35, 36**), inert gas filling a space existing between said level of liquid metal (**53, 54**) and said upper end (**59**) of said casing (**31**) and that circulation of liquid metal is established in said casing (**31**), in contact with a bundle of tubes in which circulates the feed water which is being vaporized, said bundle of tubes being situated below the space where said liquid metal enters, said liquid metal leaving said casing (**31**) at its lower part, a peripheral sleeve (**39**) within the upper part of said casing (**31**) being fastened on said casing (**31**) and arranged coaxially at a short distance therefrom above said liquid metal entry nozzle (**35, 36**), two annular perforated plates (**45, 46**) being fastened between said central sleeve (**38**) and said peripheral sleeve (**39**) above said liquid metal entry nozzle (**35, 36**), spaced according to the height of said casing (**31**) and separated by vertical perforated crosspieces (**47**), the perforations in said annular plates (**45, 46**) and said lower plate (**40**) being of substantially equal diameter and disposed in each of said plates (**45, 46, 40**) so as to be in vertical alignment with corresponding perforations in the others of said plates.

4,552,211

HEAT EXCHANGER WITH CONVECTION SUPPRESSING LONGITUDINAL BAFFLES

Max Weber, Wiesendangen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 18, 1983, Ser. No. 486,064

Claims priority, application Switzerland, Apr. 22, 1982, 2444/82

Int. Cl.⁴ F28D *7/02, 7/10;* **F28F** *9/22*

U.S. Cl. 165—160 **9 Claims**

1. In a heat exchanger, the combination comprising

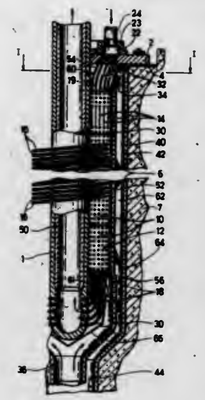
a vertical central tube;

a jacket concentric to said tube to define a first annular space therebetween;

a plurality of support plates extending coaxially and radially from said central tube to said jacket to sub-divide said annular space into a plurality of parallel flow paths for a first flowable medium;

a plurality of heat exchanger tubes extending between said central tube and said jacket within said flow paths to convey a second flowable medium therethrough for delivery to said central tube;

distributing means spaced from said support plates with an annular chamber therebetween and connected to said



tubes at one end thereof to deliver the second flowable medium thereto;

a plurality of separating plates extending through said annular chamber each separating plate extending coplanar with a respective support plate and extending from said support plates to said distributing means to define continuations of said flow paths throughout the annular chamber so as to prevent a circular flow; and

outlet means in said jacket adjacent said distributing means to exhaust the first flowable medium from said flow paths.

4,552,212

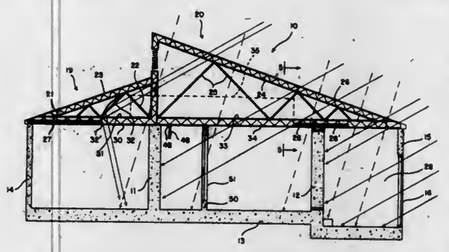
STRUCTURE HEATING AND COOLING SYSTEM

David A. Nuttle, 1316 Ravenhurst Dr., Raleigh, N.C. 27609

Filed Jan. 16, 1984, Ser. No. 570,851

Int. Cl.⁴ B60H *1/00*

U.S. Cl. 165—48.2 **6 Claims**



1. An improved heating and cooling system comprising: a structure having at least one interior thermal storage wall, a plurality of interior partition walls, a floor, a ceiling, and a roof; at least a portion of said thermal storage wall being constructed of a relatively high density material capable of storing alternately relatively large amounts of positive and negative BTU's; at least a portion of said partition walls being constructed of a solar transmissive material; at least a portion of said floor being constructed from a relatively high density material capable of storing alternately relatively large amounts of positive and negative BTU's; at least a portion of said ceiling having an opening therein with an openable closure operatively associated therewith; means associated with said openable closure for reflecting solar energy onto portions of said high density wall and floor not otherwise in a position to passively receive solar energy; a relatively transparent glazing covering said ceiling opening; and at least a portion of said roof having an equatorial exposure with relatively transparent glazing forming the cover thereof whereby when it is desired to passively collect solar energy, the closure over said ceiling opening can be opened to allow solar energy to pass through said roof, through said ceiling, and to be stored in said high density wall and floor.

4,552,213

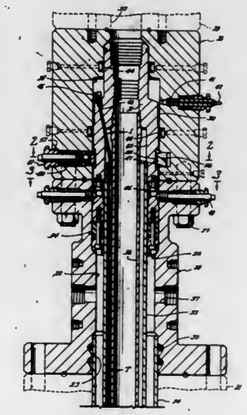
WELLHEAD APPARATUS

Jerry K. Boyd, Tomball, and Yu C. Chang, Houston, both of Tex., assignors to FIP, Inc., Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 585,440

Int. Cl.⁴ E21B *23/00, 33/03*

U.S. Cl. 166—88 **20 Claims**



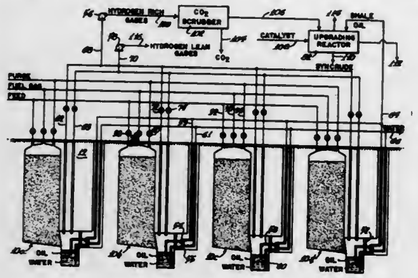
1. Wellhead apparatus, comprising a tubing head adapted to be mounted on a casing head, said head having a bore therethrough with a seat in the bore, an adapter adapted to be mounted on and releasably connected to the tubing head, said adapter having a bore therethough whose lower end is aligned with the bore of the tubing head above the seat, when so connected, a coupling disposable within the bore of the adapter, said coupling having a bore therethrough which is aligned with the upper end of the bore of the adapter, when so disposed, a casing suspended from the coupling in alignment with the coupling bore and extending therefrom within the tubing head, a tubing suspended from the coupling within the casing in alignment with the coupling bore and extending therefrom below the casing and spaced therefrom to provide an annular space therebetween, an assembly adapted to be disposed about the casing and supported on the seat in the bore of the head for sealing between the casing and the head, said adapter having an opening into its bore for connection with an external source of hydraulic fluid, means including seal means about the bore of the adapter for sealing between the adapter and the coupling and a port in the coupling for connecting the opening with the annular space, and means for transmitting hydraulic fluid through said space to and from hydraulically operable means within the well, said coupling having a groove thereabout, and said adapter having a plurality of supporting dogs mounted thereon for movement into and out of the groove, whereby with the dogs in the groove, and the adapter released from the tubing head, the coupling is supported from

the adapter to permit the casing and tubing strings to be raised therewith.

4,552,214
PULSED IN SITU RETORTING IN AN ARRAY OF OIL SHALE RETORTS

John M. Forgac, Elmhurst, and George R. Hoekstra, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Mar. 22, 1984, Ser. No. 592,378
Int. Cl.[4] E21B *43/247*; C10B *57/20*
U.S. Cl. 166—259 27 Claims



1. A process for retorting oil shale, comprising the steps of:
(a) simultaneously heating rubblized masses of oil shale in retorting zones of a plurality of underground retorts to a retorting temperature to liberate hydrocarbons and water from said oil shale leaving retorted shale containing residual carbon;
(b) combusting said residual carbon in said oil shale in combustion zones behind said retorting zones in said plurality of underground retorts with flame fronts fed by a feed gas to provide a substantial portion of said heating, said flame fronts advancing generally in the direction of flow of said feed gas;
(c) injecting a purge fluid selected from the group consisting essentially of steam, water, nitrogen, carbon dioxide, and combinations thereof, into said plurality of underground retorts to quench said flame fronts and subsequently reigniting said flame fronts with said feed gas while continuing to liberate hydrocarbons and water in said retorting zone;
(d) step (b) being performed in at least one of said underground retorts at a time when step (c) is performed in at least one other of said underground retorts; and
(e) withdrawing said liberated hydrocarbons and water from said underground retorts.

4,552,215
METHOD OF GRAVEL PACKING A WELL

Stephen W. Almond, Ventura, Calif., and Ronald E. Himes, Rush Springs, Okla., assignors to Halliburton Company, Duncan, Okla.

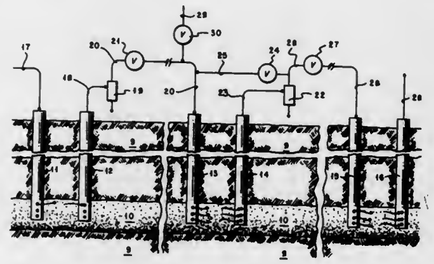
Filed Sep. 26, 1984, Ser. No. 654,818
Int. Cl.[4] E21B *43/04*
U.S. Cl. 166—278 20 Claims

1. A method for gravel packing a highly deviated well bore penetrating a subterranean formation comprising:
preparing a gravel packing fluid by admixing an aqueous liquid, a gelling agent comprising a cellulose ether which is chemically modified to incorporate pendent vicinal dihydroxy groups in an amount sufficient to provide a DS of about 0.3 to about 1.3 and exhibits shear-thermal stability at a temperature in excess of 200° F., said gelling agent being present in an amount in excess of about 0.2 percent by weight of said aqueous liquid, a crosslinking agent comprising a zirconium IV-containing compound present in an amount of at least about 0.001 percent by weight of said aqueous liquid and a particulate agent;
introducing said gravel packing fluid into a subterranean formation through said highly deviated well bore; and
depositing said particulate agent within said well bore to form a permeable pack.

4,552,216
METHOD OF PRODUCING A STRATIFIED VISCOUS OIL RESERVOIR

Robert Wilson, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 21, 1984, Ser. No. 623,256
Int. Cl.[4] E21B *43/243*
U.S. Cl. 166—261 12 Claims



1. In a method of producing oil from a viscous oil-bearing subsurface reservoir, said reservoir being stratified by permeability variations and being penetrated at spaced points by a first injection well and a first producing well and being penetrated by a second injection well and a second producing well, said first injection and producing wells being located to penetrate a first part of said reservoir and said second injection and producing wells being located to penetrate a second part of said reservoir, said first and said second parts of said reservoir being spaced laterally from each other, said method comprising initiating combustion in said reservoir at a point adjacent said first injection well and injecting into said first injection well a combustion supporting free oxygen containing gas characterized by the fact that the products of combustion contain essentially nitrogen-free carbon dioxide, producing said carbon dioxide from said reservoir through said first producing well, injecting said carbon dioxide into said second injection well, and producing oil from said reservoir through said second producing well.

4,552,217
MICROBIOCIDAL ANIONIC SEQUESTERANTS WITH POLYVALENT METAL CATIONS FOR PERMEABILITY CORRECTION PROCESS

Yulin Wu, and Naim A. Mumallah, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 9, 1984, Ser. No. 629,153
Int. Cl.[4] E21B *33/138, 43/22*
U.S. Cl. 166—270 19 Claims

1. A method for treating an underground formation which comprises injecting effective permeability control proportions of an in situ gelable composition comprising effective ratios of:
(a) water,
(b) at least one polymer capable of gelling with a crosslinking agent within a gelation pH range,
(c) at least one crosslinking agent comprised of polyvalent metal cations, and
(d) at least one sequestering agent characterized as biocidal and
wherein said polyvalent metal cations are sequestered by said sequestering agent.

4,552,218
UNLOADING INJECTION CONTROL VALVE

Richard J. Ross, and David J. Speller, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Sep. 26, 1983, Ser. No. 535,409
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—319 9 Claims



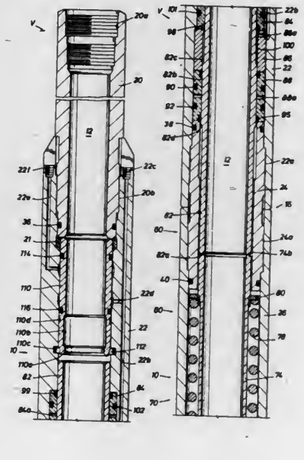
1. Fluid pressure responsive valving apparatus for use with an annular downhole tool having a packing element responsive to a pressure differential between the bore of the tool and the surrounding annulus within the well bore, comprising: a tubular assembly connectable in series relation between a surface-connected well conduit and the downhole tool; plug means for closing said tubular assembly to prevent the passage of fluids in either direction therepast and for permitting fluid pressure within said tubular assembly to be increased; a valve mounted in said tubular assembly and shiftable between first and second positions in response to increased fluid pressure within said tubular assembly; said valve in said first position connecting the bore of said tubular assembly to the annulus; resilient means urging said valve to said first position; said valve in said second position directing conduit fluid pressure into the bore of the downhole tool to expand the packing element thereof; and means responsive to the conduit fluid pressure changes for shifting said valve to said second position against the bias of said resilient means.

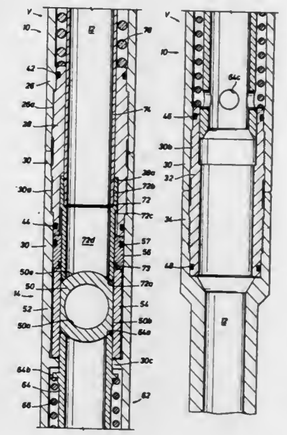
4,552,219
SUBSURFACE SAFETY VALVE

Fred S. Wong, Houston, and Larry F. Grohman, Spring, both of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Oct. 5, 1983, Ser. No. 539,333
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—321 8 Claims

1. A subsurface safety valve for use in controlling flow in a well conduit providing a desired fluid flow path in the well, including:
a valve housing having means for connecting said valve housing in a well conduit providing the desired fluid flow path, said valve housing having a flow passage formed therethrough which communicates with the well conduit when connected therewith to form a portion of the well conduit at a desired subsurface location in the well;
flow closure means disposed in said flow passage for movement to and from a closed position for blocking flow of fluid through said flow passage and an open position for enabling flow of fluid through said flow passage;
operator means mounted with said housing for moving said flow closure means longitudinally in said flow passage to and from the open and closed positions; and
said flow closure means including:
a ball-type flow closure element having a flow enabling port extending therethrough which when aligned with said flow passage enables desired flow and when said port is disposed out of communication with said flow passage, said ball-type flow closure element blocks flow through said flow passage, said ball-type flow closure element having a pair of parallel flats formed thereon, said flow enabling port forming a longitudinal axis that is disposed between and parallel to said flats;
a pair of ball-type flow closure element operating retainers fixedly secured in said flow passage, one of said retainers positioned adjacent one of said parallel flats and the other of said retainers positioned adjacent the other of said parallel flats;

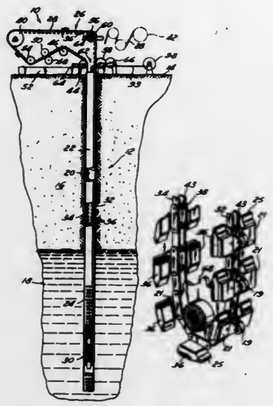




at least one of said adjacent operating retainers and flats having a first co-acting means for rotating said ball-type flow closure element to and from the open and closed position in response to relative longitudinal movement of said ball-type flow closure element relative to said operator guides a prearranged longitudinal distance; and
at least one of said adjacent operating retainers and one of said flats having a second co-acting means for maintaining said flow enabling port in the open position aligned with said flow passage during longitudinal movement of said ball-type flow closure element greater than the

prearranged longitudinal distance required to effect rotation to the open position.

4,552,220
OIL WELL EVACUATION SYSTEM
Brian D. Jones, 1795 Huntington St., Riverside, Calif. 92504
Filed Feb. 3, 1984, Ser. No. 576,970
Int. Cl.⁴ E21B *43/00*
U.S. Cl. 166—369 **32 Claims**



16. An article for use in a cylindrical oil well bore, comprising:

a container having a normally open top opening for filling said container and a normally closed bottom opening that opens and releases the contents of said container when said container is compressed; and

a portion of said container conforming to the curvature of the inside of said bore for scraping accumulated material from the inside of said bore.

30. A system for enhancing the production of oil from an oil well by evacuating sand, paraffin and other solid matter therefrom, said well having a well bore surrounded by a well casing, the system comprising:

a station located at the well head for receiving and collecting said solids as well as oil produced from said well;

a downhole unit located inside said well casing near the bottom of said well to provide an anchor for said system;

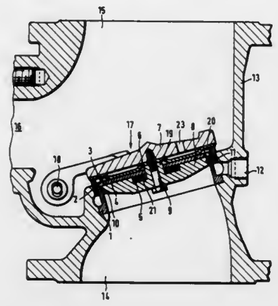
an endless belt at least partially supporting said downhole unit at a predetermined depth in said well, said belt being driven between said station and said downhole unit;

means on said belt for simultaneously evacuating from said well said solids and said oil, thereby enhancing the production of said oil; and

means for excavating said solids to facilitate their accumulation and evacuation by said evacuation means.

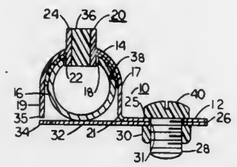
4,552,221
DRY-HEAD OR DELUGE-TYPE VALVE FOR FIRE-EXTINGUISHING SYSTEMS
Wilfried Klein, Lindlarer Str. 79, 5063 Overath-Immekeppel, Fed. Rep. of Germany
Filed Jul. 27, 1983, Ser. No. 517,544
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230086
Int. Cl.⁴ A62C *37/06*
U.S. Cl. 169—22 **11 Claims**

1. In a dry or deluge-type valve for permanently installed fire-extinguishing systems, having a blocking element mounted in a valve housing with an inlet and outlet and which tightly blocks the open cross-section of the housing and locking and release means integrated into the valve, the improvement wherein the locking and release means comprises means forming at least one radial depression at the open cross-section of the valve mounting, at least one locking element engageable with the at least one depression to lock the blocking element in a blocking position and means for maintaining the locking element in the engaged position against the pressure of an extinguishing fluid in response to the pressure of a gas or mixture of gases exceeding a predetermined level which is weaker than the pressure of the extinguishing fluid, wherein the blocking element comprises two disk-shaped elements rigidly fastened together, one of which is an air flap configured to at least partly engage an adjacent face of the open cross-section of the housing along its total circumference and the other



of which is a water disk configured to be positioned inside the open cross-section housing and completely span same when the blocking element is in the blocking position, wherein one part of the water disk has a central projection and an annular depression that surrounds the projection on the side that faces the air flap, a closure plate mounted for axial displacement on the central projection and a compression spring in the annular depression, and wherein the central projection and the edge of the open cross-section of the housing, the closure plate and the air flap form an annular space and wherein the annular space communicates with the part of the housing that faces the air flap through at least one hole in the air flap.

4,552,222
FUSIBLE-ELEMENTS HOLDER BRACKET DEVICE
Kip B. Goans, 2576 Appolo Ave., and Ruel R. Gober, Jr., 3525 Lake Catherine Dr., both of Harvey, La. 70058
Filed Aug. 29, 1984, Ser. No. 645,330
Int. Cl.⁴ A62C *37/12*
U.S. Cl. 169—57 **11 Claims**



1. In a fire protection system having a monitoring pressure fluid line for holding deactivated activating means of a fire control safety system, a fusible elements holder bracket device for venting fluid pressure in said line to atmosphere at a preselected rise in temperature to activate said system, comprising:

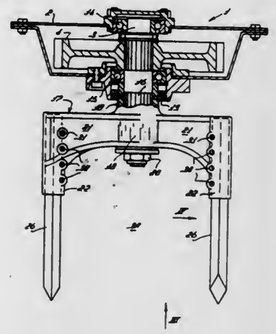
(a) a body means integral with a hollow open ended cylinder means, said body means being flat in part for attaching to supporting structure, and sequentially curved upwardly in part to an apex and down for estending partially around said pressure fluid line, and said hollow open ended cylinder means being normal to said upward curve and apex

and extending therebelow and above respectively into said pressure fluid line side opening and to atmosphere;

(b) a plurality of connecting means for attaching said means flat part to said supporting structure and to said pressure fluid line with said lower end of said cylinder means extending through said side opening into said line; and

(c) a plurality of fusible element means, one said means mounted in said hollow open ended cylinder means for closing said ends, second said means mounted between said body means curved part and said pressure fluid line for sealing said one connection of said cylinder end in said line, and a third said means mounted as part of said connecting means for attaching said body means to to said supporting structure, and all for melting at a preselected temperature.

4,552,223
SOIL CULTIVATING IMPLEMENTS
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
Filed May 24, 1983, Ser. No. 497,552
Claims priority, application Netherlands, May 26, 1982, 8202143
Int. Cl.⁴ A01B *33/06*
U.S. Cl. 172—49.5 **10 Claims**



1. A soil working member which rotates about a substantially vertical axis to work the underlying soil, the soil working member comprising a tine holder for holding a tine at a distance spaced from its corresponding axis that penetrates a substantial distance into the soil while at the same time it is rotated about said axis, said tine holder comprising a substantially vertically disposed sleeve, said sleeve having a hollow interior for receiving said tine, said sleeve between its exterior and its hollow interior being thicker along its leading edge than along its trailing edge relative to its usual direction of rotation, said tine holder being substantially U-shaped when seen in vertical cross section, the limbs of the U being directed forwardly with respect to the intended direction of operative rotation of the soil working member of which said holder forms a part.

4,552,224
HITCH ASSEMBLY FOR A TANDEM DISC IMPLEMENT
Terry Luscombe, P.O. Box 108, Armstrong, Iowa 50514
Filed Mar. 19, 1984, Ser. No. 590,735
Int. Cl.⁴ A01B *69/00*; B60D *1/14*
U.S. Cl. 172—324 **2 Claims**

1. A multiple tandem plow implement connectable to a tractor to be towed thereby, comprising:

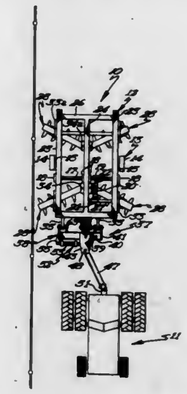
an elongate, generally rectangular-shaped implement frame extending in a fore and aft direction;

a plurality of gangs of disc plows mounted on said frame, including a front pair of gangs and a rear pair of gangs, each frong gang being oppositely angled with respect to a gang positioned directly rearwardly thereof;

a pair of vertically shiftable ground engaging wheels mounted on said frame and being shiftable between working and travel positions, said ground engaging wheels when in the travel position elevating the gangs of plows above the surface of the ground and when in the working position allowing plows to penetrate the ground;

an elongate generally rectangular-shaped hitch frame positioned forwardly of and below said implement frame and extending transversely and substantially normal to the direction of travel, means pivotally connecting said hitch frame with the front end of said implement frame to permit vertical pivotal movement between the hitch frame and implement frame about a horizontal axis extending normal to the direction of travel, a pair of substantially flat vertically spaced apart substantially parallel plates secured to said hitch frame and projecting forwardly therefrom;

an elongate draw bar extending in a fore and aft direction and having means at its forward end for pivotal connection with a tractor, said draw bar having a rear end portion positioned between said plates, pivot means adjacent the rear end of said draw bar pivotally connecting the



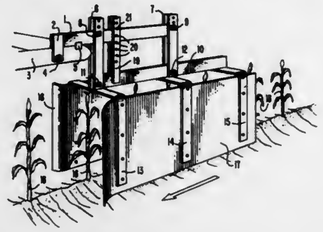
draw bar to said plates to permit lateral shifting of the draw bar about a vertical axis relative to the hitch frame;

a horizontally disposed double-acting horizontal ram positioned forwardly of said hitch frame and being extendable and retractable, pivot means pivotally connecting one end of said hydraulic ram to one end of said hitch frame for pivoting movement of the hydraulic ram relative to the hitch frame about a vertical axis, pivot means pivotally connecting the other end of said hydraulic ram to the rear end of the draw bar to permit various and selected power shifting of the rear end of the draw bar laterally with respect to the hitch frame in opposite directions between a neutral position and offset position, said draw bar when in the neutral position being disposed in the longitudinal center line of the implement frame to permit trailing the latter substantially in a line with a tractor, said draw bar when in an offset position being angled with respect to the longitudinal center line of the implement frame to permit the implement frame to travel in offset relation thereto, said hydraulic ram being operable to retain the draw bar in an adjusted neutral or offset position.

4,552,225
CULTIVATOR SHIELD ATTACHMENT
Ernest E. Behn, and Jerome L. Behn, both of R.R. #1, Boone, Iowa 50036
Filed Oct. 28, 1983, Ser. No. 546,281
Int. Cl.⁴ A01B *39/26*
U.S. Cl. 172—513 **4 Claims**

1. A support bracket for mounting a shield on a cultivator

frame, said bracket comprising an upper elongated support bar having an adapter member rigidly secured at one end, said adapter member being constructed to be fixedly secured to a cultivator frame member with said upper bar extending substantially horizontal in a rearward direction, a second elongated bar rigidly mounted on the upper portion of a shield member, said second bar being positioned below and generally parallel with said upper bar, a pair of longitudinally spaced parallel links pivotally attached at their ends to said upper and



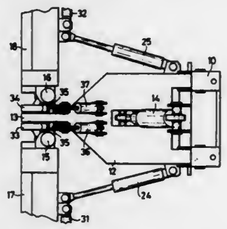
second bar, each of said links comprising a pair of laterally spaced members with one of said members positioned on each side of said upper and second bar, a height adjusting mechanism comprising a pair of rigid laterally spaced vertical strap members rigidly secured to said second bar and straddling said bar, said strap members including a plurality of aligned openings along their length, pin means adapted to be selectively positioned through one of said aligned openings and abut the upper surface of said upper bar whereby to floatingly secure the shield at a selected height above the ground.

4,552,226

HYDRAULICALLY CONTROLLED BULLDOZER-BLADE

Helmuth Platter, Vipiteno, Italy, assignor to Leitner S.p.A., Vipiteno, Italy

Filed Mar. 29, 1984, Ser. No. 594,918
Claims priority, application Italy, Apr. 1, 1983, 20448 A/83
Int. Cl.⁴ E02F *3/76*
U.S. Cl. 172—815 **2 Claims**



1. A hydraulically controlled bulldozer-blade attachment for an endless track tractor, comprising:

a supporting frame securable to a tractor;

a first intermediate frame pivotally connected to said supporting frame about a first horizontal axis extending transverse to a direction of advance of said tractor;

a first double acting hydraulic jack connected between said supporting frame and said first intermediate frame for controlling an inclination of said first intermediate frame about said first axis; two second intermediate frames, each said second intermediate frame being pivotally connected to said first intermediate frame about a respective second horizontal axis extending transverse to a direction of advance of said tractor;

a second double acting hydraulic jack connected between said first intermediate frame and each said second intermediate frame for independently controlling inclinations of said second intermediate frames about said second axes;

a half blade pivotally connected to each said second intermediate frame about a respective third axis, each said third axis extending parallel to a first vertical plane extending in said direction of advance of said tractor, each said third axis being adjustable relative to a second vertical plane extending transverse to said direction of advance by one of said second jacks, said second jacks being adapted such that said third axes are rearwardly inclined to said second vertical plane; and

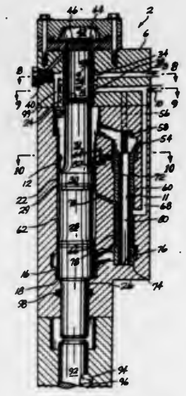
a third double acting hydraulic jack connected between said second intermediate frame and each of said half blades for controlling inclinations of said half blades about said third axes.

4,552,227

RECIPROCATING LINEAR FLUID MOTOR

Maurice Wohlwend, Seattle, Wash., assignor to The Stanley Works, New Britain, Conn.

Division of Ser. No. 331,650, Dec. 17, 1981, Pat. No. 4,466,493.
This application Aug. 16, 1984, Ser. No. 641,720
Int. Cl.⁴ F01B *25/04*; F01L *25/04*
U.S. Cl. 173—15 **17 Claims**



1. In a motor of a type including a housing having a longitudinal cavity, and a linear piston which reciprocates in said cavity and which is driven by drive means in one direction toward a lower position and against a load and is moved in the opposite direction by a hydraulic system having a fluid inlet and a fluid outlet; said drive means including a body of incompressible fluid which is partially defined by an end portion of said cavity and which acts on and transmits a driving force to the piston, and spring means in pressure communication with said body:

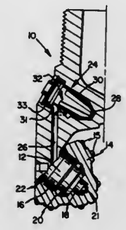
stop means for automatically shutting off the motor when the load is removed from the piston; which stop means includes slide means for allowing the piston to slide past said lower position and into a shut-off position when the load is removed from the piston, and passageway means for short-circuiting hydraulic fluid pressure from the fluid inlet directly to the fluid outlet; said passageway means including a first end that is in open communication with the fluid inlet and that has an inlet opening ported on said end portion of the longitudinal cavity, and a second end that is in open communication with the fluid outlet and that has an outlet opening ported on said end portion of the longitudinal cavity; said inlet opening and said outlet opening being blocked from communication with each other by the piston when the motor is operating and in open communication with each other via the body of incompressible fluid when the piston is in its shut-off position; each of said openings being blocked by a side portion of the piston for at least a portion of the time the motor is operating to allow movement of the piston in said opposite direction to compress the spring means; and said outlet opening communicating with said body of fluid when the piston is in said lower position to prevent the drive means from exerting any driving force on the piston in said one direction.

4,552,228

LOW PRESSURE DIFFERENTIAL COMPENSATOR

Robert F. Evans, Dallas, and Charles W. Stafford, Arlington, both of Tex., assignors to Varel Mfg. Co., Dallas, Tex.

Filed Feb. 21, 1984, Ser. No. 581,612
Int. Cl.⁴ E21B *10/24*
U.S. Cl. 175—228 **8 Claims**



4. A low pressure differential compensator for use in a sealed rotary rock bit having a lubrication system including a lubricant reservoir, the reservoir providing lubricant to a bearing area between relatively rotatable elements having a seal therebetween, comprising:

a flexible elongated diaphragm of a truncated cone configuration where the walls of the cone have opposed longitudinally extending linear crests, each crest having opposed sloping surfaces, each surface joining the sloping surface of the adjoining crest to form an undulatory cross section, said diaphragm located within said lubricant reservoir for separating said reservoir into a lubricant region and a borehole fluid region, said diaphragm expanding radially with respect to the longitudinal axis of said reservoir in response to a pressure differential across said seal.

4,552,229

EXTERNALLY POWERED CORE CATCHER

Steven R. Radford, West Jordan, and Craig R. Hyland, Magna, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

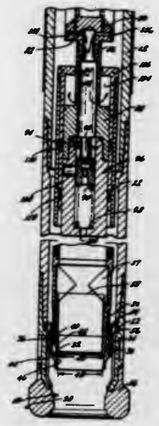
Filed Sep. 9, 1983, Ser. No. 530,520
Int. Cl.⁴ E21B *25/12*
U.S. Cl. 175—240 **18 Claims**

1. An apparatus used in combination with a coring bit connected to an outer tube for retention of a core, said core being cut by said coring bit and disposed within an inner tube disposed in turn within said outer tube, an external force being selectively applied to said inner tube, said apparatus comprising:

a slidable core catcher disposed within said inner tube and longitudinally displaceable with respect to said inner tube, said core being disposed through said core catcher;

an inner tube ring member coupled to said slidable core catcher and selectably detachable therefrom, said inner tube ring member longitudinally translatable with respect to said outer tube; and

an outer tube ring member coupled to said outer tube and longitudinally fixed thereto, said outer tube ring member extending radially inwardly from said outer tube to assume a longitudinal position opposing said inner tube ring member when said inner tube ring member is adjacently disposed to said outer tube ring member, longitudinal movement of said inner tube with respect to said outer tube thereby causing longitudinal displacement of said slidable core catcher within said inner tube by virtue of said coupling between said inner tube ring member and core catcher when longitudinal movement of said inner tube ring member is restrained by said outer tube ring member, said inner tube ring member being particularly



characterized by selectively detaching from said slidable core catcher after a predetermined amount of relative longitudinal displacement between said inner tube and said slidable core catcher,

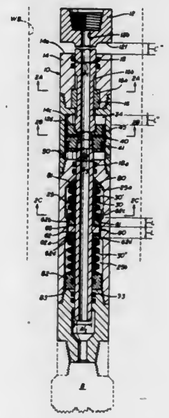
whereby said slidable core catcher is operative by said external force applied to said inner tube and not dependent upon contact and coupling with said core disposed through said core catcher into said inner tube.

4,552,230

DRILL STRING SHOCK ABSORBER

Edwin A. Anderson, and Derrel D. Webb, both of P.O. Box 567, Houston, Tex. 77001

Filed Apr. 10, 1984, Ser. No. 598,703
Int. Cl.⁴ E21B *17/07*
U.S. Cl. 175—321 **18 Claims**



1. In a shock absorber for use in a well drilling string in a well bore having a drilling jar formed by inner and outer members with up and down jar impact faces engageable to

engage and deliver an up or down jar impact to the well string when it is stuck and wherein the shock absorber includes an elongated telescopic structure having an inner tubular body and an outer housing with means for connecting the structure in a well drilling string for conducting drilling fluid therethrough, the structure further having rotary drive means between the body and the housing and resilient means engageable between the body and housing to cushion telescopic contraction and extension of the inner body and outer housing forming the structure, the invention including:

means to substantially neutralize the effect of well drilling fluid on the body;

seal means in longitudinally spaced relation between the body and housing to provide a liquid receiving chamber in which the resilient means is recieved;

extension and contraction stop shoulder means on the body and housing to limit longitudinal extension and contraction therebetween, said shoulder means being formed on the body and housing outside the liquid receiving chamber;

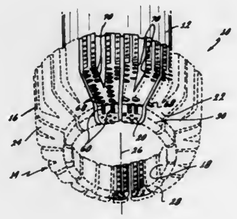
said extension stop shoulder means being longitudinally spaced on the body and housing to engage and prevent further extension of the body and housing before the up drilling jar impact faces engage to deliver an up jar by a pull on the well string, and said contraction stop shoulder means being spaced to engage and prevent further contraction of the body and housing before the down drilling jar impact faces engage to deliver a down jar by pushing on the well string so as to inhibit damage to the structure of the shock absorber during jarring blows to the stuck well string by the drilling jar.

4,552,231

ROTATING PILOT CORE BIT FOR USE IN HIGHLY FRACTURED FORMATIONS

Clifford R. Pay, Woods Cross, Utah, and F. James Thornton, Bakersfield, Calif., assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Sep. 6, 1983, Ser. No. 529,407
Int. Cl.⁴ E21B *10/48*
U.S. Cl. 175—330 **3 Claims**



1. A rotating bit for coring including an inner gage of said bit defining a core diameter and an outer gage of said bit defining a bore diameter, said bit including a bit face having a longitudinal axis, said bit comprising:

a pilot portion extending from said inner gage in a radial direction and longitudinally extending from said bit face to form a generally cylindrical cutting section, said pilot portion having diamond cutting elements disposed therein;

a flank portion extending from said pilot nose portion, said flank portion characterized by a predetermined slope defined with respect to said longitudinal axis of said bit, said flank portion having diamond cutting elements disposed therein; and

a shoulder portion extending from said flank portion to said outer gage to smoothly join said flank portion to said outer gage, said shoulder portion having diamond cutting elements disposed therein,

wherein said flank portion joins said pilot portion through a smoothed transition surface, said transition surface having an exposed diamond cutting element disposed therein,

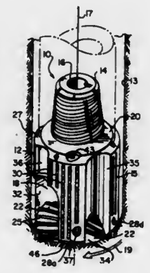
whereby a rotating bit for coring is devised which minimizes disturbance to said core while cutting and minimizes jamming of said core.

4,552,232

DRILL-BIT WITH FULL OFFSET CUTTER BODIES

Lawrence Frear, Sandy, Utah, assignor to Spiral Drilling Systems, Inc., Denver, Colo.

Filed Jun. 29, 1984, Ser. No. 626,237
Int. Cl.⁴ E21B *10/10*
U.S. Cl. 175—337 **33 Claims**



1. A rotary drill bit for drilling in an earth formation which drill bit includes a main body structure, and at least one cutter body rotatably connected at each end thereof to the main body structure at an end support position at which end support position the cutter body is attached to the main body, said cutter body having a rotational axis perpendicular to and offset from a longitudinal axis of said drill bit, each of said end support positions being located on said rotational axis and equidistant from said longitudinal axis, said cutter body further having a generally ellipsoidal configuration with parallel rows of cutting elements formed on an outer surface thereof, said cutter body acting in the first abrasive mode of operation wherein the cutter body is moved in the direction of its rotational axis to abrade the earth formation and in a second abrasive mode of operation wherein said rows impart a rotation to said cutter bodies about their rotational axes to abrade said earth formation.

4,552,233

ROTARY DRILL BIT SEAL

Frank J. Klima, Virginia, Minn., assignor to Warren A. Sturm, Minneapolis, Minn.

Continuation of Ser. No. 431,397, Sep. 30, 1982, abandoned. This application Jul. 18, 1984, Ser. No. 632,255
Int. Cl.⁴ E21B *10/24*
U.S. Cl. 175—371 **5 Claims**

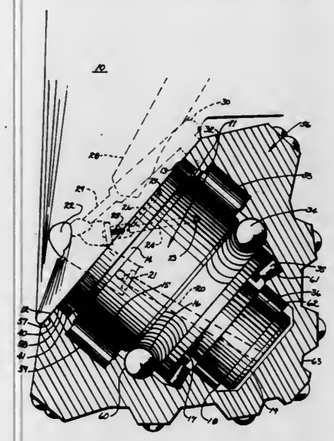
1. A seal for a rotary drill bit of the class including a journal and a cutter cone rotatably disposed on the journal comprising, in combination:

a stationary journal having a lower end and an upper end, said upper end having a radially extending portion including a surface for engagement with the axial end of a seal;

a hollow cutter cone rotatably disposed on said journal and including a radially extending upper end adjacent to the radially extending portion on the upper end of said journal and a seal receiving groove opening axially upwardly and radially inwardly on the upper end of the interior of said hollow cutter cone and adapted to receive a seal extending intermediate the lower portion of said groove and the radially extending porton of said stationary journal; and

a plurality of sealing rings, including first and second sealing rings formed of materials of dissimilar characteristics so

that one of said first and second rings is compressible and the other is incompressible axially in said seal receiving groove disposed axially in said seal receiving groove and intermediate the lower radially extending portion of said groove and the radially extending portion of said stationary journal whereby the circumferential outer surfaces of said sealing rings are in engagement with the groove in said cutter cone, the sealing rings are disposed in serial



axial engagement intermediate the radially extending portion on said stationary journal and the lower portion of the groove on said cutter cone and the inner circumferential portions of said rings are radially spaced from said stationary journal and said sealing rings are confined solely axially between the lower portion of said seal receiving groove and the radially extending portion on said stationary journal.

4,552,234

SPIRAL GUN APPARATUS

Lowell W. Revett, Youngsville, La., assignor to Halliburton Company, Duncan, Okla.

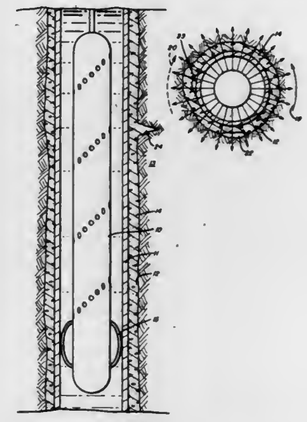
Continuation-in-part of Ser. No. 282,555, Jul. 13, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 585,955
Int. Cl.⁴ E21B *43/117*
U.S. Cl. 175—4.6 **8 Claims**

1. Shaped charge gun perforating apparatus for use in perforating casing in a cased well borehole traversing earth formations comprising:

a hollow longitudinal elongated body member sized and adapted for passage through a cased well borehole and having a longitudinal axis and an outer circumferential surface;

means for maintaining said longitudinal axis of said body member approximately coincident with the longitudinal axis of the casing in a cased well borehole, thereby providing optimum standoff of said outer circumferential surface from the interior surface of the casing;

plural shaped charge perforating guns carried interiorly in said hollow body member and having firing apertures arranged on said outer circumferential surface of said body member and distributed longitudinally along the length of said body member, said firing apertures being generally circular in shape and having axes of rotation radially disposed with respect to said longitudinal axis of said body member, said shaped charge perforating guns being arranged to be substantially simultaneously fired to produce perforations through well casing along the circumference of the well casing, said shaped charge perforating guns being longitudinally distributed in a density of at least four such perforating guns per foot along said body member such that said firing apertures form on said exterior surface thereof a generally longitudinally spirally shaped pattern and wherein the azimuthal angles about said longitudinal axis of said body member formed by said radial axes of said firing apertures with each other are arranged such that over a maximum of a six foot longitudinal length of said body member said radial axes of said firing apertures form approximately 15° angles with respect to each other about said longitudinal axis of said



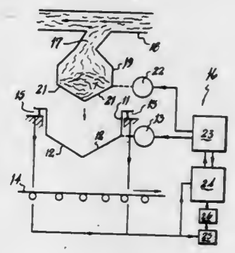
body member, the optimum standoff of said outer circumferential surface and the positioning of said radial axes of said firing apertures cooperatively interacting to provide at least 360° coverage of high azimuthal dispersion perforations produced in the circumference of a well casing over such a maximum of six foot longitudinal length, said perforations being no more than approximately 15° offset from each other over a given length not exceeding six feet.

4,552,235

CYCLICALLY WEIGHING BULK SOLID MATERIAL

David Brunnschweiler, Blackburn, England, assignor to Haigh Chadwick Limited, West Yorkshire, England

Filed Apr. 21, 1983, Ser. No. 487,011
Claims priority, application United Kingdom, Apr. 21, 1982, 8211473
Int. Cl.⁴ G01G *19/52, 13/16, 13/24, 21/10*
U.S. Cl. 177—1 **9 Claims**



1. In a method for cyclically weighing flowable bulk solid material as part of a dispensing process comprising the steps of:

supplying said material from a continuously operating controllable delivery feed arrangement to a weigh-pan,

generating a signal indicative of the amount of material in the weigh-pan,

terminating supply of said material from said feed arrange-

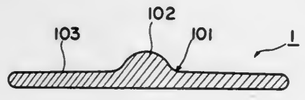
ment when said signal indicates a predetermined amount of material in the weigh-pan,
causing the weigh-pan, after receiving and weighing all the material supplied by said feed arrangement up to the said termination of said supply, to deliver its contents,
and
preparing the weigh-pan for the next cycle,
the improvement comprising:
predetermining a rate of delivery from said weigh-pan in accordance with the requirements of said dispensing process in terms of the average amount delivered per cycle and the cycling frequency,
supplying from said feed arrangement material to said weigh-pan through valve means in which said material accumulates when said weigh-pan is not receiving material from said valve means, and
controlling said controllable feed arrangement to supply said material substantially at said predetermined rate.

4,552,236

DISTRIBUTION TABLE FOR CONTROLLING FEED RATE OF ARTICLES SUPPLIED IN AUTOMATIC WEIGHING APPARATUS

Yoshiharu Mikami, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 9, 1982, Ser. No. 416,323
Claims priority, application Japan, Sep. 10, 1981, 56-135111[U]
Int. Cl.⁴ G01G *19/22, 21/28*
U.S. Cl. 177—25 **2 Claims**



1. An apparatus for controlling the feed rate of articles in an automatic weighing apparatus, comprising:
a distribution table having an upper surface formed with a centrally located hemispherical projection and a flat portion surrounding the projection;
means, connected to said distribution table, for subjecting the distribution table to helical reciprocatory vibration; and
a plurality of radially extending, independently vibratable troughs disposed about the outer circumference of said distribution table for receiving articles distributed by the distribution table.

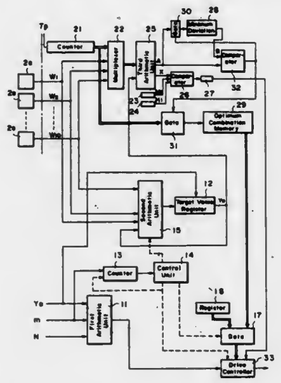
4,552,237

COMBINATORIAL WEIGHING METHOD AND APPARATUS

Takashi Saskiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jun. 17, 1983, Ser. No. 505,479
Claims priority, application Japan, Jun. 23, 1982, 57-107789
Int. Cl.⁴ G01G *19/22*
U.S. Cl. 177—25 **8 Claims**

1. A combinatorial weighing method for use in a combinatorial weighing apparatus for combining weight data obtained from a plurality of weighing machines to find a combination giving a total combined weight value equal or closest to a target weight value within a preset weight range and for discharging weighed batches of articles from the weighing machines providing the combination, the combinatorial weighing being performed for a case where the target weight value is greater than the maximum load of the weighing apparatus, said method comprising the steps of:
(a) computing an average weight value of batches of articles, which are to be charged into each of the weighing machines, based on a number of times m batches of articles, where m is an integer greater than or equal to one, are to be discharged from all of the plurality of weighing machines, the target weight value, and the total number of weighing machines;
(b) repeating, m times, a cycle of discharging the batches of articles from all of the weighing machines and supplying batches of articles, having substantially the average weight value, into each of the weighing machines;



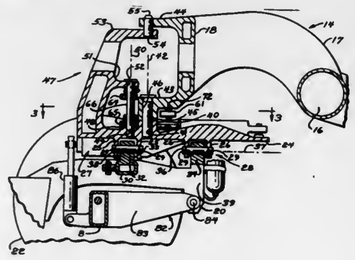
(c) computing a difference between the target weight value and the total weight value of the batches of articles obtained after discharging the batches of articles from all of the weighing machines m times;
(d) selecting a combination of batches of articles, with the difference serving as the target weight value, contained in the weighing machines giving a total weight within the preset weight range inclusive of the target weight value; and
(e) discharging the selected batches of articles.

4,552,238

TRACTOR SCRAPER HITCH STEERING AND SUSPENSION SYSTEM

Hardin Joyce, Jr., Springfield, Ill., assignor to Fiatallis North America, Inc., Carol Stream, Ill.

Filed Sep. 26, 1983, Ser. No. 535,793
Int. Cl.⁴ B62D *5/10;* **B60G** *25/00*
U.S. Cl. 180—139 **15 Claims**



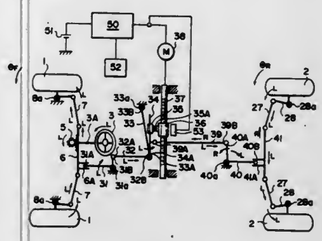
1. A vehicle steering and suspension system for use with an articulated vehicle having a tractor portion and a trailer portion coupled thereto by a hitch connection that permits the vehicle portions to rotate relative to each other about an articulation axis extending vertically through the tractor and trailer portions comprising;
a hitch base frame secured to a portion of the tractor and having formed therein an aperture coincident with said articulation axis of the hitch connection,
structural means forming a part of and extending upwardly from said hitch frame means at a forward portion thereof,
said structural means including a bottom portion and a middle portion having formed therethrough apertures oriented to form a vertical common axis located forwardly of said articulation axis,
said structural means further including an upper portion having formed therethrough an aperture with an axis coincident with said articulation axis,
a draft frame connected to the trailer portion having a forward portion comprising a lower bracket member with an aperture formed therethrough with an axis coincident with said articulation axis, an upper bracket member with an aperture formed therethrough with an axis coincident with said articulation axis,
pin means disposed between said bottom portion and said middle portion of said structural means,
pin means disposed along said articulation axis connecting said hitch base frame and said lower bracket member of the draft frame for pivotal movement therebetween,
pin means disposed along said articulation axis connecting said upper portion of the structural means and said upper bracket member of the draft frame for pivotal movement therebetween, and
steering linkage means connected to said hitch base frame disposed to rotate about said common axis and effective to cause said tractor portion to rotate about said trailer portion a total of 180 degrees.

4,552,239

FOUR-WHEEL STEERING DEVICE FOR VEHICLE

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Filed Oct. 25, 1983, Ser. No. 545,190
Claims priority, application Japan, Oct. 26, 1982, 57-188023; Oct. 28, 1982, 57-189446; Oct. 28, 1982, 57-189447
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 180—140 **13 Claims**



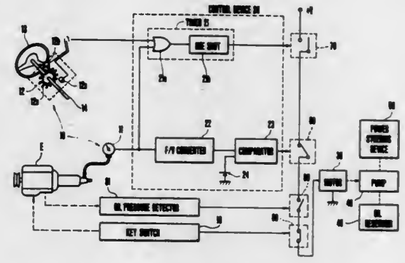
1. A four-wheel steering device for a vehicle comprising a front wheel steering mechanism for turning the front wheels, a rear wheel steering mechanism for turning the rear wheels, a vehicle speed sensor for detecting the vehicle speed and a controller for controlling the rear wheel steering mechanism characterized in that said controller controls the rear wheel steering mechanism so that the rear wheel turning angle is changed in accordance with a turning angle ratio characteristic curve defined on a $\theta F - \theta R$ plane wherein θF and θR respectively represent the front wheel turning angle and the rear wheel turning angle, said turning angle ratio characteristic curve being substantially a broken line having an inflection point at which the inclination thereof is changed, the turning angle ratio characteristic curve having a positive first inclination in the region where the value of θF is smaller than the value of θF at the inflection point and a second inclination smaller than the first inclination in the region where the value of θF is not smaller than the value of θF at the inflection point, and said turning angle ratio characteristic curve being changed according to the vehicle speed so that the turning angle ratio $\theta R/\theta F$ is increased as the vehicle speed increases.

4,552,240

POWER STEERING APPARATUS

Sadao Takeshima, and Takeshi Obe, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,278
Claims priority, application Japan, Feb. 14, 1983, 58-22551
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 180—142 **15 Claims**



1. In a power steering apparatus for use in a motor car of the type including a control device for controlling a motor driven oil pump in accordance with an output of a sensor device which detects running condition of said motor car driven by an engine, the improvement which comprises means for stopping said oil pump while said engine is stopped and means for stopping said oil pump during starting of said engine.

4,552,241

FOUR-WHEEL DRIVE SYSTEM WITH CENTER DIFFERENTIAL LOCK CONTROL RESPONSIVE TO RPM DIFFERENCE

Kunihiko Suzuki, Sagamihara, Japan, assignor to Nissan Motor Company, Ltd., Japan

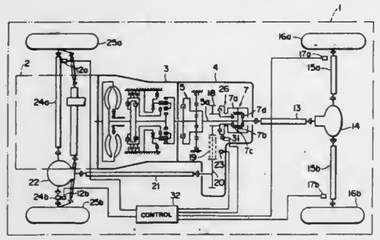
Filed Apr. 16, 1984, Ser. No. 601,002
Claims priority, application Japan, May 23, 1983, 58-90391
Int. Cl.⁴ B60K *17/34*
U.S. Cl. 180—249 **16 Claims**

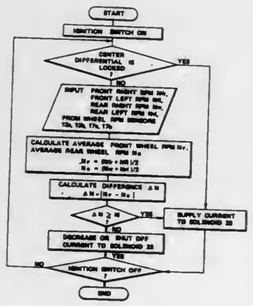
1. A four-wheel drive vehicle comprising:
an engine,
a front right wheel, a front left wheel, a rear right wheel and a rear left wheel,
a four-wheel drive system for transmitting power from said engine to said front wheels and said rear wheels, said four-wheel drive system comprising a center differential connected between said front wheels and said rear wheels for absorbing a rotational speed difference between said front wheels and said rear wheels, and restraining means capable of holding said center differential selectively in a restrained condition in which the differential action of said center differential is restrained, and in a released condition in which the differential action of said center differential is allowed, said four-wheel drive system further comprising front wheel side rotating means connected between said center differential and said front wheels for driving said front wheels and rear wheel side rotating means connected between said center differential and said rear wheels for driving said rear wheels, said center differential allowing said front wheel side rotating means and said rear wheel side rotating means to rotate at different speeds when said center differential is in the released condition, and
a control system comprising:
front speed sensing means for sensing a rotational speed of said front wheel side rotating means,

rear speed sensing means for sensing a rotational speed of said rear wheel side rotating means,

condition sensing means for detecting whether said center differential is in or out of said restrained condition, and

control means, connected with both of said front and rear speed sensing means and said condition sensing means, for controlling said restraining means in accordance with signals of said front and rear speed sensing means





and said condition sensing means, said control means commanding said restraining means to bring said center differential to the restrained condition if the difference between the rotational speed of said front wheel side rotating means and the rotational speed of said rear wheel side rotating means is equal to or larger than a predetermined value and at the same time said center differential is out of the restrained condition.

4,552,242

COAXIAL TYPE COMPOSITE LOUDSPEAKER

Akihiko Kashiwabara, Kawasaki, Japan, assignor to Soshin Onkyo Works, Ltd., Yokohama, Japan

Filed Oct. 18, 1983, Ser. No. 543,453
Claims priority, application Japan, Apr. 15, 1983, 58-56421
Int. Cl.⁴ H05K *5/00*
U.S. Cl. 181—144 **6 Claims**

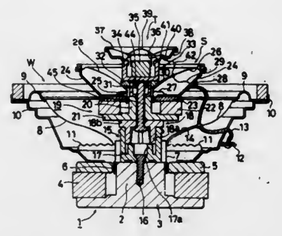
1. A coaxial type composite loudspeaker, comprising:

a woofer;

first and second additional loudspeakers coaxial with the axis of said woofer and in front of said woofer, each of said woofer and said first and second additional loudspeakers having a yoke at the rear thereof and a center pole at the front thereof coaxial with the yoke, said woofer and said first and second additional speakers having different diameter front openings and different allocated frequency bands;

spacers between each of the adjacent loudspeakers for mounting said additional loudspeakers coaxially on said woofer; and

the first of said spacers being between said woofer and the first additional loudspeaker and disposed immediately in front of said woofer and having a plate rest with a closed bottom cylinder against the center of the front end surface of the center pole of said woofer, a screw extending through the closed bottom and into the center pole to fix the plate rest to said center pole, and a mount having an outer plate with a central hole which is in intimate contact



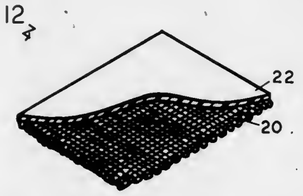
with and disposed centrally on the rear surface of the yoke of said first additional loudspeaker and a cylindrical base projecting from the central rear surface of said outer plate and snugly fitting into the cylinder of said plate rest and adhesively secured therein.

4,552,243

DIAPHRAGM MATERIAL FOR ACOUSTICAL TRANSDUCER

Louis Melillo, Crystal Lake, Ill.; Tsutomu Haga, Yamagata, and Iwao Sashida, Chichibushi, both of Japan, assignors to Pioneer Industrial Components, Inc., Elk Grove Village, Ill.

Filed May 3, 1984, Ser. No. 606,624
Int. Cl.⁴ H04R *7/02*
U.S. Cl. 181—169 **17 Claims**



1. A diaphragm for use in an acoustical transducer or loudspeaker, which diaphragm comprises: a tightly-woven, close-weave, self-supporting, carbon fiber woven cloth material and a thin air sealing layer on one or both sides of the woven carbon fiber cloth material to control the internal loss characteristics of the diaphragm and to seal the passage of air through the cloth material, the woven carbon fiber cloth material comprising about 80 percent by volume or more of the volume of the diaphragm, and which diaphragm has a sonic velocity of about 5×10^3 meters per second or greater and a controlled internal loss of about 0.05 (tan σ) or more.

4,552,244

SAFETY SUPPORT AND RESCUE CLAMP

Robert A. Maciejczak, 640 W. Devon, Chicago, Ill. 60631

Filed Sep. 22, 1983, Ser. No. 534,755
Int. Cl.⁴ A62B *1/00*
U.S. Cl. 182—82 **15 Claims**

1. A safety support and rescue clamp for use on building structures for supporting personnel and equipment on wall faces of a building structure,

said clamp including a generally rectangular plate-like pawl means having opposed side edges, front and rear edge faces, for selectively and removably positionable within

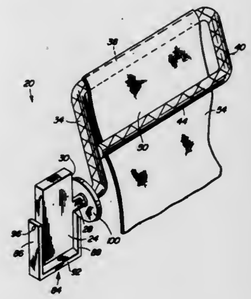
an elongate, generally vertically-extending channel-like slotted track supported on a building structure on a wall face thereof,

the track having a pair of opposed parallel side walls, a rear wall, and a pair of slot-defining, spaced partial front walls,

said pawl means being operable to lock within the track and constituting anchor means for overcoming a weight-derived force vector directed downwardly along the track,

said pawl means being alignable with a slot formed in a forwardly presented face of the track and being insertable into the track through the slot formed therein,

said pawl means being pivotally disposed within the track, and having an overall length which exceeds a distance between the opposed side walls of the track,



said pawl means opposed side edges serving to bridge and grippingly to engage the side walls of the track at opposed lateral interior faces thereof and mechanically to lock said clamp against sliding displacement downwardly within the track,

axle means for pivotally supporting and manipulating said pawl means,

said axle means being joined to and extending rearwardly and normally from said rearwardly directed edge face of said pawl means, and in a plane generally paralleling a principal plane of said pawl means, and

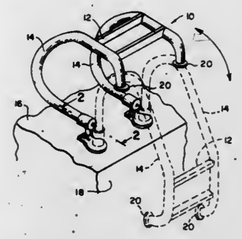
lever means connected to and projecting generally normally of said axle means for imparting rotational movement to said axle means and for, concurrently, pivotally displacing said pawl means carried thereby, in response to pressure applied to said lever means and about said axle means.

4,552,245

SWIMMING POOL LADDER SECUREMENT DEVICE

Albert W. Lindberg, Jr., 125 W. 6th St., Bayonne, N.J. 07002

Filed Sep. 13, 1984, Ser. No. 650,175
Int. Cl.⁴ E06C *9/08*
U.S. Cl. 182—97 **4 Claims**



1. A releasable securement device for a swimming pool ladder having a tubular ladder rail hingedly connected to an anchor mounted in the swimming pool deck, comprising:

a hollow cup-like cylindrical ferrule having an open end and a generally closed end, said ferrule conformed to slidably and coaxially receive the tubular ladder rail through the open end of the said ferrule, the closed end having a hole therethrough located approximately coaxially to the longitudinal axis of said ferrule;

means for hingedly attaching said ferrule to the anchor;

clamping bolt means passing through said hole in the closed end of said ferrule and disposed generally coaxially with the longitudinal axis of said ferrule;

a conically-shaped ring expander having a tapered side wall, and threadably engaged to said clamping bolt means, said expander being coaxially positioned within the tubular ladder rail to be secured, said tapered side wall facing the closed end of said ferrule, said expander having a diameter slightly smaller than the inside diameter of the tubular ladder rail;

a toroidal split ring having a round cross section and being disposed within the ladder rail and engaging the tapered side wall of said expander;

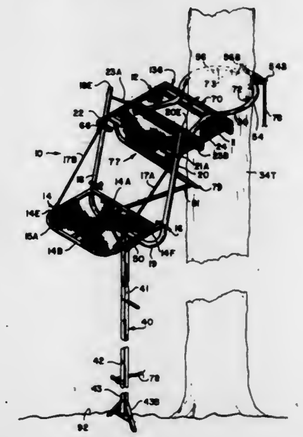
a hollow cylindrical spacer having an outside diameter slightly smaller than the inside diameter of the ladder rail, said spacer being positioned within the ladder rail, between said ring and the closed end of said ferrule, so that when said bolt means is tightened, said expander retracts towards the closed end of said ferrule, forcing the tapered sidewall of said expander to expand said ring radially outward to lockingly engage the inner surface of the rail in a tangential, circular manner, said spacer preventing said ring from moving laterally within the rail.

4,552,246

PORTABLE HUNTER TREE STAND

A. Lynn Thomas, Texarkana, Ark., assignor to Thomas Tree Stand Co., Inc., Texarkana, Ark.

Filed Oct. 16, 1984, Ser. No. 661,569
Int. Cl.⁴ A01M *31/02*
U.S. Cl. 182—116 **16 Claims**



1. A portable tree stand for use by hunters, outdoorsmen or the like for positioning themselves at an elevated position upon a tree, said tree stand comprising:

a rigid, generally planar seat for supporting said hunter, outdoorsman or the like above ground, said seat having a rigid frame, a pair of opposite sides, and a front and a rear;

a generally U-shaped, rigid support yoke having a pair of spaced-apart, generally parallel ends pivotally coupled to said planar seat upon opposite sides thereof;

a rigid, generally planar, cooperating foot rest pivotally secured to said U-shaped yoke adapted to be selectively

deployed in an operational position generally parallel with and beneath said seat portion;

jaw means for securing said stand to a tree, said jaw means comprising first and second cooperating jaw members pivotally secured to said seat frame and adapted to be selectively deployed in substantially circumferential engagement with a tree, said jaw members occupying a plane substantially parallel with said planar seat, each of said jaw members provided with a plurality of tree engaging spikes for engaging the tree, said jaw members extending outwardly from said seat away from the rear thereof;

a rigid, tree-engaging V-brace pivotally secured to said seat frame generally at the front of said seat, said brace extending downwardly and converging in a pointed portion adapted to forcibly penetrate said tree beneath and to the rear of said seat; and,

elongated ladder means for supporting said tree stand, said ladder means, when deployed, extending between ground and said tree stand and facilitating the installation and removal of said stand and the ingress and egress of said hunter, outdoorsman or the like relative to said stand.

4,552,247

DEER STAND

Ricky A. Purdy, 716 E. Sixth, DeWitt, Ark. 72042

Filed Oct. 17, 1984, Ser. No. 662,450
Int. Cl.[4] A01M *31/02*
U.S. Cl. 182—116 **8 Claims**



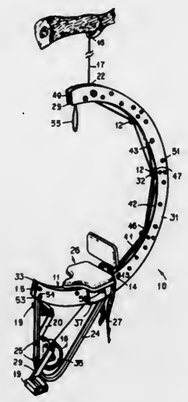
1. An observation stand including upper and lower upstanding ladder sections removably joined together in end aligned relation with the upper section forming an upper extension of the upper end of the lower section, said upper and lower sections each including opposite side upstanding stiles and vertically spaced rungs extending between and interconnecting said stiles, said upper ladder section including a standing platform mounted between the stiles thereof below the upper ends of the stiles and spaced generally the same distance above the next lower rung of the upper section as the last mentioned rung is spaced above the next lower rung, one marginal inner portion of said platform extending between the upper section stiles and said platform extending horizontally outwardly of the medial plane of said upper section, the upper end portions of said upper stiles including generally horizontal arms projecting outwardly therefrom and spaced above and generally paralleling said platform, the outer ends of said arms being interconnected by bracing structure extending therebetween defining a horizontally outwardly opening tree trunk embracing recess having an innermost limit spaced outward of the outer marginal portion of said platform remote from said one marginal portion thereof, seat defining panel structure supported from and spanning the space between said arms and spaced outward along the latter from said upper section stiles, and inclined opposite side and elongated brace members including upper ends anchored relative to the outer end portions of said arms, lower ends anchored to said upper section stiles below said platform and intermediate length portions anchored relative to the opposite ends of the outer marginal portion of said platform, the spacing of said seat defining panel structure outwardly along said arms from the upper section stiles providing an unobstructed vertically extending zone above at least the inner marginal portion of said platform between said arms for receiving the legs of a person standing on said platform, the included angle between said platform and the portions of said upper section stiles below said platform being slightly greater than 90°.

4,552,248

PORTABLE CLIMBING DEVICE

Jehugh A. Payne, 271 Berean Ave., Atlanta, Ga. 30316

Continuation-in-part of Ser. No. 284,383, Jan. 6, 1982, abandoned. This application Oct. 25, 1984, Ser. No. 664,512
Int. Cl.[4] E04G *3/10*
U.S. Cl. 182—142 **9 Claims**



1. A portable climbing device which is adapted to be hung from an existing overhead structure such as a tree limb, comprising:

(a) a frame having at least one arcuate member; the arcuate member being generally bisected in a longitudinal direction;

(b) a seat member mounted on the arcuate member and extending generally upwardly toward the center of curvature thereof; the arcuate member having a pair of end portions defining an opening, the arcuate member occupying a narrow region of space which extends generally downwardly from the upper end portion and above, behind and beneath the seat member when the frame is suspended in use;

(c) a supporting member, each arm of which is connected to the arcuate member to form a structure proximate the seat member; said structure extending away from the center of curvature of the arcuate member;

(d) means for hoisting the frame including a winch mounted on the supporting member, a set of foot pedals rotatably connected thereto, a support cable attached to the winch, and means connected to the foot pedals for engaging the winch so that the cable can be alternately retracted and extended by pedaling; and

(e) a pair of skids for detachably mounting the seat member on the arcuate member, the skids straddling a section of the arcuate member having a side with a concave surface which extends outwardly between the pair of skids, and

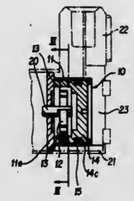
means for adjusting the positions of the skids to and fro along said section; the seat member remaining in a generally upright position when the frame is suspended in use; the distance between the uppermost portion of the seat member and said concave surface remaining approximately constant as the positions of the skids are adjusted, so that as the spacing between the foot pedals and the seat member is increased, there is an increase in the amount of space free of obstacles above the seat member as indicated by an increase in the angle between two imaginary lines extending from the center of the uppermost portion of the seat member, one of these lines joining said center to said upper end portion of the arcuate member and the other of these lines extending downwardly from said center perpendicularly to said concave surface.

4,552,249

MOUNTING DEVICE FOR SPIRAL SPRING

Motonobu Akagi, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 27, 1983, Ser. No. 461,384
Claims priority, application Japan, Feb. 3, 1982, 57-13772[U]
Int. Cl.[4] F03G *1/08*
U.S. Cl. 185—39 **4 Claims**



1. A mounting device for a spiral spring, comprising:

a rotatable shaft;

a casing having a wall through which a first end of said rotatable shaft extends;

spiral spring means for biasing said rotatable shaft in one direction, said spiral spring means having an inner end which is engaged with said first end of said rotatable shaft;

a spring holder positioned within said casing and having a first projection extending therefrom with which an outer end of said spiral spring means is engaged;

cover means fitted within said casing for covering said spiral spring means and engaging with said spring holder so as to be rotated therewith and for thereby adjusting the biasing force of said spiral spring means; wherein said rotatable shaft has a groove formed therein and wherein said spiral means has an inner end portion which is fitted within said groove formed in said rotatable shaft and said cover means further comprises a first and second notch formed therein and an annular groove formed on the outer periphery thereof and wherein said spring holder further comprises a second projection extending therefrom such that said first and second projections of said spring holder are received within said first and second notch, respectively, of said cover means; and

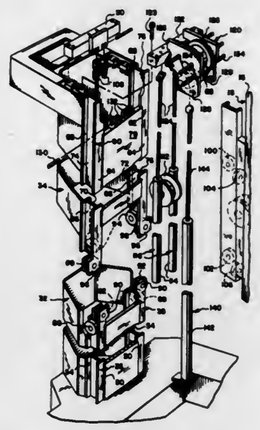
an O-ring installed in said annular groove hermetically sealing an open end of said casing and preventing free rotation of said cover means by an interference provided by engagement of said o-ring between the cover means and the casing.

4,552,250

LIFT TRUCK

Donald Luebrecht, Fort Jennings, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio

Filed Apr. 22, 1983, Ser. No. 487,625
Int. Cl.[4] B66B *9/20, 7/02*
U.S. Cl. 187—9 E **8 Claims**



1. A lift truck comprising:

a frame;

a mainframe mast attached to and extending upwardly from said frame, said mainframe mast having a first pair of parallel, vertically-extending beams, a continuous, substantially flat, relatively thin-walled front wall attached to and extending between said first pair of beams and a continuous, relatively thin-walled, vertically-extending rear channel having a substantially flat rear wall opposite said front wall and a pair of opposing side walls extending rearwardly from said beams and having longitudinal edges attached thereto, said beams, front walls and channel forming a substantially enclosed, continuous body;

a second stage mast positioned to telescope over an exterior of said mainframe mast and having a second pair of parallel, vertically-extending beams, a continuous, substantially flat, relatively thin-walled outer front wall attached to and extending between said second pair of beams, and a continuous, relatively thin-walled, vertically-extending outer rear channel having a substantially flat outer rear wall opposite said outer front wall and a pair of opposing outer side walls extending rearwardly from said second pair of beams and having longitudinal edges attached thereto, said second pair of beams, outer front wall and outer rear channel forming a substantially enclosed, continuous outer body sized to telescope over but not contact said mainframe mast;

said mainframe mast including a first pair of transverse rollers having rotational axes oriented substantially transversely, and a first pair of longitudinal rollers having rotational axes oriented substantially longitudinally, said first pairs of rollers engaging said second pair of beams;

said second stage mast having a second pair of transverse rollers having axes oriented substantially transversely, and a second pair of longitudinal rollers being substantially coplanar with said front wall of said mainframe mast and having rotational axes oriented substantially longitudinally, said second pairs of rollers engaging said first pair of beams, whereby contact between said mainframe mast and said second stage mast is limited to rolling contact by said rollers against said beams;

lifting fork means movably mounted to said second mast; and

means for elevating said second stage mast relative to said

mainframe mast and for elevating said lifting fork means relative to said second stage mast.

4,552,251

CYCLE WHEEL RIM BRAKE CONSTRUCTION

Robert Schoch, Hilzingen, Fed. Rep. of Germany, assignor to Weinmann AG, Hohentwiel, Fed. Rep. of Germany

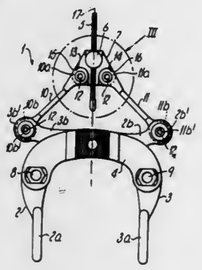
PCT No. PCT/EP82/00226, § 371 Date Apr. 29, 1983, § 102(e) Date Apr. 29, 1983, PCT Pub. No. WO83/01423, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 12, 1982, Ser. No. 495,337

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 3141004

Int. Cl.⁴ B62L *1/12*

U.S. Cl. 188—24.21 **9 Claims**



1. A cycle wheel rim brake construction comprising a one piece mounting member; means for mounting said mounting member between its ends on a cycle frame; a pair of similar two-armed levers corresponding arms of which are adapted to straddle a wheel rim and support brake pads and the other arms of which overlie one another and terminate in free ends located on opposite sides of a plane passing between said corresponding arms; means pivotally mounting both of said levers on said mounting member and at opposite ends of the latter for movements of said corresponding arms toward and away from one another; a unitary cable carrier plate having opposite ends located on opposite sides of said plane; means for adjustably clamping a traction cable to said carrier plate between the ends thereof and coincident with said plane; and a pair of pull rods pivotally connected at corresponding ends to the free ends of said other arms of said levers and at their opposite ends to the opposite ends of said carrier plate, said opposite ends of said pull rods and said opposite ends of said carrier plate having cooperable stops engageable with one another for limiting movement away from one another of said corresponding ends of said levers.

4,552,252

CARRIER BODY FOR A DISC BRAKE PAD

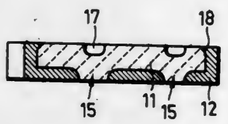
Kurt Stahl, Wahner Strasse 19 - 21, 5000 Köln 21, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,381

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935943; Aug. 8, 1980, 3030003

Int. Cl.⁴ F16D *65/04*

U.S. Cl. 188—73.1 **7 Claims**



1. In a carrier body of a brake pad for disc brakes, which carrier body is arranged to support a block of friction material of the brake pad and includes a plate-shaped molded member of a hard ceramic material presenting a rear face and a circumferential edge face, and a cover made of metal and secured to the member and contacting the rear face of the member, the improvement wherein said metal cover is applied to said member in a casting process in which molten metal is introduced into a mold containing said molded member to contact the rear face and the circumferential edge face of said molded member and the molten metal is then cooled and solidified to form said metal cover, whereby said metal cover closely contacts the rear face and circumferential edge face of said molded member and additionally encases said circumferential edge face of said plate-shaped molded member and imposes compressive stresses in said molded member and further wherein said molded member has a frontal face opposite said rear face and provided with recesses and said rear face of said molded member is provided with projections which penetrate said metal cover and correspond in their orientation approximately to said recesses in said frontal face.

4,552,253

FLOATING-CALIPER DISC BRAKE

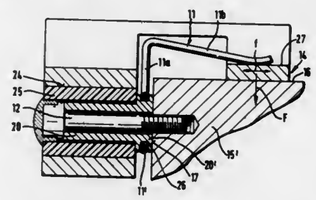
Jochen Burgdorf, Offenbach-Rumpenheim, and Roberto Stoka, Nauheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 1, 1983, Ser. No. 500,064

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223627

Int. Cl.⁴ F16D *65/00*

U.S. Cl. 188—73.38 **7 Claims**



1. A floating caliper disc brake mechanism comprising a pair of disc brake shoes adapted to be mounted adjacent opposed axial faces of a wheel brake disc, a caliper assembly mounted for floating movement in a direction axial to a support member to control movement of the brake shoes relative to said brake disc, a pair of spaced guide bolts mounting said caliper assembly to said brake support member to enable movement of said caliper assembly in a direction axial to the support member with the axis of said bolts generally parallel to the axis of said support member and disc a guide bushing surrounding each guide bolt, at least one generally L-shaped retaining spring having a retaining leg thereof having a section forming a lug surrounding said guide bushing to mount the spring thereto and another section extending in a direction radial to an adjacent one of said bolts for firmly positioning said spring against a surface of said support member transverse to the axis of movement of the caliper assembly, another leg of said retaining spring extending parallel to the axis of movement of said caliper assembly and exerting a force transversely on the caliper assembly to retain said caliper assembly against said support member in a slide frictional engagement therewith to enable the axial slide movement of the caliper assembly relative to said support member and to the other leg of the spring.

4,552,254

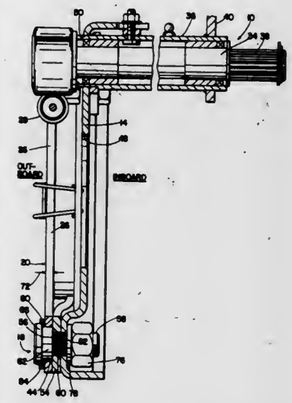
DRUM BRAKE SPIDER ASSEMBLY WITH CANTILEVER ANCHOR PIN

Gunnar Baltare, Portage, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 22, 1983, Ser. No. 506,926

Int. Cl.⁴ F16D *51/20*; F16B *2/14*

U.S. Cl. 188—328 **9 Claims**



1. A spider assembly for an expanding shoe drum brake of the type utilizing cantilever anchor pin mounting wherein the brake shoes are pivotably supported at a generally concave cavity structure defined in one end of the brake shoe web structure on an anchor pin structure extending outwardly from the outboard side of the spider member, said assembly comprising;

a spider member having a centrally located mounting portion adapted for non-rotational mounting to a vehicle, an actuator support portion at one end thereof and an anchor pin support portion at the other end thereof, said anchor pin support portion defining an anchor pin receiving bore therethrough;

an anchor pin received in said anchor pin receiving bore, said anchor pin defining a first portion received in said anchor pin receiving bore, a pivot surface portion extending from said anchor pin receiving bore in the outboard direction and of a larger outer diameter than the inner diameter of said anchor pin receiving bore, said pivot surface portion outer diameter generally equal to the inner diameter of said concave cavities, said pivot surface portion of a greater axial length than the axial width of said brake shoe webs, and a slightly enlarged headed portion at the outboard end of said anchor pin;

a generally annular washer slidably received on said pivot surface portion, said washer having a generally flat radially extending portion with a centrally located aperture therethrough for receipt of said pivot surface portion, the inner diameter of said aperture being smaller than the outer diameter of said headed portion, said radially extending portion of a greater outer diameter than the inner diameter of said concave cavity, and an axially extending portion extending in the outboard direction from the outer periphery of said radially extending portion, said radially extending portion having an axial thickness less than the difference between the axial length of said pivot surface portion and the axial width of said web structure, the combined axial width of said radially extending portion and said axially extending portion of said washer greater than the difference between the axial length of said pivot surface portion and the axial width of said web structure, said axially extending portion extending generally perpendicularly from said radially extending portion and defining an inner diameter surface having a radius greater than the outer diameter radius of said headed portion.

4,552,255

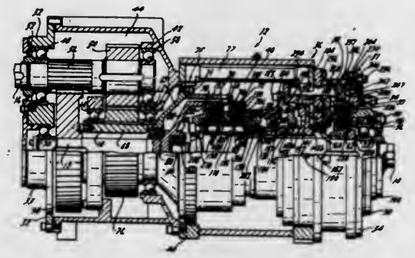
MULTIPLE SPEED DRIVE

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Company, Warren, Mich.

Filed Aug. 8, 1983, Ser. No. 521,250

Int. Cl.⁴ F16D *67/04*

U.S. Cl. 192—18 A **13 Claims**



1. A multiple speed drive unit comprising: a housing defining a central cavity between opposite longitudinally spaced end walls, a main shaft extending coaxially through said opposite spaced end walls and comprising first and second coaxially arranged shaft sections; said first shaft section further comprising inner and outer shaft sections, first and second series of radially disposed clutch plates spaced axially from one another and mounted in said cavity for rotation with said inner and outer shaft sections respectively of said first shaft section; a series of radially disposed brake plates spaced axially from both series of said clutch plates and non-rotatably disposed in said cavity; a series of friction discs mounted on said second shaft section for rotation therewith and adapted for selective frictional engagement with said clutch and brake plates; first and second clutch actuating members located on axially opposite sides of selective of said friction discs and movable axially of said shaft sections, with movement thereof in one direction serving simultaneously to frictionally engage said first series of clutch plates with selected of said friction discs and to release selected of the remaining friction discs from frictional engagement with said second series of clutch plates and with movement thereof in the other direction serving simultaneously to release said first series of clutch plates from said frictional engagement with selected of said friction discs and to frictionally engage said second series of clutch plates with selected of said remaining friction discs; a non-rotatable piston member disposed in said housing coaxial of said main shaft and movable between first and second positions for effecting axial movement of said actuating member; first pressure applying means including a pressurized fluid acting against one side of said piston member for urging said piston member toward one of said positions of clutch engagement; second pressure applying means including a pressurized fluid acting against the other side of said piston member for urging said piston member toward the other of said positions of clutch plate engagement; means for equalizing the pressures applied to said first and second pressure applying means to urge said piston to an intermediate position at which neither series of clutch plates is engaged with said friction discs; a brake actuating member axially spaced from said clutch actuating members and movable axially of said main shaft with movement thereof in one direction serving to frictionally engage said brake plates with selected of said friction discs mounted on said second shaft section and movement thereof in the opposite direction serving to release said brake plates from engagement with selected of said friction discs; a second non-rotatable piston member disposed in said housing coaxial of said shaft and movable between first and second positions for effecting axial movement

of said brake actuating member; spring means for urging said second piston member toward one of said brake actuating member positions; and third pressure applying means including a pressurized fluid acting against one side of said second piston member for urging said piston member toward the other of said brake actuating member positions against the bias of said spring means.

4,552,256

MOTOR, CLUTCH AND GEARING CONTROL

Jean Legrand, 24, rue Ernest Renan, 92310 Sevres, France

Filed Nov. 30, 1982, Ser. No. 445,835
Claims priority, application France, Dec. 9, 1981, 81 22991
Int. Cl.⁴ B60K *41/28*
U.S. Cl. 192—0.052 **17 Claims**

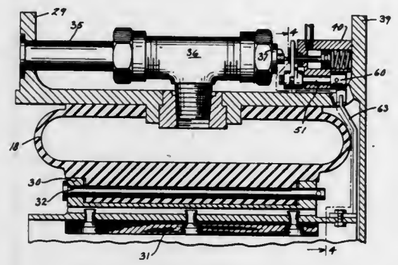
1. In an automatic clutch system which provides an automatic coupling between an engine and a driven mechanism, especially for automotive vehicles, comprising a fluid-type servomotor connected to a clutch unit, means for producing action of an energizing fluid for the servomotor in a direction of clutch disengagement, a discharge circuit for discharging fluid from the servomotor, and clutch progressiveness means comprising two members mechanically connected respectively to an accelerator pedal of the engine and to the clutch unit and together defining between them at least one variable orifice in said discharge circuit to modify the action of said servomotor in a direction of clutch engagement in such a manner as to ensure that a cross-sectional area of the at least one orifice tends to decrease when the clutch unit moves towards an engaged position and that said cross-sectional area tends to increase when the accelerator pedal is displaced so as to increase the engine speed; the improvement in which said system further comprises in said discharge circuit, flow area varying means responsive to at least one running condition of the vehicle other than position of the clutch unit or of the accelerator pedal, said flow area varying means being adapted to adjust in said circuit, as a function of said at least one running condition, a flow sectional area for said fluid flowing through the at least one variable orifice.

4,552,257

OVERLOAD PROTECTION MECHANISM FOR CLUTCHES

Ronald A. Witt, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Oct. 21, 1983, Ser. No. 544,253
Int. Cl.⁴ F16D *7/02*
U.S. Cl. 192—56 F **6 Claims**



1. An overload mechanism for a pneumatic clutch which includes an air inflatable flexible gland secured at one side to a rim and mounting clutch shoes on its opposite side, said mechanism comprising:

an air valve operatively connected to said gland and including a valve stem;

a spring loaded actuator biased to engage said stem to open said valve;

holding means adapted to be interposed between said stem and actuator to prevent engagement of said stem by said actuator; and

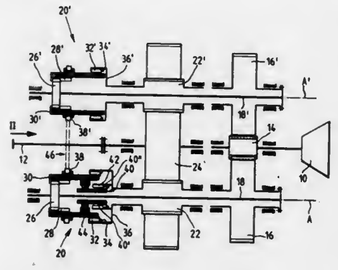
means responsive to relative movement between said rim and said shoe for moving said holding means from between said stem and actuator to release said actuator.

4,552,258

CLUTCH ARRANGEMENT FOR POWER TRANSMISSION, ESPECIALLY A REDUCTION GEAR DRIVE UNIT FOR MARINE VESSELS

Hans Sigg, Mutschellen, and Otto Staedeli, Menzingen, both of Switzerland, assignors to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

Filed Jan. 30, 1984, Ser. No. 575,469
Claims priority, application Switzerland, Feb. 2, 1983, 574/83
Int. Cl.⁴ F16D *23/02, 41/22*
U.S. Cl. 192—67 A **6 Claims**



1. A clutch device for a power transmission unit, especially a toothed clutch device for a marine propulsion gear transmission, comprising:

a self-engaging main clutch disposed in a first power transmission path of said power transmission unit;

synchronizing means provided for said self-engaging main clutch;

at least one subsidiary clutch devoid of any synchronizing means and being disposed in a further power transmission path acting in parallel to said first power transmission path;

an actuating mechanism for translating an engagement motion of said main clutch into an engagement motion of said at least one subsidiary clutch;

each of said main and subsidiary clutches being provided with helical clutch teeth engaging corresponding, mating, clutch teeth with substantially no clearance; and

said actuating mechanism coupling the main and subsidiary clutches with substantially no clearance.

4,552,259

RESIN-REINFORCED, NODULAR PLATED WET FRICTION MATERIALS

Clarence E. Albertson, Villa Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 27, 1984, Ser. No. 625,333
Int. Cl.⁴ F16D *13/00*
U.S. Cl. 192—107 M **6 Claims**

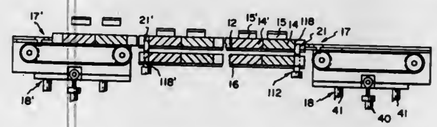
1. A torque transmitting element adapted for use in a clutch comprising a rigid backing member and a wear facing affixed to said backing member, said wear facing comprising a nodular plated metallic coating further coated with phenolic resin.

4,552,260

WORKPIECE FEEDING APPARATUS

Vladimiro Teagno, and Alessandro Chiusa, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 15, 1983, Ser. No. 561,701
Int. Cl.⁴ B65G *21/20*
U.S. Cl. 198—345 **6 Claims**



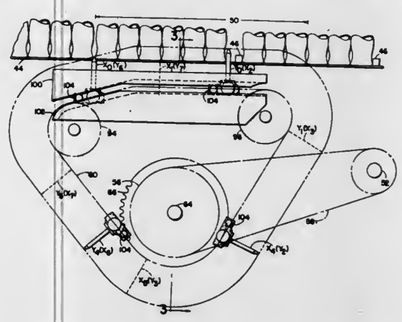
1. Apparatus for feeding electrical connectors (15, 15) into alignment with respective workstations (13, 13') arranged in a row comprising a frame (11) providing a feed path (12) extending past the workstations (13, 13') between an exit and an entry end; a plurality of individual pallets (14, 14') having precise longitudinal dimensions and adapted to carry respective connectors (15, 15); means to shunt (17, 17') a series of the pallets (14, 14') in end-to-end relation along the feed path (12) substantially to fill the feed path (12) between the entry and exit ends bringing pallets (14, 14') sequentially into coarse alignment with respective workstations (13, 13'); pallet positioning means (21, 21') comprising means including at least one cam member (104, 104') mounted on the frame (11) adjacent opposite ends of the feed path (12) and operable to reciprocate perpendicularly to the feed path (12) into and out from engagement with the leading and ultimate pallet (14, 14') of the series of pallets (14, 14') subsequent to operation of the indexing means (17, 17'), to urge the pallets (14, 14') longitudinally of the feed path (12) both into end-to-end abutment and together as a series precisely to align respective connectors (15, 15') with the workstations; and pallet return means comprising a return path (16) having an entry end adjacent the exit end of the feed path (12) and an exit end adjacent the entry end of the feed path, means (18, 18') being provided to convey the pallets (14, 14') between the exit end of the return path (16) and the entry end of the feed path (12).

4,552,261

ARTICLE GROUPER FOR CASE PACKER

John L. Raudat, North Madison, and Timothy H. Thompson, Durham, both of Conn., assignors to Standard-Knapp, Inc., Portland, Conn.

Filed Dec. 27, 1983, Ser. No. 565,754
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—425 **6 Claims**



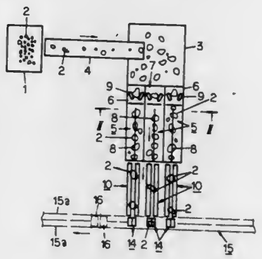
1. A conveyor system for forming discrete groups of articles from a column of advancing articles in a downstream direction between lane guides, said system comprising at least two conveyor chains, projecting pins carried by said chains, variable speed drive means for moving one chain at a speed which varies cyclically as said one chain follows a closed orbit that includes an upper run so oriented that said pins move in the same path and in the same direction as the advancing articles, differential means coupling said one chain to the other chain so that its pins move in the same orbit but at a speed which varies inversely to that of said one chain and pins, said pins provided in staggered relationship to one another in said orbit to provide a predetermined pitch distance between said pins as they move along said upper run, and said pitch distance between pins in said two conveyor chains varying cyclically between maximum and minimum limits, and means for adjusting said differential means to provide a desired spread or difference between said maximum and minimum pin pitch limits.

4,552,262

ARTICLE FEEDING APPARATUS

Katsuhiko Murakami, and Yoshio Iwamoto, both of Shiga, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

PCT No. PCT/JP83/00012, § 371 Date Jul. 27, 1983, § 102(e) Date Jul. 27, 1983, PCT Pub. No. WO83/02407, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 13, 1983, Ser. No. 522,303
Claims priority, application Japan, Jan. 19, 1982, 57-7315; Jan. 19, 1982, 57-7316; Jan. 19, 1982, 57-7317; Jan. 19, 1982, 57-6153; Jan. 19, 1982, 57-6154; Jan. 20, 1982, 57-6852; May 17, 1982, 57-72089; May 17, 1982, 57-72090
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—447 **10 Claims**



1. An article feeding apparatus comprising:

(a) a plurality of feed troughs disposed side by side with each other with their take-in ends formed as flat surfaces in juxtaposed relation in a plane;

(b) a plurality of arranging conveyors parallel with each other and each being effective to cause articles being fed thereon from its associated feed trough to pass therealong in a line;

(c) pool hoppers disposed at the take-out ends of said arranging conveyors and adapted to open and close;

(d) a bucket conveyor for feeding to the next process the articles dropped therein from said pool hoppers one by one, said buckets supported to turn around the axes of pivots; and

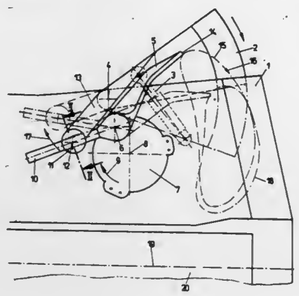
(e) article separating means disposed at a predetermined position in the path of travel of the buckets of said bucket conveyor and adapted to separate a plurality of articles from each other if such articles are charged into a bucket, said article separating means including at least one rotary brush with the tips of its bristles penetrating members forming the bottom of said bucket.

4,552,263

DRIVE ARRANGEMENT FOR THE LOADING ARMS OF A LOADING RAMP FOR HEADING MACHINES OR LONGWALL SHEARING MACHINES

Arnulf Kissich, Zeltweg; Franz Schöffmann, Leoben; Alfred Zitz, and Gerhard Steinbrucker, both of Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jun. 14, 1983, Ser. No. 504,306
Claims priority, application Austria, Jul. 2, 1982, 2576/82
Int. Cl.⁴ B65G *65/02*
U.S. Cl. 198—514 **10 Claims**



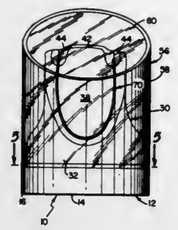
1. A loading head for a mining machine of the type having a loading ramp, the ramp having laterally extendable ramp members pivotally connected to the mining machine to vary the effective width of the ramp, the loading head having at least one loading arm cooperating with the extendable ramp member, a drive means for the loading arm comprising a rotary disc, the loading arm being pivotally connected to the disc at its periphery whereby rotation of the disc causes an essentially orbital path of the loading arm, the loading arm having a guide arm extending outward from the pivotal connection between the loading arm and the disc and the guide arm being pivotally connected to the extendable ramp member whereby movement of the extendable ramp alters the position of the orbital path of the loading arm.

4,552,264

JEWELRY CONTAINER

Richard Quarrell, and Paul A. Ranson, both of New York, N.Y., assignors to General Mills Products Corp., Minneapolis, Minn.

Filed Mar. 27, 1984, Ser. No. 593,999
Int. Cl.⁴ B65D *5/50, 73/00*
U.S. Cl. 206—45.14 **16 Claims**



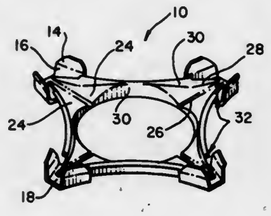
1. A jewelry container comprising a cup-shaped base including a circular bottom and a cylindrical wall extending upwardly from the periphery of said circular bottom, said cylindrical wall having a longitudinally directed rib disposed on the interior thereof at one angular location, a pedestal for holding and displaying a jewelry article to be contained, the pedestal having a substantially cylindrical lower portion of a diameter to fit within said cylindrical wall and having an upper portion extending above said cylindrical wall, said pedestal also having a longitudinally directed groove receiving said rib therein to establish a predetermined angular relationship of said pedestal with respect to said cylindrical wall, the upper portion of said pedestal including a generally flat sloping panel, a cylindrical-shaped cover, said cover having a slant top, and means releasably interfitting the lower edge of said cover to the upper edge of said cylindrical wall when said pedestal is in said predetermined angular relationship with respect to said base, the slant top of said cover being in a predetermined angular relationship with said pedestal when said pedestal is in its said predetermined relationship with said base.

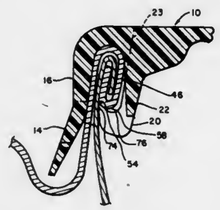
4,552,265

CAN CLIP AND MULTIPLE CONTAINER PACKAGE

James S. Bader, Lakewood, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Aug. 17, 1983, Ser. No. 524,129
Int. Cl.⁴ B65D *71/00*
U.S. Cl. 206—159 **8 Claims**





1. A clip having a plurality of discrete body portions, each of said discrete body portions capable of holding a can to form a multiple container package, said discrete body portions comprising:

hook means for engaging a chime portion of said can;

support wall means integral with and extending upwardly from said hook means said support wall means having a surface in contact with an adjacent surface of said can for uniformly supporting said hook means along a predetermined arc which is concentric with said hook means;

a plurality of spaced apart ear means having holding portion means extending downwardly and located for holding said can in engagement with said hook means;

said hook means and said support wall means extending for substantially the entire distance between said spaced apart ear means but spaced a short distance from each of said ear means;

shelf means integral with said ear means and extending inwardly from said ear means at the upper portion of said ear means;

flange means integral with said shelf means and the upper portion of said support wall means;

hinge means integral with said shelf means and said flange means for coupling said shelf means and said flange means of adjacent discrete body portions along predetermined lines of weakness;

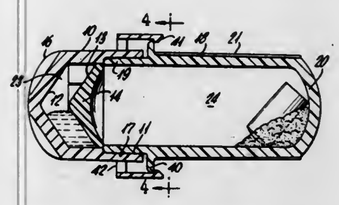
said flange means maintaining the position of said support wall means relative to said plurality of discrete body portions during disengagement of said can from each of said spaced apart ear means by limiting movement of said support wall means relative to said plurality of discrete body portions to allow said ear means to move relative to said hook means during disengagement of said can to release said can from said discrete body portion.

4,552,266

DISPOSABLE DENTAL CAPSULE

Edward Weissenburger, Mercerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 933,015, Aug. 14, 1978, abandoned. This application May 25, 1979, Ser. No. 41,756
Int. Cl.⁴ B65D *81/32*
U.S. Cl. 206—220 **18 Claims**



1. A disposable dental capsule comprising:

a first hollow cylindrical section having an open end and a closed end;

a second hollow cylindrical section having an open end and a closed end;

means for joining a securing said open ends of said first and second cylindrical sections to form a closed cylindrical container;

a displaceable, flexible disk having an edge in sealing engagement with the inner wall of said cylindrical container whereby said container is divided into two, noncommunicating inner chambers, and having one face conforming to the shape of the inside surface of one end of said container; and

edge compression means for maintaining said edge under compression to maintain the seal between said edge and said inner wall of said cylindrical container,

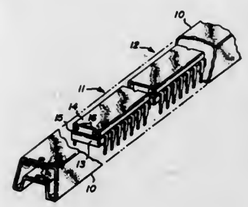
whereby when said disk is displaced to said one end of said container, the face of said disk nests therewith and one of said inner chambers is substantially eliminated.

4,552,267

CERAMIC SEMICONDUCTOR PACKAGE CHIP PREVENTION STRUCTURE AND METHOD

Francis W. Layher, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 11, 1985, Ser. No. 710,354
Int. Cl.⁴ B65D *85/30, 81/00;* **H05F** *3/02;* **H05K** *5/00*
U.S. Cl. 206—334 **11 Claims**



1. In a ceramic package made up of parts sealed together to house an electronic device, which is to be handled in plural numbers pursuant to testing and using, wherein such handling may act to impact the devices and thereby chip said ceramic and a heat-resistant, non-absorbent, resilient coating material is located on said package to absorb said impact whereby the incidence of chipping of said ceramic is reduced, the improvement comprising:

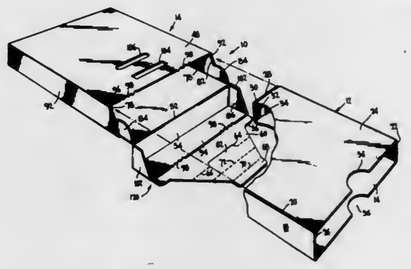
said coating being composed of a glass loaded with malleable metal particles and fused to the surface of said ceramic package.

4,552,268

LIGHT-TIGHT CARTON FOR X-RAY AND OTHER LIGHT SENSITIVE FILM

John F. Lee, Vernon, N.J., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Jan. 20, 1984, Ser. No. 572,298
Int. Cl.⁴ B65D *85/67*
U.S. Cl. 206—455 **15 Claims**



1. A reclosable carton unit for film and like light sensitive materials, said carton unit comprising inner and outer cartons formed of light proof paperboard, said outer carton comprising front and rear panels joined together by sides, a bottom panel and a top panel, said top panel being hingedly carried by said rear panel, said front panel having a top portion and a remainder, said top portion being connected to the remainder along a rupturable transverse weakening line spaced from said top panel, a closure panel carried by said top panel and overlying an upper part of said front panel including said top portion, said side walls having weakening lines extending from ends of said front panel weakening line and defining top side portions, said top portion being fixedly secured to said closure panel, said inner carton extending across and beyond all of said weakening lines whereby when said outer carton is opened and reclosed, said inner carton extends across and forms a light barrier across parting lines defined by rupture of said front panel and said sides along said weakening lines, and locking tabs carried by said closure panel for locking engagement with said front panel below said weakening line thereof.

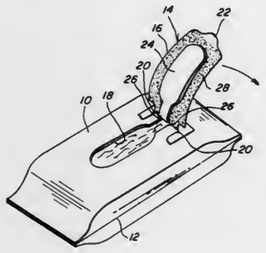
14. A carton to be reclosed in a darkroom and the like, said carton including a front panel and a closure panel for overlying said front panel, said closure panel has hingedly connected thereto a locking flap with locking tabs, said locking flap having at a free end thereof a secondary one of said locking tabs facing away from said closure panel, and there being a primary one of said locking tabs carried by said locking flap and formed from said closure panel, and there being locking apertures in said front panel for receiving said locking tabs, a portion of said front panel closely adjacent and above said locking aperture for said primary locking tab being colored differently from said closure panel, and a portion of said front panel closely adjacent and below the other of said locking apertures being colored differently from said closure panel whereby failure of either or both of said locking tabs to engage in a respective locking aperture will be automatically visually identified.

4,552,269

RESEALABLE SEALING DEVICE

Sung-Chol Chang, 101 W. 31st St., Suite 2306, New York, N.Y. 10001

Filed Dec. 7, 1983, Ser. No. 558,989
Int. Cl.⁴ B65D *33/16, 33/20*
U.S. Cl. 206—632 **2 Claims**



1. A container with a resealable sealing device, comprising in combination, a container having an outer surface, an elongated inner flap, and an elongated sealing flap overlying said inner flap, said inner flap having a periphery with a forward and rearward portion, the forward portion of said periphery being cut out from said surface and terminating at said rearward portion, the rearward portion of said periphery being integrally attached to said surface along a line of attachment, said inner flap being pivotally liftable with respect to said outer surface along said line of attachment, said sealing flap having adhesive applied along one surface thereof and being attached onto said inner flap by means of said adhesive, said sealing flap being larger than said inner flap so as to define a peripheral border around said inner flap, said peripheral border including a front border portion, side border portions and a rear border portion, the rear border portion overlapping the rearward portion of said periphery of the inner flap, and being permanently attached to the outer surface of the container by means of said adhesive, a pair of opposing L-shaped cuts formed into said sealing flap commencing from opposing side edges thereof and partially extending into said side border portions of said sealing flap and then extending rearwardly toward the permanently attached rear border portion and terminating at said line of attachment, a first pair of tear prevention holes formed at the termination of said L-shaped cuts, and a second pair of tear prevention holes formed at the termination of said forward portion peripheral cut of said inner flap, all said tear prevention holes lying on said line of attachment, whereby said sealing flap can be pivotally lowered to replace said inner flap into its cut out and thereby seal the container by having the front border portion and the side border portions of said peripheral border of the sealing flap adhere to the container outer surface by means of said adhesive, and can pivotally be lifted to open the container without the permanently attached rear border portion lifting off and without said inner flap being detached.

4,552,270

STORAGE SYSTEM FOR ATHLETIC EQUIPMENT OR THE LIKE

Scott B. Lentz, 1000 N. Columbus St., and Howard C. Dale, 1013 Duke St., both of Alexandria, Va. 22314

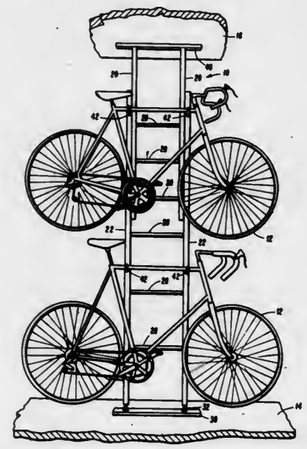
Filed Mar. 1, 1984, Ser. No. 585,192
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—17 **9 Claims**

1. A storage system for holding athletic equipment and the like, comprising:

(a) first and second longitudinal support members, each of said longitudinal support members comprising an upper and a lower longitudinally adjustable section, said upper longitudinally adjustable section having a first set of drillings formed therein, said lower longitudinally adjustable section having a second set of drillings formed therein, wherein at least two of said drillings of said first set overlap with at least two of said drillings of said second set to define a number of overlap regions exactly corresponding to the number of drillings in said first and second sets which overlap;

(b) a plurality of cross support pieces extending from the first and second set of drillings in said first longitudinal support member to said first and second drillings of said second longitudinal support member, at least two of said plurality of cross support pieces extending through respective overlap regions of said first and second longitudinal support members;

(c) means for adjustment operatively connected with a first end of each of said first and second longitudinal support members;



(d) a first substantially horizontal contact member in engagement with said means for adjustment and adapted for contact with a first contacting surface;

(e) a second substantially horizontal contact member in engagement with a second end of said first and second longitudinal support members and adapted for contact with a second contacting surface;

(f) a plurality of support means connected to each of said first and second longitudinal support members;

whereby coarse length adjustment of said first and second longitudinal support members is achieved by moving said upper and lower longitudinally adjustable sections relative to one another to thereby redefine the overlap regions, and fine length adjustment, as well as adjustment for non-parallelism of said first and second contacting surfaces, are achieved by said means for adjustment.

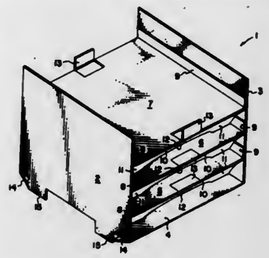
4,552,271

COLLAPSIBLE CONTAINER CONSTRUCTION

Kermit W. Kranz, 8160 W. Kochville Rd., Saginaw, Mich. 48603

Filed Mar. 27, 1984, Ser. No. 593,897
Int. Cl.⁴ A47F *5/11*
U.S. Cl. 211—41 **10 Claims**

1. A container for supporting a plurality of similar items comprising a pair of spaced apart, parallel frame members; a plurality of shelf members secured to and spanning the space between said frame members, said shelf members being spaced from one another a distance sufficient to enable one of said items to be accommodated between adjacent shelf members; and retaining means carried by each shelf member which overlies another shelf member and having at least one footed portion of such length as at least to span the space between adjacent shelf members, each of said retaining means being hinged to the associated shelf member for swinging movements between a first position in which the space between the associated shelf member and the adjacent shelf is clear and a



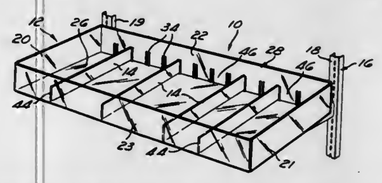
second position in which said retaining means forms a barrier between the associated shelf member and the adjacent shelf member.

4,552,272

DISPLAY BIN

Frank P. Field, 854 Napoli Dr., Pacific Palisades, Calif. 90272

Filed Apr. 11, 1984, Ser. No. 599,193
Int. Cl.⁴ A47F *5/08*
U.S. Cl. 211—88 **9 Claims**



1. A system for displaying or storing merchandise or the like, comprising:

a bin including a bottom panel, a pair of side panels, a front panel and a rear panel; the rear panel having at least one panel slot therein, the bottom panel including at least one orifice therein corresponding to each panel slot and spaced apart therefrom;

a divider having a first end adapted for insertion into the panel slot, the divider further including a projection extending therefrom into the orifice when the first end is positioned in the slot so that the panel slot, the projection and the orifice cooperate to retain the divider in a preset position to divide the bin into a plurality of portions while maintaining the front panel free of obstructions; and

a pair of barbs extending from said projection to engage the projection in the orifice to retain the divider against accidental removal from the preset position,

said pair of barbs being offset from one another along the length of the projection so that the projection may be engaged in the orifice by inserting a first barb into the orifice and then rotating the divider relative to the bottom panel to urge the second barb into the orifice.

4,552,273

PAPER MANAGEMENT SUPPORT RACK

Richard H. Wolters, Grand Rapids, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

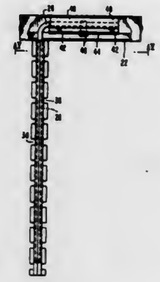
Filed Feb. 21, 1984, Ser. No. 582,210
Int. Cl.⁴ A47B *57/04*
U.S. Cl. 211—187 **8 Claims**

1. A support rack for supporting a plurality of trays, shelves or the like within a larger storage cavity including an upper shelf having internal flanges on opposite sides of the underside thereof, said support rack comprising:

a pair of spaced L-spaced hanger bars;

a planar guide rack secured to one of the legs of each of said hanger bars and spanning the space therebetween; and

slidable wedging means secured to the other leg of each of



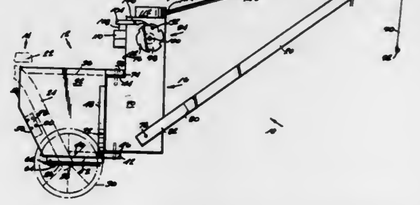
said hanger bars, each said slidable wedging means movable with respect to said other leg and engaging said internal flanges to rigidly mount said support rack between the underside of said upper shelf and said internal flanges on said upper shelf.

4,552,274

TRICYCLE AND A TOY CRANE ASSEMBLY REMOVABLY MOUNTED THEREON

Lawrence R. Lundin, 10057 Highway 2, Rapid River, Mich. 49878

Filed Jan. 3, 1984, Ser. No. 567,511
Int. Cl.⁴ B66C *23/06*
U.S. Cl. 212—232 **3 Claims**



1. In combination, a tricycle and a toy crane assembly removably mounted to the rear of said tricycle, said crane assembly including a main frame member, means for removably mounting said main frame member to said tricycle, a swivel frame member pivotally mounted to said main frame member, a boom member pivotally attached to said swivel frame member and having a free outer end, boom adjustment means mounted on said swivel frame for changeably adjusting the position of the boom member relative to the swivel frame member, said boom adjustment means including a boom line extending from said swivel frame to the outer end of said boom, and running line adjustment means mounted to said swivel frame for adjustably operating a running line, said boom adjustment means icluding a first reel member rotatably mounted to the top of said swivel frame member for holding a supply of boom line, said first reel having a toothed periphery, a first pawl pivotally mounted adjacent said first reel member, resilient means for keeping said first pawl in an engaged position relative to said reel and line guide means for guiding the boom line between said first reel member and said boom member, said line guide line means further including centering means for keeping the boom line in the center of said first reel

member, said running line adjustment means including a second reel member rotatably mounted to said swivel frame member for holding a supply of running line, said second reel member having a toothed peripheral rim, a second pawl mounted adjacent said second reel member, resilient means for keeping said second pawl in a pawl engaged position and second line guide means for guiding the running line.

4,552,275

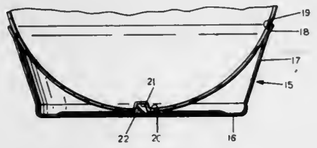
PRESSURIZED FLUID PACKAGE

Long F. Chang, Sylvania, and Frank Patek, Jr., Whitehouse, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 333,074, Dec. 21, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,264

Int. Cl.⁴ B65D *23/00, 23/08*

U.S. Cl. 215—12 R **18 Claims**



1. A pressurized fluid package comprising

an oriented plastic container including a cylindrical side wall, a neck, a neck finish on the upper end of the neck for receiving a closure, and a hemispherical bottom wall,

a plastic base including an annular seating area for engaging a surface on which the package is supported,

said base having a peripheral annular inverted frustoconical wall extending upwardly and outwardly and terminating in an annular frustoconical free edge portion defining an inner primary support area tangentially engaging a complementary area of the upper end of the hemispherical wall of the container to provide primary support axially for the container in the base,

said hemispherical bottom wall having a radius that is uniform throughout the bottom wall,

said free edge portion of said frustoconical wall engaging the hemispherical wall and being tangential thereto at an angle ranging between 50° and 75° with a transverse plane through the axis of the base,

said base having a second contact area for receiving adhesive to bond the hemispherical bottom wall of the container.

4,552,276

DRINKING VESSEL HAVING A HOLDER

Wolfgang Büch, Dorfstrasse 4, D-2359, Kisdorf, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,357

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 8314583[U]

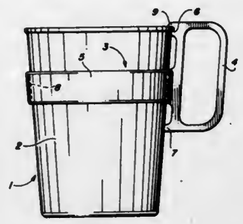
Int. Cl.⁴ B65D *21/02*

U.S. Cl. 215—100 A **6 Claims**

1. A holder for a drinking vessel having a generally circular exterior at any location and an open top with a lip extending circumferentially at the said top, said holder comprising:

(a) a ring member having an opening adapted to extend circumferentially about an intermediate section of the exterior of said vessel;

(b) a handle integrally formed with said ring and adapted for grasp by the user, said handle including upper and lower spaced-apart rests, said upper rest engaging said rim and said lower rest engaging the said vessel body at a location below the said ring, at least one of said rests having a diameter less than the corresponding engaged portion of the vessel whereby a prestressing force is applied on the



vessel wall when said one rest is placed in engagement with the vessel.

4,552,277

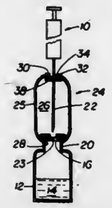
PROTECTIVE SHIELD DEVICE FOR USE WITH MEDICINE VIAL AND THE LIKE

Robert D. Richardson, 2202 Lakeland Rd., Anchorage, Ky. 40223, and Thomas B. Leanhart, 1113 Girard Dr., Louisville, Ky. 40222

Filed Jun. 4, 1984, Ser. No. 616,572

Int. Cl.⁴ B65D *81/32*

U.S. Cl. 215—249 **15 Claims**



1. A shield device adapted to be connected over the neck of a medicament vial and the like containing a liquid medicament, the vial being the type having a puncturable seal closing the vial neck adapted to be punctured by a hypodermic needle, the shield device comprising:

means defining a collapsable liquid medicament containing chamber adapted to receive and contain liquid medicament which may exit the vial through the puncture made in the vial seal upon withdrawal of the hypodermic needle from the vial seal;

means defining an opening at one end of the chamber defining means adapted to receive and seal around the neck of the vial;

means defining an aperture at the other end of the chamber defining means generally opposite the opening into the chamber defining means; and,

an imperforate, puncturable seal device closing the aperture in the chamber defining means, the seal being adapted to be punctured by a hypodermic needle.

4,552,278

CRIMPABLE CAPPING ASSEMBLY FOR A CENTRIFUGE TUBE

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1984, Ser. No. 666,616

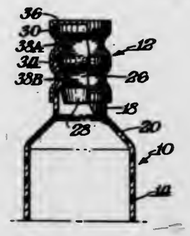
Int. Cl.⁴ B65D *45/02*

U.S. Cl. 215—277 **8 Claims**

1. A capping assembly for use with a centrifuge tube formed of a deformable material, the tube having a neck portion which defines a fluid port, the neck having a predetermined interior and exterior, the capping assembly comprising:

a stopper having a plug portion sized and configured for close fitting receipt on the interior of the neck; and

a sleeve sized and configured for close fitting receipt over the exterior of the neck in concentric telescopic relationship with respect to the plug, the sleeve being responsive



to a crimping force to deform and compress the material of the neck intermediate the plug and the sleeve to form an annular seal between the neck and the plug which resists fluid leakage out of the fluid port from the interior of the tube.

4,552,279

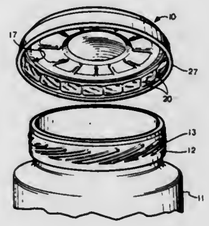
CONTAINER CLOSURE

Bruce M. Mueller, Sylvania, Ohio, and Zbignew Swierczek, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 14, 1984, Ser. No. 650,490

Int. Cl.⁴ B65D *41/22*

U.S. Cl. 215—318 **8 Claims**



1. A container closure adapted to be applied to a container having threads by an axial movement and to be removed by a rotary movement to open the container comprising

a body including a base wall and a peripheral wall,

and a gasket of plastic material formed in situ along the peripheral wall and at least a portion of the base wall which is adapted to overlie the end of the container,

an annular portion of the gasket along the peripheral wall being formed with a plurality of circumferentially extending substantially flat surfaces such that it has a polygonal configuration in transverse cross section with axially extending channels at the junctures of the substantially flat surfaces such that when the closure is applied to the container, the threads on the container deform the surfaces of the polygonal portion by indentation to define complementary threads therein, and when the closure is being applied, the channels permit gases in the head space of the container to escape so that excessive pressurization tending to force the cap off does not occur and after the closure is applied to the container, the channels provide areas into which the plastic material may cold flow to release excessive stresses which develop during shelf life of the package comprising the closure and container, thereby resulting in lower removal torques.

4,552,280

CONTAINERS FOR WASTE PRODUCTS

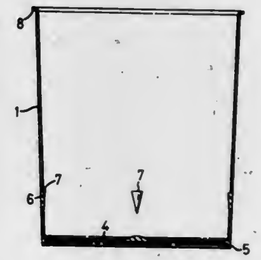
William R. Owen, 56 Heol Llanishan Fach, Rhiwbine, Cardiff, CF4 6LF., and Andras Juhasz, 53 Waterloo Rd., Cardiff, CF3 7BJ., both of Wales

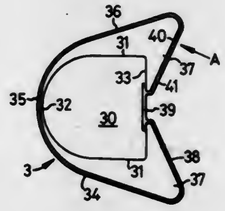
Filed Nov. 26, 1982, Ser. No. 444,745

Claims priority, application United Kingdom, Nov. 26, 1981, 8135733

Int. Cl.⁴ B65F *1/16*

U.S. Cl. 220—1 T **6 Claims**





1. A self-closing container for waste or contaminative articles comprising

a receptacle having an aperture through which articles are deposited in the container and a retaining projection,

a closure member secured to the receptacle and constrained for rectilinear sliding movement across the plane of the aperture between first and second positions at which the aperture is opened and closed respectively,

and means for releasably securing the closure member in its second position comprising a substantially non-stretchable, resiliently deformable band, engaged around said retaining projection on the receptacle and joined at both ends to the closure member and extending around the periphery of the closure member such that it has to be deformed against its resilience to move the closure member from its closed position, the resiliently deformable band having a first preset natural shape and predisposition, when the closure member is in its closed position, and a second shape, when the closure member is in its open position, which is a distortion of the first shape and from which the deformable band naturally returns to said first shape to close the container.

4,552,281

GLASS FIBER REINFORCED RESIN TANK WITH PARTICULAR JOINT STRUCTURE

William A. Schneider, Conroe, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

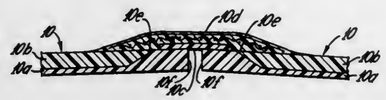
Filed Jun. 29, 1984, Ser. No. 626,071

Int. Cl.⁴ B65D *8/06, 8/18*

U.S. Cl. 220—5 A **4 Claims**

1. An elongated generally cylindrical fiber-reinforced resin tank particularly adapted to contain corrosive liquids and comprising two tank halves each having a closed end and a

flangeless open end and each having an inner liner of corrosion-resistant resin and an outer structural wall of corrodible resin, the corrodible structural wall of each tank half ending short of the flangeless open end thereof in a direction axially of the tank and the corrosion-resistant inner liner of each tank half extending axially of the tank past an end of the structural wall of the tank half adjacent the flangeless open end thereof and being radially enlarged adjacent said flangeless open end thereby to cover said end of the structural wall and present a



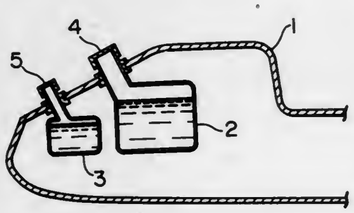
radially outer surface substantially flush with the outer surface of the structural wall, and an external lay-up bridging the flangeless open ends of the tank halves on the outside of the tank and securing the two tank halves relative to each other with the flangeless open ends thereof adjacent each other, said external lay-up being subject to contact by corrosive liquid or vapors thereof when corrosive liquid is stored in the tank and at least a radially inner portion of the external lay-up comprising corrosion-resistant resin.

4,552,282

STRUCTURE FOR RETAINING TANK CAP

Hiroshi Nishida, Miki, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Jan. 22, 1985, Ser. No. 693,096
Claims priority, application Japan, Jan. 25, 1984, 59-8689[U]
Int. Cl.⁴ B65D *1/24, 1/36, 57/00*
U.S. Cl. 220—20 **6 Claims**



1. A tank cap retaining structure for use in a motorcycle, a small-sized marine craft or an agricultural machine in which a plurality of tanks, such as a fuel tank and an oil tank, are disposed side by side, said structure comprising:

tank caps of said tanks having respective outer surfaces which are formed such as to be capable of detachably engaging each other for the purpose of retaining said tank caps.

4,552,283

SAFETY DEVICE FOR CLAMPING SCREWS ON PRESSURIZED FLUID RECEPTACLES

Erich Poldner, Benningen, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

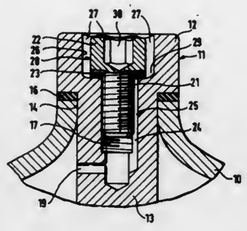
Filed Nov. 19, 1984, Ser. No. 672,672
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341675
Int. Cl.⁴ B65D *53/00*
U.S. Cl. 220—304 **7 Claims**

1. A safety device for a clamping screw on a pressurized fluid receptacle comprising in combination;

a head and an adjoining threaded shaft defined by the clamping screw, the head having an internally faceted socket-type recess which is adapted for engagement by a matching wrench;

a threaded axial bore in the clamping screw extending from the bottom of the faceted recess into the shaft of the clamping screw;

a bleed screw having a threaded shaft and an adjoining head which, when the bleed screw is screwed into the threaded axial bore of the clamping screw, prevents access to the internally faceted recess by said wrench; and



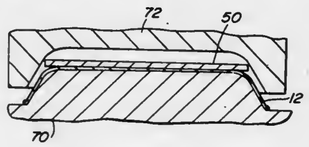
a bleed channel defined between the clamping screw and the bleed screw, the bleed channel having a bleed channel inlet which is open to the interior of the pressurized fluid receptacle and a bleed channel outlet which is located in the immediate vicinity of the head of the bleed screw, so that, when the bleed screw is screwed tight, its head closes off the bleed channel outlet, and, when the bleed screw is unscrewed, it initially allows only a small flow of pressurized fluid to escape through the bleed channel outlet.

4,552,284

COOKWARE BOTTOM WALL STRUCTURE

Al S. Rummelsburg, Scarsdale, N.Y., assignor to Kidde Consumer Durables Corp., Bronx, N.Y.

Division of Ser. No. 403,828, Jul. 30, 1982, Pat. No. 4,511,077.
This application May 30, 1984, Ser. No. 602,308
Int. Cl.⁴ B44D *1/14*
U.S. Cl. 220—453 **7 Claims**



1. Cookware comprising a stainless steel utensil having a bottom wall connected to an upstanding side wall by a curved portion, an aluminum disk metallurgically bonded directly to the bottom wall and the curved portion with a serrated key type interface, a central portion of said disk being thicker than the thickness of said utensil walls, said disk being thinner at its periphery, the thinned periphery of said disk overlying and terminating where the side wall joins said curved portion.

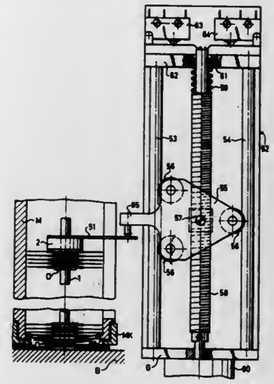
4,552,285

UNLOADING DEVICE

René Lüscher, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,564
Claims priority, application Switzerland, Mar. 10, 1983, 1286/83
Int. Cl.⁴ B65G *59/06*
U.S. Cl. 221—13 **4 Claims**

1. Apparatus for the individual ejection of flat objects comprised of a flat, relatively rigid center part and an elastically deformable circumferential part, from a magazine in which the objects are stacked on one another, said magazine including an ejection orifice with a retaining cam that projects inwardly from its wall, comprising an ejector actuable from the exterior of said magazine to apply pressure to said rigid center part of the objects, whereby the entire stack may be moved in the direction of the ejection orifice, a support surface, a holder for positioning the magazine such that its ejection orifice (**66**) is



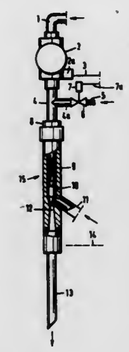
located at a slight distance above the support surface, drive means for said ejector which induces a force on the ejector to eject an object from the magazine onto the support surface, and means responsive to the counter pressure created by the ejected object on said support surface for relieving the force on said ejector when said counter pressure reaches a limiting value.

4,552,286

METHOD AND AN APPARATUS FOR THE PRODUCTION AND DISPENSING IN PORTIONS OF NONCARBONATED MIXED DRINKS

Alexander Kückens, Gross Sarau, and Horst Köhl, Bad Oldesloe, both of Fed. Rep. of Germany, assignors to Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co. KG, Reinfeld, Fed. Rep. of Germany

Filed Sep. 20, 1983, Ser. No. 533,860
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3234957
Int. Cl.⁴ B67D *5/60*
U.S. Cl. 222—145 **3 Claims**



1. In a method of dispensing noncarbonated beverages, in which water is forced through an injection pump and a citrus concentrate is drawn by the injection pump into admixture with the water, the improvement which comprises the steps of:

following a discharge of said mixture to form a portion of a beverage dispensed, terminating the flow of water and admitting air to said ejection pump to completely discharge an injection zone thereof from said concentrate; and

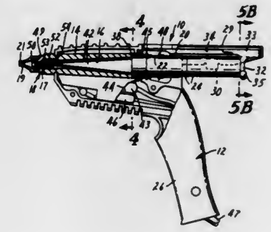
maintaining air in said zone so that the air is encountered by said mixture for the formation of the next portion of the mixture to be dispensed and air bubbles are formed in said mixture to hold particles of said concentrate in suspension in the water of the mixture.

4,552,287

THERMOPLASTIC DISPENSING DEVICE

Michael M. Dziki, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

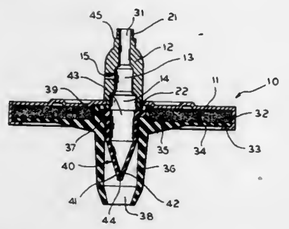
Filed Jan. 7, 1983, Ser. No. 456,346
Int. Cl.⁴ B67D *5/32*
U.S. Cl. 222—146.5 **13 Claims**



1. In a device for dispensing molten thermoplastic material comprising a frame, a barrel member mounted on said frame and having an internal melting chamber communicating with an outlet opening through a nozzle, a sleeve with a through opening having one end secured at said barrel member and said opening communicating with the end of said melting chamber opposite said outlet opening, said sleeve being adapted to receive a block of solid thermoplastic material with one end portion of the block in the melting chamber and the block projecting through said sleeve, and means for heating said barrel member to melt the end portion of the block therein, said frame including a handle positioned so that an operator can grip the handle with the fingers of one hand while applying pressure with the thumb of that hand directly toward the end of the block opposite the melting chamber to press the block through the sleeve and into the melting chamber to force molten thermoplastic material out said outlet opening, the improvement wherein:

said device further includes holding means at the end of said sleeve opposite said melting chamber adapted for holding a second block of solid thermoplastic material outside said sleeve in aligned end-to-end relationship with a said block of thermoplastic material in said sleeve while affording pressure by the thumb of an operator to press the second block into the sleeve and melting chamber, said holding means comprising spaced opposed resiliently flexible gripping parts projecting towards said handle, said gripping parts having opposed distal surfaces spaced so that the second block can be transversely pressed therebetween to resiliently move the gripping parts away from each other and afford movement of the block therebetween, and having opposed inner surfaces adapted to engage the seocnd block of polymeric material along its opposite side surfaces to hold the second block in alignment with the block in said sleeve, while affording movement of the second block and the thumb of the operator between said gripping parts to move the seoond block toward said sleeve.

4,552,288
AUTOMATIC VENTING SEALING CAP
Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Des Plaines, Ill.
Filed Nov. 10, 1983, Ser. No. 550,605
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—482 **7 Claims**



1. An automatic vacuum venting sealing cap for use in conjunction with safety storage containers for fluids, said cap cooperating with and substantially sealing an opening in said container when in a first engaged position, and detaching from said opening to allow substantially unrestricted access to said opening for the introduction or removal of contents of the interior of said container through said opening when said cap is in a second disengaged position, said cap including mounting means for cooperating with a mounting bracket, wherein said mounting bracket transports said cap between said engaged and said disengaged positions and retains said cap in sealing engagement with the top edge of a collar surrounding said opening when in said engaged position, said cap also including a cover whose perimeter dimensions are at least equal to the perimeter dimensions of the top edge of the collar surrounding the container opening, and further including a sealing gasket proximate to at least the periphery of the cover such that the sealing gasket is disposed between the cover and the upper edge of the collar surrounding the opening when the cap is in the engaged position, providing a substantially fluid and vapor tight seal between the cover and the collar, wherein the cover has connecting means connecting it to said mounting means and provides mechanical support for said gasket, the invention comprising:

said mounting means including an air passageway therein with a first open end which is exterior to said container when said cap is in said engaged position, and with a second open end proximate said mounting means and said cover and extending through said cover;

valve means, said valve means permitting passage of air therethrough in a first direction while substantially impeding passage of air therethrough in a second opposite direction.

said valve operably connected to said second open end of said passageway and communicating with the container opening when said cap is in said engaged position, such that said valve permits the passage of air in a forward direction into said first open end of said passageway, through said passageway, through said second open end of said passageway, through said valve means, and into the interior of said container, while substantially preventing the passage of air or contents from the interior of said container through said passageway in a second opposite direction;

said valve means including a reed valve element, said reed valve element describing a vent passageway having a flanged first end and a second end tapering from said first end, with a flexible orifice at said second end,

said flanged first end of said reed valve element sealably engaged with said second open end of said air passageways to substantially prevent passage of air between said air passaageway and the interior of said container other than through said flexible orifice,

said gasket including a deformable cushion proximate said cap and a flexible covering for contacting said upper edge of said collar;

and means substantially encasing said valve means for mechanically protecting said valve means from potentially damaging contact with foreign objects,

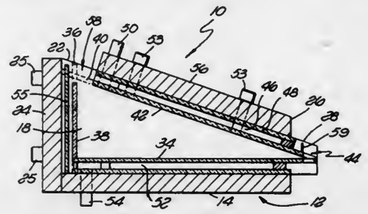
said valve protection means comprising a protruding cylindrical shroud substantially surrounding said reed valve element,

the first end of said shroud sealably engaging and supporting said flange end of said reed valve element,

the second end of said shroud proximate said flexible orifice and providing an opening through which said orifice may communicate with the interior of said container;

said flexible covering and said shroud defining a vapor tight integral unit which, in conjunction with said reed valve element, substantially seals said container opening from passage of vapors or fluids out of said opening when said cap is in said engaged position.

4,552,289
TUNDISH FOR RIBBON CASTING OF SEMICONDUCTOR RIBBON
G. Felix Wakefield, Woodland Hills, and David L. Bender, Thousand Oaks, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed May 8, 1980, Ser. No. 147,804
Int. Cl.[4] B22D *11/10*
U.S. Cl. 222—600 **8 Claims**



1. A tundish useful in casting a ribbon of material comprising:

a hopper for the molten material having a bottom plate and at least two side wall plates and a top plate, said top plate converging with said bottom plate to form an elongated orifice for extruding the material therethrough, at least one of said top plate and bottom plate being movable with respect to said other of said top plate and bottom plate to change the thickness of said orifice; and

a heating element to provide heat to the molten material, including at least a portion having a substantially flat configuration oriented substantially parallel to a surface of one of said top and bottom plates, said surface being opposite the surface of said plate for facing the molten material within the hopper.

4,552,290
METHOD AND APPARATUS FOR CLEAVING OPTICAL FIBERS
Tadeusz Szostak, Gillette, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.
Filed Jan. 31, 1983, Ser. No. 462,571
Int. Cl.[4] C03B *37/16*
U.S. Cl. 225—2 **8 Claims**

1. An apparatus for cleaving an elongate optical fiber comprising:

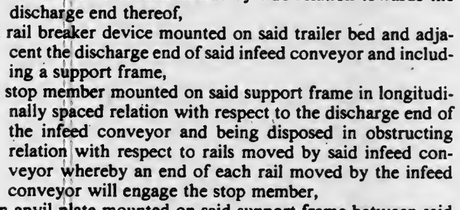
a housing;

a holder on said housing fixedly supporting said fiber thereat, said holder defining a pre-determined fiber axis;

a fiber support on said housing for supporting a longitudinal extent of said fiber spaced from said holder along said pre-determined fiber axis;

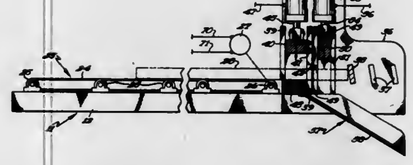
a cleaving element movably supported on said housing adjacent said fiber support for scoring said fiber at said longitudinal extent; and

a fiber pulling means for grasping said fiber at a location spaced from said fiber support and for pulling said fiber in



a direction parallel to said fiber axis, said pulling means including a clamping member having a fiber engaging surface movable transversely relative to said fiber axis, independently of the movement of said fiber pulling means from a first position non-intersecting said fiber axis to a second position intersecting said fiber axis for thereby moving a portion of said fiber to a clamping position offset from said fiber axis.

4,552,291
APPARATUS FOR BREAKING RAILROAD RAILS
Jeffery L. Schott, 1142 Featherstone Rd., Box 20, Red Wing, Minn. 55066
Filed Aug. 1, 1983, Ser. No. 519,309
Int. Cl.[4] B23P *17/02*
U.S. Cl. 225—96.5 **10 Claims**



1. A portable apparatus for breaking elongate railway rails into predetermined lengths for use as scrap metal, comprising:

a trailer having a bed and having ground-engaging wheels and adapted to be towed to an operational site by a prime mover,

an elongate infeed conveyor on said trailer bed and having an infeed end and a discharge end for moving a plurality of rails to be broken in side by side relation towards the discharge end thereof,

a rail breaker device mounted on said trailer bed and adjacent the discharge end of said infeed conveyor and including a support frame,

a stop member mounted on said support frame in longitudinally spaced relation with respect to the discharge end of the infeed conveyor and being disposed in obstructing relation with respect to rails moved by said infeed conveyor whereby an end of each rail moved by the infeed conveyor will engage the stop member,

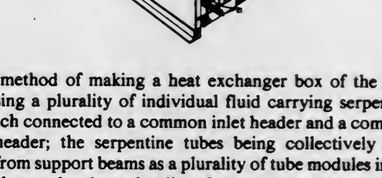
an anvil plate mounted on said support frame between said stop member and the discharge end of the infeed conveyor,

a vertically shiftable clamping and scoring member disposed in opposed relation with respect to said anvil plate and being vertically translatable towards and away from said anvil member,

first power means connected to said clamping and scoring member and mounted on said support frame for shifting said clamping and scoring member towards and away from said anvil plate, said clamping and scoring member when shifted toward said anvil plate clamping said rail against the anvil plate and scoring the rail to be broken along a line extending transversely of the rail,

a vertically shiftable impact member disposed between said clamping and scoring member and said stop member and vertically translatable in a forward and return direction, second power means connected to said impact member and mounted on said support frame adjacent said first power means for shifting said impact member in forward and return directions, said impact member when shifted in a forward direction simultaneously striking the rails clamped by said clamping and scoring member and breaking said rails along the scored transverse lines.

4,552,292
HEAT EXCHANGER
Richard T. Cuscino, Andover; Lester H. Lee, Braintree; Melvin A. Prohl, Boxford; David R. Skinner, Georgetown, and Thomas F. Taylor, Salem, all of Mass., assignors to General Electric Company, Lynn, Mass.
Filed Nov. 12, 1982, Ser. No. 440,800
Int. Cl.[4] B23P *15/26*
U.S. Cl. 228—183 **5 Claims**



1. A method of making a heat exchanger box of the type comprising a plurality of individual fluid carrying serpentine tubes each connected to a common inlet header and a common outlet header; the serpentine tubes being collectively supported from support beams as a plurality of tube modules in the heat exchanger box by a plurality of tube support sheets including convergent-divergent tube hanger straps; the method comprising the steps of:

prefabricating each serpentine tube from inlet to outlet prior to assembly into a tube module;

alternately stacking the serpentine tubes with tube hanger straps to form a plurality of tube support sheet sections and a tube module;

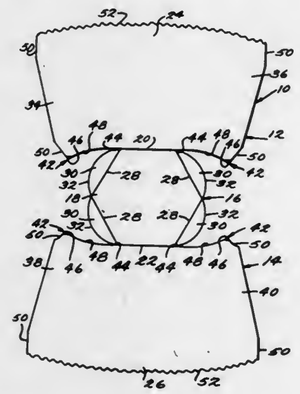
hanging a plurality of tube modules from a plurality of support beams; and,

joining adjacent individual tube support sheet sections aligned in the same plane to form a plurality of tube support sheets.

4,552,293
CONTAINER BLANK HAVING RELIEVED EDGE CONSTRUCTION
Bobby W. Blagg, Waco, Tex., and Richard F. Gulliver, Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.
Filed Oct. 25, 1983, Ser. No. 545,277
Int. Cl.[4] B65D *3/04*
U.S. Cl. 229—1.5 B **18 Claims**

1. A flat blank of foldable sheet material cut and scored to be erected and secured into a container comprising

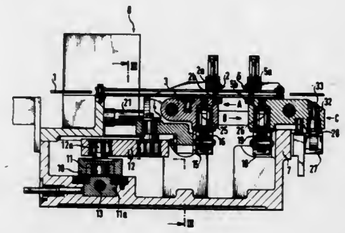
a pair of peripheral wall forming sections and a bottom wall forming section integrally interconnecting said pair of peripheral sections in spaced relation,
the interconnection between said bottom section and said pair of peripheral sections being along straight parallel fold lines,
said bottom section having a plurality of flaps formed integrally with the remaining periphery thereof between the corresponding ends of said parallel fold lines,
the interconnection between said bottom section and each of said flaps being along a straight fold line defining a portion of the periphery of the bottom section,
each peripheral section including opposed side portions disposed outwardly of the associated parallel fold line,
each side portion providing an edge extending from the end of the associated parallel fold line which includes (1) a corner



forming edge portion for engaging the fold line of the associated flap when the associated peripheral section is folded about its parallel fold line with the bottom section and the associated side portion is flexed into a position wherein the corner edge portion is engaged with the fold line of the associated flap and (2) a relieved edge portion for enabling the associated flap to be folded upwardly without engagement between the relieved edge portion and the interior surface of the associated flap as the flap is folded upwardly when the corner edge portion is disposed in engaged relation to the fold line of the associated flap as aforesaid to a position insuring that further upwardly folded movement of the flap will cause the adjacent side portion to move simply without interference between the relieved edge portion and the interior surface of the associated flap into surface to surface engagement therewith.

4,552,294
GRIPPING FEEDER FOR STRIP OR WIRE STOCK
Frank Rotzler, Maulbronn, Fed. Rep. of Germany, assignor to R W M-Raster-Werkzeugmaschinen GmbH, Oetisheim, Fed. Rep. of Germany
Filed Nov. 29, 1983, Ser. No. 556,086
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247001
Int. Cl.⁴ B65H *17/36, 17/44*
U.S. Cl. 226—142 **3 Claims**

1. In a gripping feeder for an intermittent feeding of continuous stock in a predetermined direction in an intermittently operated machine for processing said stock, comprising
a stationary retaining gripper,
a carriage preceding said retaining gripper when viewed in said predetermined direction and reciprocable in and opposite to said predetermined direction,
a feeding gripper mounted on and movable in unison with said carriage,
a first actuating mechanism for opening and closing said retaining and feeding grippers in phase opposition to each other in step with the intermittent operation of said machine, and
a second actuating mechanism for reciprocating said carriage and feeding gripper in and opposite to said predetermined direction in step with the intermittent operation of the machine,
the improvement residing in that
a rail is provided, which extends transversely to said predetermined direction,
said second actuating mechanism comprises a feed rocker extending transversely to said predetermined direction, a slider, which is mounted on said feed rocker to be slidable along the same and along said rail and defines a fulcrum for said feed rocker, feed drive means for oscillating said feed rocker about said fulcrum, and transmitting means for reciprocating said carriage in and opposite to said predetermined direction in response to said oscillation of said feed rocker, and



means are provided for holding said slider in a selected position relative to said rail so that the stroke length of said carriage depends on the position of said slider relative to said rail, wherein
said feeding gripper comprises a movable jaw formed by a jaw arm pivoted to said carriage, and
said first actuating mechanism comprises a camwheel, means for rotating said camwheel in step with the intermittent operation of said machine, a cam follower rocker having a first rocker arm cooperating with said camwheel and a second rocker arm, and a plunger bearing at one end on said second rocker arm and at the other end on said jaw arm,
said means for rotating said camwheel comprise a rotary shaft extending in said predetermined direction,
said camwheel being axially slidably mounted on and nonrotatably connected to said shaft,
a guide rod is provided, which is parallel to said shaft and together with said shaft constitutes a track, and said carriage is slidably mounted on said track.

4,552,295
ANTI-WRINKLE DEVICE
Gary R. Smith, Overland Park, Kans.; Larry J. Rutter, Blue Springs, Mo., and James E. Amer, Kansas City, Kans., assignors to Smith R.P.M. Corporation, Overland Park, Kans.
Filed Oct. 23, 1984, Ser. No. 663,795
Int. Cl.⁴ D06C *3/06;* **B65H** *25/26, 17/22*
U.S. Cl. 226—195 **12 Claims**

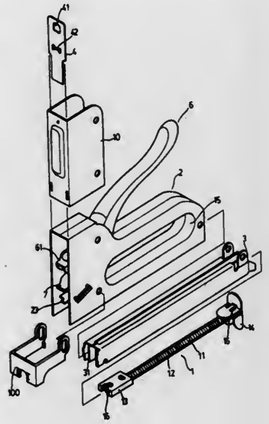
1. An anti-wrinkle device for controlling wrinkles in a moving elongate paper web engaging said device; said device comprising:
(a) a support structure;
(b) said support structure including a central shaft;
(c) first and second supporting members;
(d) first and second surfaces adapted to engage a side of the web and being supported by said first and second supporting members respectively, each of said first and second surfaces having a respective first end and a second end;

(e) said first and second supporting members are each rotatable about said shaft such that said first and second surfaces rotate about an axis associated with said shaft;
(f) said surfaces are generally cylindrical with approximately equal diameters;
(g) said surface first ends are closely spaced from one another;
(h) eccentricity adjusting means associated with each of said surfaces and cooperating with said first and second supporting members to allow rotation of each of said surfaces about an axis thereof and to allow independent eccentric adjustment of said surfaces relative to each other; and



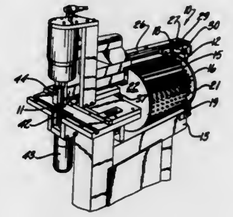
(i) eccentricity positioning means cooperating with said eccentricity adjusting means to allow selective positioning of the eccentricity of each surface relative to each other;
(j) whereby the eccentricity of one of said surfaces relative to another is selectively variable whereat said surfaces respectively engage said web.

4,552,296
STAPLING GUN
Wang Sheng, 4F. No. 2, Lane 350, Chung Ho Rd., Chung Ho City, Taipei Hsien, Taiwan
Filed Oct. 19, 1983, Ser. No. 543,483
Int. Cl.⁴ B25C *1/02*
U.S. Cl. 227—109 **1 Claim**



1. A stapling gun comprising:
a main body portion;
a handle pivotally mounted on said main body portion;
a guide way mounted into the lower part of said main body portion, said guide way being provided with two vertical plates so that the vertical distance between the inner top surface of said guide way and the top of any one of the vertical plates is less than two times the thickness of the thinnest staple adapted for use with the guide way;
a pusher detachably mounted into said guide way so as to push staples accommodated in said guide way to go forward, said pusher being provided with an inverted U-shaped head portion which is just fitted between said inverted U-shaped head portion and said guide way;
a driver movably mounted into said main body portion for pressing out staples therein, said driver being slightly thinner than the side thickness of a staple with smallest side thickness which is adapted for use with said guide way and slightly less wide than the width between the two vertical inner surfaces of said guide way;
a covering plate mounted on the front of said main body portion; and
an adjustable wire attachment movably mounted at the lower part of said covering plate, said adjustable wire attachment being provided with a notch for protecting and fixing a wire to be held in position, and two lugs each located at one side of said wire adjustable attachment and having a slot.

4,552,297
ROTATABLE RELOADING APPARATUS FOR A STAPLER
James A. Belanger, Northville; Douglas J. Calvin, Farmington Hills, and Brian K. Thompson, Wixom, all of Mich., assignors to Belanger, Inc., Northville, Mich.
Filed Jul. 22, 1983, Ser. No. 516,033
Int. Cl.⁴ B25C *1/04, 5/02;* **B21J** *15/28*
U.S. Cl. 227—120 **6 Claims**



1. A reloading apparatus in combination with a magazine and a pneumatically operated fastening device, with said reloading apparatus effective to supply fasteners to said magazine for said fastening device comprising:
a frame;
a fastener storage unit for supplying fasteners to be loaded into said magazine mounted on said frame;
said fastener storage unit including a plurality of rails adapted to receive the fasteners fixed to a support rotatably mounted on said frame having a central axis about which said rails rotate with each rail being aligned parallel to the central axis;
a pneumatically operated pusher member in operative communication with said storage unit pushing fasteners toward said magazine until contacting a first limit switch on a loading stroke, returning from said magazine to retrieve additional staples on a return stroke until contacting a second limit switch;
a two-way switching means controlling said pusher member operatively responding to said first and second limit switches;
indexer means operably attached to said support for rotating said support incrementally and positioning another of said rails relative to said pusher member;
said indexer means including a hub secured to said supprot coaxial with the central axis of said support;
a one-way clutch secured to said hub;
an arm connected to the clutch and extending radially outwardly from the clutch;
a pneumatic cylinder attached to the frame and operably connected to the arm for arcuately pivoting the arm about the central axis;
said pneumatic cylinder being actuated by said second limit switch when said second limit switch is contacted by said pusher member on the return stroke;

a third limit switch adapted to be engaged after the arm has pivoted a predetermined amount to cause the pneumatic cylinder to pivot the arm in the opposite direction about the central axis; and

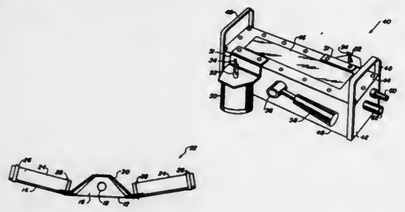
a shunting means connecting said two-way switching means with said pneumatically operated fastening device thereby preventing the latter from operating when said pusher member is in the return stroke.

4,552,298

APPARATUS FOR ATTACHING AN UNDERWATER EXPLOSIVE PAD EYE

Terry E. Hill, Thornville; George R. Riley, Grove City; Vonne D. Linse, Columbus; Sheryll C. Green, London, all of Ohio, and Paul G. Tack, Witchita Falls, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1983, Ser. No. 490,016
Int. Cl.⁴ B23K *20/08*
U.S. Cl. 228—2.5 **12 Claims**



1. An apparatus for applying an explosive pad eye to an underwater surface, comprising:

a housing, said housing including four sides and a top, said top having a clear area through which the inside of the housing may be seen;

a gas inlet passing through one of said four sides of said housing for admitting compressed gas into said housing and forcing out any water;

a sealing means mounted on the bottom edge of said four sides of said housing for creating a watertight seal between said housing and said surface, said sealing means being continuous and encircling the entire bottom of the housing except for one opening on the side opposite the side containing the gas inlet for allowing water from inside the housing to escape; and

an explosive pad eye including two wing portions and explosive charges connected to each of said wing portions;

wherein said housing is placed on said surface, gas is introduced into said housing through said gas inlet forcing water out of said housing through said opening in said sealing means and said explosive charges are detonated, causing said wing portions to be welded to said surface.

9. A metallic pad eye for application to a metallic underwater surface, comprising:

a base member including a central portion and two wing portions, extending in opposite directions from said central portion, which are bent upwardly at an angle of approximately 12 degrees, said base member being formed from a strip of metal;

a protrusion on the bottom surface of said wing portions adjacent said central portion;

two flange members connected to opposite edges of said central portion, each of said flange members having an opening arranged opposite the opening of the other flange member; and

an explosive charge connected to each of said wing portions which, when detonated, force said wing portions downwardly into contact with said underwater surface to form a weld which holds said pad eye to said underwater surface, wherein said protrusion serves to cut through the film of water on the underwater surface upon detonation of said explosives and permits initiation of the weld.

4,552,299

INTERMEDIATE ACCUMULATING SYSTEM IN PROCESSING STRIP MATERIAL

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06720

Continuation of Ser. No. 421,067, Sep. 22, 1982, , which is a continuation of Ser. No. 162,681, Jun. 25, 1980, abandoned. This application Jun. 4, 1984, Ser. No. 616,665
Int. Cl.⁴ B23K *31/02*; B21C *49/00, 47/26*
U.S. Cl. 228—5.7 **16 Claims**



1. A plant for producing metal strips, comprising

(a) a central intermediate storehouse for partly processed strips containing a plurality of variable capacity strip accumulators,

(b) strip guiding tracks from said storehouse to and from strip processing lines situated at various locations in said plant, and

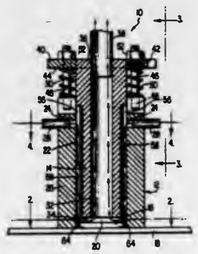
(c) strip guiding tracks and reconnecting means within said storehouse to connect and/or disconnect strip arriving from, or destined to, said strip processing lines at said plant with selected accumulators at said storehouse.

4,552,300

METHOD AND APPARATUS FOR SOLDERING AND DESOLDERING LEADLESS SEMICONDUCTOR MODULES FOR PRINTED WIRING BOARDS

Carl B. Zovko, Melbourne, Fla., and Alan D. Vogel, Columbia, Md., assignors to Pace, Incorporated, Laurel, Md.

Filed May 9, 1983, Ser. No. 492,989
Int. Cl.⁴ B23K *1/12*
U.S. Cl. 228—20 **9 Claims**



1. A device for soldering semiconductor modules having contact pads on the bottom thereof to and desoldering them from leaded terminal surfaces on a printed wiring board, said device comprising:

(a) a housing member having a longitudinally extending bore therethrough defined by a wall, said bore having a first opening adjacent one end of said housing adapted to enclose said module while said module is on said leaded terminal surfaces,

(b) an inner member slidable in said bore,

(c) means for supplying air under pressure between said wall and said inner member, said inner member having a passageway connecting an intake port at one end of said inner member to a source of vacuum connected to an exhaust port at the other end of said inner member, and

(d) means for heating said air under pressure as it passes between and contacts said wall and said inner member to thereby melt said leaded terminal surfaces to enable soldering or desoldering of said module when said first opening of said housing member is brought to a position adjacent said module.

4,552,301

METHOD OF BONDING CERAMIC COMPONENTS TOGETHER OR TO METALLIC COMPONENTS

Manfred R. Liehr; Wolfgang Nolting, both of Hamburg; Rolf U. D. Kobs, Tornesch, and Reiner U. Orlowski, Quickborn, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1984, Ser. No. 585,706
Int. Cl.⁴ B23K *35/28, 20/16*
U.S. Cl. 228—263.12 **4 Claims**

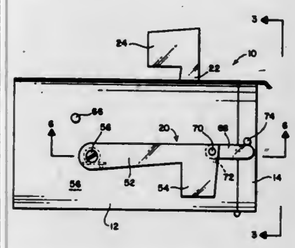
1. A method for the force-coupled and vacuum-tight bonding of ceramic components together or to metallic components by means of thermocompression by using a soldering material provided between the components to be bonded prior to the thermocompression process, characterized by the use of a soldering material of an aluminum-zinc-magnesium alloy having the composition 91.1 to 97.7% by weight of Al, 1.6 to 5.3% by weight of Zn and 0.5 to 3.6% by weight of Mg.

4,552,302

MAILBOX WITH INDICATOR FLAGS

Chester E. Rung, 7000 Seward Ave., Lincoln, Nebr. 68507

Filed Jul. 24, 1984, Ser. No. 633,847
Int. Cl.⁴ A47G *29/12*
U.S. Cl. 232—35 **7 Claims**



7. A mailbox apparatus comprising:

an elongated enclosure provided with an opening through which mail may be inserted and removed;

a door hinged to said enclosure to selectively cover and uncover said opening, said door being closed when said opening is substantially covered and opened when said opening is substantially unobstructed;

a first elongated indicator flag pivotally attached to a first side portion of said enclosure, said first indicator flag being pivotable between a non-vertical position and a substantially vertical position;

a stop attached to said first side portion of said enclosure to prevent said first indicator flag from rotating past said substantially vertical position;

means biasing said first indicator flag towards said substantially vertical position;

means for retaining said first indicator flag in said non-vertical position when said door is closed including a first stud attached to said door, a first link pivotally attached to said first indicator flag and engagable with said first stud, a stop attached to said first indicator flag to limit the rotation of said first link, and means biasing said first link towards said stop attached to said first indicator flag;

a second elongated indicator flag pivotally attached to a second side portion of said enclosure, said second indicator flag being pivotable between a non-vertical position and a substantially vertical position;

means biasing said second indicator flag towards said non-vertical position; and

means for retaining said second indicator flag in said vertical position when said door is closed, including a second stud attached to said door, and a second link pivotally coupled to said second indicator flag and engagable with said second stud;

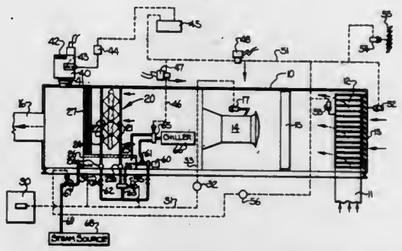
whereby the opening of said door causes said first indicator flag to pivot to said substantially vertical position and said second indicator flag to pivot to said substantially non-vertical position.

4,552,303

AIR-CONDITIONING SYSTEM

Gary H. Fisher, and H. Pat Padgett, both of Rockingham, N.C., assignors to Industrial Sheet Metal & Mechanical Corp., Rockingham, N.C.

Filed Sep. 7, 1982, Ser. No. 415,577
Int. Cl.⁴ F24F *3/02*
U.S. Cl. 236—44 C **6 Claims**



1. An energy efficient method for cooling and conditioning the air being supplied to an air-conditioned area, said method comprising directing a flow of air along a predetermined path to the air-conditioned area, contacting the air in its course of travel to the conditioned area with a spray of water to cool and condition the air by discharging water from a plurality of spray nozzles arranged in opposed impinging pairs and mounted in the path of travel of the air so to form a fine spray extending fully across the flow path of the air, sensing the dry bulb temperature of the air in the air-conditioned area, reducing the flow rate of the air being directed to the air-conditioned area in response to the sensing of a reduction in the dry bulb temperature in the air-conditioned area so as to maintain the dry bulb temperature substantially constant, correspondingly reducing the volume of spray water contacting the air so as to maintain a predetermined ratio between the volumes of spray water and air flow by reducing the volume of water supplied to one of the spray nozzles of each pair without reducing the volume of water supplied to the other nozzle of the pair so as to maintain a fine spray extending fully across the flow path of the air, and also varying the temperature of the spray water in response to changes in the dew point of the air in the air-conditioned area so as to maintain the dew point at a predetermined level.

4,552,304

ELECTRONIC GAS VALVE PULSATOR

Arthur S. Papazian, 8010 Owensmouth Ave., Canoga Park, Calif. 91304

Filed Mar. 22, 1984, Ser. No. 592,073
Int. Cl.⁴ F23N *5/20*
U.S. Cl. 236—46 F **5 Claims**

1. An electronic gas valve pulsator for a gas fired furnace controlled by a room thermostat, comprising:

a plastic housing adapted to be mounted on a wall of a room,

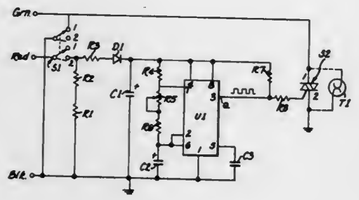
said housing having an opening therein with a manually operable control member extending therethrough and movable therein;

two scales associated with said opening and indicating pulse duration and furnace efficiency, respectively, for any selected setting of said control member;

an electronic timer housed in said housing for generating a series of electrical pulses having a preselected frequency and duty cycle as determined by the setting of said control member relative to said scales;

an electronic solid-state switch mounted in said housing and controlled by said electronic timer, said solid-state switch being connected in series, in use, with a gas valve of said gas fired furnace for alternately energizing and deenergizing said valve in response to said electrical pulses, whereby said valve is in the fully-open position when energized and in the fully-closed position when deenergized;

a time constant network connected to said electronic timer for controlling said electronic timer, said time constant network comprising first, second and third resistors connected in series and in series with a capacitor, said second resistor being connected intermediate said first and third resistors and being adjustable by movement of said control member, and said first and third resistors being fixed in value to predetermine maximum and minimum values of said pre-selected frequency and duty cycle;



a manually operable double pole switch mounted in said housing for separately disabling both said electronic timer and said electronic switch, whereby in use when said manually operable switch disables said electronic timer and said electronic switch, said gas valve will be in the fully-open position when said room thermostat is closed and in the fully-closed position when said room thermostat is open;

control wiring connected to said switch for connection to controls of said furnace;

a rectifier network connected between said double pole switch and said time constant network for supplying said time constant network and said electronic timer with a rectified D.C. voltage when said double pole switch is connected to a supply of A.C. voltage; and

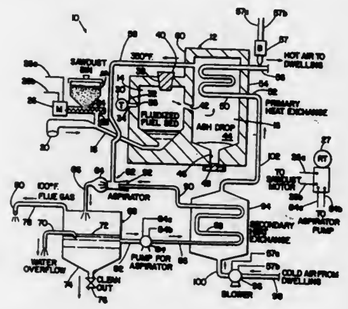
a safety thermostat mounted in said housing and connected in a parallel across said electronic switch for energizing said valve independently of said electronic switch when the ambient temperature in the vicinity of said housing drops below a pre-determined minimum value and said manually operable switch has not been operated to disable said electronic timer and said electronic switch, said safety thermostat preventing the ambient temperature of the room from dropping to freezing in the event of a failure of the electronic gas valve pulsator.

4,552,305

FURNACE

Reagan Houston, 252 Foxhunt Dr., Long John Mountain, Hendersonville, N.C. 28739

Filed Mar. 25, 1985, Ser. No. 717,941
Int. Cl.[4] F24D *5/10*; F23G *5/02*; F22B *1/02*
U.S. Cl. 237—69 **6 Claims**



5. A furnace comprising,

a combustion chamber and a separate heat exchange chamber and a transfer port connecting said combustion chamber and said heat exchange chamber in gas flow relationship,

heat exchange means in said heat exchange chamber and means for circulating heat exchange fluid in heat exchange relationship with said heat exchange means,

inlet means for fuel and, combustion air into said combustion chamber and means for feeding fuel and air at controlled ratio into said combustion chamber to produce combustion of fuel into gases of combustion,

an aspirator having a suction port and an outlet, said suction port connected in gas flow relationship to said heat exchange chamber to receive gases of combustion from said heat exchange chamber,

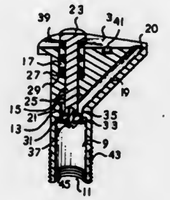
and means for circulating fluid through said aspirator thereby reducing pressure in said suction port to reduce pressure in said heat exchange chamber and in said transfer port and in said combustion chamber to cause combustion air to flow into said combustion chamber through said inlet for combustion air.

4,552,306

DRINKING FOUNTAIN DEVICE AND COMBINATION SINK AND DRINKING FOUNTAIN DEVICE

Alfred A. Litwak, Box 40, R.D. 1, Frenchtown, N.J. 08825, and Laurene H. O'Donnell, R.D. 1, Box 333AA, Milford, N.J. 08848

Filed Oct. 26, 1982, Ser. No. 436,848
Int. Cl.[4] E03B *9/20*
U.S. Cl. 239—29 **3 Claims**



1. A single-stream drinking fountain device for substantially horizontal mounting, said device comprising

a bracket having a substantially planar top surface and a bottom surface spaced apart from (each other) said top surface, said bottom surface forming a substantially horizontal plane at said baseline, said bracket having an orifice in said top surface,

a housing (connected to said bottom surface of said bracket and) extending downward (therefrom) from said bottom surface, said housing containing (faucet) valve means located essentially below said baseline, said (faucet) valve means having an inlet and an outlet, said inlet being connectable to a source of water, said water retarded from passing through said inlet to said outlet by an off-on mechanism located at said top surface of said bracket and being substantially flush with said top surface and having a linkage through said housing to said (faucet) valve means, said off-on mechanism and said orifice both located in the same planar portion of said top surface, and

a single conduit connected between said outlet of said (faucet) valve means and said top surface orifice, said conduit projecting upwardly from said (faucet) valve means to connect said (faucet) valve means with said orifice so that water passing through said (faucet) valve means also passes through said top surface orifice in a generally upwardly moving direction.

4,552,307

PET REPELLENT DEVICE

Yolanda Stedham, 823 N. Austin Ave., Apt. 2, Inglewood, Calif. 90302

Filed Aug. 3, 1983, Ser. No. 519,968
Int. Cl.[4] A01M *13/00*
U.S. Cl. 239—57 **1 Claim**

1. A device for holding and dispensing pet repellent comprising:

pet repellent;

a container for holding said repellent;

means for standing said container on the ground;

venting means consisting of two holes in the top of said container;

a vent cap symetrically located over each of said holes, said vent cap having a hemispherical dome shape slightly larger than said holes on the top of said container;

adjusting means of said venting means, said adjusting means of said venting means consisting of a bolt with a locknut attached thereto, said bolt mating with a nut attached to a web member in said holes in said container whereby turning said bolt and adjusting and tightening said locknut changes and fixes the gap between said cap and a circular ridge on said container and therefore changes the rate of venting said repellent to the atmosphere.

4,552,308

TURBINE ENGINE VARIABLE GEOMETRY DEVICE

Casimir Rogo, Mt. Clemens, and Herman N. Lenz, Lambertville, both of Mich., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 22, 1980, Ser. No. 199,469
Int. Cl.[4] B05B *15/00*
U.S. Cl. 239—457 **10 Claims**

1. A turbine nozzle for a turbine engine comprising:

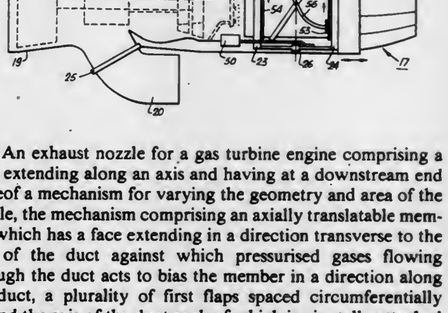
a support housing,

a combustion chamber contained within the support housing and having an exhaust outlet,

said support housing having a pair of spaced walls which form an annular nozzle passageway having its outer end open to said exhaust outlet,

said nozzle passageway having an annular opening formed along one nozzle wall,

an annular ring slidably mounted in said opening and having an axial end exposed to said nozzle passageway,



means for moving said ring transversely across said passageway between a retracted position and an extended position in which said ring protrudes into and restricts said nozzle passageway, and

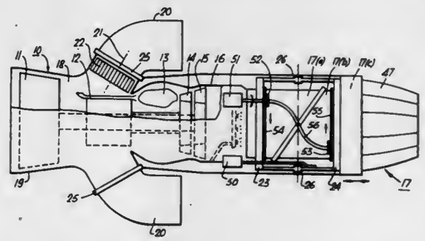
a plurality of circumferentially spaced vanes secured to the other nozzle wall and protruding into said nozzle passageway and wherein said ring includes a plurality of slots which register with and slidably receive said vanes.

4,552,309

VARIABLE GEOMETRY NOZZLES FOR TURBOMACHINES

Gary F. Szuminski, Marietta, Ga., and Thomas J. Jones, Bristol, England, assignors to Rolls-Royce Inc., New York, N.Y. and Rolls-Royce Limited, London, England

Continuation of Ser. No. 376,389, Apr. 7, 1982, abandoned. This application Jan. 30, 1985, Ser. No. 696,869
Int. Cl.[4] B63H *11/10*
U.S. Cl. 239—265.19 **7 Claims**



1. An exhaust nozzle for a gas turbine engine comprising a duct extending along an axis and having at a downstream end thereof a mechanism for varying the geometry and area of the nozzle, the mechanism comprising an axially translatable member which has a face extending in a direction transverse to the axis of the duct against which pressurised gases flowing through the duct acts to bias the member in a direction along the duct, a plurality of first flaps spaced circumferentially around the axis of the duct each of which is pivotally attached at its upstream end to the axially translatable member, each first flap being provided with a cam follower that co-operates with a cam that is fixed relative to the fixed duct thereby to define the attitude of each first flap relative to the member, a

plurality of first seal plates each of which is pivotally attached at an upstream end to the member and positioned to cover the gap between adjacent first flaps, a set of circumferentially spaced second flaps each of which is pivotally attached at its upstream end to the downstream end of a first flap, a plurality of second seal plates each of which is pivotally attached at an upstream end to the downstream end of one of the first seal plates and positioned to cover the gap between two adjacent second flaps, a plurality of struts each of which is pivotally connected at one end to the member and pivotally connected at another end to a second flap at a region of the second flap downstream of the pivotal attachment of the second flap to the first flap, and a plurality of third flaps each of which is pivotally attached at one end to the member and pivotally attached at its other end to the downstream end of one of the second flaps.

4,552,310

FUEL INJECTION NOZZLES

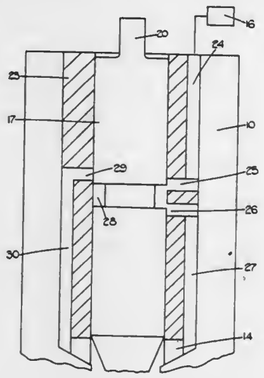
David J. Gaskell, Sudbury, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jun. 29, 1984, Ser. No. 626,070

Claims priority, application United Kingdom, Jul. 16, 1983, 8319284

Int. Cl.⁴ F02M *47/06*

U.S. Cl. 239—533.5 **4 Claims**



1. A fuel injection nozzle of the so-called inwardly opening type comnprising a nozzle body, a blind bore formed in the body, a seating defined at the blind end of the bore, a valve member slidable in the bore, one end of the valve member being shaped to co-operate with said seating, resilient means for biasing the valve member into contact with the seating, a fuel inlet in the body, said valve member defining an area against which fuel under pressure supplied to said inlet can act to lift the valve member away from the seating thereby to allow fuel flow through an outlet, first and second flow paths through which fuel flows from said inlet to act upon said area of the valve member and to said outlet, said first flow path including a restrictor the degree of restriction offered by the restrictor increasing as the valve member moves away from the seating, said second flow path being closed when the valve member is in contact with the seating but opening when the valve member has moved a predetermined distance away from the seating, said second flow path when opened, offering decreasing restriction to the flow of fuel as the valve member continues to move away from the seating.

4,552,311

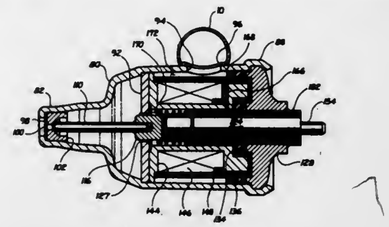
LOW COST UNITIZED FUEL INJECTION SYSTEM

Gary L. Casey, Troy, Mich., assignor to Allied Corporation

Filed Sep. 23, 1983, Ser. No. 535,009

Int. Cl.⁴ B05B *1/30*

U.S. Cl. 239—585 **31 Claims**



1. A unitized fuel injection system comprising:

a unitized fuel rail having a tubular rail member having an input at one end for receiving fuel under pressure and a plurality of output apertures disposed at predetermined positions along its length, a fuel pressure regulator permanently attached to the opposite end of said rail member for controlling the pressure of the fuel in the rail member, and a plurality of cylindrical valve housings, one of said valve housings permanently attached to said rail member coincident with each of said outlet apertures; each of said valve housings having a forward necked down section, an annular end face partially enclosing the end of said necked down section, a body section attached directly to said rail member, and an intermediate section interconnecting said necked down section with said body section, each of said body sections having a fuel inlet aperture mating with said outlet aperture interconnecting the interior of said valve housing with the interior of said rail member;

a metering plate disposed in each of said valve housings abutting said annular end face, said metering plate haaving an axially disposed metering orifice;

a stationary valve member pressed into the necked down section of each valve housing and captivating said metering plate against said annular end face, each of said stationary valve members having an axial aperture intercepting said metering orifice at its forward end and terminating in a conical valve seat;

a light weight movable valve assembly concentrically disposed in each of said valve housings, each of said movable valve assemblies comprising a magnetically susceptible armature and a coaxial valve stem having one end attached to said armature and an opposite end having a spherical surface engaging said conical valve seat;

a magnetically susceptible end cap enclosing the rear end of each valve housing, each of said end caps having a central aperture and at least one terminal aperture;

a magnetically susceptible cylindrical stator concentrically disposed in each of said valve housings, one end of said stator received in the central aperture of said end cap and structurally supported therefrom, the other end of said stator separated from said armature by a predetermined distance; and

a resilient member disposed in each valve housing between said stator and said armature urging the spherical surface of the valve stem into engagement with said conical valve seat with a predetermined force;

a cylindrical coil assembly disposed in each of said valve housings circumscribing said armature and said stator, each of said coil assemblies including a bobbin having a pair of electrically conductive terminals protruding external to said valve housing through said at least one terminal aperture of said end cap, a radial fluid vent connecting the entrapped space between said bobbin, said armature and said stator with the space between said bobbin and said

housing, and a solenoid coil wound on said bobbin having one of its ends connected to one of said pair of electrical terminals and the other end connected to the other of said pair of electrical terminals.

4,552,312

FUEL INJECTION VALVE

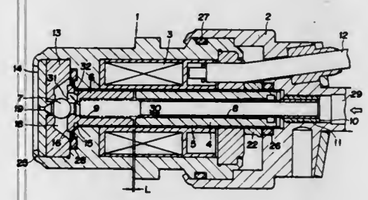
Yasuo Ohno; Tadashi Seino; Yukio Ueno; Kenji Kariyama; Shinji Utsugi, and Shigeo Okada, all of Iwate, Japan, assignors to Toboku Mikuni Kogyo Kabushiki Kaisha, Japan

Filed Jan. 9, 1984, Ser. No. 569,167

Claims priority, application Japan, Jan. 14, 1983, 58-3325; Feb. 28, 1983, 58-27012[U]

Int. Cl.⁴ B05B *1/30*

U.S. Cl. 239—585 **9 Claims**



1. An electromagnetic fuel injection valve having a body of magnetic material, a core and a hollow plunger disposed in the body and formed with a fuel passage communicating with a valve chamber, a ball valve secured to the end of the plunger and separably associated with a seat member, and a solenoid coil for opening the ball valve upon energization thereof to eject fuel comprising:

a guide pipe surrounded on the outer periphery of said core and extended at the end thereof to said valve chamber, and

a stopper formed between the extended end of said guide pipe and the protruded end of said plunger at the valve chamber side engaged within said guide pipe for restricting the stroke of said plunger.

4,552,313

METHOD AND APPARATUS FOR SWITCHING YARN IN TURRET-TYPE WINDER

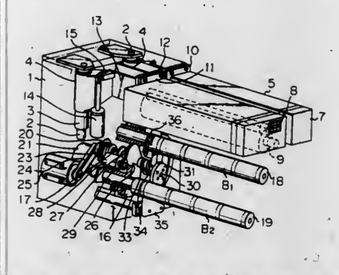
Yasusuke Sasaki, Osaka, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Jun. 7, 1984, Ser. No. 618,164

Claims priority, application Japan, Jun. 7, 1983, 58-100145

Int. Cl.⁴ B65H *54/06, 54/42, 67/04*

U.S. Cl. 242—18 A **15 Claims**



1. A method for switching yarn in a turret type automatic winder in which a pair of bobbin holders are arranged on a rotatable turret with each bobbin holder being capable of alternately occupying a winding position and a doffing position upon every half turn of said turret comprising

continuously taking up a yarn on a bobbin held on one bobbin holder in the winding position to form a package while an empty bobbin is held on the other bobbin holder in the doffing position,

switching the yarn from the package to the empty bobbin when the package grows to a predetermined size by rotating said turret a half turn, and

accelerating each of said bobbins prior to switching of the yarn from the package to the empty bobbin so that a proper yarn tension is maintained including positively increasing the driving torque for accelerating said bobbin holder carrying the package in a manner corresponding to the growth in size of the package.

4,552,314

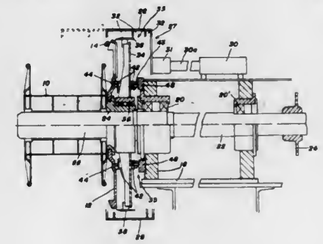
METHOD AND APPARATUS FOR FIXING AN END OF A COILED WIRE ON A TAKE UP SPOOL

Masahisa Noguchi, Chiba, and Kazuji Kaneda, Ichihara, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,872

Int. Cl.⁴ B65H *75/28*

U.S. Cl. 242—25 R **17 Claims**



5. An apparatus for securing a terminating end of a coiled wire on a take up spool on a wire take up apparatus which comprises a catching plate integrally rotating with said take up spool and having a catching pawl to catch an initiating end of the wire to be coiled on said take up spool, said apparatus characterized in that said catching pawl has a catching portion to catch said terminating end of said coiled wire and further comprising wire introduction means including a wire introduction cover disposed so as to cover said catching plate and said take up spool and having means to introduce said terminating end of said wire toward said catching pawl so that said initiating and terminating ends of said wire intersect, and a power source to relatively move said wire introduction cover and said spool between an advanced position in which said wire introduction cover surrounds said take up spool and a retracted position in which said take up spool is relieved out of said wire introduction cover; and means to fix intersecting portions of said initiating and terminating ends of said wire to each other.

4,552,315

ROLLED WEB DISPENSER

Maurice Granger, 17 rue Marcel Pagnol, 42270 Saint-Priest-en-Jarez, France

Filed Sep. 19, 1983, Ser. No. 533,661

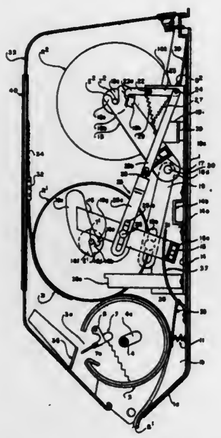
Claims priority, application France, Jan. 13, 1983, 83 00737; Jun. 21, 1983, 83 10533

Int. Cl.⁴ B65H *19/04*

U.S. Cl. 242—55.3 **16 Claims**

1. A dispensing device for rolled webs comprising a roll being used supported by a first support and a spare roll supported by a second support, a rigid structure having the two supports pivotally mounted thereon, a small rod linked hingedly to the two supports, wherein the roll being used is ejected and the spare roll is transferred automatically to the first support; means linked hingedly to the first support releas-

ing the second support from the connecting means when the roll being used is almost entirely paid off; an interlocking

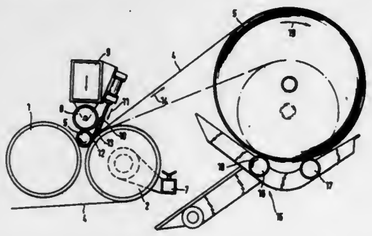


means for controlling the support of the spare roll, and a spring which urges back the first support with its fresh roll.

4,552,316
METHOD AND APPARATUS FOR WINDING WEBS OF CELLULOSE

Hartmut Dropczynski, Dormagen, and Peter Trilling, Wuppertal, both of Fed. Rep. of Germany, assignors to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,086
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244966
Int. Cl.⁴ B65H *19/20, 17/08*
U.S. Cl. 242—56 R **4 Claims**

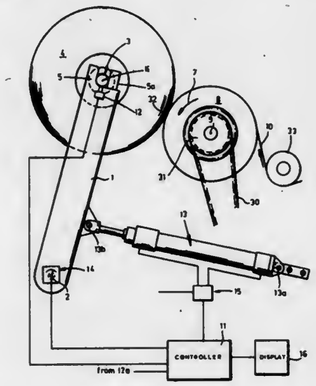


3. In an apparatus for winding a web of cellulose on a core tube while under tension, including means for separating the web after a predetermined amount of web has been wound on a first core tube, the improvement comprising means for partly looping the web around a next core tube prior to separation of the web and while the web is still under tension, means for forcing the web down to almost completely wrap around said next core tube and for wetting the web transversely to the direction of travel to effect separation while ensuring that said next core tube is completely looped.

4,552,317
APPARATUS FOR COILING A SYNTHETIC RESIN FOIL WEB

Hartmut Halter, Ruppichteroth, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,609
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1983, 3335713
Int. Cl.⁴ B65H *17/08, 23/00*
U.S. Cl. 242—65 **5 Claims**



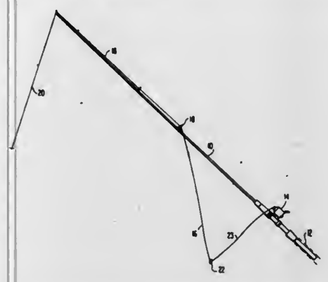
1. An apparatus for coiling a coil web which comprises:
a pair of mutually parallel spaced apart arms pivotal about a horizontal axis at lower ends of said arms and having upper ends formed with lodgements adapted to support a coil formed by a foil web;
a contact drum adapted to apply said foil web to said coil;
drive means connected with said contact drum for rotating same and thereby rotating said coil, said coil bearing by its weight upon said contact drum;
a control member connected to at least one of said arms for regulating the pressure with which said coil bears on said drum;
at least one force sensor on said arms responsive to a force component of the weight of said coil parallel to said arms;
an angle sensor responsive to the inclination of said arms; and
a controller receiving inputs from said sensors and connected to said member for controlling the pressure with which said coil bears against said drum.

4,552,318
FISH STRIKE INDICATOR

B. Elwood Durham, Southern Ave., Kannapolis, N.C. 28081

Filed Jul. 26, 1983, Ser. No. 517,266
Int. Cl.⁴ A01K *89/01*
U.S. Cl. 242—84.1 K **10 Claims**

1. For use with a closed face fishing reel having a front face portion and including an opening for a fishing line in the front face portion, a fish strike indicator comprising:
(a) an annular indicating member adapted to be received on a fishing line with the line extending through the opening in said annular member, so that said annular member and line may move freely with respect to each other;
(b) a tubular member for removably supporting said annular indicating member, said tubular member being formed for attachment to said front face portion surrounding the opening in said front face portion;
(c) said annular indicating member being dimensioned to frictionally engage said tubular member when not in use;
(d) said annular indicating member being removable from said tubular member for use and being supported during such use in slack formed in the line;

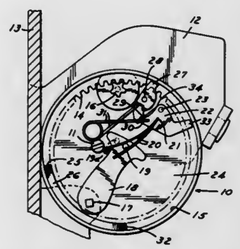


(e) said annular indicating member being caused to move up and down when the line is moved by a striking fish to provide a visible indication of the strike.

4,552,319
COMBINATION VSI AND ALR RETRACTOR

James A. Gavagan, Centerline, and Jerry Motyka, Detroit, both of Mich., assignors to Irvin Industries Inc., Rochester Hills, Mich.

Filed Dec. 14, 1983, Ser. No. 561,323
Int. Cl.⁴ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **5 Claims**

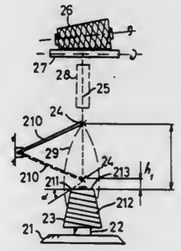


1. Combination vehicle sensitive inertia, and automatic locking retractor, comprising a vehicle sensitive inertia retractor having spring wind-up webbing reel means with a ratchet and a latch bar normally actuated by inertia means for locking the reel means against webbing extraction, and supplemental means biasing the latch bar toward extraction locking ratchet engagement in response to full webbing extraction beyond occupant restraining position to cause said retractor upon webbing spring wind-up to a passenger restraining position to automatically lock in an automatic locking retractor mode against extraction without inertia actuation, said supplemental means including gearing responsive to reel rotation for sensing full webbing extraction and retraction, latch bar biasing control detent lever means movable between an automatic locking retractor position and a vehicle sensitive inertia position modes by said gearing at extremities of said webbing extraction and retraction, said detent lever means including a pair of separate noncoaxially pivotally mounted interengaging levers, and detent means on said levers to maintain said detent lever means in said automatic locking retractor position or said vehicle sensitive inertia position when the webbing is wound on or off the reel an amount between the extremities of webbing extraction and retraction, and means responsive to said lever means for restoring normal vehicle sensitive inertia operation upon full belt retraction beyond occupant restraining position.

4,552,320
METHOD AND APPARATUS FOR FORMING SNARL-FREE THREAD RESERVES

Olivier Wüst, Seuzach, Switzerland, assignor to Maschinenfabrik Schrärer AG, Erlenbach, Switzerland

Filed Apr. 4, 1983, Ser. No. 482,037
Claims priority, application Switzerland, Apr. 20, 1982, 2373/82; Sep. 29, 1982, 5772/82
Int. Cl.⁴ B65H *49/00, 69/04*
U.S. Cl. 242—128 **26 Claims**

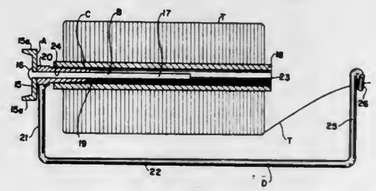


15. A winding machine or the like comprising:
a donning mandrel;
a delivery bobbin mounted on said donning mandrel;
a winding bobbin for winding-up one or a number of threads running towards the same;
drive means for driving said winding bobbin;
a thread guide arranged substantially coaxially with respect to and at a distance from said donning mandrel;
means for reducing the angle of a thread extending between said delivery bobbin and said thread guide;
a tube provided for the delivery bobbin;
an extension having an end and forming an axial prolongation attached to said tube of said delivery bobbin; and
said thread being deflectable at said extension so as to form an angle of $<60°$ with an end face of said delivery bobbin.

4,552,321
STRAND GUIDE

Marc A. Raeckelboom, Rte. 3, Box 501, Simpsonville, S.C. 29681

Filed Feb. 6, 1984, Ser. No. 577,490
Int. Cl.⁴ B65H *49/02;* **D03J** *5/08*
U.S. Cl. 242—130 **5 Claims**



1. A creel for supporting a plurality of yarn packages having a tubular core member comprising:
an upright frame having a plurality of spaced outwardly projecting elongated members for loosely receiving said tubular core member of said yarn packages;
elongated package positioning members each having an outer surface tapering inwardly toward an insertable end receivable within said tubular core member for snugly receiving said package thereon;
a longitudinal bore within each said elongated package positioning member loosely receivable upon said spaced outwardly projecting elongated members; and
an offset support carried by each of said package positioning

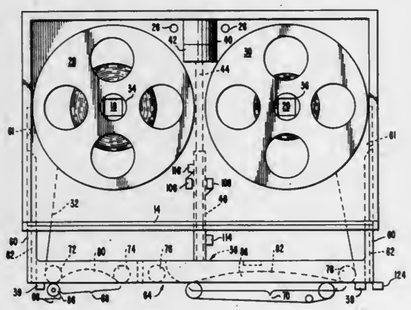
members remote from said insertable ends supporting a yarn guide for feeding yarn from said packages.

4,552,322

CASSETTE APPARATUS FOR STORING LIGHT SENSITIVE, HEAT DEVELOPABLE FILM

John B. S. Waugh, Mountain Lakes, N.J., assignor to LASERstore, Ltd., Hamilton, Bermuda

Filed Aug. 6, 1984, Ser. No. 638,227
Int. Cl.⁴ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **19 Claims**



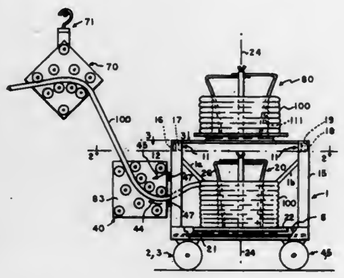
15. A cassette system comprising:
a housing;
a supply spool located in said housing;
a take-up spool located in said housing;
film means for storing information connected to said supply spool and to said take up spool;
movable door means connected to said housing for preventing light from entering said housing when said door means is closed;
film carrier means for supporting a portion of said film means;
motor means for propelling said film carrier means and a portion of said film means outside of said housing when said door means is open;
spool drive means; and,
spool engaging means responsive to the movement of said door means for causing said spool drive means to drivingly engage said supply and take up spools.

4,552,323

CABLE DISPENSING APPARATUS

John F. Otis, 11 Power Rd., Westford, Mass. 01824

Filed Oct. 11, 1984, Ser. No. 659,640
Int. Cl.⁴ B65H *75/40*, *49/00*
U.S. Cl. 242—865 R **6 Claims**



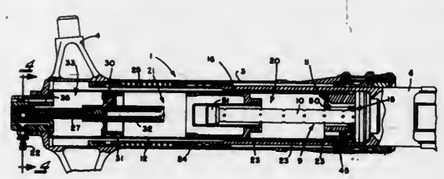
1. Apparatus for dispensing cable from a coil of the cable contained in the apparatus comprising,
(a) a freestanding cart,
(b) at least two interchangeable cable coil holding reels, each including a spool for holding a coil of cable, mounted on a turntable platform, the spool axis of rotation being perpendicular to the plane of said platform,
(c) each of said cable coil holding reel platforms has four outside corners providing four points of support therefor,
(d) means in said cart providing at least two shelves spaced apart one above another a distance sufficient to clear the height of one of said cable coil holding reels, each of said shelves for holding one said cable coil holding reels at said four points of support therefor,
(e) each shelf holding one of said cable coil holding reels in a position from which cable can be dispensed from the outside of said coil held thereby,
(f) one of said cart shelves is a bottom shelf that supports one of said cable coil reels at the bottom of said cart,
(g) said cart shelves above said bottom shelf thereof being sufficiently open at the center thereof that said cable coil holding reels can be lifted, each from the shelf it is held on, from said cart through said center openings in said shelves above.

4,552,324

LANDING GEAR MECHANISM FOR USE ON ROUGH RUNWAYS

Louis C. Hrusch, Chesterland, Ohio, assignor to Pneumo Corporation, Boston, Mass.

Filed May 31, 1983, Ser. No. 499,217
Int. Cl.⁴ B64C *25/60*
U.S. Cl. 244—104 FP **66 Claims**



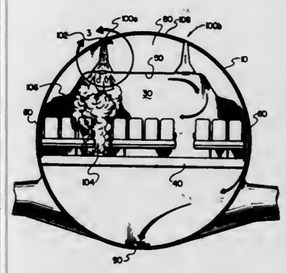
1. A landing gear mechanism comprising a main cylinder, a main strut piston axially movable within said main cylinder, means for controlling the rate of instroke of said main strut piston within said main cylinder including restrictor means defining with the outboard end of said main strut piston a lower piston chamber therebetween, said restrictor means having a restricted flow passage therethrough for controlling the rate of flow of hydraulic fluid between said lower piston chamber and the opposite side of said restrictor means, overload relief valve means for relieving excess pressure from said lower piston chamber in the event that an overpressure condition should develop during instroke movements of said landing gear mechanism while taxiing, and means for blocking communication between said overload relief valve means and said lower piston chamber during landing, said means for blocking communication between said overload relief valve means and said lower piston chamber comprising a rotary valve vane movable between a first position covering said overload relief valve means during landing and a second position uncovering said overload relief valve means after landing has taken place.

4,552,325

EMERGENCY SMOKE DISPOSAL SYSTEM FOR PRESSURIZED AIRCRAFT

Wilhelm A. Bruensicke, Santa Monica, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Sep. 24, 1982, Ser. No. 422,934
Int. Cl.⁴ B64D *13/00*, *25/00*
U.S. Cl. 244—118.5 **9 Claims**



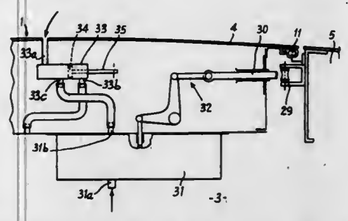
1. A smoke evacuation system for a vehicle comprising:
a skin opening defined in an outer skin separating an interior compartment within said vehicle from an exterior environment surrounding said vehicle, said interior being capable of being maintained at a positive differential pressure with respect to said exterior;
a cover plate for covering said opening and thereby preventing any flow of air therethrough;
means for ejecting said cover plate from said opening; and
a smoke disposal chute having a first end in fluid communication with a region within said compartment at which smoke may be expected to collect and a second end in fluid communication with said opening;
whereby when said cover plate is ejected from said opening, any smoke-laden air in said region will be forced through said opening and evacuated into said external environment as a result of said positive pressure differential.

4,552,326

SAFETY DEVICE FOR OPENING AN OUTWARDLY OPENING AIRCRAFT DOOR IN THE EVENT OF EXCESS PRESSURE INSIDE THIS AIRCRAFT AND DOOR EQUIPPED THEREWITH

Jean Bokalot, Toulouse, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Jun. 26, 1984, Ser. No. 624,816
Claims priority, application France, Jul. 8, 1983, 83 11451
Int. Cl.⁴ B64C *1/14*
U.S. Cl. 244—129.5 **7 Claims**



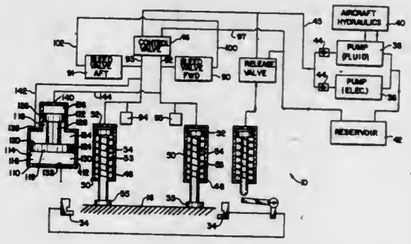
1. Safety device for an aircraft door opening outwardly by a preliminary movement enabling stops borne by said door to be disengaged from stops borne by the frame thereof, after which complete opening of the door is obtained by a simple thrust or pull, said safety device comprising at least one mobile lock and one stop, one mounted on the door and the other on the frame thereof and adapted to cooperate with one another to interrupt the prior movement of disengagement of the stops on the door and the stops on the frame, said mobile lock being controlled by manometric means receiving the pressures inside and outside of the aircraft, so that said mobile lock takes a retracted position, for which it cannot cooperate with said stop when said inside pressure is substantially equal to the outside pressure, and a projecting position for which it can cooperate with said stop when said inside pressure is greater than the outside pressure, said safety device being applied to said door, which has to be able to open quickly if necessary, by actuation of a special handle, and there being means adapted to inhibit the action of said mobile lock and controlled by said special handle.

4,552,327

HYDRAULIC EJECTOR

William R. Carter, Jamestown, N. Dak., assignor to Western Gear Corporation, Jamestown, N. Dak.

Filed Sep. 19, 1983, Ser. No. 533,675
Int. Cl.⁴ B64D *1/12*
U.S. Cl. 244—137 R **10 Claims**



1. A hydraulic system for controlling the ejection of a store from an aircraft comprising:
a control means having an inlet means adapted to be connected to a source of pressurized hydraulic fluid and an outlet means, said control means having operable means for selectively hydraulically connecting and disconnecting said inlet means to said outlet means;
a pair of ejector units having movable members which define variable volume hydraulic chambers within said ejector units, respectively, said movable members having an exterior portion adapted to engage a store, said chambers each being of a selected minimum volume when said movable members are in engagement with a store, said chambers increasing in volume to move said movable members to eject a store,
an accumulator having a sealed gas chamber with a gas therein at a pressure less than the pressure of such a source, said accumulator having a movable member defining a pair of variable volume accumulator chambers which simultaneously increase in volume as the volume of said gas chamber decreases as the accumulator is charged, said gas chamber and said accumulator chambers changing in the reverse manner when said accumulator is discharged,
conduit means simultaneously connecting said outlet means to said variable volume chambers of said ejector units and to said accumulator chambers, respectively, whereby when said operable means connects said inlet means to said outlet means, the pressurized hydraulic fluid from such a source simultaneously biases said movable members of said ejector units into engagement with such a store and charges said accumulator by moving said movable member thereof to compress the gas in said gas chamber and whereby, when said inlet means is thereafter disconnected from said outlet means, said store can be ejected by said movable members of said ejector units under the effect of the gas within said gas chamber upon said movable member of said accumulator.

4,552,328

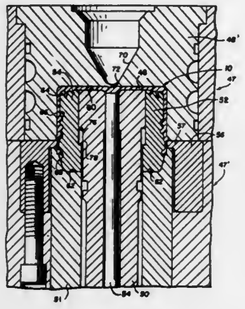
MOLD FOR MAKING TAMPER-PROOF CLOSURE

Herbert V. Dutt, and Paul A. Santostasi, both of Sarasota, Fla., assignors to Sun Coast Plastics, Inc., Sarasota, Fla.

Division of Ser. No. 567,077, Jan. 5, 1984, Pat. No. 4,526,282, and a continuation of Ser. No. 491,673, May 5, 1983, abandoned. This application Mar. 1, 1985, Ser. No. 707,364

Int. Cl.⁴ B29C *1/00, 7/00;* **B29D** *1/00;* **B29F** *1/14*

U.S. Cl. 249—67 **5 Claims**



1. A mold for forming a closure cap having a closure shell and an integrally formed tamper-proof security ring secured thereto by frangible ribs, comprising:

upper and lower mold portions cooperating to define, in a closed position, a closure cap cavity;

a movable core ring mounted on said lower mold portion and adapted to engage the inner surface of a closure cap formed in said cavity;

an annular stripper ring including inwardly extending projection having a generally axially extending interior mold face adapted to cooperate with said moveable core ring to define a part of said closure cap cavity and adapted to engage the outer surface of a closure cap formed in said cavity, said stripper ring including a first transverse surface which intersects a generally axially extending first portion of said interior mold face to define a first stripper ring shoulder adapted to engage a corresponding shoulder defined on the skirt portion of a closure cap formed in said closure cap cavity.

4,552,329

CARBON FIBER-REINFORCED GYPSUM MODELS AND FORMING MOLDS

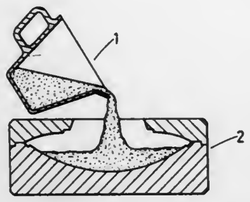
Yoshiaki Hattori, Yokkaichi, and Makoto Ishihara, Ama, both of Japan, assignors to Noritake Co., Limited, Nagoya, Japan

Filed Apr. 19, 1984, Ser. No. 601,851

Claims priority, application Japan, Apr. 19, 1983, 58-068954; Apr. 23, 1983, 58-071963

Int. Cl.⁴ B28B *1/26;* **B29C** *5/00*

U.S. Cl. 249—134 **13 Claims**



1. A carbon fiber-reinforced gypsum model comprising a gypsum structure of a matrix, said structure of a matrix comprising gypsum and from 5 to 200 mm long carbon fibers uniformly dispersed therein in the form of single fibers in an amount rainging from 0.008 to 2.0 wt % based on said gypsum.

4,552,330

PRESSURE MEDIUM ACTUATED VALVE

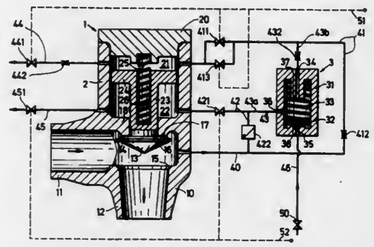
Karl H. Grotloh, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 17, 1984, Ser. No. 611,091

Claims priority, application Switzerland, May 19, 1983, 2731/83; Jan. 10, 1984, 410/84

Int. Cl.⁴ F16K *31/124*

U.S. Cl. 251—30.01 **14 Claims**



1. A pressure medium actuated valve comprising

a body having a pressure zone, an inlet port for connection to a pressure medium source to deliver a pressure medium to said zone, an outlet port,, and a cylinder sealingly spaced from said zone;

a closure member for selectively opening and closing said outlet port;

a servopiston slidably disposed in said cylinder to sub-divide said cylinder into a first cylinder space which increases in size during transition of said servopiston from a working position to a safety position and a second cylinder space which decreases in size during said transition;

a rod connecting said servopiston to said closure member to permit movement of said closure member with said servopiston;

at least one spring in said cylinder for biasing said servopiston towards said safety position;

a first relief conduit extending from said first cylinder space to at least one pressure medium sink;

a first control valve in said first relief conduit;

a second relief conduit extending from said second cylinder space to at least one pressure medium sink;

a second control valve in said second relief conduit;

a first connecting conduit communicating said pressure zone in said body with said first cylinder space;

at least one control valve in said first connecting conduit;

a second connecting conduit communicating said pressure zone in said body with said second cylinder space;

at least one control valve in said second connecting conduit;

a non-return valve in said second connecting conduit for preventing a flow of pressure medium from said second cylinder space to said pressure zone;

a third connecting conduit connecting a first flow path with a second flow path, said first flow path extending through said first connecting conduit, said first cylinder space and said first relief conduit to said first control valve and said second flow path extending through said second connecting conduit from said non-return valve, said second cylinder space and said second relief conduit to said second control valve;

a double-action non-return valve connected in said third connecting circuit; and

an external medium conduit connected to said double-action valve to deliver a pressure medium thereto, said double-action valve having a first position communicating said first flow path with said second flow path and a second position communicating said external medium conduit with said second flow path.

14. A pressure medium actuated valve comprising

a body having a pressure zone, an inlet port for connection to a pressure medium source to deliver a pressure medium to said zone, an outlet port, and a cylinder sealingly spaced from said zone;

a closure member for selectively opening and closing said outlet port;

a servopiston slidably disposed in said cylinder to sub-divide said cylinder into a first cylinder space which increases in size during transition of said servopiston from a working position to a safety position and a second cylinder space which decreases in size during said transition;

a rod connecting said servopiston to said closure member to permit movement of said closure member with said servopiston;

at least one spring in said cylinder for biasing said servopiston towards said safety position;

a first relief conduit extending from said first cylinder space to at least one pressure medium sink;

a first control valve in said first relief conduit;

a second relief conduit extending from said second cylinder space to at least one pressure medium sink;

a first connecting conduit communicating said pressure zone in said body with said first cylinder space;

at least one control valve in said first connecting conduit;

a second connecting conduit communicating said pressure zone in said body with said second cylinder space;

at least one control valve in said second connecting conduit;

a non-return valve in said second connecting conduit for preventing a flow of pressure medium from said second cylinder space to said pressure zone;

a third connecting conduit connecting a first flow path with a second flow path, said first flow path extending through said first connecting conduit, said first cylinder space and said first relief conduit to said first control valve and said second flow path extending through said second connecting conduit from said non-return valve, said second cylinder space and said second relief conduit to said second control valve, said third connecting conduit being connected to said first flow path between said first cylinder space and said control valve in said first connecting conduit and to said second flow path between said second cylinder space and said control valve in said second connecting conduit;

a removable wall portion mounted on said cylinder to define a part of said third connecting conduit; and

a constriction within said wall portion for calibrating a flow through said third connecting conduit.

4,552,331

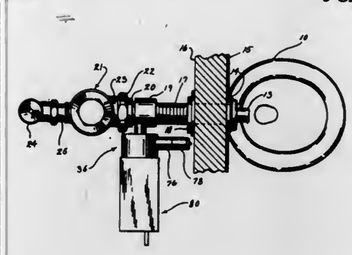
REMOTELY CONTROLLABLE RESET MECHANISM FOR A VACUUM-ACTUATED SYSTEM

William A. Smart, Jr., Germantown, Wis., assignor to Bradley Corporation, Menomonee Falls, Wis.

Filed Aug. 3, 1984, Ser. No. 637,296

Int. Cl.⁴ F16K *31/02, 35/00, 37/00*

U.S. Cl. 251—95 **6 Claims**



1. A reset mechanism for a fluid-valve assembly with a lockout device of the type having a reciprocally movable reset stem that moves in a vacuum-actuated stroke when a partial vacuum is drawn in a vacuum chamber of the lockout device to lock an actuator for the fluid-valve assembly, the reset mechanism comprising:

the reset stem having a passageway extending from the vacuum chamber to a port outside a lockout device housing;

valve means in the passageway biased to a position closing the passageway; and

a solenoid with an operating stem coupled to the valve means, and coupled to the reset stem with a lost motion connection, the solenoid being energized to move its operating stem and the reset stem on a reset stroke opposite in direction from the vacuum-actuated stroke, wherein the valve means is opened in a first portion of the reset stroke to relieve the vacuum in the vacuum chamber during a lost motion movement through the lost motion connection, and wherein the reset stem is moved in a second portion of the reset stroke following the lost motion movement to withdraw the reset stem from a vacuum-actuated position to unlock the actuator of the fluid-valve assembly.

4,552,332

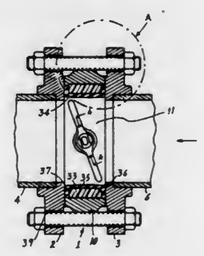
BUTTERFLY VALVE, ESPECIALLY FOR DEAD-END SERVICE

Henry R. Sonderegger, Barrington, and Charles Chatterley, Coventry, both of R.I., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 27, 1984, Ser. No. 624,865

Int. Cl.⁴ F16K *51/00*

U.S. Cl. 251—148 **7 Claims**



1. A butterfly valve, comprising

a valve body bounding a passage centered on an axis and having two axially spaced end portions and an intermediate region therebetween, said valve body having at least one detaining projection extending radially inwardly into said passage at one of said end portions;

a disc-shaped valve member mounted in said valve body for turning about a turning axis extending transversely of said passage between a closing position in which said valve member extends across said passage at said intermediate region, and a fully open position in which said valve member extends substantially along said axis of said passage, through a plurality of partially open positions; and

means for sealing said valve member in said passage, including an annular sealing element extending around said axis of said passage, said sealing element including a support ring having two oppositely facing axial faces one of which faces toward said detaining projection and an outer circumferential surface of an outline substantially corresponding to the cross-sectional shape of said passage at said intermediate region, and an elastically yieldable sealing ring at least partially embedding said support ring but exposing at least a zone of said one axial face of said support ring which is substantially coextensive with said

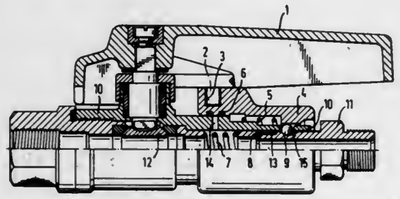
detaining projection of said valve body for said zone to abut said projection, said sealing means further including at least one rigid holding member connected to said valve body and having an axial contact surface which faces said sealing element and sealingly contacts said sealing ring at a circumferentially complete region thereof which is juxtaposed with the other of said axial faces of said support ring.

4,552,333

BAYONET CATCH FOR A LINE OF PRESSURIZED MEDIUM

Pertti K. Niemi, Vaasa, Finland, assignor to Oy Pajakanta AB, Finland

Filed Jan. 27, 1984, Ser. No. 574,413
Int. Cl.[4] F16L *29/00*
U.S. Cl. 251—149.9 **7 Claims**



1. The combination of a manually operated valve and a bayonet type conduit to plug connection, said valve having a body with a fluid passes therethrough; a rotatable valve element mounted within said body for closing said passage and a lever external of said body connected to said valve element for rotation thereof between opened and closed positions, said valve body having a plug receiving tubular portion at one end of said passage and a sleeve surrounding said portion and slidable lengthwise of said portion; a bleed passage in said portion between said rotatable valve and said one end and communicating with said passage; said sleeve having closure means seating over said bleed passage when said sleeve is in plug locking position, a discharge passage in said sleeve positioned to communicate with said bleed passage when said sleeve is retracted toward said rotatable valve; means secured to said rotatable valve element for rotation therewith, said means engaging said sleeve for shifting said sleeve to connect said bleed passage and discharge passage after said rotatable valve element has reached a closed position and before moving the sleeve of plug release position whereby fluid pressure in the passage and coupling is released before the uncoupling the plug.

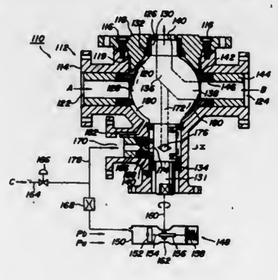
4,552,334

FLOW CHANGE-OVER VALVE FOR THE BLOWING OF FLUIDS INTO MOLTEN METAL VESSEL

Yoshiro Tomiyama; Masaaki Yamanashi; Hitoshi Morishita; Fumio Sudo; Shuzo Fujii, and Hideo Miwa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe and Denka Consultant & Engineering Company Limited, Tokyo, both of, Japan

Filed Apr. 30, 1984, Ser. No. 605,137
Claims priority, application Japan, Mar. 28, 1984, 59-58162
Int. Cl.[4] F16K *31/12, 19/00*
U.S. Cl. 251—240 **2 Claims**

1. A flow change-over valve for the blowing of fluids into a molten metal vessel comprising a housing provided with an inner body supporting space, an outlet port and at least three inlet ports for different fluids, said at least three inlet ports comprise first, second and third inlet ports, a spherical valve body hermetically fitted into said supporting space, said valve body having upper and lower extension portions disposed axially with respect to said outlet port, said valve body rotatably supported in the housing to perform a changing-over of said inlet passages and provided therein with a main passage communicating with said outlet port and selectively communicating between a respective one of said first, second or third inlet ports, said main passage extending through the upper extension portion of the valve body for communication with the outlet port, said main passage further defining an inlet opening in said valve body for communication with a respective one of said first, second or third inlet ports, and an outlet opening which defines the outlet port, said third inlet port being a purging fluid inlet arranged to communicate with said inlet opening so as to provide a purge fluid flow through said main passage to the outlet port during each rotation of the valve body when changing-over from said first inlet port to said second inlet port and vice versa, hermetic sealing means providing a sealed fluid passage, respectively, between each of said first and second inlet ports and the inlet opening of said valve body, and means for pushing said hermetic sealing means against the valve body so as to prevent leakage, said housing



being provided with a shroud-like gap surrounding the valve body, said gap being in communication with the inner periphery of the housing, said gap being in communication with said third inlet port for purging fluid and the inlet opening of said main passage to provide a purge fluid flow when the valve body changes-over from said first inlet port to said second inlet port so as to provide a purge fluid flow through said main passage, and vice versa, to prevent any mixing of different fluids flowing through said first and second inlet ports, the lower extension portion of the valve body being provided with a purge fluid passage for communicating with a second purge fluid inlet, said purge fluid passage extending within said purge fluid passage extending within said lower extension portion to said spherical valve body, said passage communication with said main passage interiorly of said spherical valve body so as to direct purging fluid toward said outlet port, said housing including a purge fluid connection wherein both said purge fluid inlet and said second purge fluid inlet communicate with said purge fluid connection.

4,552,335

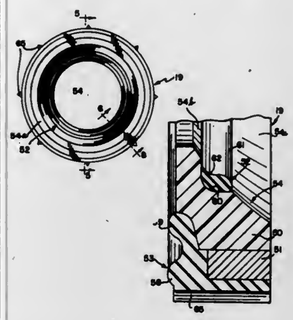
BALL VALVE

William H. Alexander, and Roy R. Dare, both of Houston, Tex., assignors to Vapor Corporation, Chicago, Ill.

Filed Nov. 3, 1983, Ser. No. 548,320
Int. Cl.[4] F16K *5/06*
U.S. Cl. 251—315 **11 Claims**

1. In a high pressure ball valve including a valve body having coaxially aligned inlet and outlet ports, a control chamber between said ports and a bonnet aligned with the control chamber, a ball in the closure chamber having a cylindrical passageway therethrough and rotatable between an open position where the passageway is coaxially aligned with said inlet and outlet ports and a closed position where the passageway is at right angles to the axis of the inlet and outlet ports, annular seats within said body and aligned with said inlet and outlet ports guidably supporting said ball, and a stem in the bonnet interconnected to said ball such that the ball floats between

said seats, the improvement being in said seats each of which comprise a molded plastic core having a heat deflection point of at least 400 degrees F. and elastomeric sealing means bonded to said core to seal between the ball and body, said core having a spherical ball engaging face of the same radius as the ball with a recess intermediate the opposite edges of the face, said ball engaging face defining a spherical volume, said elasto-



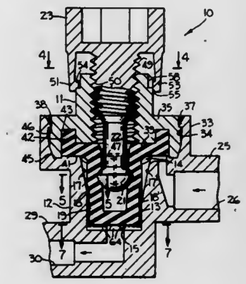
meric sealing means including a seal in said recess to seal between the seat and ball, and said seal including a convex portion disposed within the spherical volume defined by said ball engaging face and a concave portion disposed outside the spherical volume defined by said face, said concave portion being disposed on the side of said convex portion toward the center of said seat.

4,552,336

LIQUID FLOW REGULATOR

Giovanni Pastrone, Los Gatos, Calif., assignor to OXIMETRIX, Inc., Mountain View, Calif.

Filed Jun. 29, 1984, Ser. No. 626,266
Int. Cl.[4] F16K *7/02, 47/04*
U.S. Cl. 251—331 **5 Claims**



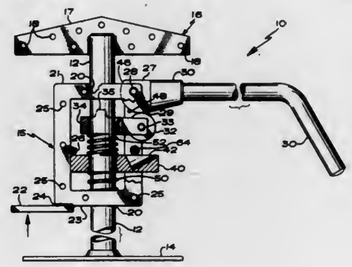
1. A liquid flow regulator comprising:
a housing having an axial bore, an inlet adjacent one end of the bore, an outlet at the opposite end of the bore, and at least one axial groove opening endwise into the inlet and laterally of the bore into the bore, said groove having at least one dimension that tapers from the inlet to the bore so that the groove cross-sectional area gradually decreases to nothing where the groove merges into the bore;
an elastomeric sock fitted within the bore;
means movable axially of the bore within the sock for expanding the sock radially outward into sealing engagement with the housing adjacent the bore, whereby flow through the groove and the bore is regulated by the axial position of the sock expanding means and the minimum cross-sectional area of the tapered, axial groove at the axial location where the sock seals the bore, said sock expanding means including a bulb, a stem attached to the bulb including means threadedly fitting the stem through the housing so as to permit the bulb to be moved axially of the bore upon rotation thereof, and a knob for rotating the stem; and
means for disabling the sock expanding means to limit withdrawal of the bulb from the bore.

4,552,337

CARPENTER JACK

Allen R. Wille, 2207 Roosevelt Dr., Apt. 5, Anchorage, Ak. 99503

Filed Apr. 2, 1984, Ser. No. 595,832
Int. Cl.[4] B23P *19/02*
U.S. Cl. 254—106 **11 Claims**



1. A friction-type carpenter jack for jacking a first workpiece toward a second workpiece comprising:
a shaft;
a base plate engageable with said shaft and capable of providing support for the carpenter jack;
a carrier being rotatably mounted along said shaft and having an upper and lower section; said lower section having a first workpiece retaining means extending therefrom, said carrier also having a plurality of holes along its periphery for nail placement to secure the first workpiece during jacking;
an upwardly jacking means mounted on said carrier for movement of said carrier away from said base plate;
said upwardly jacking means including an upper handle displaceable between a first and second position;
a downwardly jacking means mounted on said carrier for movement of said carrier toward said base plate;
said downwardly jacking means including a lower handle displaceable between a first and second position;
a head plate engageable with said shaft and being rotatably mounted about said shaft on the opposite end of said shaft from said base plate, said head plate also including a plurality of openings for nail placement and holding of the second workpiece during jacking, said head plate further including a retaining surface capable of abutting the second workpiece; and
said carrier and said head plate cooperate with said upwardly jacking means permitting the first and second workpieces to be permanently aligned adjacent and in functional relationship to one another.

4,552,338

DEVICE FOR PUSHING OR PULLING ELONGATE WIRE- OR ROD-SHAPED ELEMENTS THROUGH CONDUITS

Per Lindgren, Vingåker, Sweden, assignor to Company PAX, Halleforsnas, Sweden

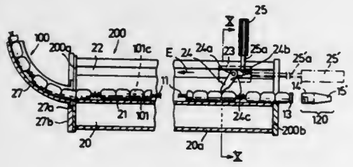
Filed Jun. 30, 1983, Ser. No. 509,968
Claims priority, application Sweden, Jul. 13, 1982, 8204296
Int. Cl.[4] B65H *59/00*
U.S. Cl. 254—134.3 FT **18 Claims**

1. A device for displacing a conduit draw wire through a

conduit, comprising an elongate apparatus body with a first track for a selected length of said conduit draw wire and a carrier means for transporting said conduit draw wire element in the track during a feeding stroke and releasing it during a return stroke, wherein an equilong parallel second track is provided in the body for a runner, said carrier means is mounted on said runner and a handle projecting from the body is provided to drive the runner in said second track in alternating feeding strokes and return strokes, said conduit draw wire comprising a selected length of an elongate bendable member onto which is slipped a plurality of rigid beads with axial bores, the beads being arranged in a plurality of groups each of which comprises at least a first and a second end bead, each group being separated by an interspace from a neighboring group, a plurality of helical compression springs being provided, each having a middle part and two end parts and each spring being arranged in one of said interspaces to bear by said end parts against end beads of said groups disposed adjacent a respective interspace so as to push the groups apart, said member being at both ends firmly attached to end pieces and having a length selected so as to constantly keep said springs in a partially compressed state.

7. A device for feeding a flexible conduit draw wire through a conduit, comprising a combination:

an elongate apparatus body having a front end and a rear end;



a first elongate track for a selected length of the draw wire and extending in said body between said two ends thereof;

a second elongate track for accommodating a runner for smooth gliding movement and extending parallel and equilong with said first track;

a first elongate slot in said body extending parallel and equilong with said two tracks and providing access into the first track along the entire length thereof;

a driver engageable with said length of draw wire accommodated in said first track during a feeding stroke and releasing it during a reverse return stroke;

a runner movably mounted for continuous gliding reciprocating movement in said second track and carrying said driver which passes through said first slot into said first track to selectively engage there and release said length of conduit wire;

a rod for driving said runner in continuous reciprocating gliding movement in said second track for a feeding stroke and a return stroke of said driver, said rod being at a first end rigidly affixed to the runner, and an intermediate part thereof passing through an elongate opening extending in said body parallel and equilong with the first said track, and a second end projecting from said body; and

an operating handle mounted on said second end.

4,552,339

HOISTING DEVICE WITH COMPENSATED TACKLE

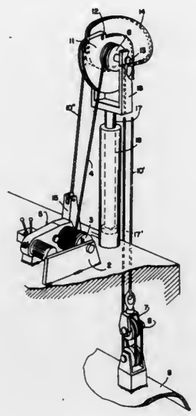
Theo F. H. Werners, Bilthoven, and Berend W. Drenth, Drunen, both of Netherlands, assignors to Hydraudyne B.V., Boxtel, Netherlands

Filed Jun. 5, 1984, Ser. No. 617,387

Claims priority, application Netherlands, Jun. 6, 1983, 8302006

Int. Cl.⁴ B66D *1/50*

U.S. Cl. 254—277 **14 Claims**



10. A hoisting device for suspending a load from a floating hull subjected to vertical wave motion, comprising the combination of:

a tackle assembly comprising an upper block having at least one pulley and a lower block having at least two pulleys and provided with load supporting means;

a winch on said hull and a hoisting cable wound thereon, said hoisting cable being passed over one of said two pulleys of said lower block, over said one pulley of said upper block, over the other of said two pulleys of said lower block and then into connection with said upper block;

carrying cable means for suspending said upper block from said hull; and

motion compensating means for simultaneously reeling in and paying out said carrying cable means to maintain said lower block at a substantially fixed vertical position despite vertical motion imparted to said hull, said motion compensating means comprising pressure actuated means which is expandable and retractable to reel in and pay out said carrying cable means while its actuating pressure varies in response to expansion and contraction, and means responsive to expansion and contraction of said pressure actuated means for varying the resistance to expansion and contraction thereof in consonance with variation of said actuating pressure.

4,552,340

PORTABLE WINCH

Joseph R. Sheppard, Oregon City, Oreg., assignor to True Dimension Inc., Oregon City, Oreg.

Filed Sep. 29, 1983, Ser. No. 537,094

Int. Cl.⁴ B66D *3/18*

U.S. Cl. 254—358 **6 Claims**

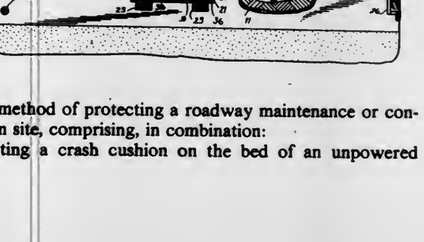
1. A portable winch comprising

a chain saw motor unit including a gasoline-powered engine, a housing for the engine, a motor output shaft with clutch driven by the engine, said output shaft extending laterally of the chain saw motor unit,

an elongate frame including an elongate base and opposed upstanding sides extending upwardly from opposed side margins of said base joined to said base,

means securing said housing of the chain saw motor unit to the base of said frame adjacent one end of said frame with the chain saw motor unit disposed above said base and with an end of the motor unit facing toward the opposite end of said frame and with said motor output shaft above and extending transversely of said frame base,

a winch drum assembly including a winch drum and drum shaft means extending axially of the drum and having ends projecting from opposite ends of the drum, said winch drum assembly being located between said frame sides and above said base adjacent said opposite end of said frame, bearings journaling said ends of said drum shaft on said frame sides,



a speed-reducing transmission including input and output shafts which extend out from opposite sides of the transmission, said transmission being secured to said frame with the transmisssion positioned intermediate the chain saw motor unit and said drum assembly and between said frame sides with said ends extending inwardly therefrom, bearings journaling said input and outputs shafts on said sides of the frame,

first power-transmitting means extending longitudinally of said frame inwardly of the frame sides connecting the clutch of the motor output shaft and the input shaft of the speed-reducing transmission, and second power-transmitting means extending longitudinally of said frame with said input and output shafts extending inwardly therefrom inwardly of the frame sides connecting the output shaft of said speed-reducing transmission and said drum shaft.

4,552,341

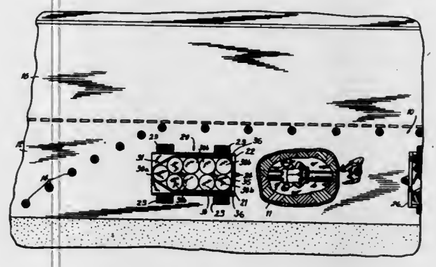
METHOD OF PROTECTING A ROADWAY MAINTENANCE AND CONSTRUCTION SITE

Stanley Zucker, 15 Mary Beth Dr., Suffern, N.Y. 10901, and Fritz Schwarting, 477 Beverly Rd., Ridgewood, N.J. 07450

Filed Dec. 22, 1982, Ser. No. 452,151

Int. Cl.⁴ E04H *17/00*

U.S. Cl. 256—1 **11 Claims**



1. A method of protecting a roadway maintenance or construction site, comprising, in combination:

mounting a crash cushion on the bed of an unpowered wheeled vehicle, the bed of the unpowered vehicle being vertically movable relative to the wheels;

releasably connecting the unpowered vehicle to a powered towing vehicle;

towing the unpowered vehicle to the site and locating the same in position to block oncoming traffic at said site;

disconnecting the unpowered vehicle in said blocking position from the towing vehicle, to enable the movement of the towing vehicle to a remote location; and

lowering the bed of the unpowered vehicle relative to the wheels until the lowermost portion of the vehicle rests on the surface of the roadway with the bed lying on said roadway, thereby maintaining the crash cushion in a fixed and favorable position to protect the maintenance or construction crew as well as the occupants of any vehicle coming in contact with the crash cushion.

4,552,342

METHOD AND APPARATUS FOR PREHEATING AND CHARGING SCRAP IN STEELMAKING

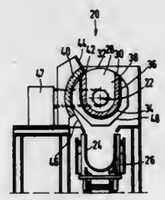
Karl Hein, Moers, Fed. Rep. of Germany; Markus Hubig, Hergenrath, Belgium, and Helmut Seroka, Bochum, Fed. Rep. of Germany, assignors to Klöckner CRA Technologie GmbH, Duisburg, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,354

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307940

Int. Cl.⁴ C21B *7/00*

U.S. Cl. 266—175 **11 Claims**



1. An apparatus for preheating and then charging scrap metallic materials into a steelmaking converter, said apparatus comprising

an elongated furnace which includes an elongated heating chamber therein, an elongated opening for enabling scrap metallic materials to be supplied to and removed from said heating chamber, and means for enabling the scrap metallic materials in said heating chamber to be heated, said elongated furnace defining an imaginary longitudinal axis therethrough,

covering means for said elongated opening and thus enclosing the heating chamber in said elongated furnace,

support means mounting said elongated furnace such that said imaginary longitudinal axis therethrough is horizontal, said support means enabling said furnace to rotate about a pivot axis which is parallel to said imaginary longitudinal axis from a charging position wherein its elongated opening is generally upwardly directed to a discharging position wherein its elongated opening is generally downwardly directed, and

an elongated transportable charging trough positionable below and alignable with said elongated furnace, said elongated charging trough including a storage chamber therein and an elongated mouth, said elongated mouth enabling heated scrap metallic materials which are discharged from said elongated furnace when in its discharging position to pass into said storage chamber and enabling the heated scrap metallic materials to thereafter be removed therefrom and charged into a steelmaking converter, said storage space having a volume at least equal to the volume of the heated chamber in said furnace and said elongated mouth having a length and width at least equal

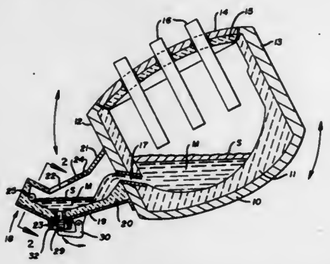
to the length and width of said elongated opening of said furnace.

4,552,343

COMBINATION ELECTRIC FURNACE AND SLAG RETAINING POURING SPOUT

Michael D. Labate, Ellwood City, and Joseph A. Perri, Coraopolis, both of Pa., assignors to Insul Company, Inc., East Palestine, Ohio

Filed May 13, 1985, Ser. No. 732,941
Int. Cl.⁴ C21C 5/44, 5/52
U.S. Cl. 266—200 **11 Claims**



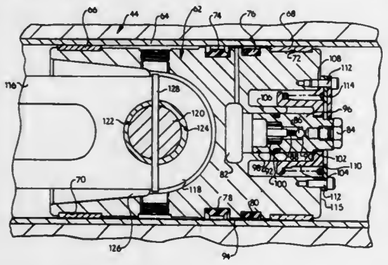
1. The combination of an electric steel making furnace which has a tap hole and a slag retaining pouring spout in communication with said tap hole, said slag retaining pouring spout extending outwardly from said steel making furnace in an outwardly and upwardly angled configuration, said slag retaining pouring spout having a secondary tap hole therein and said electric furnace being arranged to be tilted so as to move said slag retaining pouring spout in a generally vertical arcuate path whereby tilting said electric furnace to move said slag retaining pouring spout downwardly will cause molten slag and metal in said electric furnace to flow through said tap hole into said slag retaining pouring spout, a closure removably affixed in said secondary tap hole for retention therein whereby said molten slag and molten metal are retained in said slag retaining pouring spout for a period of time sufficiently to float said slag above said secondary tap hole.

4,552,344

BARRIER FLUID SEALED PISTON FOR ROAD WHEEL SUSPENSION

D. Dale Johnson, Mt. Clemens, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 12, 1983, Ser. No. 530,939
Int. Cl.⁴ F16F 9/36
U.S. Cl. 267—64.11 **2 Claims**



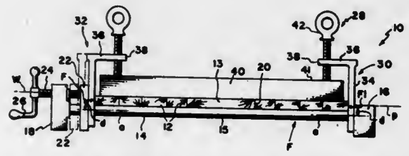
1. A self-contained road wheel suspension system comprising in combination, a spindle fixedly secured to a vehicle hull, a road arm having a spindle housing on one end and a road wheel support on the opposite end thereof, bearing means for supporting said spindle housing for rotation relative to said spindle, a fluid filled crankcase defined by said spindle housing and said spindle, mechanically operated single chamber gas spring means at the opposite end of said road arm, said gas spring means including a gas volume and a first piston relatively reciprocated with respect to said arm, seal assembly means carried by said piston and barrier means defining a pressurized oil barrier in said first piston to lubricate and preload the seal assembly means to seal the gas volume; said barrier means including an oil charge port, means forming a chamber in said first piston filled with oil, and means including a spring carriage and a spring for biasing said oil barrier without flow restriction to lubricate and pressure preload said seal assembly means to a pressure greater than that of said gas spring means to produce a predetermined pressure differential across the seal means to maintain the seal lubricated during dynamic operation of said first piston, said barrier means further including a movable second piston carried by said first piston and having one end exposed to the pressure of said gas spring means and the opposite end forcing oil to lubricate and preload the seal assembly means.

4,552,345

CLAMP MECHANISM

Steven J. Benda, 6712 Glendower Rd., Apt. B, Raleigh, N.C. 27612; George M. Kivisto, and Paul M. Kivisto, both of Box 47, Cokato, Minn. 55321

Filed Jan. 26, 1984, Ser. No. 574,034
Int. Cl.⁴ B25B 1/20
U.S. Cl. 269—43 **13 Claims**



1. A workpiece holder for clamping a plurality of elongate side-by-side abutting co-planar strips of wood to be joined, each of said strips including top and bottom surfaces spanned by lateral side edge surfaces which abut the adjacent side edge surfaces of adjacent strips, said holder comprising:

transversely extending linear support means for supporting a plurality of longitudinally extending coplanar strips of wood in side-by-side relation;

a pair of opposed, laterally spaced apart clamping blocks;

means mounting said clamping blocks on said support means for relative lateral movement toward and away from each other between non-clamping positions, spaced apart a predetermined distance, and less spaced apart clamping positions to exert edgewise pressure on said strips and to clamp said plurality of strips therebetween;

means reacting between said support means and said clamping blocks for moving said clamping blocks between said clamping and non-clamping positions;

anti-bowing means for precluding the upward bowing of said strips out of the plane of said strips when said clamping blocks are in said clamping positions exerting edgewise clamping pressure on said strips, comprising:

laterally extending hold-down means disposed above and spanning said strips;

means coupled to said clamping blocks for movement therewith and for movement relative thereto for vertically moving said hold-down means between a raised inoperative position and a lowered strip clamping position for exerting downward pressure on said hold-down means and said strips to clamp said strips to said support means and prevent them from moving upwardly out of the plane of said strips;

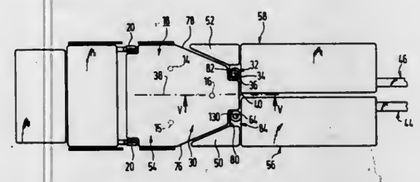
said anti-bowing means comprising a pair of bracket means mounted on said support means for relative movement with said clamping blocks; said bracket means extending laterally inwardly of said support means and having a portion thereof overlying said strips.

4,552,346

OPERATING TABLE

Eberhard Schnelle; Hans-Ulrich Jung, both of Rastatt, and Werner Hetzel, Ottersweier, all of Fed. Rep. of Germany, assignors to Stierlen-Maquet AG, Rastatt, Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 494,669
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218328
Int. Cl.⁴ A61G 13/00
U.S. Cl. 269—322 **1 Claim**



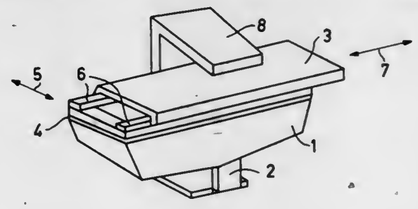
1. An operating table for operations on the extended extremities of patients, said table comprising a frame, a support plate for the upper body of the patient arranged on said frame, which support plate has an end section usable to support the pelvis of the patient, a support arm provided on said frame below said support plate and which arm extends along the longitudinal middle plane of said support plate and has a free forward end located below the forward side of said end section, said free forward end of said support arm having two vertical counterbar receiving openings located on opposite sides of the longitudinal middle plane of said support plate and each of which openings is displaced outwardly from said middle plane by less than half the largest width of said support plate, and a counterbar adapted to be removably inserted in either one of said two vertical counterbar receiving openings of said arm and which counterbar when so inserted extends vertically upwardly beyond the top surface of said support plate, said counterbar receiving openings being located near said forward side of said end section so that when said counterbar is inserted in either one of said counterbar receiving openings it is engageable with the pelvic area of a patient lying with his upper body on said support plate, said support plate having an end section of trapezoidal shape which tapers to its forward side, said free end of said support arm also having means providing two horizontally directed aligned receiving openings extending in opposite directions transversely to said longitudinal middle plane of said support plate and having identical non-circular cross-sections, and two supplemental devices each insertably fastenable in one of said transversely extending receiving openings by means of a horizontal pin on said supplemental device, each of said supplemental device being in the form of a triangular support plate, said two devices when their pins are inserted in said transversely oriented receiving openings being arranged so that said trapezoidally shaped end section is enlarged by said triangular support plates to at least approximately a rectangular form whose width is at least approximately as large as the width of the section of said support plate adjacent to said end section.

4,552,347

X-RAY APPARATUS COMPRISING A TABLE-TOP WHICH IS DISPLACEABLE IN THE LONGITUDINAL DIRECTION

Manfred Wallis, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,845
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244579
Int. Cl.⁴ A61G 13/00
U.S. Cl. 269—322 **5 Claims**



1. A patient table for an X-ray apparatus, said table comprising:

a carriage;

a table top slidably arranged on the carriage to be displaceable in a longitudinal direction;

at least two rotatable sprockets arranged on the carriage and spaced from each other in the longitudinal direction, each sprocket having teeth;

a motor for rotating one of the sprockets;

an endless chain loop arranged around the sprockets, said chain having links engaged by the teeth of the sprockets; and

a plurality of coupling elements attached to the table top, said coupling elements being spaced from each other in the longitudinal direction and being arranged to engage the chain links;

characterized in that:

the chain has a pitch equal to the length of the chain divided by the number of links in the chain;

adjacent teeth of the sprockets are separated circumferentially by a distance equal to twice the pitch of the chain so that the teeth of the sprockets engage only every other chain link;

adjacent coupling elements are separated by a distance equal to twice the pitch of the chain so that the coupling elements engage only every other chain link; and

the coupling elements engage only links which are not engaged by the teeth of the sprockets.

4,552,348

COUCH FOR PATIENTS

Bernd Forssmann, Friedrichshafen; Hans-Heinrich Gerth, Meersburg; Hendrik Zech, Überlingen, and Christian Chaussy, Germering, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

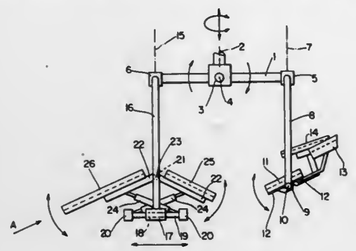
Filed Jan. 5, 1983, Ser. No. 455,836
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201021
Int. Cl.⁴ A61G 15/00
U.S. Cl. 269—324 **6 Claims**

1. A couch for reliably supporting and fixing in place a completely or partially anesthesized patient in a strain-free and compression-free manner, for instance to comminute renal calculi in a contact-less manner by means of shock waves,

comprising four individually adjustable rests and support surfaces respectively for the two arms, the head and the shoulder of a person, the supports for the two arms being

situated next to and to the side of the support for the head, above the support for the shoulder;

two separate pairs of rests and supports for the legs of the person being spaced from the said four support surfaces for establishing an unsupported area for the back of the person down from his or her shoulder to the thighs;



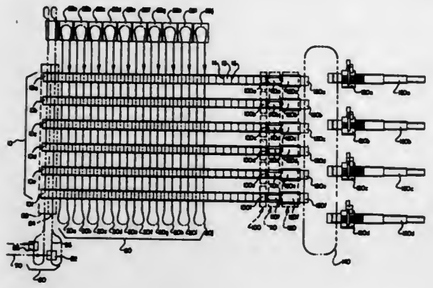
said two separate pairs of rests and supports each being tiltable on longitudinal parallel axes, and the rests and supports of each pair being inclinable in relation to each other.

4,552,349

PROGRAMMABLE PACKAGING GRID FOR LOOP GRIPPER PRODUCT CONVEYOR SYSTEM

Jerold C. Loos; James R. Wakefield, both of Rocky River, and Frederick S. Foster, Avon Lake, all of Ohio, assignors to Hall Systems, Inc., Westlake, Ohio

Continuation of Ser. No. 365,566, Apr. 5, 1982, Pat. No. 4,484,733. This application Jul. 30, 1984, Ser. No. 635,500
The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.
Int. Cl.⁴ B65H *39/02*
U.S. Cl. 270—54 **11 Claims**



1. A programmable packaging grid for grouping selective ones of a plurality of available products to produce customer insert packages comprising:

a plurality of longitudinally extending receiving conveyors each defining a plurality of package receiving areas;

a receiving conveyor monitor means for monitoring the position of the receiving conveyors;

a plurality of gripping conveyors disposed above the receiving conveyors, each gripping conveyors including a plurality of individual grippers running in a loop generally transverse to the receiving conveyors;

a plurality of sources of products, each product source disposed adjacent a gripping conveyor to supply products thereto;

a gripper conveyor monitor means for monitoring the position of the gripper conveyors;

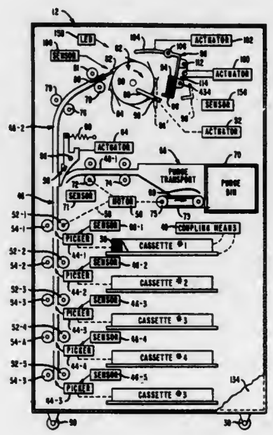
control means for controlling the gripping conveyors to transfer selected products into selected receiving conveyor package receiving areas, the control means being operatively connected with the receiving conveyor monitor means and the gripper conveyor monitor means for determining coincidence between the receiving conveyor package receiving areas and the individual grippers.

4,552,350

TRANSPORT FOR DIVERTED AND PURGED SHEETS IN A SHEET DISPENSER

Charles S. Nagy; Dale L. Placke, both of Dayton; Jack R. Gross, Waynesville, and Robert H. Granzow, Miamisburg, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 28, 1984, Ser. No. 594,452
Int. Cl.⁴ B65H *5/22*
U.S. Cl. 271—3 **5 Claims**



1. A transport system for use with a sheet dispenser comprising:

means for collecting sheets to be dispensed;

a collecting bin positioned below said collecting means to receive sheets to be purged from said collecting means;

a purge bin having an entrance thereto, with said entrance being located near the bottom of said purge bin;

an endless belt means positioned at the bottom of said collecting bin to receive said sheets to be purged, with said endless belt means having a discharge end;

said endless belt means and said entrance to said purge bin being positioned so that said discharge end is positioned adjacent to said entrance;

means for moving said endless belt means in a direction which moves the sheets carried by said endless belt means into said entrance area; and

bias means to resiliently bias said sheets against said discharge end of said endless belt means to facilitate the moving of said sheets into said entrance of said purge bin.

4,552,351

BILL STORING MECHANISM FOR AUTOMATIC TELLER MACHINES

Katsura Tsukamoto, Ninomiya, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,294
Claims priority, application Japan, Aug. 6, 1982, 57-136402
Int. Cl.⁴ B65H *5/22*
U.S. Cl. 271—3.1 **2 Claims**

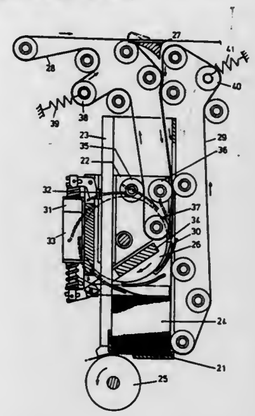
1. A bill storing mechanism for an automatic teller machine comprising:

a bill feed path;

a bill receiving casing;

a paddle wheel assembly having at least one paddle wheel in said casing for receiving a bill and positively stacking said bill in said casing;

variable length transport means between said feed path and said paddle wheel for transporting said bill from said feed path to said paddle wheel;



guide means for slidably guiding said paddle wheel assembly in the direction of bills being stacked in said casing;

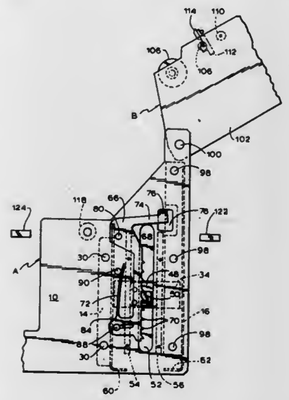
press means for pressing the most recently stacked bills against the stack to move the paddle wheel assembly away from the stack and at the same time provide a uniform pressure on the stack to permit reliable feeding of bills from the other end of the stack.

4,552,352

TOP LOADING SHEET FEED APPARATUS FOR PRINTER OR THE LIKE

Richard C. Nickels, Jr., Reisterstown, and Gerald S. Stevens, Jr., Forest Hill, both of Md., assignors to General Instrument Corp., New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,872
Int. Cl.⁴ B65H *13/64*
U.S. Cl. 271—10 **43 Claims**



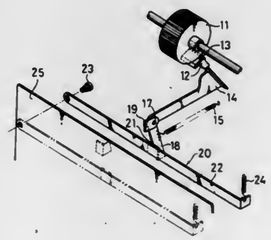
1. Sheet feed apparatus comprising means for retaining a stack of sheets, said retaining means having an end through which sheets can be loaded onto the stack, means for continuously urging said stack towards said end, means, normally situated in an operational position relative to said end to cooperate with said stack, for removing sheets from said stack in sequence, said removing means being movable relative to said end, between said operational position wherein said stack is maintained within said retaining means by said removing means against the action of said urging means, and a load position remote from said end wherein said stack is no longer maintained within the retaining means by said removing means against the action of said urging means, and means, actuated in response to said movement of said removing means from said operational position toward said load position, for preventing substantial movement of said stack toward said end when said movement preventing means is actuated.

4,552,353

DOUBLE-FEED PREVENTION DEVICE IN PAPER FEEDING APPARATUS

Kazunori Tanaka, Atsugi, and Mitsuru Yoshikawa, Zama, both of Japan, assignors to Duplo Seizo Kabushiki Kaisha, Japan

Filed Dec. 20, 1983, Ser. No. 563,353
Claims priority, application Japan, Dec. 20, 1982, 57-221955
Int. Cl.⁴ B65H *3/52*
U.S. Cl. 271—124 **8 Claims**



1. A double-feed prevention device in a paper feeding apparatus including a paper feeding roller and a cooperating paper separating plate adapted to feed single sheet of paper therebetween from a stacked supply of sheets, which comprises said paper separating plate being carried on a lever means in pivotal movement toward and away from said paper feeding roller, a lever biasing means arranged to move said lever means in a first direction and bias said paper separating plate toward said paper feeding roller, a stopper means arranged to restrict the movement of said lever means in a second direction opposite to said first direction by mechanical engagement with a part of the lever means, and a stopper biasing means arranged to movably bias said stopper means into mechanical engagement with the lever means as said lever means moves in said first direction and thereby prevents the movement of said paper separating plate away from said paper feeding roller.

4,552,354

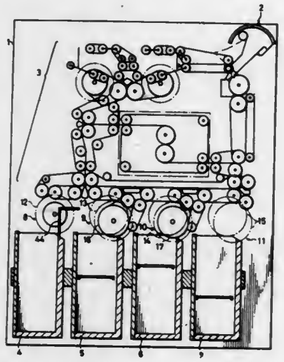
DEVICE FOR OPENING AND CLOSING PUSH COVER OF NOTE CONTAINER BOX FOR USE IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Koichi Goi; Junichi Arikawa; Hideyuki Ebihara, and Hiroshi Chiba, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,056
Claims priority, application Japan, Feb. 4, 1982, 57-16597
Int. Cl.⁴ B65H *31/00, 33/14*
U.S. Cl. 271—163 **3 Claims**

1. A device for opening and closing a bank note container box for use in an automatic money depositing and disbursing machine and having an upper opening through which bank notes are pulled out and stacked, which comprises a push cover hinged at the vicinity of said upper opening of said box to open and close the same, said push cover being closed to push the aft end of the upper surface of the uppermost bank note just being pulled out during the operation of pulling bank

notes out of said box, a swingable lock member for engaging with said push cover to hold the same normally at the closed condition, a swingable unlock member for swinging said lock member to release said push cover during the operation of



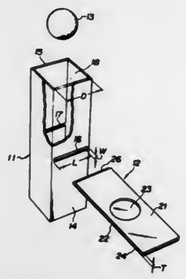
stacking bank notes into said box, and an opening arm for operating said unlock member to release said push cover from the locked condition and having means for guiding said push cover between the open and closed positions.

4,552,355

PENETRATION-THROUGH-WALL MAGIC SET

Shigeru Sugawara, Tokyo, Japan, assignor to Tenyo Company, Ltd., Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 617,020
Int. Cl.⁴ A63J *5/00*
U.S. Cl. 272—8 R **5 Claims**



1. A-penetration-through-wall magic set, comprising:

a hollow tube open at opposite ends thereof and having a tube bore;

a pair of slots in said tube opposite to each other with their common plane perpendicular to said tube;

a gimmicked panel including a solid piece as wide as the length of said slots in said tube, said solid piece having an opening smaller than said tube bore, and a solid pliable piece as wide as said solid piece stuck at one end thereof to one end of said solid piece and overlapping said solid piece;

an object capable of passing through said opening in said solid piece of said gimmicked panel;

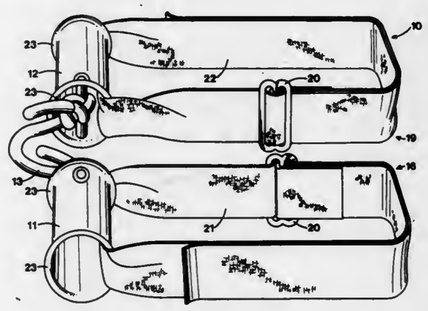
said solid pliable piece at its free end extending beyond the free end of said solid piece so that when solid piece and said solid pliable piece are inserted across said tube through one slot towards the other slot at a slight angle, said free end of said solid pliable piece abuts the inner wall of said tube adjacent said other slot so as to be separated from said solid piece, said solid piece then being aligned with said other slot so that on extension of said solid piece through and beyond both slots, said free end of said solid pliable piece travels along the inner wall of said tube bore so that said object on being dropped into said tube and through said opening in said solid piece pushes said solid pliable piece aside and falls completely through said tube bore.

4,552,356

EXERCISE DEVICE

Francis J. Brousseau, 3052 Kingsbridge Ave., Bronx, N.Y. 10463

Filed Jul. 9, 1984, Ser. No. 628,912
Int. Cl.⁴ A63B *21/02*
U.S. Cl. 272—137 **8 Claims**



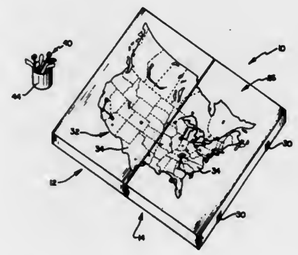
1. An exercising harness for exercising the arms and legs in unison, comprising first and second means defining handle portions, first and second inelastic leg attachment strap members each being attached directly to said first and second handle portions, said leg attachment strap members having means adapted to receive insertion of a leg of an exerciser, said inelastic leg attachment strap members further comprising means to adjust said strap to receive different leg lengths, and an elastic member disposed between said first and second handle portions and fixed to each said handle.

4,552,357

SPORTS GEOGRAPHY JACKSTRAW GAME

Leo C. Di Egidio, 32874 Burlwood Dr., Solon, Ohio 44139

Continuation of Ser. No. 428,626, Sep. 30, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 646,020.
Int. Cl.⁴ A63F *9/00, 3/04*
U.S. Cl. 273—1 GG **11 Claims**



1. A game of jackstraws, comprising:

a game board having a top surface and a bottom surface;

a map displayed on the top surface of the game board;

a plurality of jackstraw-receiving means on the game board, said jackstraw-receiving means being located in the vicinity of pre-determined geographic sites displayed on said map, the pre-determined geographic sites identifying cities having major league sports teams; and

a plurality of jackstraws, each having an elongate stem portion having a generally constant cross-section and a length to width ratio greater than 10, and an end portion having game indicia thereon, the end portion being larger than the cross-section of the stem portion, the stem portion adapted to be inserted into the jackstraw-receiving means, each of the jackstraws also including indicia corresponding to a selected geographic site, the game indicia being in the form of three-dimensional representations of sports equipment corresponding to sports equipment utilized by major league sports teams in the pre-determined geographic sites.

9. A method of playing a game of jackstraws, comprising the steps of:

providing a game board having a top surface and a bottom surface;

providing a map on the surface of the game board;

providing a plurality of jackstraw-receiving means on the game board, said jackstraw-receiving means being located in the vicinity of pre-determined geographic sites displayed on said map;

providing a plurality of jackstraws, each having an elongate stem portion, a first end portion having game indicia thereon, and a second end portion adapted to be inserted into the jackstraw receiving means, each of the jackstraws also including indicia corresponding to a selected geographic site; and

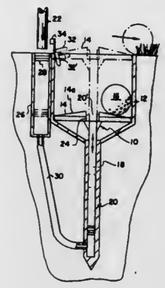
tossing the jackstraws into a jumbled heap, removing jackstraws one at a time from the heap without disturbing the heap, and inserting removed jackstraws into jackstraw-receiving means corresponding to indicia contained on the removed jackstraws.

4,552,358

GOLF BALL EJECTOR FOR GOLF GREEN HOLE LINER

John J. McGlew, Box 823, Tuxedo Park, N.Y. 10987

Continuation of Ser. No. 398,597, Jul. 15, 1982, Pat. No. 4,496,150. This application Jan. 30, 1984, Ser. No. 564,290
Int. Cl.⁴ A63B *57/00*
U.S. Cl. 273—34 A **3 Claims**



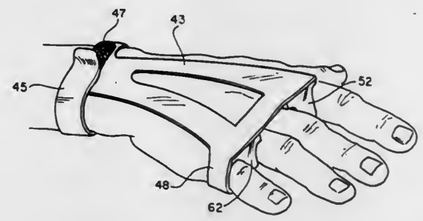
1. A flag pole-actuated golf ball ejection device for use by a golfer on a golf course having a hole comprising a liner for said hole, a golf ball support positioned in said liner and being movable upwardly and downwardly therein, a fluid pressure cylinder alongside said liner, a piston movable in said cylinder and having a portion exposed for engagement by the flag pole, a pressure fluid in said cylinder movable by movement of said piston, and means connected to said golf ball support and movable by the fluid in said cylinder in response to displacement of said piston to move said golf ball support upwardly to present a golf ball which has entered into the hole liner at a higher level which is convenient so as to be picked up by the golfer.

4,552,359

FIXED HAND SPAN DEVICE FOR BOWLER

Jerry D. McDonald, 6782 Paul Revere Ct., Orlando, Fla. 32809

Filed Feb. 22, 1984, Ser. No. 582,533
Int. Cl.⁴ A61B *71/02*
U.S. Cl. 273—54 B **15 Claims**



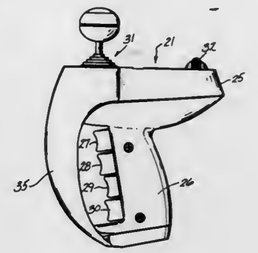
1. A semi-rigid device utilized on the hand for support in bowling, comprising a generally triangularly shaped member designed for insertion entirely between two fingers of the hand, and securing means attached to said member, said securing means encircling at least part of the hand or wrist of the user, for preventing dislodgement of said member from the selected position between the fingers.

4,552,360

VIDEO GAME WITH CONTROL OF MOVEMENT AND RATE OF MOVEMENT OF A PLURALITY OF GAME OBJECTS

Eric Bromley, West Simsbury, and Robert A. Schenck, Hebron, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 430,351, Sep. 29, 1982, Pat. No. 4,462,594. This application Feb. 13, 1984, Ser. No. 579,709
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.⁴ A63F *9/22*
U.S. Cl. 273—85 G **20 Claims**



14. In a video game which comprises a memory adapted to store at addressable locations numerical positional data of locations of a plurality of game objects on a video display which are movable under player control, and the game objects are read out for display in accordance with the beam location on the video display, a player operated directional control for selecting direction of movement of a game object, the improvement comprising,

player operated means for selecting one or more game objects for movement, a plurality of game object direction registers, said direction registers being responsive to said direction control and said means for selecting game objects to establish an indication of each game object selected for movement and the direction of movement thereof,

a plurality of game object position registers each adapted to

store a numerical indication of the positon of a game object,

a source of clock pulses, and means responsive to the indications in said direction registers and said clock pulses for periodically updating the game object numerical indications of selected game objects in said position registers, said numerical indications of the display positions of said plurality of objects in said memory being periodically updated in accordance with the numerical indications in corresponding position registers to produce movement of said selected game objects on said display on successive display frames.

4,552,361

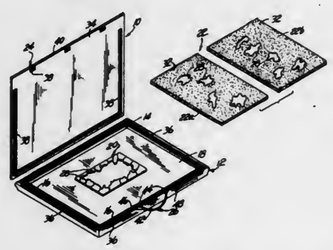
JIG-SAW PUZZLE WORK BOARD

Robert H. LaFleur, 1729 Cresthill, Royal Oak, Mich. 48073

Continuation-in-part of Ser. No. 419,966, Sep. 20, 1982, Pat. No. 4,479,651, which is a division of Ser. No. 236,803, Feb. 23, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 581,735

Int. Cl.⁴ A63F *9/10;* **B65D** *85/00*

U.S. Cl. 273—157 R **3 Claims**



1. A portable jig-saw puzzle work board comprising a substantially rectangular frame forming a rim having an edge bordering a substantially rectangular recess, a resilient padding having dimensions permitting said padding to be removably fitted into said recess with a snug fit, a removable lid for retaining said padding in said recess and fastening means for removably affixing said lid across said rim of said frame, wherein a substantially flat work surface is formed across the bottom of said recess, said padding has a thickness substantially corresponding to the distance from said rim of said frame to said work surface formed at the bottom of said recess and, said fastening means comprising Velcro material attached to said rim of said frame and complementary Velcro material attached to a marginal surface of said lid, said Velcro material being in the form of a plurality of strips disposed proximate and extending parallel to the edge of said frame rim and said complementary Velcro material being in the form of a plurality of strips disposed proximate and extending parallel to each edge of said lid, wherein substantially less complementary Velcro material is provided along one edge of said lid than is provided along the other edges of said lid so that said lid has less adhesion to said rim of said frame along one edge than along said other edges.

4,552,362

GAME TABLE WITH MULTIPLE PLAYING SURFACES

Hugh F. Oake, 1607 S. Mullen St., Tacoma, Wash. 98405

Filed Feb. 6, 1984, Ser. No. 577,254

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—237 **10 Claims**

1. A multiple playing surface game table having the appearance of a piece of furniture, comprising:

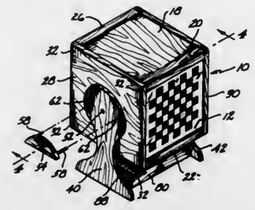
a rigid base including two parallel upright end standards,

a trunnion bar extending between and supported by said end standards,

a generally cubical game board assembly including two end panels and four side panels, said two end panels including bearing means supporting said assembly for rotation on said trunnion bar between the base end standards, said side panels comprising at least three different game board surfaces, and lock means for engaging and preventing relative rotation between at least one of the end standards and the adjacent end panel of the cubical assembly, said lock means including:

a hole through one of the end standards,

a hole in the end panel of the cubical assembly adjacent said end standard, arranged so that the adjacent said end standard covers said end panel hole from view at all times, and



a pin means removably insertable through said end standard hole into said end panel hole, the pin means when so inserted locking the cubical assembly against rotation relative to the end standard with any one of the assembly side panels in an upper horizontal position, said pin means being arranged on and being manipulated by handle means covering said end standard hole from view when said handle means is engaged, said handle means also providing a grip surface exteriorly of the end standard for manual engagement by a user in lifting and moving the game table.

4,552,363

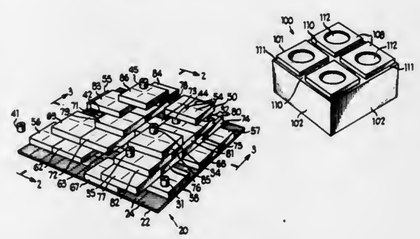
BOARD GAME HAVING STACKABLE TILES AND MOVEABLE PLAYING PIECES

Steven F. Rehkemper, Chicago; Donald A. Rosenwinkel, Oak Park; John V. Zaruba, Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 14, 1983, Ser. No. 550,967

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—241 **16 Claims**



1. A game for two players comprising:

a plurality of pieces;

the pieces including a set of cylindrical tokens assigned to each player;

each token having opposed ends;

the opposed ends of each token having means designating the number of moves that may be made with the token and means associating each end with one of the players;

the pieces also including tiles useable by each player;

each of the tiles having a bottom and a top surface divided into four congruent spaces;

the top surface of each of the tiles further including:

first key means for positioning an end of a cylindrical token on each of the spaces;

second key means for the positioning of the bottom of another of the tiles on each of the spaces of the top surface; and

each of the tiles being adapted to be supported upon a combination of underlying pieces.

4,552,364

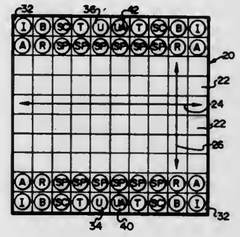
METHOD OF PLAYING STRATEGY GAME

Jeffery J. Shaffer, 313 East St., Oregon City, Oreg. 97045

Continuation of Ser. No. 287,072, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 93,309, Nov. 13, 1979, abandoned. This application Apr. 30, 1984, Ser. No. 631,501

Int. Cl.⁴ A63F *3/02*

U.S. Cl. 273—260 **1 Claim**



1. A method of playing a board game comprising:

(a) providing a game board having a predetermined matrix of playing spaces arranged in ranks and files;

(b) providing distinguishable first and second opposing sets of playing pieces;

(c) providing two additional playing pieces, one of said additional playing pieces being identifiable with each of said sets of playing pieces and being distinguishable from each of the individual playing pieces in said set;

(d) completely filling a predetermined number of ranks of said spaces with playing pieces from each of said sets;

(e) moving a single playing piece of said first set on said game board according to predetermined rules of play;

(f) moving a playing piece of said second set on said game board according to said rules of play;

(g) alternatingly repeating steps (e) and (f);

(h) after repeating steps (e) and (f) a first predetermined number of times greater than zero, and before repeating steps (e) and (f) a second predetermined number of times greater than said first predetermined number of times, placing said respective additional playing pieces on said game board in any space not then occupied by one of said playing pieces; and

(i) thereafter alternatingly repeating steps (e) and (f) until one of said additional playing pieces has been captured by movement of one of said playing pieces from the opposing set onto the space occupied by said additional playing piece.

4,552,365

ELASTIC TUBULAR LOOPED PROJECTILE

Wayne G. Smith, 10129 Lowell Ave., Overland Park, Kans. 66212

Division of Ser. No. 330,073, Dec. 14, 1981, Pat. No. 4,436,077. This application Jan. 16, 1984, Ser. No. 570,959

Int. Cl.⁴ A63H *27/00*

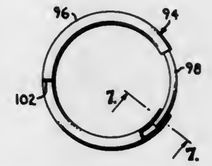
U.S. Cl. 273—425 **11 Claims**

1. A loop missile for projection from a gun, said missile comprising:

an elongated, elastic tube;

said elastic tube being sufficiently elastic to permit stretching over the barrel of a gun from the free end of a barrel to the opposite end where a trigger is located; and

an elongated, transversely circular, flexible rod, each end of said rod being secured to a corresponding end of said tube



in a manner so that the tube and rod conjointly define a closed loop, the tube ends being spaced apart and the rod extending across the gap between said ends, whereby a portion of a gun may engage the rod in said gap to project the missile.

4,552,366

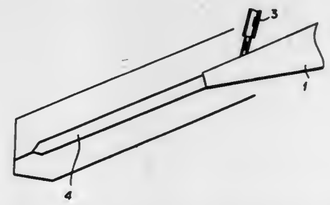
METHOD FOR PRODUCING A SEAL STRIP FOR A CRACK BETWEEN TWO COMPONENTS MOVING IN RELATION TO ONE ANOTHER

Vesa Liukkonen, and Mika Liukkonen, both of Vehmarontie 4 as 61, 20540 Turku 54, Finland

Filed Apr. 15, 1983, Ser. No. 485,168

Int. Cl.⁴ B29F *3/10;* **B32B** *3/00;* **H05K** *9/00*

U.S. Cl. 277—1 **3 Claims**



1. A method of sealing a joint, which comprises the steps of:

squeezing a flowable tubular bead of a settable material along said joint from a nozzle having a configuration whereby a hole remains in said bead running the length thereof after said bead has been deposited at, and adhered to, said joint; and

setting said bead to a flexible strip retaining said hole therein.

4,552,367

HUB SEAL AND AXLE ASSEMBLY AND METHOD FOR ITS ASSEMBLY

George Fedorovich; Kenneth C. Kirkland, and Jim F. McGraw, all of Longview, Tex., assignors to Garlock, Inc., Palmyra, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,280

Int. Cl.⁴ F16J *15/32*

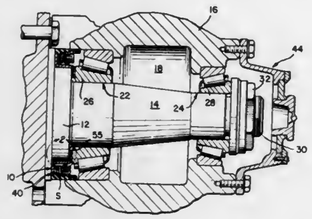
U.S. Cl. 277—1 **16 Claims**

1. A method of assembling a hub seal sleeve onto a cooperating element comprising the steps of:

slip fitting a hub seal sleeve onto a cooperating element of an axle to a location where it is retained on the cooperating element adjacent to but short of a final, operative position of the hub seal sleeve on the cooperating element; and

press fitting the hub seal sleeve onto the cooperating element to an extent requiring a force at least substantially as great as the maximum which can be applied by hand by displacing the hub seal to the final, operative position thereof on

the cooperating element via the sub-steps of assembling a hub on the axle, and tightening an adjusting nut onto the



axle in a manner applying a force which pushes the hub seal sleeve further onto the cooperating element.

4,552,368

BACKUP SEAL WITH BUSH IN FORM OF RADIALLY FLOATING WASHER

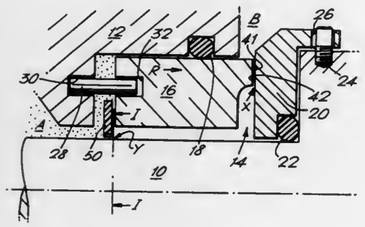
Neil M. Wallace, Stockport, England, assignor to Flexibox Limited, Manchester, England

Filed Nov. 30, 1984, Ser. No. 676,857

Claims priority, application United Kingdom, Dec. 1, 1983, 8332074

Int. Cl.⁴ F16J *15/38*

U.S. Cl. 277—27 **14 Claims**



1. A mechanical seal system for a rotary shaft exiting a housing containing fluid to be retained within the housing, the system comprising:

(a) a main mechanical seal; and

(b) a second, backup seal having:

(i) a stationary seal element sealed in the housing;

(ii) a rotary seal element sealed on the shaft, each seal element being provided with opposing annular seal faces surrounding the shaft and being arranged to be urged toward one another to form a running seal therebetween substantially only by the pressure of any fluid product leaking past the main seal should that seal fail; and,

(iii) a bush in the form of an axially free, radially floating washer disposed on the shaft between the main and backup seals, which bush is a close fit on the shaft and is adapated to form a temporary seal between the shaft and stationary seal element while fluid pressure behind the washer and seal element builds up and closes the backup seal between the rotary and stationary seal elements.

4,552,369

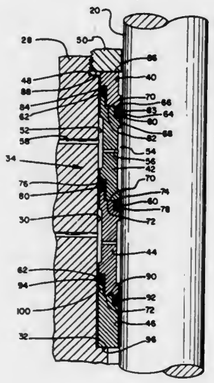
STEM SEALING FOR HIGH PRESSURE VALVE

Vernon G. Stewart, Houston, and Frank C. Adamek, Pasadena, both of Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Dec. 24, 1984, Ser. No. 685,439

Int. Cl.⁴ F16J *15/06;* **F16K** *41/04*

U.S. Cl. 277—226 **4 Claims**



1. A stem sealing apparatus for a high pressure valve, said valve having a bonnet and a moveable valve stem passing therethrough, comprising;

a bore through the bonnet;

an upwardly facing shoulder toward the lower end of said bore;

a packing gland threadedly connect to said bonnet;

a plurality of loosely stacked cylindrical inserts surrounding said valve stem within said bonnet, and including a upper insert, a lower insert, and a plurality of intermediate inserts;

each of said inserts having an outside diameter less than the diameter of the bore of said bonnet, and an inside diameter greater than the outside diameter of the stem;

each of the intermediate inserts having an exterior annular cavity, an interior annular cavity, said exterior and interior cavities being fluidedly connected to one another, an upper and a lower insert abutting surface for abutting adjacent inserts, the insert abutting surfaces being centrally located with respect to the radial dimension, an upper and a lower seal retaining surface located at both the inboard and outboard radial dimensions;

said upper insert having a lower insert abutting surface for abutting the adjacent insert, and lower seal retaining surfaces located both at the inboard and outboard locations with respect to the radial dimensions;

said lower insert having an upper insert abutting surface for abutting the adjacent insert, and upper seal retaining surfaces located at both the inboard and outboard locations with respect to the radial dimension;

means for injecting and retaining a flowable sealant material into said annular cavities;

a plurality of seal rings including a plurality of inner seal rings located between said adjacent inserts adjacent the inboard seal compressing surfaces and a plurality of outer seal rings located between adjacent inserts adjacent the outboard seal compressing surfaces;

each seal ring including a deformable central seal member and an upper and a lower anti-extrusion ring, each anti-extrusion ring having zero clearance from the adjacent bore or stem;

the thickness of said seal rings in the uncompressed condition being less than the distance between the spaced apart seal compressing surfaces.

4,552,370

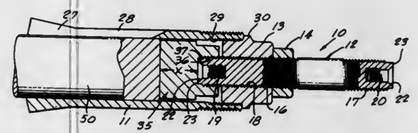
SET OF WORKPIECE STOPS FOR WORKPIECE CLAMPING COLLET

Kenneth A. Baumgartner, 858 Glenlyn Dr., Azusa, Calif. 91702

Filed Apr. 11, 1983, Ser. No. 483,658

Int. Cl.⁴ B23B *31/20*

U.S. Cl. 279—1 S **8 Claims**



1. In a workpiece clamping collet mountable in a lathe spindle, that improvement which comprises:

a unitary assembly for supporting a selected one of a set of workpiece stops axially of said collet comprising:

an externally threaded master stem;

internally threaded non-adjustable collar means embracing said master stem and having a threaded shank having a shoulder in abutment with the end of said collet for securing said non-adjustable collar means in a predetermined position axially of said collet;

a lock nut mounted on said master stem engagable with said collar means to lock said master stem in a predetermined position axially of said master stem;

threads on the forward end of said master stem adapted to mate with the threads of a workpiece stop;

a plurality of non-adjustable workpiece stops of different dimensions each having threads at one end mateable with the threads at the forward end of said master stem; and

each of said non-adjustable workpiece stops having a fixed stop surface adjacent the threaded end thereof spaced a predetermined axial distance from the other end thereof which said fixed stop surface abuts a stop surface on the forward end of said master stem when mounted thereon whereby said stops can be substituted for one another with the outer end of the substituted stop in a predetermined distance from the forward end of the collet.

4,552,371

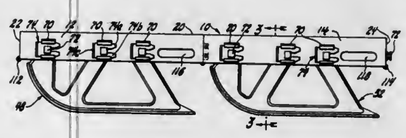
SCREWLESS COLLAPSIBLE SLED, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Samuel J. McFrisby, Ecorse, Mich., assignor to Joseph A. Ulicne, Grosse Ile, Mich., a part interest

Continuation-in-part of Ser. No. 304,244, Sep. 21, 1981, abandoned. This application May 19, 1983, Ser. No. 495,985

Int. Cl.⁴ B62B *13/16*

U.S. Cl. 280—20 **18 Claims**



1. A collapsible sled for transporting articles, comprising:

a front section and a rear section, said sections being pivotably interconnected;

one of said sections being pivotal with respect to the other through an arc of approximately 180°;

each said section comprising a box-like member which includes front and rear hinge plates, a support platform, front and rear depending walls, and opposite side walls;

each said section having a pair of snow blade runners pivotably directly connected thereto by hinge means;

each said snow blade runner being pivotal from a position in which it is entirely received within said box-like member to an operable position in which said snow blade runner extends downwardly from and substantially perpendicularly to said platform;

first means comprising a removable hinge pin and said front and rear hinge plates for locking said front and rear sections together in a collapsed condition with said snow blade runners disposed therein;

second means on the outside surface of said side walls for locking said snow blade runners in said operable position;

third means on the inside surface of said front wall of said rear section for locking said front and rear sections in an open operable position; and

each said second and third means comprising a locking member which is slidably received in a keeper member.

4,552,372

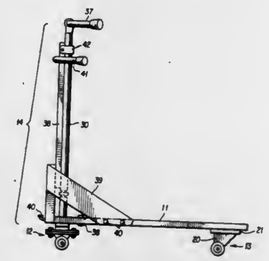
SCOOTERBOARD

Daniel T. Jones, 196-18 116th Ave., St. Albans, N.Y. 11414

Continuation-in-part of Ser. No. 343,432, Jan. 28, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,875

Int. Cl.⁴ B62K *9/00*

U.S. Cl. 280—87.04 R **6 Claims**



1. A scooterboard including a board having an assembly hole formed in a front end thereof and a rear skate wheel truck fixedly mounted to an underside of said board at a rear end thereof, comprising:

a selectively lockable swivelling assembly operatively associated with said assembly hole;

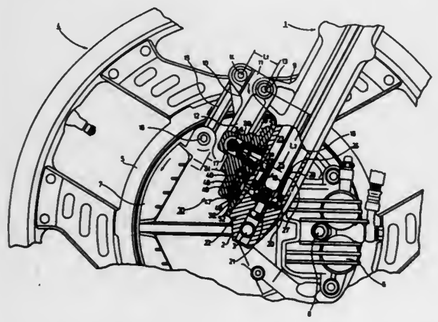
a front skate wheel truck fixedly secured to said selectively lockable swivelling assembly and positioned on the underside of said board at said front end;

a steering post assembly detachably affixed to said selectively lockable swivelling assembly such that when said selectively lockable swivelling assembly is in an unlocked state said front skate wheel truck is freely swivellable and said steering post assembly cooperates with said selectively lockable swivelling assembly to guidingly swivel said front skate wheel truck;

a steering column assembly detachably and rigidly affixed to said front end of said board such that when said selectively lockable swivelling assembly is in a locked state said front skate wheel truck is prevented from swivelling and said scooterboard is guided by an operator grasping said steering column assembly and alternately exerting a sidewardly force on first and second sides of said board; and

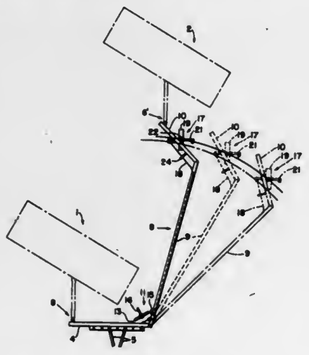
removable locking means operatively associated with said selectively lockable swivelling assembly for selectively cooperating with said selectively lockable swivelling assembly such that said selectively lockable swivelling assembly is positionable in said unlocked state and said locked state.

4,552,373
FRONT WHEEL SUSPENSION SYSTEM FOR MOTORCYCLE OR THE LIKE
Takeshi Kawaguchi, Saitama; Yoshimi Ishikawa, Tokyo, and Taizo Oonishi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 418,664, Sep. 16, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 595,635
Claims priority, application Japan, Sep. 19, 1981, 56-148030
Int. Cl.[4] B60G *17/08;* **B62K** *25/08*
U.S. Cl. 280—276 **7 Claims**



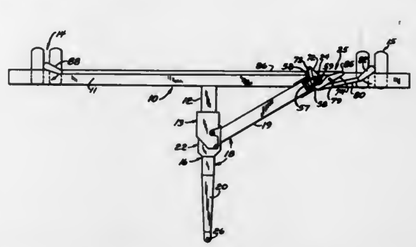
1. In an anti-dive device for the telescopic front fork assembly of a motorcycle or the like, the telescopic front fork assembly including a bottom case having a forward wall fixed to an outer tube telescopically receiving a fork pipe, the bottom case carrying an axle for the front wheel, the improvement comprising, in combination: a contraction regulator fixed on the forward wall and having a main oil passage with a main valve therein, two spaced openings in said forward wall communicating with said main valve in said main oil passage, and a bell crank having a short arm moving in response to braking torque applied to the front wheel and having a long arm operable to close said main valve.

4,552,374
PULLING HITCH ASSEMBLY
David Osterloh, 140 Osterloh Rd., Minster, Ohio 45865
Filed Sep. 9, 1983, Ser. No. 530,863
Int. Cl.[3] B60D *1/14;* **A01B** *73/00*
U.S. Cl. 280—411 R **13 Claims**



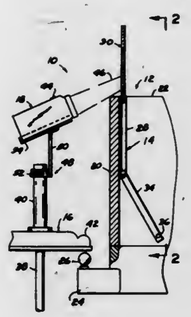
1. A pulling hitch assembly for pulling agricultural implements with a tractor or other motorized or even animal-drawn pulling unit, comprising:
a front beam which is adapted to be attached to a pulling unit;
an angle beam which is pivotally attached to said front beam;
pivoting means associated with said front beam and said angle beam for effecting pivoting of said angle beam relative to said front beam;
a guide wheel assembly which includes a tire mounted on a wheel, and which is pivotably connected to said angle beam in a location remote from said pivoting means; and
a fixed length cable which is connected directly to said front beam, is guided by said angle beam, and is connected only to said guide wheel assembly; said cable being disposed in such a way, and being of such a length, that said cable is adapted to pivot said guide wheel assembly exclusively relative to said angle beam, when the latter is pivoted relative to said front beam, in such a way that said tire of said guide wheel assembly is pivotable independently of any tractor or pulling unit and is always disposed substantially perpendicular to said front beam irrespective of position and direction of any tractor or pulling unit therewith.

4,552,375
CONVERTIBLE IMPLEMENT FRAME PULLED LENGTHWISE IN THE TRANSPORT POSITION
Jon E. Kinzenbaw, Williamsburg, Iowa, assignor to Kinze Manufacturing, Inc., Williamsburg, Iowa
Filed Sep. 22, 1983, Ser. No. 534,965
Int. Cl.[4] B60D *1/14;* **B62D** *53/04*
U.S. Cl. 280—415 R **12 Claims**



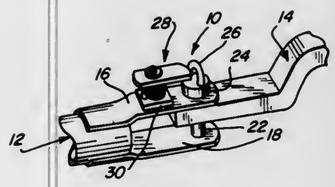
1. In an agricultural implement having an elongated frame and adapted to be converted between a use position in which the frame extends transverse of the direction of travel and a transport position in which said frame is pulled lengthwise, the improvement comprising: an articulated draft member including a forward section and a rear section pivotally connected together; means for mounting the rear end of the rear section to said frame for rotation about a vertical axis and at a location between the transverse center of said frame and one end thereof; and extension means for connecting said draft member to said frame in the use position at a location adjacent the pivotal connection between said forward and rear sections thereof, whereby in the use position, said rear section of said articulated draft member acts as a brace to maintain said frame transverse of the direction of travel of said implement and said forward section of said draft member is generally parallel to the direction of travel of said implement, and in the transport position, said forward and rear sections of said draft member are aligned and extend generally parallel to the direction of elongation of said frame.

4,552,376
TRAILER HITCH LAMP GUIDE
Archie Cofer, P.O. Box 75, Waureka, Okla. 73573
Filed Nov. 16, 1983, Ser. No. 552,523
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 280—477 **5 Claims**



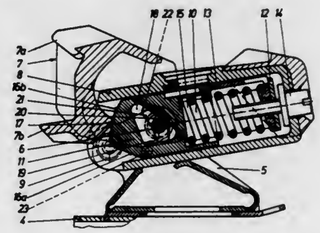
1. A trailer hitch coupling guide enabling the driver of a towing vehicle having a central longitudinal axis, to position the hitch component on the towing vehicle in cooperative coupling relation with the companion hitch component on a forwardly projecting trailer tongue, comprising:
target means including an upright translucent panel mounted on the rearward end portion of the towing vehicle;
signal means including a lamp emitting converging light rays; and,
means supporting said lamp on the trailer tongue for directing the light rays in an upward and forwardly inclined direction in a vertical plane aligned with the central longitudinal axis of the trailer tongue for illuminating predetermined portions of the target means in accordance with the position and proximity of the towing vehicle relative to the companion hitch component.

4,552,377
HITCH PIN SECURING DEVICE
Cornie Folkerts, R.R. #1, Box 127, Inwood, Iowa 51240
Filed Mar. 23, 1984, Ser. No. 592,834
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—515 **7 Claims**



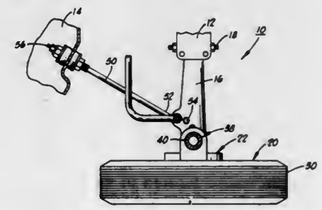
1. A device for locking a hitch pin in a hitch in which the hitch pin extends from a first side through first and second members to connect said members, comprising:
a pivot pin secured to the first side of the first member;
means for defining a shoulder about the pivot pin and spaced from the first side;
a pin retainer plate on the defined shoulder, the plate being pivotable about the pivot pin between a first position clear of the hitch pin and a second position blocking the hitch pin from withdrawal from the first and second members;
means for securing the plate against substantial axial motion on the pin;
a first stop secured to the first member;
a second stop secured to the plate, said first and second stops abutting when the plate is in the second position; and
means for biasing the stops toward abutment from said first position.

4,552,378
SAFETY SKI BINDING
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland
Filed Mar. 2, 1984, Ser. No. 585,723
Claims priority, application Austria, Mar. 11, 1983, 878/83
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—632 **7 Claims**



1. A safety ski binding, in particular a heel holder, comprising a sole holder which is supported on a bearing block for pivotal movement about a swivel axle which extends transversely of the ski and parallel to the upper side of the ski, the sole holder being held in a downhill skiing position by a slide member which cooperates with a control surface on the sole holder and which is guided for movement against the force of a release spring in a spring housing which is supported on the bearing block for pivotal movement about an axis which extends parallel to the axle, the spring housing serving simultaneously as a spring housing and as a release member for effecting a voluntary opening of the sole holder, including a control surface on the slide member, wherein the control surface on the sole holder is a control cam, wherein the swivel axle of the sole holder is offset toward an end of the ski relative to the axis of the spring housing, wherein the slide member in the downhill skiing position engages the control cam of the sole holder in the region between the two axes, and wherein a control recess is provided in the slide member for the swivel axle of the sole holder.

4,552,379
COMPRESSION LINK ADAPTOR ASSEMBLY
Kenneth D. Foster, 7615 Shelby La., Broken Arrow, Okla. 74014
Filed Nov. 25, 1983, Ser. No. 554,985
Int. Cl.[4] B62D *17/00*
U.S. Cl. 280—661 **13 Claims**



1. An improved adjustable compression link assembly for effecting camber and caster settings of a wheel assembly wherein the wheel asembly is connected by a transverse link assembly to a laterally extending cross frame member of a main

frame, the adjustable compression link assembly comprising, in combination:

a compression link rod having a first end portion attachable to the transverse link assembly, a medial portion, and a threaded second end portion having a reduced cross-sectional dimension, the compression link rod further characterized as having a shoulder stop formed between the threaded second end portion and the medial portion thereof;

adaptor sleeve means for interconnecting the threaded second end portion of the compression link rod to the main frame and adjustably establishing the effective length of the compression link rod, the adaptor sleeve means comprising:

an adaptor sleeve having a longitudinal bore extensive therethrough and with an internal shoulder stop engaging portion, the threaded second end portion of the compression link rod extendable through the longitudinal bore such that the shoulder stop of the compression link rod abuttingly engages the shoulder stop engaging portion of the adaptor sleeve and the extremity of the threaded second end portion of the compression link rod protrudes from the longitudinal bore so as to be extendable through a selected aperture in the main frame;

at least one compression spacer member supportable on the adaptor sleeve; and

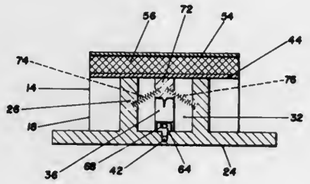
lock means for securing the compression link rod to the main frame such that the compression spacer member and the main frame are grippingly engaged between portions of the lock means.

4,552,380

SELF-CONTAINED CRASH BAG AND INITIATOR

George L. Stevens, Ogden, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Jan. 11, 1984, Ser. No. 569,861
Int. Cl.⁴ B60R *21/08*
U.S. Cl. 280—728 **4 Claims**



1. Structure for the inflation of inflatable protective bags for safety systems for vehicles, comprising, in combination:

a cup-shaped member having a substantially flat base and including an annular wall attached to said base, being generally perpendicular thereto, and forming a cylindrical opening therein, said wall having a screw thread formed on the inner surface thereof remote from said base and having at least one channel formed therein extending for substantially the full length of said wall in a direction generally perpendicular to said base,

passageway means in said base providing communication between said channel and said cylindrical opening,

stab primer and booster charge means located in said channel adjacent said base,

inertial firing pin means located in said channel separated from said percussion and booster charge means,

over-center spring means normally holding said firing pin means out of contact with said percussion and booster charge means but operative, when subjected to deceleration in the direction of said base accompanying a crash, to move over center thereby to effect actuation of said firing pin means toward and into contact with said percussion and booster charge means,

cover means for covering the end of said annular wall remote from said base including a first substantially flat plate having an imperforate circumferential edge portion of size sufficient at least to close said channel and having a central portion with peforations therein, said central portion enclosing said cylindrical opening of said wall means to form a reaction chamber and to retain combustible gas generant means therein, said cover means further including first and second cylindrical portions extending substantially perpendicularly in opposite directions from said first plate with said first one of said cylindrical portions extending into said cylindrical opening of said wall means, said first one of said cylindrical portions having external screw threads thereon adapted for mating engagement with the screw threads formed on the inner surface of said opening, and said second cylindrical portion having perforations therein,

a second substantially flat plate covering the end of said second cylindrical portion remote from said first plate, said second plate being imperforate and having a circumferential flange extending beyond the perimeter of said second portion to define, with said second cylindrical portion and said first plate, an annular space,

heat sink screen means provided in said annular space, and

crash bag means having an opening with said opening attached in gas tight relationship with said base, with said cup-shaped member, cover means and said second flat plate extending therein,

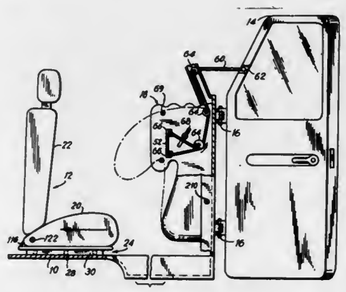
said perforations in said first plate and in said second cylindrical portion providing openings for the outlet flow of generated gases through said heat sink screen means into said crash bag means.

4,552,381

PASSENGER RESTRAINT SAFETY SYSTEM

Samuel L. Schlanger, 140 Cheyenne Way, Wayne, N.J. 07470

Filed Feb. 13, 1984, Ser. No. 579,689
Int. Cl.⁴ B60R *21/00*
U.S. Cl. 280—752 **12 Claims**



1. A passenger restraint safety system for a passenger type automobile, said automobile having a chassis, a passenger seat including a frame, and a door hingedly connected to said chassis providing access to said passenger seat, said safety system including:

(a) a guide track system for said passenger seat and frame permitting unrestrained movement of said seat and frame on said guide track system in the longitudinal direction of said chassis;

(b) a safety cushion in front of said passenger seat contoured to the body of a passenger in the seated position to provide a large body contact area having an upper body portion and a leg portion;

(c) locking means for locking said passenger seat and frame in a position at a pre-determined distance from said safety cushion to allow free and unrestricted movement to a passenger seated thereon;

(d) means for releasing said locking means triggered by a collision of said automobile with another object such that said seat and frame are released for unrestrained free movement on said track system whereby the forward momentum of said passenger and said seat cause said seat to move instantaneously toward said safety cushion to restrain said passenger in a seated position therebetween; and

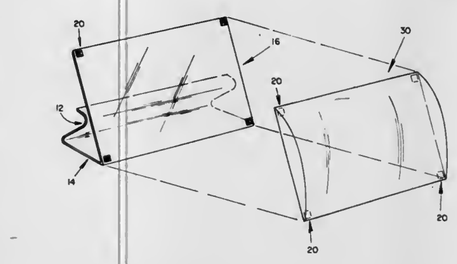
(e) means for collapsing said safety cushion from a first safety position to a second position farther away from said seat when said door is opened and returning said safety cushion to said first safety position when said door is closed so that a passenger may enter said automobile and be seated therein, said means comprising a plunger located within said safety cushion adapted for movement in a direction away from said seat, means operatively connecting said plunger to the outer fabric of said safety cushion, means for biasing said plunger so that said safety cushion is normally maintained in its first safety position, and means operatively connecting said plunger to said door so that said plunger collapses against said biasing means when said door is opened and is repositioned by said biasing means when said door is closed.

4,552,382

BOOKHOLDER WITH MAGNIFIED VIEWING WINDOW

Mollie G. W. Cowden, 813 Caravan Cir., Austin, Tex. 78746

Filed Jul. 25, 1983, Ser. No. 517,210
Int. Cl.⁴ B42D *9/00, 3/00*
U.S. Cl. 281—45 **1 Claim**



1. In a bookholder adapted to hold a book open to a preselected page into flat contact with an integral first viewing window such that substantially all the printed material on the preselected pages is exhibited through the viewing window for reading, the improvement comprising:

(a) A second viewing window of substantially the same dimensions as said first viewing window formed to magnify substantially all the underlying printed material, thereby facilitating readability and means removably mounting said secured window to said first window.

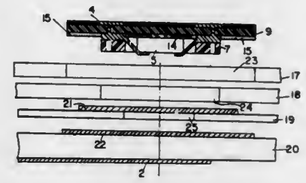
4,552,383

IDENTIFICATION CARD HAVING AN IC MODULE

Joachim Hoppe, and Yahya Haghiri-Tehrani, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,218
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151408
Int. Cl.⁴ B42D *15/00*; G06K *7/06, 19/00*
U.S. Cl. 283—83 **6 Claims**

1. An identification card or similar data carrier incorporating an IC module, said IC module being arranged on a carrier element, said identification card having a plurality of card layers and including a recess in an area in which said carrier element is positioned, at least two of said card layers positioned adjacent to said recess, a supporting layer being attached to



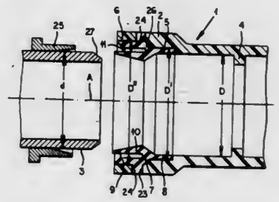
each of said at least two card layers, each supporting layer comprising means for stabilizing the shape of said card layers during hot lamination of said card.

4,552,384

MOLDED-JOINT ASSEMBLY

Wilhelm Cyriax, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabriken GmbH, Meinerzhagen, Fed. Rep. of Germany

Division of Ser. No. 269,820, Jun. 3, 1981, Pat. No. 4,410,479, which is a continuation-in-part of Ser. No. 84,196, Oct. 12, 1979, abandoned. This application Mar. 16, 1983, Ser. No. 475,848
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845308; Sep. 6, 1979, 2936016
Int. Cl.⁴ F16L *17/02*
U.S. Cl. 285—111 **2 Claims**



2. A joint assembly comprising:

a hard outer member having a cylindrical inner surface and a mouth at one end and formed on said inner surface adjacent said mouth of said member with a cylindrical recess having two portions of different diameter, said outer member being formed with a through going sprue hole opening on said inner surface at said recess, said outer member being further formed axially inwardly of said recess from said mouth with an inwardly extending annular shoulder between said portions of different diameter; and

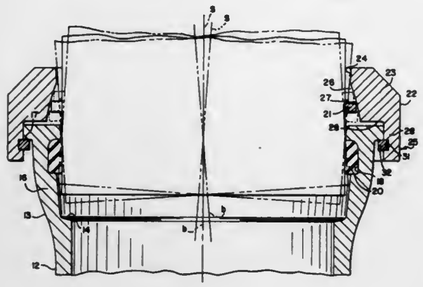
a soft seal adhered to said inner surface at said recess and having an integral sprue extending all the way through said outer member at said sprue hole, said soft seal having a V-cross section with a shank lying in one portion of said recess flush with said inner surface and a pair of arms reaching toward said mouth, one of said arms lying against a wall of the other portion of said recess and having an inwardly converging bevel at said mouth and the other of said arms being spaced from said one of said arms and tapering in cross section toward said mouth.

4,552,385

BOLTLESS RESTRAINED PIPE JOINT

Robert G. Peting, Oak Forest, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 3, 1983, Ser. No. 455,037
Int. Cl.⁴ F16L *17/02*
U.S. Cl. 285—111 **6 Claims**



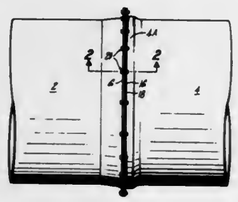
1. A restrained pipe joint comprising,
a bell mouth including an annular lip,
a spigot inserted into said bell mouth,
a compressible sealing gasket disposed about said spigot end and seated within a groove in said bell mouth,
a ring fixed to said spigot,
annular restraining ring means disposed about said spigot and having a concave inner wall engagable with said spigot ring,
said restraining ring means including first holding means engaging said restraining ring for holding said concave surface in engagement with said spigot ring and second holding means underlying said lip on said bell mouth thereby to restrain said spigot and bell mouth against lengthwise separation, at least one of said first or second means comprising a snap ring.

4,552,386

JOINTS BETWEEN CYLINDERS OF DIFFERENT MATERIALS

Herbert L. Burchette, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,344
Int. Cl.⁴ F16L *55/00*
U.S. Cl. 285—187 **8 Claims**



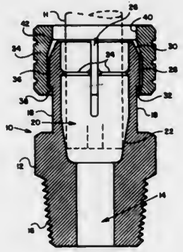
1. A connection between the ends of two coaxial cylindrical members having substantially different thermal coefficients of expansion, one cylindrical member having a first radial annular flange projecting therefrom, said first radial annular flange being spaced a short distance from its end providing a short cylindrical end extension, said second cylindrical member having a second radial annular flange projecting therefrom in the same radial direction, said second cylindrical member having said second radial annular flange located at the end of the second cylindrical member, said end of said cylindrical member having said second radial annular flange extending around and being radially spaced from said short cylindrical extension with the second radial annular flange abutting said first radial annular flange, said circumference of one of said radial annular flanges having radial projections, a torque and spacer means connected to said other radial annular flange adjacent the circumference of said one of said radial annular flanges and having contact with said radial projections to prevent a rotating movement of one of said cylindrical members with respect to the other cylindrical member, an axial load means connected to said other radial annular flange through said torque and spacer means to prevent axial flange separation between said first radial annular flange and said second radial annular flange and permit thermal growth therebetween, an annular resilient strain pad positioned between said short cylindrical extension and said other cylindrical member radially spaced therefrom to absorb radial growth and maintain said two cylindrical members concentric.

4,552,387

COUPLING FOR PRESSURE HOSE

Gerhard S. E. Schmidt, 208 Duplex Ave., Toronto, Ontario, Canada (M5P 2B2)

Continuation-in-part of Ser. No. 367,782, Apr. 12, 1982, abandoned. This application May 23, 1983, Ser. No. 497,074
Int. Cl.⁴ F16L *33/00*
U.S. Cl. 285—238 **11 Claims**



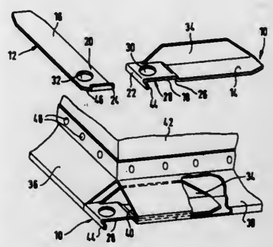
1. A hose coupling for attachment to a hose and comprising;
hose clamping fingers having inner ends rooted to said body portion, and having outer ends from said body portion, the body portion and the fingers being formed as a single integral one piece unit;
ridge means around the exterior of said fingers adjacent said outer ends, said fingers defining a reduced cross-section from said ridge means to said inner ends;
slidable collar means having inner and outer ends fitting captively around said fingers, and being slidable along said fingers relative to said ridge means;
an interior annular wedging portion around the interior of said collar adjacent said outer end for co-operating with said ridge means so as to squeeze said fingers together when the collar means is slid towards said body portion, and releasing said fingers when the collar means is slid away from said body portion;
collar retaining means on the inner end of said collar means for engaging said fingers and retaining said collar means thereon said collar means defining an intermediate portion between said inner end, and said wedging portion, of an enlarged diameter to fit loosely over said ridge means on said fingers;
interior tooth means on said fingers arranged and located so as to engage the outer surface of said hose, and to bite into it, when said fingers are squeezed together by said wedging portions of collar means, and
interior sealing sleeve means of gradually reducing diameter for making sealing engagement with the outer surface of said hose.

4,552,388

CORNER ANGLE ASSEMBLY

Manfred Meinig, Riethelm-Weilheim, Fed. Rep. of Germany, assignor to Karl Meinig KG, Riethelm-Weilheim, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,312
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340503
Int. Cl.⁴ F16L *23/00*
U.S. Cl. 285—363 **8 Claims**



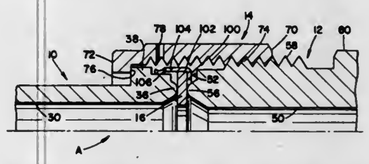
1. In a corner angle assembly, wherein two separate pieces have respective legs adapted to be inserted into openings formed in respective supporting flanges, wherein the flanges are attached to respective metal duct segments, wherein the pieces have respective contact areas overlapping one another and are provided with aligned screw-holes, and wherein each of the contact areas has a perpendicularly bent end edge portion, the improvement wherein the leg and contact area of the second piece are substantially in the same plane, wherein the contact area of the first piece is substantially parallel but off-set in one direction from the leg of the first piece, and wherein the respective perpendicularly bent edge portion of the first piece extends in a direction opposite said one direction and cooperates with the respective off-set contact area of the first piece to form a guide groove for insertion of the second piece therein.

4,552,389

FLUID COUPLING

Gerald A. Babuder, Mentor, and Jeffrey L. Weigl, Cleveland, both of Ohio, assignors to Cajon Company, Macedonia, Ohio

Filed Aug. 23, 1982, Ser. No. 410,408
Int. Cl.⁴ F16L *19/00*
U.S. Cl. 285—379 **21 Claims**



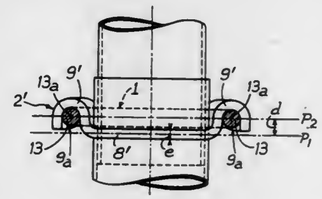
1. In a fluid coupling of the type having first and second generally cylindrical coupling components including fluid passageways extending longitudinally thereof, said components having opposed radial end faces including generally annular sealing beads extending axially therefrom toward each other with an annular sealing gasket interposed therebetween, said coupling further including means for moving said components into a close-spaced substantially coaxial relationship such that said sealing beads sealingly engage opposite face areas of said gasket, the improvement comprising:
a retainer device for maintaining said gasket in a predetermined located position relative to the end face of one of said components in a substantially coaxial relationship therewith, said retainer including an annular end wall and a plurality of retaining legs extending outwardly of said end wall in a direction generally normal thereto in a retaining relationship with said one component and an area thereof spaced axially rearward from the associated radial end face, said retaining legs and said end wall defining a cavity which captures said gasket for preventing radial movement thereof relative to said one component end face such that said gasket is positively located intermediate the annular end wall of said retainer and the sealing bead at said one component end face, said annular end wall having an inside diameter greater than the outside diameter of the annular sealing bead on the end face of the other of said components and less than the outer diameter of said gasket, whereby said gasket is positively located in a generally coaxial relationship with said components when they are moved toward said closely spaced relationship by said moving means, said sealing beads each engaging substantially the same portion of the associated gasket face area during subsequent disassembly and reassembly of the coupling.

4,552,390

CLAMP FITTING FOR PIPES

Lionel Calmettes, Ozoir-la-Ferriere, France, assignor to Etablissements Caillau, Boulogne-Billancourt, France

Filed Dec. 8, 1983, Ser. No. 559,217
Claims priority, application France, Nov. 17, 1982, 82 19254
Int. Cl.⁴ F16L *21/06*; B65D *63/00*
U.S. Cl. 285—420 **2 Claims**



1. In a clamp fitting for pipes, particularly for exhaust pipes of automobile vehicles, comprising a staple in the form of a stirrup with divergent arms, stops being provided towards the ends of the arms of this staple, at least one of these stops being constituted by a nut screwed on a thread of the arm of the staple, and a strap presenting a median part of incurved form, provided towards its ends with laterally open forks and abutting on the end stops of the arms of the staple,
the plane (P_1) perpendicular to the axis of the fitting and passing through the centre of gravity of the incurved median part of the strap is offset with respect to the plane (P_2) defined by the axes of the arms of the staple when they occupy their normal position, at the moment of clamping, in the forks provided at the ends of the strap, the offset of said plane (P_1) with respect to said plane (P_2) being oriented in the same direction as that from the bottom of the forks towards their lateral opening.

4,552,391

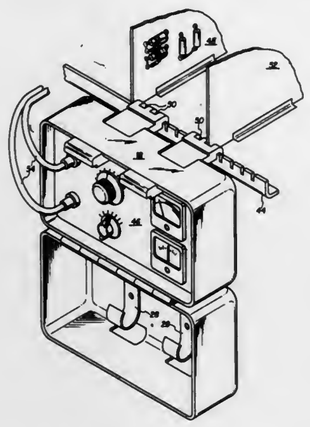
PORTABLE ENCLOSURE WITH COMBINED LATCH AND SUPPORT SYSTEM

Larry V. Moore, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 11, 1982, Ser. No. 338,761
Int. Cl.⁴ E05C *5/00*
U.S. Cl. 292—5 **11 Claims**

1. In a portable enclosure for holding equipment on a fixed structure, a combination latch and support system comprising:
a bracket member retained in the enclosure and movable through an aperture in the enclosure to an extended position and movable back through said aperture to a re-

tracted position, said bracket member including means for attaching to said fixed structure, said means being in a non-attaching arrangement when said bracket member is in said retracted position, and said means becoming ar-



ranged for said attaching by said bracket member moving to said extended position; and

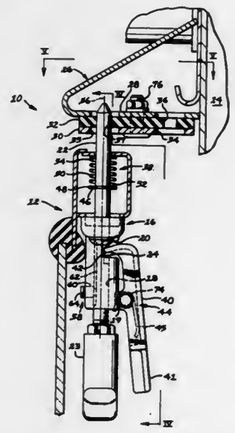
means for latching the enclosure closed when the bracket member is in said retracted position and unlatching the enclosure when in the extended position.

4,552,392

HOLD OPEN DEVICE

Michael E. Morello, Sandwich, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 27, 1984, Ser. No. 574,321
Int. Cl.⁴ E05C *1/04*
U.S. Cl. 292—181 **6 Claims**



1. An apparatus connectable to a pivotally movable partition for selectively locking the partition in an open position, said partition being pivotally connected to a foundation member, the apparatus comprising:

a body having first and second intersecting passages and being connectable to said partition;

a rod reciprocatably disposed in said first passage and movable between a first, unlocked position and a second, locked position, said rod having a diameter and a recess extending radially into said rod, said recess being alignable with said second passage at the second position of said rod;

a bracket having a mounting element joinable to the foundation member, an engagement plate, and a resilient member disposed between said mounting element and said engagement plate, said engagement plate and said resilient member each having a first opening at least as large as and smaller than said diameter of said rod, respectively, said openings being generally coaxially arranged for reception of one end of said rod at the second position of said rod, said mounting element and said engagement plate being fixed one relative to the other;

first biasing means for urging said rod in a direction toward said first position;

a lever pivotally connected to said body and having an engagement portion insertable into said recess through said second passage; and

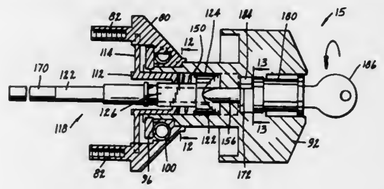
second biasing means for urging said engagement portion of said lever into said recess.

4,552,393

DOOR LATCH MECHANISM

George Wartian, East Detroit, Mich., assignor to Wartian Lock Co., St. Clair Shores, Mich.

Continuation of Ser. No. 494,501, May 13, 1983, abandoned.
This application May 8, 1985, Ser. No. 731,761
Int. Cl.⁴ E05C *3/22*
U.S. Cl. 292—221 **7 Claims**



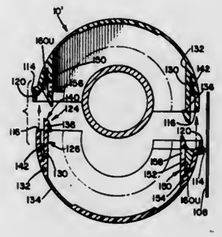
1. A door latch mechanism comprising a latch, means for mounting said latch on a door for movement to and from an operative position in which it is adapted to engage a keeper to maintain the door closed, a housing, a pusher assembly comprising a plunger mounted in said housing for reciprocation, a push rod between said plunger and latch extending lengthwise in the direction of plunger movement and having one end abutting said plunger, the other end of said push rod being operable to move said latch away from its operative position in response to longitudinal movement of said push rod in one direction, a rotatable member, cam means between said rotatable member and plunger for moving said plunger and hence said push rod in said one direction in response to rotation of said rotatable member to move said latch away from its operative position, said cam means comprising confronting contoured surfaces on said pusher assembly and rotatable member, spring means urging said plunger in a direction opposite said one direction, said push rod being rotatable between a first position and a second position, means for rotating said push rod, and means for locking said latch in its operative position in response to rotation of said push rod from its first to its second position.

4,552,394

TAMPER INDICATOR

David A. Kesselman, 16685 Arnold Dr., Sonoma, Calif. 95476

Continuation of Ser. No. 434,550, Oct. 15, 1982, Pat. No. 4,426,108, which is a continuation of Ser. No. 274,483, Jun. 17, 1981, Pat. No. 4,372,593. This application Nov. 10, 1983, Ser. No. 550,546
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 292—307 B **18 Claims**



9. A seal for providing an indication of tampering with a connection nut enclosed thereby comprising:

first and second separate, unconnected, interlockable collar portions for forming a collar for surrounding a connection nut,

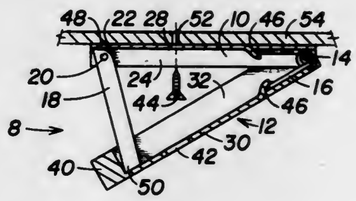
each of said first and second collar portions including an outer wall having an inner and an outer surface, first and second walls formed integrally with said outer wall and extending in substantially parallel spaced relationship therefrom, said first and second walls extending substantially normal to said outer wall and each terminating at an inner edge, the inner edges of the first and second walls of said first collar portion cooperating with the inner edges of the first and second walls respectively of said second collar portion to define enclosed openings in said collar when said first and second collar portions are interlocked, said outer wall and first and second walls terminating at first and second spaced end edges, said first end edge being in a plane which is spaced outwardly beyond the plane of said second end edge, the first end edge of each of said first and second collar portions abutting the second end edge of the other collar portion when the first and second collar portions are interlocked, a cuff located adjacent the second end edge and being formed integrally with said outer and first and second walls to extend completely around and outwardly of said second end edge, said cuff extending from said outer and first and second walls beyond said second end edge for a distance which is at least equal to the distance between the planes of said first and second end edges so that the cuff will extend over the abutting first and second end edges of said first and second collar portions when the first and second collar portions are interlocked, and first and second spaced fastening means on each of said first and second collar portions with the first fastening means of each collar portion being adapted to engage and interlock with the second fastening means of the remaining collar portion at a location spaced inwardly from the first and second walls and the inner surface of the outer walls of said first and second collar portions to form said collar, said first fastening means including a first member affixed at a base end thereof to the inner surface of said outer wall at a location spaced from but adjacent to said first end edge, said first member having a free end opposite to said base end thereof which is spaced inwardly from the inner surface of said outer wall and which extends to and terminates at a terminal edge spaced outwardly beyond the plane of said first end edge, the free end of said first member being provided with a first catch means on the portion thereof which extends outwardly beyond the plane of said first end edge, and said second fastening means including a second member affixed at a base end thereof to the inner surface of said outer wall at a location spaced from but adjacent to said second end edge, said second member having a free end opposite to said base end thereof which is spaced inwardly from the inner surface of said outer wall and which extends to and terminates at a terminal edge spaced outwardly beyond the plane of said second end edge but positioned within the confines of said cuff, the free end of said second member being provided with a second catch means for engaging and interlocking with the first catch means of an adjoining collar portion when said first and second collar portions are interlocked, the free end of one of said first and second members being spaced from the inner surface of said outer wall a greater distance than the free end of the remaining member, said first and second members and said first and second catch means being located and formed so that said first catch means of a first of said collar portions will engage the second catch means of a second said collar portions during but prior to the interlocking thereof to cause relative flexure between the free ends of said first and second members, said first fastening means including a single reinforcing rib extending between the inner surface of said outer wall and said first member, said single reinforcing rib being secured to said first member substantially below said first end edge, said second fastening means including at least two spaced reinforcing ribs extending between the inner surface of said outer wall and said second member.

4,552,395

COLLAPSIBLE WEDGE FOR SLIDING DOORS AND WINDOWS

Edward J. Dominguez, 503 Park Ave., San Jose, Calif. 95110

Continuation of Ser. No. 297,245, Aug. 28, 1981, abandoned.
This application Mar. 25, 1985, Ser. No. 715,763
Int. Cl.⁴ E05C *17/44, 17/54*
U.S. Cl. 292—342 **9 Claims**



1. A collapsible wedge assembly for sliding doors and windows provided with a sliding closure and an upper track for guiding the closure, said collapsible wedge assembly comprising:

an elongated base adapted to be attached to the upper track;

a first pivot means;

at least a first elongated wedging member attached to said elongated base by said first pivot means for pivoted movement towards said elongated base to a closed position and away from said elongated base to an open closure-wedging position, wherein said elongated wedging member is urged toward a closed position by a force tending to open the closure, and exerts a downwardly directed force on the sliding closure;

at least a first torsion spring means mounted on said first pivot means and continuously urging said elongated wedging member from said open position toward said closed position;

second pivot means; and,

at least a first prop member attached to said elongated base by said second pivot means and normally biased by the

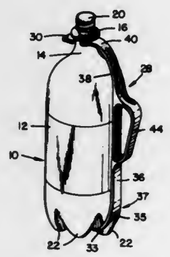
force of gravity away from said elongated base to an overcenter position when said elongated wedging member is moved to open, closure-wedging position, to prop said elongated wedging member in said open, closure-wedging position, and to resist movement of said wedging member to a closed position by said spring means.

4,552,396

BOTTLE HANDLE FOR PLASTIC PRONG BOTTLE

John M. Rais, 520 Westport Ave., Norwalk, Conn. 06851

Filed Oct. 29, 1984, Ser. No. 665,948
Int. Cl.⁴ B65D *23/10*
U.S. Cl. 294—27.1 **7 Claims**



1. A reusable handle adapted to be secured to a bottle having an annular side wall terminating in a neck at one end and a bottom formed from a plurality of spaced support prongs at its opposite end, said handle comprising:

a rigid, arcuate looped first portion at one end of said handle having a substantially diamond-shaped opening adapted to be inserted about a support prong of a bottle,

a substantially horizontal hook-like second end portion at the opposite end of said handle adapted to encompass the neck of a bottle, and

an intermediate strap-like portion joining said hook-like second end portion with said looped first end portion,

said intermediate strap-like portion including a finger gripping substantially vertical loop intermediate the ends thereof.

4,552,397

APPARATUS FOR GRIPPING AN ARTICLE

Peter Conrad, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 387,645, Jun. 11, 1982, Pat. No. 4,427,158. This application Nov. 14, 1983, Ser. No. 551,781
Int. Cl.⁴ B25J *15/00;* **B66C** *1/44*
U.S. Cl. 294—86.4 **1 Claim**



1. Apparatus for gripping an article comprising:

a hollow arm having resiliently swingable flexible bristle projections extending into a center bore of said arm, inner ends of said swingable projections defining an aperture having a cross-section smaller than the article to be gripped,

means for telescopingly inserting said arm onto the article while simultaneously rotating said arm about its longitudinal axis relative to the article such that said inner ends of said projections swing generally tangentially in response to engagement with an outer periphery of the article,

brake means for holding the article against rotation during insertion of said arm thereonto, and

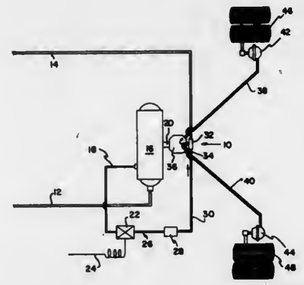
means for rotating said arm in the opposite direction to deactivate said brake means.

4,552,398

TRACTOR-TRAILOR BRAKE ACCELERATION SYSTEM

John R. Risley, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 12, 1984, Ser. No. 570,135
Int. Cl.⁴ B60T *15/46*
U.S. Cl. 303—7 **2 Claims**



1. In a pneumatic trailer brake system of the type actuated by a pneumatic signal from the brake system of an associated tractor, said trailer brake system including pneumatically actuable brakes on the trailer, an air reservoir, a pneumatic relay valve connected to the reservoir and having at least one service outlet connected to said trailer brakes and a control inlet pneumatically connected with said tractor to receive said pneumatic signal therefrom, the improvement comprising:

an electrically actuated valve pneumatically connected to said reservoir and electrically connected with said tractor for actuation upon actuation of said tractor brake system;

a pressure reducing valve pneumatically connected in series with said electrically actuated valve and having an outlet pressure substantially less than said pneumatic signal from said tractor; and

a shuttle valve having a first input port pneumatically connected with said tractor brake system to relieve said pneumatic signal, a second input port pneumatically connected to the outlet pressure of said pressure reducing valve, and an outlet port connected to said control inlet of said relay valve, said shuttle valve providing exclusive pneumatic communication between the input port thereof experiencing higher pressure and said relay valve.

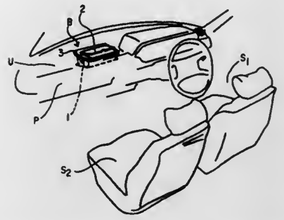
4,552,399

GLOVE BOX ON VEHICULAR INSTRUMENT PANEL

Kazuya Atarashi, Saitama, Japan; assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,479
Claims priority, application Japan, Jun. 22, 1983, 58-94980[U]
Int. Cl.⁴ B60R *7/06*
U.S. Cl. 296—37.12 **13 Claims**

1. A glove box for the upper surface of a vehicle dashboard, comprising, means for mounting on the dashboard upper surface and having pocket for receiving articles, a lid means for covering said pocket and movable forward to open said pocket, means for engaging said lid means and preventing said forward movement upon deceleration of the vehicle.

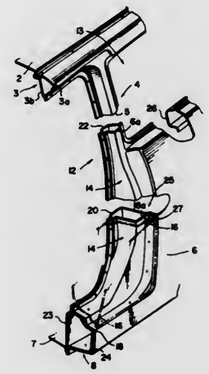


4,552,400

TWO-DOOR TYPE AUTOMOBILE BODY STRUCTURE

Hayathugu Harasaki, and Osamu Matsuura, both of Hiroshima, Japan, assignors to Mazda Motor Company, Hiroshima, Japan

Continuation of Ser. No. 404,838, Aug. 3, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,315
Claims priority, application Japan, Aug. 4, 1981, 56-122209; Aug. 7, 1981, 56-123815
Int. Cl.⁴ B62D *25/00, 23/00*
U.S. Cl. 296—185 **6 Claims**



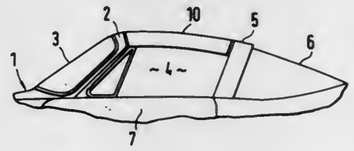
1. A body structure for a two-door type automobile including roof rail means extending along each side of a roof panel, side sill means extending along each side of a floor panel, center pillar means comprising a pillar inner and a pillar outer which are connected together to form a structure of a closed cross-section, said center pillar means having an upper end connected with said roof rail means and extending substantially downwardly therefrom, a rear fender panel having a substantially vertically extending front edge portion which is bent transversely inwardly of the body structure to form a stepped configuration complementary to a rear edge configuration of a side door adapted to be mounted on said body structure, an inner panel having a front edge secured to said front edge portion of the rear fender panel and extending rearwardly from said front edge with a space with respect to said rear fender panel and then bent transversely outwardly toward said rear fender panel, said inner panel further having a rear edge also secured to said rear fender panel at a portion which is covered by a rear edge portion of the side door to form a lower pillar means of closed cross-section, said lower pillar means being connected at a lower end with said side sill means, said inner panel of the lower pillar means being connected with the pillar inner of the center pillar means and said rear fender panel being connected with the pillar outer of the center pillar means so that the closed cross-section of the lower pillar means is contiguous with the closed cross-section of the center pillar means.

4,552,401

FOLDING ROOF FOR VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES

Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,704
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147214
Int. Cl.⁴ B60J *7/14, 7/18*
U.S. Cl. 296—219 **19 Claims**



1. A folding roof for vehicles, bridging a passenger space by extending between a windshield frame and a roll-bar, said folding roof comprising a roof covering means, laterally disposed longitudinally extending girder means for defining the lateral edges of the folding roof, and a plurality of strut means arranged between the longitudinally extending girder means extending substantially parallel to said girder means and a longitudinal center plane of the vehicle for supporting the covering means, said covering means interconnecting the longitudinally extending girder means and the strut means, said strut means including alternately disposed form-rigid strut means and elastic strut means disposed such that unsupported sections of the covering means remain between the strut means.

4,552,402

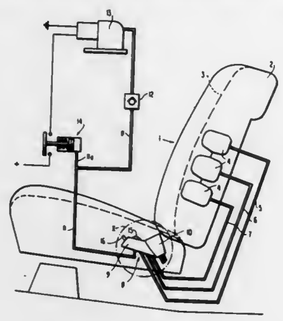
INSTALLATION FOR THE SUPPLY OF SEVERAL SIMILAR ELEMENTS WITH A MEDIUM UNDER ATMOSPHERIC EXCESS PRESSURE

Guntram Huber, Dachtel; Hermann Möller, Aidlingen; Eberhard Faust, Stuttgart; Rüdolf Andres, Sindelfingen, and Wolfram Qüillmalz, Ehningen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 435,957
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142833
Int. Cl.⁴ A47C *3/00;* **B60N** *1/00*
U.S. Cl. 297—284 **16 Claims**

1. An installation for the supply of several similar elements with a pressure medium under atmospheric excess pressure for the control of different air chambers of a backrest of a motor vehicle seat, comprising a valve means and a distribution means series-connected with said valve means, said distribution means having outlets adapted to be connected with the similar elements, characterized in that the valve means is constructed as pressure modulator means and in that the pressure modulator means is operable to be selectively connected with at least

one of said elements by said distribution means, and wherein the installation includes a structural unit coordinated to a



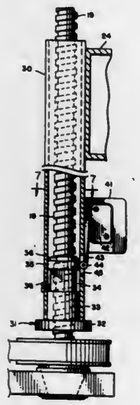
bracket means for the actuation of the pressure modulator means.

4,552,403

POWER-OPERATED MEDICAL EXAMINATION TABLE

Leonard J. Yindra, Manitowoc, Wis., assignor to Hamilton Industries, Two Rivers, Wis.

Filed Sep. 29, 1983, Ser. No. 537,340
Int. Cl.⁴ A47C *3/24*
U.S. Cl. 297—330 **7 Claims**



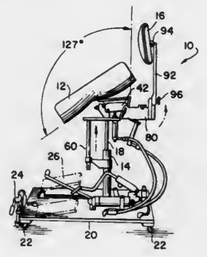
1. A power-operated medical examination table having a base, an extensible/retractable column mounted upon said base, a top supported by said column, and means for extending and retracting said column to raise and lower said top; said means including a load-bearing member disposed beneath said top and normally supporting the same; power drive means for selectively raising and lowering said load-bearing member; said load-bearing member being separable from said top when said power drive means is operated to lower said load-bearing member at the same time that an obstructive force prevents lowering of said top; and sensing means for sensing such separation of said load-bearing means from said top and for interrupting operation of said power means; said top including an inner section mounted upon said column and at least one outer section hingedly connected to said inner section along a horizontal hinge line; second power means for pivoting said outer section between lowered and raised positions; said second power means including a second load-bearing member; second power drive means provided on one of said hinged sections for urging said load-bearing member towards and away from said one of said hinged sections; stop means provided by the other of said hinged sections normally engaging and supporting said second load-bearing member, whereby movement of said second load-bearing member by said second power means causes pivotal movement of said outer section relative to said inner section; said stop means and said second load-bearing member being separable from each other when downward pivotal movement of said outer section is restrained by an obstruction.

4,552,404

NEUTRAL BODY POSTURE CHAIR

Jerome J. Congleton, 2728 San Felipe, College Station, Tex. 77840

Filed Oct. 12, 1983, Ser. No. 541,093
Int. Cl.⁴ A47C *1/02*
U.S. Cl. 297—330 **14 Claims**



1. A chair adapted to support a user in a neutral body posture position; said position defined as the position the body assumes during weightlessness wherein the torso of the body and upper legs form an angle with respect to each other within a range of 100–140 degrees, and the upper legs and the lower legs form a second angle with respect to each other within the range of 100–140 degrees; comprising: a base; a vertical support means; a seat attached to said vertical support means; said seat having a back portion and a front portion; said front portion being downwardly inclined from said back portion at a neutral body posture position angle between 100–140 degrees with respect to the vertical axis of said chair; said back portion of said seat forming a contoured bowl having lower supporting surfaces and raised sides adapted for reception and support of the buttocks of a user; said front portion of said seat forming semi-cylindrical leg troughs extending forwardly of said contoured bowl, said troughs having lower supporting surfaces and raised sides conforming to and being adapted for reception and support of the upper legs of a user; and an elevated weight-bearing pommel positioned between said leg troughs and raised above said lower supporting surfaces of said contoured bowls; the forward end of said pommel and the forward end of said leg troughs being in substantially the same plane; said weight-bearing pommel supporting the weight of the user at the pubis bone maintaining the user at an inclined neutral body position angle within said seat.

4,552,405

SUPPORT FOR SEAT ADJUSTING DEVICE

John W. Wiers, Romeo, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

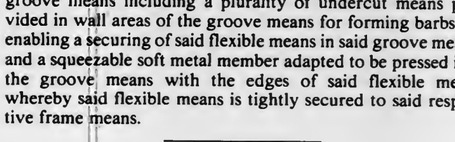
Filed Oct. 6, 1983, Ser. No. 539,442
Int. Cl.⁴ A47C *1/027*
U.S. Cl. 297—375 **7 Claims**

1. A seat adjusting device including a rod secured to one part of the seat and axially movable relative to a locking mechanism for selective locking engagement at different positions on said rod comprising:

a fulcrum pivotally mounted on a fulcrum support and having an axis normal to the axis of said rod, a plurality of lockwashers slidably mounted to said rod with at least one washer on each side of said fulcrum,

means biasing said washers about said fulcrum to engage said rod,

manually actuable means for moving said lockwashers against said biasing means to release said engagement,



a housing substantially enclosing said lockwashers, said fulcrum, said biasing means and said means for moving said lockwashers, and

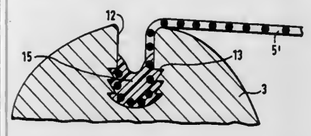
said fulcrum support extending through an opening in said housing and projecting out of said housing and fixed to another part of said seat whereby the load applied to said lockwashers and said fulcrum is transferred to said other part of said seat independently of said housing.

4,552,406

CHAIR

Herbert Ohl, Darmstadt, Fed. Rep. of Germany, assignor to Wilkhahn Wikening & Hahne GmbH & Co., Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,925
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207352
Int. Cl.⁴ A47C *1/12*
U.S. Cl. 297—445 **54 Claims**



1. A chair comprising a first frame means for forming a seat portion, a second frame means for forming a backrest portion, and a substantially flat flexible means adapted to be disposed on said first and second frame means, longitudinally extending groove means formed in each frame for accommodating egdes of said flexible means, means formed in said groove means for enabling a securing of the edges of said flexible means in said groove means including a plurality of undercut means provided in wall areas of the groove means for forming barbs for enabling a securing of said flexible means in said groove means, and a squeezable soft metal member adapted to be pressed into the groove means with the edges of said flexible means whereby said flexible means is tightly secured to said respective frame means.

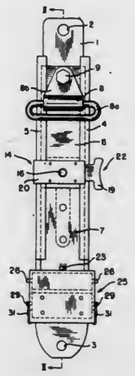
4,552,407

SEATBELT CLAMP

Juichiro Takada, 12-1, 3-chome Setagayaku, Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,173
Claims priority, application Japan, Jul. 20, 1982, 57-108753[U]
Int. Cl.⁴ A62B *35/00*; B60R *21/10*
U.S. Cl. 297—476 **6 Claims**

1. A clamping device for clamping a seatbelt of a passive restraint belt system comprising an elongated base plate affixed to a vehicle body and having a case at a lower end thereof, an elongated operating member slidably mounted lengthwise of the base plate and having a belt guide means affixed adjacent an upper end thereof and a cam means affixed at a lower end thereof, a movable clamping jaw in the case having a surface engageable with the cam means, a fixed clamping jaw arranged on a wall of the case opposite to the movable clamping jaw, the seatbelt passing through a space defined between the movable jaw and the fixed jaw, and wrapping at least partway around the belt guide means and a spring biasing the operating member and its cam away from the movable clamping jaw toward a non-clamping position, whereby when a predetermined force



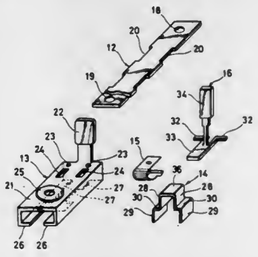
is exerted on the seatbelt, the biasing force of the spring is overcome and the operating member is moved toward a clamping position to cause the cam to engage the movable clamping jaw, thereby forcing the movable clamping jaw against the fixed clamping jaw, to clamp the seatbelt between the fixed and the movable clamping jaws.

4,552,408

ADJUSTABLE ANCHOR MOUNTING DEVICE

Katsuyasu Ono, Kanagawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Sep. 15, 1983, Ser. No. 532,406
Claims priority, application Japan, Sep. 24, 1982, 57-144423[U]
Int. Cl.⁴ A62B *35/02*; B60R *21/10*
U.S. Cl. 297—483 **9 Claims**



1. An adjustable anchor mounting device comprising:

a substantially planar base to be mounted fixedly on a vehicle body and having a plurality of interlocking means provided in pairs spacedly along the direction of displacement of an anchor;

a slide member guided along the base, carrying the anchor thereon, having substantially a lip-groove shape and including a front wall, a pair of side walls extending rearward from the front wall and a pair of rear walls extending inwardly from the respective side walls, whereby surrounding the base;

a latch piece supported on the slide member in such a way that the latch piece is slidable between a first position where the latch piece is in engagement with either one of

the interlocking means and a second position where the latch piece is out of engagement with any of the interlocking means, said latch piece being formed of a plate-like member, being engageable with either one of the interlocking means, having a pair of leg portions received respectively in attachment slots formed through the front wall and guide portions formed in the rear walls and a top portion connecting the leg portions together, and being formed substantially into a U-shape as seen in a transverse cross-section thereof;

biasing means normally urging the latch piece toward the first position; and

release means engageable with the top portion of the latch piece and permitting the shifting of the latch piece to the second position when moved relative to the latch piece.

4,552,409

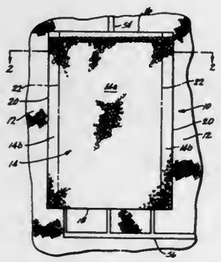
IN SITU OIL SHALE RETORT WITH CONTROLLED PERMEABILITY FOR UNIFORM FLOW

Rex T. Ellington, Norman, Okla., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 19, 1984, Ser. No. 590,711

Int. Cl.⁴ E21B *43/247*; E21C *41/10*; C10B *57/20*

U.S. Cl. 299—2 **4 Claims**



1. An in situ oil shale retort in a subterranean formation containing oil shale, the in situ retort containing a fragmented permeable mass of formation particles within top, bottom, and side boundaries of unfragmented formation, the fragmented permeable mass having a vertically extending center portion and a vertically extending perimeter portion surrounding the center portion, the center portion having a lower average void fraction (e_1) than the average void fraction (e_2) of the perimeter portion, the center portion having a larger average particle size (d_1) than the average particle size (d_2) of the perimeter portion.

4,552,410

BRAKING SYSTEMS FOR RAILWAY

David J. Wickham; Raymond A. S. Wilkins, both of Chippenham, and Edmund J. Page, London, all of England, assignors to Westinghouse Brake & Signal Co., Wiltshire, England

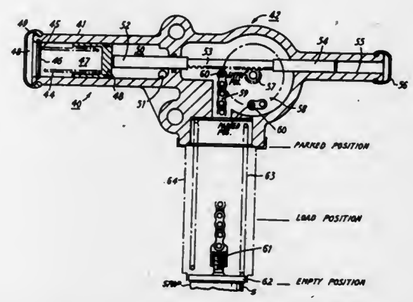
Filed Oct. 17, 1983, Ser. No. 542,536

Claims priority, application United Kingdom, Nov. 6, 1982, 8231753; Nov. 15, 1982, 8232604

Int. Cl.⁴ B60T *8/20*

U.S. Cl. 303—23 R **6 Claims**

1. A braking system for a railway vehicle having a body carried by a sprung bogie, the system including an empty-load valve operable by empty-load measuring means carried by one of the body and the bogie of the vehicle and a stop carried by the other of the body and the bogie, the measuring means including a piston-and-cylinder arrangement extended by pressurization of the arrangement upon the making of a brake application to bring an arresting member into engagement with the stop, a pinion drivingly connected to the arresting member, a rack operatively connected to said piston-and-cylinder arrangement, and drivingly engaged with said pinion such that extension of the piston-and-cylinder arrangement, as transmitted through the rack, rotates the pinion to allow the arresting member to move into engagement with the stop and thereby determine the permitted degree of rotation of the pinion, the empty-load valve being operable in accordance with the permitted degree of rotation of the pinion either to permit a higher



level of brake application upon lesser movement of the arresting member before the arresting member engages the stop or a lower level of brake application upon greater movement of the arresting member before the arresting member engages the stop.

4,552,411

PULSATING BRAKE ACCELERATOR FOR RAIL VEHICLE AIR BRAKE

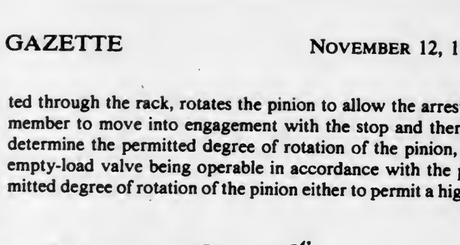
Josef Hintner, Türkheim, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,318

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3232047; Mar. 25, 1983, 3311037

Int. Cl.⁴ B60T *17/04, 15/38*; B61H *9/00*

U.S. Cl. 303—37 **13 Claims**



4. Pulsating brake accelerator (4, 8, 12) for an indirectly operating air brake for rail vehicles, operating at any braking level of a service brake application (control braking) and having a first inlet opening (2) for brake line signals and a second inlet opening (3) for reference pressure signals, said reference pressure signals originating in a control chamber (QAC) which is connected with a brake pipe (BP) via a filling nozzle (7), said brake accelerator (4, 8, 12) having a control organ (4) that reacts to pressure differences between the pressure signals at said first and second inlet openings (2, 3), a control element (4) controlling a first valve device (8) for the operation of a pulsator (12) which releases repeated air pulses from said brake pipe to atmosphere during every braking level, said first valve device (8) being connected to said control chamber (QAC) and via a first nozzle (13), to said pulsator, wherein:

(a) said pulsator (12) is connected to said brake pipe (BP) via a second nozzle (23);

(b) said pulsator (12) forms a mixed pressure from a first derived pressure (QAW) and a second derived pressure (BPW), said first pressure (QAW) being derived from the pressure in said control chamber (QAC) via said first nozzle (13) and said second pressure being derived from the pressure in said brake pipe (BP) via said second nozzle (23);

(c) said pulsator releases mixed pressure impulses (BPW/QAW) at every braking level to atmosphere, while at the same time the brake pipe pressure and the control chamber pressure are reduced via said pulsator (12);

(d) said control element (4) also functions as an emergency brake piston and forms an accelator/emergency brake piston-unit which controls a second valve device (5) is a first compressed connecting passage (3, 4', 47) between said control chamber (QAC) and a bleeder nozzle (6) and additionally a third valve devices (46'') in a second compressed air connecting passage (2, 2'', 48) between said brake pipe (BP) and atmosphere, as well as said first valve device (sensor 8).

4,552,412

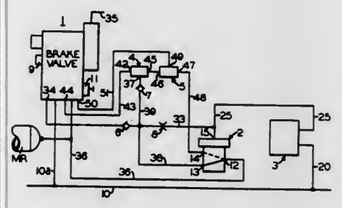
BRAKE PIPE CHARGING CUT-OFF ARRANGEMENT

Richard F. Balukin, Penn Hills, and John R. Reiss, North Versailles, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Jul. 20, 1984, Ser. No. 632,985

Int. Cl.⁴ B60T *11/32*

U.S. Cl. 303—67 **8 Claims**



1. A brake pipe charging cut-off system for a railway vehicle comprising:

(a) a source of fluid under pressure;

(b) a brake pipe normally charged with fluid pressure from said source;

(c) a brake valve device including a brake pipe cut-off valve operable in response to pressurization thereof to interrupt said charging of said brake pipe;

(d) an actuating valve having a control chamber pressurization of which effects operation of said actuating valve to a first position in which said source of fluid under pressure is connected to said control chamber and depressurization of which effects operation of said actuating valve to a second position in which said source of fluid under pressure is cut off from said control chamber and connected to said brake pipe cut-off valve;

(e) rate sensing valve means for venting said control chamber of said actuating valve in response to an emergency rate of reduction of said brake pipe pressure; and

(f) a choke via which said source of fluid pressure is connected to said control chamber in said first position of said actuating valve.

4,552,413

ANTI-SKID BRAKE CONTROL SYSTEM FOR AUTOMOBILES

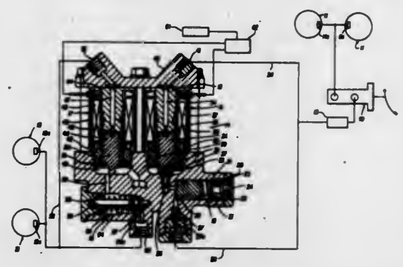
Takashi Fujii; Masamoto Ando, both of Toyota, and Takumi Nishimura, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 7, 1983, Ser. No. 511,484

Claims priority, application Japan, Jul. 9, 1982, 57-120148

Int. Cl.⁴ B60T *8/08*

U.S. Cl. 303—106 **12 Claims**



1. An anti-skid brake control system for a vehicle comprising:

a master cylinder;

at least one rear wheel brake cylinder;

brake pressure circuit means for communication of said master cylinder with said rear wheel brake cylinder;

hydraulic pressure control means for controlling hydraulic brake pressure supplied from said master cylinder to said rear wheel brake cylinder through said brake pressure circuit means, said hydraulic pressure control means comprising a first electromagnetic valve interposed between said master cylinder and said rear wheel brake cylinder and being operable to interrupt the communication between said master cylinder and said rear wheel brake cylinder and to establish the communication between said rear wheel brake cylinder and a reservoir upon energizing thereof, a second electromagnetic valve interposed between said first electromagnetic valve and said rear wheel brake cylinder and being normally open, and a pressure reducing valve interposed in parallel with said second electromagnetic valve between said first electromagnetic valve and said rear wheel brake cylinder; and

means electrically connected with said hydraulic pressure control means for causing the energized position of said first electromagnetic valve upon generating the initial locking tendency at a rear wheel to reduce the hydraulic brake pressure, said means further being operable for causing the de-energized position of said first electromagnetic valve and for causing and maintaining the energized position of said second electromagnetic valve upon fading said initial locking tendency.

4,552,414

HYDRAULIC CIRCUIT FOR AN ANTI-LOCKING BRAKING SYSTEM

Etsuo Fujii; Makoto Satoh, both of Saitama, and Mitsuo Toyoda, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,732

Claims priority, application Japan, Oct. 29, 1982, 57-164871; Oct. 31, 1982, 57-164674; Nov. 15, 1982, 57-172757; Nov. 15, 1982, 57-172758

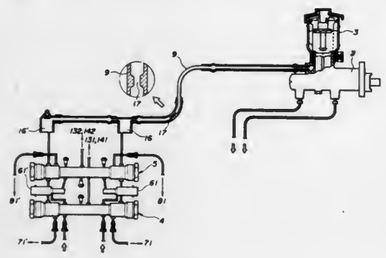
Int. Cl.⁴ B60T *8/02*

U.S. Cl. 303—115 **1 Claim**

1. In an anti-lock braking system of the type including a master brake cylinder for applying braking pressure, said master brake cylinder having a hydraulic fluid reservoir, hydraulic pressure modulator means for regulating the braking pressure

to prevent brake locking, said modulator means having a relieved hydraulic fluid chamber, and hydraulic fluid line means operatively connecting said relieved hydraulic fluid chamber to said master brake cylinder for transferring hydraulic fluid in said relieved hydraulic fluid chamber to said reservoir during regulation of the braking pressure, the improvement comprising:

means for preventing air trapped within said fluid line means from being transferred to said modulator means, said preventing means comprising said reservoir being positioned entirely at a location above an inlet connection of said fluid line means to said master brake cylinder, whereby such trapped air is caused to move upwardly by its buoyancy through said fluid line means and said reservoir;



means for, in the event of the occurrence of a leak in said fluid line means, ensuring a required supply of hydraulic fluid for said relieved hydraulic fluid chamber, said ensuring means comprising buffer chamber means in said fluid line means for accumulating therein hydraulic fluid, said buffer chamber means being positioned at a level below said inlet connection; and

means for throttling the flow of hydraulic fluid from said relieved hydraulic fluid chamber to said reservoir, and thereby for preventing depletion of the accumulation of hydraulic fluid in said buffer chamber means, said throttling means comprising a restriction of the internal size of said fluid line means, said restriction being located between said buffer chamber means and said inlet connection.

4,552,415

ADJUSTABLE DRAWER MOUNTING ASSEMBLY

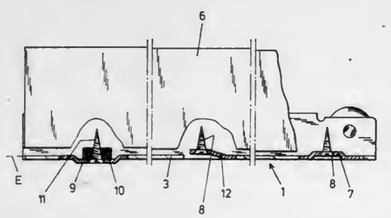
Manfred Fulterer, Lustenau, Austria, assignor to Fulterer Gesellschaft m.b.H., Lustenau, Austria

Filed Jul. 31, 1984, Ser. No. 636,398

Claims priority, application Austria, Aug. 3, 1983, 2814/83; Apr. 25, 1984, 1375/84

Int. Cl.⁴ A47B *88/04*

U.S. Cl. 308—3.8 **13 Claims**



1. A drawer mounting assembly slidably mounting a drawer on a base member to enable said drawer to be withdrawn from said base member in a pullout direction, said drawer having a bottom side, said assembly comprising: a longitudinal rail member having a longitudinal dimension which extends parallel to said pullout direction and a support flange extending from said rail member essentially in a horizontal plane beneath said bottom side of said drawer over substantially the entire length of said rail member; slider means supporting said rail member in sliding engagement on said base member; lug means on said rail member connected with said support flange and adapted to be deformed to enable movement thereof relative to said horizontal plane; and connector means affixing said lug means to said bottom side of said drawer; said lug means being arranged to enable deformation thereof after attachment to said drawer thereby to adjust the position of said drawer relative to said base member during mounting thereof; said lug means comprising a first lug member which is located on said rail member at a rearward position taken relative to said pullout direction and which is located above said horizontal plane and a second lug member which is located forwardly taken relative to said pullout direction and which is located below said horizontal plane, with a resilient buffer member being provided between said bottom side of said drawer and said second lug member and with said connector means comprising screws fastening both said first and said second lug members to said bottom side of said drawer.

4,552,416

REARING ARRANGEMENT FOR GUIDING A CARRIAGE IN A STRAIGHT LINE ALONG A GUIDE RAIL

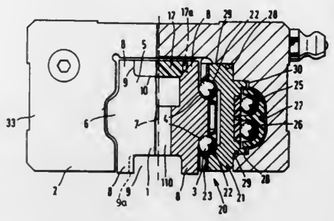
Wolfgang Lehmann, Stuttgart, and Hans-Walter Aab, Waiblingen, both of Fed. Rep. of Germany, assignors to Neff Gewindespindeln GmbH, Waldenbuch, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,129

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313128

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 308—6 C **17 Claims**



1. In combination with a base structure (12) including at least one projection,

bearing arrangement for guiding a carriage (2) in a straight line along a guide rail (1) wherein

the guide rail (1) is formed with four longitudinal guide tracks (4) thereon;

the carriage (2) is longitudinally movable with respect to the guide rail;

an interposed longitudinal ball bearing assembly (20) is provided, interposed between the carriage (2) and the guide rail (1), and supporting the carriage on the guide rail, said ball bearing assembly (20) having a plurality of balls (3) for rolling and weight bearing contact with the guide tracks (4) on the guide rail, said assembly including return track means (24, 25, 26) for returning and recirculating unloaded balls in an endless chain around the guide tracks, and wherein

the guide rail (1) is formed, at the side of the rail remote from the position of the carriage thereon, with at least two longitudinal parallel ribs (8), defining a longitudinal groove (9) therebetween;

at least one projection (11) of the base structure fitting in the groove (9) between said parallel ribs;

the carriage (2) has generally C-shaped cross section defining an insertion opening (34), the inside diameter of the insertion opening being larger than the width of the guide rail (1);

said ball bearing assembly (20) forming a unitary element including said balls (3), said return track means (24, 25, 26) and ball retention means (23) for retaining the balls on said assembly and retaining said ball captive thereon, comprising a ball race body (21) having ball races (22) thereon, located for operation of the balls between guide tracks (24) on the rail and the ball race 5(22) on said ball race body, said ball race body further having said return track means (24, 25, 26) secured to said ball race body (21) and forming part of said unitary element, said ball retention means being secured to said ball race body and forming part of said unitary element, to retain the balls in and on the respective ball races and in and on said unitary element;

said carriage being formed with receiving recesses (30) at either side of the guide rail to receive said ball bearing assembly (20) as a unitary element (20) including said ball race body, and said return track means (24, 25, 26);

and matching, engaging, fitting surfaces (28, 29) formed respectively, in said opening (34) of said carriage (2) and the ball race body (21) for positioning of the ball race body, and hence the ball bearing assembly (20) in the carriage upon insertion of the bearing assembly (20) into the carriage and thereby recisely locating the balls (3) between the guide tracks (4) on the rail, and the ball races (22) on the ball race body of the bearing assembly (20).

4,552,417

POLYGONAL TYPE OPTICAL DEFLECTOR

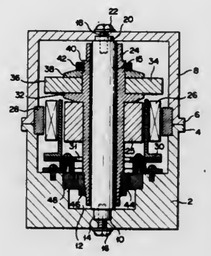
Mitsuo Yamashita, Yokohama; Goro Oda, Sagamihara, and Kiyoshi Tomimori, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 14, 1983, Ser. No. 513,795

Claims priority, application Japan, Jul. 20, 1982, 57-126123

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 308—10 **3 Claims**



1. A polygonal type optical deflector, comprising:

a motor housing;

a fixed shaft extending within the motor housing;

a rotatable hollow cylindrical spindle into which the shaft is coaxially and detachably inserted, the inner surface of the spindle facing the outer surface of the shaft with a gap provided therebetween;

a polygonal mirror fixed to the hollow cylindrical spindle and rotatable together with the spindle.

a dynamic pressure type radial bearing consisting of a smooth plane formed on one of the inner surface of the spindle and the outer surface of the shaft and parallel straight grooves extending in parallel with the axis of the shaft and formed on the other of the inner surface of the spindle and the outer surface of the shaft;

a magnetic thrust bearing for suspending the hollow cylindrical spindle in its axial direction;

a motor rotor fixed to the hollow cylindrical spindle; and

a motor stator fixed to the housing for rotating the motor rotor.

4,552,418

MOUNTING FOR DATA DISPLAY EQUIPMENT

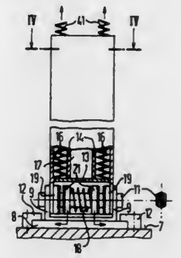
Herbert Sarnezki, Munich, and Klemens Hübner, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,664

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235457

Int. Cl.⁴ H04N *5/64*

U.S. Cl. 312—242 **12 Claims**



1. Mounting for display equipment, comprising a lower part in the form of a base plate having an upper surface and being supported in a level position, an upper part in the form of a box-shaped housing, a picture screen surrounded by said upper part, a connecting part in the form of a turntable rotatably supported about a vertical axis on said upper surface of said lower part, a support arm formed of a first elongated hollow bottom part and a second elongated hollow head part each having first and second ends, said second ends of said first and second parts being telescoped together, said first end of said first part being rotatably supported about a horizontal axis on said connecting part, said first end of said second part being rigidly connected to said upper part, at least one compensating element disposed in said support arm for pushing said first and second parts apart, a notch strip disposed in one of said first and second parts having at least one row of detent notches formed therein along the longitudinal direction of said support arm, at least one ratchet pawl rotatably supported about a horizontal axis in the other of said first and second parts, said ratchet pawl being engaged in one of said detent notches in a rest position thereof and being movable out of said detent notches in a disengaged position thereof, and a detent rod engageable with said ratchet pawl and operable from outside the mounting for moving said ratchet pawl into said disengaged position.

4,552,419

MINI-DESK

William L. Poole, 8229 Kingsbrook, #225, Houston, Tex. 77024

Filed May 24, 1984, Ser. No. 613,231

Int. Cl.⁴ A47B *97/00, 85/00*

U.S. Cl. 312—281 **10 Claims**

1. A portable desk comprising:

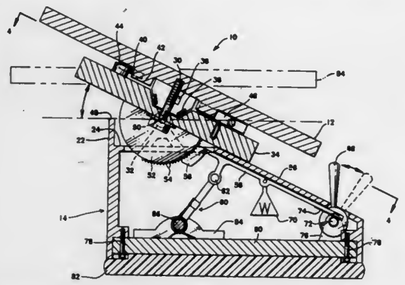
a body having a generally flat surface thereabout;

a first surface connected to said body, said first surface capable of canting with respect to said body;

control means arranged about said body so as to maintain said first surface in at least one fixed position with respect to said body; and

a turntable means interposed between said first surface and

said body, said first surface connected to said turntable means so as to permit rotational movement of said first



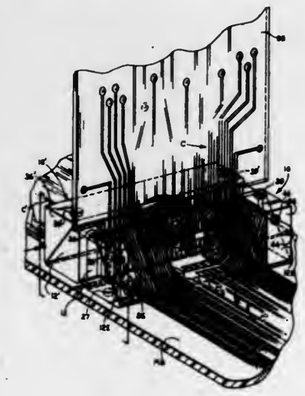
surface with respect to said body, said turntable means being pivotally attached about said body.

4,552,420

ELECTRICAL CONNECTOR USING A FLEXIBLE CIRCUIT HAVING AN IMPEDANCE CONTROL ARRANGEMENT THEREON

George T. Eigenbrode, deceased, late of Camp Hill, Pa. (by Judy E. Eigenbrode, executrix), assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 2, 1983, Ser. No. 557,702
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 R **22 Claims**



1. An electrical connector for electrically connecting an array of signal conduction paths disposed on a first substrate with a corresponding array of signal conduction paths disposed on a second substrate, the connector comprising:

a core;

a flexible circuit wrapped around the core, the flexible circuit having thereon a first surface and a second surface;

an array of signal conduction tracings disposed on the first surface of the flexible circuit, the signal conduction tracings being arranged to electrically contact corresponding ones of the signal conduction paths on the first and the second substrates;

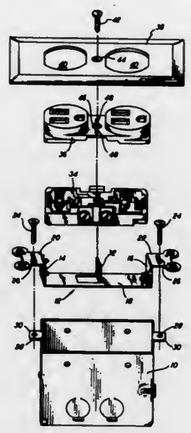
an impedance control arrangement disposed on the second surface of the flexible circuit comprising at least one ground tracing carrying a signal return current through a ground potential connection at both ends of the ground tracing, the ground tracing being arranged with respect to the signal conduction tracings on the first surface so that the impedance of the signal conduction tracings matches the impedance of the corresponding conduction paths on the first and second substrates.

4,552,421

ELECTRIC OUTLET HAVING NOVEL SCREW ANCHOR AND GROUND CONNECTION

William B. Drapkin, Jamesville, N.Y., assignor to Pass & Seymour, Inc., Solvay, N.Y.

Filed Jan. 23, 1984, Ser. No. 572,804
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 R **2 Claims**



1. An electrical outlet assembly having electrical terminals and receptacles for receiving a straight blade plug comprising:

(a) a box-like housing having wall members defining an open side;

(b) an electrically grounded mounting strap of flat, electrically conducting metal having opposite end portions respectively secured to an opposing pair of said wall members, and joined by a pair of parallel legs to a central portion in a U-shaped configuration, whereby said central portion lies in a first plane spaced from a second plane in which said end portions lie;

(c) a body portion upon which the electrical terminals and receptacles for the blades are mounted;

(d) a threaded screw fastener;

(e) a receptacle cover having openings for passage of the plug blades and first aperture means lying essentially in said second plane for passage of said screw fastener;

(f) a wall plate positioned in covering relation to said receptacle cover and open side of said housing having open areas through which said receptacle cover openings are exposed and second aperture means in alignment with said first aperture means for loose passage therethrough of said screw fastener;

(g) means retaining said receptacle cover, said body portion and said mounting strap in a predetermined assembled orientation within said housing;

(h) an elongated member formed integrally with said central portion and bent along a fold line to extend from said first plane toward said first aperture means and extending into the path of said screw fastener extending through said second and first aperture means toward said mounting strap central portion;

(i) said elongated member being flexible about said fold line and bent at a medial position to extend to a free end out of said screw fastener path; and

(j) said screw fastener being anchored by threaded engagement with said first aperture means to hold said wall plate in position whereby, as said screw fastener is advanced through said second and thence through said first aperture

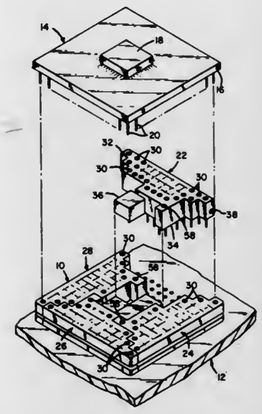
means, it contacts said elongated member at said medial position flexing said elongated member about said fold line to remain in electrical contact therewith, thereby providing a ground path for said screw fastener and any metal parts with which it is in contact.

4,552,422

MODULAR RECEPTACLE PIN GRID ARRAY

Benny M. Bennett; Robert F. Meehan, both of Harrisburg, and Dale R. Zell, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 14, 1983, Ser. No. 475,268
Int. Cl.[4] H01R *23/72*
U.S. Cl. 339—17 CF **5 Claims**



1. A modular receptacle receiving a high density array of pin terminals from an integrated chip carrier, the receptacle having a mating face and an opposite directed mounting face with a plurality of terminal passages extending there between in parallel spaced rows, a like plurality of receptacle terminals, each terminal mounted in a respective passage and having a receptacle pin engaging portion directed toward said mating face, and a mounting portion extending from the mounting face contacting a conductive portion of a circuit board characterized in that said receptacle is formed by four intermating modules of insulative material, each module having a longer outer side and a shorter inner side connected at opposite ends, by stepped end profiles, each step of each end profile corresponding to a row of passages, and a keying block recessed from said mating face and extending from the inner side of each said module whereby said modules are interfitted by said stepped end profiles with the recessed keying blocks forming a cavity to receive a chip of a chip carrier therein.

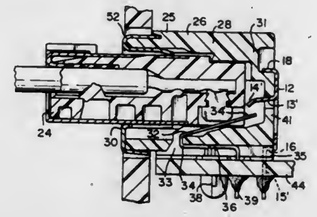
4,552,423

SHUNTED ELECTRICAL CONNECTORS

Robert C. Swengel, Jr., York, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 30, 1984, Ser. No. 595,571
Int. Cl.[4] H01R *31/08*
U.S. Cl. 339—19 **3 Claims**

1. An electrical connector socket comprising an insulating housing having first, front and second, rear ends, spaced apart wall portions extending between the ends and across the rear end defining between them a plug receiving cavity open at a plug receiving mouth at the first end, terminals extending cantilever spring fashion rearwardly from root ends adjacent one wall portion adjacent the mouth across the cavity away from the one wall portion to free ends spaced from the one wall portion adjacent the rear end so that insertion of the plug into the cavity deflects the terminals towards the one wall portion, a programmable shunt stamped and formed from sheet metal and comprising a web portion from which a series of individual contact fingers have been stamped to lie adjacent the plane of the web at the same pitch as terminals, the shunt being secured to the housing with the web adjacent and face-to-face with a wall portion, preselected individual contact



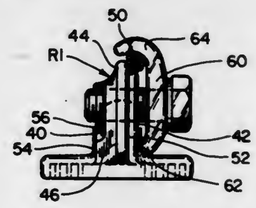
fingers of the series having been bent to project transversely out from the plane of the web into the rear end of the cavity on a side of the terminals remote from the one wall portion into engagement with free end portions of preselected terminals thereby to common the terminals when the plug is not received in the cavity, the unselected contact fingers remaining adjacent the plane of the web.

4,552,424

HIGH VOLTAGE TERMINAL

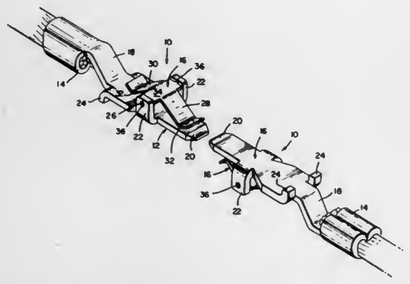
James J. Seaquist, Birmingham, and Elred R. Harmon, Pell City, both of Ala., assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 409,202, Aug. 18, 1982,. This application Nov. 14, 1983, Ser. No. 551,546
Int. Cl.[4] H01R *27/00*
U.S. Cl. 339—32 R **6 Claims**



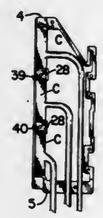
4. A high voltage bushing terminal comprising a conductive first member having a threaded bore for connecting to an insulator, said first member having a first elongated recess extending substantially parallel to the axis of said threaded bore and a second elongated recess angularly related to said axis of said threaded bore, said first member having generally opposed surfaces with said first and second recesses located in one of said surfaces and in which the other surface has third and fourth elongated recesses respectively aligned with said first and second recesses, said first member having a threaded opening equally spaced from said first and second recesses, a second member having an elongated arcuate surface along one edge and a base along an opposite edge with an opening between said arcuate surface and said base, and a threaded fastener extending through said opening in said second member and received in said threaded opening to be operable to clamp a conductor between said elongated arcuate surface and each of said recesses independently.

4,552,425
HIGH CURRENT CONNECTOR
Timothy B. Billman, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 27, 1983, Ser. No. 517,867
Int. Cl.⁴ H01R *25/00*
U.S. Cl. 339—47 R **2 Claims**



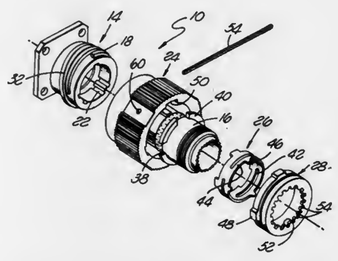
1. An electrical connector, comprising:
a. a strip of conductive material having wire retaining means at a back end and an elongated blade at a front end;
b. support brackets attached to opposite sides of the blade and having free ends extending upwardly therefrom with pin receiving means adjacent the free ends, said brackets defining a yoke-like structure; and
c. an elongated spring member having a bar with a pin on each side, said spring member positioned over the blade and in between the brackets with the pins being received in the pin receiving means for pivotally mounting the spring member thereon, said spring member further having a long spring arm attached to the bar and extending towards the front end and obliquely downwardly towards the blade and a short spring arm attached to the bar and extending towards the back end and obliquely downwardly towards the blade, said spring arms and blade defining two separate spaces therebetween for receiving another blade or a tab terminal.

4,552,426
MULTIPLE CONNECTOR HOOD FOR INTERCONNECTIONS TO PRINTED CIRCUIT BOARDS
George S. Bettencourt, Murrysville, and Robert E. Strickler, Plum Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 15, 1983, Ser. No. 532,424
Int. Cl.⁴ H01R *13/514*
U.S. Cl. 339—75 M **12 Claims**



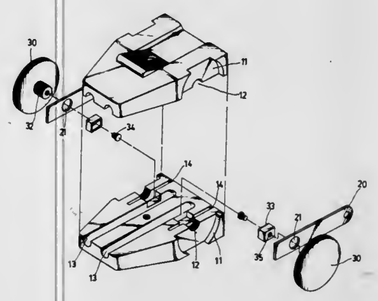
1. A connector hood for use in connecting at least one socket connector to at least one card edge connector of a printed circuit board, comprising:
(a) a pair of mating wall sections formed from a dielectric material, each wall section having top, bottom, rear and front portions, the top, bottom and rear portions having inwardly extending, mating flanges thereon and the front portion having an inwardly directed lip, the flanges releasably secured together to provide an opening along the front of the mated wall sections between confronting lips thereof, at least one of the wall sections having a vertically extending, inwardly directed support flange spaced from the lips thereof;
(b) first engaging means adjacent the front portion of the wall sections for engaging spacer blocks therebetween, said first engaging means being indentations in the inner surface of the wall section;
(c) a plurality of spacer blocks, formed from a dielectric material, having (1) second engaging means thereon for engagement with the first engaging means of the wall section, said second engaging means being projections fitting within said indentations in the inner surface of the wall section when the spacer blocks are secured within the wall section, (2) a recess therein and (3) at least one side flange, the side flange of the spacer block resting on said support flange, with the support flange positioned within said recess, said spacer blocks, adapted to fit between said inwardly directed lip and said support flange and with said lips secure at least one socket connector therebetween, completely within the mated wall sections, adjacent said opening; and
(d) at least one groove in the flanges of a wall section for passage of a cable to be electrically connected to a socket connector secured by said space blocks.

4,552,427
SELF-LOCKING CONNECTOR
Eleanor A. Landgreen, Whittier, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.
Filed Dec. 13, 1982, Ser. No. 449,359
Int. Cl.⁴ H01R *13/625*
U.S. Cl. 339—89 M **18 Claims**



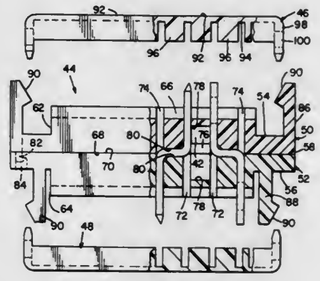
1. A connector member adapted to mate with a second connector member comprising:
a barrel having rotatable coupling means thereon for drawing said connector members into mating engagement;
self-locking means associated with said barrel and said coupling means activated near or at the end of the mating engagement of said connector members for resisting rotation of the coupling means in the uncoupling direction of rotation thereof;
said self-locking means comprising a locking spring and detent means;
said locking spring comprising a generally cylindrical ring fixed against rotation on said barrel;
said detent means including means providing a plurality of circumferentially spaced recesses surrounding said barrel and fixed to rotate with said coupling means; and
said cylindrical ring having a section thereof resilient in the axial direction, said section embodying a locking tab in front of said recesses and engageable with at least one of said recesses near or at the end of said mating engagement.

4,552,428
ELECTRICAL PLUG
Ling H. Liu, No. 97, Lane 192, Shui Yuan Rd., Fong-Yen City, Taiwan
Filed Jun. 2, 1982, Ser. No. 384,433
Int. Cl.⁴ H01R *11/20*
U.S. Cl. 339—97 P **2 Claims**



1. An electrical plug comprising
a plug body with front and rear end faces interconnected by side faces;
a plurality of grooves formed in the plug body through the front end face;
a plurality of conducting prongs fixedly disposed in the grooves with their front portions respectively projecting through the front end face;
a plurality of blind channels formed in the plug body through the rear end face with the inner portion thereof extending into the plug body adjacently parallel with the rear portions of said grooves and communicating with said grooves to create an opening in a wall between adjacent ones of said grooves and said blind channels, such that the blind channels are unobstructed by said prongs for facilitating the insertion of insulated conductors into said channels;
an externally disposed driving means suitable for hand operation;
a conductive screw member having one end fixed to said driving means and extending into said plug body toward said blind channel through a threaded opening formed in the rear portion of said conducting prong;
a rectangular serrated member having teeth arranged in substantially perpendicular rows so that a row of teeth is adjacent to each of correspondingly substantially perpendicular walls of the rectangular channel in the plug body wherein said serrated member is rotatably disposed at the other end of said conductive screw, said drive means being operable to move said serrated member axially in said opening and substantially perpendicularly relative to the longitudinal axis of said insulated conducting member to complete an electrical connection between said conducting prong in the groove and said insulated conducting member received in the adjacent blind channel, said serrated member and said opening cooperating to substantially prevent rotational movement of said serrated member and to permit axial movement of the serrated member under the control of the driving means without inducing torque in said insulated conductor, without stripping the insulated layer from said insulated conductor, and without the need for any tools.

4,552,429
MODULAR ELECTRICAL CONNECTOR FOR CONNECTING WIRES IN CABLE ENDS
Gerardus M. van Alst, Oss, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 1, 1984, Ser. No. 656,795
Int. Cl.⁴ H01R *13/39*
U.S. Cl. 339—99 R **11 Claims**

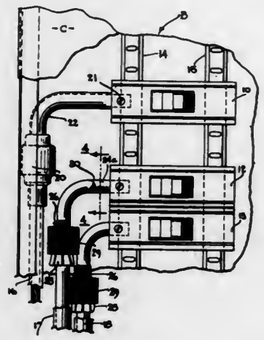


1. An electrical connector of the type comprising an insulating body having oppositely directed first and second major surfaces and a plurality of double-ended electrical terminals mounted in, and extending through, the insulating body at terminal sites, each of the terminals having a plate-like first end portion which extends from the first surface and a plate-like second end portion which extends from the second major surface, each of the end portions having an outer edge which is spaced from its associated major surface and having side edges which extend from its outer edge to the associated major surface, each of the first and second end portions having a wire-receiving slot which extends inwardly from its outer edge, the connector being characterized in that:
the first and second plate-like end portions have first and second wire cutters in alignment therewith respectively, the first and second wire cutters each having a cutting edge and having side edges which are in substantial alignment with the outer edges and the side edges respectively of the first and second plate-like end portions respectively,
the first and second wire cutters being spaced from the first and second end portions respectively, the first wire cutter being spaced from the first end portion by a distance which is less than the spacing between the second wire cutter and the second end portion,
a connecting section is provided which connects the first and second plate-like end portions to the first and second wire cutters,
each of the terminals being of one piece construction and having been produced by bending a flat blank and locating the wire cutters in alignment with the plate-like end portions whereby,
first and second wires can be connected to each of the terminals by moving the wires laterally of their axes and into the wire-receiving slots of each of the end portions, and the wires will be cut by the wire cutters during movement into the wire-receiving slots, and the insulating body can be stacked onto a substantially identical insulating body with the first wire cutters and the first end portions of the terminals of one of the bodies between the second wire cutters and the second end portions of the terminals in the other insulating body.

4,552,430
CONNECTOR HEAD FOR ELECTRIC TERMINAL BOX
Stephanie A. Myers, Santa Ana, Calif., assignor to Myers Electric Products, Inc., Montebello, Calif.
Filed Sep. 30, 1982, Ser. No. 429,534
Int. Cl.⁴ H01R *13/11*
U.S. Cl. 339—242 **2 Claims**

1. A generally elongated terminal box housing a plurality of

transversely disposed, electrical conductors such as circuit breakers located side by side, each with a mutually adjacent, inner end spaced inward from an opposing longitudinal wall of the box so as jointly with said longitudinal wall to define a longitudinal channel therealong leading to an end outlet of said box, said plurality of conductors each being coupled to one of a group of electrically conductive, elbow-shaped connector



heads, each connector head being formed with one arm bearing an insertion lance having means for coupling to one of said conductors adjacent said inner end, and a distant arm encased in a sheath of insulation, being disposed in said channel and having terminal coupling means for attachment to an individual cable extendable through said end outlet, the distant arms of said connector heads being thus disposable longitudinally along said channel.

4,552,431

OPTICAL FIBERS WITH PLASTIC CORE AND POLYMER CLADDING

Louis-René Allemand, Limours; Jean Calvet, Paris; Jean-Claude Cavan, Vincennes, and Jean-Claude Thevenin, Velizy, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

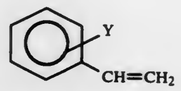
Filed Sep. 1, 1983, Ser. No. 528,479

Claims priority, application France, Sep. 23, 1982, 82 16026

Int. Cl.⁴ G02B *5/172*

U.S. Cl. 350—96.34 **15 Claims**

1. Plastic optical fibers comprising a core formed by a polymer of a compound having the formula:



in which Y is hydrogen or alkyl; and a cladding consisting essentially of a polymer selected from the group consisting of at least one vinyl acetate polymer and at least one fluorinated derivative of vinyl acetate.

4,552,432

HYBRID CABLE

Gene S. Anderson, Elburn, and David B. Watson, Batavia, both of Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 21, 1983, Ser. No. 487,094

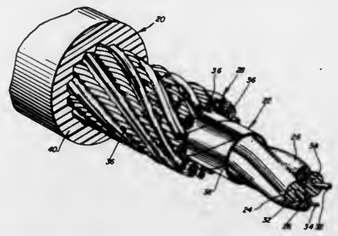
Int. Cl.⁴ G02B *5/16*

U.S. Cl. 350—96.23 **8 Claims**

1. A hybrid cable of substantially uniform cross section throughout its length for concurrently carrying optical signals and electrical signals, said cable comprising:

a high strength central section including a pair of high strength members engaging one another, each said member having a metallic core with a resilient sleeve thereabout, said central section further including at least one optical conductor having an optically conductive core with a resilient sleeve thereabout, said optical conductor engaging both of said strength members and extending substantially to the periphery of said central section;

a surrounding section including a plurality of electrical conductors surrounding said central section; and



an outer jacket formed of insulating material of the type having crush and abrasion resistance whereby electrical equipment can be connected to said electrical conductors at spaced locations intermediate the ends of said cable without interference from components of said central section.

4,552,433

OPTICAL FIBRE CABLE MANUFACTURE

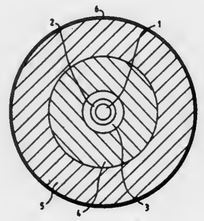
James G. Titchmarsh, Harlow, and Peter G. Hale, Writtle, both of England, assignors to Standard Telephones and Cables, plc, London, England

Filed Sep. 21, 1983, Ser. No. 534,250

Claims priority, application United Kingdom, Sep. 22, 1982, 8227034

Int. Cl.⁴ G02B *5/16, 5/14;* D02G *3/00;* B32B *9/00*

U.S. Cl. 350—96.23 **5 Claims**



1. A single fibre optical cable that can be dispensed under water in which a glass optical fibre having an internal optical waveguiding structure forms the central core of the cable, and is encased in two or more plastic coatings the first of which is applied to the optical fibre to form a plastics packaged optical fibre, around which are stranded in opposite senses first and second layers of high modulus plastics yarns, the cable being completed by a liquid permeable outer wrap of yarn with adjacent abutting or overlapping turns.

4,552,434

CRYSTALLINE INFRARED OPTICAL FIBER WITH A SMALL GAP AND A PROCESS FOR THE PRODUCTION OF SAME

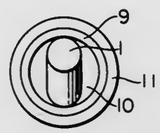
Kazuhito Murakami, and Kenichi Takahashi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 11, 1983, Ser. No. 474,350

Claims priority, application Japan, Mar. 16, 1982, 57-40254; Mar. 16, 1982, 57-40255; Mar. 16, 1982, 57-40256

Int. Cl.⁴ G02B *5/14*

U.S. Cl. 350—96.30 **14 Claims**



1. A crystalline fiber, which comprises a core crystal fiber for transmitting infrared rays provided in a cladding crystal pipe having a smaller refractive index than the core crystal fiber with a gap of 0.01 to 0.1 mm between the core crystal fiber and the cladding crystal pipe, the core crystal fiber and the cladding crystal pipe being crystalline materials selected from the group consisting of thallium halides, silver halides, alkali metal halides and mixed crystals thereof in such a combination as to give a larger refractive index to the core crystal fiber than the cladding crystal pipe.

4. A process for the production of a crystalline fiber, which comprises inserting a core crystal fiber in a cladding crystal pipe, and subjecting the fiber and pipe to drawing through a die to thereby coat the core crystal fiber with the cladding crystal pipe such that a gap of 0.01 to 0.1 mm exists between the core crystal fiber and the cladding crystal pipe.

4,552,435

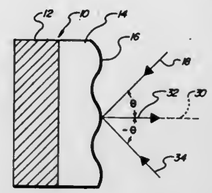
PHASE GRATING PULSE STACKER

Karlheinz von Bieren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 248,930, Mar. 30, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,703

Int. Cl.⁴ G02B *27/10*

U.S. Cl. 350—169 **13 Claims**



1. An apparatus for combining first and second beams of substantially equal wavelength λ, said apparatus comprising a phase grating and means for directing said first and second beams to strike said phase grating at a common point of incidence and from angles of incidence Θ and −Θ respectively, said phase grating having a sinusoidal surface for diffracting said first and second beams into groups of ordered diffracted beams, said sinusoidal surface having a modulation wavelength A for causing a preselected diffracted order q from each said groups of diffracted beams to propagate in a direction normal to said phase grating, said modulation wavelength being determined substantially by the relationship:

$$A = q(\lambda/\sin\Theta),$$

said sinusoidal surface having a modulation depth S which maximizes the energy allocated to said preselected diffracted order q.

4,552,436

LIQUID CRYSTAL DISPLAY HAVING UNIFORM TRANSMITTANCE

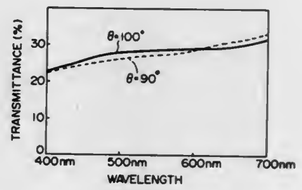
Shuichi Kozaki; Yutaka Ishii, and Fumiaki Funada, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1983, Ser. No. 517,452

Claims priority, application Japan, Jul. 28, 1982, 57-132878

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—337 **7 Claims**



1. A liquid crystal display, comprising;

a polarizer having a first polarization axis;

an analyzer having a second polarization axis, the first and second polarization axes forming an angle therebetween; and

a liquid crystal layer, mounted between said polarizer and said analyzer, having a refractive index anisotropy and thickness, such that when the product of the refractive index anisotropy and thickness is approximately 0.5 μm, the angle is selected in the range from 92 and 110 degrees, so that a combined light transmittance of said polarizer and said analyzer is a maximum in the wavelength range from 400 nm to 500 nm.

4. A liquid crystal display, comprising;

a polarizer having a first polarization axis;

an analyzer having a second polarization axis, the first and second polarization axes forming an angle therebetween; and

a liquid crystal layer, mounted between said polarizer and said analyzer, having a refractive index anisotropy and a thickness, such that when the product of the refractive index anisotropy and thickness is approximately 1.0 μm, the angle is selected in the range from 94 to 120 degrees, so that a combined light transmittance of said polarizer and said analyzer is a maximum in the wavelength range from 400 nm to 500 nm.

4,552,437

INTERNAL MASKING LAYER TO PREVENT PARALLAX IN AN ELECTRO-OPTICAL DISPLAY OR INDICATOR UNIT

Karl Gantenbrink, Karlsruhe; Peter Knoll, Ettlingen, and Peter Rapps, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,700

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237323

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—339 R **4 Claims**

1. An internally-masked, parallax-free electro-optical display unit having

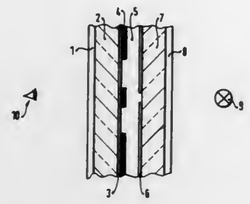
a transparent front carrier plate adapted to face an observer;

a continuous transparent front electrode layer secured to the front carrier plate at the side thereof remote from the observer;

a rear carrier plate spaced from the front carrier plate;

a rear electrode secured to the rear carrier plate at the side

thereof facing the observer, and hence facing the front electrode;
an electrically responsive medium filling the space between said plate and electrodes which, upon application of an electric voltage between the electrodes exhibits an optically observable effect; and
masking means for masking selected portions of the optical effects,
wherein, in accordance with the invention,



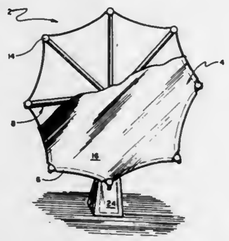
the masking means comprises a developed photographic emulsion secured between said continuous transparent front electrode layer and said electrically responsive medium,
said emulsion being developed in such a manner as to render invisible, to the observer, track zones, support points, and cross-overs between conductive tracks of said rear electrode.

4,552,438

CABLE TENSIONED MEMBRANE SOLAR COLLECTOR MODULE WITH VARIABLE TENSION CONTROL

Lawrence M. Murphy, Lakewood, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 9, 1984, Ser. No. 569,085
Int. Cl.⁴ G02B *5/10, 7/18;* **H01Q** *19/12*
U.S. Cl. 350—608 **13 Claims**



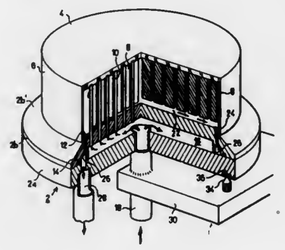
1. A solar collector comprising:
(a) a membrane member for concentrating sunlight;
(b) a plurality of elongated structural members for suspending the membrane member thereon;
(c) a plurality of control members for adjusting a tension in said membrane member and for controlling a focus provided by said membrane member, each one of said control members being disposed at a different corresponding one of said plurality of stuctural members;
(d) an elongated flexible tensioning member for tensioning said membrane member and holding said membrane member in tension; said tensioning member being coupled to said plurality of structural members, said tensioning member being adjustably tensioned with said control members; and
(e) a plurality of sleeve members for providing said membrane member with a desired surface contour during said tensioning of said membrane member, said plurality of sleeve members coupling said tensioning member to said membrane member such that said plurality of sleeve members uniformly and symmetrically stretch said membrane member in response to applying tension to said tensioning member with said control members.

4,552,439

COOLED MIRROR AND METHOD OF COOLING SAME PARTICULARLY USEFUL IN LASERS

Ethan D. Hoag, Boston, Mass., and Amotz Ravid, Ramat-Gan, Israel, assignors to Metalworking Lasers International Ltd., Tel Aviv, Israel

Filed Oct. 21, 1983, Ser. No. 544,132
Claims priority, application Israel, Nov. 1, 1982, 67142
Int. Cl.⁴ G02B *5/08*
U.S. Cl. 350—610 **19 Claims**



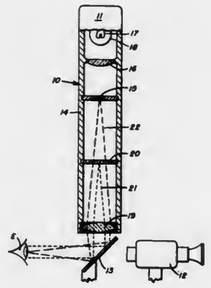
1. A cooled mirror particularly useful in lasers, comprising a reflector member, a rigid base, a plurality of spaced supporting elements joined to the underface of said reflector member and to said base such as to reduce bending of said reflector member by thermal deformation, and cooling means for cooling said reflector member; characterized in that said cooling means comprises an inlet for a cooling fluid, an outlet for the cooling fluid, and fluid-conducting means constraining the cooling fluid to flow from said inlet, through the spaces between said plurality of spaced supporting elements along a plurality of paths which are in parallel between said inlet and outlet, and then through said outlet to impinge on the underface of said reflector member at a plurality of discrete points thereon each located in one of said parallel paths.

4,552,440

APPARATUS FOR DETERMINATION OF POTENTIAL VISUAL ACUITY UTILIZING A SLIT LAMP MICROSCOPE

David L. Guyton, 307 Somerset Rd., Baltimore, Md. 21210

Filed Oct. 12, 1983, Ser. No. 541,305
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—214 **11 Claims**



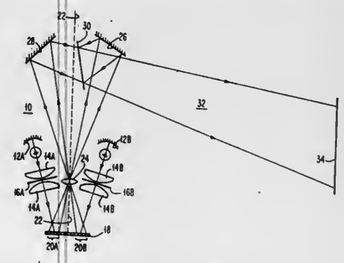
1. In combination with a slit lamp having an illumination system and a microscope for examining the eye of a patient, the illumination system including a light source, aperture illuminated by said light source, and converging lens means interposed between said aperture and the eye to be examined, with said converging lens means forming an image of said aperture in the vicinity of the eye, the improvement comprising, said aperture being of pinhole size and a target transparency having figures of calibrated size thereon interposed in the slit lamp between said aperture and said converging lens means, whereby the target transparency figures are imaged by said converging lens means in order to determine the eyes' visual acuity.

4,552,441

COLOR DISPLAY FROM A SINGLE LIGHT VALVE

Anthony G. Dewey, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 625,926
Int. Cl.⁴ G03B *21/28*
U.S. Cl. 353—31 **4 Claims**



1. A color display comprising
a projection screen,
means for producing light of a first color for an image,
means for producing light of a second color for an image,
a light valve having a first color image positioned on a first side of the axis of a projection lens and a second color image positioned on the second side of said axis,
a first mirror adapted to fold the beam from said first color image,
a second mirror adapted to fold the beam from said second color image, and
a dichroic mirror adapted to transmit the spectral band reflected from said first mirror onto a preselected location on said screen and adapted to reflect the spectral band from said second mirror onto said preselected position on said screen, said dichroic mirror positioned so that the optical path lengths for the beams from said first and second color images to said dichroic mirror are equal, and the angles of incidence of said beams on said dichroic mirror are equal.

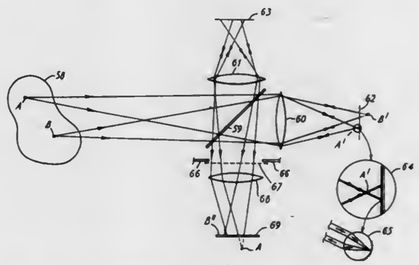
4,552,442

METHOD AND APPARATUS FOR USE IN PRODUCING AUTOSTEREOSCOPIC IMAGES

Graham S. B. Street, Impstone House, Pamber Rd., Silchester, Reading RG7 2NU, England

PCT No. PCT/GB83/00096, § 371 Date Nov. 30, 1983, § 102(e) Date Nov. 30, 1983, PCT Pub. No. WO83/03686, PCT Pub. Date Oct. 27, 1983
PCT Filed Mar. 30, 1983, Ser. No. 562,583
Claims priority, application United Kingdom, Apr. 7, 1982, 8210328; Jan. 13, 1983, 8300843
Int. Cl.⁴ G03B *35/00*
U.S. Cl. 354—112 **44 Claims**

1. Apparatus for use in producing autostereoscopic images, comprising imaging means which comprises convergent optical means, said imaging means being arranged, for any given position thereof relative to an object field, to encounter rays having paths diverging over a range of relatively large angles from respective points in the object field and to converge rays from said points from a substantial part of said range generally towards respective intermediate image points in an intermediate image field; direction-selective means positioned in said intermediate image field and adapted such that rays in a plane which are generally converging relative to one another prior to impingement on said direction-selective means become generally diverging after impingement and rays in said plane which are generally diverging relative to one another prior to impingement become generally converging after impingement on said direction-selective means, said direction-selection means causing respective rays which are incident on said convergent optical means prior to impingement on said direction-selective means to be returned to substantially the same portion of said convergent optical means previously encountered after impingement on the direction-selective means; and means for positioning photosensitive image recording means having a photosensitive layer in an image field spaced from said object field such that rays from said object field returned from said intermediate image field via substantially the same portion of said convergent optical means previously encountered converge towards respective image points in said image field at various points in front of and/or behind the photosensitive layer whereby composite stereoscopic information from said object field is recorded by said recording means for the production of an autostereoscopic image.

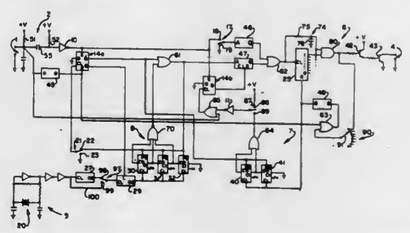


4,552,443

CAMERA SYSTEM

Joel G. Broida, 9430 La Jolla Shores Dr., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 172,774, Jul. 28, 1980, Pat. No. 4,468,106. This application Aug. 20, 1984, Ser. No. 642,118
Int. Cl.⁴ G03B *15/03*
U.S. Cl. 354—132 **4 Claims**



1. In a camera system in which a shutter is opened and closed, the improvement comprising a plurality of light sources, means for energizing said light sources serially when said shutter is open, means for selectively setting the numbers of light sources to be energized serially, means for selectively setting the length of the time intervals between energization of consecutive of said light sources, and means for selectively causing and preventing recycling of said light sources.

4,552,444

SYNTHESIS COLOR PHOTOGRAPHIC MAP AND METHOD OF MAKING SAME

Jean Beaupre, 3083 chemin des Quater Bourgeois, Ste-Foy, Canada (G1W 2K6)

Filed Nov. 30, 1984, Ser. No. 677,062
Int. Cl.⁴ G03B *19/00*
U.S. Cl. 354—354 **6 Claims**



1. A method of making a synthesis color photographic map, on a first predetermined scale and covering a wide geographic area, from a number of forestry base maps, each forestry base map covering a selective portion of said wide geographic area on a second predetermined scale larger than said first predetermined scale, said method comprising the steps of:

coloring each of said forestry base maps according to a given identification color code:

color photographying said forestry base maps thus colored while reducing the scale thereof to said first predetermined scale to thereby obtain color photographic base maps having said first predetermined scale, and

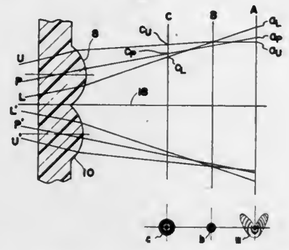
assembling said color photographic base maps together to form said synthesis color photographic map.

4,552,445

FOCUS CONDITION DETECTING DEVICE FOR CAMERAS

Hiromu Mukai, Kawachinagano; Toshihiko Karasaki, and Kunio Kawamura, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1984, Ser. No. 640,771
Claims priority, application Japan, Aug. 16, 1983, 58-149959
Int. Cl.⁴ G03B *3/00*; G01J *1/36*
U.S. Cl. 354—406 **3 Claims**



1. A focus condition detecting device for a camera having an objective lens which forms an object image, said device comprising:

a pair of re-imaging optical systems arranged symmetrically with one another with respect to the optical axis of said objective lens for re-imaging said object image as first and second re-images; and

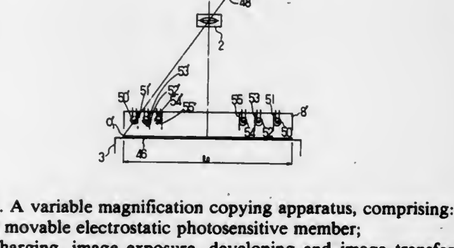
a line sensor arranged optically in front of a plane conjugate with a predetermined focal plane of said objective lens with respect to said re-imaging optical systems and extending in the direction perpendicular to the optical axis of said objective lens so that said first and second re-images are formed thereon, the distance between the corresponding points of said first and second re-images on said line sensor varying with the focus condition of said objective lens.

4,552,446

LIGHT MEASUREMENT COMPENSATION DEVICE FOR CAMERA

Yasuo Suda; Kiyoshi Alyfuku; Akio Sunouchi, and Nobuyuki Suzuki, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1985, Ser. No. 688,178
Claims priority, application Japan, Jan. 7, 1984, 59-1220
Int. Cl.⁴ G03B *7/08*
U.S. Cl. 354—429 **2 Claims**



1. A light measuring device for a camera capable of selecting a full open aperture light measuring mode, a stop-down light measuring mode, an average light measuring mode and a spot light measuring mode, comprising:

(a) light measuring means for producing a corresponding electrical signal to the intensity of an incident light from an object to be photographed; and

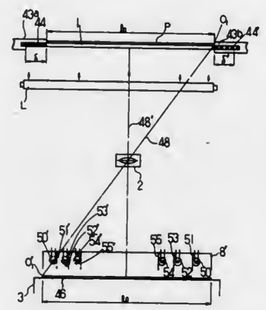
(b) means for shifting an output of said light measuring means by a prescribed quantity when said stop down light measuring mode and the spot light measuring mode are selected.

4,552,447

VARIABLE MAGNIFICATION COPYING APPARATUS WITH MARGIN ERASE

Seiji Sagara, Yokohama, and Yuuji Hasegawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,865
Claims priority, application Japan, Jun. 14, 1982, 57-100775
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **22 Claims**



1. A variable magnification copying apparatus, comprising:

a movable electrostatic photosensitive member;

charging, image exposure, developing and image transfer stations provided around said photosensitive member;

original supporting means for supporting thereon an original to be scanned in a scanning direction;

first erasing means for erasing electric charge of a part of said electrostatic photosensitive member, said first erasing means including a light reflecting member for reflecting light for illuminating the original, said light reflecting member being provided on a bottom face of said original supporting means at one end and extending in the direction of original scan;

a variable magnification optical system for projecting, at a selected magnification, onto said photosensitive member which has been electrically charged, an image of the original supported on said original supporting means and the light emitted from said first erasing means; and

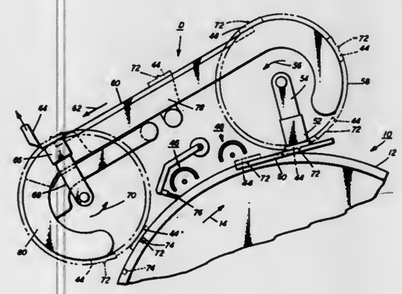
second erasing means for erasing electric charge from a part of said photosensitive member which is adjacent to the area illuminated by the light from said first erasing means, upon the magnification being less than a predetermined magnification.

4,552,448

SHEET TRANSPORT SYSTEM

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1984, Ser. No. 584,036
Int. Cl.⁴ G03G *15/01*; B65H *5/08*
U.S. Cl. 355—3 SH **5 Claims**



1. An electrophotographic printing machine of the type having a toner powder image developed on a moving photoconductive member with a sheet being advanced into registration with the toner powder image developed on the photoconductive member, including:

means for transporting the sheet; and

means for detachably coupling said transporting means to the photoconductive member with said transporting means being decoupled from the photoconductive member over a portion of the path of movement to move independently thereof and coupled thereto over a portion of the path of movement thereof to place the sheet in registration with the information developed on the photoconductive member.

4,552,449

COMPOUND IMAGE RECORDING APPARATUS

Kazuhiro Wakamatsu, and Yoshio Kawamata, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,139
Claims priority, application Japan, Oct. 22, 1982, 57-184468
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **11 Claims**

1. An electrophotographic printer for producing a print of compound copied and printed character images by carrying out electrophotographic processes including charging, exposure, positive development and fixing sequentially for a photosensitive printing medium, said printer comprising:

electrophotographic processing means for performing said electrophotographic processes;

an electrically controlled optical switch which controls exposure of said photosensitive printing medium by selectively conducting or interrupting an image of a copy text placed on a text table:

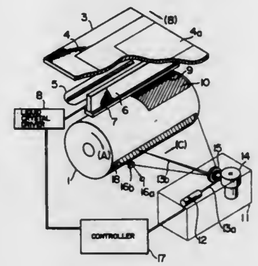
laser beam scanning means for scanning a laser beam in a predetermined direction on said photosensitive printing medium to expose said printing image thereon;

print information storage means for receiving and storing external literal information to be printed;

printing exposure control means for generating signals and for modulating the laser intensity of said laser beam scanning means in accordance with literal information stored in said print information storage means;

frame composing information storage means for receiving and storing external frame composing information for said copying image and printing image;

process sequence control means for controlling the operation of said electrophotographic processing means, and providing positional synchronizing signals when said photosensitive printing medium has predetermined positional relations with said electrically controlled switch and said laser beam scanning means;



positional information means for receiving said positional synchronzing signals and providing positional information on the positional relations between said photosensitive printing medium and said electrically controlled optical switch and between said medium and said laser beam scanning means; and

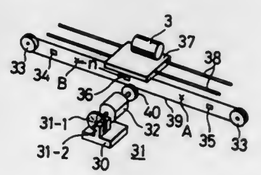
frame composing control means for receiving said frame composing information and said positional information and controlling said electrically controlled optical switch and said printing exposure control means in accordance with said information for enabling exposure of compound copied and printed character images on said photosensitive printing medium in the predetermined direction of laser beam scanning.

4,552,450

VARIABLE MAGNIFICATION APPARATUS WITH LENS POSITION CONTROL

Masahiro Tomosada, Kawasaki; Katsuyoshi Maeshima, Tokyo; Tsuneki Inuzuka, Machida, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,580
Claims priority, application Japan, Aug. 8, 1981, 56-124223
Int. Cl.⁴ G03G *15/00*; G03B *27/34*
U.S. Cl. 355—14 R **6 Claims**



1. A copying apparatus comprising:

an optical member;

drive means for driving said optical member in accordance with first and second magnifications, respectively, entered to produce images of various magnifications; and

control means for controlling said driving means to enable the second magnification to be entered during movement of said optical member to a position in accordance with the entered first magnification such that said optical member is positioned for the second magnification without it being first set to the position for the first magnification.

4,552,451

CLEANING DEVICE

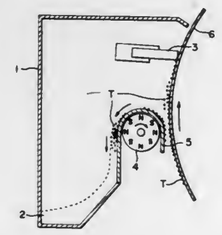
Yoshio Yamazaki, Mizuho, and Takashi Itoh, Tokyo, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 504,035

Claims priority, application Japan, Jun. 21, 1982, 57-105434; Jun. 21, 1982, 57-105435; Jun. 21, 1982, 57-105436; Jun. 22, 1982, 57-106183

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—15 **4 Claims**



1. A cleaning device including a cleaning means for residual magnetic developer on a movable image carrier from said image carrier and a transfer means for magnetically absorbing said magnetic toner developer and transferring and removing it away, characterized in that said transfer means comprises a rotary magnet member and a guide member on the surface of which a shifting field is induced by said rotary magnet member and which covers the surface of said magnet member at least from the part approaching said image carrier to the part on the opposite side where said magnetic developer drops down by its own gravity, said magnet member being rotated in a direction opposite to the moving direction of said image carrier at a position facing said image carrier, and said guide member extending from a position approaching said image carrier to a position on the opposite side with respect to said magnet member along an upper portion of the outer peripheral surface of said magnet member.

4,552,452

DAYLIGHT ENLARGER

George F. A. M. Turner, Blackmore; Michael H. Moore, Ilford, and Ernest J. Twigger, Hornchurch, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

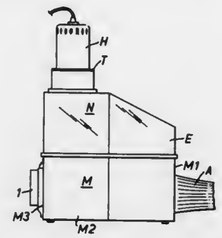
Filed Jul. 5, 1983, Ser. No. 510,700

Claims priority, application United Kingdom, Jul. 7, 1982, 8219622

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—27 **4 Claims**

1. In a daylight enlarger of the enclosed image-framing type which comprises a lamphouse, an enclosed image framing area, a transparency holder and an enlarging lens mounted over the image-framing area and which is enclosed by solid curtain walls having at least one light-tight arm-hole therein, the improvement comprising an actinic light opaque processing dish removably positioned in a light-tight manner in a portion of one of the solid curtain walls in communication with the image framing area, said positioning enabling the dish to be removed from the wall from outside the enlarger and to form part of the curtain wall during exposure, said dish having a movable lid with an upper edge and a lower pivoting edge thereon which



lid can be opened to enable print material to be inserted into said dish and be closed from inside the enclosed image framing area when said dish is positioned in said curtain wall.

4,552,453

LENS POSITIONING MECHANISM FOR A COPYING MACHINE

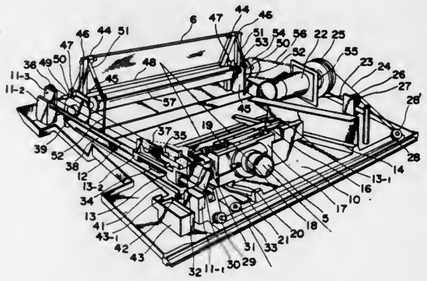
Ken-ichi Iwamoto; Tadaaki Kawano; Hiroaki Uchiyama; Takahiro Fukunaga, all of Nara; Katsuyoshi Fujiwara, Sennan, and Yoshikado Yamada, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1983, Ser. No. 540,659

Claims priority, application Japan, Oct. 14, 1982, 57-181066

Int. Cl.⁴ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **3 Claims**



1. A lens positioning mechanism for an electrophotographic copying machine capable of reproducing a copy of an original at a plurality of different magnifications one at a time, said machine comprising an optical apparatus including a lens assembly having a optical axis supported for movement to any one of several operative positions each required for the reproduction of a copy at said respective magnification, a lens mount for the support of a lens assembly a lens carriage supported for movement in a direction close toward and away from a photoreceptor and having a detent positions equal in number to that of the available magnifications, said lens mount being mounted on said lens carriage for movement in a direction perpendicular to said optical axis during movement of said operative positions determined by a respective detent position assumed by said lens carriage said guide means comprising a generally elongated guide extending at a predetermined angle relative to said optical axis, and a guide pin secured to said lens mount and slidingly engaged with said guide.

4,552,454

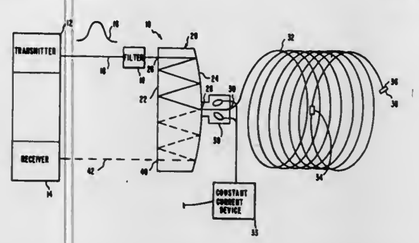
SYSTEM AND METHOD FOR DETECTING A PLURALITY OF TARGETS

Michael S. Glaser, Redondo Beach, and James R. Rochester, Arcadia, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 8, 1983, Ser. No. 464,823

Int. Cl.⁴ G01C *3/08*

U.S. Cl. 356—5 **18 Claims**



1. A test system for a laser rangefinder having signal transmission and reception paths comprising:

an optical structure having a first surface with a focal point thereon and a second surface disposed to receive energy from said signal transmission path and to transfer energy to said signal reception path;

optical waveguide means having a first end at said focal point and a second end with substantially fully reflective means thereon; and

partially reflective means positioned intermediate said first and second optical waveguide ends for reflection of a portion of the energy and for permitting transmission of substantially the remaining portion of the energy to said second end.

4,552,455

METHOD AND APPARATUS FOR FUNCTIONALLY TESTING A LASER RANGEFINDER

Karl H. Johansson, Kungsbacka, and Anders S. Severinsson, Lindome, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

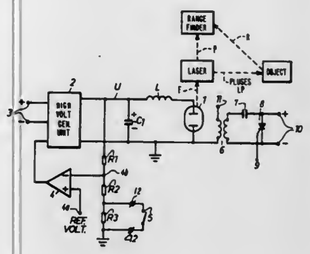
PCT No. PCT/SE82/00071, § 371 Date Nov. 23, 1982, § 102(e) Date Nov. 23, 1982, PCT Pub. No. WO82/03463, PCT Pub. Date Oct. 14, 1982

PCT Filed Mar. 16, 1982, Ser. No. 443,917

Claims priority, application Sweden, Mar. 25, 1981, 8101919

Int. Cl.⁴ G01C *3/25, 3/00*

U.S. Cl. 356—5 **6 Claims**



1. A method of functionally testing a laser rangefinder operative in association with a laser adapted for transmitting light pulses, and in which rangefinder is included a flashlamp (1) adapted to respond to high-voltage electrical energy for generating flashes which are transmitted to the laser for initiating transmission of light pulses by the laser, said flashlamp being normally controlled such that said laser generates a normal single pulse in response to each of said light pulses, a capacitor (C1) for accumulating electrical energy for application to the flashlamp, and a controllable high-voltage unit (2) for charging the capacitor (C1) to a selected D.C. voltage (U), said method comprising raising the D.C. voltage (U) supplied by the high-voltage unit (2) to a value high-enough for the laser to be actuated to send two light pulses within a short time interval, as against the normal single pulse, reflecting to said rangefinder at least part of each of said two pulses, and interpreting the reflected parts of the pulses in the rangefinder respectively as a pulse sent from the laser and as a received, reflected pulse.

4,552,456

OPTICAL PULSE RADAR FOR AN AUTOMOTIVE VEHICLE

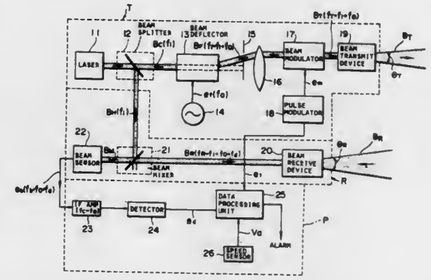
Hiroshi Endo, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Aug. 26, 1982, Ser. No. 411,813

Claims priority, application Japan, Oct. 31, 1981, 56-173729

Int. Cl.⁴ G01C *3/08*; G01P *3/36*

U.S. Cl. 356—5 **15 Claims**



1. An optical pulse radar for an automotive vehicle for detecting an object outside of the vehicle, which comprises:

(a) beam transmitting means for generating a coherent beam, splitting the generated beam into a carrier beam B_C and a heterodyne beam B_H, deflecting the carrier beam B_C by a frequency f_o in response to a high frequency signal e_f to generate a deflected carrier beam B_F modulating the carrier beam B_F to a pulse laser beam B_T with a pulse width t_w in response to a pulse-modulating signal e_m, and transmitting the carrier beam B_T in a predetermined direction at a beam divergence angle B_T;

(b) beam receiving means for receiving the beam transmitting from said beam transmitting means and reflected from the object and mixing the received beam B_R with the herterodyne beam B_H, and superheterodyning the mixed beam into a corresponding electrical interference beat signal e_b;

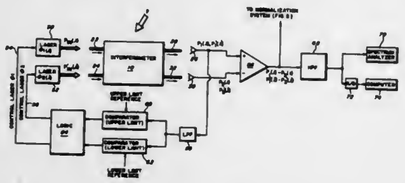
(c) beat signal processing means connected to said beam transmitting means and said beam receiving means for amplifying the beat signal e_b falling within a predetermined frequency bandwidth to generate a detection signal e_d and calculating information with respect to the object on the basis of the trigger signal e_t and the detection signal e_d.

4,552,457

FIBER OPTIC INTERFEROMETER USING TWO WAVELENGTHS OR VARIABLE WAVELENGTH

Thomas G. Giallorenzi, 8704 Side Saddle Rd., Springfield, Va. 22152; Sang K. Sheem, 3105 Tam O'Shanter Dr., Richardson, Tex. 75080, and Henry F. Taylor, 7839 Midday La., Alexandria, Va. 22306

Filed Feb. 1, 1983, Ser. No. 462,860
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—345 **19 Claims**



19. A physical sensor comprising:

input optical signal means for generating an input optical signal including a first coherent light component at a first wavelength and a second coherent light component at a second wavelength, said first and second wavelengths differing by a wavelength difference;

a Mach-Zehnder interferometer including an input port, an output port, a sensing light path, transducer means coupled to said sensing path for modulating the phase of light signals passing through said sensing path in response to a physical quantity, and a reference light path, the path length of said reference path differing from the path length of said sensing path by a path length difference, said input port receiving said input optical signal;

detector means coupled to receive an output optical signal emanating from said output port for producing an output electrical signal proportional to the intensity of said output optical signal, said output electrical signal including a first signal component due to said first light component at said first wavelength and a second signal component due to said second light component at said second wavelength, the amplitudes of said first and second signal components being proportional to said physical quantity, the phase of said first signal component differing from the phase of said second signal component by a phase difference, said phase difference being proportional to said wavelength difference and said path length difference;

phase difference adjustment means comprising wavelength control of said first and second wavelengths for adjustment of said wavelength difference; and

comparator means for distinguishing and comparing said first and second signal components;

whereby said phase difference may be adjusted such that the sensitivities of said first and second signal components to said physical quantity are never simultaneously at a minimum.

4,552,458

COMPACT REFLECTOMETER

Alan J. Lowne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,729
Int. Cl.⁴ G01N *21/47*
U.S. Cl. 356—446 **8 Claims**

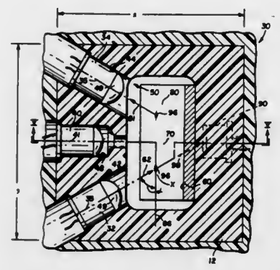
1. A compact reflectrometer for providing quantitative measurement of reflection densities, said reflectometer comprising

means for supporting a generally planar test element in a predetermined plane, contacting the reflectometer,

planar means on a major exterior surface of the reflectometer for orienting said predetermined plane generally horizontally when said planar means is placed on a rest surface,

a light source constructed to project a beam of light centered on an axis of illumination,

light detector means constructed to receive light centered on an axis of detection, said light source and said detector means being disposed with said axes each being generally parallel to said planar orienting means of the reflectometer,



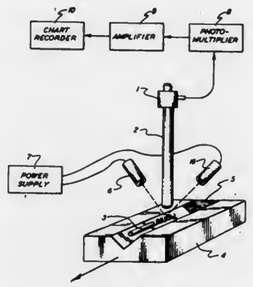
and reflecting means for (a) reflecting light from said source to a predetermined location in said predetermined plane, said source light traveling from said reflecting means along a first path; and (b) reflecting to said detector means only light that is diffusely reflected from a test element at said predetermined location in said predetermined plane, such diffusely reflected light traveling from said reflecting means along a second path; said reflecting means, light source, and detector means being three dimensionally disposed so that said first and second paths do not lie in a common plane.

4,552,459

SURFACE REFLECTIVITY DEVICE AND METHOD

Matthew S. Brennensholtz, Waterloo, and Robert L. Donofrio, Elbridge, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,902
Int. Cl.⁴ G01N *21/48*
U.S. Cl. 356—448 **2 Claims**



1. A method for measuring surface reflectivity of a coiled wire sample having a plurality of turns, the method comprising:

placing the sample under a microscope having a field of view smaller than the wire diameter;

illumnating the sample;

focusing the microscope upon a portion of the surface of a single turn of the sample;

scanning the sample with the microscope to cause the field of view of the microscope to move successively from the

surface of one turn to another, to successively collect the reflected light from such scanned surfaces;

continuously sensing the intensity of the successively collected reflected light and converting it to electrical signals proportional to the varying intensity of the reflected light; and

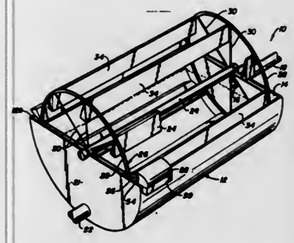
comparing the average peak values of such varying reflected intensity with a standard value to obtain a ratio.

4,552,460

BUCKET-LIFT SLURRY STORAGE APPARATUS AND METHOD

Norman R. Wallace, Walnut Creek, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Sep. 30, 1983, Ser. No. 537,623
Int. Cl.⁴ B01F *15/02, 7/02*
U.S. Cl. 366—196 **25 Claims**



1. A slurry handling apparatus comprising: a tank having a fluid inlet and a fluid outlet, whereby a slurry containing particles in suspension can be directed into and out of the tank; a plurality of buckets; means coupled with the tank for mounting the buckets on the tank for movement along a path extending into the tank and into proximity to the bottom of the tank to allow the buckets to scoop slurry particles settled in the tank off the bottom and in an upward direction, the buckets being pivotal relative to the tank; means adjacent to said path for pivoting the buckets to cause the buckets to deposit the particles scooped thereby back into the tank; and means coupled with said bucket mounting means for moving the buckets along said path as a function of the rate at which particles gravitate toward said bottom.

4,552,461

STIRRER FOR STIRRING NEAR A VESSEL WALL

Karl-Erich Ott, and Thomas Behrens, both of Hamburg, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

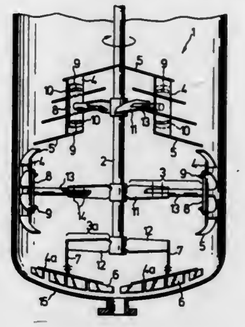
Filed Sep. 4, 1984, Ser. No. 647,162
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332069
Int. Cl.⁴ B01F *7/18, 7/24, 7/32*
U.S. Cl. 366—279 **11 Claims**

1. A stirrer for stirring near a vessel wall and for directing stirred material toward a vessel drain, the stirrer having a drive shaft, stirrer arms, plates and stirring elements,

each stirrer arm being radially arranged on and supported by the drive shaft,

each plate being secured to a stirrer arm at a position near the vessel wall and supporting a plurality of stirring elements, and

each stirring element being secured to a plate, being positioned between the plate and said vessel wall, having a leading edge, being separated from each other stirring element secured to the same plate and being inclined to direct stirred material toward the vessel drain, the stirring elements attached to a given plate being displaced from each other in the direction of revolution so that the leading edge of each successive stirring element in the direction of the vessel drain and on a plate is behind that of the



immediately preceding stirring element in said direction of revolution.

4,552,462

STIRRER APPARATUS FOR PAPER STOCK

Hans Schnell, Mengen, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,786
Claims priority, application Switzerland, Nov. 1, 1982, 6338/82; Feb. 7, 1983, 666/83
Int. Cl.⁴ B01F *7/30*
U.S. Cl. 366—280 **20 Claims**

1. A stirrer apparatus for paper stock, comprising:

a container for receiving paper stock therein;

at least one vane shaft arranged within said container;

said vane shaft being provided with protruding agitation elements;

drive means including a drive shaft for driving said vane shaft so as to travel along a substantially circular-shaped path of travel about a central axis;

pivotable coupling means for suspending said vane shaft at said drive shaft so as to carry out random pendulum-like movements essentially over the entire cross-section of said container; and

said vane shaft having a lower end devoid of any mounting arrangement therefor.

4,552,463

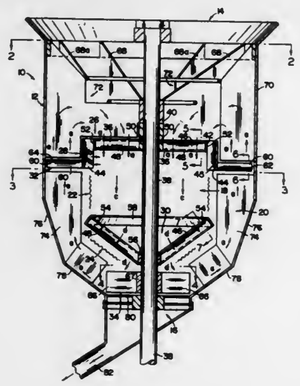
METHOD AND APPARATUS FOR PRODUCING A COLLOIDAL MIXTURE

Harry Hodson, 4730 Dunn Dr., Sarasota, Fla. 33583

Filed Mar. 15, 1984, Ser. No. 589,714
Int. Cl.⁴ B01F *7/20*
U.S. Cl. 366—295 **7 Claims**

1. An apparatus for producing a colloidal mixture of a high degree of hydration comprising a hollow enclosure having a

feed inlet to receive a product to be colloidalized and a discharge outlet to dispense the colloidal mixture comprising a thrust generating assembly including a down thrust generating component including a first upper set of down thrust blades comprising a plurality of substantially horizontal first upper down thrust blades in spaced relationship relative to each other to generate a downwardly directed vector and a second upper set of down thrust blades comprising a plurality of substantially vertical second upper down thrust blades in spaced relationship relative to each other, each said substantially vertical second upper down thrust blades attached to the outer portion of one of said plurality of substantially horizontal first upper down thrust blades to generate an inwardly directed vector such that said substantially horizontal first upper down thrust blades and said substantially vertical second upper down thrust blades cooperatively form a downwardly moving inner cylindrical liquid mass and a lower set of down thrust blades comprising a plurality of lower down thrust blades in spaced relationship relative to each other, the plane of each said lower down thrust blade being inclined relative to said plurality of substantially horizontal first upper down thrust blades to direct said downwardly moving inner cylindrical liquid mass outwardly and downwardly relative to said hollow enclosure; the upper portion of said lower down thrust blades being disposed



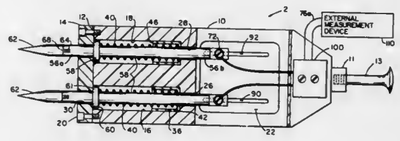
substantially in the same vertical plane as the longitudinal center line of said plurality of substantially vertical second upper down thrust blades and an up thrust generating component including an upper set of up thrust blades comprising a plurality of substantially horizontal upper up thrust blades in spaced relationship relative to each other, each of said plurality of substantially horizontal upper up thrust blades being coupled to one of said substantially vertical second upper down thrust blades outwardly of said plurality of substantially horizontal first upper set of down thrust blades to generate an upwardly directed vector and a lower set of up thrust blades comprising a plurality of substantially vertical lower up thrust blades in spaced relationship relative to each other disposed adjacent to the lower portion of said lower set of down thrust blades to generate an outwardly and upwardly directed vector such that said substantially horizontal upper up thrust blades and said substantially vertical lower up thrust blades cooperatively form an upwardly moving outer cylindrical liquid mass disposed outwardly from said downwardly moving inner cylindrical liquid mass whereby said concentrically disposed cylinders of liquid mass move in opposite directions relative to each other within said hollow enclosure such that the interface between said moving liquid masses cooperatively form a liquid shear zone to impart a high energy shearing therebetween to produce a hydrated colloidal mixture.

4,552,464
ANALOGUE DIAL CALCULATOR/WRIST WATCH
Scott A. Rogers, 6510 Patterson Ave., Richmond, Va. 23226
Filed Jul. 17, 1984, Ser. No. 631,749
Int. Cl.[4] G04B *47/00*
U.S. Cl. 368—10 **9 Claims**



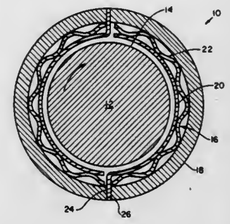
1. A calculator watch having an analog dial face including a watch housing, calculator means for performing numerical calculations, said watch having analog hour designations positioned uniformly about said dial face, said calculator means including numerical input means for the numerals zero through nine, for entering like numerical data into said calculator means, said numerical input means for numerals one through nine being positioned adjacent their respective identical numerical hour designations about said analog watch face and a zero numerical input means positioned adjacent either the ten o'clock, eleven o'clock or twelve o'clock positions on said analog watch face.

4,552,465
TWO-POINT SPRING LOADED THERMOCOUPLE PROBE WITH REPLACEABLE TIPS
Albert R. Anderson, Export, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Jan. 10, 1984, Ser. No. 569,720
Int. Cl.[4] G01K *1/14, 7/00*
U.S. Cl. 374—179 **19 Claims**



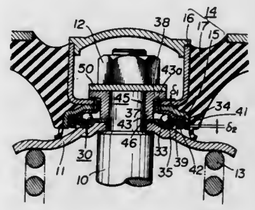
1. A thermocouple probe device for use in measuring the temperature of a metal comprising:
(a) a housing;
(b) two parallelly spaced apart elongated thermocouple elements respectively slidably received in said bores in said housing;
(c) a first end portion detachably secured respectively to a first end of each of said thermocouple elements extending from said housing;
(d) bias means engaging said thermocouple elements and said housing to resiliently mount each of said thermocouple elements in said housing; and
(e) detachable means to secure leads to a second portion of each of said thermocouple elements, said detachable means further comprising means to inhibit rotation of said thermocouple elements in said housing to thereby facilitate removal of one of said first end portions from the remainder of said thermocouple element.

4,552,466
COMPLIANT HYDRODYNAMIC FLUID JOURNAL BEARING
Edward L. Warren, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Apr. 24, 1984, Ser. No. 603,374
Int. Cl.[4] F16C *32/06*
U.S. Cl. 384—103 **8 Claims**



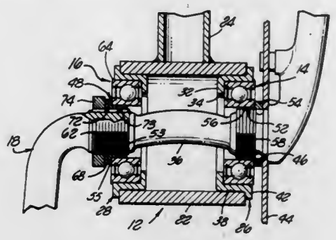
1. In a complaint hydrodynamic journal bearing of the type wherein a rotating shaft is supported in a bore extending through a cartridge sleeve, a plurality of pad assemblies having no bump blocks circumferentially spaced around said shaft adjacent to said sleeve, each of said pad assemblies comprising
a member having a bearing surface facing said shaft mounted between said shaft and said cartridge sleeve,
a compliant element having a plurality of spaced resilient projections for engaging said member to support the same without being secured thereto positioned between said member and said cartridge sleeve,
at least one projection on an end of said member in the direction of rotation of said shaft, said projection having one surface facing in said direction of rotation and another surface facing in an opposite direction, and
restraining means on said sleeve for engaging at least one of said surfaces whereby movement of said member is restricted to a direction normal to said shaft thereby inhibiting destructive bending moments within said member during rotation of said shaft, said restraining means comprising
at least one protrusion extending from an edge of the bore of said cartridge sleeve, and
said projection extends outwardly from an end of said member in a direction parallel to said bore and has one surface in engagement with said protrusion.

4,552,467
ROLLING BEARINGS FOR STRUT-TYPE SUSPENSIONS
Kenji Takei, Hiratsuka, and Yukihiro Akabane, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1984, Ser. No. 630,519
Claims priority, application Japan, Jul. 15, 1983, 58-109640[U]
Int. Cl.[4] F16C *19/10, 33/58*
U.S. Cl. 384—615 **4 Claims**



1. An angular contact bearing for a vehicle strut-type suspension formed of a shock absorber having an extensible piston rod, a rubber buffer mount attached to the vehicle having an upper plate, and an upper seat for receiving a coil spring, the bearing comprising:
a rotary bearing race fixedly mountable on the piston rod together with the upper seat of the shock absorber for receiving the coil spring;
a first cylindrical portion disposed at the radially inner part of the rotary bearing race, and having a radially outwardly extending flange at one axial end thereof;
a stationary bearing race fixed to the rubber mount, the stationary bearing race having a radially innermost part which confronts the outer face of the first cylindrical portion of the rotary bearing race;
a second cylindrical portion disposed at the radial outer part of the stationary race and having a radially inwardly extending flange disposed at one axial end thereof;
a plurality of bearing balls disposed between the rotary bearing race and the stationary bearing race;
the outwardly extending flange of the rotary bearing race being disposed axially above the upper plate such that the outwardly extending flange and the upper plate overlap each other with a first axial clearance;
the inwardly extending flange of the second cylindrical portion of the stationary bearing race being disposed axially under the radially outer part of the rotary bearing race such that the rotary bearing race and the stationary bearing race overlap each other with a second axial clearance;
wherein the rotary bearing race, the stationary bearing race and the plurality of ball bearings are assembled as a non-separable shell type ball bearing such that said first cylindrical portion of the rotary bearing can fixedly accommodate the piston rod of the shock absorber, the stationary bearing race can be fixed to the body of the motor vehicle and at least one of the radially outwardly extending flange and the portion of the upper plate confronting the radially outwardly extending flange is fabricated of a material having self-lubricating characteristics; and
wherein the first axial clearance between the outwardly extending flange of the rotary bearing race and the upper plate of the rubber buffer mount is set smaller than the second axial clearance between the radially inwardly extending flange of the second cylindrical portion of the stationary bearing race and the radially outer end portiion of the rotary bearing race.

4,552,468
BICYCLE SEALED BEARING KIT
Willard C. Hopper, Jr., 4850 Trail, Norco, Calif. 91760
Filed Feb. 17, 1982, Ser. No. 349,617
Int. Cl.[4] F16C *9/02*
U.S. Cl. 384—458 **1 Claim**



1. A bicycle sealed bearing unit kit for installing sealed bearing units on a bicycle having a one-piece crank comprising:
a pair of bearing mounting elements each formed of a cylindrical collar having a flange formed at one end thereof;

said flange being integrally formed with said collar and extending outwardly in a plane perpendicular to said collar axis;

said bearing mounting elements each having threads formed on the inner surface thereof for enabling said elements to be secured to said crank and wherein a conventional sealed bearing unit is mounted on each of said collars, and wherein one end of each bearing unit is juxtaposed with one of said flanges of said element;

the inner diameter of one of said element collars being smaller than the inner diameter of the collar of said other element, for enabling the element collar having a greater diameter to pass over the portion of said crank to which said element collar having a smaller diameter is secured.

4,552,469
INK DOT PRINTER

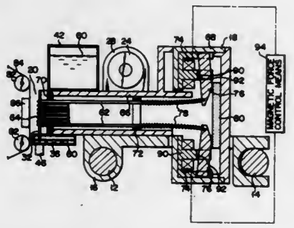
Takeyoshi Tsuge; Yoshihiro Torisawa; Ayumu Makino, all of Mishima, and Tsutomu Kimura, deceased, late of Mishima, all of Japan (by Shizuko Kimura, legal representative), assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,368

Claims priority, application Japan, Jun. 10, 1983, 58-103958; Jun. 22, 1983, 58-112237; Jun. 22, 1983, 58-112241

Int. Cl.⁴ B41J *3/12, 27/18*

U.S. Cl. 400—119 **17 Claims**



1. An ink dot printer comprising:

a means for storing magnetic ink;

a pair of magnetic pole plates arranged opposite to each other to form a slit whose one end is immersed in the magnetic ink supplied from the magnetic ink storing;

a magnetism generating means for magnetizing the paired magnetic pole plates to introduce the magnetic ink supplied from the magnetic ink storing means into the slit to form a magnetic ink film therein;

a plurality of needles arranged adjacent to one another along the longitudinal direction of the slit which each is freely movable in its longitudinal direction between a first position where its one end portion is immersed in the magnetic ink film in the slit formed by the paired magnetic pole plates and a second position where its one end portion is projected from the magnetic ink film in the slit;

a driving means for selectively driving the needles to move from the first position to the second position;

a space forming means for separating the end faces of the one end portions of the needles, which have been located at the second position, from a recording paper on a platen by a distance greater than the thickness of the magnetic ink on each of the end faces; and

a magnetic ink flying means for flying the magnetic ink from the end faces of the one end portions of the needles, which have been located at the second position, onto the recording paper on the platen to force the magnetic ink on the recording paper on the platen to form dots of magnetic ink thereon;

wherein symbols such as characters or numerals can be printed on the recording paper by the groupings of dots of the magnetic ink.

4,552,470
THERMAL TRANSFER COLOR PRINTER FOR PRINTING ON SHEETS OF PAPER

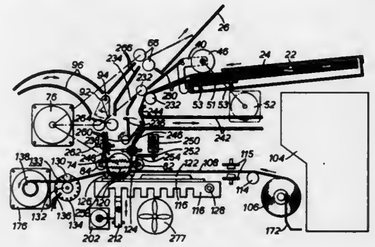
Masasumi Yana; Hitoshi Nagato, both of Yokohama; Kiyoshi Yamada, Tokyo; Shyoji Ueno, and Kunihiro Shibuya, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 22, 1983, Ser. No. 554,319

Claims priority, application Japan, Nov. 24, 1982, 57-204526

Int. Cl.⁴ B41J *3/20*

U.S. Cl. 400—120 **10 Claims**



1. A thermal transfer color printer for printing a color image on individual separate sheets of a recording medium comprising:

supply means for storing sheets of recording medium and supplying one sheet at a time into said thermal transfer color printer;

a reversible platen roller rotatably supported in said thermal transfer color printer to transport a single sheet of said recording medium received from said supply means;

first and second pinch rollers, each rotatably supported adjacent said reversible platen roller at opposite sides thereof to press the sheet of recording medium against the surface of said reversible platen roller;

first guide means for guiding the sheet of recording medium from said supply means to said reversible platen roller so that it is gripped by said reversible platen roller and said first pinch roller;

a multicolored ink ribbon supported to move across said platen roller with one face of said ink ribbon forming a guide for transporting the sheet of recording medium along the surface of said platen roller, said ink ribbon having a plurality of color segments successively arranged along its length;

a thermal printhead having thermal elements selectively energized by color component electrical signals representing the color image to be printed on the sheet of recording medium, said printhead supporting said ink ribbon at a position facing the surface of said platen roller;

printhead moving means for selectively moving said thermal printhead up and down so that, in the up state, the printhead presses said ink ribbon and the sheet of recording medium onto the surface of said platen roller for thermally transferring colored ink from the ink ribbon onto the sheet of recording medium when said thermal elements are energized and, in the down state, said thermal printhead provides a guide path for the sheet of recording medium between said ink ribbon and the surface of the platen roller;

platen roller drive means for driving said reversible platen roller in a first direction to load the sheet of recording medium in said thermal transfer color printer;

pinch roller shift means for shifting said first pinch roller toward the surface of said platen roller during a first loading time period to retain the sheet of recording medium on the surface of said platen roller to enable said platen roller to feed the sheet of recording medium to said second pinch roller, said pinch roller shift means shifting said first pinch roller away from the surface of said platen roller during a second loading time period to disengage said first pinch roller;

slack removing means positioned along said first guide means for applying a force to the sheet of recording medium during the second loading time period to remove slack from the sheet of recording medium, said pinch roller shifting means shifting said first pinch roller back toward the surface of said platen roller to again retain the sheet of recording medium after slack is removed during the second loading time period;

ink ribbon drive means for transporting said multicolored ink ribbon in the first direction, said platen roller drive means further transporting the sheet of recording medium in the first direction at substantially the same rate as said ink ribbon, said platen roller drive means also including reverse drive means for transporting the sheet of recording medium in a reverse direction, said platen roller drive means transporting the sheet of recording medium a limited distance to maintain contact between the sheet of recording medium and at least one of said first and second pinch rollers during movement in the first and reverse directions; and

electrical circuit means connected to said thermal printhead for supplying the color component electrical signals to said thermal elements while the sheet of recording medium is transported in the first direction.

4,552,471
PRINT HEAD WITH PERMANENT MAGNETIC BIAS

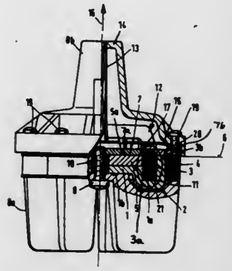
Bernd Gugel, Ulm-Einsingen, and Harald Niebel, Senden, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 21, 1983, Ser. No. 553,826

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1982, 3243477

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **9 Claims**



1. In a print head for operating and containing elongated styli, the combination comprising

a coil carrier having along its periphery upwardly bent yoke legs in integral configuration, each having a front end face, all the front end faces being situated in a common plane;

a permanent magnet arranged centrally on the coil carrier and having an outer surface being coplanar with said front end faces of said yoke legs;

a magnetizable cover plate arranged in abutment with said faces in a plane defined by said coplanarity;

said magnetizable cover plate having aperture means adjacent the respective armatures for interrupting the magnetic flux, the apertures being filled with a nonmagnetizable material;

a plurality of coils respectively arranged around said yoke legs underneath said cover plate; and

a plurality of armatures resiliently mounted on top of said cover plate and having a first portion juxtaposed to said coils and a second portion for respectively carrying a print stylus.

4,552,472
INK DOT PRINTER

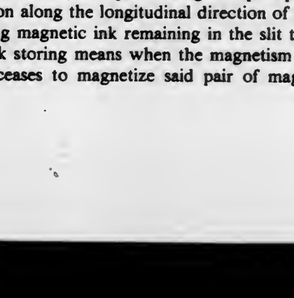
Takeyoshi Tsuge; Yoshiro Torisawa; Ayumu Makino, all of Mishima, Japan, and Tsutomu Kimura, deceased, late of Mishima, Japan (by Shizuko Kimura, legal representative), assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,361

Claims priority, application Japan, Jun. 10, 1983, 58-103958; Oct. 17, 1983, 58-193825; Oct. 24, 1983, 58-199450; Oct. 31, 1983, 58-205619; Nov. 4, 1983, 58-207161; Nov. 15, 1983, 58-214407

Int. Cl.⁴ B41J *3/12, 27/18*

U.S. Cl. 400—124 **22 Claims**



1. An ink dot printer, comprising:

elongate magnetic ink storing means having a magnetic ink supplying hole and an air opening;

a pair of magnetic pole plates arranged opposite to each other to form a slit one end of which is arranged to be immersed in magnetic ink stored in the magnetic ink storing means;

magnetism generating means for selectively magnetizing the pair of the magnetic pole plates to introduce the magnetic ink stored in the magnetic ink storing means into the slit to form a magnetic ink film in the slit;

a plurality of needles arranged adjacent to one another along the longitudinal direction of the slit and each freely movable in its longitudinal direction between a first position where one end portion of each needle is immersed in the magnetic ink film in the slit formed by said pair of magnetic pole plates, and a second position where said one end portion is projected from the magnetic ink film;

driving means for selectively driving the needles to move them from the first position to the second position, wherein the selected needles force the magnetic ink as adhered on said one end portions at the first position, onto a recording paper to form dots of the magnetic ink on the paper so that characters can be printed by grouping of the dots;

an ink cartridge arranged to be detachably mounted on the magnetic ink storing means to communicate magnetic ink contained in the cartridge into said magnetic ink supplying hole; and

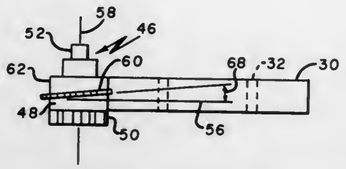
a magnet associated with the magnetic ink storing means, said magnet being in operative relation to a bottom end of the slit formed by said pair of magnetic pole plates and at a position along the longitudinal direction of the slit, for returning magnetic ink remaining in the slit to the magnetic ink storing means when the magnetism generating means ceases to magnetize said pair of magnetic pole plates.

4,552,473

RIBBON FEED MECHANISM

Stephen M. Pawlak, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 15, 1984, Ser. No. 660,662
Int. Cl.[4] B41J *35/28, 33/24*
U.S. Cl. 400—208 **4 Claims**



1. A ribbon feed mechanism for printing machines, the ribbon feed mechanism includes a base plate, a take-up spool rotatably mounted on the base plate, a roll of film ribbon supported on the take-up spool, the roll of film ribbon having a predetermined ribbon width and having outer convolutions, a drive shaft mounted on the base plate and incrementally rotated for feeding the film ribbon, the drive shaft having an axis of rotation, the ribbon feed mechanism comprising:

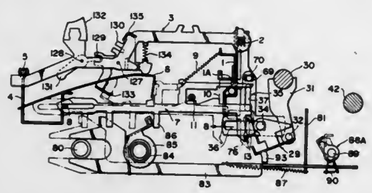
a toothed wheel fixed on the drive shaft for rotatiion therewith, said toothed wheel comprising means for rotating the take-up spool in response to incremental rotation of the drive shaft, said toothed wheel comprising a generally circular disc with a plurality of teeth extending from the circumference of said disc, the teeth all being located in a first plane which is oriented at an angle of 3° to 10° with respect to a second plane perpendicular to the axis of said drive shaft, the angular mounting of said toothed wheel comprising means for causing the teeth on said toothed wheel to penetrate the outer convolutions of the film ribbon at varying locations relative to the predetermined ribbon width.

4,552,474

BACKSPACE DEVICE IN TYPEWRITER

Giancarlo Horeschi, and Gian P. Barozzi, both of Tokyo, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Continnation-in-part of Ser. No. 287,692, Jul. 28, 1981, abandoned. This application Nov. 9, 1983, Ser. No. 550,291
Claims priority, application Japan, Aug. 11, 1980, 55-110952
Int. Cl.[4] B41J *19/62*
U.S. Cl. 400—310 **3 Claims**



1. A backspace device in a typewriter comprising:

an interposer operable by the operation of a key lever:

a cycle bail operable by said interposer;

a cycle clutch for intermittently transmitting a driving force from a driving source to a main shaft so that the main shaft can be rotated by a predetermined number of times in association with said cycle bail;

an actuating bail for performing a cycle of a motion along a moving path of a predetermined mode by a full turn of said main shaft, while rendering to said interposer a motion in a direction of said interposer leaving the cycle bail during said motion;

a backspace link for moving in association with said interposer during the leaving motion of said interposer;

a backspace rack extending laterally of the typewriter, supported rotatably about an axis laterally disposed and turned to a working position by said backspace link; and

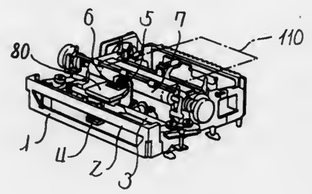
a backspace pawl fastened onto a carriage so that said backspace pawl can be reciprocated a predetermined distance in the lateral direction by a cam rotatable integrally with the main shaft and having a toothed portion to be meshed with said backspace rack rotated to said working position; characterized in that the carriage is retracted by a predetermined value of pitch along the main shaft by a reaction force generated at a portion of the engagement of the backspace pawl with the backspace rack by a motion of the backspace pawl.

4,552,475

PRINTER CARRIAGE AND HAMMER ASSEMBLY

Masayuki Suzaki, Fugisawa, and Tetuo Kanno, Atsugi, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 201,375, Oct. 27, 1982, abandoned. This application Nov. 10, 1982, Ser. No. 440,626
Claims priority, application Japan, Oct. 30, 1979, 54-150421[U]
Int. Cl.[4] B41J *1/24*
U.S. Cl. 400—144.2 **9 Claims**



1. A printer comprising:

a frame;

a carrier reciprocatably mounted on said frame;

a carriage having a detachable print wheel; and

means for pivotally mounting said carriage on said carrier for selective pivoting between a first operational position wherein said carriage is held in place and a second released position for exchanging said print wheel; wherein said carriage further comprises an engaging pin;

said carrier further comprises a movable piece resiliently mounted thereon and at least one reference surface;

said movable piece further comprises a first tapered surface for contacting said engaging pin to displace said movable piece when said carriage is pivoted toward said first position and a second tapered surface for forcing said engaging pin against said at least one reference surface when said carriage is in said first position during operation of said printer to restrain movement of said carriage with respect to said carrier; and

wherein holding and releasing of said carriage with respect to said carrier may easily be achieved by engaging said carriage and moving said carriage.

4,552,476

COMBINATION HIGH PRESSURE WAND AND BRUSH FOR VEHICLE WASHING

Patrick T. Heraty, and Michael Heraty, both of 12023 S. 76th Ave., Palos, Ill. 60463

Filed Mar. 8, 1984, Ser. No. 587,360
Int. Cl.[4] A46B *11/02, 11/06*
U.S. Cl. 401—136 **6 Claims**

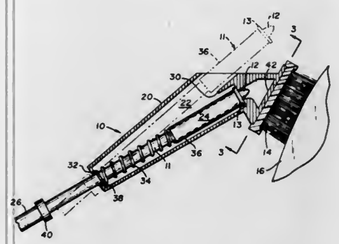
1. A combination brush-wand washing unit for cleaning an object comprising:

a high-pressure wand having a nozzle;

a housing through which the said high-pressure wand may project;

a brush mounted on the housing; and

means for allowing the wand to be moved between a first position wherein said wand and its nozzle projects from the housing with the nozzle at a distance from the housing



and brush for emitting a stream of high-pressure liquid therefrom, and a second position wherein the wand nozzle is within the housing such as to direct its flow to and through the brush,

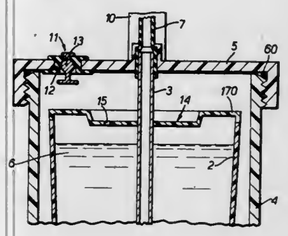
whereby the user may alternatively and selectively use the unit as a cleaning high-pressure wand close to the object without fear of the housing or brush hitting or scraping the object or as a liquid flowing brush.

4,552,477

APPARATUS FOR FEEDING A LIQUID TO AN APPLICATOR

John D. Braithwaite; Derrick O. King, both of Berkshire, and Sidney J. Williams, Surrey, all of England, assignors to Black & Decker Inc., Newark, Del.

PCT No. PCT/GB79/00131, § 371 Date Apr. 9, 1980, § 102(e) Date Apr. 9, 1980, PCT Pub. No. WO80/00315, PCT Pub. Date Mar. 6, 1980
PCT Filed Aug. 3, 1979, Ser. No. 194,452
Claims priority, application United Kingdom, Aug. 9, 1978, 32726/78
Int. Cl.[4] B43K *5/02*
U.S. Cl. 401—188 R **5 Claims**



1. A portable apparatus for feeding liquid under pressure to an applicator, comprising:

a vessel;

a liquid container received, in use, within the vessel;

a pressurizing assembly supported on the vessel and including a housing having a capsule of pressurized gas and further having pressure reducing means therein, the pressure reducing means having a high pressure side and a low pressure side;

a first fluid path extending from the high pressure side of the pressure reducing means and communicating with the outlet of the pressurized gas capsule;

a second fluid path extending from the low pressure side of the pressure reducing means through the vessel and into the container;

a feed conduit for transferring liquid from the container to an applicator;

the feed conduit passing through the top of the vessel and the top of the container to a location adjacent the bottom of the container; and

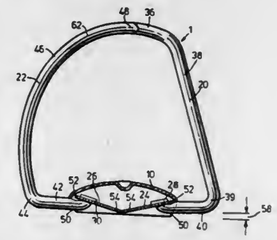
the portion of the top of the container through which the feed conduit passes being in the form of a diaphragm, the diaphragm closing over the junction between the container wall and the feed conduit.

4,552,478

RING MECHANISM

Lewis Cohen, Toronto, Canada, assignor to Double-W Stationery Corporation, Weston, Canada

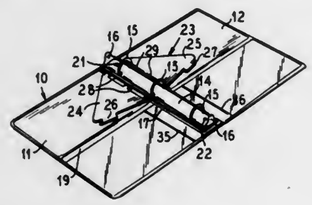
Filed Jul. 12, 1984, Ser. No. 630,138
Int. Cl.[4] B42F *3/04, 13/26*
U.S. Cl. 402—39 **26 Claims**



1. A ring mechanism for mounting on a loose leaf binder having at least one generally planar cover member and including ring elements moveable between open and closed positions so that paper having ring holes spaced inwardly from an edge thereof can be retained on the ring elements in said binder, the mechanism comprising: a resilient cover rail having turned in side edges and apertures at its said edges; a first carrier rail, for carrying first ring elements; at least one first ring element, the or each of which is mounted at a first end thereof on the first carrier rail extending through a respective aperture in the cover rail, and includes a second end formed as a mesh end and a first, bottom portion extending from the first end thereof to a first intermediate location, which, in use in the closed position, is spaced further from a binder cover member than the first end thereof, the first bottom portion being arranged to receive and support paper below the top of the cover rail and adjacent a binder cover member; a second carrier rail for second ring elements, the first and second carrier rails being nested in side by side relationship between side edges of said cover rail, the combined width of the carrier rails being greater than the width between said side edges when said cover rail is unstressed, whereby the carrier rails may be moved between an over centre open position and an over centre closed position; at least one second ring element, the or each of which is mounted at a first end thereof on the second carrier rail extending through a respective aperture in the cover rail and and includes a second end formed as a mesh end adapted to mesh with the mesh end of a first ring element, a second bottom portion extending from the first end thereof to a second intermediate location, which, in use in the closed position is spaced further from a binder cover member than the first end thereof, the second bottom portion being arranged to receive and support paper below the top of the cover rail adjacent a binder cover member, with the first and second ring elements defining a closed loop with their mesh ends meshing with one another when said carrier rails are in said closed over centre position, and said mesh ends of the first and second ring elements being spaced from one another when said carrier rails are in the open over centre position; and mounting means for mounting the cover rail to a binder cover member so that the first ends of the

ring elements are spaced above the cover member, whereby clearance for movement of the ring elements between open and closed positions is provided by the spacing of said first ends from the cover member and by the greater spacing of said intermediate locations from the cover member in the closed position, as compared to the first ends of the ring elements.

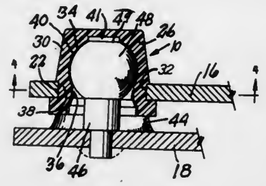
4,552,479
EASEL TYPE BINDER
Hy Nickow, Lincolnwood; Martin A. Nickow, Highland Park, and Harold G. Rowlett, Chicago, all of Ill., assignors to General Loose Leaf Bindery Co., Inc., Chicago, Ill.
Filed Jan. 6, 1984, Ser. No. 568,618
Int. Cl.⁴ B42F *13/22, 3/04;* B42D *3/16*
U.S. Cl. 402—74 **5 Claims**



1. An easel-type loose leaf binder comprising:
a front panel,
a rear panel,
a central panel disposed between said front panel and said rear panel, with fold lines running longitudinally the full length of said front and rear panels adjacent said central panel to permit said front and rear panels to be folded into a binder-closed position, together with a transversely extending fold line extending across said front, rear and central panels to permit an upper portion of each panel to be folded back into an easel providing position,
a rigid frame,
a plurality of split ring mechanisms in longitudinally spaced relation along said rigid frame,
relatively flexible backing strip located behind said rigid frame,
first securing means securing a portion of said backing strip above said transversely extending fold line to said rigid frame alone,
second securing means securing a portion of said backing strip above said transversely extending fold line to both said rigid frame and said central panel,
a flap-carrying member secured to said central panel above said transversely extending fold line, said flap-carrying member including spaced relatively rigid flaps foldable longitudinally with respect to said flap-carrying member, into upright positions, each flap having a locking tab formed therein, said backing strip having spaced slots therein proportioned to receive said locking tabs in spaced relation when said binder is in its easel providing position to thereby rigidify the binder in its easel providing position.

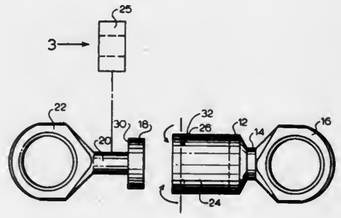
4,552,480
BALL JOINT STRUCTURE
Allan E. McIntyre, LaPorte, Ind., assignor to Sprague Devices, Inc., Michigan City, Ind.
Filed Jun. 29, 1984, Ser. No. 626,236
Int. Cl.⁴ F16C *11/06*
U.S. Cl. 403—76 **5 Claims**

1. A ball joint structure for connecting a drive link and the free end of a pivotally mounted crank arm, comprising a socket member having a cavity including a part-spherical portion, a restricted neck portion and a flexible flaring skirt portion extending from the mouth of said cavity, means detachably mounting said socket member on said link in a manner restrained against rotation, and a ball carried by the free end of said crank arm, the restricted neck of said socket member having an inner diameter smaller than the diameter of said ball,



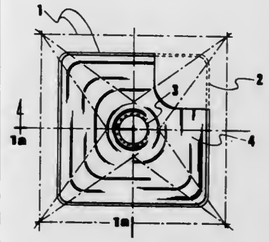
said socket member being resilient to accomodate insertion of said ball into said spherical cavity portion, said skirt engaging said crank arm when said ball is received in said spherical cavity portion.

4,552,481
ENVIRONMENTAL IMPERVIOUS SWIVEL
Thomas J. Bluett, 4 Cordell Pl., East Northport, N.Y. 11731
Filed Jul. 23, 1984, Ser. No. 633,485
Int. Cl.⁴ F16D *1/12*
U.S. Cl. 403—165 **6 Claims**



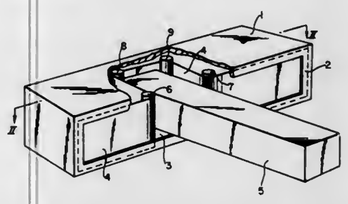
1. An environmental impervious swivel, comprising:
(a) a cylinder connected by a first shank to a first connecting member;
(b) a cylindrical piston connected by a second shank to a second connecting member, said piston being inserted coaxially into said cylinder so that said piston can swivel inside said cylinder;
(c) a cylindrical bushing disposed coaxially around said second shank and having an outer diameter equal to the outer diameter of said piston and having a relatively close fit to the inner diameter of the cylinder;
(d) means for inserting said cylindrical bushing over said second shank; and
(e) means for preventing said cylindrical piston from pulling free of said cylinder when an axial force is applied including a cylinder with an open end rolled over to form a flat front face and having an inner diameter so that said inner diameter of said rolled over end is less than an outer diameter of said cylindrical bushing and said cylindrical piston, the length of the bushing and piston approximating the cylinder length until the rolled over end so as to permanently secure said cylindrical piston within said cylinder and simultaneously also retard the entrance of any environmental contaminant while permitting low friction swiveling.

4,552,482
JUNCTION FOR CONNECTION AND ASSEMBLY OF TRUNCATED CONICAL-PYRAMIDAL GEOMETRIC SHAPE FOR MULTI-DIRECTIONAL ELEMENTS OF THREE-DIMENSIONAL STRUCTURES
Alexis Vikroff, 10 rue du Congres, 06000 Nice, France
Filed Feb. 2, 1983, Ser. No. 463,245
Claims priority, application France, Feb. 5, 1982, 82 02130
Int. Cl.⁴ F16B *7/00*
U.S. Cl. 403—172 **9 Claims**



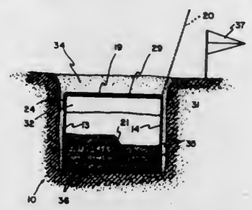
1. A connecting and assembly modular joint for the multi-directional elements of three-dimensional structures, comprising a unitary member having a central portion of truncated conical shape whose smaller base is a circular edge lying on the conical contour of said central portion and surrounding a round hole, and at least one flat portion extending outward and as a continuation of said central portion, said at least one flat portion lying on the surface of a regular polygon.

4,552,483
DEVICE FOR COVERING AN OBLONG OPENING IN A HOUSING
Gerold Anderka, Ellerbek; Joachim Brandt, Hamburg; Gerhard Deblitz, Quickborn; Rolf Martens, Hamburg; Rolf Paschen, Elmshorn, and Bernd Willimczik, Wedel, all of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.
Filed Aug. 31, 1984, Ser. No. 646,187
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332044
Int. Cl.⁴ F16B *17/00*
U.S. Cl. 403—288 **4 Claims**



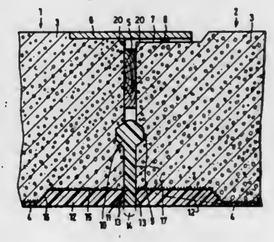
1. A device for covering an oblong housing opening, along which a movable slide block element, having a proximate portion extending into the housing and a distal portion extending outward through said housing opening, is movable back and forth, which comprises a flexible band engaged to extend around the element proximate portion, the width of the band being greater than the width of the housing opening, wherein means to hold the band against an inner surface of the housing between the slide block element and each end of the housing opening, are characterized by means immovably securing the band (4) to the housing proximate each end of the housing opening (3), deflecting rollers (6, 7) adapted to deflect the band (4) into the housing (1), which are supported upon the slide block element (5) in the vicinity of the housing opening (3), and guide rollers (8, 9) to guide the band (4) about an inner end face of the element (5), which are supported upon the proximate portion of the slide block element (5), located within the interior of the housing (1).

4,552,484
COMPOSTING CONTAINER FOR FIELD USE
David A. Nuttle, 1316 Ravenhurst Dr., Raleigh, N.C. 27609
Filed Jan. 6, 1984, Ser. No. 568,701
Int. Cl.⁴ G21F *9/00*
U.S. Cl. 405—128 **9 Claims**



1. The method of providing field toilet type facilities comprising: transporting a folded inner unit constructed preferably of a double walled corrugated paper type material and an outer cover constructed preferably of a platic type material and both being biodegradable to a use location; unfolding said inner unit to form an inner container having sides, a bottom, and a least one top; unfolding said outer cover; inserting said unfolded inner container into said outer cover to form a combination field toilet and composting container; forming an opening in the earth; placing said combination container in said opening; placing a locating means adjacent said container; deposition alternate layers of feces and soil in said combination containers to fill the same; closing said top of said inner container; folding said outer cover over said inner container; and covering the combination container with soil whereby said feces will be anaerobic compost to destroy all intestinal organisms therein and said combination container will biodegrade.

4,552,485
PROCESS AND PREPRESSING PIPE FOR LAYING A PIPELINE IN THE EARTH
Heiner I. Hammer, Seevetal, Fed. Rep. of Germany, assignor to Schlegel Lining Technology GmbH, Hamburg, Fed. Rep. of Germany
Filed Oct. 22, 1982, Ser. No. 436,039
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142177
Int. Cl.⁴ B63B *35/04;* E21D *11/00;* F16L *55/00, 1/02*
U.S. Cl. 405—184 **8 Claims**



1. Pipe for use in laying a prepressed pipeline in the earth comprising:
a load bearing shell having an inner surface; an at least substantially even outer surface and first and second longitudinal force transferring end faces;
a layer of polymeric material adjacent to said inner surface,

said layer characterized by a first average thickness over a substantial portion of said pipe between said end faces and end portions of greater thickness proximate said end faces; and

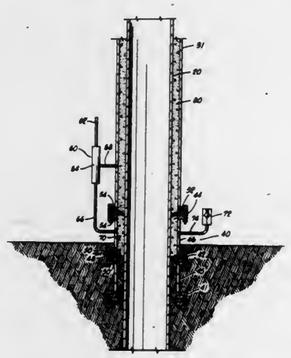
a plurality of flexible projections extending from said layer into said shell for anchoring said layer to said shell.

4,552,486

GROUTING METHOD - CHEMICAL METHOD

Lloyd C. Knox, Duncan, Okla., and Clayton A. Moore, London, England, assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1984, Ser. No. 591,701
Int. Cl.⁴ E02D *21/00, 5/34*
U.S. Cl. 405—227 **20 Claims**



1. A method of grouting a first and second annular space formed by an annular support member having an upper pile seal assembly and a lower pile seal assembly thereon and a pile driven therethrough of an offshore platform, said first annular space being located between said annular support member and said pile and between said upper pile seal assembly and said lower pile seal assembly, said second annular space being located between said annular support member and said pile and above said upper pile seal assembly, said method comprising the steps of:

injecting an alkali silicate material which floculates upon contact with a di- or multivalent cation fluid into said first annular space; and

injecting cement or grout into said second annular space.

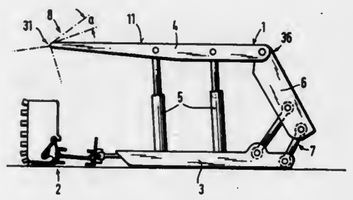
4,552,487

MINE ROOF SUPPORT UNIT HAVING DUST SUPPRESSION MEANS

Walter Welrich, Dortmund, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Luner, Fed. Rep. of Germany

Continuation of Ser. No. 243,658, Mar. 13, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,361
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010415
Int. Cl.⁴ E21D *17/02, 19/00;* E21C *47/02*
U.S. Cl. 405—295 **19 Claims**

1. In a mine roof support unit having a generally horizontally disposed roof shield and a rearwardly inclined goaf shield, said roof shield being vertically adjustable between a set position against an overlying roof portion of the mine working and a retracted position spaced therebeneath, and said goaf shield being adapted to screen off a goaf space of the mine working, the improvement comprising: at least one liquid spray nozzle mounted on an upper side of the support unit at a front (face-side) edge of the roof shield and directed upwardly towards said overlying roof portion, and means for spraying liquid through said at least one nozzle while said roof shield is retracted from said overlying roof portion thereby to moisten the same and inhibit the subsequent formation of dust occasioned



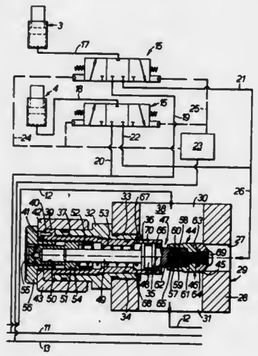
either by setting the roof shield against said overlying roof portion or by retracting the roof shield therefrom.

4,552,488

MINE ROOF SUPPORT SYSTEM

Peter Elliott-Moore, Harvington, Nr. Evesham, England, assignor to Dowty Mining Equipment Limited, England

Filed Jan. 12, 1983, Ser. No. 457,424
Claims priority, application United Kingdom, Feb. 3, 1982, 8203047
Int. Cl.⁴ E21D *15/44, 23/26*
U.S. Cl. 405—299 **5 Claims**



1. A mine roof support system including a plurality of hydraulically-operated mine roof supports each having a roof beam and at least one extendible prop for raising the roof beam into engagement with the mine roof, means associated with each said support for advancing it towards the working face of the mine, control valve means for each support, a main supply pipe for supplying liquid at high pressure and by way of respective said control valve means to said prop or props of each of said supports for full roof support, a main return pipe, a respective relief valve connected to discharge liquid into said main return pipe and including a movable element and a seating with which said element is co-operable, said relief valve being communicable with said prop or props by way of its associated said control valve means when said liquid at high pressure is no longer supplied to said prop or props and the respective said roof support is being advanced by said advancing means, said movable element of each said relief valve comprising at least two relatively-movable parts, which are connected together with a predetermined amount of lost motion, and being so co-operable with said seating as to ensure that when said support is so advancing a substantially constant predetermined back-pressure is maintained in said prop or props sufficient to maintain the roof beam of the respective said support in only light pressure contact with the mine roof, but if the pressure in said main return pipe exceeds the pressure

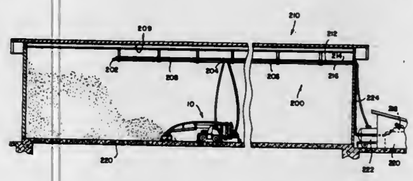
then subsisting in said control valve means, one of said parts of said element is caused automatically to close onto said seating.

4,552,489

VEHICULAR MOBILE HIGH CAPACITY PNEUMATIC CONVEYOR

Wayne M. Jacobson, York, and Roger L. Quaintance, Henderson, both of Nebr., assignors to Cyclonaire Corporation, Henderson, Nebr.

Division of Ser. No. 339,479, Jan. 15, 1982, Pat. No. 4,432,676. This application Nov. 14, 1983, Ser. No. 551,103
Int. Cl.⁴ B65G *53/40*
U.S. Cl. 406—39 **5 Claims**



1. In a large storage building of the type which provides storage for dry particulate material, such as Portland cement or the like, the building being of the type which stores the material on a single elevation and wherein the horizontal storage area is substantially larger that the height, apparatus for pneumatically conveying said material from said building, said apparatus comprising:

a self-propelled vehicle having a vertically moveable and horizontally rotatable mechanical boom constructed for movement and manipulation within the interior of said building, said boom having a nozzle assembly at the outer end portion thereof adapted to engage the material, said vehicle further having a transfer vessel assembly fixedly attached to the rear end of the vehicle for receiving material conveying through a conveying line interconnecting the nozzle assembly with the transfer vessel assembly under vacuum pressure and for transferring the material into a conveying line under positive pressure;

sources of positive pressure and vacuum pressure for use by said transfer vessel assembly during pneumatic conveying of said material, said sources of positive and vacuum pressure being located outside of said storage building;

means connected to said sources of positive and vacuum pressure extending along the building, said means having a plurality of sets of distribution ports, each of which is adapted to provide a connection point to distribute both positive and vacuum pressure and a connection point for said conveying line from said transfer vessel assembly;

flexible conduit means for interconnecting one set of said distribution ports with said transfer vessel to provide interconnections for said positive pressure, vacuum pressure and the material conveying line;

such that said vehicle can be moved within said building so that said nozzle assembly can engage said material for removing the same from said building during operation, the vehicle being capable of operating all areas thereof by being attached to one of said ports in the immediate area of operation.

4,552,490

SOLIDS FEED CONTROL VALVE ASSEMBLY

Thomas J. Neale, Parsippany, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

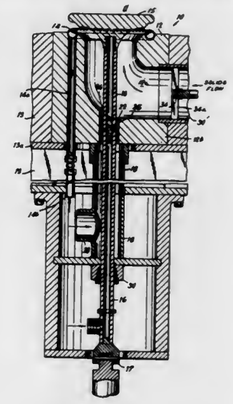
Continuation of Ser. No. 482,808, Apr. 7, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,497
Int. Cl.⁴ B65G *53/48*
U.S. Cl. 406—56 **12 Claims**

1. A poppet type valve assembly with gas purged seat for controlling flow of particulate solids therethrough, comprising:

(a) a valve body having a solids flow passageway therein and having a purged valve seat located at the passageway outlet end;

(b) a torus-shaped manifold located radially outwardly from the valve seat, said manifold having multiple outlet ports for directing a purge gas flow radially inwardly toward a mating valve head, said manifold being connected to a gas flow passageway located within said valve body for supplying a purge gas to said valve head;

(c) a poppet type valve head mating with said valve seat, said head being rigidly attached to an elongated stem, said



stem passing through a packing gland arranged for pressure sealing around the elongated stem, said stem being adapted for moving said valve head relative to said valve seat;

(d) an elongated tube extending between said valve body and said packing gland and surrounding said valve stem; and

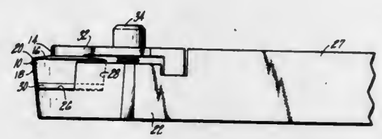
(e) at least one booster nozzle located in said valve body adjacent said valve stem for passing a gas therethrough to facilitate passage of the particulate solids through the valve body passageway; and whereby the poppet valve head seating surface is gas purged to remove particulate solids therefrom.

4,552,491

CUTTING TOOL HAVING CYLINDRICAL CERAMIC INSERT

Frederick D. Parker, Springfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 23, 1980, Ser. No. 161,825
Int. Cl.⁴ B26D *1/00*
U.S. Cl. 407—107 **5 Claims**



1. A cutting tool comprising:

a holder having a portion adapted for receiving a ceramic insert;

releasable clamping means attached to the holder, for maintaining the insert in contact with the holder;

a ceramic insert, engaged with the holder and clamping

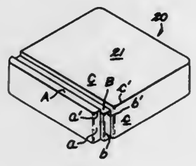
means, the insert having the shape of a tapered cylinder with the cylinder diameter increasing along the insert length from a first end to a second end, the first insert end adapted to mate with a portion of the holder, the opposing second insert end having a circumferential edge bevel and a chamfer, the intersection of the second insert end and tapered cylinder wall producing a circumferential cutting edge having at any point a compound negative rake angle provided by the chamfer and the bevel, the rake angle of the chamfer being more negative than the rake angle of the bevel, and the insert taper providing a relief angle when the tool is positioned for cutting along the plane in which the circumferential cutting edge lies.

4,552,492

CUTTING INSERT WITH MEANS FOR SIMULTANEOUSLY REMOVING A PLURALITY OF CHIPS

Ranga Komanduri, and William R. Reed, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,694
Int. Cl.⁴ B23B *27/22*
U.S. Cl. 407—114 **7 Claims**



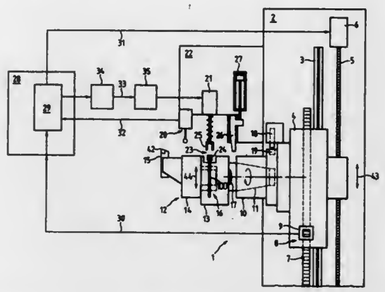
1. A polygonal cutting insert comprising first and second spaced substantially parallel opposed primary faces, a plurality of side faces generally perpendicular to said primary faces connecting said primary faces, at least one corner formed by the intersection of said first primary face and two of said side faces, at least three discrete substantially parallel cutting edges at said corner formed adjacent the intersection of said two side faces and said first primary face, at least two of said cutting edges being staggered inwardly to a different extent in a direction parallel with said first primary face and at least one of said cutting edges being staggered inwardly in a direction perpendicular to said first primary face.

4,552,493

APPARATUS FOR AUTOMATICALLY DISPLACING THE RADIAL POSITION OF A CROSS-FEED SLIDE IN A CROSS-FEED HEAD OF A CUTTING MACHINE

Robert Schultshick, Uster, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Apr. 25, 1983, Ser. No. 488,601
Claims priority, application Switzerland, May 3, 1982, 2696/82
Int. Cl.⁴ B23B *49/00, 25/06*
U.S. Cl. 408—3 **12 Claims**



1. A cutting machine, especially a boring and milling machine, comprising:
- a stand including a guide member;
- a carriage arranged for reciprocating movement along said guide member in a carriage displacement path;
- drive means for displacing said carriage on said stand and including a displacement spindle and a drive motor;
- a machine measurement system mounted on said carriage and including a scale mounted substantially parallel to said guide member for measuring the position of said carriage;
- a spindle having an axis of rotation arranged at said carriage at substantially right angles to said guide member and including a tool holding and chucking fixture;
- said spindle having a groove identifying an indexed position thereof;
- a cross-feed head inserted into said spindle and including:
  - a spindle insert;
  - a cross-feed slide displaceably arranged in said spindle insert and provided with a tool having a top;
  - a displacement mechanism for displacing said cross-feed slide relative to said spindle insert and comprising a spindle drive;
- a cantilever structure;
- a displacement drive means arranged at said cantilever structure at the end of said carriage displacement path for driving said displacement mechanism;
- a clutch arrangement provided between said displacement drive means and said displacement mechanism and comprising a male member and a female member engaging therewith to transmit rotary action, one of which members is advanceable;
- an indexing pin displaceably journalled at said carriage for engaging said groove provided at said spindle in said indexed position thereof such that said spindle is retained in said indexed position;
- a sensor for sensing the position of said cross-feed slide;
- a numerical control provided with an adjusting control mechanism for controlling said drive motor and said displacement drive means and connected with said sensor and with said machine measurement system;
- said numerical control being provided for adjusting a cutting radius defined by a distance between said axis of rotation of said spindle and said tip of said tool;
- clamping means provided in said cross-feed head for clamping said cross-feed slide in a defined position in relation to said spindle insert; and
- releasing means provided on said cantilever structure at one end of said carriage displacement path for releasing said clamping means.

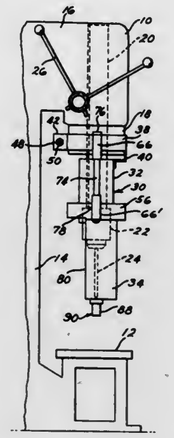
4,552,494

SAFETY SHIELD FOR DRILL PRESS

Douglas R. Wix, Rte. 2, Box 286, Westmoreland, Tenn. 37186

Filed May 14, 1984, Ser. No. 610,151
Int. Cl.⁴ B23B *47/34;* B23Q *11/08*
U.S. Cl. 408—67 **4 Claims**

1. A collapsible shield for protecting an operator of a vertical drill press, said shield comprising:
- a. a pair of interconnected telescoping hollow cylinders, with a top cylinder of elongated shape adapted to be mounted to a non-rotating, vertically movable drill housing member, and a lower cylinder of elongated shape that is suspended from the top cylinder and is capable of vertical telescoping movement with respect to the top cylinder;
- b. the top cylinder being fitted above its top end with an enlarged split collar that is joined to the top cylinder by tab means remote from the said split so the collar may expand and contract, and fastening means assembled across the split of the collar for tightening and loosening the collar with respect to the said drill housing member;
- c. the lower cylinder being fitted with an enlarged collar adjacent its top end of about the same diameter as the said split collar, the lower cylinder being larger in diameter than the top cylinder so the lower cylinder may telescope over the top cylinder;
- d. a first pair of opposite tubular bearings each mounted vertically on the upper split collar, and a second pair of opposite tubular bearings each mounted vertically on the lower collar to be in vertical alignment with the said first pair, and a vertical elongated slide pin mounted between the aligned bearings of both collars, the top portion of each slide pin having an enlarged head, and the pins loosely fitted in the bearings of the top collar and fixed with respect to the bearings of the lower collar for suspending the lower cylinder from the top cylinder by means of these slide pins;
- e. one side of the lower cylinder being removed so that it is open for gaining access to the interior thereof, the bottom of the lower cylinder being closed by a wall that is furnished with a central opening supporting a downwardly projecting tubular drill guide.



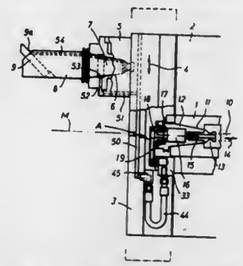
4,552,495

HORIZONTAL DRILLING AND MILLING MACHINE

Matthias Maizkorn, Jüchen, Fed. Rep. of Germany, assignor to Scharmann GmbH & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 16, 1984, Ser. No. 641,489
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3329964
Int. Cl.⁴ B23B *3/20*
U.S. Cl. 409—136 **6 Claims**

1. A horizontal combined drilling and milling machine, comprising:
- a hollow drilling spindle which conveys cooling medium and is provided with a conical receiving recess;
- a faceplate having a first part disposed thereon;
- a cross slide movably supported on said faceplate;
- a tool cartridge supported on said cross slide for receiving a tool holder which is adapted to hold a tool;
- an adapter, which includes a hollow cone-shaped head which can be removably inserted in said conical receiving recess of said drilling spindle to receive cooling medium therefrom; said adapter also includes a hollow moving arm which is connected to said cone-shaped head, is rotatable relative thereto, and can receive cooling medium therefrom; said arm includes a second part which can be removably connected to said first part of said faceplate and can convey cooling medium thereto;



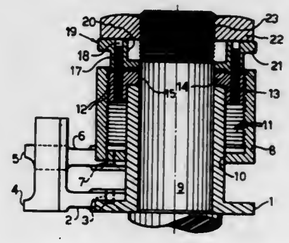
- a cooling medium line associated with said cross slide; and
- a flexible connection disposed between said first part of said faceplate and said cooling medium line to convey cooling medium from the former to the latter.

4,552,496

DIVIDED MILLING CUTTERS

Lennart Johannesson, Parkgatan 41, S-571 00 Nässjö , Sweden

Filed Jan. 5, 1983, Ser. No. 455,825
Claims priority, application Sweden, Jan. 7, 1982, 8200034
Int. Cl.⁴ B23B *31/40*
U.S. Cl. 409—209 **5 Claims**



1. A divided milling cutter comprising a cutter spindle having an annular shoulder and a threaded portion which is axially spaced from said annular shoulder; an inner sleeve slidable on to and securable to said cutter spindle between said threaded portion and said annular shoulder; a first cutter half releasably secured to said inner sleeve; a second cutter half; and means for securing said second cutter half to said cutter spindle in a position which is adjustable in the axial direction with respect to said first cutter half, wherein said securing means comprises a first annular abutment surface at one end of said inner sleeve for engaging said annular shoulder of said cutter spindle; a second annular abutment surface at the other end of said inner sleeve; an intermediary sleeve having an inner, annular flange for engaging said second abutment surface of the inner sleeve, external threads, and first coupling means; an outer sleeve having internal threads for cooperation with the external threads of said intermediary sleeve, and an annular flange which is directed radially inwards and slidingly encircles said spindle and to which said second cutter half is fastened, said annular flange of the outer sleeve being located at that end of the outer sleeve which is adjacent to said first cutter half; and a pressure ring having a tubular portion which is insertable into said outer sleeve and is provided with second coupling means for engagement with said first coupling means of the intermediate sleeve, said first and second coupling means being constructed for transferring a torque from said pressure ring to said intermediary sleeve, and an annular flange projecting radially outwards from said tubular portion; and a locking nut

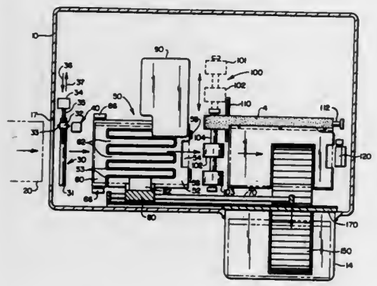
having internal threads for engaging the threads of said threaded portion of said cutter spindle.

4,552,497

APPARATUS AND METHOD FOR PREPARING MULTIPAGE, TAPED, SIDE-STITCHED DOCUMENTS

Barry C. Kockler, Lewisville; John E. Dobson, Dallas, and Daniel T. Noonan, Plano, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed May 21, 1984, Ser. No. 612,229
Int. Cl.[4] B42B *5/00, 2/00*
U.S. Cl. 412—6 **18 Claims**



1. Apparatus for producing a multipage, side-stitched document comprising:
(a) a support surface;
(b) scoring means for producing score lines upon sheets of paper transported along said support surface;
(c) means for feeding a series of sheets in aligned progression along said support surface and in scoring relationship with said scoring means;
(d) lateral positioning means for altering the relative lateral position between said support surface and said scoring means to cause progressive changes in the location of the score lines produced upon different ones of said sheets;
(e) accumulating means for collecting a plurality of sheets fed and scored as aforesaid and arranging said sheets into a stack; and
(f) stitching means for driving a plurality of staples into said stack along spaced positions within a margin defined by said score lines and the corresponding edge of said stack.

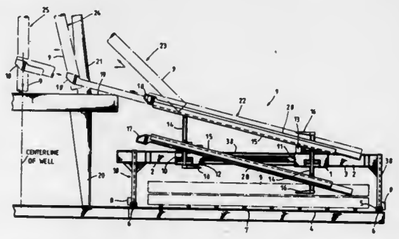
2. Apparatus for preparing a multipage, side-stitched document which comprises in combination:
(a) means for feeding a series of sheets to be included in said document in a paused, timed, preselected order to a scoring station;
(b) said scoring station including:
(i) a scoring mechanism for impressing a vertical score line along one edge of each sheet as it passes through said scoring station, and
(ii) means for moving said scoring mechanism to and through preselected positions;
(c) means for determining when a sheet has passed through the scoring station and generating a signal responsive thereto to move the scoring mechanism to its next preselected position;
(d) a downstream, in-line accumulating station to receive scored sheets from the scoring station;
(e) first clamping means associated with the accumulating station for grasping a complete assembly of sheets on the side opposite the score lines;
(f) means for moving said clamped assembly to a downstream, in-line stitching station;
(g) said stitching station including a stitching head to make two or more stitches in the assembled sheets adjacent to and exterior of the score lines;
(h) means for moving the stitched assembly downstream from the stitching station;
(i) stop means downstream of the stitching station to stop movement of the side-stitched document;
(j) second clamping means associated with said stop means for grasping the document on its upstream side transverse to the stitched side;
(k) means for releasing the first clamping means from the document and returning said clamping means to the accumulating station; and
(l) means for releasing the second clamping means and transferring the side-stitched document to a packing station.

4,552,498

PICKUP AND LAY-DOWN APPARATUS

Edward D. Dysarz, Houston, Tex., assignor to Branham Industries, Inc., Conroe, Tex.

Filed May 2, 1983, Ser. No. 490,731
Int. Cl.[4] E21B *19/14*
U.S. Cl. 414—22 **17 Claims**



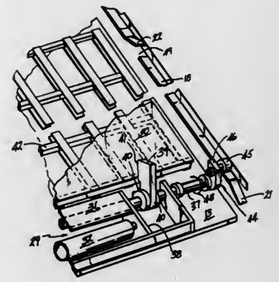
1. A pick-up and lay-down apparatus for transferring tubular pipe from a pipe rack to the drill floor of a drilling rig, comprising:
a gantry extending across and adapted for movement over the pipe rack, said gantry including a gantry cross beam which extends across the pipe rack;
a moveable trolley mounted on said gantry and adapted for movement along said gantry beam; a rotation means;
a pair of moveable spaced apart lifting arms mounted to said trolley by said rotation means, each said spaced apart lifting arm adapted to move independently of the other;
a moveable auxiliary lifting arm mounted on each said spaced apart lifting arm and adapted for independent movement relative to said lifting arm, said gantry and said moveable trolley cooperating to position said lifting arms over a pipe to be transferred;
a fork assembly rotatably mounted to each of said spaced apart lifting arms, said fork rotatable from a first position in which said spaced apart lifting arms may lower said forks below said pipe to be transferred, to a second position in which the forks are extended beneath said pipe to be transferred;
means for rotating said fork assembly; and
a trough assembly mounted to said auxiliary lifting arms for movement therewith, said auxiliary lifting arm moving said trough in the direction of said forks to secure said pipe to be transferred between said forks and said trough assembly, said rotation means rotating said spaced apart lifting arms about said gantry from a first position in which said trough assembly is above said pipe to be transferred to a second position in which said pipe to be transferred is resting in said trough assembly, said trough assembly being extensible to supportably move said pipe to be transferred to the drill rig floor.

4,552,499

SLIP SHEET RETAINERS

Julian D. Foust; Leonard M. Ysidro, Sr., both of Cleveland, and Danny R. Cross, Decatur, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Dec. 22, 1982, Ser. No. 452,262
Int. Cl.[4] B65G *57/00*
U.S. Cl. 414—125 **10 Claims**



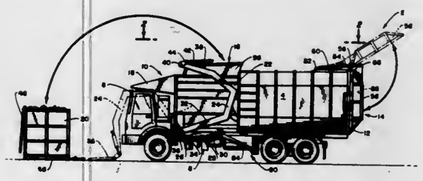
1. In a palletizer for providing pallets with a bottom feed pallet system including a generally vertical stack of pallets having at least a bottommost and a next higher pallet wherein the underside of a bottommost pallet is placed on conveying means, the pallet being conveyed along a predetermined path of travel to a loading point for the placement of objects thereon, the palletizer having means to place a slip sheet having a front edge and a back edge on top of a pallet as the pallet is conveyed by conveying means along the predetermined path of travel, the improvement comprising in combination:
(a) a pallet push bar connected to the conveying means, the pallet push bar having a front side, a rear side and a top portion therebetween, the top portion having a rotatable roller with a first end and an opposing second end, the roller being adjacent a portion of the rear side to support the underside of the next higher pallet the front side contacting a back edge of the pallet to convey the pallet along the predetermined path of travel; and
(b) means for retaining the slip sheet in position on top of the pallet as the pallet is conveyed along the predetermined path to the loading point, the means for retaining being connected to the pallet push bar exteriorly of both the first end and the opposing second end of the roller and having at least a first serrated slip sheet engaging surface to engage the back edge of the slip sheet to prevent the slip sheet from riding up and over the retaining means as the pallet is conveyed along the predetermined path of travel.

4,552,500

REFUSE HAULING AND STORAGE APPARATUS

Jose A. Ghibaudo, 12703 Alconbury, Cerritos, Calif. 90701, and Eduardo J. Ghibaudo, 7103 De Palma St., Downey, Calif. 90241

Filed May 18, 1984, Ser. No. 611,739
Int. Cl.[4] B65F *3/20*
U.S. Cl. 414—408 **14 Claims**



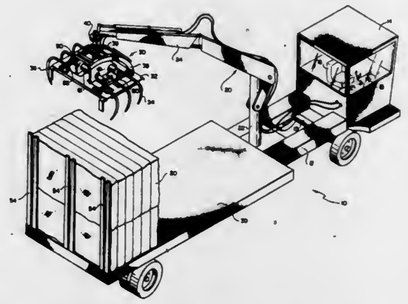
1. A refuse handling device comprising an elongated, hollow body arranged for mounting on a motor truck chassis or the like having a cab, said body being of uniform, polygonal cross-section throughout its length, closed on a forward end and open on an opposite rear end, and having an upper loading therein spaced longitudinally from said open end for depositing refuse within the body, said forward closed end having an elongated cab canopy portion adapted to project outwardly over said motor truck chassis cab; means on said body for lifting a refuse container to dump refuse from the container into said body through said upper loading opening and for thereafter lowering said container; a closure means associated with said open end of said body for releasably closing said rear opening in said body; compacting means within said body for longitudinal movement therein to compress against said closure means refuse loaded thereinto through said upper loading opening having a compacting platen mounted for movement longitudinally in said body and having an upper angularly displaced inclined guiding part extending a sufficient distance forward thereof for guiding refuse which is falling by gravity, rearward of the position of said compacting platen within said body, and being adapted to be received into said elongated cab canopy portion of said body when said compacting platen is positionally located in said hollow body substantially adjacent said upper loading opening for accepting refuse passing therethrough, and a lower packer part, so that refuse entering said body through said upper loading opening is guided by said upper angularly displaced inclined guiding part into a position to be acted upon by said lower packer part, and power operated means for causing reciprocal packing movement of said compacting platen to urge said deposited refuse rearwardly in said body.

4,552,501

BIG BALE HANDLING SYSTEM

Raymond W. Clark, Rte. 1, Box 131, Hansen, Id. 83334, and Rudolf Limpert, 280 Woodland Dr., Summit Park, Utah 84060

Continuation-in-part of Ser. No. 418,241, Sep. 15, 1982, abandoned. This application Sep. 14, 1983, Ser. No. 532,574
Int. Cl.[4] B60P *1/00*
U.S. Cl. 414—486 **7 Claims**



3. A system for handling and transporting large bales of crops, said system comprising;
a motorized chassis having operator control means whereby a single operator can control said system, said chassis further having table means onto which bales can be loaded;
boom means connected to said chassis for lifting and maneuvering the bales;
fork means positioned on a distal end of said boom means for grabbing the bales and holding them while they are maneuvered; and
rotator means positioned on the distal end of said boom and connected to said fork means, said rotator means compris-

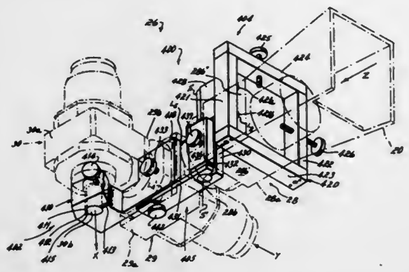
ing first means for rotating said fork means about a substantially vertical axis, and second means for rotating said fork means about a substantially horizontal axis such that said bales of crops may be rotated and stacked on a selected side thereof, said second means for rotating said fork means about a substantially horizontal axis comprising a curved track and a sled, said sled being translatable along said track from a first position of adjustment to a second position of adjustment.

4,552,502

APPARATUS FOR LOCKING THE WRIST LINKS OF A WORK ROBOT IN THE SAME RESPECTIVE RELATIVE POSITIONS TO FACILITATE CALIBRATION OF THE WRIST LINK POSITION TRANSDUCERS THEREOF

Martin J. Harjar, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Oct. 7, 1983, Ser. No. 539,919
Int. Cl.⁴ G66C *13/00*
U.S. Cl. 414—680 **3 Claims**



1. A fixture to facilitate calibrating position transducers respectively associated with at least three different articulated links serially connected in a chain to define a multi-link, multi-axis robot, each robot link including a rotary output member and a housing rotatably mounting said output member, each robot link of the chain further including means securing the housing associated therewith to the rotary output member associated with the next adjacent inner link of the chain, said fixture comprising:

outer means engageable with the rotary output member of the outermost link of the chain to prevent with respect to said outer means when engaged therewith both (a) rotary movement of said outermost rotary output member about its own axis and (b) rotary movement of said outermost rotary output member about a second rotary axis coincident with the axis of the rotary member which is secured to the actuator housing of the outermost link, which second rotary axis is angled to said axis of rotation of said outermost rotary output member, said outer means including a bore configured to snugly embrace the periphery of said outermost rotary output member when inserted therein, said bore having a locating element therein engageable with a corresponding locating member on the periphery of said outermost rotary output member to prevent rotation of said outermost rotary output member relative to said bore,

inner means engageable with the innermost link which includes said housing for the innermost rotary output member, said inner means when engaged with said innermost link being immovable relative thereto both (a) axially along the length of said innermost link and (b) rotationally about the longitudinal axis of said innermost link, and

intermediate means rigidly interconnecting said inner and outer means to prevent any relative movement therebetween, said intermediate means being connected relative to links disposed between said innermost link and said outermost link, solely through said inner means and said outer means, thereby locking all links of said chain against relative movement with respect to each other, and wherein

said inner means and said intermediate means are detachable,

said axis of rotation of said outermost rotary output member is orthogonal to the axis of the rotary output member which is secured to the actuator housing of said outermost link,

said inner means includes

a rectangular frame having first and second orthogonal locating surfaces for engaging adjacent orthogonal sides of said innermost link of said chain to position the plane established by said frame, when said frame is engaged with said innermost link, perpendicular to the axis of rotation of said innermost rotary output member, and

a shaft disposed parallel to said frame plane and said first locating surface and perpendicular to said second locating surface, and

said intermediate member includes

a locating bore disposed parallel to said bore of said outer means, and

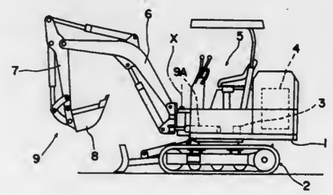
selectively operable clamp means for temporarily clamping said shaft in said locating bore to temporarily couple said intermediate means and said inner means, and thereby orient the rotational axes of said rotary output members in mutually orthogonal directions when said intermediate means and inner means are temporarily coupled, and said frame is engaged with said outmost link, and said outermost rotary output member is engaged in said bore of said outer means.

4,552,503

EXCAVATING VEHICLE

Akihiko Mouri; Yoshinobu Tabuchi, both of Sakai; Akira Tsuda, Osaka; Masahiro Tsutsumi, Sakai, and Kazushige Ikeda, Osaka, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Dec. 21, 1983, Ser. No. 563,917
Claims priority, application Japan, Dec. 24, 1982, 57-234298
Int. Cl.⁴ A01B *63/111*
U.S. Cl. 414—687 **2 Claims**



1. An excavating vehicle including a hydraulic actuator and a control system for producing a swivel motion of a swivel base which comprises:

means for moving said vehicle from place-to-place,

a swivel base on said means for moving said vehicle,

an excavating apparatus on said swivel base,

a hydraulic system for operating said actuator drive, said hydraulic system including,

a control valve for adjusting a flow rate and direction of flow of a hydraulic fluid supplied to said actuator,

a motor-pump for pumping said hydraulic fluid to said control value,

swivel base position determining means for setting a predetermined stopping position of said swivel base,

detector means for detecting positions of said swivel base,

operator position setting means for setting a direction and speed of movement of said swivel base relative to a neutral position, and

control means for controlling fluid flow through said control valve,

said control means adapted to receive control signals from said operator means, said position setting means and said position detector means which determines a swivel speed of said swivel base and a deceleration timing signal from said operator position setting means which signals are evaluated in said control means and result in an output signal for controlling said control valve,

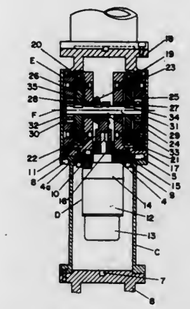
whereby said output signal to said control valve controls the fluid flow rate through said control valve thereby reducing the flow rate in a timed relationship in accordance with swivel speed to slowly stop said swivel base at a desired stop position, the faster the swivel speed, the earlier the output signal is directed to said control valve.

4,552,504

INDUSTRIAL ROBOT

Akiyoshi Nakada, Suita; Toshitugu Inoue, Kyoto; Haruo Tada, Kobe; Kiyoshi Shinki, Neyagawa; Kuninori Takezawa, Ikeda, and Makoto Doi, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP83/00175, § 371 Date Jan. 31, 1984, § 102(e) Date Jan. 31, 1984
PCT Filed May 31, 1983, Ser. No. 579,362
Claims priority, application Japan, May 31, 1982, 57-93614
Int. Cl.⁴ F16H *33/00*
U.S. Cl. 414—735 **4 Claims**



1. An industrial robot comprising:

a plurality of arm units each composed of a driving unit from among a plurality of driving units having different driving powers and different driving speeds, a joint unit from among a plurality of joint units having different driving speeds and power transmitting capacities, and an arm from among a plurality of arms having different sizes and load capacities, said arm units being connected to each other in series, said joint units, driving units and arms each having connecting surfaces thereon having positioning parts and setting-fixing parts in a predetermined pattern for enabling the joint units, driving units and arms to be detachably connected to other joint units, driving units and arms at corresponding connecting surfaces to form arm units with the desired joint units, driving units and arms;

said joint units each having a stationary frame and a follower frame rotatably connected to each other for rotation around an axis of rotation and being connected at two positions along said axis of rotation and having a driving power transmitting mechanism connected between said frames and including reduction gears at at least one of said two positions;

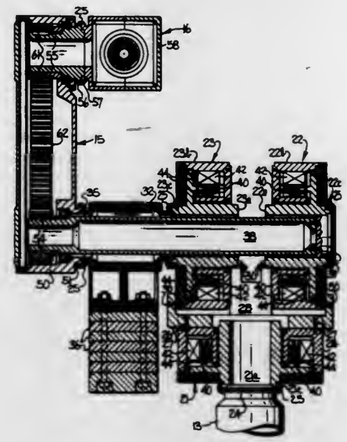
said driving units each having a motor, a position sensing unit fixed to said motor, and a flange on which said motor is mounted and having bearings rotatably supporting the shaft of said motor and an output member fixed to the motor shaft, said motor shaft, when a driving unit is connected with a joint unit, intersecting said axis of rotation of said joint unit and said power transmission mechanism having means engaged with the output member on the motor shaft of the connected driving unit, whereby said output member and said power transmission mechanism are connected to each other in an arm unit so as to be capable of power transmission from the motor of the driving unit to the power transmission mechanism of a joint unit.

4,552,505

INDUSTRIAL ROBOT HAVING DIRECT COAXIAL MOTOR DRIVE

Robert H. Gorman, Clinton, Pa., assignor to American Robot Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 443,156, Nov. 19, 1982, , which is a continuation-in-part of Ser. No. 346,222, Feb. 5, 1982, Pat. No. 4,424,473. This application Aug. 19, 1983, Ser. No. 524,839
The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.
Int. Cl.⁴ B66C *1/10*
U.S. Cl. 414—735 **9 Claims**



1. An industrial robot having at least three controlled axes of movement, and characterized by the absence of a torque converting drive train in the drive units of three primary axes of movement, and comprising

a support member,

a first drive unit having a base component fixedly mounted to said support member, a secondary component rotatably mounted with respect to said base component to define a first axis, and drive means for relatively rotating said base component and secondary component about said first axis,

a second drive unit having a base component, a secondary component rotatably mounted with respect to its base component to define a second axis, means fixedly mounting said secondary component of said second drive unit to said secondary component of said first drive unit such that the second axis is non parallel to said first axis, output means fixed to said base component of said second drive unit and aligned coaxially with said second axis, and drive means for relatively rotating said base component and secondary component of said second drive unit about said second axis,

a third drive unit having a base component, a secondary component rotatably mounted with respect to its base component to define a further axis, means fixedly mounting said secondary component of said third drive unit to the secondary component of said first drive unit such that said further axis is coaxial with said second axis, output

means fixed to said base component of said third drive unit and aligned coaxially with said second axis, and drive means for relatively rotating said base component and secondary component of said third drive unit about said second axis, and

said drive means of each of said first, second, and third drive units comprising an electrical motor having a rotor disposed coaxially about the associated rotational axis and being fixed to one of either said base component or said secondary component thereof, and a stator disposed coaxially about the associated rotational axis and being fixed to the other of said base component or said secondary component thereof.

6. An industrial robot having a plurality of controlled axes of movement, and comprising

a support member (26),

a first drive unit (22) having a base component (22*a*) and a secondary component (22*b*), said base component being rotatably mounted with respect to said secondary component to define a central axis (B), means fixedly mounting said secondary component of said first drive unit to said support member, output shaft means (38) fixed to said base component and aligned coaxially with said central axis, and drive means (40, 42) for rotating said base component about said central axis, and

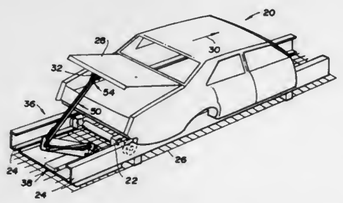
a second drive unit (23) having a tubular base component (23*a*) and a secondary component (23*b*), said base component being rotatably mounted with respect to its secondary component for rotation about said central axis and being coaxially disposed about said output shaft means, means fixedly mounting said secondary component of said second drive unit to said support member, tubular output means fixed to said base component of said second drive unit and aligned coaxially about said output shaft means of said first drive unit, and drive means for rotating said base component of said second drive unit about said central axis.

4,552,506

OPENER MECHANISM AND SYSTEM UTILIZING SAME

Michael A. Cummins, Mt. Clemens, and Thomas M. Powell, Dryden, both of Mich., assignors to GMFanuc Robotics Corporation, Troy, Mich.

Filed Jan. 24, 1984, Ser. No. 573,430
Int. Cl.⁴ B66C *1/00*
U.S. Cl. 414—735 **21 Claims**



1. An apparatus for moving a closure of a vehicle body at a work station between open and closed positions along a path, the apparatus comprising:

a base;

a first arm mounted on said base for rotary movement about a first pivot axis;

a second arm mounted on said first arm for rotary movement about a second pivot axis between a parked position and a pick-up position corresponding to closed positions of the closure and for movement with the first arm between the pick-up position and a full-open position corresponding to the open position of the closure;

a gripper mechanism mounted on a free end of said second arm and adapted for receiving and releasing the closure in the pick-up position;

a motor including a rotatable actuator shaft; and

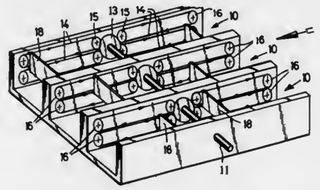
arm control linkage connected to said actuator shaft for transferring and translating rotary motion of the actuator shaft at a substantially constant angular velocity to rotate said second arm between the parked and pick-up positions and to rotate the first and second arms between the pick-up and full-open positions at a substantially sinusoidal angular velocity wherein the gripper mechanism is accelerated and decelerated in a relatively smooth fashion as it follows the path of the closure between the open and closed positions after receiving the closure.

4,552,507

POWER TRANSMISSION PLANT HAVING PRESSURE SURFACES

Ferdinand Klute, Fixberg 6, 4790 Paderborn, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,226
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308815
Int. Cl.⁴ F04D *23/00*
U.S. Cl. 415—5 **10 Claims**



1. A power transmission plant for utilising the natural flow gradient of water or wind comprising a plurality of identical parallel fluid conduits, each having upper and lower longitudinal portions; a first pressure plate fixed in a generally upright position and disposed transversely in and displaceable along the upper portion of each conduit and a second upright pressure plate fixed in a generally upright position and disposed transversely in and displaceable along the lower portion of each conduit; a rotatable power output shaft; and guide and transmission means engaging and cooperating with the upper and lower portions of both pressure plates of each conduit such that upon movement of one of the plates along the respective conduit under the influence of fluid flowing along the conduit, the other plate moves along the conduit in an opposite direction and such that at the end of a predetermined path of travel the first plate is guided vertically into the lower portion of the conduit and the second plate is guided vertically into the upper portion of the conduit, said guide and transmission means being connected to said power output shaft to rotate the same upon movement of the plates.

4,552,508

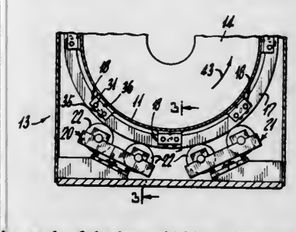
WEAR RING MOUNT FOR LIFT PUMPS

Robert A. Reid, Charlton City, Mass., assignor to CPC Engineering Corporation, Sturbridge, Mass.

Filed Jun. 15, 1983, Ser. No. 504,463
Int. Cl.⁴ F16C *13/04*; F03B *11/06*
U.S. Cl. 415—72 **9 Claims**

1. Mounting means for securing a wear ring to the tubular housing of an elongated inclined lift pump for rotatably supporting the lower end of said housing on cooperating rollers comprising a first plurality of blocks spaced uniformly about said tubular housing and secured thereto, each of said blocks including a slot having axes disposed in a plane perpendicular to the axis of said ring and inclined relative to the housing with the leading end spaced outwardly from the housing a distance

greater than the trailing end, a plurality of pins carried by and extending from the upper side of said wear ring and engaging said slots, a second plurality of blocks spaced uniformly about and secured to said tubular housing adjoining the lower side of said wear ring when the latter is in engagement with the first



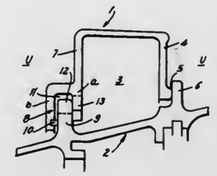
set of blocks, each of the last said blocks having a slot parallel to the first said slots and inclined in the direction thereof and pins carried by the lower side of said wear ring and engaging the last said slots, said slots being of arcuate shape having the concave side facing said tubular housing.

4,552,509

ARRANGEMENT FOR JOINING TWO RELATIVELY ROTATABLE TURBOMACHINE COMPONENTS

Ludwig Schweikl, Moosburg; Horst Weiss, Seefeld, and Friedrich Sippel, Stein, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,427
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003469
Int. Cl.⁴ F01D *25/26*
U.S. Cl. 415—135 **14 Claims**



1. An arrangement for joining two rotationally symmetrically correlated turbomachine components which are subjected to dissimilar thermal effects, the components defining between them an air duct surrounding the axis of the components, comprising:

(a) a resilient band-like wall section extending radially from a first component,

(b) a wall section projecting radially from a second component, the resilient wall section bearing resiliently in an axial direction against the second component wall section to provide a seal for the air duct,

(c) another wall section of the first component and another wall section of the second component cooperating to form a radially extending tongue-in-groove joint coaxial with the two components, the tongue of the joint fitting loosely enough in the groove of the joint to permit relative axial and radial movement between the two components, and

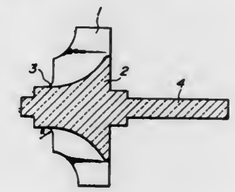
(d) a bayonet-type connection between one of the cooperating pairs of wall sections of the two components, the connection permitting axial movement between the two components, to effect assembly thereof, when the components are in one relative circumferential orientation, and the connection preventing axial disassembly movement between the components when they are in a different relative circumferential orientation.

4,552,510

RADIAL TYPE CERAMIC TURBINE ROTOR AND METHOD OF PRODUCING THE SAME

Mizuno Takeyuki, Toyohashi, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Feb. 13, 1984, Ser. No. 579,764
Claims priority, application Japan, Feb. 24, 1983, 58-28632
Int. Cl.⁴ F01D *5/34*
U.S. Cl. 416—241 B **8 Claims**



1. A radial type ceramic turbine rotor comprising a shaft portion, a hub integrally connected to said shaft portion, a blade portion integrally formed on said hub, an end surface on a gas exit side of the hub extending from an end surface of said blade portion in the proximity of said hub, and a fillet formed at a circular connection between said blade portion and said end surface on the gas exit side of the hub, said fillet comprising a concave surface having a radius of curvature of greater than 3 mm.

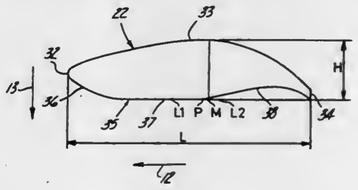
4. A method of producing a radial type ceramic turbine rotor which comprises a shaft portion, a hub integrally connected to said shaft portion, a blade portion integrally formed on said hub, an end surface on a gas exit side of the hub extending from an end surface of said blade portion in the proximity of said hub, said method comprising the steps of injection molding a ceramic material into an injection molding die, said injection molding die producing a fillet at a circular connection between said blade portion and said end surface on the gas exit side of the hub, said fillet comprising a concave surface having a radius of curvature of greater than 3 mm, after sintering, removing a plasticizer from the injection molded rotor and sintering the rotor under atmospheric pressure.

4,552,511

PROPELLER FOR MARINE PROPULSION DEVICE

Yukio Sumigawa, Iwata, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Nov. 28, 1983, Ser. No. 555,469
Claims priority, application Japan, Nov. 30, 1982, 57-208526
Int. Cl.⁴ B63H *1/26*
U.S. Cl. 416—242 **5 Claims**



1. A marine propeller blade having a leading edge and a trailing edge with a forward face and a rearward face each extending from said leading edge to said trailing edge, said forward face having a generally planar part extending from contiguous to said leading edge toward said trailing edge and merging into a generally recessed cup shaped part extending toward said trailing edge, said blade having its greatest thick-

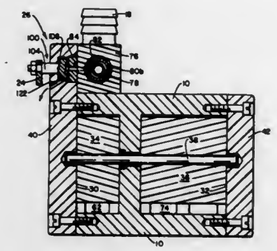
ness in the axial direction in an area contiguous to the point of merger of said planar part and said cup shaped part.

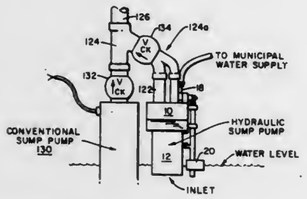
4,552,512

STANDBY WATER-POWERED BASEMENT SUMP PUMP

William Gallup, Palatine, and Detleff W. P. Schmidt, Schaumburg, both of Ill., assignors to Permutare Corporation, Palatine, Ill.

Filed Aug. 22, 1983, Ser. No. 525,121
Int. Cl.⁴ F04B *41/06, 49/00, 17/00;* **F04C** *2/00*
U.S. Cl. 417—3 **19 Claims**





1. A municipal water-powered auxiliary basement sump pump system for backing up a residential electric sump pump installation having an existing discharge line, comprising

a water-powered rotary vane pump having a drive chamber and a pump chamber,

slotted drive and pump rotors with a plurality of slidable vanes received therein sealingly engaging the inside walls of the respective chambers,

means for drivingly coupling said drive rotor to said auxiliary pump rotor to impart rotation thereto, said drive chamber having a drive water inlet displaced from a drive water outlet,

said auxiliary pump chamber having a sump water intake displaced from a sump water outlet,

valve means for communicating said drive water inlet with a municipal water supply in response to the sump water level exceeding a predetermined threshold,

exit manifold means for connecting said sump water outlet and said drive water outlet to said existing discharge line of the residential electrical sump pump, and

intake manifold means for supplying said auxiliary pump intake with sump water.

4,552,513

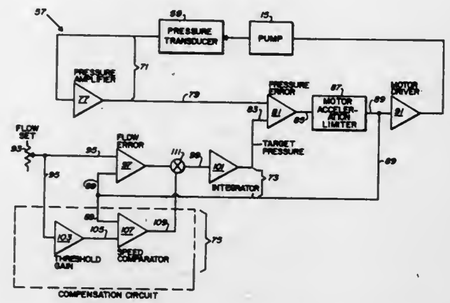
MULTIPLE PISTON PUMP CONTROL

Leslie A. Miller, San Jose, and Thomas J. McCall, Fremont, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 7, 1983, Ser. No. 472,668
Int. Cl.⁴ F04B *49/06, 3/00*
U.S. Cl. 417—18 **4 Claims**

1. A method of reducing pulsations in the flow produced by a multiple piston assembly pump of the kind which has a pressure piston assembly and a damper piston assembly connected in series with the outlet of the pressure piston assembly connected to the inlet of the damper piston assembly and which provides an overlap between the flow output of the piston assemblies during a portion of the strokes of the piston assemblies and wherein a sudden pump speed change occurs during the overlap between the flow output of the piston assemblies, said method comprising,

controlling, except during the overlap, the speed of the pump by a first fast control loop which responds to pump output pressure and a second slow control loop which responds to average pump speed,



detecting the sudden pump speed change which occurs during the overlap between the flow output of the piston assemblies, said step of detecting the speed change including detecting the beginning and the end of the actual duration of the time period of the overlap, and

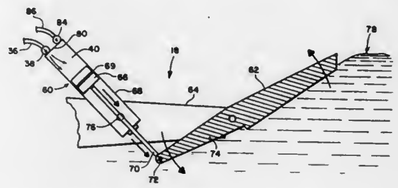
deactivating the slow control loop from controlling the pump speed during the time period of the overlap and running the pump to hold a substantially constant pump output pressure during the duration of the time period until the pump speed returns to the normal speed existing prior to the sudden speed change.

4,552,514

WAVE DRIVEN WORK EXTRACTING DEVICE

Glenn E. Hagen, New Orleans, La., assignor to Williams, Inc., New Orleans, La.

Division of Ser. No. 515,471, Jul. 20, 1983,. This application Mar. 19, 1984, Ser. No. 591,050
Int. Cl.⁴ F04B *17/00;* **B01D** *3/10*
U.S. Cl. 417—332 **2 Claims**



1. A work extracting device driven by the wave motion of a fluid, said wave motion having an amplitude spectrum and a wave length spectrum comprising:

a first float having a density such that said first float floats in said fluid and moves in response to said wave motion;

a cylinder;

a piston slideably engaging the interior of said cylinder;

a piston rod fastened and extending from said piston; and

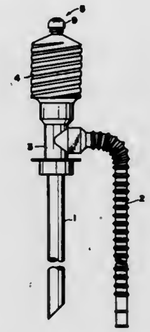
a second float connected to said first float so as to maintain said first and said second floats in position relative to one another while allowing said first and second floats to move in response to said wave motion, said cylinder being pivotally mounted to said second float, said first float having an arm fixedly connected to and extending longitudinally from said first float a distance beyond the point of connection between said first float and said second float, said piston rod pivotally connected about the end of said arm of said first float, said end of said arm being opposite said first float and beyond the point of connection between said first float and said second float.

4,552,515

HANDY TUBE PUMP

Tsuyoshi Endo, 53, Kamihonmachidori, Numazushi, Shizuokaken, Japan

Filed Sep. 5, 1984, Ser. No. 647,604
Int. Cl.⁴ F04B *45/02, 43/06*
U.S. Cl. 417—472 **1 Claim**



1. A tube pump for transferring liquid from one place to another place, comprising:

a chamber,

a suction tube having a first end connected to the chamber and a second end adapted to be situated in a place where liquid to be transferred is held,

a discharge tube having a first end connected to the chamber and a second end adapted to be situated in another place where liquid is to be transferred,

a bellows member having an opening at an upper end, said bellows member being adapted to be gripped by a user's hand and connected to the chamber to communicate therewith so that when the bellows member squeezed by the hand of the user provides negative pressure to the chamber, liquid is sucked into the chamber through the suction tube, and when the bellows member is squeezed by the hand of the user to thereby provide positive pressure to the chamber, liquid in the chamber is forced to exit from the chamber through the discharge tube, and

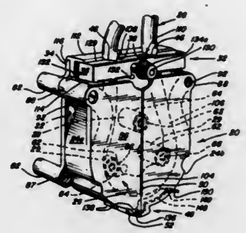
a valve member attached to the opening of the bellows member, said valve member including a threaded cap securely connected to the opening and having an aperture passing therethrough, a cover having a stem extending from the cover, said stem having an end and a diameter smaller than that of the opening so that when the stem is located in the aperture, an annular space is formed inside the aperture, a seal situated around the stem adjacent to the end thereof, and a spring situated around the stem and located between the cover and the threaded cap to urge the cover upwardly so that the annular space is normally sealed by the seal, and when the cover is pushed by the user against the force of the spring, the inside of the bellows member communicates with atmosphere through the annular space.

4,552,516

PERISTALTIC PUMP

Deryl B. Stanley, Huntley, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Jun. 15, 1984, Ser. No. 620,906
Int. Cl.⁴ F04B *43/12, 45/08*
U.S. Cl. 417—477 **11 Claims**



1. A peristaltic pump comprising:

a base plate;

a rotor rotatably supported on the base plate and having at least two compression surfaces rotatable therewith through a predetermined path, the rotor having an axis extending through the base plate;

first and second reaction members having reaction surfaces thereon, the reaction members being mounted on the base plate for movement relative to the base plate between an open position spaced from the rotor to facilitate loading and removal of a compressible fluid flow tube relative to the rotor, and a closed position enabling peristaltic pumping action to be effected on the tube during rotation of the rotor;

means for selectively retaining the reaction members in the closed position, and

gripping means for securing the compressible fluid flow tube in a predetermined position, the gripping means comprising first and second gripping members movable relative to one another, the first gripping member having a pair of generally V-shaped notches formed therein and the second gripping member having a pair of generally V-shaped notches formed therein opening toward the notches on the first gripping member for cooperation therewith in gripping the fluid flow tube;

each of the notches defining an included angle of about 90°.

4,552,517

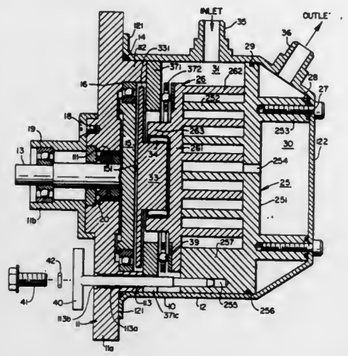
SCROLL TYPE FLUID DISPLACEMENT APPARATUS AND METHOD OF ASSEMBLY

Shigemi Shimizu, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 13, 1983, Ser. No. 513,430
Claims priority, application Japan, Jul. 15, 1982, 57-123522
Int. Cl.⁴ F01C *1/04;* **B23P** *15/00*
U.S. Cl. 418—55 **8 Claims**

1. In a scroll type fluid displacement apparatus including a housing having a front end plate, a pair of scroll members, one of said scroll members being fixedly disposed relative to said housing and having a circular end plate from which a first wrap extends into the interior of said housing and the other scroll member being movably disposed for non-rotative orbital movement within the interior of said housing and having a circular end plate from which a second wrap extends, a rotation preventing mechanism operatively connected to said front end plate and said other scroll member, said first and second wraps interfitting at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, and a driving mechanism extending through said front end plate operatively connected to said other scroll member to effect the orbital motion of said other scroll member whereby said fluid pockets change volume, the improvement comprises said fixed scroll member being formed with a

bore having a predetermined depth and an open end facing said front end plate, said front end plate having a hole extending completely through it to be placed in substantial alignment



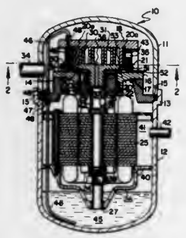
with said bore by an adjustment member inserted into said bore through said hole suring assembly of the apparatus to set the angular relationship between both scroll members.

4,552,518

SCROLL MACHINE WITH DISCHARGE PASSAGE THROUGH ORBITING SCROLL PLATE AND ASSOCIATED LUBRICATION SYSTEM

Robert E. Utter, Genoa, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,848
Int. Cl.⁴ F04C *18/04, 29/02*
U.S. Cl. 418—55 **11 Claims**



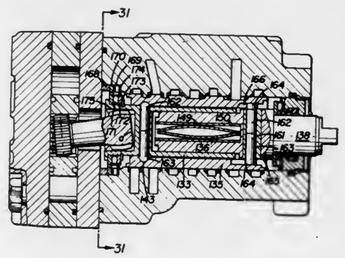
1. A scroll machine for compressing a fluid comprising
a. two scroll plates with intermeshed involute wrap elements defining pockets in which fluid is compressed as the plates orbit relative to each other;
b. means for driving one of the scroll plates in orbital motion relative to the other scroll plate, said driving means including a drive shaft rotatably connected to the one driven scroll plate at a point eccentrically disposed relative to the longitudinal axis of the drive shaft;
c. a shell hermetically enclosing the scroll plates and the driving means;
d. means for dividing substantially the entire volume enclosed by the hermetic shell into a first part that is at suction pressure and a second part that is at discharge pressure;
e. a passage through said driven scroll plate, adjacent the axial center of its involute wrap element and in fluid communication with the second volume enclosed by the shell, said passage being operative to discharge substantially all the fluid compressed by the orbital motion of the scroll plates;
f. an oil reservoir disposed in the second part of the volume enclosed by the shell;
g. means for delivering oil from the oil reservoir to the radially outer ends of the involute wrap elements, said oil thereafter being carried with the fluid as it is compressed and discharged through said passage in said driven scroll plate; and
h. means disposed adjacent the scroll plate for separating the compressed fluid from the oil and for delivering the oil thus separated to one or more bearing surfaces disposed adjacent the passage.

4,552,519

HYDROSTATIC STEERING UNIT WITH CYLINDRICAL SLIDE MEMBER WITHIN CYLINDRICAL VALVE SLEEVE

Hollis N. White, Jr., 243 Pyle La., Hopkinsville, Ky. 42240

Continuation-in-part of Ser. No. 439,058, Nov. 4, 1982, Pat. No. 4,494,916, which is a continuation-in-part of Ser. No. 381,946, May 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 317,501, Nov. 2, 1981, Pat. No. 4,494,915, which is a continuation-in-part of Ser. No. 51,508, Jun. 25, 1979, abandoned. This application Dec. 30, 1983, Ser. No. 567,429
Int. Cl.⁴ F04C *2/10;* **F15B** *13/04;* **B62D** *5/08*
U.S. Cl. 418—61 B **11 Claims**



1. In a device having an actuation pin between a cylinder and a surrounding sleeve, the improvement of the actuation pin being solid and split in a plane substantially perpendicular to the longitudinal axis of the pin such that the actuation pin insures actuation and that rotational forces on one end of the pin do not interact with the rotational forces on the other end of the pin.

7. In a device utilizing a actuation member mounted in a hole in a cylinder extending across thereof and twin oppositely disposed grooves in a surrounding sleeve for the operable interconnection therebetween, the improvement of an eccentric bushing, and said eccentric bushing in the hole in the cylinder being between said actuation member and the cylinder, such bushing compensating for any misalignment between the hole in the cylinder and the grooves in the surrounding sleeve.

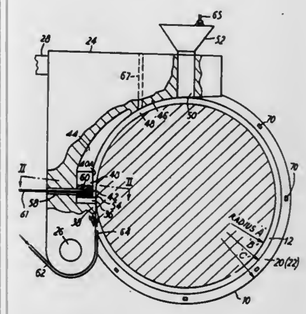
8. In a hydrostatic steering device having a drive shaft, a slide member and a steering means, with a rotational to rotational interconnection between one of the drive shaft and the steering means with the slide member and a rotational to axial interconnection between the other of the drive shaft and the steering means with the slide member, there being a distance between the rotational to rotational interconnection and the rotational to axial interconnection and said slide member having a neutral position, an improved device comprising means to adjust the distance between the rotational to rotational interconnection and the rotational to axial interconnection, this adjustment varying the neutral position of the slide member.

4,552,520

CONTINUOUS EXTRUSION OF METALS

John East, Highworth, and Ian Maxwell, Reading, both of England, assignors to Metal Box Public Limited Company, England

Filed Jan. 27, 1984, Ser. No. 574,512
Claims priority, application United Kingdom, Feb. 3, 1983, 8302951; Apr. 12, 1983, 8309836
Int. Cl.⁴ B22F *3/02;* **B21C** *23/01*
U.S. Cl. 425—79 **13 Claims**



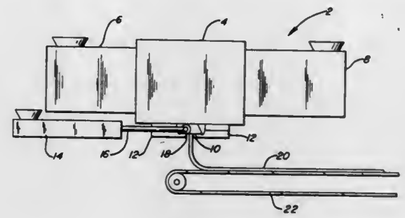
1. Apparatus for effecting continuous extrusion of metal from a feedstock in particulate, comminuted or solid form, which apparatus includes:
(a) a rotatable wheel member (**10**) arranged for rotation when in operation by a driving means, said wheel member having formed peripherally thereon a continuous circumferential groove (**12**);
(b) a cooperating shoe member (**24**) which extends circumferentially around a substantial part of the periphery of said wheel member and which has a portion (**30**) which projects in a radial direction partly into said groove with small working clearance (**32,34**) from the side walls (**14**) of said groove, said shoe member portion defining with the walls of said groove an enclosed passageway (**48**) extending circumferentially of said wheel member;
(c) feedstock inlet means (**50,52**) disposed at an inlet end of said passageway (**48**) for enabling feedstock to enter said passageway at said inlet end whereby to be engaged and carried frictionally by said wheel member, when rotating, towards the opposite, outlet end of said passageway;
(d) an abutment member (**36**) carried on said shoe member and projecting radially into said passageway (**48**) at said outlet end thereof so as to substantially close said passageway at that end and thereby impede the passage of feedstock frictionally carried in said groove (**12**) by said wheel member, thus creating an extrusion pressure in said passageway at said outlet end thereof;
(e) a die member (**40,42**) carried on said shoe member and having a die orifice opening (**42**) from said passageway (**48**) at said outlet end thereof, through which orifice feedstock carried in said groove (**12**) and frictionally compressed by rotation of said wheel member (**10**), when driven, is compressed and extruded in continuous form, to exit from said shoe member (**24**) via an outlet aperture (**60,58**); and
(f) flash-removing means (**70**) secured on said wheel member (**10**) for rotation therewith and arranged to periodically intercept and thereby forcibly detach sections of a waste material, which is flash (**68**), that is being continuously extruded, when the apparatus is in operation, through one or both of two gaps (**32,34**) which provide the said small working clearances between the said side walls (**14**) of said groove (**12**) and the cooperating surfaces of said shoe member portion (**30**) which projects radially into said groove.

4,552,521

APPARATUS FOR CO-EXTRUDING A RUBBER STRIP OF ONE MATERIAL WITH A STRIPE OF A SECOND MATERIAL

Don J. Linnstaedter, Waco, Tex., assignor to GenCorp Inc., Akron, Ohio

Filed Dec. 10, 1984, Ser. No. 679,669
Int. Cl.⁴ B29C *47/06, 47/12*
U.S. Cl. 425—131.1 **3 Claims**



1. Apparatus for extruding a strip having a main body of a first material and a lengthwise extending stripe of a second material, said apparatus including a unit with an entry side and an exit side and a first passageway for said first material having a cross-section of relatively wide width and a relatively narrow height, said first passageway extending through said unit from said entry side to said exit side, and a second passageway for said second material intersecting said first passageway at an orifice located on a portion of a widthwise extending edge of said passageway cross-section and between said entry side and exit side of said unit, means on said entry side of said unit for forcing said first material through said first passageway, and means for forcing said second material through said second passageway and into said first passageway through said orifice, characterized by the improvement comprising,
blocking means interrupting said first passageway at a location upstream from the location where said second passageway interrupts said first passageway, said blocking means extending across the height of said cross-section of said first passageway and over substantially the same widthwise portion of said cross-section as said orifice, but being spaced from the ends of said widthwise extending edge of the cross-section,
a tube extending from said end surface of said unit through said unit parallel to and spaced from said widthwise edge surface of the elongated cross-section of said first passageway, said tube forming the wall of said entry portion of said passageway and having an elongated hole at the location where said exit portion intersects said entry portion of said second passageway, said elongated hole extending parallel to and facing said widthwise edge of the cross-section of said first passageway.

4,552,522

SEGMENTED SPACER RING

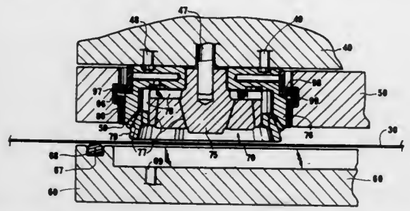
Hugh Van Melle, Etobicoke, Canada, assignor to Amhil Enterprises Ltd., Mississauga, Canada

Filed Apr. 26, 1984, Ser. No. 604,303
Claims priority, application Canada, Dec. 23, 1983, 444228
Int. Cl.⁴ B29C *1/14, 17/00*
U.S. Cl. 425—182 **7 Claims**

6. The combination of a plate and a spacer ring for effectively reducing the size of a hole in the plate, where the ring has a flange, and the hole is provided, in its inward-facing surface, with a groove complementary to the flange, characterised in that:
the ring is in three segments, arranged so that when the three segments are abutted the segments comprise a complete ring with no gaps;
in that the first and second of the three segments comprise

sufficiently less than the complete ring that in the absence of the third segment the first and second segments can each be assembled into the hole with the respective flanges on the segments fully inserted into the groove, and with respective one ends of each of the first and second segments in an abutment that lies in a plane which includes a radius of said ring;

in that the respective other ends of the first and second segments are not, in substance, divergent radially outwardly, but are shaped as to allow the third segment to be



inserted between them in a generally radial direction until the flange on the third segment is fully inserted into the groove, the ends of the third segment then being in an abutment with the respective other ends of the first and second segments that lies in a plane parallel to the plane which includes said radius;

in that the plate is the stripper plate of a vacuum forming apparatus for moulding articles in sheet plastic;

and in that the stripper plate has several holes, and each hole is provided with a respective one of the said spacer rings.

4,552,523

FOOD SHAPING APPARATUS

Kisaku Suzuki, 1-19-8, Toshida, Nerima-ku, Tokyo, Japan

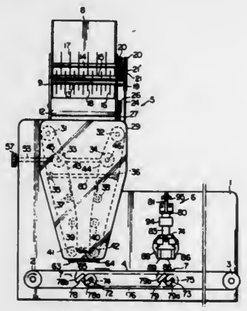
Division of Ser. No. 408,974, Aug. 17, 1982, Pat. No. 4,460,611.

This application Jul. 3, 1984, Ser. No. 627,408

Claims priority, application Japan, Aug. 20, 1981, 56-123394; Oct. 30, 1981, 56-163285; Nov. 26, 1981, 56-190261; Dec. 25, 1981, 56-197719

Int. Cl.⁴ A23P *1/00*; A22C *7/00*

U.S. Cl. 425—225 **18 Claims**



1. A food shaping apparatus for shaping a foodstuff comprising:

a hopper for introducing said foodstuff thereinto;

conveyor means for conveying said introduced foodstuff;

loosener means for loosening the foodstuff which is being conveyed by the conveyor means;

scraper means for scraping the loosened foodstuff from said conveyor means;

a casing for operatively supporting the conveyor means, loosener means and scraper means, said casing being at its top connected with a bottom of the hopper,

a pair of plates located one behind the other and to face each other with a spacing therebetween;

a plurality of pairs of rollers journalled to laterally opposite sides of said plates, said plurality of pairs of rollers comprising a top pair and a bottom pair, said plurality of pairs of rollers being disposed such that the spacing between each rollers of a pair of rollers progressively decreases from said top pair down to said bottom pair;

a pair of feed belts for feeding downwardly the scraped foodstuff while being progressively compressed therebetween, said belts being passed over the rollers on the respective sides of the pairs of rollers and movable in opposite directions to each other; and

cutter means located at a lower end of the feed belts for cutting a predetermined amount or length of the foodstuff.

4,552,524

HYDRAULIC PRESS

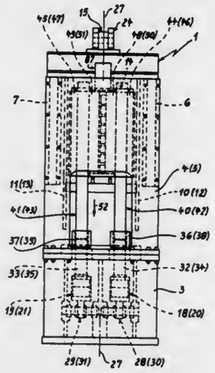
Klaus Schmidts; Dieter Therolf, and Ulrich Weber, all of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Aktiengesselschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 28, 1984, Ser. No. 687,190

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 8337753[U]

Int. Cl.⁴ B29C *17/00, 1/00*; B30B *11/00*

U.S. Cl. 425—406 **6 Claims**



1. An hydraulic press, such as for pressing plastic mats reinforced with glass fibers into formed parts, with a stationery cross-piece and a slidable cross-piece as well as a press drive which drive for moving the slidable cross-carriage includes at least one adjusting cylinder with a working stroke corresponding to the range of movement of the press and at least two press cylinders of short stroke couplable to the slidable cross-piece through a coupling, characterized in that for coupling each press cylinder to the slidable cross-piece a coupling rod is provided along with at least one stationery clamping jaw and at least one pressable clamping jaw cooperating with the coupling rod.

4,552,525

DIE EJECTOR ASSEMBLY FOR MULTI-STAGE FORMING MACHINES

Franz Stehr, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,552

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322944

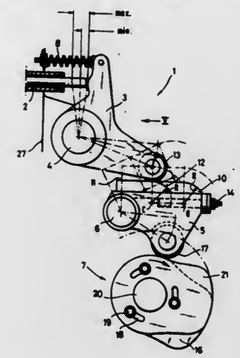
Int. Cl.⁴ B29C *7/00*; B29F *1/14*

U.S. Cl. 425—422 **8 Claims**

1. An ejector assembly for a multi-stage forming machine having each forming stage including a die ejector that is separately adjustable as to its extent of lift, said assembly comprising:

(a) an ejector pin, an ejector lever member and a drive means for the ejector lever member,

(b) an intermediate lever member disposed between the ejector lever member and the drive means,



(c) said intermediate lever member being common to several ejector lever members,

(d) said intermediate lever member having adjustable able French curve cam surfaces for each forming stage of the forming machine.

4,552,526

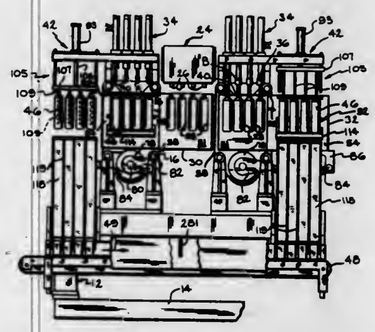
BLOW MOLDING MACHINE WITH MOLD SHUTTLE STRUCTURE

Robert X. Hafele, Baton Rouge, La., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Jul. 18, 1983, Ser. No. 514,435

Int. Cl.⁴ B29D *23/03*

U.S. Cl. 425—522 **4 Claims**



1. In blow molding apparatus for manufacturing containers wherein said apparatus has a blow molding station, a parison forming station to one side of said blow molding station, a container trim station at the other side of said blow molding station, parallel tie rods, platens mounted on said tie rods for movement toward and away from each other and multiple station mold carrying slides mounted on said platens for shuttle movement between a first position below said parison forming and blow molding stations and a second position below said blow molding and trim stations; at least one blow head at said blow molding station operable to be moved downwardly into engagement with a mold on said slides for blowing a parison in said mold to a configuration forming a container in said second position of said slides, and means directly supporting said blow head on at least one of said tie rods to provide for a common support of said mold and said blow head on said tie rods so that in response to downward movement of said blow head into engagement with said mold no reaction movements are generated tending to separate said blow head and said mold.

4,552,527

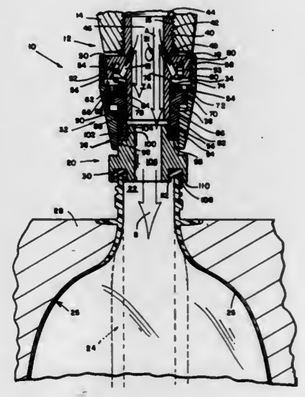
NOZZLE ASSEMBLY

Burnis L. Hunter, Mableton, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.

Filed Oct. 9, 1984, Ser. No. 659,161

Int. Cl.⁴ B29C *17/07*; B29F *5/00*

U.S. Cl. 425—535 **8 Claims**



1. A nozzle assembly of a blow molding machine for introducing a pressurized gas into an opening of a parison to conform the parison to the shape of a mold, the nozzle assembly comprising: connecting means for attachment to an outlet of pressurized gas, contacting means for contacting the opening of the parison including a deformable seal means for preventing the escape of pressurized gas, and means defining an expansible chamber between the connecting means and the contacting means for ensuring engagement between the contacting means and the parison opening.

4,552,528

CURRENT GENERATOR FOR THE SUPPLY AND DETECTION OF OPERATION OF A GAS BURNER AND CONTROL DEVICE APPLYING SAME

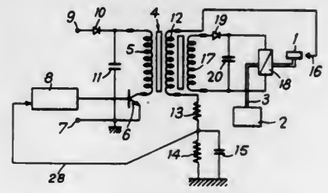
Albert Gaiffier, Le Puy, France, assignor to Societe Anonyme: Construction Electriques R.V., Saint Germain Laprade, France

Filed Apr. 3, 1984, Ser. No. 596,448

Claims priority, application France, Apr. 7, 1983, 83 05892

Int. Cl.⁴ F23N *5/12*

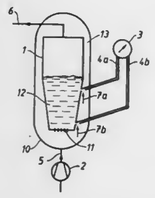
U.S. Cl. 431—25 **5 Claims**



1. A fuel ignition means to provide an ignited flame comprising:

a transformer having a primary winding and a first and a second secondary windings;
energization means for providing a periodic excitation signal to said primary winding and gated by a gating signal;
flame probe means positioned at least partially within said flame connected to one end of said first secondary;
resistive return means connected to the other end of said first secondary, wherein at least part of said resistive return includes a capacitor connected thereacross, providing said gating signal to said energization means;
fuel valve for controlling the fuel flow; and
means to energize said fuel valve connected to said second secondary, wherein
the presence of said flame provides a gating signal to enable said energization means, wherein energy is produced at the second secondary for energization of said fuel valve;
the absence of said flame inhibits the gating signal thereby inhibiting the flow of fuel.

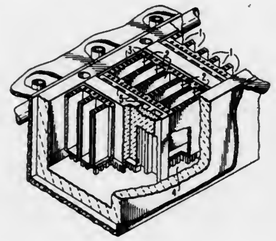
4,552,529
DEVICE FOR PRESSURE MEASUREMENT IN A PRESSURIZED CONTAINER
Roine Brännström, and Nils-Erik Söderberg, both of Finspong, Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden
Filed Oct. 18, 1983, Ser. No. 542,929
Claims priority, application Sweden, Nov. 1, 1982, 8206195
Int. Cl.[4] F27B *15/00*
U.S. Cl. 432—58 **3 Claims**



1. A pressurized fluidized bed combustion plant comprising:
a first container for containing a particulate mobile material;
a second container surrounding said first container;
means for feeding pressurized air to a space formed between said first container and said second container;
means for introducing said pressurized air into said first container so as to fluidize said particulate material;
sensing means connected to said first container by a tube means passing through said space between said first and second containers; and,
a bleeding means connected to said tube means for bleeding a portion of said pressurized air from said space to said first container via said tube means, said bleeding means being dimensioned and located relative to said space and said tube means so that the flow rate of said bleed portion is sufficient to prevent said particulate material from blocking said tube means but insufficient to prevent a sensing of the pressure in said first container by said sensing means.

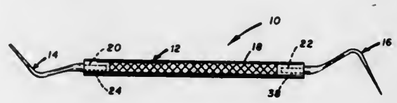
4,552,530
RING SECTION BAKING FURNACE AND PROCEDURE FOR OPERATING SAME
Kare Gunnes, Asker; Tormod Naterstad, Årdalstangen, and Olav Lid, Sunndalsora, all of Norway, assignors to Ardal og Sunndal Verk a.s., Oslo, Norway
Filed Nov. 7, 1983, Ser. No. 549,546
Claims priority, application Norway, Nov. 5, 1982, 823695
Int. Cl.[4] F27B *5/02, 5/16*
U.S. Cl. 432—192 **11 Claims**

1. In a ring section furnace of the type including a plurality of sections connected in series, each said section comprising a plurality of parallel pits defined by spaced parallel pit walls, and vertical ducts provided in each said pit wall, with flue gases being passed through said ducts to achieve heat treatment by indirect heat exchange with material to be treated placed in said pits, the improvement comprising:



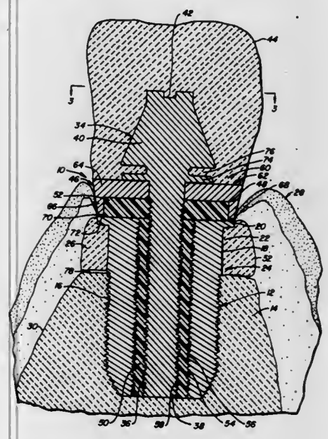
means for segregating said ducts of each said pit wall into separate groups of ducts and thereby for causing the flue gas to pass both upwardly and downwardly through respective said ducts in each said pit wall.

4,552,531
GAUGED ROOT CANAL CONDENSER SPREADER
Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20910
Filed Nov. 16, 1984, Ser. No. 671,908
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—147 **7 Claims**



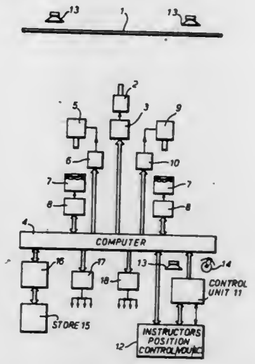
1. A dental instrument for root canal work, comprising:
a handle, said handle having geometrically configured socket-like cavities in each end thereof, said handle being elongated and rod-like in configuration and having suitable knurling on the outside surface thereof;
a first dental instrument component, said first dental instrument component having a capability for performing dental condensing operations in prepared root canals of teeth, said first dental instrument component having a first end and a second end, said first end of said first dental instrument component being geometrically configured into a shaft-like coupling end, said geometrically configured shaft-like coupling end being so sized and configured so as to be removably inserted into one of said geometrically configured socket-like cavities in said handle by a snap fit, said second end of said first dental instrument component being configured into a tapered condenser portion to perform said condensing operations in said prepared root canals, said first dental instrument component between said geometrically configured shaft-like coupling end and said tapered condenser portion thereof has a short body member portion, a tapered transition portion, and a bend portion, in that sequence, said geometrically configured shaft-like coupling end, said short body portion, said tapered transition portion, said bend portion, and said tapered condenser portion all being integral and monolithic in that sequence;
a second dental instrument component, said second dental instrument component having a capability for performing dental spreader operations in prepared root canals of teeth, said second dental instrument component having a first end and a second end, said first end of said second dental instrument component being geometrically configured into a shaft-like coupling end, said geometrically configured shaft-like coupling end being so sized and configured so as to be removably inserted into the other of said geometrically configured socket-like cavities in said handle by a snap-fit, said second end of said second dental instrument component being configured into a tapered portion to perform said spreader operations in said root canals, said second dental instrument component between said geometrically configured shaft-like coupling end and said tapered spreader portion thereof has a short body member portion, a tapered transition portion, and a bend portion, in that sequence, said geometrically configured shaft-like coupling end, said short body portion, said tapered transition portion, said bend portion, and said tapered spreader portion all being integral and monolithic in that sequence; and
a plurality of color code markings, said plurality of color code markings being applied to said second end of said first and second dental instrument components, respectively, to indicate matching pairs and size and depth measurements in said prepared root canals.

4,552,532
OSTEOCORRECTIVE DENTOALVEOLAR IMPLANT SYSTEM
Peter G. Mozsary, 413 Skyline Drive, Vallejo, Calif. 94590
Filed Dec. 12, 1983, Ser. No. 560,199
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—173 **9 Claims**



1. A dental implant system intended for placement in an alveolus of the jaw bone comprising:
a. a root including means intended for fixing the root to the jawbone said root having a portion intended for extending into the alveolus, said root further including a surface having a transverse dimension in relation to said root portion extending into the alveolus, said root surface intended for being adjacent the outer surface of the jawbone;
b. a post including means for supporting said post to said root;
c. a crown connected to said post;
d. means for cushioning forces applied to said crown, said cushioning means including a resilient member having a first element placed between said post and said portion of said root intended for extending into the alveolus; and a second element placed adjacent said surface of said root adjacent the outer surface of the jawbone; and
e. means for attenuating relative movement between said crown and said root upon the application of force to said crown, said attenuating means including a spacer disposed adjacent said second element of said resilient member such that said second element of said resilient member lies between said surface of said root adjacent the outer surface of the jawbone and said spacer, said spacer including a surface intended for being capable of directly contacting said root surface adjacent the outer surface of said jawbone, thereby attenuating the relative movement between said crown and said root.

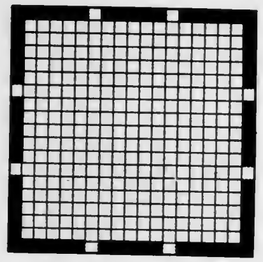
4,552,533
GUIDED MISSILE FIRE CONTROL SIMULATORS
Dennis A. Walmsley, Hurstpierpoint, England, assignor to Invertron Simulated Systems Limited, England
PCT No. PCT/GB82/00325, § 371 Date Jul. 11, 1983, § 102(e) Date Jul. 11, 1983, PCT Pub. No. WO83/01832, PCT Pub. Date May 26, 1983
PCT Filed Nov. 15, 1982, Ser. No. 515,053
Claims priority, application United Kingdom, Nov. 14, 1981, 8134375
Int. Cl.[4] F41G *7/00*
U.S. Cl. 434—12 **23 Claims**



1. A guided missile fire control simulator in which a plurality of image projectors are combined in a projection system under the control of a digital computer to display on a common screen:
a view of a selected combat area produced by a terrain image projector;
a view of a target superimposed on said view of said combat area and produced by a target image projector;
a representation of the appearance of a guided missile in flight, as seen by the operator, which representation is superimposed upon the terrain view from a missile image projector, and which is occulted whenever the theoretical flight path takes the missile out of the view of the operator, and which is terminated by a visual representation of the effects of the missile warhead exploding only if the explosion or the effects thereof would be visible to the operator;
said target image projector and said missile image projector each being caused to project their image to respective positions on the screen by respective associated projection directing system controlled by said computer;
an instructor's control station providing means for supervising an exercise by the production of relevant control signals;
and at least one missile control station providing means for the operation to produce missile launch and guidance control signals;
said computer being supplied with exercise control data comprising;
stored information constituting an elevation database defining the displayed terrain;
stored information defining the visibility of any position in

the displayed terrain to the operator and thus constituting a visibility database;
stored information concerning the missile flight characteristics and capabilities to constitute a weapon system database;
and said computer using said information to translate said control signals received from an operator's control unit at and after launching of a missile into a resultant theoretical flight path for said missile and producing signals to control said projection directing system of said missile image projector to cause the projected image to follow the calculated path across the displayed terrain and to terminate the missile flight by an image projection representing the effect of explosion of the missile warhead if within the operator's field of view, but inhibiting such projection if theoretically outside the operators field of view.

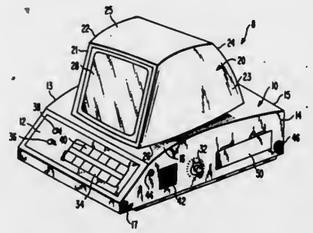
4,552,534
VISUAL COMMUNICATION SYSTEM DEVICES
Ralf Krempel, 2400 Pacific Ave., San Francisco, Calif. 94115
Filed Aug. 3, 1984, Ser. No. 637,289
Int. Cl.⁴ G09B *19/00*
U.S. Cl. 434—170 **4 Claims**



1. A visual communication system comprising;
a board covered with a gridlike surface marked on its face so that each side of said board contains an equal number of squares, the edges of said board depicting markings designating groups of square locations, and
a plurality of information carrier means to be mounted on said board, each of said information carrier means having a plurality of surfaces, each surface of one of said means being of a different color,
the information carrier means being positioned on a particular square with a particular color surface uppermost, such that the combination of square location and color surface designates a specific alphabet letter according to a predetermined code.

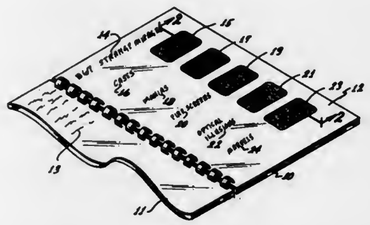
4,552,535
MECHANICAL ASSEMBLY FOR AUDIO-VISUAL TEACHING MACHINES
Steve Steffel, Northfield, N.J., assignor to Frank Warren Ferguson, Arlington, Va.
Filed May 18, 1984, Ser. No. 611,779
Int. Cl.⁴ G09B *7/06*
U.S. Cl. 434—315 **13 Claims**

1. An improved audio-visual apparatus for projecting spaced visual information segments and for reproducing correlated audio information, comprising:
a mounting plate;
cartridge receiving means on said mounting plate for receiving an audio-visual cartridge which incorporates an audio information storage disc and an annular holder for securing visual information segments surrounding said disc;
first drive means for rotatably driving said disc;
second drive means for rotatably driving said annular holder to advance said visual information segments along an annular path;
an optical system mounted on said mounting plate for projecting a selected visual information segment, said optical system including a light source, means for projecting light from said source through a fixed portion of said annular path, and an adjustable elongated focusing arm pivotally mounted at a first end and adjustably mounted at a second end on said mounting plate and including a lens mounted near said second end of said elongated focusing arm, said lens being located adjacent said fixed portion of said annular path and being moveable about an elongated radius to provide substantially linear motion for the lens;
sound reproducing means including transducer means se-



cured to a transducer arm rotatably and pivotally mounted on said mounting plate for providing selective engagement of said transducer means with said storage disc to reproduce audio information stored thereon, said sound reproducing means including manually adjustable indexing and cueing means for rotating said arm to position said transducer means over said disc and for raising and lowering said transducer; and
control means for selectively energizing said first and second drive means and said cueing means in response to audio information on said disc to position selected visual information segments in said fixed portion of said annular path to cause said selected segments to be projected, and to drive said disc to produce audio information corresponding to said projected visual information segments.

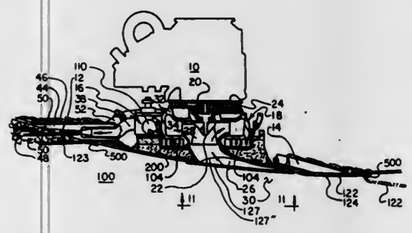
4,552,536
PROGRAMMED LEARNING TEXTBOOK
Andrew F. Kay, 320 Serpentine Dr., Del Mar, Calif. 92014, and David A. Kay, 1745 Valdez Dr., La Jolla, Calif. 92037
Filed Jul. 12, 1984, Ser. No. 630,298
Int. Cl.⁴ G09B *3/06*
U.S. Cl. 434—327 **13 Claims**



1. A programmed learning text having a plurality of pages and a self-test question, comprising:
a plurality of possible answers to said question, the answers being printed on one of said pages, at least one of said ansers being a correct answer to said question;
means on said page adjacent said answers for identifying each correct answer by touch; and

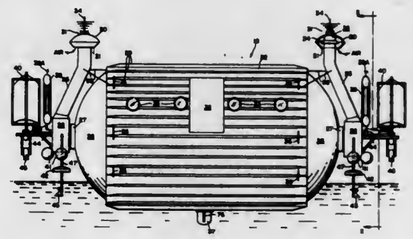
camouflaging means on said page for visually camouflaging said identifying means.

4,552,537
MARINE PROPULSION DEVICE WITH ENGINE HEAT RECOVERY SYSTEM AND STREAMLINING HULL CLOSURES
Hendrick W. Haynes, FID&D, P.O. Box 66152, Seattle, Wash. 98166
Filed Jun. 20, 1979, Ser. No. 50,199
Int. Cl.⁴ B63H *11/08*
U.S. Cl. 440—47 **11 Claims**



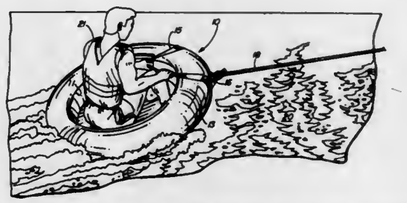
1. In a boat propelled directionally by an inboard marine water jet propulsion system for boats supported by the boyant property of water when said jet is operating, said boat comprising:
(a) A boat;
(b) A motor located therein;
(c) A water pumping means coupled operably to said motor;
(d) Said water pumping means afixed to said boat to allow the drawing of fluid (**100**) from the outside of the boat and through an intake region (**26**) into the jet pump and
(e) By the operation of said pumping means the water is discharged through a defined pathway to allow the expression of said drawn fluid through a nozzle to the outside of said boat where the result of said expression of the fluid through the nozzle is the propulsive reaction of the boats travel apposed to the direction of said fluid expression;
wherein the improvement is comprising:
(1) Said nozzle means being operably connected by a thrust transmission tube means (**38**) to a pumping means (**18**) including an impeller casing for housing a water impelling means (**28**) therein;
(2) Said water impelling means pumping water (**100**) at a rate sufficient to induce turbulent flow of the water when it is pumped in a passageway (**34**);
(3) Said passageway (**34**) including means for heating its interior surface to a temperature above that of the water (**100**) being drawn in by said pumping means (**18**), said means for heating being in thermal communication with said impeller casing;
(4) Wherein the energy lost by a driving motor operatively connected to said pump in transporting a water stream through said pump is reduced by the effect of increasing the boundry layer water temperature, thus lowering the pressure change necessary to draw gas out of solution adjacent to said boundry when said water is in a turbulent flow condition.

4,552,538
MULTIDIRECTIONAL AMPHIBIOUS SAFETY VEHICLE
Vincent Galluzzo; Angela Galluzzo, and Victor T. Galluzzo, all of 8548 Oakleigh Rd., Baltimore, Md. 21234
Filed Apr. 16, 1984, Ser. No. 600,402
Int. Cl.⁴ B63H *5/00*
U.S. Cl. 440—99 **10 Claims**



1. A multidirectional amphibious safety vehicle, comprising:
an outer cylindrical shell having two opposite ends and a longitudinal axis therethrough;
a stationary central pipe having two opposite ends and extending along the longitudinal axis of the outer cylindrical shell;
means, secured around the central pipe, for rotating the outer cylindrical shell about the central pipe so that the safety vehicle moves forward and backward over land, water, and other terrain;
motor means, mounted on at least one of the two opposite ends of the central pipe, for driving the safety vehicle sideways on water;
auxiliary wheel means, mounted on the two opposite ends of the central pipe, for providing balance whenever the safety vehicle travels over land and other terrain; and
sail means, mounted on the two opposite ends of the central pipe, for driving the safety vehicle sideways on water.

4,552,539
HYDROPLANE APPARATUS
James M. Hoenstine, 3201 Alamo Dr., Orlando, Fla. 32805, and Thomas E. Ray, 2512 Trentwood Blvd., Orlando, Fla. 32812
Division of Ser. No. 424,105, Sep. 27, 1982, Pat. No. 4,451,239.
This application May 24, 1984, Ser. No. 614,108
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.
Int. Cl.⁴ B63B *7/08*
U.S. Cl. 441—66 **11 Claims**



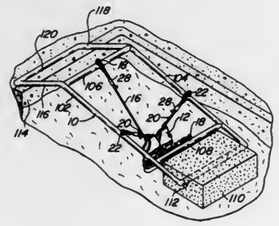
7. A recreational hydroplane apparatus for towing behind a boat or the like, said apparatus comprising:
(a) an annular inflatable tube member having a round, central hole extending therethrough;
(b) a unitary flexible cover surrounding the outer periphery of said tube, said cover having an annular central opening therein concentric with said central hole in said tube, said opening in said cover having a substantially smaller dimension than the outer periphery of said tube, said cover further including a closed, substantially flat bottom along a side opposite said annular central opening thereof, said

cover and said tube being dimensioned such that said bottom is drawn tightly across said central hole in said tube when said tube is inflated;

(c) a fabric tow strap having each end portion thereof sewn only to, and extending along the plane of said flat bottom, said tow strap including a loop to which a tow rope may be fastened; and wherein

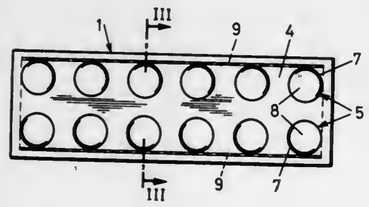
(d) flexible handle means sewn at two points on said flexible cover, said handle means extending toward said annular central opening of said cover, said handle means dimensioned such that a person sitting within said central hole in said tube and on said bottom can grasp said handle means, permitting said person to control and maneuver said hydroplane apparatus as it skims through the water.

4,552,540
SWIMMING POOL EXERCISE DEVICE
Eric Bass, 10 Walton Ave., Doylestown, Pa. 18901
Filed Jan. 19, 1984, Ser. No. 572,267
Int. Cl.⁴ A63B *69/12*
U.S. Cl. 441—129 **16 Claims**



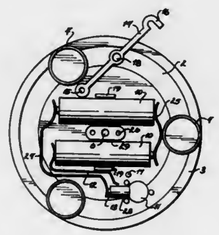
1. A buoyant vest for use in a swimming pool, said vest being made of a buoyant material and being adapted to be worn by a person, said vest having first vest loops attached adjacent the shoulder portions thereof and second vest loops attached adjacent the waist thereof, a frame detachably attached to a side of a swimming pool, said frame having side struts and at least one cross strut, at least one first anchoring loop attached to said cross strut, at least one second anchoring loop attached to one of said side struts, whereby adjustable security lines can be attached between one of said vest loops and one of said anchoring loops and between another of said vest loops and another one of said anchoring loops.

4,552,541
TOY BUILDING BLOCK WITH ELECTRICAL CONTACTING PORTIONS
Peter Bolli, Grabenackerstrasse 46, CH-6312 Steinhausen, Switzerland
Filed Feb. 9, 1984, Ser. No. 578,415
Claims priority, application Switzerland, Feb. 14, 1983, 814/83
Int. Cl.⁴ A63H *33/04*
U.S. Cl. 446—91 **16 Claims**



1. A toy building block having on one face thereof at least one row of mechanical coupling pins and opposite thereto mechanical counter-coupling sockets, at least a plurality of said coupling pins in said row having electrically conducting and electrically insulating regions angularly spaced from each other, said electrically conducting region of each of said pins in said row being disposed at the same angular orientation, and at least one contact member within said block and forming a portion of said socket, said contact member being electrically connected to said electrically conducting regions of a plurality of coupling pins in said row and having electrically conducting surfaces extending in a direction parallel to the longitudinal direction of said row of coupling pins.

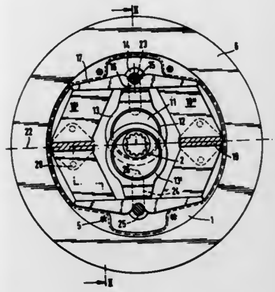
4,552,542
SPINNING DISC TOY
Marjan Reysman, 49 Jack Rd., Williamsville, N.Y. 14221
Filed Nov. 7, 1984, Ser. No. 668,971
Int. Cl.⁴ A63H *1/32*
U.S. Cl. 446—254 **9 Claims**



1. A string-activated illuminable spin disc toy comprising two half-disc sections complementary to each other, a battery and bulb compartment securing means, and string-activating means attached to both of said half-disc sections, one of said sections containing in its interior portion said battery and bulb compartments, said securing means comprising an inner and outer securing means, said outer securing means comprising a centrally positioned annular conduit extending transversely through at least a portion of both of said sections and adapted to receive therethrough a bolt means thereby connecting said half-disc sections together to form a disc-like toy, said inner securing means comprising a movable bar adapted to be moved and locked into position over substantially the width of said battery compartment, said inner securing means comprising a substantially centrally located aperture aligned with said conduit to receive said bolt.

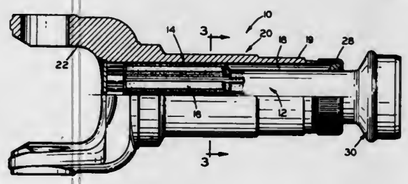
4,552,543
TORSIONALLY ELASTIC COUPLING WITH AN IMPROVED CHARACTERISTIC CURVE
Franz J. Wolf, and Hubert Pletsch, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Fed. Rep. of Germany
Filed Sep. 11, 1984, Ser. No. 649,287
Claims priority, application European Pat. Off., Sep. 14, 1983, 83109087.3
Int. Cl.⁴ F16D *3/76, 13/64*
U.S. Cl. 464—83 **11 Claims**

1. A torsionally elastic coupling for transmitting torque between input and output members comprising coaxial first and second coupling plates (1, 2) respectively connected to said output and input members; at least one spring link connected between said coupling plates, said plates being twistable with respect to one another through said spring link (18); at least one motion-changing link (11) connected to transmit force between said first and second coupling plates through said spring link; at least one bearing plate (17) positioned in contact with said spring link (18) and connected with the first coupling plate, wherein said motion-changing link (11) is coupled to the bearing plate (17) so that when rotation of the second coupling plate relative to the first coupling plate occurs, said bearing plate moves radially as a result of said motion-changing link rotating with the second coupling plate to selectively tighten or relax said spring link (18) depending on the rotational direction of said second coupling plate, wherein said bearing plate (17) is formed as a thick and heavy centrifugal weight (17) having an inert mass, said centrifugal weight



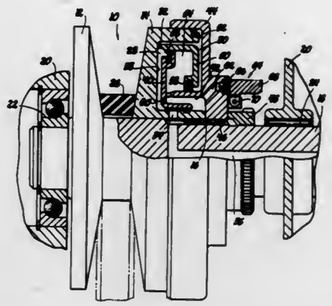
being dimensioned so that as input load changes increase as a function of rotational speed of said input member, said coupling exhibits a progressively increasing twisting softness caused by centrifugal movement of the bearing plate as a result of the mass of the centrifugal weight bearing plate so that an angle of twist between said first and second coupling plates progressively increases for a predetermined load change as a function of increasing rotational speed.

4,552,544
DRIVE LINE SLIP JOINT ASSEMBLY
John A. Beckman, Toledo, Ohio, and David E. Sills, Marion, Ind., assignors to Dana Corporation, Toledo, Ohio
Filed Dec. 27, 1982, Ser. No. 453,077
Int. Cl.⁴ F16C *3/03;* F16D *3/06*
U.S. Cl. 464—162 **4 Claims**



1. A drive line slip joint component having a plurality of axially extending splines, each spline comprising an axially extending face, each face having a circumferentially extending width, at least two of said faces each comprising one resilient axially extending protuberance, each of said faces further comprising a low-friction coating bonded thereto, each resilient protuberance comprising an integral portion of said coating, said coating generally having a constant thickness over said face, said thickness within the range of 0.007 to 0.014 inch, and said protuberance extending 0.001 to 0.003 inch above the surface of said coating said protuberances being circumferentially spaced apart about said component, said protuberances providing means for enhancing the dynamic balancing of said component.

4,552,545
CENTRIFUGAL PRESSURE COMPENSATOR FOR A VARIABLE DRIVE PULLEY
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 18, 1984, Ser. No. 621,857
Int. Cl.⁴ F16H *11/06*
U.S. Cl. 474—16 **2 Claims**

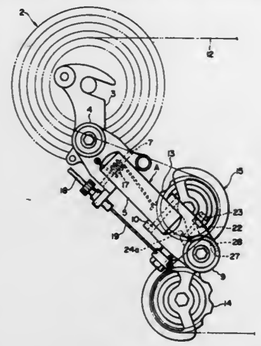


1. A mechanism providing pressure compensation for a dual area control member in a rotary V-belt drive having adjustable pulleys with a drive belt, said mechanism comprising; a movable pulley sheave including a hub portion; a housing mounted for unitary rotation with said pulley sheave and being secured for permitting relative linear movement on said pulley sheave; a first annular piston slidably disposed on said housing and cooperating with said housing and said pulley sheave to form a first pressure chamber; a separator wall slidably disposed on said pulley sheave and said first piston and cooperating therewith to form a compensating chamber; a second pressure chamber formed between an annular end wall of said pulley sheave and said separator wall with said end wall being operative as a second annular piston; fluid flow passage means for directing pressurized fluid to said first and second pressure chambers and said first and second annular pistons whereby said pulley sheave is urged to move relative to said housing; and first and second restricted flow passages for directing fluid to and from said compensating chamber respectively, said first restricted flow passage being in fluid communication with the pressurized fluid in one of said pressure chambers, said fluid in said compensating chamber being at a pressure level determined in part by the rotary speed of said pulley sheave and acting on said first annular piston in opposition to centrifugally generated fluid pressure in said pressure chambers and thereby reduce the axial loading of the movable pulley sheave.

4,552,546
DEVICE FOR CONTROLLING THE TENSION OF A TRANSMISSION CHAIN IN AN EXTERNALLY MOUNTED SPEED CHANGER FOR A BICYCLE
Noritoki Ishikawa, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Filed Jun. 27, 1983, Ser. No. 507,636
Claims priority, application Japan, Jun. 25, 1982, 57-110352
Int. Cl.⁴ F16H *7/08, 11/08*
U.S. Cl. 474—82 **4 Claims**

1. In a speed changer for a bicycle provided on a bracket connected to a hub of its rear wheel, and including a plurality of sprocket wheels having different diameters, a transmission chain, a moveable member, a pair of parallel links pivotally connected at one end to said bracket and pivotally connected at the other end to said moveable member whereby said moveable member is supported for movement parallel to the axis of said hub, spring means on said bracket for biasing said moveable member in one axial direction a chain positioning frame

supported rotatably on said moveable member and carrying a guide pulley and a tension pulley for guiding said chain about one of said sprocket wheels while maintaining said chain under tension, and a torsion spring provided on said moveable member for urging said frame in the direction which enables said



chain to be tensioned, the improvement which comprises a stepless adjustable control mechanism provided on said frame for steplessly controlling the force of said torsion spring to control the tension on said chain, said torsion spring having one end engaged with said mechanism and the other end connected to said moveable member.

4,552,547

STRAW CHOPPER DRIVE

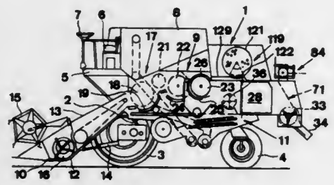
José A. C. L. Carnewal, Eeklo, and Daniël M. Van Overschelde, Roeselare, both of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 22, 1984, Ser. No. 582,497

Claims priority, application United Kingdom, Feb. 25, 1983, 8305217

Int. Cl.⁴ F16H *7/08*

U.S. Cl. 474—101 **19 Claims**



1. Drive means comprising driving means, driven means, and intermediate means located between the driving means and the driven means such that there is an angled line of drive between the driving means and the driven means, first flexible drive transmission means extending between the driving means and the intermediate means, and second flexible drive transmission means extending between the intermediate means and the driven means, first tensioning means operable to move the intermediate means in a first direction to tension the first flexible drive transmission means, and second tensioning means operable to move the intermediate means in a second direction to tension the second flexible drive transmission means.

4,552,548

V-BELT TRANSMISSION APPARATUS

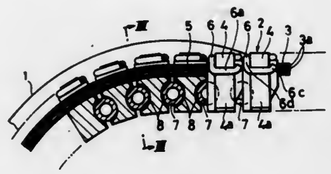
Torao Hattori, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1984, Ser. No. 669,172

Claims priority, application Japan, Nov. 7, 1983, 58-171320[U]

Int. Cl.⁴ F16G *5/00*

U.S. Cl. 474—201 **10 Claims**



1. A V-shaped device for engaging an endless belt in a V-belt power transmission, said V-shaped metallic device comprising:

(a) a V-shaped member having a groove in a wall of each arm of the V, wherein said V-shaped member is adapted to have the endless belt positioned between the arms of the V and wherein said grooves are positioned below the plane of the inner surface of the belt in the V; and

(b) a stopper means having a middle portion extending between the arms of said V-shaped member outside of the belt and end portions engaging the grooves in the wall of the arms of said V-shaped member, wherein said stopper means prevents said V-shaped member from coming off the belt.

4,552,549

V-BELT TRANSMISSION DEVICE

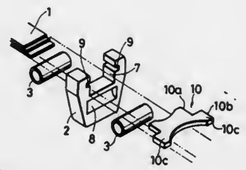
Torao Hattori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,357

Claims priority, application Japan, Mar. 8, 1983, 58-32268[U]; Mar. 8, 1983, 58-36650; Apr. 16, 1983, 58-66327

Int. Cl.⁴ F16G *1/28*

U.S. Cl. 474—202 **7 Claims**



1. In a V-belt transmission device in which a plurality of substantially V-shaped metal members and a plurality of resilient metal members are alternately mounted to an endless metal belt member made of band steel and are in contact with each other to consitutute a V-belt which is subjected to a tension between a driving V-pulley and a driven V-pulley, thereby effecting a torque transmission between both the pulleys, each of said V-shaped metal members being provided with a substantially U-shaped groove directed to the outside, each of said resilient metal members being formed as a hollow roller to engage with recessed surfaces which are formed in opposing surfaces of a pair of said V-shaped metal members and said V-shaped metal members and said resilient metal members are fastened together at their outer peripheries by said metal belt member, said V-belt transmission device characterized in that a pair of right and left engaging grooves are formed at inward wall of arm end portions of each of said U-shaped grooves

formed in said V-shaped metal members and stop members are each formed in a plate having a narrow portion and at least one wide portion, each of said stop members being engaged with said engaging grooves with said narrow portion.

4,552,550

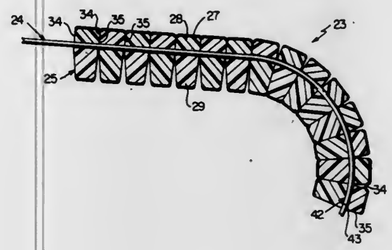
BELT CONSTRUCTION, TRANSVERSE BELT ELEMENT THEREFOR AND METHOD OF MAKING THE SAME

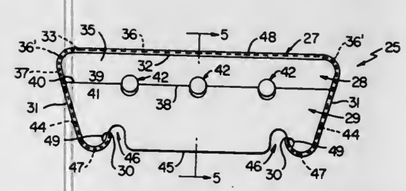
Anderson W. Howerton, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 30, 1984, Ser. No. 575,434

Int. Cl.⁴ F16G *1/22*

U.S. Cl. 474—242 **22 Claims**





1. In an endless power transmission belt construction comprising an endless flexible carrier means that has a longitudinal axis and a plurality of transverse belt elements assembled on said carrier means, each said belt element comprising a plurality of parts secured together to define opening means passing transversely therethrough and receiving said carrier means therein, the improvement wherein one of said parts of each said belt element comprises a generally C-shaped clip that in a direction substantially transverse to said longitudinal axis of said carrier means snaps over and substantially encircles and holds the remaining parts of the respective belt element in their assembled relation.

4,552,551

DOUBLE- AND BOTTOM-SEAM BAG-MAKING METHOD AND APPARATUS

Karl Dreckmann, Hennef-Altenbödingen, Fed. Rep. of Germany, assignor to M. Lehmacher & Sohn GmbH Maschinenfabrik, Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Jan. 6, 1983, Ser. No. 455,919

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201248

Int. Cl.⁴ B31B *23/00*

U.S. Cl. 493—194 **4 Claims**

1. An apparatus for making bags from a multilayer synthetic-resin strip workpiece, the apparatus comprising:

transport means for conveying the workpiece longitudinally in a transport direction along a path;

an upper welding element along the path having

an upper upstream welding tool extending across the path,

an upper downstream welding tool generally parallel thereto, and

a seat extending parallel to and between the two upper tools in said upper welding element;

a first blade releasably fittable in the seat of the upper welding element and projecting downward from the upper tools when in the seat;

respective lower upstream and downstream welding tools vertically aligned with the upper upstream and downstream tools;

means for heating at least one of the upstream tools and at least one of the downstream tools;

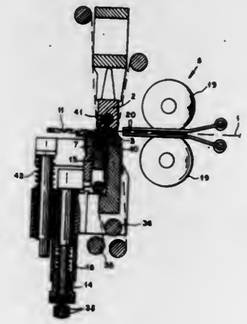
stacking means including at least one pin movable in the lower downstream tool between a position beneath same to a position projecting above same;

bottom-seaming means including a further blade positionable between the lower tools and displaceable between a position beneath same into a position projecting above said lower tools into said seat upon the removal of the first blade therefrom;

means for vertically displacing the upper and lower tools with the workpiece between them from outer positions toward one another to closely juxtaposed inner positions to weld the workpiece together along upstream and downstream seams at the respective tools and to cut the workpiece across with the first blade between the seams when heater means is heating the respective tools, the blade is in the seat, and the pin lies below the lower tools for double seaming and to cut through and form end seams in the workpiece with said second blade when the heater means is not heating the respective tools, the blade is not in the seat, and the pin is above the lower tools for bottom seaming, and for displacing said tools away from one another to free the severed downstream end section of the workpiece;

relatively stiff spring means nondisplaceable transversely of the path and engageable with the upstream lower tool for resisting downward displacement of same from the inner position with a relatively great spring force; and

relatively soft spring means supporting the downstream lower tool on the upstream lower tool for resisting downward displacement of the former relative to the latter with a relatively small spring force.



4,552,552

PUMP SYSTEM FOR USE WITH DIALYSIS AND LIKE APPARATUS

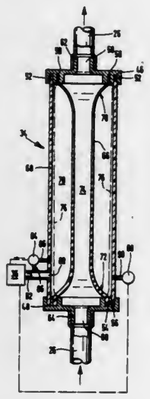
Hans-Dietrich Polaschegg, Oberursel, and Bernd Mathieu, Spiesen, both of Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,645

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205449

Int. Cl.⁴ A61M *1/03*

U.S. Cl. 604—4 **16 Claims**



15. A pumping system for pumping the blood of a patient comprising:

a rigid casing and a flexible diaphragm within the casing, the diaphragm defining and separating a working chamber and a blood chamber which is expandable and contractable for pumping blood said blood chamber having blood inlet means and blood outlet means in fluid communication therewith;

means including a displaceable chamber for supplying the working chamber with a working fluid for expanding and contracting the working chamber so that the blood chamber is contracted and expanded;

low pressure limiting valve means in fluid communication with the working chamber responsive to pressure within the working chamber for preventing pressure below a predetermined low pressure in the working chamber by venting the working chamber, and high pressure limiting valve means in fluid communication with the working chamber responsive to pressure within the working chamber for preventing pressure above a predetermined high pressure in the working chamber by venting the working chamber, whereby the supplying means and the blood pumping means operate in phase at pressures between the predetermined low and high pressures within completion of one cycle of expansion and contraction after start up regardless of phase differences at start up.

4,552,553

FLOW CONTROL VALVE

Rudolf R. Schulte; Gary P. East, both of Santa Barbara; Marga M. Bryant, and Alfons Heindl, both of Goleta, all of Calif., assignors to Pudenz-Schulte Medical Research Corp., Santa Barbara, Calif.

Continuation of Ser. No. 510,381, Jun. 30, 1983, abandoned, which is a continuation of Ser. No. 208,514, Nov. 20, 1980, abandoned. This application Jan. 30, 1984, Ser. No. 574,997

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—9 **29 Claims**

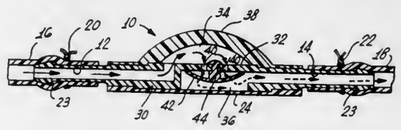
1. A surgically implantable flow control valve for controlling the flow of fluid from one portion of the human body to another, said valve comprising:

a substantially rigid polypropylene base of unitized construction including a plate having a generally planar inlet surface and a generally planar outlet surface, a tubular inlet connector integral with said plate, and a tubular outlet connector integral with said plate;

an inlet passageway through said base, said inlet passageway originating at an open end of said inlet connector and terminating at an inlet port situated on said inlet surface of said plate;

an outlet passageway through said base, said outlet passageway originating at an outlet port adjacent said outlet surface and terminating at an open end of said outlet connector;

a resilient dome substantially overlying said base and said inlet port, said dome having an arch-shape similar to one-half of a sphere, the inner surface of said dome being smooth and forming a seal against an upper surface of said base to create an inlet chamber between said dome and said base, said dome being deformable toward said base by external pressure so that the extent of deformation is limited by contact between said dome and said base;



a mounting pad generally underlying said base and interacting with the edges of said dome to substantially encase said base in connection with said dome, said mounting pad including suture holes to allow said valve to be fixedly attached to a specific location on the human body;

an outlet chamber between said outlet surface and said mounting pad;

a plate passageway permitting fluid communication between said inlet chamber and said outlet chamber; and

a flow control member including a central support and a resilient membrane, said central support being securely attached to said base and extending therefrom into said outlet chamber to support said membrane, said membrane being generally arch-shaped and resiliently biased to normally contact said outlet surface generally along the outer edges of said membrane in a manner surrounding said plate passageway and forming a releasable seal between said outlet surface and the outer edges of said membrane, said outlet surface being sufficiently rigid to maintain a proper valve seat for the outer edges of said membrane despite pressure applied to said inlet surface caused by contact of said dome with said inlet surface when said dome is fully deformed, said membrane being formed of an elastomer material to prevent sticking with said polypropylene base.

4,552,554

INTRODUCING CATHETER

Arnold S. Gould, Bedford, Mass.; Gary Sawicki, Thompson, Conn., and Michael A. Ciannella, Marlboro, Mass., assignors to Medi-Tech Incorporated, Watertown, Mass.

Filed Jun. 25, 1984, Ser. No. 624,053

Int. Cl.⁴ A61B *17/00*; A61M *5/00*

U.S. Cl. 604—51 **16 Claims**

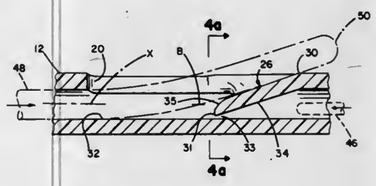
1. In an introducing catheter comprising: a tube defining a lumen and having proximal and distal open ends, said tube having a tapered tip and decreased lumen size at said distal end, said catheter enabling distal entry of a first relatively small diameter guidewire, said tube further having a side port larger than the distal diameter of said lumen through which a larger,

second guidewire, advanced within said tube from said proximal end, can emerge.

the improvement wherein

a ramp is disposed within said tube at the distal end of said side port, said ramp being inclined distally toward said side port.

the distal end of said ramp being fixed to said tubing adjacent to said side port and the proximal end of said ramp being disposed adjacent to the inner wall of said tubing in the



region opposite said side port in a manner to permit passage therepast of said first, relatively small guidewire.

said ramp thereby being adapted to permit said first guidewire to be advanced proximally through said tubing from the distal tip past said side port and said ramp being adapted to deflect the tip of said second, larger diameter guidewire advanced distally through said tubing from the proximal end, to cause said second guidewire to emerge from said lumen via said side port.

4,552,555

SYSTEM FOR INTRAVENOUS DELIVERY OF A BENEFICIAL AGENT

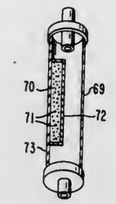
Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 289,082, Jul. 31, 1981, abandoned. This application Oct. 19, 1981, Ser. No. 312,491

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.⁴ A61M *5/14*

U.S. Cl. 604—56 **19 Claims**



1. An intravenous delivery system for administering a drug formulation to a patient, comprising in combination:

(a) a reservoir of a pharmaceutically acceptable intravenously administrable fluid;

(b) a formulation chamber comprising:

(1) a wall surrounding a lumen;

(2) an inlet in the wall that communicates with the reservoir to permit fluid to flow from the reservoir into the formulation chamber;

(3) a beneficial intravenously administrable drug in the formulation chamber, said drug present in an amount for performing a beneficial program, and which drug forms a drug formulation with the intravenously administrable fluid that enters the chamber;

(4) a drug release rate membrane in the formulation chamber formed of a material that releases drug formulation from the chamber concomitantly with the passage of intravenously administrable fluid that flows through the chamber; and,

(5) an outlet in the wall that permits drug formulation and the intravenously administrable fluid to leave the formulation chamber.

4,552,556

PARENTERAL CONTROLLED THERAPY

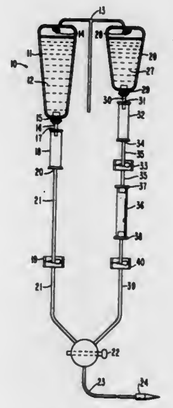
John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 542,466, Oct. 17, 1983, Pat. No. 4,493,702, which is a continuation of Ser. No. 325,206, Nov. 27, 1981, Pat. No. 4,432,756. This application Jan. 4, 1985, Ser. No. 689,103

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.⁴ A61M *5/14*

U.S. Cl. 604—80 **4 Claims**



1. A parenteral delivery set for administering a beneficial agent formulation to a warm-blooded animal, the delivery set comprising:

(a) a primary tube for the flow of a parenterally acceptable fluid therethrough;

(b) a secondary tube for the flow of a parenterally acceptable fluid therethrough;

(c) a formulation chamber in communication with the secondary tube, the formulation chamber comprising:

(1) a wall that surrounds a lumen;

(2) an inlet for letting a fluid into the formulation chamber;

(3) a beneficial agent delivery device in the formulation chamber, the delivery device comprising an inner mass transfer conductor, a beneficial agent in the mass transfer conductor, and a membrane that surrounds the mass transfer conductor for releasing beneficial agent into the formulation chamber;

(4) an outlet for letting an agent formulation leave the formulation chamber; and,

(d) a common tube in communication with the primary tube for receiving fluid from the primary path, and in communication with the secondary tube for receiving agent formulation from the secondary tube.

4,552,557

INFLATABLE UTERINE HEMOSTAT

Avvari Rangaswamy, Stevens Hospital, Welch, W. Va. 24801

Filed Oct. 21, 1983, Ser. No. 544,059

Int. Cl.⁴ 61F *5/00*

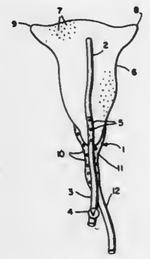
U.S. Cl. 604—96 **6 Claims**

1. An inflatable uterine device to control uterine bleeding comprising:

(1) an insertion means which facilitates insertion of the device into the uterus,

(2) an inflatable portion attached to and surrounding said insertion means which, when inflated, substantially conforms to the shape of the uterus, said inflatable portion having disposed thereon at its proximal end twin apical projections designed to conform to and block the entrances to the fallopian tubes, the wall of said inflatable portion being of a thickness sufficient to exert pressure on the uterine wall to control uterine bleeding,

(3) a tubular inflation channel connected to and in communication with the interior of said inflatable portion, said tubular inflation channel containing distally located pores through which said inflatable portion can be inflated and



deflated once the device has been inserted into the uterus, said tubular inflation channel being adapted at its distal end by means which permit said tubular inflation channel to be sealed once said inflatable portion has been inflated and unsealed to permit an inflating fluid to be bled from the interior of said inflatable portion, and

(4) a second tubular channel, separate from said tubular inflation channel and attached to the outer surface of the wall of said inflatable portion, containing in its walls proximally located pores to permit drainage of blood and other uterine debris once the device has been inserted into the uterus.

4,552,558

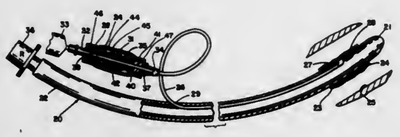
PRESSURE WARNING, INDICATING AND APPLYING MONITOR FOR CUFF TYPE INDWELLING DEVICES

Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Filed Jul. 14, 1983, Ser. No. 513,645

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—100 **9 Claims**



9. In combination with an indwelling device having an inflatable cuff at the distal end and a tubule adapted to extend outside the patient's body to inflate the cuff:

a tubule extension adapted to be connected between a source of air under pressure and the proximal end of said tubule, said extension including a one-way valve to prevent back flow;

a pilot balloon of non-stretchable material, adapted to be inflated when the cuff is inflated, said pilot balloon extending around said tubule extension and being inflatable by air apertures therein, said pilot balloon being of generally spherical shape when fully inflated;

and a pressure monitoring balloon of stretchable, resilient material, enclosing said pilot balloon in an airtight sealed chamber and extending therearound on said tubule extension, said pressure monitoring balloon progressively changing from elongated cylindrical, to oval, to spherical configuration as said cuff and pilot balloons are progressively expanded.

4,552,559

APPLICATORS

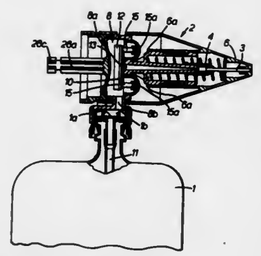
John H. Donaldson; Robert Brunswick, and Andrew J. Foulkes, all of Melbourne, Australia, assignors to Wellcome New Zealand Limited, Auckland, New Zealand

Continuation of Ser. No. 441,430, Nov. 15, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,731

Claims priority, application New Zealand, Nov. 24, 1981, 199049; Aug. 30, 1982, 201756

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—198 **43 Claims**



1. An applicator including:

a reservoir for matter to be applied;

an applicator head comprising a chamber and elongate needle;

the needle being at least partially surrounded by a generally elongate proboscis mounted for axial movement over the needle;

at least one valving means being provided between the chamber and the needle;

further valving means being provided between the reservoir and the chamber;

triggering means being provided;

actuation of said triggering means causing matter to be applied to be passed from the reservoir into the chamber;

the proboscis being so mounted relative to the chamber and the needle, that on predetermined axial movement of the proboscis over the needle, at least an end of said needle is at least partially exposed and means between the chamber and needle is opened and means is provided to cause matter to pass from the chamber through said needle.

4,552,560

RESEALABLE ADHESIVE TAB FASTENER

Ludwig Tritsch, Wilmette, Ill., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 236,406, Feb. 23, 1981, abandoned. This application Dec. 21, 1983, Ser. No. 566,751

Int. Cl.⁴ A41B *13/02*; A61F *13/16*

U.S. Cl. 604—390 **5 Claims**

1. A resealable adhesive tab fastener means suitable for use on a disposable diaper comprising:

(a) a carrying tape segment having an innerface and an outerface and including a fixed end secured to the diaper and a free end which includes a gripping means at the terminating end of the free end portion; and

(b) a transferable holding means adhesively, but releasably, carried on the innerface of the free end of said carrying tape segment, said holding means being a tape segment having an adhesive coated face on the face opposite the face adhesively, but releasably attached to said carrying tape segment, said holding means being at least co-extensive with the free end of said carrying tape segment and having a gripping means at the terminating end nearest the gripping means of said carrying tape segment said gripping means being provided by the absence of adhesive on the tape segment at the terminating end thereof, a finger-lift comprising a separate piece of material secured to the adhesive surface, or an adhesive-to-adhesive turned over portion of the tape segment at the terminating end thereof, said gripping means allowing the opening of said fastener without application of pressure to the body of the wearer of said diaper.

4,552,561

BODY MOUNTED PUMP HOUSING AND PUMP ASSEMBLY EMPLOYING THE SAME

James B. Eckenhoff, Los Altos; John R. Peery, Palo Alto, and Felix A. Landrau, Milpitas, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 23, 1982, Ser. No. 452,523

Int. Cl.⁴ A61J *7/00*; A61M *5/00*

U.S. Cl. 604—896 **48 Claims**

8. A pump assembly adapted to be mounted on the body of a subject comprising, in combination:

(a) pump housing means, said housing means comprising:

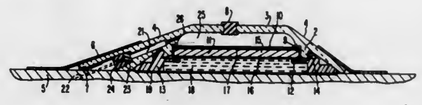
(i) internal receptacle means defined by the internal top and side surfaces of said housing;

(ii) exterior top and side surfaces;

(iii) an exterior bottom surface at the bottom, body proximal end of said exterior side surface; and

(iv) passageway means extending through said housing and terminating at one end proximate the internal top surface of said receptacle means and at another end proximate the bottom end of said exterior side surface;

(b) an expansible, fluid impermeable membrane disposed within said receptacle means, dividing said receptacle means into upper and lower portions;



(c) fluid imbibing pump means in said lower portion, said pump means having outlet means in fluid communicating relationship with said membrane; and

(d) sealing means providing a fluid tight seal between said membrane, said fluid imbibing pump means and said housing means, whereby material discharged from said outlet means will be confined between said fluid imbibing pump means and said membrane.

4,552,562

PROCESS FOR PREVENTING THE GELATION OF CONCENTRATED AQUEOUS PHOTOACTIVATOR SOLUTIONS

Werner Preiswerk, Binningen, and Beat Bruttel, Böckten, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Mar. 19, 1984, Ser. No. 590,929

Claims priority, application Switzerland, Mar. 25, 1983, 1641/83

Int. Cl.⁴ C09B *47/20;* **C11D** *3/39;* **D06L** *3/12;* **C08J** *5/22*

U.S. Cl. 8—101 **14 Claims**

1. A process for preventing the gelating of a concentrated aqueous photoactivator solution containing a sulfonated zinc or aluminum phthalocyanine, which comprises passing a crude solution containing said photoactivator, when preparing said concentrated solutions, through a semipermeable asymmetrical membrane having a pore diameter of 1 to 500 Å and which consists of cellulose acetate which is modified by reaction with an ionic compound which contains hydroxyl-reactive groups, or which consists of polyacrylonitrile or a copolymer of acrylonitrile and another ethylenically unsaturated monomer, and which is modified by reaction with hydroxylamine and subsequent reaction with a polyfunctional monomer selected from the group consisting of cyclic carbonimide halides, isocyanates, isothiocyanates and N-methylol compounds, then a polyfunctional polymer selected from the group consisting of polyethyleneimine, polyvinyl alcohol, polyvinylamine or polyvinyl aniline, and finally with an ionic compound which contains hydroxyl- or amino-reactive groups.

4,552,563

COMPOSITION FOR THE ALKALINE BLEACHING OF TEXTILES CONTAINING PEROXYAMINE

Bernard Dubreux, Francheville le Bas; Jackie Emeraud, Jouy en Josas; Gerard Tatin, Mulhouse, and Jean-Pierre Schirmann, Oullins, all of France, assignors to Atochem, France

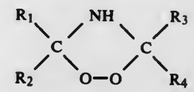
Filed Sep. 13, 1984, Ser. No. 650,778

Claims priority, application France, Sep. 20, 1983, 83 14911

Int. Cl.⁴ D06L *3/00*

U.S. Cl. 8—107 **6 Claims**

1. A composition for the alkaline bleaching of textiles during washing comprising a washing powder and at least one peroxide derivative of the general formula:



(I)

where R_1, R_2, R_3, and R_4 are hydrogen, a linear alkyl radical containing from 1 to 12 carbon atoms, a cycloalkyl or branched alkyl radical containing from 3 to 12 carbon atoms, or an aromatic hydrocarbon radical having from 6 to 12 carbon atoms; R_1 and R_2 and/or R_3 and R_4, respectively, capable of forming a cycloalkyl radical having from 3 to 12 carbon atoms.

4,552,564

USE OF IMPROVED STARCH-POLYVINYL ALCOHOL COMPOSITION AS A TEXTILE SIZE

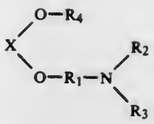
Edward D. DeBoer, Sauk Village, and Kenneth R. Yahl, Orland Park, both of Ill., assignors to American Maise-Products Company, Hammond, Ind.

Filed Jul. 27, 1984, Ser. No. 635,367

Int. Cl.⁴ C08G *18/08*

U.S. Cl. 8—115.6 **13 Claims**

1. A composition for sizing yarn which comprises a derivative starch having the following structural formula:



wherein X is starch, R_1 is selected from the group consisting of alkylene and hydroxyalkylene, R_2 and R_3 are each selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl and hydrogen and R_4 is a hydroxyalkyl; and polyvinyl alcohol, wherein the composition has a ratio of derivative starch: polyvinyl alcohol in the range of from about 1:9 to 9:1.

4,552,565

HAIR DYES: DIRESORCYL SULPHIDE, SULPHOXIDE OR SULPHONE COUPLING AGENTS

Norbert Maak, Neuss, and Edgar Lieske, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,040

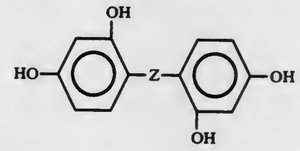
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340829

Int. Cl.⁴ A61K *7/13;* **D06P** *1/32;* **C11D** *3/40*

U.S. Cl. 8—409 **18 Claims**

1. A composition of matter of the developer-coupler type for the dyeing of hair comprising:

(a) at least one coupler of the formula



(I)

wherein Z is a sulfur atom, an >SO group or an $>SO_2$ group, or a cosmetically acceptable salt of said coupler of formula I; and

(b) at least one developer, said developer being capable of developing a color shade when oxidatively coupled with said coupler of the formula I or with said salt of said coupler.

4,552,566

GLOBULOUS PRODUCTS OF SUBLIMING SUBSTANCE, ITS MANUFACTURING PROCESS AND MANUFACTURING APPARATUS

Kouji Kita, Tokyo; Kohei Itakura, Chiba, and Shigeo Mitsuhashi, Narita, all of Japan, assignors to Ise Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 460,058

Claims priority, application Japan, Jan. 21, 1982, 57-6859

Int. Cl.⁴ C01B *7/14*

U.S. Cl. 23—313 R **2 Claims**

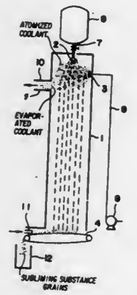
1. A method of producing globulous products of a subliming substance, which comprises:

melting said subliming substance;

discharging said subliming substance through a nozzle so as to form a plurality of droplets of 0.3 to 5 mm diameter;

discharging a non-soluble inert coolant liquid having a boiling point lower than said subliming substance and atom-

ized to a size of 10 to 2500μ so as to contact and cool said droplets; and



forming said globulous products so as to have a diameter of 0.3 to 5 mm.

4,552,567

PRESSURE ROLLER APPARATUS FOR BRIQUETTING CUT MATERIAL OF BIOLOGICAL ORIGIN SUCH AS GREEN CROPS, WOOD FLAKES OR PEAT

Alfred T. Nielsen, No. 4 Lyngskraenten, 2840 Holte, Denmark

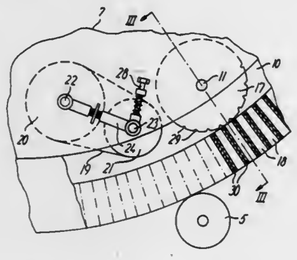
PCT No. PCT/DK84/00033, § 371 Date Dec. 5, 1984, § 102(e) Date Dec. 5, 1984, PCT Pub. No. WO84/04276, PCT Pub. Date Nov. 8, 1984

PCT Filed Apr. 25, 1984, Ser. No. 686,262

Claims priority, application Denmark, Apr. 27, 1983, 1872/83

Int. Cl.⁴ B30B *11/20, 3/00*

U.S. Cl. 44—13 **4 Claims**



1. Pressure roller apparatus for briquetting of cut and dried material of biological origin, such as green crops, wood flakes or peat, through radial die openings (18) formed in the bottom of an inwardly open material supply channel (10) provided in a circular rotary ring, the cross section of the channel at the briquetting zone being virtually filled out by a pressure roller (17) journalled on a stationary axis, and the channel being associated with a mechanism (19, 21) for precompressing the material upstream of this pressure roller, c h a r a c t e r i z e d in that the ring with die openings (18) is localized at, and firmly connected to, the rear end of a rotary drying drum (1), and in that the precompression mechanism comprises an endless band (19) coplanar with the material supply channel (10) and passing around both a stationarily journalled disc (20) and a disc (21) located nearer to the pressure roller (17), the latter being entered into the material supply channel and being adjustable and elastically urged against its bottom, and the endless belt being drivable at the same peripheral speed as the channel bottom.

4,552,568

METHOD FOR PREPARING COAL-WATER SLURRY

Taizo Igarashi; Hisao Higuchi, and Shingo Yamazaki, all of Hyogo, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,089

Claims priority, application Japan, Jul. 24, 1982, 57-129496

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **10 Claims**

1. A method for preparing a coal-water slurry comprising the divided addition of dispersing agent or multi-step addition of dispersing agent during grinding in a process for preparing a coal-water slurry by the wet grinding of coal in water.

2. A method for preparing a coal-water slurry as in claim 1, wherein the dispersing agent is a cationic surface active agent, an anionic surface active agent, a nonionic surface active agent or an amphoteric surface active agent.

3. A method for preparing a coal-water slurry as in claim 2, wherein the dispersing agent additionally comprises an alkaline substance.

4,552,569

N-HYDROCARBYLHYDROCARBYLENEDIAMINE CARBOXYLATE AND LUBRICANTS CONTAINING SAME

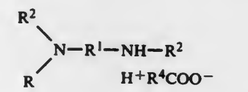
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 508,980, Jun. 29, 1983, Pat. No. 4,511,482. This application Jan. 22, 1985, Ser. No. 693,446

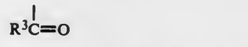
Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—71 **11 Claims**

1. A liquid fuel composition comprising a major proportion of a liquid fuel and a friction reducing amount of a compound of the formula:



wherein R is a hydrocarbyl group containing 6 to 20 carbon atoms, R^1 is a C_2 to C_3 hydrocarbylene group, R^2 is selected from the group consisting of hydrogen and



wherein at least one R^2 is the latter group in which R^3 is selected from the group consisting of hydrogen and a C_1 to C_6 alkyl group, and R^4 is a C_1–C_{20} hydrocarbyl group.

4,552,570

ADSORBENT FRACTIONATOR WITH AUTOMATIC CYCLE CONTROL AND PROCESS

Barton A. Gravatt, Homer, N.Y., assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 351,677, Feb. 23, 1982, abandoned, which is a continuation of Ser. No. 267,964, May 27, 1981, abandoned, and Ser. No. 145,938, May 2, 1980, abandoned. This application Feb. 8, 1984, Ser. No. 577,728

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—20 **13 Claims**

1. Apparatus having a sorbent bed for alternately adsorbing and thereby reducing the concentration of first gas in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas and then regenerating the sorbed bed by desorption of adsorbed first gas without application of heat, comprising, in combination, a vessel; a chamber therein for a bed of sorbent having a preferential adsorptivity for the first gas and that is regenerated by desorption of first gas without application of heat; a line for delivering influent gas at an inlet end of said bed; a line for delivering effluent gas from an outlet end of said bed; a capacitor positioned between the inlet and outlet ends of the bed and having two conductors of selected surface area spaced from each other a sufficient distance to define a space sized to accommodate a volume of sorbent as the dielectric whose change in first gas content, detected as a function of dielectric constant, causes a change in capacitance thereof; means for closing off the influent flow of gas after a predetermined first time interval; means responsive to the change in capacitance to give a first signal in response to a first predetermined capacitance indicating a first selected first gas content has been reached at the end of said time interval; means for depressurizing the sorbent bed and for introducing a purge gas to regenerate the sorbent in response to the first signal; and means for returning the sorbent bed to the adsorption mode after a second predetermined time interval whereby depressurization and purge is omitted under low loading conditions.

12. Apparatus for reducing the concentration of first gas in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, comprising, in combination, a vessel; a chamber therein for a bed of sorbent having a preferential affinity for the first gas; a line for delivering influent gas at an inlet end of said bed; a line for delivering effluent gas from an outlet end of said bed; a capacitor comprising an open array of at least three flat parallel sheet conductors interleaved with alternate sheets connected together in conducting relation and arranged in the bed with the planes of the sheet substantially in-line with the flow in a manner to directly intercept a substantial portion of the gas flow through the bed, the sheet conductors being coated with an electrically insulating layer so that the capacitor is isolated from the conductivity of said sorbent, the sheets being of selected surface area and spaced from each other a sufficient distance to define a space sized to accommodate a volume of sorbent as the dielectric change in first gas content, detected as a function of dielectric constant, causes a change in capacitance thereof; means responsive to the change in capacitance to give a signal when a selected capacitance indicating a selected first gas content is reached or exceeded; and means for regenerating the sorbent bed in response to the signal.

4,552,571

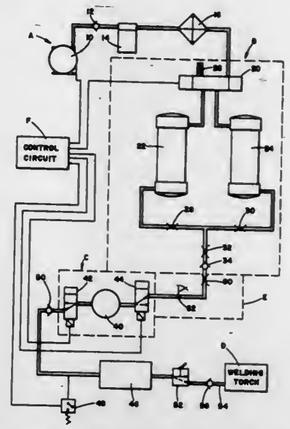
OXYGEN GENERATOR WITH TWO COMPRESSOR STAGES

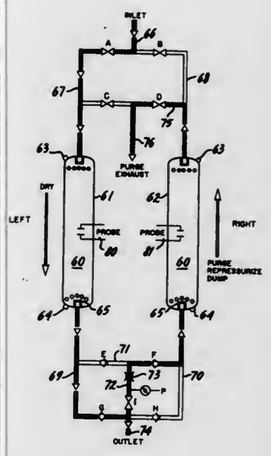
Fernand J. Dechene, New Britain, Conn., assignor to VBM Corporation, Louisville, Ky.

Filed Apr. 5, 1984, Ser. No. 596,892

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—21 **20 Claims**





1. A method of separating a primary product gas from a gaseous mixture, the method comprising:

supplying the gaseous mixture at a first relatively low pressure alternately to first and second molecular sieve beds which each contain a physical separation medium which selectively adsorbs at least one adsorbable component of the mixture and passes the primary product gas and causing the adsorbable component to be removed from the other of the first and second beds;

drawing the primary product gas from adjacent the molecular sieve beds to increase a pressure drop thereacross such that the primary product gas has a second relatively low pressure adjacent the molecular sieve beds;

limiting the second relatively low pressure to positive pressures;

selectively adjusting a rate at which primary product gas is drawn from the molecular sieve beds to adjust the purity thereof;

increasing the pressure of the primary product gas from the second relatively low pressure to a relatively high pressure;

storing the increased pressure primary product gas in a storage tank; and,

maintaining the storage tank generally at the relatively high pressure.

8. An apparatus for supplying a primary product gas at a relatively high pressure, the apparatus comprising:

a first compressor means for providing a gaseous mixture at a first relatively low pressure;

a valving means for alternately channelling the gaseous mixture from the first compressor means alternately to a first end of each of at least two molecular sieve beds for separating the primary product gas from the gaseous mixture;

a second compressor means which receives the primary product gas from a second end of the molecular sieve beds for maintaining pressure adjacent the second end of the molecular sieve beds at a second relatively low pressure which is less than the first relatively low pressure and for supplying the primary product gas to a primary product outlet at a relatively high pressure which relatively high pressure is greater than both the first and second relatively low pressures; and,

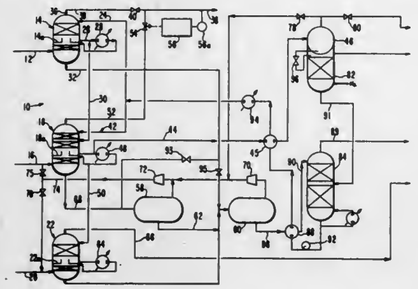
a second compressor start-up valve means for selectively (a) enabling the second compressor to be operated without load for a start-up duration and (b) after the start-up duration, channelling the primary product gas from the sieve beds through the second compressor means to downstream equipment, the start-up valve means being operatively connected with the sieve beds second end and the second compressor means, whereby the second compressor means is able to be started without load.

4,552,572

PROCESS FOR DESULFURIZATION OF FUEL GAS

Lionel S. Galstaun, Houston, Tex., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Jul. 26, 1983, Ser. No. 517,885
Int. Cl.⁴ B01D *47/00*
U.S. Cl. 55—36 **15 Claims**



1. In a system for removal of acid gases from a first gas available at super atmospheric pressure, rich in carbon dioxide and containing hydrogen sulfide, and a second gas rich in carbon monoxide, containing carbon dioxide at a partial pressure lower than in said first gas, and containing hydrogen sulfide, the process comprising the steps of:

contacting the first gas with a physical absorption solvent having a high selectivity for hydrogen sulfide in countercurrent flow of solvent and the first gas wherein said solvent absorbs carbon dioxide and hydrogen sulfide in a first stage and said solvent absorbs carbon dioxide but not hydrogen sulfide in a second stage and using part of the solvent from the second stage in the first stage, separating the solvent containing carbon dioxide and hydrogen sulfide from the first stage and recovering a hydrogen rich gas from the second stage;

separately contacting said second gas with another part of the solvent from the second stage under conditions sufficient to cause said solvent containing carbon dioxide to extract hydrogen sulfide from said second gas and to release carbon dioxide; and

separating the desulfurized second gas from the solvent containing hydrogen sulfide for use as a fuel.

4,552,573

DUST SUPPRESSOR APPARATUS

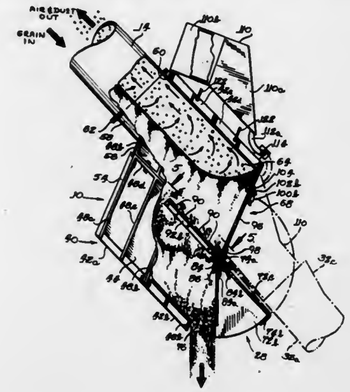
Bruce T. Weis, Anoka; Nash N. Helmy, St. Louis Park; David E. Tweet, and Bruce W. Moechnig, both of Minneapolis, all of Minn., assignors to Cargill Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 357,787, Mar. 12, 1982, abandoned. This application Nov. 30, 1983, Ser. No. 556,312
Int. Cl.⁴ B01D *45/02, 45/08*
U.S. Cl. 55—312 **11 Claims**

1. Apparatus for use in discharging particulate material while suppressing discharge of dust, said apparatus comprising, in combination:

a housing defining an internal chamber and having an inlet opening enabling particulate material to be introduced into said internal chamber, said housing having a primary discharge opening enabling particulate material to be discharged from said chamber by gravity, said housing being made of a plurality of modular sections secured together so as to define said internal chamber, said modular sections being mutually releasable to facilitate disassembly of said housing,

a suppressor control gate mounted on said housing for movement between a first position adapted to prevent discharge of material through said discharge opening and a second discharge position enabling gravity discharge through said discharge opening,



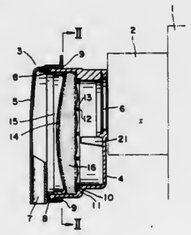
and means biasing said suppressor control gate to its said first position until a predetermined quantity of particulate material acts on said control gate to overcome said biasing means and open said control gate, said control gate and biasing means being operative to exert substantially constant pressure on the particulate material discharging through said discharge opening so as to enable bulk discharge while preventing egress of dust ladened air through said discharge opening.

4,552,574

AIR CLEANER

Nobuyuki Hotta, Niiza, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,414
Claims priority, application Japan, Apr. 18, 1983, 58-56678[U]
Int. Cl.⁴ B01D *46/10*
U.S. Cl. 55—501 **5 Claims**



1. An air cleaner for mounting on a carburetor comprising:

a bowl-shaped casing having an exit duct for communicating said casing with a carburetor and a set of recess portions and a cover member having conduit means opening into said casing to bring air into said casing;

a filter element having first and second sides and located in said bowl-shaped casing in the path of air passing between

said conduit means and said exit duct for filtering air introduced from outside into said casing;

a holding means for holding said filter element in place, said holding means supporting the first side of said filter element;

a holding plate assembly in said casing having a grid-like portion adjacent the second side of said filter element and including a set of engaging lug portions cooperating with said set of engaging recess portions so as to engage said holding plate assembly to said casing,

one of each of said recess and lug sets of engaging portions located on one side of said holding plate assembly and said casing in adjacent engageable relationship to each other,

another of each of said recess and lug sets of engaging portions located on a side of said holding plate assembly and said casing, in adjacent engagable relationship to each other, opposite said one side of said holding plate assembly and said casing,

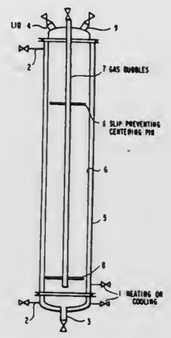
said one of each of said engaging portions on one side of said holding plate assembly and said casing displaced vertically from said another of each of said engaging portions on the opposite side of said holding plate assembly and said casing.

4,552,575

METHOD FOR THE MASS SEPARATION OF A LIQUID MIXTURE THROUGH FRACTIONAL CRYSTALLIZATION

Konrad Stolzenberg, Waltrop; Karl H. Koch, and Rolf Marrett, both of Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Ruetgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 24, 1983, Ser. No. 460,429
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203818
Int. Cl.⁴ B01D *9/02*
U.S. Cl. 62—544 **5 Claims**



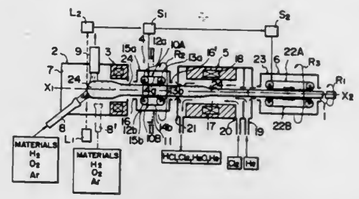
1. A method for the mass separation of a liquid mixture through fractional crystallization comprising precipitating from a liquid phase, a crystal layer on the wall of a filled crytallization zone having at least one heat dissipating surface, wherein the liquid phase is cooled indirectly and the mass transfer occurs from thin boundary layers, and removal of the residual liquid phase and melting down of the crystal layer occur in one or more stages, wherein the thin boundary layers are produced by gas bubbles introduced at the bottom of the crystallization zone without recycling of the liquid phase, said gas bubbles gliding during their ascent as closely as possible along the heat-dissipating surface of said zone.

4,552,576

METHOD OF FABRICATING OPTICAL GLASS BASE MATERIAL AND APPARATUS FOR FABRICATING THE SAME

Ryoichi Hara; Toshiaki Kuroha, both of Ichihara, and Nobuo Inagaki, Ibaraki, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Nippon Telephone & Telegraph Public Corp., both of Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 641,880
Claims priority, application Japan, Aug. 22, 1983, 58-152760
Int. Cl.⁴ C03C *25/02*; C03B *37/03*
U.S. Cl. 65—2 **7 Claims**



1. A method of fabricating an optical glass base material, comprising the steps of:

(a) generating in an input zone, soot-like oxide powders from SiO_2 or GeO_2 raw material from a burning zone (**8**) so as to produce fine glass powders and injecting these powders in a predetermined direction along a rotating longitudinal travel path;

(b) growing with these powders a rod-shaped base material workpiece (**24**) and detecting the formation of said workpiece by means of an emitted beam to produce a control signal;

(c) controlling the forward moving speed of the rod-shaped workpiece in response to the control signal;

(d) passing said rod-shaped workpiece through a first heat treating zone to semi-sinter said workpiece, and simultaneously degassing the workpiece of OH components while reducing its volume; and,

(e) introducing the semi-sintered workpiece to a second heat treating zone while supporting the workpiece so as to degas the workpiece and transparently vitrifying the workpiece while feeding an inert gas into this second heat treating zone.

4,552,577

METHOD OF PRODUCING SHAPED FOAMED-GLASS ARTICLES

Deepak Varshneya, Washington, D.C.; Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Robert K. Mohr, Washington, D.C., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Annapolis, both of, Md.

Filed Apr. 5, 1983, Ser. No. 482,231
Int. Cl.⁴ C03B *19/08*
U.S. Cl. 65—22 **28 Claims**

1. A method of forming shaped foamed-glass articles comprising:

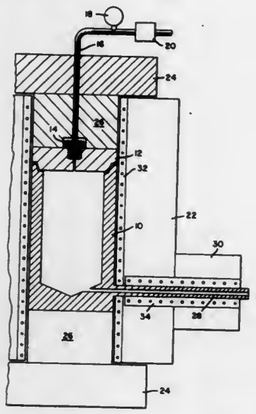
(i) introducing glass particles to a pressure vessel in the presence of water;

(ii) applying a pressure to said pressure vessel sufficient to permit entrapment of water during sintering;

(iii) increasing the temperature of said glass in said pressurized vessel to cause said glass to sinter and entrap water;

(iv) increasing the temperature of said glass to its fining temperature (T_F) of about 800° to 1200° C. in said pressurized vessel for a sufficient time to fine said glass;

(v) reducing the temperature of said glass to its pressure release temperature (T_{PR});



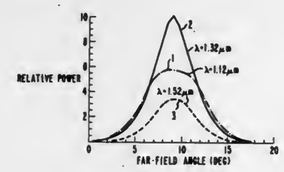
(iv) reducing the pressure on said glass containing water whereby controlled foaming of said glass occurs; and
(viii) cooling to form said shaped foamed-glass article.

4,552,578

OPTICAL FIBER FABRICATION PROCESS COMPRISING DETERMINING MODE FIELD RADIUS AND CUT-OFF WAVELENGTH OF SINGLE MODE OPTICAL FIBERS

William T. Anderson, Lawrenceville, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 16, 1983, Ser. No. 494,891
Int. Cl.⁴ C03B *37/07*
U.S. Cl. 65—29 **4 Claims**



1. Single mode optical fiber manufacturing process comprising a multiplicity of manufacturing steps including forming a first optical fiber preform, drawing first fiber from the first preform and grading of the draw fiber, the process further comprising

determining the mode field radius ω for radiation of wavelength λ_o of a segment of the first fiber, λ_o being a wavelength in the single mode regime of the segment of fiber, the fiber segment having a first and a second end and being of length effective to produce steady-state propagating conditions at the second end for radiation of wavelength λ_o launched into the first end;

comparing ω to a predetermined target value of the mode field radius; and

setting at least one of the manufacturing steps in the manufacture of the first fiber, setting of at least one of the manufacturing steps for the subsequent production of another optical fiber, in accordance with the result of the comparison between ω and the target value;

the mode field radius ω determined by a method comprising

(a) coupling substantially monochromatic measurement radiation of wavelength λ_o into the first end of the fiber segment in a manner effective for launching the fundamental mode LP_{01},

(b) measuring, as a function of a far-field angle θ, the radiation power at a multiplicity of values of θ in at least part of the central lobe of the far-field radiation field of the radiation emitted from the second end of said first fiber fiber end, the set of measured values of radiation power to be referred to as the radiation power distribution,

(c) fitting a Gaussian function $G(\theta)$ to the radiation power distribution, or to a distribution derived from the radiation power distribution, and

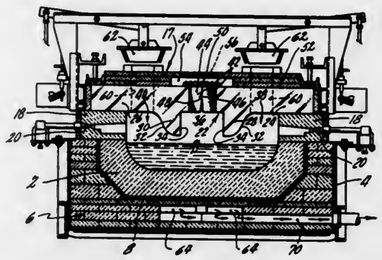
(d) determining ω from the fitted $G(\theta)$.

4,552,579

GLASS FOREHEARTH

John F. Blumenfeld, Simsbury, and Frank Bubon, Windsor, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Dec. 7, 1983, Ser. No. 559,160
Int. Cl.⁴ C03B *5/235*
U.S. Cl. 65—346 **14 Claims**



1. A forehearth for the conveyance of molten glass having at least one cooling zone, said cooling zone including a trough, a roof over said trough, a pair of spaced projections extending downwardly from the roof to define in the space below the roof a central channel over the central portion of the stream of molten glass and side channels over respective side portions of the stream of glass, said roof having at least one area of reduced thickness in the portion over the central channel, an enclosed upper cooling channel extending longitudinally of the forehearth over the area of reduced thickness and having an inlet and an outlet spaced longitudinally from said inlet, and heating means for applying heat to each side portion of the stream of glass.

4,552,580

USE OF N-ACYL SARCOSINATE AND ITS SALTS AS COMPATIBILITY AGENTS FOR PESTICIDE/LIQUID FERTILIZER FORMULATIONS

Michael J. Aldwinckle, Stevenage, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,339
Claims priority, application United Kingdom, Mar. 11, 1982, 8207131
Int. Cl.⁴ A01N *25/30*
U.S. Cl. 71—3 **14 Claims**

1. A combined liquid fertiliser/pesticide mixture comprising
(i) a liquid fertiliser;
(ii) a pesticide;
(iii) a compound of the formula
$RCON(CH_3)CH_2COOX$

wherein
R is C_8–C_{17} alkyl or alkenyl, and
X is hydrogen, and alkali metal, ammonium, C_1–C_4 alkylamine or triethanolamine; and
(iv) a solvent or mixture of solvents for (iii).

4,552,581

METHOD OF INHIBITING NITRIFICATION OF AMMONIUM NITROGEN

John M. Bremner, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 3, 1984, Ser. No. 606,893
Int. Cl.⁴ C05G *3/08*
U.S. Cl. 71—61 **6 Claims**

1. The method of inhibiting nitrification of ammonium nitrogen in a plant growth medium containing a fertilizer providing ammonium nitrogen, comprising having present in said growth medium an effective nitrification inhibiting amount of phenylacetylene.

4,552,582

COTTON DEFOLIANT COMPOSITIONS

Paul J. Kruger, Middlesex, N.J., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.

Continuation-in-part of Ser. No. 412,144, Aug. 27, 1982, abandoned. This application Jul. 28, 1983, Ser. No. 517,424
Int. Cl.⁴ A01N *43/82*
U.S. Cl. 71—73 **10 Claims**

1. A cotton defoliant composition consisting essentially of an effective cotton defoliating mixture of thidiazuron and a thiocyanate compound as a cotton defoliating potentiating agent, the weight ratio of thiocyanate compound to thidiazuron being from about 10:1 to about 640:1 and said thiocyanate compound is selected from the group consisting of ammonium thiocyanate, sodium thiocyanate and potassium thiocyanate.

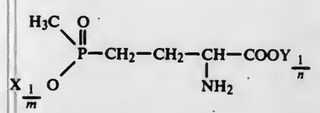
4,552,583

HERBICIDAL COMPOSITIONS

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Division of Ser. No. 68,185, Aug. 20, 1979, Pat. No. 4,382,812, which is a division of Ser. No. 971,636, Dec. 20, 1978, Pat. No. 4,265,654. This application Sep. 21, 1982, Ser. No. 420,929
Claims priority, application Japan, Dec. 28, 1977, 52-157421; Dec. 29, 1977, 52-157422; Dec. 29, 1977, 52-158932; Mar. 30, 1978, 53-36059
Int. Cl.⁴ A01N *57/12*
U.S. Cl. 71—86 **16 Claims**

1. A herbicidal composition for controlling perennial weeds and brush which comprises a component (i) which is a compound of the formula



wherein X and Y are the same or different and each represents a hydrogen atom, a mono- or divalent metal atom, ammonium, a mono-, di- or tri-lower alkylammonium, a mono-, di- or tri-ethanolammonium or a mono-, di- or tri-lower alkenylammonium, and m and n represent valencies of X and Y, respectively
or an acid-addition salt thereof, and a component (ii) which comprises a compound selected from the group consisting of a chlorophenoxy C_1–C_4 aliphatic acid or salt or ester thereof, a chlorobenzoic acid or salt or ester thereof and 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea; in a ratio by weight of said component (i) to said component (ii) of from 1:0.25 to 1:1.

4,552,584

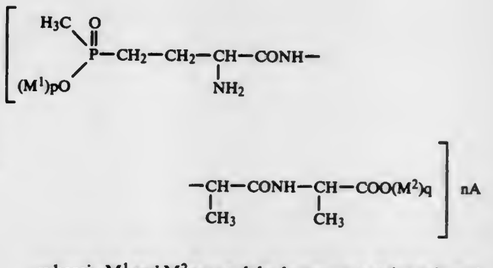
HERBICIDAL COMPOSITION AND HERBICIDAL PROCESSES

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 164,510, Jul. 2, 1980, abandoned, which is a division of Ser. No. 959,838, Nov. 13, 1978, Pat. No. 4,309,208. This application May 18, 1983, Ser. No. 495,819
Claims priority, application Japan, Mar. 9, 1978, 53-25971
Int. Cl.⁴ A01N *51/18, 43/58*
U.S. Cl. 71—86 **5 Claims**

1. A process for severely damaging or killing unwanted herbaceous and bushy plants, which comprises applying to plants susceptible thereto or to the growth medium of said plants a herbicidally effective amount of a composition consisting essentially of:

(i) SF-1293 substance or an SF-1293 substance salt of the formula:



wherein M^1 and M^2 are each hydrogen or a cation selected from the group consisting of sodium, potassium, lithium, copper, magnesium, calcium, zinc, nickel, manganese and ammonium which is unsubstituted or substituted by 1–4 lower alkyl, hydroxy lower alkyl, or lower alkenyl; A is an inorganic or organic acid selected from the group consisting of hydrochloric, sulfuric, hydrobromic, phosphoric, perchloric, nitric, acetic, propionic, citric, tartaric, monochloroacetic, trichloroacetic and trifluoroacetic acids; n is 0, 0.5 or 1; p is the inverse number of the valency of M^1; and q is the inverse number of the valency of M^2, in admixture with

(ii) the choline salt of maleic hydrazide, at a weight ratio of component (i) to component (ii) in the range of 1:0.5 to 1:16, to inhibit the growth of said unwanted plants.

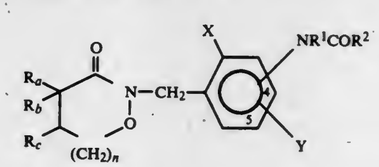
4,552,585

HERBICIDAL 2-(AMINOPHENYL)METHYL DERIVATIVES OF 3-ISOXAZOLIDINONES OR 3-OXAZINONES

Jun H. Chang, Princeton Junction, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Oct. 4, 1984, Ser. No. 657,848
Int. Cl.⁴ A01N *43/72, 43/74;* C07D *261/04, 265/02*
U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



in which n is zero or one; NR^1COR^2 is in one of positions 4 and 5;

R_a is hydrogen or alkyl of 1 to 3 carbon atoms;
R_b is hydrogen, alkyl of 1 to 3 carbon atoms, or methylthio;
R_c is hydrogen, alkyl of 1 to 3 carbon atoms, or phenyl; or R_a, R_b and R_c taken with the carbon atoms at positions 4' and 5' form a benzene ring;
X is hydrogen or halogen;
Y is hydrogen or halogen at the other of positions 4 and 5;
R^1 is hydrogen, or alkyl of 1 to 4 carbon atoms;
R^2 is alkyl of 1 to 6 carbon atoms, haloalkyl of 2 to 4 carbon atoms, cyclopropyl, methylcyclopropyl, benzyl, alkoxy of 1 to 2 carbon atoms, t-butyloxy when R^1 or Y is other than hydrogen, haloalkoxy of 3 or 4 carbon atoms, or $—NR^3R^4$;
R^3 is methyl; and
R^4 is hydrogen, methyl, methoxy or benzyl.

5. A herbicidal composition comprising a herbicidally effective amount of the compound of claim 1 in admixture with an agriculturally acceptable carrier, diluent, or adjuvant.

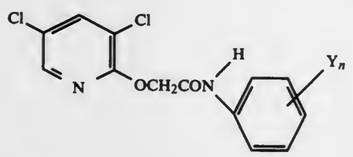
4,552,586

CERTAIN 2-PYRIDYLOXYACETANILIDES AND THEIR USE AS HERBICIDES

Masahiro Aya; Junichi Saito; Kazuomi Yasui; Shinzo Kagabu; Atsumi Kamochi, and Naoko Yamaguchi, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Continuation of Ser. No. 353,987, Mar. 2, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 553,001
Claims priority, application Japan, Mar. 12, 1981, 56-34555
Int. Cl.[4] C07D *213/64;* A01N *43/40*
U.S. Cl. 71—94 **3 Claims**

1. In the cultivation of rice the method of combating weeds which comprises applying to the rice or to a field in which the rice is grown or to be grown a herbicidally effective amount of a 2-pyridyloxyacetanilide of the formula



in which
Y each independently is C_1–C_4-alkyl or CF_3, and
n is 0, 1, 2 or 3.

4,552,587

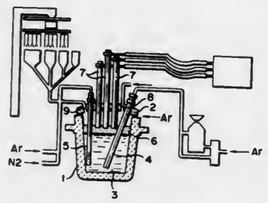
METHOD OF OPERATING LADLE REFINING FURNACE

Hirohisa Nakashima; Yoshimi Komatsu; Masafumi Ikeda, and Tsuneo Kondo, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,567
Claims priority, application Japan, Sep. 28, 1984, 59-145888[U]; Oct. 11, 1984, 59-213093; Oct. 12, 1984, 59-153759[U]; Oct. 12, 1984, 59-153760[U]; Oct. 12, 1984, 59-213332
Int. Cl.[4] C21C *5/52*
U.S. Cl. 75—12 **10 Claims**

1. A method of operating a ladle refining furnace having a ladle covered by a water-cooled cover and at least one bubbling lance that is submerged into, and subsequently withdrawn from, molten metal disposed in said ladle during the refining thereof, each bubbling lance flowing gas into said molten metal during refining and during submersion into and withdrawal from said molten metal, said method comprising the steps of:

(a) adjusting the flow of said gas from said bubbling lance during said submersion and said withdrawal of said lance at a flow rate which is greater than the flow rate of said gas from said bubbling lance during stationary bubbling of the molten metal when said bubbling lance is stationary, and decreasing the flow rate of said gas from said bubbling lance when it is stationary after said submersion in said molten metal; and



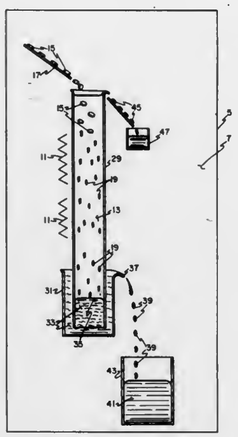
(b) adjusting said flow rate of said gas so that the rate of change in flow rate of said gas is not more than 200 l/min/min when the flow rate of said gas flowing through said bubbling lance is decreased after submersion of said bubbling lance into said molten metal.

4,552,588

MAGNESIUM REDUCTION OF URANIUM FLUORIDE IN MOLTEN SALTS

Guy R. B. Elliott, 133 La Senda Rd, Los Alamos, N. Mex. 87544

Filed Jun. 9, 1983, Ser. No. 502,714
Int. Cl.[4] C22B *60/02*
U.S. Cl. 75—84.4 **10 Claims**



1. A method of reducing uranium fluoride to uranium by reaction with magnesium at near-atmospheric pressure comprising:

(a) providing a means for heating and containing molten salt,
(b) providing a substantially inert atmosphere within the said means for heating and containing molten salt,
(c) emplacing molten salt in the said means for heating and containing molten salt, thereby creating a molten-salt region,
(d) introducing uranium fluoride and magnesium into the said molten-salt region,
(e) allowing the said reaction of uranium fluoride with magnesium to take place,
(f) allowing the said uranium produced by the said reaction of uranium fluoride with magnesium to settle from the said molten salt, and
(g) independently removing the said uranium and the magnesium-fluoride byproduct of the said reaction of uranium fluoride with magnesium.

10. An apparatus for reacting uranium fluoride with magnesium to produce uranium comprising:

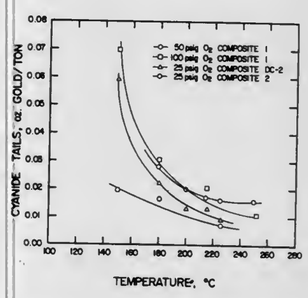
(a) a first containment means with at least one first entry means and, at lower elevation, at least one first discharge means,
(b) molten uranium filling the said first containment means to the discharge elevation of the said first discharge means,
(c) a second containment means with at least one second entry means and, at lower elevation, at least one second discharge means, the said second discharge means being positioned within the said molten uranium and at an elevation lower than the elevation of the said first discharge means, and the said second entry means being positioned at a higher elevation than the said molten uranium,
(d) molten salt bath at least partially filling the said second containment means and floating upon the said molten uranium,
(e) a means for introducing at least uranium fluoride and magnesium through the said second entry means and into the said molten salt,
(f) a means for collecting molten uranium which has formed in the said molten salt, has moved from the said molten salt, and has passed into the said molten uranium, thereby passing through the said second discharge means and through the said first entry means,
(g) a means for discharging at least magnesium fluoride separate from the said first discharge means, and
(h) a means for providing an inert atmosphere in regions where the reactants, uranium fluoride and magnesium, and the uranium product of the reaction could be attacked by a reactive atmosphere.

4,552,589

PROCESS FOR THE RECOVERY OF GOLD FROM REFRACTORY ORES BY PRESSURE OXIDATION

Peter G. Mason, Scarborough, Canada; Frank D. Wicks, Stansbury Park, Calif., and John C. Gathje, Arvada, Colo., assignors to Getty Oil Company, Salt Lake City, Utah

Filed Jan. 27, 1984, Ser. No. 574,667
Int. Cl.[4] C22B *11/08*
U.S. Cl. 75—105 **27 Claims**



21. A process for recovering gold, said process comprising the steps of:

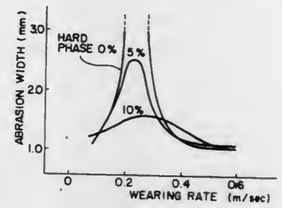
forming an ore slurry by grinding a refractory gold bearing ore to form a slurry which is mixed with a diluent stream;
introducing the slurry to at least one autoclave which is maintained at an autoclave temperature in excess of about 150° C. and an autoclave oxygen partial pressure maintained in excess of about 10 psia;
agitating the slurry to oxidize substances which cause the ore to be refractory to form an oxidized slurry;
cooling the oxidized slurry to a temperature less than about 150° C.;
passing the oxidized slurry to a plurality of stages in which the oxidized slurry is contacted with a cyanide and activated charcoal, the activated charcoal flowing in countercurrent fashion with the oxidized slurry whereby gold is transferred to the activated charcoal;
separating the activated charcoal from the oxidized slurry;
collecting a tailings stream from the oxidized slurry;
treating a water portion of the tailings stream to destroy any free cyanide and form a treated reclaimed water stream; and
recycling the treated reclaimed water stream to a step of the process upstream from the step of passing the oxidized slurry to a plurality of stages.

4,552,590

FERRO-SINTERED ALLOYS

Tohru Nakata, Matsudo; Hiroyuki Endo, Abiko; Masatoshi Harada; Tadao Hayasaka, both of Kashiwa, and Osamu Miyamoto, Matsudo, all of Japan, assignors to Hitachi Powdered Metals Co. Ltd., Japan

Division of Ser. No. 237,906, Feb. 25, 1981, Pat. No. 4,422,875. This application Aug. 12, 1983, Ser. No. 522,663
Claims priority, application Japan, Apr. 25, 1980, 55-54316; May 9, 1980, 55-60609
Int. Cl.[4] B22F *5/00;* C22C *38/00*
U.S. Cl. 75—246 **2 Claims**



1. A ferro-sintered alloy having wear resistance at elevated temperatures, comprising a matrix in which 25 to 75 weight % of an alloying base A of the following composition is irregularly dispersed with 75 to 25 weight % of an alloying base B of the following composition, said matrix having 3 to 15 weight % of at least one of the following hard phases C and D dispersed therein:

Base A			Base B		
Cr	2~4%	(by weight)	Co	5.5~7.5%	(by weight)
Mo	0.2~0.4%	(by weight)	Ni	0.5~3%	(by weight)
V	0.2~0.4%	(by weight)	Mo	0.5~3%	(by weight)
C	0.6~1.2%	(by weight)	C	0.6~1.2%	(by weight)
Fe	the remainder		Fe	the remainder	

Hard phase C:
45~60% Co—33~36% Mo—and remainder Si Alloy (by weight)
Hard phase D:
45~60% Fe—33~36% Mo—and remainder Si alloy (by weight)

4,552,591

OIL FIELD BIOCIDE COMPOSITION

Scott W. Millar, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 15, 1984, Ser. No. 610,452
Int. Cl.[4] C09D *5/14*
U.S. Cl. 106—18.33 **5 Claims**

1. A method of inhibiting bacterial growth in oil field fluids comprising adding thereto an effective bacterial inhibiting amount of a biocide consisting essentially of a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one, the weight ratio of the former to the latter being from about 94 percent to about 64 percent, adsorbed on a solid, particulate adsorbent.

4,552,592

PROCESS FOR PREPARING PRINTING INK BINDERS, AND THEIR USE IN PRINTING INKS

Albert Rudolphy, Wiesbaden, and Gerhard Werner, Glashütten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 377,910, May 13, 1982, abandoned. This application Mar. 29, 1984, Ser. No. 594,700

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127719

The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.

Int. Cl.⁴ C09D *11/08*

U.S. Cl. 106—30 **9 Claims**

1. A process for preparing printing ink binders consisting essentially of of (a) a natural resin acid, (b) a hydrocarbon polymer which is derived from polymerizable hydrocarbons having isolated C_5 rings, (c) a α,β-ethylenically unsaturated carboxylic acid unit, and (d), a metal compound selected from the groups consisting of at least one calcium compound and a combination thereof with a compound of at least one other metal of group II of the periodic system, which comprises reacting in a first step (A) component (a) with a component (b) having a bromine number of 80 to 200 and a component (c), the natural resin (a) and the sum of components (b) and (c) being in a weight ratio of 1:0.7 to 1, B) reacting the product obtained in a second step in in the melt with component (d) such that the meta content, relative to the total amount of components (a) to (c) is in the range of from 1.5 to 6% by weight and in such a way that the acid number is reduced by at least one third of its value with the provisio that at most 70% of the COOH-groups of the reaction product are converted into salts and (C) reacting the product obtained in a third step in the melt with acetic acid to convert the metal compounds not consumed, via acetates into salts of the resin.

4,552,593

PREPARATION OF EFFECT PIGMENTS COATED WITH METAL OXIDES

Werner Ostertag, Gruenstadt, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,274

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237264

Int. Cl.⁴ C04B *31/26, 31/00;* **C08K** *7/00*

U.S. Cl. 106—291 **18 Claims**

9. A process for the preparation of an effect pigment wherein (i) as the pigment substrate, mica flakes, of which from 10 to 90% by weight have a longest particle dimension of from 60 to 400 μm and the remainder have a longest dimension of from 3 to 30 μm, are fluidized in a fluidized bed, (ii) the fluidized particles are simultaneously treated at from 200° to 500° with one or more metal chlorides and steam in the gas phase, where the particles are coated by hydrolysis of the metal chlorides and (iii) after coating, that fraction which has a longest particle dimension of from 3 to 30 μm is separated off as the effect pigment.

4,552,594

METHOD FOR REMOVING PIPE COATINGS

Dirk F. van Voskuilen, and Frans van Voskuilen, both of No. 12, Stationsweg, 3931 ES Woudenberg, Netherlands

Filed Sep. 6, 1983, Ser. No. 529,752

Claims priority, application Netherlands, Sep. 8, 1982, 8203501

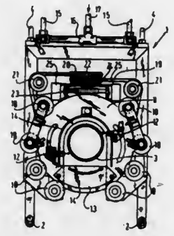
Int. Cl.⁴ B08B *3/02, 9/02*

U.S. Cl. 134—34 **4 Claims**

1. A method of removing bituminous or other coatings from an outer pipe surface having a circumferential and longtudinal direction comprising the following steps:

directing one or more powerful water jets against said outer pipe surface with a pressure of between 300 and 600 bars;

directing said water jets against said outer pipe surface at an acute impact angle relative to said circumferential direction of the pipe; and



moving each of said water jets in a zigzag path along said outer pipe surface;

said zigzag path having the longitudinal direction of the pipe as its main direction, with paths of adjacent water jets being closely spaced in said circumferential direction.

4,552,595

METHOD OF MANUFACTURING A SEMICONDUCTOR SUBSTRATE HAVING DIELECTRIC REGIONS

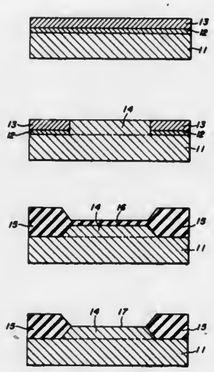
Hiroshi Hoga, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,094

Claims priority, application Japan, May 13, 1983, 58-82502

Int. Cl.⁴ H07L *21/263, 21/225*

U.S. Cl. 148—1.5 **9 Claims**



1. A method of manufacturing a semiconductor substrate having dielectric isolation regions comprising steps of forming an amorphous silicon layer on the surface of a monocrystalline silicon substrate by implanting ions in the surface of said monocrystalline substrate to produce a first layer of amorphous silicon on said substrate, chemically vapor depositing a second amorphous layer of silicon onto said first layer, annealing a selected zone of said amorphous silicon layers to form a crystallized region intended as an active region, subjecting the resulting structure to a thermal oxidation process to form said dielectric isolation regions, and removing an oxide coating formed on the surface of said crystallized region.

4,552,596

GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET WITH IMPROVED WATT LOSS

Tadashi Ichiyama, Sagamihara; Shigehiro Yamaguchi, Fujisawa; Tohru Iuchi, Kawasaki, and Katsuro Kuroki, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

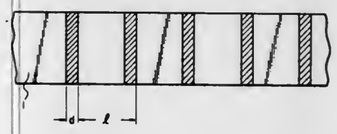
Continuation of Ser. No. 214,035, Dec. 8, 1980, abandoned, which is a division of Ser. No. 58,757, Jul. 19, 1979, Pat. No. 4,293,350. This application Aug. 17, 1982, Ser. No. 408,737

Claims priority, application Japan, Jul. 26, 1980, 55-91217

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.⁴ C22C *38/02*

U.S. Cl. 148—31.5 **26 Claims**



1. A grain-oriented silicon steel electrical sheet with a reduced watt loss wherein said sheet has been cold rolled to a final thickness and finally high temperature annealed, said steel sheet having:

a (110) [001] structure and coarse grains;

a plurality of spaced apart lines of laser beam irradiation extending across said sheet and thereby extending across said coarse grains with said lines of laser beam irradiation being produced by irradiating said sheet with a laser beam after final high temperature annealing;

wherein

said lines of laser beam irradiation are oriented across the rolling direction of said sheet; and

the surface of said sheet is not damaged by said laser beam irradiation and does not have raised edges adjacent said lines of laser beam irradiation caused by said irradiation with said laser beam; and

with said sheet further having:

subdivided magnetic domains between each of two lines of laser beam irradiation wherein said subdivided magnetic domains are formed by said laser beam irradiation.

14. A grain-orientd silicon steel electrical sheet with a reduced watt loss wherein said steel sheet has been cold rolled to a final thickness and finally high temperature annealed, said steel sheet having:

a (110) [001] structure and coarse grains; insulating film on the surface of said sheet;

a plurality of spaced-apart lines of laser beam irradiation extending across said insulating film and across said sheet and thereby extending across said coarse grains with said lines of laser beam irradiation being produced by irradiating said sheet having said insulating film on the surface thereof with a laser beam after final high temperature annealing and after application of insulating film on the surface of said sheet; wherein

said lines of laser beam irradiation are oriented across the rolling direction of said sheet; and

said surface of said silicon steel sheet is not damaged by said laser beam irradiation and said silicon steel sheet does not have raised edges adjacent said lines of laser beam irradiation caused by said irradiation with said laser beam; and

with said sheet further having:

subdivided magnetic domains between each of two lines of laser beam irradiation wherein said subdivided magnetic domains are formed by said laser beam irradiation.

4,552,597

SOFT COMPOSITE EXPLOSIVES AND PROCESS FOR MAKING SAME

M. Taylor Abegg, Salt Lake City; John A. Peterson, Brigham City, both of Utah; Harvey A. Jessop, deceased, late of Lehi, Utah, and by Ormond F. Lavery, personal representative, Sandy, Utah, assignors to Megabar Explosives Corporation, Ogden, Utah

Filed Aug. 17, 1984, Ser. No. 641,687

Int. Cl.⁴ C06B *45/00*

U.S. Cl. 149—2 **27 Claims**

1. An essentially anhydrous soft composite explosive composition comprising a melt-in-fuel emulsion in which the discontinuous phase is a eutectic mixture comprised of ammonium nitrate and at least one soluble compound with at least one other oxidizer salt, and in which the continuous phase is a mixture of at least one emulsifier and at least one fuel, comprising less than 2.5% by weight of the explosive composition.

4,552,598

ETHYLENEDIAMINE SALT OF 5-NITROTETRAZOLE AND PREPARATION

Kien-yin Lee, and Michael D. Coburn, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 17, 1984, Ser. No. 611,557

Int. Cl.⁴ C06B *31/32*

U.S. Cl. 149—47 **38 Claims**

1. A process for preparing the ethylenediamine salt of 5-nitrotetrazole, which comprises the steps of:

a. dissolving two equivalents of ammonium 5-nitrotetrazole in methanol forming thereby a first solution;

b. adding one equivalent of ethylenediamine to said first solution, forming thereby a second solution;

c. allowing sufficient interaction time to permit said ammonium 5-nitrotetrazole and said ethylenediamine in said second solution to react to substantial completion; and

d. removing said methanol.

4,552,599

PROCESS FOR PRODUCING INSULATED RECTANGULAR WIRE

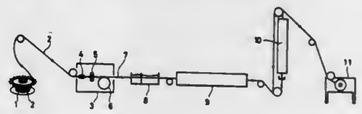
Shigeo Masuda, and Morihiko Katsuda, both of Aichi, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed May 8, 1984, Ser. No. 608,287

Claims priority, application Japan, May 11, 1983, 58-82206

Int. Cl.⁴ H01B *13/06*

U.S. Cl. 156—50 **3 Claims**



1. A process for producing insulated rectangular wire, comprising the steps of:

drawing a round wire through a die in a tandem-drawing device;

electrolytically cleaning the drawn wire;

applying an insulating coating onto the cleaned surface;

baking the insulating coating;

subjecting the insulated wire to at least one cycle of rolling; and

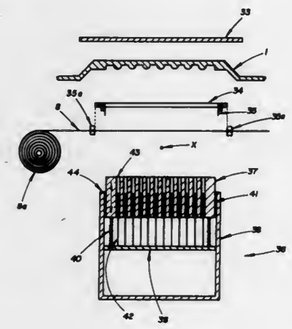
wherein said step of drawing said round wire comprises drawing down said round wire by means of a single die and a capstan to thereby remove any surface defects in said conductor having a size of 3 μm or greater, said capstan being made of a material softer than said conductor.

4,552,600

METHOD AND APPARATUS FOR MANUFACTURING A PURGE TRAP TRAY

Stanislaus J. Laiewski, Reading; Thomas A. Hessen, Ephrata; Thomas R. Hardy, Lebannon, and Allie F. Gilvin, Sinking Spring, all of Pa., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Nov. 23, 1982, Ser. No. 443,992
Int. Cl.⁴ B29C *27/06, 27/08;* **B32B** *31/04*
U.S. Cl. 156—73.1 **16 Claims**



1. A method for manufacturing a tray having a purge liquid reservoir comprising:
providing a support portion comprising a shoulder area and standoff means raised from a sunken reservoir area wherein said shoulder area completely surrounds said reservoir area;
removing a sheet of liquid impermeable thermoplastic material from a larger sheet of said material, said removed sheet having a border area; and
simultaneously perforating said removed sheet while adhering said border area to said shoulder area in a liquid tight manner.

11. An apparatus for forming a tray having a purge liquid reservoir comprising:
means adapted to separate a portion of a sheet of thermoplastic material;
resiliently mounted transfer block means comprising perforation pin channels and vacuum ports, said block means being adapted to transfer said separated portion to a position where a border area of said separated portion is in substantial contact with a shoulder area of a tray support portion;
perforation pin means comprising tips, said perforation pin means being mounted on a crossplate and inserted into said perforation pin channels, whereby, upon depression of said resiliently mounted transfer block means, the tips of said perforation pin means exit said perforation pin channels; and
means adapted to adhere aaid border area to said shoulder area.

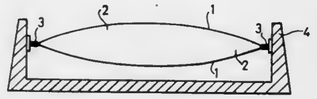
4,552,601

METHOD OF FOAMING A FOAMABLE COMPOSITION IN A SEALED SACK

Yutaka Hirano, and Hiroki Kawai, both of Tokyo, Japan, assignors to Sumitomo Corporation and Nikken Sekkei Ltd., both of Osaka, Japan

Filed Mar. 24, 1983, Ser. No. 478,700
Claims priority, application Japan, Mar. 24, 1982, 57-46883; Mar. 24, 1982, 57-46884
Int. Cl.⁴ C09J *5/02;* **B32B** *5/20, 31/14*
U.S. Cl. 156—79 **6 Claims**

1. A method of manufacturing a construction material comprising the steps of:
forming a hermetically sealed sack by disposing two thin flat sheets of flexible material in overlying relationship to one another and sealing together the edges of said thin sheets about the peripheries thereof;
providing a foamable composition in said sealed sack;
fixedly supporting said sack horizontally in suspension by said edges and completely about said peripheries thereof for the portions of said sheets between said sealed edges to be unsupported and freely deformable and the said sealed edges to be fixedly secured and immovably retained in place in their supported contour position; and



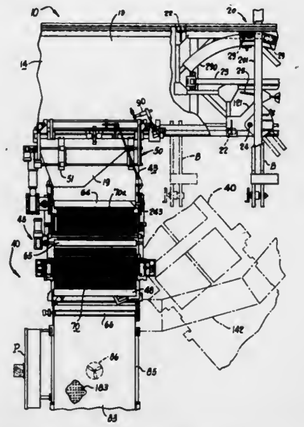
causing said foamable composition to be foamed and solidified while said sack is maintained so supported in suspension, whereby said unsupported portions of said thin sheets of said hermetically sealed sack are elastically deformed, without any external restraint thereof, arcuately outwardly relative to one another transverse to the plane of said supported sealed edges and into shallow spherically dished from by the pressure produced by the foaming of said foamable composition while the said sealed edges are maintained flat and in their said contour position in the said plane by the said fixedly supporting thereof.

4,552,602

HIGH—SPEED SPLICING SYSTEM FOR PREPARING PLY STOCK

Clifford A. Landsness, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 4, 1984, Ser. No. 616,863
Int. Cl.⁴ B65H *69/06*
U.S. Cl. 156—157 **8 Claims**



1. In a process for preparing ply stock in which a continuous sheet of rubber-covered tire cord fabric having evenly spaced longitudinal cords is fed by first conveyor means to an angularly adjustable bias cutter and periodically cut across its width to form panels of a predetermined size and parallogram shape which are transferred from said first conveyor means to a second conveyor means and automatically spliced together at their uncut side portions by a splicer to form a continuous strip of ply stock which is fed by said second conveyor means in a direction parallel to the cut edges of the panels, the improvement which comprises,

(a) advancing each bias-cut panel from the cutter to a stationary transfer position on said first conveyor means in alignment with said continuous strip, wherein the side portion of the panel is adjacent the trailing side portion of a similar panel held in a stationary splicing position at the end of said strip during such advance,
(b) splicing said side portions and initiating operation of the cutter while the two panels are in said stationary positions,
(c) during operation of the cutter, completing the cycle by advancing said continuous strip a short distance in a direction transverse to the longitudinal tire cords to remove the spliced panel from said first conveyor means and to transfer the panel to said stationary splicing position; and
(d) continually repeating the cycle.

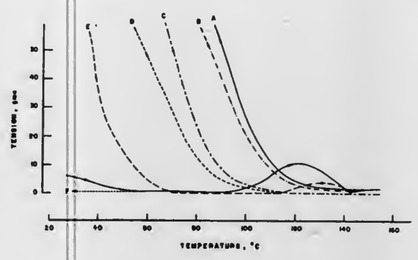
7. In an apparatus for preparing carcass ply stock having first conveyor means for supporting and feeding a continuous sheet of rubber-covered tire cord fabric of uniform width having regularly spaced longitudinal cords, an angularly adjustable bias cutter having means for making parallel cuts in the sheet to sever all of the cords while separating the sheet into panels of a predetermined size and a parallelogram shape, second conveyor means for receiving the cut panels including a lap splicer with means for joining the uncut side portions of said panels to form a continuous strip of ply stock on said second conveyor means, the improvement wherein:
(a) said lap splicer is located at the side of said first conveyor means to join the uncut side of the cut panel on said first conveyor means to the continuous ply stock formed by spliced panels on said second conveyor means, whereby each spliced panel is pulled transversely off the first conveyor means by periodic advancement of said ply stock,
(b) means are provided for positioning the last spliced panel with its trailing side edge portion overlapping the side edge portion of a previously cut panel resting in a transfer position on said first conveyor means,
(c) a pressure bar is mounted on the splicer to move downwardly against said overlapped side edge portions to provide a lap splice,
(d) actuating means are provided to move the pressure bar upwardly and downwardly in timed relation to operation of the cutter, and
(e) bar means are provided for engaging said trailing side edge portion to lift the same during a portion of each cycle to a position out the path of movement of said previously cut panel.

4,552,603

METHOD FOR MAKING BICOMPONENT FIBERS

Robert D. Harris, Jr.; James P. Parker, and Charles L. King, all of Asheville, N.C., assignors to Akzona Incorporated, Enka, N.C.

Division of Ser. No. 279,125, Jun. 30, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 423,943
Int. Cl.⁴ D01D *5/22*
U.S. Cl. 156—167 **7 Claims**



1. A method for producing a heterofilament of the type comprising a latently adhesive component for forming interfilamentary bonds upon the application of heat and subsequent cooling, and a fiber component consisting of polyester, said heterfilament being characterized by a thermomechanical response wherein, upon the application of heat sufficient to melt the latently adhesive component and subsequent cooling, shrinkage force greater than about 0.01 g/denier appears in said fiber component only after the resolidification of said latently adhesive component; said method comprising the sequential steps of:
(a) spinning said fiber; and
(b) subjecting said fiber to a thermal conditioning treatment wherein said fiber is heated to a preselected temperature below the softening point of the lower melting component for at least a preselected time in order to bring about in said fiber the above described thermo-mechanical response.

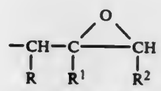
4,552,604

BONDING METHOD EMPLOYING FILM ADHESIVES

George E. Green, Stapleford, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 871,052, Jan. 20, 1978, abandoned. This application May 27, 1980, Ser. No. 153,390
Claims priority, application United Kingdom, Feb. 2, 1977, 04170/77
The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.
Int. Cl.⁴ B29C *19/00*
U.S. Cl. 156—246 **9 Claims**

1. A method for bonding together two surfaces selected from the group consisting of metals, ceramics, and wood, which comprises
(i) applying to a carrier or strippable backing sheet, in the absence of a substance which gives rise to a substantial degree of photoinduced polymerisation through consumption of epoxide groups, a layer of (liquid) composition (consisting of)
an epoxide resin containing at least one group of the formula



directly attached to an atom of oxygen, nitrogen or sulfur, where either R and R^2 each represent a hydrogen atom in which case R^1 denotes a hydrogen atom or a methyl group, or R and R^2 together represent $—CH_2CH_2—$, in which case R^1 denotes a hydrogen atom,
a photopolymerisable compound which is an acrylic ester containing at least one group of the formula

$$CH_2=C(R^3)COO—$$

where R^3 is a hydrogen, chlorine or bromine atom, or a C_1–C_4 alkyl group,
and a heat-activated curing agent for epoxide resins selected from the group consisting of polycarboxylic acid anhydride, dicyandiamide, an imidazole, a latent boron difluoride chelate, an aromatic polyamine and a complex of an amine with boron trifluoride or with boron trichloride,
(ii) exposing said layer to actinic radiation until the composition solidifies to form an essentially solid, continuous, self-supporting adhesive film due to photopolymerisation of the said photopolymerisable compound while the epoxide resin remains substantially in the thermosettable state,
(iii) removing the said solid film from the carrier or strippable backing sheet,
(iv) sandwiching the said solid film between, and in contact with, the two surfaces, the said solid film, and
(v) heating the assembly to cure the epoxide resin.

4,552,605

UTILIZING PARTICULATE ADHESIVE FOR LAMINATING PLASTIC FILM TO THE SURFACE OF METAL

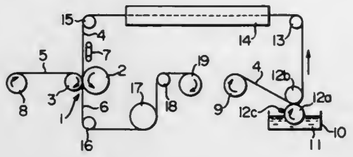
Senji Itoh, Ayase; Toshifumi Tanabashi, Yokohama, and Kazuhisa Ishibashi, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Continuation of Ser. No. 57,671, Jul. 16, 1979, abandoned. This application Aug. 12, 1981, Ser. No. 292,186

Claims priority, application Japan, Jul. 17, 1978, 53-86044; May 7, 1979, 54-54707

Int. Cl.⁴ B32B *31/06, 31/08, 31/12, 31/28*

U.S. Cl. 156—273.3 **6 Claims**



1. In a method for producing laminated packaging sheet materials which comprises continuously feeding a metal foil to a fixed traveling path, causing said foil to travel along said path, continuously applying an adhesive to one surface of the traveling foil at a definite point along said path, continuously feeding a synthetic resin film to the surface of the adhesive-coated foil at a point downstream from said point at which said adhesive is applied to said foil, and adhering said film to said foil via said adhesive, the improvement which comprises

coating an adhesive synthetic resin powder having a particle diameter of 0.1 to 100 microns, either as such or as a dispersion in water or in an organic liquid having a boiling point of 50° to 112° C., on the surface of a metal foil having a thickness of 5–30 microns, the amount of said resin powder adhered to said foil surface being 0.1 to 10 g/m^2,

heating the resin coating by high frequency induction with a high frequency induction heating coil arranged adjacent said path opposite the traveling foil but not being in contact with said foil, to melt said resin powder, thereby to bond said resin powder to said foil,

superposing said synthetic resin film on the resulting molten coating,

heating the resultant assembly under pressure, and

cooling the heated assembly.

4,552,606

FLOTATION METHOD FOR ORIENTING CHIPS IN THE MANUFACTURE OF SURFACE COVERING

Timothy D. Colyer, Columbia, and Darryl L. Sensenig, Mountville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 7, 1983, Ser. No. 473,016

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 156—280 **2 Claims**

1. A method for forming a surface covering having a tightly packed single layer of decorative chips on the surface thereof, comprising:

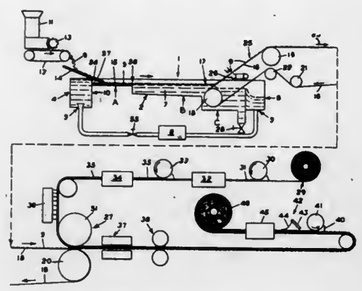
(a) providing a body of liquid of lesser density than that of the decorative chips and flowing from a first location to a second location;

(b) providing a plurality of decorative chips having a size-to-mass ratio such that they are capable of floating on the surface of said body of liquid;

(c) feeding said chips onto the surface of said liquid at said first location at a rate and in amounts predetermined to result in a spaced-apart dispersion of the chips thereon;

(d) reducing the rate of flow of said liquid at said second location, thereby causing said chips to form a tightly-packed single-chip-thickness layer on the surface of the liquid;

(e) removing said tightly packed layer of chips from said liquid at said second location without causing any substantial change in the spacing of the chips with respect to each other, said tightly packed layer of chips is removed from the liquid at said second location by passing a porous support member upward at an angle from below the surface thereof through the chip-layer-innerface, wherein excess water is removed from the support member and from around the chips prior to their securement to the substrate;



(f) applying and securing said layer of chips to a substrate;

(g) applying a transparent resinous wear layer to cover said chips and extend into any spaces therebetween; and

(h) applying heat to fuse all resinous material.

4,552,607

METHOD OF MAKING ELECTRICALLY CONDUCTIVE THIN EPOXY BOND

Gregg W. Frey, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Jun. 4, 1984, Ser. No. 616,630

Int. Cl.⁴ C09J *3/02*

U.S. Cl. 156—330 **3 Claims**

1. A method of providing a thin, electrically conductive bond between two conductive substrates comprising the step of bonding the substrates together using a non-conductive epoxy to which uniformly sized, electrically conductive microspheres have been added, whereby the bond thus formed will be made by the non-conductive epoxy, the bond thickness will corrrespond to the diameter of said microspheres, and electrical conductivity between said substrates will be provided by the conductive path formed by said microspheres.

4,552,608

SYSTEM FOR COMPUTER CONTROLLED LABELING MACHINE

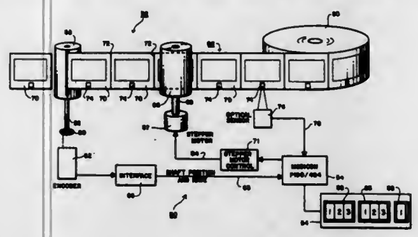
Wolfgang Hoffmann, Modesto, and Michael West, Turlock, both of Calif., assignors to B & H Manufacturing Company, Ceres, Calif.

Filed Sep. 16, 1983, Ser. No. 532,783

Int. Cl.⁴ B65H *23/18*

U.S. Cl. 156—351 **2 Claims**

1. In combination, a labelling machine including a master shaft and a slave shaft, means for sensing position of said master shaft, a data processing system including first input means connected to receive data from said sensing means, processing means connected to receive data from said first input means, and output means connected to receive results of operations performed by said processing means on the data, said output means being connected to supply control signals for operation of said slave shaft relative to said master shaft, an optical sensor for a registration mark for each label on a sheet of labels, said data processing system including a second input means, said optical sensor being connected to said second input means, a means for entering a length of labels on the sheet to be fed through said labelling machine, said data processing system including a third input means, said length entering means being connected to said third input means, said slave shaft comprising a drive roller positioned to advance the sheet of labels in said labelling machine, a stepping motor connected between said slave shaft drive roller and said output means of said digital data processing means, said processing means being responsive to inputs from said master shaft position sensing means, said registration mark optical sensor and said length entering means for providing actuating signals from the master shaft position, sensed registration mark and length inputs to said stepping motor to maintain alignment of each label in the sheet of labels relative to position of the master shaft as the sheet of labels is advanced in said labelling machine.



4,552,609

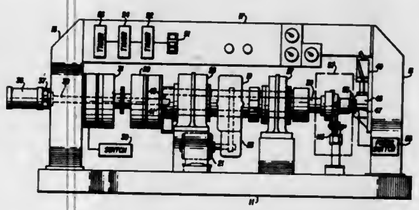
METHOD AND APPARATUS FOR FRICTION WELDING

Howard M. Larsen, Daytona Beach, Fla., assignor to Homac Mfg. Company, Ormond Beach, Fla.

Filed Sep. 24, 1984, Ser. No. 653,791

Int. Cl.⁴ B23K *27/08*

U.S. Cl. 156—358 **7 Claims**



1. A continuous drive friction welder including apparatus for orienting a rotatable element relative to a fixed element during the welding process comprising

mounting means for supporting said fixed element;

support means for holding said rotatable element; said support means comprising;

a drive hub;

a driven hub coaxial with and driven by said drive hub;

an escapement hub coaxial with and extending between said driven hub and said drive hub;

a linkage between said driven hub and said drive hub so as to drive said driven hub; and

a cam on said escapement hub for forcing said linkage into said escapement hub whereby said drive wheel ceases to impart motion to said driven wheel;

means for rotating said support means;

means for axially advancing said support means so that said rotatable element contacts said fixed element under a predetermined pressure;

means for disengaging said rotatable element support means from said rotating means after a predetermined number of rotations so that said rotatable element and associated support means continue to rotate into a coast down welding stage;

means for stopping said rotatable element after a predetermined period of time subsequent to said predetermined number of rotations; and

means for actuating said axial advancing means at the end of said predetermined period of time so as to apply a final forge pressure for completing the welding process whereby the rotational position of said rotatable element is oriented relative to said fixed element when weldment is completed.

4,552,610

AUTOMATIC LABEL WINDING AND CHARGING DEVICE FOR PRINTERS

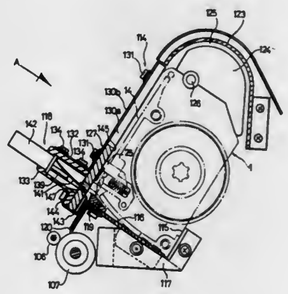
Yo Sato, Tokyo; Tadao Kashiwaba, and Akeshi Odajima, both of Iwate, all of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed May 3, 1984, Ser. No. 606,698

Claims priority, application Japan, May 28, 1983, 58-79738

Int. Cl.⁴ B65C *11/00*

U.S. Cl. 156—384 **8 Claims**



1. A portable label applying system including:

a printer for producing a printed label web by printing a plurality of labels which are adhered in longitudinal series to a web of backing paper;

a take-up cassette adapted to be removably mounted in said printer for receiving the printed label web and also adapted to be removably mounted in a dispenser for removing printed labels from said cassette and applying these printed labels to commodities, said take-up cassette having a first means for generating pressure to hold the backing paper;

an automatic label winding and charging means for use with said printer, comprising:

a cassette guide for guiding said take-up cassette when the latter is to be mounted in said printer,

pressure releasing means for releasing the pressure of the first means thereby releasing the backing-paper,

label guide means for guiding the printed label web to said cassette, and

cutter means for cutting said printed label web;

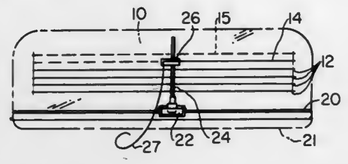
said pressure releasing means including first and second doors biased to open positions in which they allow said pressure generated by said first means to hold said backing paper, and said doors being operable to closed positions in which they abut the first means to release the pressure of the same while forming a clear passage for said label web.

4,552,611

CONDUCTOR APPLYING APPARATUS FOR REAR WINDOW DEFROSTERS

Normand Dery, Sherbrooke, Canada, and Jean-Louis Boudreau, Barton, Vt., assignors to Astrolab Inc., St.-Elie d'oxford, Canada

Filed Aug. 26, 1983, Ser. No. 526,791
Int. Cl.⁴ B32B *31/04;* B44C *7/00*
U.S. Cl. 156—391 **11 Claims**



1. A hand-held flat conductor applying apparatus for applying to the receiving surface of a curved glass pane, namely the rear window in a motor vehicle or the like, a plurality of equidistant, essentially straight, lengths of pre-glued flat conductor defining the heating lines of a rear window resistive defroster, comprising, in combination, a confining guide edge temporarily affixed to and following the curvature of said receiving surface for setting a datum line for said heating lines, said confining guide edge being an elongated thin strip of suitably flexible material having a T-shaped flange defining a track and extending along said elongated thin strip and being perpendicular thereto, a conductor laying head through which passes said length of flat conductor being applied to said receiving surface, a translation carrier engaging said confining guide edge to enable translation of said translation carrier along said confining guide edge, a rigid bar mounting said conductor laying head to said translation carrier, means on said rigid bar supporting said conductor laying head at any one of a plurality of regularly spaced apart points along said rigid bar thereby setting the desired spacing of said heating lines in said rear window resistive defroster, and connecting means detachably coupling said translation carrier to said confining guide edge and promoting smooth translatory motion of said translation carrier and of said rigid bar thereon along said confining guide edge to ensure parallelism of said heating lines and wherein said connecting means comprises a set of small rollers on said translation carrier riding along opposite sides of said track for smooth translation along said confining guide edge and for detachably connecting said translation carrier to said track.

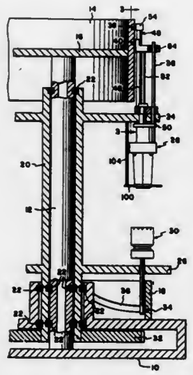
4,552,612

INERTIAL SPIN WELDING OF THERMOPLASTIC AND THERMOPLASTIC COATED CONTAINER PARTS

Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 415,126, Sep. 7, 1982, Pat. No. 4,386,999, which is a continuation-in-part of Ser. No. 234,344, Feb. 3, 1981, abandoned. This application Feb. 9, 1983, Ser. No. 465,135
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.⁴ B23K *27/00;* B29C *27/08;* B29D *23/03*
U.S. Cl. 156—494 **9 Claims**

1. Spin welding apparatus comprising upper and lower mandrel means mounted for vertical movement toward and away from each other along a common vertical axis, said upper mandrel means being adapted to releasably support an open ended cylindrical container body and said lower mandrel means being adapted to releasably support a container bottom of thermoplastic material having an axially upwardly projecting peripheral flange insertable into said container body with a press fit, first drive means for driving at least one of said mandrel means in rotation about said vertical axis relative to the other mandrel means, and second drive means for driving said mandrel means in movement along said vertical axis to seat said container bottom within said container body while said mandrel means are rotating relative to each other to insert and frictionally weld said container bottom in said container body; with radially expansible and contactable body engaging means mounted on the lower end of said upper mandrel means in



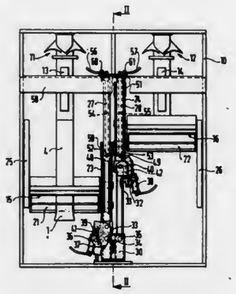
symmetrically disposed relationship about said vertical axis, said engaging means being normally disposed in a contracted position wherein said engaging means may be axially inserted into a container body, and expanding means for radially expanding said engaging means to an expanded position wherein the radially outer surfaces of said expanding means lie on a common cylindrical surface having a diameter equal to the specified internal diameter of said container body.

4,552,613

APPARATUS FOR PRODUCING POUCH PACKAGES IN PAIRS

Hugo Auer, Schwaz, Australia, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,352
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312653
Int. Cl.⁴ B32B *31/18*
U.S. Cl. 156—515 **10 Claims**



1. An apparatus for simultaneously producing pairs of pouch packages from two separate tubes of packaging material, said apparatus having two separate independent operating tubular shaping devices vertically disposed beside one another and having two separate crosswise closure devices incrementally advancing said two tubes of packaging material by the length of one pouch at a time, which devices in an upper position

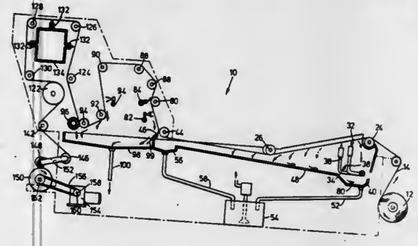
engage the respective tubes of material and in a lower position sever one pouch package at a time from each separate tube of material, and which each said device is moved incrementally up and down by means of a common drive mechanism, in which each said crosswise closure device is disposed on a separate carrier, and that each said carrier is arranged to be removably coupled with a common reciprocating element which is moved up and down by the drive mechanism to form two pouches at the same time.

4,552,614

DEMETALLIZING METHOD AND APPARATUS

Donald E. Beckett, Mississauga, Canada, assignor to Beckett Packaging Limited, Mississauga, Canada

Filed Jun. 18, 1984, Ser. No. 621,609
Int. Cl.⁴ C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—640 **29 Claims**



1. A continuous method of forming a pattern on a metallized polymer film, which comprises:
providing said metallized polymer film as a continuous web and conveying said continuous web successively through an etchant solution-applying zone, a washing zone and a drying zone,
continuously spray applying an aqueous etchant solution to the metallized surface of said continuous web in said etchant solution applying zone, said continuous web having also located thereon a pattern of etchant-resistant material corresponding to the desired pattern and masking metal from the etchant solution, thereby to effect removal of metal only from the areas of said web contacted by the etchant solution and not having the etchant-resistant material applied thereto,
continuously washing spent etchant solution from said continuous web in said washing zone, and
continuously drying the resulting washed web in said drying zone.

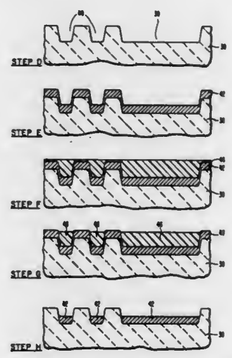
4,552,615

PROCESS FOR FORMING A HIGH DENSITY METALLURGY SYSTEM ON A SUBSTRATE AND STRUCTURE THEREOF

Albert Amendola, Hopewell Junction; Arnold F. Schmeckenbecher, Poughkeepsie, and Joseph T. Sobon, New Paltz, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1984, Ser. No. 612,289
Int. Cl.⁴ H05K *3/14*
U.S. Cl. 158—659.1 **18 Claims**

1. A process for forming a top surface metallurgy pattern on a ceramic substrate comprising
providing an unsintered green ceramic substrate,
forming indented lines in the surface of the ceramic substrate that defines the desired surface metallurgy pattern,
sintering the ceramic substrate,
depositing a substantially uniform blanket metal layer of at least one metal over at least a portion of the surface of the ceramic substrate including said indented lines, the thickness of said metal layer being less than the depth of said indented lines, the metal being relatively thin on the side walls of the indented lines,
applying a masking layer of material of a thickness in excess of the depth of said indented lines over the metal layer, which material of said masking layer is resistant to an etchant of the metal of the metal layer, and presents a relatively planar top surface,
reducing the thickness of said masking layer by removing a relatively uniform layer portion from the surface, thereby



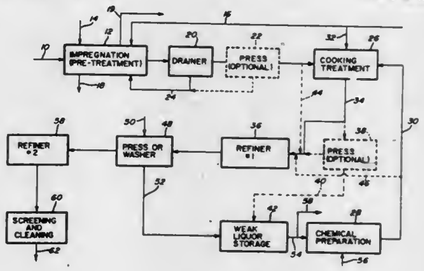
exposing the metal layer portions that overlie the upper surface of said substrate, but leaving intact the masking layer portions overlying the metal layer portions in the indented lines,
exposing the top surface of said ceramic substrate to an etchant for the metal of the metal layer thereby removing the exposed metal areas but leaving intact the metal layer portions in the indented lines that are covered by said masking layer portions, and
removing the remaining portions of the masking layer.

4,552,616

PULPING PROCESS PRETREATMENT USING A LOWER ALKANOLAMINE IN THE PRESENCE OF AMMONIUM HYDROXIDE

Peter K. Kauppi, North Vancouver, Canada, assignor to New Fibers International Inc., Grand Cayman Island, Cayman Islands

Filed Sep. 29, 1983, Ser. No. 536,967
Claims priority, application Canada, Oct. 20, 1982, 413857
Int. Cl.⁴ D21C *1/06, 3/06, 3/20*
U.S. Cl. 162—19 **23 Claims**



1. A pulping process for producing a high yield pulp from woody lignocellulosic material comprising pre-treating said lignocellulosic material by impregnating same with a loweralkanolamine in the presence of ammonium hydroxide, prior to contact with said pulping chemical, in amounts sufficient to improve the dewatering characteristics of the high yield pulp and to cause softening of lignin in said material and to promote

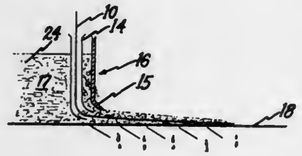
fiber separation, adding a pulping chemical to the impregnated material and mechanically defibrating the material, said pretreatment reducing pulping chemical and refining energy consumption as well as vapor and liquid effluent pollution.

4,552,617

SECURITY FEATURES IN PAPER

Timothy T. Crane, Windsor, Mass., assignor to Crane & Co., Dalton, Mass.

Filed Jun. 13, 1984, Ser. No. 620,276
Int. Cl.⁴ D21D *3/00*; D21H *5/10*
U.S. Cl. 162—103 **9 Claims**



1. A method for providing security features or watermarks within paper comprising the steps of:

imparting indicia to the surface of a substrate material which is selectively dissolved at a predetermined temperature during the paper making process;

inserting the indicia bearing substrate within a water slurry containing paper fibers during dewatering of said water slurry and maintaining said slurry at a first temperature less than said predetermined temperature to incorporate said substrate within said paper fibers: while dewatering said slurry to consolidate said paper fibers into a wet paper sheet without dissolving said substrate; and

dissolving said substrate at said predetermined temperature to incorporate said substrate within said paper sheet and to leave said indicia within said paper sheet without dissolving said paper fibers during drying of said wet paper sheet.

4,552,618

STABILIZED ABSORBENT BOARDS

Stephen L. Kopolow, Plainsboro, N.J., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 289,609, Aug. 3, 1981, abandoned. This application Apr. 11, 1984, Ser. No. 599,102
Int. Cl.⁴ D21H *5/12*
U.S. Cl. 162—157.1 **7 Claims**

1. A method for providing a board including hydrocolloidal fibers, said board having increased resistance to deformation in the wet state while still maintaining the capacity to absorb body fluids comprising the steps:

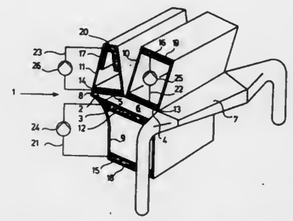
forming said board comprising said hydrocolloidal fibers from an aqueous slurry comprising said hydrocolloidal fibers; heating said board at a temperature ranging from about 150° C. to about 250° C. for a period of about 3 to about 30 minutes.

4,552,619

THERMAL STABILIZING SYSTEM FOR A HEADBOX OF A PAPERMACHINE

Sakari Laitinen, Huutjärvi, and Tapani Nyman, Karhula, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Apr. 16, 1984, Ser. No. 600,429
Claims priority, application Finland, May 11, 1983, 831634
Int. Cl.⁴ D21F *1/02, 1/04*
U.S. Cl. 162—336 **4 Claims**



1. In combination with a papermachine headbox, a thermal stabilizing system for said headbox, comprising:

a lower box beam and at least one upper box beam, said box beams being positioned to support said headbox, each said beam having an inner wall in contact with a stock flowing through said headbox and an outer wall and each said beam being provided with at least one liquid space extending lengthwise of the beam and adjoining each said inner and outer wall, each said liquid space having a liquid, separate from said stock, flowing therethrough;

liquid circulation means for circulating the liquid between each said space of each beam,

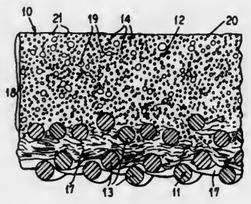
and means for heating said outer walls to a temperature equal to that of the inner walls, said heating means consisting of the flowing stock, by heat transfer from the flowing stock to the liquid flowing through the liquid spaces in the box beams, and said thermal stabilizing system being devoid of control devices.

4,552,620

PAPER MACHINE BELT

Richard J. Adams, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 19, 1983, Ser. No. 533,309
Int. Cl.⁴ D21F *3/02*
U.S. Cl. 162—358 **7 Claims**



1. A belt for conveying and covering paper webs passing through pressure nips of paper making machines which comprises an endless looped blanket of woven fabric and an integral continuous impervious layer of urethane plastics material covering the paper web receiving face of the blanket and penetrated into the woven fabric providing an inseparable bond uniting the fabric and layer, said layer having closed isolated pores throughout the thickness thereof and a ground finished granite stone-like surface receiving the web, said surface having pores ranging in size from 0.019 to 0.185 mm

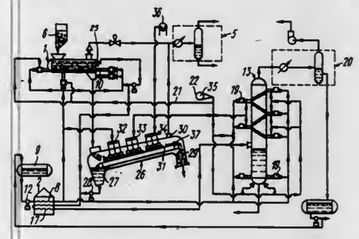
uncovered at said surface and said belt having a durometer hardness of at least 70 on the A scale.

4,552,621

APPARATUS FOR THERMAL DECOMPOSITION OF POLYMERIC MATERIALS

Genrikh D. Lyakhevich, Minsk; Anatoly P. Khimanych, Bobruisk; Vasily G. Suzansky, Bobruisk, and Vulf P. Kovalerchik, Bobruisk, all of U.S.S.R., assignors to Belorussky Politekhnichesky Institut, Minsk, U.S.S.R.

Filed Jun. 17, 1983, Ser. No. 505,277
Int. Cl.⁴ C10B *1/00*
U.S. Cl. 202—84 **9 Claims**



1. Apparatus for the thermal decomposition of polymeric material containing solid impurities, which comprises:

reaction chamber means for thermally decomposing the polymeric material and forming a suspension containing the polymeric material and the solid impurities;

separator means for removing the solid impurities from the suspension, the separator means being located downstream from the reaction chamber means and being in communication with the reaction chamber means for receiving the suspension therefrom;

the separator means including an inclined conveyor having an upper and a lower end, with the inclined conveyor receiving the suspension containing the polymeric material from the reaction chamber means adjacent the lower end of the conveyor such that the suspension and polymeric material in the suspension flow off and are discharged from the lower end of the conveyor, and such that the conveyor transports the solid impurities upward for discharge from the upper end of the conveyor; and

distillation means for further thermally decomposing the polymeric material, the distillation means being in communication with the separator means for receiving the suspension from the separator means after the solid impurities have been removed from the suspension by the inclined conveyor of the separator means.

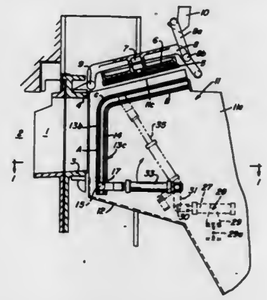
4,552,622

CLEANING APPARATUS FOR THE SEALING SURFACES OF LEVELING DOORS AND LEVELING DOOR FRAMES OF BATTERY-TYPE COKE OVENS

Hans-Jurgen Kwasnik, Herne, and Hans-Gunter Piduch, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed May 1, 1984, Ser. No. 605,893
Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317185
Int. Cl.⁴ C10B *43/00*
U.S. Cl. 202—241 **9 Claims**

1. In a coke oven battery having leveling door frames and leveling doors rotatable from positions in which they engage the door frames to positions where they are rotated upwardly to permit access to a coke oven chamber through the door frame, the combination of means carried on a coke-pushing machine for cleaning the sealing surfaces of said leveling doors and leveling door frames, said cleaning means comprising a casing of substantially channel-shaped cross section movable on the pushing machine toward and away from the leveling door frame and having side and bottom walls with forward edges adapted to extend around the leveling door frame and an open top above which a leveling door is positioned when it is rotated upwardly, guideways mounted on the side walls of the casing, each guideway having a first portion extending parallel to the leveling door frame and extending along substantially the entire length of the leveling door frame, each guideway also having a second portion communicating with the first portion and extending parallel to sealing surfaces of a leveling door when the door is rotated upwardly to permit access to a coke oven chamber, a carriage extending between and movable along said guideways, and liquid nozzles carried on said carriage and adapted to be directed at the sealing surfaces of the leveling door frame and the sealing surfaces of the leveling door when rotated upwardly, the nozzles being connected through hoses to a supply of high-pressure liquid, the arrangement being such that as the carriage moves along said guideways, high-pressure liquid issuing from said nozzles will clean the sealing surfaces of the leveling door frame and the upwardly rotated leveling door.

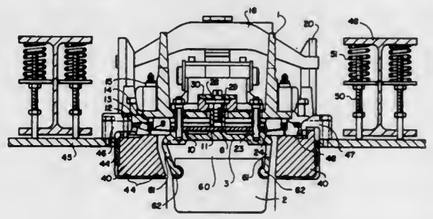


4,552,623

COKE OVEN DOOR CLOSURE CONSTRUCTION

Klaus Urbye, and Werner Abendroth, both of Haltern, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co., Kg., Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,600
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311183
Int. Cl.⁴ C10B *25/06*
U.S. Cl. 202—248 **18 Claims**



1. A door closure for defining and closing an opening in a coke oven, comprising a door frame, a door body, a plurality of plug holders connected to plugs and carried by said door body including a separate upper and a separate lower plug holder arranged adjacent and fixedly mounted to the top and bottom respectively of the door body, and at least one movable intermediate plug holder between said upper and lower plug holders, a sealing diaphragm between said door body and said

upper and lower intermediate plug holders and having a marginal portion extending beyond said plug holders and terminating in a sealing edge around its periphery bearing against the frame in a sealing engagement therewith, biasing means biasing said sealing edge into engagement with the frame, a movable back-up plate connected to said intermediate plug holder and a corresponding portion of the diaphragm and disposed between said diaphragm and said door body, and adjustable means connected to said door body and connected to said plate for varying the position of the plate and said intermediate plug holder and said corresponding portion of said diaphragm relative to said door body.

4,552,624

ELECTROCHEMICAL APPARATUS FOR MONITORING AND/OR MEASURING A COMPONENT OF A GAS AND A METHOD OF USING SAID APPARATUS

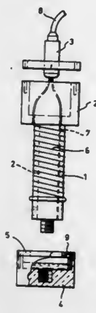
Andrew S. Clarkson, Preston, England, assignor to British Nuclear Fuels Limited, Risley, England

Filed Aug. 8, 1983, Ser. No. 521,350

Claims priority, application United Kingdom, Aug. 23, 1982, 8224183

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T **16 Claims**



1. An electrochemical device for monitoring and quantitatively analysing hydrogen fluoride in ambient atmosphere or a gas stream and of the kind which employs a deliquescent electrolyte, characterised by the combination of the employment of a bromide/bromate electrolyte, and the employment of a cathode which has a larger contact area with the electrolyte and with the atmosphere or gas stream compared with the anode.

7. A method for the detection, monitoring and/or quantitative analysis of hydrogen fluoride in ambient atmosphere or a gas stream, comprising exposing to the ambient atmosphere or gas stream an electrochemical device according to claim 4.

4,552,625

REFERENCE ELECTRODE ASSEMBLY

Paulus M. Van Der Velden, Hengelo, Netherlands, assignor to Cordis Europa N.V., Roden, Netherlands

Filed Dec. 29, 1983, Ser. No. 566,576

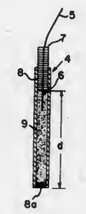
Claims priority, application Netherlands, Jan. 7, 1983, 8300057

Int. Cl.⁴ G01N *27/46, 27/30*

U.S. Cl. 204—1 T **13 Claims**

1. A reference electrode assembly, comprising:

an ion-specific electrode, said electrode being encapsulated within and contacted by a polymer matrix, said polymer matrix being a weak electrolyte having a strong affinity for hydrogen ions, the bulk of said polymer matrix having an open cell structure which contains a liquid as an electrode potential causing agent and its surface being such that it forms a barrier preventing a free and open connection to the environment of the reference electrode, said polymer matrix being within a support member, wherein



said ion-specific electrode is a hydrogen ion-specific electrode.

4,552,626

METAL PLATING OF POLYAMIDE THERMOPLASTICS

Richard M. Stevenson, Grosse Pointe Woods, Mich., assignor to Michael Landney, Jr., Grosse Pointe Shores, Mich.

Filed Nov. 19, 1984, Ser. No. 673,185

Int. Cl.⁴ C25D *5/56*

U.S. Cl. 204—20 **16 Claims**

1. A method of metal plating a surface of an article of a thermoplastic resin with a filler therein comprising the steps of; providing an article of at least one of a polyester and polyamide resin with a weight average molecular weight of at least about 10,000 and filled with about 5 to 60% by weight of at least one of metal, metal salt and mineral fillers, cleaning and making hydrophillic a surface of said article by contacting said surface with an alkaline cleaning solution and a surfactant prior to removing filler from said surface, removing at least a portion of the filler from said surface by contacting said surface with an organic or mineral acid having a normality of not greater than about 4.0 and which will dissolve at least a portion of said filler, after removing said filler electroless plating said surface from which filler has been removed to deposit thereon and adhere thereto an electrically conductive metallic layer of at least one of cobalt, nickel and copper, driving said electroless plated surface to remove essentially all moisture therefrom by heating to an elevated temperature of not more than about 190° F. for not more than 30 minutes, after drying said electroless plated surface electroplating such surface to deposit thereon and adhere thereto at least one metallic layer of at least one of copper and nickel, and thereafter electroplating such electroplated surface to deposit on and adhere to said layer at least one layer of at least one of nickel and chromium.

4,552,627

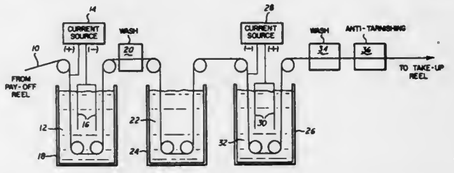
PREPARATION FOR IMPROVING THE ADHESION PROPERTIES OF METAL FOILS

Arvind Parthasarathi, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1984, Ser. No. 670,239

Int. Cl.⁴ C25D *5/34, 17/00*

U.S. Cl. 204—27 **19 Claims**



1. A process for improving the adhesive properties of a metal or metal alloy material, said process comprising:

forming a substantially uniform layer of metal oxide on at least one surface of said material;

non-electrolytically converting the oxide layer into a substantially uniform layer of fresh metal on said at least one surface and thereby rendering said at least one surface more uniformly electrochemically active; and

forming a plurality of dendritic structures on said at least one surface to improve said adhesive properties.

4,552,628

PALLADIUM ELECTROPLATING AND BATH THEREOF

Jeannine Wilcox, North Plainfield, and George A. Karustis, Westfield, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 416,412, Sep. 9, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 584,282

Int. Cl.⁴ C25D *3/50*

U.S. Cl. 204—47 **23 Claims**

1. An aqueous acidic bath for electroplating palladium comprising a substantially halide-free and thiourea-free aqueous solution of: (a) a palladium tetraammine compound obtained by reacting $Pd(R)_2(NO_2)_2$ wherein R is NH_3 or an amine, with ammonium hydroxide; (b) sulfamate anions; (c) ammonium cations; and (d) optionally alkali metal cations; wherein at least 25% of the cations are ammonium, said bath has a pH from about 5 to 7.

4,552,629

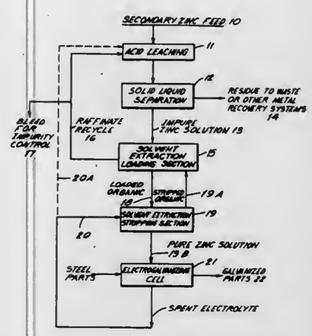
ELECTROGALVANIZING UTILIZING PRIMARY AND SECONDARY ZINC SOURCES

Willem P. C. Duyvesteyn, Benthuisen, Netherlands, and Robert F. Hogsett, Arvada, Colo., assignors to Amax, Inc., Greenwich, Conn.

Filed Jan. 31, 1985, Ser. No. 696,985

Int. Cl.⁴ C25C *3/22*

U.S. Cl. 204—55 R **10 Claims**



1. A process for producing electrogalvanized articles from primary and secondary zinciferous materials, selected from the group consisting of zinc oxide ores, calcines, steel plant dust, zinc dross and/or metallics, and zinc residues containing iron, lead and calcium compounds, and at least one of the elements cadmium and aluminum as compounds thereof, and chloride and fluoride salts which comprises,

mixing a charge of said zinciferous material with an acid leach solution containing a mixture of chloride and sulfate ions,

the amount of sulfate ions as sulfuric acid being at least stoiciometrically sufficient to react with zinc to form a soluble sulfate thereof and with lead and calcium to form a sulfate precipitate thereof,

leaching said oxidic zinciferous material with said solution at an elevated temperature below the boiling point of said solution maintained at a pH in the range of about 2 to 3.5 to inhibit dissolution of iron contained in said zinciferous material,

subjecting said solution to solid-liquid separation to remove the lead and calcium sulfate precipitate and other solids and provide a filtrate containing zinc, some iron and at least one of aluminum and cadmium,

oxidizing said filtrate and adjusting the pH thereof to a level selective to the precipitation of any iron and aluminum present,

separating the precipitate from said filtrate containing zinc, cadmium and impurities,

separating zinc from said filtrate at an organic solvent extraction stage by using an organic solvent selective to the removal of zinc,

stripping the zinc from said solvent in a stripping stage using an acid solution containing sulfuric acid of pH below about 1.5 to provide a purified zinc solution for electrogalvanizing,

recycling the stripped organic to said organic solvent extraction stage,

contacting said electrogalvanizing solution with a ferrous metal part to be plated, wherein the ferrous metal part is employed as a cathode relative to an insoluble anode immersed in said solution,

electrogalvanizing said ferrous metal part by passing a current from said insoluble anode to said ferrous metal part as the cathode and thereby produce spent electrogalvanizing solution, and

recycling said spent electrogalvanizing solution to the stripping stage and/or the leaching stage.

4,552,630

CERAMIC OXIDE ELECTRODES FOR MOLTEN SALT ELECTROLYSIS

Douglas J. Wheeler, Cleveland Heights, Ohio; Jean-Jacques R. Duruz, Geneva, Switzerland; Ajit Y. Sane, Willoughby, Ohio, and Jean-Pierre Derivaz, Geneva, Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

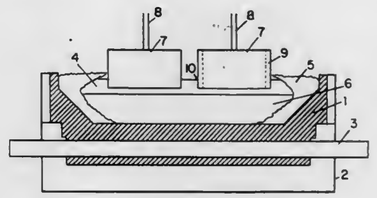
PCT No. PCT/US80/01609, § 371 Date Jul. 24, 1981, § 102(e) Date Jul. 24, 1981, PCT Pub. No. WO81/01717, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 4, 1980, Ser. No. 298,243

Claims priority, application United Kingdom, Dec. 6, 1979, 7942180

Int. Cl.⁴ C25C *3/06*; C25B *11/04*

U.S. Cl. 204—67 **26 Claims**



1. In a process for the production of a metal by electrolysis of a metal compound dissolved in a molten salt electrolyte the improvement which comprises conducting said electrolysis using an anode comprising a body consisting essentially of a ceramic oxide material of spinel structure, characterized in that said material has the formula:

$$M_{I_x} M_{II_{3-x}} O_4 \cdot y\, M^{n+}_{III}\, O_{n/2}$$

where:

M_I is one or more divalent metals from the group Ni, Co, Mg, Mn, Cu and Zn;

x is 0.5–1.0;

M_{II} is one or more divalent/trivalent metals from the group Ni, Co, Mn, and Fe, but excluding the case where M_I and M_{II} are both the same single metal;

M_{III}^{n+} is one or more metals from the group Ti^{4+}, Zr^{4+},

Sn^{4+}, Fe^{4+}, Hf^{4+}, Mn^{4+}, Fe^{3+}, Ni^{3+}, Co^{3+}, Mn^{3+}, Al^{3+}, Cr^{3+}, Fe^{2+}, Ni^{2+}, Co^{2+}, Mg^{2+}, Mn^{2+}, Cu^{2+}, Zn^{2+} and Li^{1+}, where n is 1, 2, 3 or 4 depending upon the valence state of M_{III};

and the value of y is compatible with the solubility of

$$M_{III}^{+}O_{n/2}$$

in the spinel lattice and between 0 and 0.2, providing that, when y=0, then at least one of the following conditions is met:

(A) X is a value less than 0.99;

(B) there are at least two metals M_I;

(C) there are at least two metals M_{II} which are not in equal whole atom proportions.

4,552,631

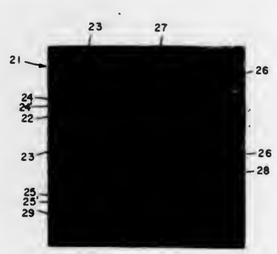
REINFORCED MEMBRANE, ELECTROCHEMICAL CELL AND ELECTROLYSIS PROCESS

Thomas C. Bissot, Newark, and Stephen Li, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1983, Ser. No. 473,962

Int. Cl.⁴ C25B *1/46, 13/02, 13/08*

U.S. Cl. 204—98 **57 Claims**



1. In a reinforced fluorinated cation-exchange polymer membrane which is impermeable to hydraulic flow of liquid, said membrane comprising at least first and second layers of fluorinated polymers whose functional groups are —CFZ—COOM groups or —CFQ—SO_3M groups, where M is H, Na, K or NH_4, Z is F, CF_3 or CF_2Cl, and Q is F, Cl, C_1 to C_{10} perfluoroalkyl or CF_2Cl, said layers when adjacent being in adherent contact with one another, said first layer being of polymer whose functional groups are —CFZ—COOM groups and said second layer being of polymer whose functional groups are —CFQ—SO_3M groups, the improvement wherein said membrane has a hydrogen bubble release layer at the outer surface of said first layer, has voids at the outer surface of said second layer characterized by a void volume of 5 to 40% and an open are of 15 to 100%, and wherein said membrane has reinforcement strands partially or completely embedded therein, and each said polymer with —CFZ—COOM groups has an equivalent weight of 670 to 1500 and each said polymer with —CFQ—SO_3M groups has an equivalent weight of 600 to 1500.

54. The membrane of claim 49 or 53 wherein said membrane has a hydrogen bubble release layer at the outer surface of said first layer.

4,552,632

HYDROMETALLURGICAL METHOD OF EXTRACTION OF COPPER FROM SULPHIDE-CONTAINING MATERIAL

Einar Andersen, and Gunnar H. Boe, both of Kr-sand, Norway, assignors to Elkem a/s, Oslo, Norway

Filed Jul. 5, 1984, Ser. No. 627,773

Claims priority, application Norway, Jul. 8, 1983, 832496

Int. Cl.⁴ C25C *1/12*

U.S. Cl. 204—107 **4 Claims**

1. A method for extraction of copper from sulphide ores or concentrates by leaching the ore or concentrates by means of iron (III) chloride and copper (II) chloride containing leach solution, characterized in that the leaching process is regulated in order to keep the red-ox potential between 430 mV and 460 mV whereby iron (III) chloride is reduced to iron (II) chloride while copper (II) chloride is kept in the bivalent state and the copper content in the ore or concentrate is leached as copper (II) chloride, whereafter the pregnant leach solution is contacted by a pyridine carboxylic ester extractant, said extractant being an organic complex-ion forming extractant of which the extraction properties are dependent on the chloride concentration whereby copper (II) chloride is extracted from the pregnant leach solution into the organic phase.

4,552,633

FINE PARTICULATE FOR USE IN CLINICAL TESTING AND A PROCESS FOR PRODUCING THEREOF

Minoru Kumakura; Isao Kaetsu; Mieko Suzuki, and Masakazu Adachi, all of Gunma, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Japan Immunoresearch Laboratories Co., Ltd., Gunma, both of, Japan

Filed Sep. 22, 1983, Ser. No. 534,661

Claims priority, application Japan, Sep. 29, 1982, 57-170028; Sep. 29, 1982, 57-170029; Sep. 29, 1982, 57-170030

Int. Cl.⁴ C08F *2/48, 2/54, 16/34*

U.S. Cl. 204—159.21 **15 Claims**

1. A process for producing a fine particulate carrier for use in clinical testing having a generally uniform size within the range of 0.5 to 20 microns and an aldehyde group on the surface by exposing to light or ionizing radiation, at temperatures in the range of between 5° and −100° C., a polymerizable monomer having an aldehyde group and a polymerizable double bond in the same molecule while maintaining said monomer at temperatures within said temperature range.

4,552,634

RADIATION HARDENED LIFT-OFF CORRECTION MEDIUM AND PROCESS OF MANUFACTURE

Terence E. Franey, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 419,101, Sep. 16, 1982, Pat. No. 4,434,207. This application Oct. 31, 1983, Ser. No. 547,177

Int. Cl.⁴ C08J *3/28;* C08L *33/08*

U.S. Cl. 204—159.23 **13 Claims**

1. A material suitable for use as a bonding material under impact for lift-off correction of printing consisting essentially of the ionizing-radiation-cured product of the mixture of a triacrylate consisting essentially of acrylate moieties and an alkyl moiety and a polyacidic acid of the fatty-acid type having at least one unsaturated ring structure of carbon molecules.

4,552,635

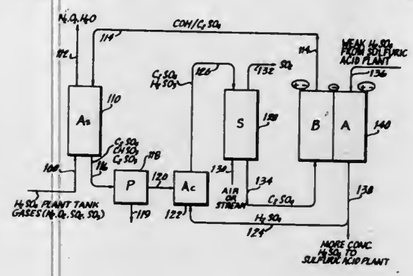
ELECTRODIALYTIC METHODS FOR REMOVAL OF SULFUR OXIDES FROM WASTE GASES

Theodore J. Jenczewski, Sherrill, N.Y., and William H. Skinner, Jr., Budd Lake, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 490,995, May 2, 1983, abandoned. This application Aug. 9, 1984, Ser. No. 639,528

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 204—182.4 **23 Claims**



1. A method for removing and recovering SO_2 and SO_3 from gases, and regenerating the process liquors, which comprises the steps of:

(a) contacting, in a first reaction zone, gases containing SO_2 and SO_3 with a reaction liquid comprising aqueous hydroxide to produce an aqueous salt solution containing aqueous soluble sulfites, bisulfites and sulfates, and a gas comprising water vapor and depleted in SO_2 and SO_3;

(b) contacting, in a second reaction zone, said aqueous salt solution with a reaction liquid comprising sulfuric acid and water to form an aqueous solution comprising sulfurous acid and aqueous soluble sulfates;

(c) separating the sulfurous acid from said aqueous solution by liberating SO_2 as a gas therefrom;

(d) providing an electrodialytic water splitter comprising at least one unit cell, each unit cell comprising an acid and a base compartment;

(e) feeding the liquid comprising aqueous soluble sulfates to the base compartment of the electrodialytic water splitter;

(f) feeding a liquid comprising dilute aqueous sulfuric acid and substantially free of soluble sulfate salts to the acid compartment of the electrodialytic water splitter;

(g) passing current through said electrodialytic water splitter to produce a liquid enriched in sulfuric acid in the acid compartment, and a liquid comprising aqueous hydroxide in the base compartment.

4,552,636

PROCESS FOR REMOVING AMMONIUM-IONS IN AN OXIME PREPARATION FROM A HYDROXYL-AMMONIUM SALT

Franciscus van den Brink, Geldrop, and Marinus Alfenaar, Schinnen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 4, 1984, Ser. No. 616,681

Claims priority, application Netherlands, Jun. 10, 1983, 8302072

Int. Cl.⁴ B01D *13/02;* C07C *131/00*

U.S. Cl. 204—182.4 **4 Claims**

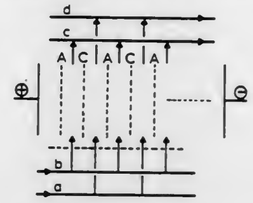
1. A process for preparing a hydroxylammonium salt and an oxime comprising:

conducting a synthesis of a hydroxylammonium salt in a first reaction zone;

synthesizing an oxime from said hydroxylammonium salt and an aldehyde or ketone in a second reaction zone;

circulating an aqueous acid reaction medium between the hydroxylammonium synthesis zone and the oxime synthesis zone wherein a reducable nitrogen source in the form of nitrate ions or nitrogen monoxide is continuously supplied to said circulating rection medium being fed to the first reaction zone whereby ammonium, ion by-products are formed during the reduction of the nitrogen source in said first reaction zone;

subjecting the reaction medium from the second reaction zone to an electrodialysis treatment with an electrodialysis membrane, wherein a first diluate flow composed of said reaction medium passes along one side of said electrodialysis membrane and a discharge concentrate flow passes along the other side of said electrodialysis membrane whereby ammonium ions pass from said first diluate flow through said membrane into said discharge concentrate flow.



4,552,637

CELL FOR THE REFINING OF ALUMINIUM

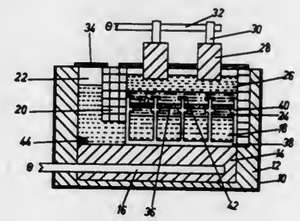
Sylvestre Viré , Neuhausen am Rheinfall, and Ludwig Gauckler, Schaffhausen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 5, 1984, Ser. No. 586,283

Claims priority, application Switzerland, Mar. 11, 1983, 1343/83

Int. Cl.⁴ C25C *3/08, 7/04*

U.S. Cl. 204—243 R **13 Claims**



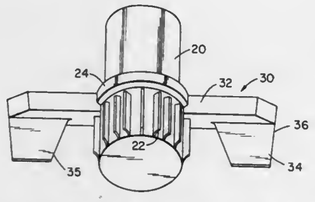
1. A thermally insulated cell for the electrolytic purification of aluminum, comprising a trough having an outer steel tank, a refractory lining and a carbon base containing anodically connected iron bars; a melt of an aluminum alloy doped with at least one heavy metal and having a density ρ_1 forms the anode; a layer of molten electrolyte material resting on the anode and having a density ρ_2; a top layer of molten extra-high purity aluminum and having a density ρ_3 forms the cathode; and graphite cathodes which are fixed to the cathode cell structure and dip from above into the extra-high purity aluminum wherein ρ_1 is greater than ρ_2 which is greater than ρ_3, the improvement which comprises an exchangeable separator horizontally located at least partially within said cell and consisting of a porous material resistant to the electrolyte and to metal, said separator being freely movable in the vertical direction a distance (h) defined by a corrosion-resistant, refractory frame wherein the porosity of the separator allows the electrolyte and metal to pass through without any significant additional loss of potential.

4,552,638

ELECTRODE ASSEMBLY HAVING IMPROVED CURRENT DISTRIBUTION FOR USE IN AN ELECTROLYTIC REDUCTION CELL

Robert L. Voegel, and Kenton B. Wright, both of Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,077
Int. Cl.⁴ C25D *17/12*
U.S. Cl. 204—286 **16 Claims**



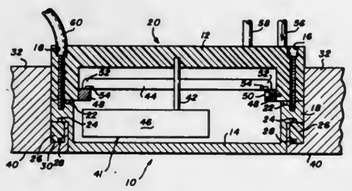
1. An improved electrode assembly for use in a cell for the production of metal by electrolytic reduction in a molten salt bath comprising:
(a) a nonmetallic conductive electrode having a top surface;
(b) a central current carrying metallic support shaft received in a central bore in said electrode extending axially downward from said top surface; and
(c) metallic fin members extending radially from said central support shaft in said electrode, said metallic fin members comprising a plurality of gate members extending radially from said central shaft adjacent said top surface of said electrode and wing members extending from said gate members downwardly into said electrode from said top surface, said gate members each having a width exceeding the depth of said gate member at least adjacent the top surface of said electrode to increase the surface area of said gate member whereby heat generated adjacent the interface between said nonmetallic conductive electrode and said metallic fin members may be dissipated.

4,552,639

MAGNETRON SPUTTER ETCHING SYSTEM

Charles B. Garrett, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 632,790, Jul. 20, 1984, abandoned. This application Mar. 13, 1985, Ser. No. 712,452
Int. Cl.⁴ C23C *15/00*
U.S. Cl. 204—298 **16 Claims**



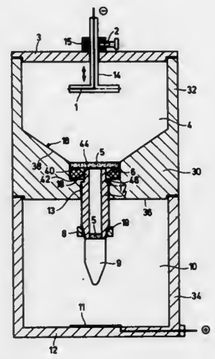
1. A magnetron etching device, comprising in combination,
a low pressure gas chamber for positioning an object having a surface to be etched;
means for creating an electrical field between said surface to be etched and a collector surface means;
a magnetic source connected to a means for moving said magnetic source with respect to the object to be etched, such that the lines of magnetic flux created move above the etch surface of the object to be etched, said magnetic source being spaced from said object when said object is positioned in said gas chamber and said magnetic source being located on the etch surface side of the object to be etched;
means for injecting an inert gas into said chamber;
whereby the etched material may be transferred from the object to the collector surface means and the motion of the magnetic source can etch the object uniformly.

4,552,640

ELECTROPHORETIC APPARATUS FOR THE QUANTITATIVE ELUTION OF PROTEINS OR POLYPEPTIDES FROM A GEL

Jürgen Kartenbeck, Heidelberg, Fed. Rep. of Germany, assignor to Deutsches Krebsforschungszentrum Stiftung Des Offentichen Rechts, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,735
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147611
Int. Cl.⁴ G01N *27/28*
U.S. Cl. 204—301 **8 Claims**



1. An apparatus for the quantitative elution of proteins or polypeptides from a gel by means of electrophoresis, said apparatus comprising:
an upper electrode chamber for holding a buffer solution containing the gel from which the proteins or polypeptides are to be eluted,
an upper electrode in the upper electrode chamber;
a lower electrode chamber for holding a buffer solution and disposed beneath said upper electrode chamber,
a lower electrode in the lower electrode chamber;
a septum separating the upper chamber from the lower chamber;
a connecting passage in the septum for connecting said upper and lower electrode chambers; and
a collecting capsule for collecting the proteins of polypeptides, the collecting capsule being disposed at the end of said connecting passage in said lower electrode chamber, and adapted to be suspended in the buffer solution which is to be held in said lower electrode chamber.

4,552,641

PROCESS FOR PREPARING A PLATINUM SURFACE ON TIN OXIDE SUBSTRATE

Herbert A. Laitinen, 337 Leigh Hall, Gainesville, Fla. 32611, and James R. Waggoner, 4085 Nobel Dr., #13, San Diego, Calif. 92122

Filed Dec. 28, 1983, Ser. No. 566,478
Int. Cl.⁴ C25D *3/50, 5/34*
U.S. Cl. 204—32.1 **10 Claims**

6. The process of preparing a platinum-coated tin oxide substrate which comprises:
(a) soaking for 15–60 minutes a tin oxide substrate in a solution of metal hydroxide having a concentration of 5–15 molar,
(b) removing the substrate from the solution and washing it to be substantially free of hydroxide,
(c) immersing the washed substrate in a solution of $Na_2Pt(OH)_6$ in 0.001M to 0.1M KOH and applying to the substrate an electric potential of +0.1 to +0.7 volt; and
(d) recovering the substrate coated with a thin layer of platinum in the amount of 0.01 to 0.10 micrograms of platinum per cm^2 of true surface area.

4,552,642

METHOD FOR CONVERTING COAL TO UPGRADED LIQUID PRODUCT

William P. Hettinger, Jr., Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 27, 1983, Ser. No. 507,864
Int. Cl.⁴ C10G *1/08*
U.S. Cl. 208—10 **32 Claims**

1. A process for achieving hydrogenation of a coal liquefaction product which comprises dispersing coal particles in a heavy oil liquefaction solvent material at a temperature in the range of 399° C.–471° C. (750°–880° F.) in the presence of hydrogen at a pressure in the range 2000–4000 psig and utilizing a colloidal matrix material coated with one or more hydrogenating metals as a catalyst composition dispersed in said liquefaction solvent for accelerating coal liquefaction, hydrogenation and removal of sulfur, nitrogen and oxygen therefrom.

4,552,643

ANTIFOULANTS FOR THERMAL CRACKING PROCESSES

Randall A. Porter, and Larry E. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 22, 1985, Ser. No. 693,436
Int. Cl.⁴ C10G *9/00, 9/12, 9/16*
U.S. Cl. 208—48 AA **21 Claims**

1. A method for reducing the formation of coke on the metals which are contacted with a gaseous stream containing hydrocarbons in a thermal cracking process comprising the step of contacting said metals with an antifoulant selected from the group consisting of a combination of tin and copper, a combination of antimony and copper and a combination of tin, antimony and copper.

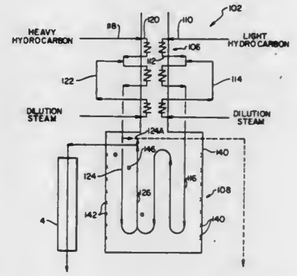
4,552,644

DUOCRACKING PROCESS FOR THE PRODUCTION OF OLEFINS FROM BOTH HEAVY AND LIGHT HYDROCARBONS

Axel R. Johnson, North Babylon, N.Y.; Swami Narayanan, Westwood, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation of Ser. No. 431,588, Sep. 30, 1982, Pat. No. 4,492,624. This application Feb. 24, 1984, Ser. No. 583,135
The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.
Int. Cl.⁴ C10G *9/14, 51/06*
U.S. Cl. 208—78 **1 Claim**

1. A process for the thermal cracking of heavy hydrocarbon feed to produce olefins comprising:
(a) diluting the heavy hydrocarbon feed with steam in a ratio of 0.2 or less pound of steam per pound of heavy hydrocarbon;
(b) elevating the temperature of the heavy hydrocarbon with the steam diluent to a temperature to effect partial thermal cracking;
(c) mixing a stream of light hydrocarbon feedstock which is lighter than the heavy hydrocarbon feed with steam diluent;
(d) thermally cracking the light hydrocarbon feedstock to completion to produce principally olefins;
(e) delivering the completely cracked light hydrocarbon effluent to the stream of partially cracked heavy hydrocarbon to form a composite stream, said light hydrocarbon effluent providing heat for subsequent cracking and serving as a diluent for the partially cracked heavy hydrocarbon;
(f) further cracking the composite stream to the required degree of completion; and
(g) quenching the effluent from the cracked composite stream of heavy and light hydrocarbon to terminate the reactions.

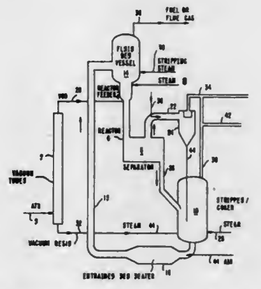


4,552,645

PROCESS FOR CRACKING HEAVY HYDROCARBON TO PRODUCE OLEFINS AND LIQUID HYDROCARBON FUELS

Robert J. Gartside, Wellesley, Mass.; Axel R. Johnson, North Babylon, N.Y., and Joseph L. Ross, Houston, Tex., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Mar. 9, 1984, Ser. No. 587,952
Int. Cl.⁴ C10G *51/06, 57/00*
U.S. Cl. 208—80 **10 Claims**



1. A process for the production of olefins or light hydrocarbon fuels comprising the steps of:
(a) separating a heavy hydrocarbon into a light hydrocarbon fraction and a heavy hydrocarbon fraction;
(b) thermally cracking the light hydrocarbon fraction with heat supplied by hot particulate solids;
(c) separating the cracked product from the hot particulate solids;
(d) delivering the separated particulate solids to a stripper/-coker;
(e) introducing the heavy hydrocarbon into the stripper/-coker to produce vaporized hydrocarbon and coke;
(f) combusting coke produced in the reactor and stripper/-coker to heat the particulate solids,
(g) returning the heated particulate solids to the thermal cracking reactor.

4,552,646

DEARSENATING OF SHALE OIL WITH METAL CHLORATES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 24, 1984, Ser. No. 685,413
Int. Cl.[4] C10G *25/06, 17/02, 17/04, 17/09*
U.S. Cl. 208—90 25 Claims

1. A process for removing at least a portion of arsenic impurities from a hydrocarbon-containing feed stream, which contains arsenic impurities, comprising the step (A) of contacting said feed stream with an aqueous extractant, which comprises (a) at least one substantially dissolved metal chlorate, and (b) at least one acid having a pKa of less than 3, under suitable dearsenating conditions so as to produce a hydrocarbon-containing stream having a reduced level of arsenic.

4,552,647

PROCESS FOR CRACKING HIGH-BOILING HYDROCARBONS USING CONTINUOUS ADDITION OF ACIDITY ENHANCING ADDITIVES

William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, and Hubert W. Beck, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 474,619, Mar. 11, 1983, Pat. No. 4,496,665, which is a continuation-in-part of Ser. No. 277,751, Mar. 30, 1981, Pat. No. 4,432,890. This application Apr. 18, 1984, Ser. No. 600,747
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—120 20 Claims

1. A process for converting residual hydrocarbon stocks including, reduced crude and the like, containing greater than 4 ppm of nickel plus vanadium and 2% Conradson Carbon, said process utilizing a zeolite-containing catalyst comprising at least about 2000 ppm of Ni+V contaminants, said process comprising continuous addition to said feed stock or catalyst an additive comprising Ti, Zr or mixtures thereof, so as to maintain conversion activity and selectivity in the presence of said contaminating metals.

4,552,648

FLUIDIZED CATALYTIC CRACKING PROCESS

Edward J. Rosinski, Pedricktown, N.J.; Albert B. Schwartz, Philadelphia, and Francis G. Dwyer, West Chester, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 8, 1984, Ser. No. 577,941
Int. Cl.[4] C10G *11/05*
U.S. Cl. 208—120 25 Claims

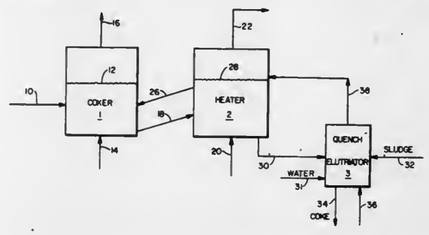
1. In a process for catalytically cracking a hydrocarbon feed having an initial boiling point of at least 200° C., a 50% point range of at least 260° C. and an end point of at least 320° C. to improve the octane number of the cracked product which comprises the steps of contacting the feed in a reaction zone under catalytic cracking conditions in the absence of added hydrogen with a catalyst comprising a conventional cracking catalyst to produce a cracked hydrocarbon product which is recovered as a product of the process, the improvement comprising adding to said conventional cracking catalyst a thermally treated zeolite having a mole ratio of SiO_2:Al_2O_3 of about 10:1 to 100:1 and a constraint index of about 1 to 12, wherein said zeolite has been subjected to thermal treatment at thermal treatment conditions sufficient to reduce its alpha activity to about 1 to 10 prior to use in said process, whereby product yield losses are reduced.

4,552,649

FLUID COKING WITH QUENCH ELUTRIATION USING INDUSTRIAL SLUDGE

Ann D. Patterson, Vacaville, Calif., and Wayne M. Kachel, Plainfield, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 15, 1985, Ser. No. 712,181
Int. Cl.[4] C10G *9/32, 17/00*
U.S. Cl. 208—127 9 Claims



1. In a fluid coking process comprising the steps of:
(a) contacting a carbonaceous chargestock having a Conradson carbon content of at least about 5 weight percent with hot fluidized solids in a fluidized coking bed containing a coking zone maintained in a fluidized state by the introduction of a fluidized gas to produce a vapor phase product and coke which deposits on said fluidized solids;
(b) introducing a portion of said solids with a coke deposit thereon into a heating zone to heat said portion of solids;
(c) recycling a first portion of heated solids from said heating zone to said coking zone;
(d) passing a second portion of said heated solids from said heating zone to an elutriation zone to separate larger particles from smaller particles of said solids;
(e) introducing a cooling agent into said elutriation zone to cool said larger solid particles;
(f) passing the vaporous effluent of said elutriation zone to said heating zone, said vaporous effluent comprising steam and said entrained smaller solid particles;
the improvement which comprises: said cooling agent comprising an aqueous sludge comprising an organic waste to produce steam and convert at least a portion of said organic waste to a vaporous organic compound, and passing said vaporous organic compound to said heating zone.

4,552,650

PROCESS FOR HYDROTREATING METAL CONTAINING OIL FRACTIONS USING A SUPPORTED CATALYST OF INCREASED RESISTANCE TO POISONS

Hervé Toulhoat, Le Pecq; Yves Jacquin, Sevre, and Thierry Dupin, Garges les Gonesses, all of France, assignors to Societe Francaise des Produits pour Catalyse Pro-Catalyse, Rueil-Malmaison, France

Division of Ser. No. 505,557, Jun. 17, 1983, Pat. No. 4,499,203. This application Jun. 5, 1984, Ser. No. 617,433
Claims priority, application France, Jun. 17, 1982, 82 10757
Int. Cl.[4] C10G *45/08*
U.S. Cl. 208—216 PP 29 Claims

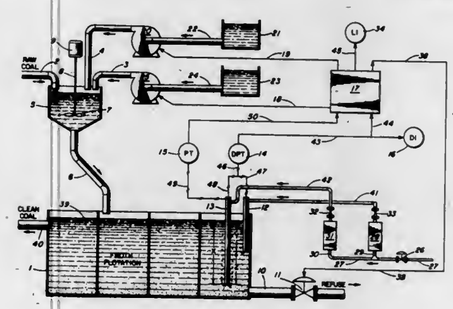
1. In a process for hydrotreating a hydrocarbon, wherein a hydrocarbon charge is contacted with hydrogen in the presence of a supported heterogeneous hydrotreatment catalyst, and wherein said process is subject to catalyst deactivation by pore mouth plugging,
the improvement wherein said catalyst comprises a carrier and at least one catalytic metal or compound of a catalytic metal, said metal or at least one of the metals being vanadium, molybdenum, tungsten, nickel, cobalt or iron, wherein said catalyst consists of a plurality of juxtaposed agglomerates each formed of a plurality of acicular platelets, the platelets of each agglomerate being oriented generally radially with respect to one another and with respect to the center of the agglomerate; wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts.

4,552,651

CONTROL OF FROTH CELL PERFORMANCE THROUGH THE USE OF DIFFERENTIAL BUBBLER TUBES

Thomas D. Sandbrook, Eighty Four, and Roy O. Scandrol, Library, both of Pa., assignors to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 551,222, Nov. 14, 1983, abandoned. This application Feb. 1, 1984, Ser. No. 575,964
Int. Cl.[4] B01J *4/00*
U.S. Cl. 209—1 5 Claims



1. A method of controlling the separation of coal from a coal and refuse pulp mixture in a froth flotation means comprising the steps of:
(a) providing a froth flotation means, and a differential bubbler tube means, said bubbler tube means comprising two tubes disposed to different levels into the pulp within said flotation means,
(b) passing gas through said differential bubbler tube means while measuring the differential back pressure of said tubes and also the back pressure of one of said tubes,
(c) producing a first control signal proportional to the ratio of said back pressure to said differential back pressure, and a second control signal proportional to said differential back pressure,
(d) feeding a mixture of coal and refuse pulp to said froth flotation means to form a coal froth product and a refuse output,
(e) controlling the flow rate of said refuse output from said froth flotation means in response to changes in said first control signal, and
(f) controlling the rate of addition of a froth enhancement additive to said froth flotation means in response to changes in said second control signal.

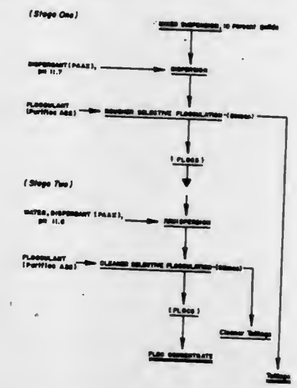
4,552,652

METHOD FOR REMOVING INORGANIC SULFIDES FROM NON-SULFIDE MINERALS

Yosry A. Attia, Columbus, Ohio, and Douglas W. Fuerstenau, Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 17, 1983, Ser. No. 542,349
Int. Cl.[4] B03B *1/00*
U.S. Cl. 209—5 6 Claims

1. The method as in claim 2 wherein the polymeric agent of the admixing has a molecular weight of from about 2,000 to about 20,000 and is a reaction product of carbon disulfide and a polymer selected from the group consisting of cellulose, methyl cellulose, sodium carboxymethyl cellulose, hydroxypropyl methyl cellulose, polyvinyl alcohol, polysaccharide,



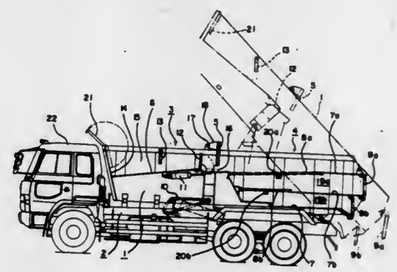
polyacrylic acid, methacrylic acid and salts thereof, and partially hydrolyzed acrylamide.

4,552,653

REAR DUMP TRUCK WITH SIEVING DEVICE

Shin Sumino, Sukaihaitsu Tokai 2310, 1-13 Tomiyacho, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Apr. 20, 1984, Ser. No. 602,472
Claims priority, application Japan, Apr. 22, 1983, 58-70144
Int. Cl.[4] B07B *1/28*
U.S. Cl. 209—421 9 Claims



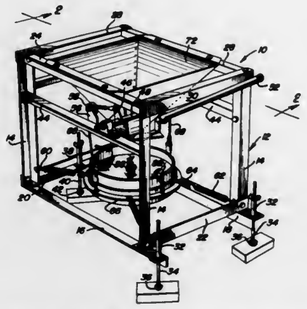
1. A rear dump truck comprising:
a tiltable load box including a floor, a front plate and a pair of side plates;
a partition dump door pivotably carried by said load box defining a gap between a lower edge portion thereof and the floor and dividing the box into a front section and a rear section, said partition dump door being lockable in a plurality of predetermined pivotal positions;
sieve means extended substantially horizontally at an intermediate height position within the box rear section;
a load chamber forming a part of the box below the sieve means;
rear dump door means attached to the load chamber; and
a stopper pivotably mounted on the floor of the front section at a position forward of the partition dump door in this box, locking means for locking said stopper in a predetermined pivotal position, the stopper being pivotable between a first position adjacent the floor of the box and a second, upright position relative to the floor of the box, the height of the stopper in the second position being lower than that of the side plates of the box.

4,552,654

SAMPLE CONCENTRATING CABLE JIG

William L. Mansker, 8704 Gutierrez NE., Albuquerque, N. Mex. 87111

Filed Mar. 30, 1984, Ser. No. 595,476
Int. Cl.[4] B03B *4/00*
U.S. Cl. 209—425 **7 Claims**



1. A sample concentrator jig including an open support frame for support in body of water with the level of the water disposed, generally, at a predetermined level on said frame, a mount, a generally horizontal sample support screen supported from said mount, said mount including portions thereof horizontally spaced apart about and outward of said support screen, a plurality of generally horizontal elongated coiled expansion springs extending between and having their opposite ends removably anchored to said mount portions and to corresponding peripherally spaced portions of said support frame with said springs in at least partially tensioned state and supporting said mount and screen from said frame, lift means connected between said frame and mount operative to intermittently direct and release upward thrusts on said mount, said expansion springs supporting said screen at a level at least slightly below said predetermined level, said lift means including a plurality of upstanding elongated and flexible tension member sections having their lower ends anchored relative to said mount portion and means for applying said upward thrusts on the upper end portions of said tension member sections, said tension member section lower ends being evenly spaced about a central area of said support screen, said means for applying said upward thrusts on said tension member sections including an operating shaft oscillatably supported from said frame and extending horizontally thereacross, said operating shaft including a radially outwardly projecting handle and a pair of radially outwardly projecting lever arms adjacent its opposite ends, a pair of pulley wheels journaled from opposite side portions of said frame, substantially vertically spaced above the tension member section lower ends, said tension member sections including mid-portions trained over said pulley wheels, the ends of said tension member sections remote from said mount being anchored relative to said lever arms.

4,552,655

SELF-CLEANING FILTER APPARATUS

Moshe Granot, Moshav Adanim, Israel

Filed Oct. 6, 1981, Ser. No. 309,094
Int. Cl.[4] B01D *19/02*
U.S. Cl. 210—108 **10 Claims**

1. Filter apparatus adapted to be connected to a supply line for a fluid to be filtered and to be operated according to either a filter mode or a self-cleaning mode, comprising:

a housing having a filter body therein;

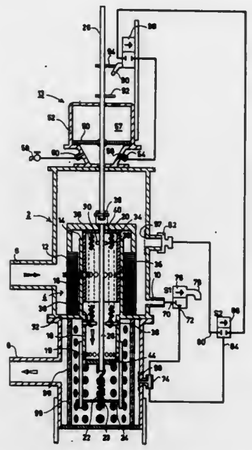
said housing including an inlet on the upstream side of the filter body, a clean fluid outlet on the downstream side of the filter body, and a dirty fluid outlet on the upstream side of the filter body;

said filter body including a plurality of filter elements which are adapted to be pressed together during the filtering mode of operation, and spread apart during the self-cleaning mode of operation;

a drive for moving the filter elements apart;

a first valve between the downstream side of the filter body and the clean fluid outlet;

a second valve between the upstream side of the filter body and the dirty fluid outlet;



and differential pressure control means sensing the difference in pressure between the upstream and downstream sides of the filter body, and effective, in response to sensing a differential pressure exceeding a predetermined value, to initiate a self-cleaning mode of operation by closing said first valve, opening said second valve, and actuating said drive to permit the filter elements of the filter body to move apart and to be cleaned by the fluid.

4,552,656

PURIFIED WATER STORAGE SYSTEM

Donald F. Solomon, Newport Beach, Calif., assignor to Wetco, Inc., Las Vegas, Nev.

Filed Sep. 23, 1983, Ser. No. 534,983
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—137 **16 Claims**



1. A purified water container system comprises

a container having rigid walls capable of holding a fluid under pressure,

a first chamber within said container,

a flexible impermeable bladder mounted within said first chamber,

walls means in the container for precluding expansion of the bladder beyond a predetermined volume,

a second chamber having a volume of at least 75% of the volume of the first chamber,

at least one passageway connecting said first chamber with said second chamber,

conduit means for passing purified water from a reverse osmosis purification unit into and out from the bladder under pressure to said bladder, and

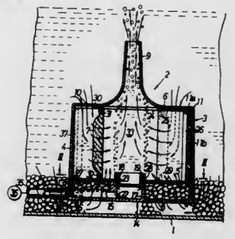
supply means for providing a gas under pressure to said chambers, said system being constructed such that when the bladder is filled to the maximum capacity, a volume of pressurized gas approximately equal to at least 75% of the bladder volume exists in said second chamber to enable the maintenance of a substantial pressure drop across said reverse osmosis unit.

4,552,657

FILTER

Yonekichi Ogawa, Tokyo, Japan, assignor to Suisaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,435
Claims priority, application Japan, Jan. 24, 1984, 59-11561
Int. Cl.[4] B01D *35/02*
U.S. Cl. 210—169 **3 Claims**



1. A filter comprising a filter case the interior of which is divided by a separator into upper and lower filtration chambers, a compact filter material of a cylindrical shape disposed in said upper filtration chamber so as to define on both outer and inner sides thereof a non-purification chamber communicating with upper suction ports formed at the upper part of said filter case and a purification chamber communicating with a drain pipe disposed on the upper surface of said filter case and having a large capacity, and a coarse filter material housed in said lower filtration chamber and serving also as a weight, said lower filtration chamber communicating with said purification chamber through passage ports formed in said separator while communicating with lower suction ports formed in a bottom surface of said filter case, said purification chamber communicating with an air feed port connected to an air pump.

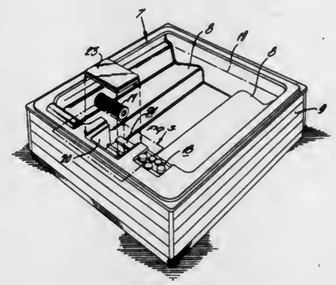
4,552,658

SPA WITH RECESSED FILTER CHAMBER

Carson D. Adcock, Huntington Valley, and Robert Lauter, Horsham, both of Pa., assignors to W. W. Adcock, Inc., Huntingdon Valley, Pa.

Filed Aug. 31, 1984, Ser. No. 645,870
Int. Cl.[4] E04H *3/18*
U.S. Cl. 210—169 **4 Claims**

1. A spa with a water recirculation system, comprising a molded shell for the spa water having a filter cavity integrally molded with the shell below the water level and upwardly open for access from above the water level, the cavity being inwardly open to the interior of the shell to receive water therefrom and having a filter chamber in the lower portion thereof positioned to receive a filter in a horizontal position at a level below the water level in the shell and the filter chamber having a suction connection extended exteriorly of the shell, and a renewable filter positioned horizontally in said chamber to receive water flowing into the filter chamber from the interior of the shell and delivering the filtered water to said suction connection.

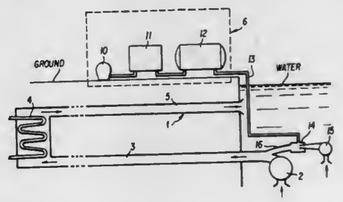


4,552,659

APPARATUS FOR ELIMINATION OF BIOFOULING

Norikazu Tabata; Shigeki Nakayama; Keisuke Namba, and Shiro Yamauchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,144, Mar. 4, 1980, abandoned. This application Mar. 29, 1984, Ser. No. 594,911
Int. Cl.[4] C02F *1/78*
U.S. Cl. 210—177 **1 Claim**



1. Apparatus for the elimination of biofouling of a water system comprising:

an oxygen supply tank;

an oxygen pressure boost means;

a low-efficiency ozonizer;

a first heat exchanger means having a high temperature side and a low temperature side;

first, second, third and fourth motor operated valves;

a thermal conditioning recycling pump;

a second heat exchanger means having first, second third and fourth fluid ports;

a water ejector in communication with said water system;

a water ejector pump in communication with said water ejector; and

a single adsorption column, wherein said adsorption column further comprises an ozone adsorbent, a thermal conditioning jacket disposed around said adsorbent for heating and cooling said adsorbent, first and second thermal conditioning ports in communication with said jacket, and exactly three gas ports in communication with said adsorbent, said three gas ports further comprising a gas inlet and first and second gas outlets; wherein said apparatus further comprises

a closed gas-handling piping path comprising and extending uninterrupted from said first gas outlet of said adsorption column, through said first motor controlled valve, through said low temperature side of said first heat exchanger means, through said oxygen supply tank, through said oxygen pressure boost means, through said low-efficiency ozonizer, through said high temperature side of

said first heat exchanger means, through said second motor operated valve and to said gas inlet of said adsorption column;

a closed thermal conditioning piping loop for circulating a first thermal conditioning fluid to selectively heat and cool said adsorbent, wherein said thermal conditioning loop further comprises and extends through said thermal conditioning jacket and from said first thermal conditioning port of said adsorption column to said second thermal conditioning port of said adsorption column, wherein said thermal conditioning loop further comprises said thermal conditioning recycling pump, said third motor controlled valve and said first and second fluid ports of said second heat exchanger means;

means for passing a second thermal conditioning fluid through said third and fourth ports of said second heat exchanger means;

an ozone ejecting piping path extending uninterrupted from said second gas outlet of said adsorption column, through said fourth motor operated valve and thence to said water ejector;

wherein said water ejector and said water ejector pump further comprise means for selectively rapidly desorbing ozone from said adsorbent and injecting said ozone at high concentration into said water system; and

wherein said thermal conditioning loop further comprises means for heating said adsorbent during said desorbing and ejecting and means for cooling said adsorbent during operation of said ozonizer.

4,552,660

PLATE FILTER HAVING A MOVABLE FILTER CLOTH

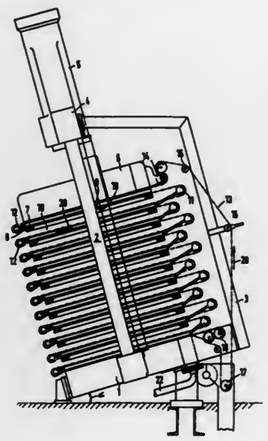
Alfons Schotten, Düren, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,286

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246771

Int. Cl.⁴ B01D *25/12*

U.S. Cl. 210—225 **2 Claims**



1. A plate filter having a length, comprising

(a) a stand;

(b) a plurality of filter plates supported on said stand in a parallel orientation and being shiftable parallel to said length;

(c) means for shifting said filter plates towards one another;

(d) a first deflecting roll carried by each filter plate on first side thereof; each first deflecting roll having a roll axis; roll axes of consecutive first deflecting rolls, as viewed parallel to said length, lying alternatingly in a first plane and in a second plane spaced from one another;

(e) a second deflecting roll carried by each filter plate on a second side thereof;

(f) a filter cloth supported by said first and second deflecting rolls; said filter cloth being trained in succession alternatingly about said first and second deflecting rolls for guiding said filter cloth in a zigzag course between consecutive filter plates;

(g) a first sprocket affixed to each said first deflecting roll coaxially therewith for rotation with the first deflecting roll as a rigid unit; each said first sprocket having a diameter;

(h) a second sprocket mounted on each said first deflecting roll coaxially therewith for free idling rotation relative to the first deflecting roll; each said second sprocket having a diameter; the distance between said first and second planes being greater than the diameter of said first and second sprockets;

(i) a first elongated drive means being trained in a zigzag course in an alternating sequence about first and second sprockets of first deflecting rolls belonging to consecutive filter plates as viewed along said length; said first elongated drive means being in meshing relationship with the first and second sprockets about which said first elongated drive means is trained;

(j) a second elongated drive means being spaced from said first elongated drive means in a direction perpendicular to said length; said second elongated drive means being trained in a zigzag course in an alternating sequence about second and first sprockets of first deflecting rolls belonging to consecutive filter plates as viewed along said length; said second elongated drive means being in meshing relationship with the first and second sprockets about which said second elongated drive means is trained; the zigzag course of said first elongated drive means being parallel to the zigzag course of said second elongated drive means; the diameter of said first and second sprockets and the distance between said first and second planes being dimensioned for varying the magnitude of a looping angle represented by an arc along which the first and second elongated drive means are in engagement with respective first and second sprockets to compensate for length variations of said first and second elongated drive means upon shifting motion of said filter plates relative to one another; and

(k) means for driving said first elongated drive means in a first direction and said second elongated drive means in a second, opposite direction for rotating said first deflecting rolls to advance said filter cloth in said zigzag course thereof.

4,552,661

LIQUID FILTER HAVING SELF-RETAINING FILTER BAGS

Howard W. Morgan, P.O. Box 735, Michigan City, Ind. 46360

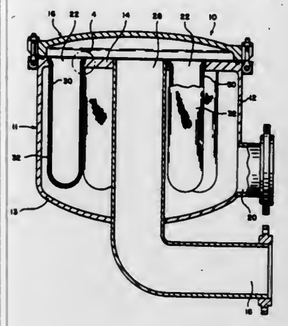
Continuation of Ser. No. 486,396, Apr. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 311,962, Oct. 16, 1981, abandoned. This application May 24, 1983, Ser. No. 497,426

The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.⁴ B01D *29/30*

U.S. Cl. 210—232 **3 Claims**

1. In a liquid filter including a housing having an upper part defining at least one opening into the interior of said housing, a removable cover spanning said housing opening, inlet and outlet ports providing fluid communication with said housing interior through said housing opening, a filter bag having a reticulated sack part, said ring part including a flexible downturned lip having an angled side wall and terminating in an end edge, said housing upper part including a channel circumscribing said defined housing opening, the improvement wherein said channel includes a base generally paralleling the plane of said housing opening and a side tapering upwardly and inwardly relative to the opening, said bag sack part extending through said housing opening and said bag ring part lip seated



in said channel with the side wall of said lip being urged against the side of said channel and the end edge of said lip contacting the base of said channel to secure and seal said bag to said housing at said housing upper part.

4,552,662

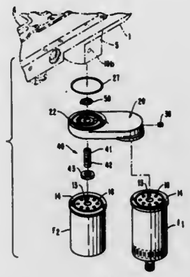
INTEGRAL FUEL FILTER HEAD AND ADAPTER FOR MULTIPLE FUEL FILTER CANISTERS

Timothy P. Webster, Columbus; Ervin E. Bush, Westport, and Roger D. Sweetland, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 2, 1984, Ser. No. 626,937

Int. Cl.⁴ B01D *29/24*

U.S. Cl. 210—232 **21 Claims**



1. A liquid fuel operated engine having an integral fuel filter head formed unitarily on a part of the engine, said integral fuel filter head having a socket for matingly receiving a fuel filter canister and ports, in communication with fuel lines within said engine, for delivery of clean fuel to and receipt of dirty fuel from respective ones of said fuel lines, and a fuel filter adapter detachably secured to said integral fuel filter head, said fuel filter adapter having a body formed with a base mounting socket for matingly engaging the fuel filter socket of the integral fuel filter base and at least two filter sockets for matingly receiving a respective fuel filter canister, passages being formed in said body of the adapter for enabling dirty fuel to be fed from said engine through said base mounting socket, said filter sockets and filter canisters attached thereto, and cleaned fuel to be returned through said base socket to said engine.

4,552,663

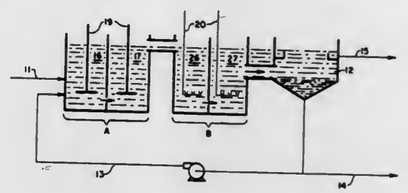
PROCESS FOR THE REMOVAL OF AMMONIACAL NITROGEN IN THE BOD SORPTION ZONE OF A WASTEWATER TREATMENT PLANT

Marshall L. Spector, Allentown, and Sun-Nan Hong, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 31, 1984, Ser. No. 636,208

Int. Cl.⁴ C02F *3/30*

U.S. Cl. 210—605 **6 Claims**



1. In a method for operating an activated sludge system to produce a sludge having rapid settling characteristics and containing an activated biomass species which method comprises:

(a) forming a mixed liquor in a BOD sorption zone, said mixed liquor being formed by mixing an activated biomass with a soluble BOD_5 and ammonia containing wastewater influent under conditions such that at least 25% of the soluble BOD_5 is sorbed by said biomass;

(b) oxidizing the BOD_5 in the mixed liquor, including at least part of the BOD_5 sorbed in said biomass, in an oxidation zone by contracting the mixed liquor with an oxidizing agent, said oxidizing being effective for oxidizing at least 30% of the total influent BOD_5 in the mixed liquor;

(c) settling the resulting oxidized mixed liquor in a settling zone thereby forming a supernatant liquor and a dense sludge containing activated biomass; and

(d) recycling at least a portion of the dense sludge to the BOD sorption zone;

the improvement for removing more than at least 2 ppm ammoniacal nitrogen in the BOD sorption zone such that said removed ammoniacal nitrogen does not reappear in the system as NOX or protein, said improvement comprising:

reducing the ammoniacal nitrogen concentration of the mixed liquor in the oxidation zone such that the ammoniacal nitrogen concentration in the mixed liquor leaving said zone is less than about 0.3 ppm and maintaining an overall F/M ratio equal to or greater than about 0.05.

4,552,664

METHOD AND APPARATUS FOR REMOVING IONS FROM A LIQUID

Philip E. Benner, 1739 Randolph Rd., Schenectady, N.Y. 12308

Filed May 9, 1984, Ser. No. 608,428

Int. Cl.⁴ B03C *1/02*

U.S. Cl. 210—695 **12 Claims**

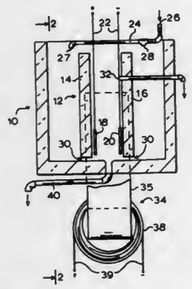
1. A method of removing ions from an ionizing liquid, comprising:

(a) establishing liquid flow in a predetermined direction;

(b) electrically charging the ions in a selected region of the flowing liquid;

(c) applying a magnetic field to said selected region and to the electrically-charged ions therein operative to move said electrically charged ions in the direction of liquid flow whereby the liquid remote in the direction of liquid flow from said selected region is of increased ion concentration;

(d) discharging liquid at a location remote in the direction of liquid flow from said selected region; and



(e) withdrawing liquid of lower ion concentration from a location of said selected region near the applied magnetic field.

4,552,665

STABILIZATION OF SOLUBLE MANGANESE AND ITS REACTION PRODUCTS

Paul H. Ralston, Bethel Park, and Sandra L. Whitney, McDonald, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed May 4, 1984, Ser. No. 607,027
Int. Cl.[4] C02F *5/10*
U.S. Cl. 210—697 **4 Claims**

1. A process for inhibiting the precipitation of dissolved manganese ion and its reaction products in aqueous solutions, comprising adding to an aqueous solution containing manganese ions 0.1 to 20 ppm of a copolymer of an unsaturated carboxylic compound selected from the group consisting of acrylic acid, methacrylic acid, their salts and mixtures thereof, and an unsaturated sulfonic compound selected from the group consisting of 2-acrylamido-2-methylpropylsulphonic acid, 2-methacrylamido-2-methylpropylsulphonic acid, their salts and mixtures thereof, wherein said copolymer has a weight average molecular weight of less than about 50,000, as determined by low angle laser light scattering and said carboxylic compound to sulfonic compound has a weight ratio of 1:20 to 20:1, to inhibit the precipitation of said manganese ions and disperse said reaction products.

2. The process of claim 1, wherein said copolymer is added in combination with a compound selected from the group consisting of water-soluble polycarboxylates, phosphonate and phosphates and the weight of said copolymer to said polycarboxylate, phosphonate, or phosphate is 1:50 to 50:1.

4,552,666

PROCESS FOR THE TREATMENT OF SEWAGE SLUDGE

Dietrich Müller, Handelmannweg 1, D-2000 Hamburg 52, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,712
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243827
Int. Cl.[4] C02F *11/12*
U.S. Cl. 210—710 **10 Claims**

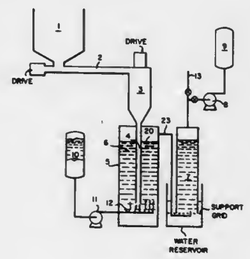
1. A process for the treatment of digested sewage sludge consisting essentially of mixing the sewage sludge with comminuted, dried autumn foliage until a deformable material is obtained, the proportions of autumn foliage to sewage sludge on a dry basis being from 0.3 to 0.6 parts of sewage sludge per part of comminuted autumn foliage and being such that the mixture is bound into a cohesive plastic material, a part of the water being removed from the sewage sludge either prior to the addition of the total autumn foliage, or after a partial addition thereof.

4,552,667

DESTRUCTION OF ORGANIC HAZARDOUS WASTES

Clifford G. Shultz, 1701 Glendale, Evansville, Ind. 47712

Filed Jun. 25, 1984, Ser. No. 624,368
Int. Cl.[4] C02F *1/70*; B01D *47/02*
U.S. Cl. 210—757 **14 Claims**



1. A process for treating hazardous wastes which contain hazardous organic compound containing covalently bound element selected from the group consisting of oxygen, nitrogen, sulfur and phosphorus, said process comprising the steps of introducing such compound below the surface of a bath comprising molten aluminum and reacting covalently bound oxygen, nitrogen, sulfur and phosphorus in said compound with molten aluminum in said bath to reduce such compound thereby destroying it and forming less hazardous product.

4,552,668

OXIDATION OF SULFIDES IN POLYMER-THICKENED AQUEOUS SOLUTION

Richard A. Brown, Trenton, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 30, 1984, Ser. No. 635,870
Int. Cl.[4] C02F *1/76*; C09K *3/00*
U.S. Cl. 210—759 **45 Claims**

41. A method for oxidizing a sulfide in a viscous, aqueous solution containing from 1 to 100 kg/m^3 of a hydratable polymeric material selected from the group consisting of polysaccharides, polysaccharide derivatives, polyacrylamides, polyacrylamide copolymers, and mixtures thereof comprising the steps of

a. adjusting the pH of the aqueous solution between pH 3 and pH 10, and

b. incorporating into the aqueous solution

i. from 0.05 to 0.5 parts by weight of a compound selected from the group consisting of aromatic hydroxy compounds, unsaturated compounds and allylic compounds,

ii. sufficient hydrogen peroxide to react with at least part of the sulfide present in the aqueous solution, and

iii. an effective amount of a transition metal activator selected from the group consisting of copper, iron, a coordination compound of copper or iron containing at least one single dentate ligand or a chelate of copper or iron containing at least one multidentate ligand.

4,552,669

PNEUMATIC HYDRO-PULSE FILTER SYSTEM AND METHOD OF OPERATION

Ron S. Sekellick, Prospect, Conn., assignor to Mott Metallurgical Corporation, Farmington, Conn.

Filed Apr. 18, 1983, Ser. No. 485,884
Int. Cl.[4] B01D *23/24*
U.S. Cl. 210—798 **32 Claims**

1. A repeatably rejuvenated filtration system comprising:

an elongated filter array comprising a plurality of open ended rigid tubular porous filter elements having relatively smooth interior wall surfaces forming interior axial bores;

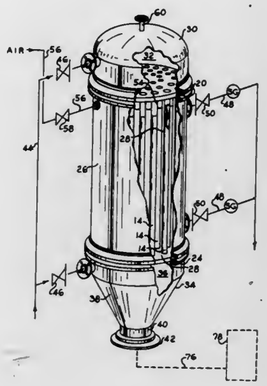
means for providing a flow stream of solid/fluid feed slurry to be filtered;

means for feeding the slurry into simultaneous operative engagement with the interior wall surface of each of said tubular filter elements at a sufficient pressure so that the fluid of the slurry passes outwardly through the walls of the tubular filter elements and the solids within the slurry are collected as a cake on the wall surfaces without substantial intrusion into the porous filter element;

means for selectively providing an increase in fluid pressure on the downstream side of said filter elements and for providing a brief pressure pulse of fluid radially inwardly through said walls of said porous filter elements into said axial bores to dislodge the collected cake from the interior wall surfaces and to provide a fluid bearing between said collected cake and said interior wall surfaces; and

means for subjecting the cake of solids to a rapid discharge fluid flow axially through the interior of the tubular element in the absence of filtration so that said fluid bearing coacts with said rapid axial fluid flow to flush the cake of solids axially along the interior of the tubular filter elements out an open end thereof.

18. A repeatably rejuvenating filtration process comprising the steps of:



(a) providing a flow stream of a solid/fluid feed slurry to be filtered;

(b) feeding the slurry into simultaneous operative engagement with a relatively smooth interior porous wall surface of each of a plurality of rigid tubular open ended filter elements at a sufficient pressure so that the fluid of the slurry passes outwardly through the walls of the tubular filter elements and the solids within the slurry are collected as a cake on the wall surfaces without substantial intrusion into the porous filter element;

(c) halting the flow of slurry to be filtered;

(d) selectively increasing filter pressure on the downstream side of the fluid element;

(e) subjecting the cake of solids to a brief fluid pressure pulse inwardly through the walls of the tubular filter elements sufficient to dislodge the cake of solids from the wall surfaces and provide a fluid bearing between the dislodged cake and the wall surfaces; and

(f) subjecting the cake of solids on the interior wall surfaces to a fluid flow axially through the interior of the tubular elements so that said fluid bearing coacts with said axial flow for removal of the cake of solids axially along the interior of the tubular filter elements and out the open ends thereof.

4,552,670

AMPHOTERIC WATER-IN-OIL SELF-INVERTING POLYMER EMULSION

Stanley A. Lipowski, Livingston, and John J. Miskel, Jr., Mendham, both of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 541,544, Dec. 1, 1983, Pat. No. 4,505,828, which is a division of Ser. No. 482,407, Apr. 6, 1983, Pat. No. 4,431,548, which is a division of Ser. No. 308,175, Oct. 5, 1981, Pat. No. 4,392,917, which is a division of Ser. No. 84,986, Oct. 15, 1979, Pat. No. 4,330,450. This application Feb. 22, 1985, Ser. No. 704,553
Int. Cl.[4] C09K *7/02*
U.S. Cl. 252—8.5 C **9 Claims**

1. In treatment of aqueous drilling muds for use in petroleum exploitation, the improvement which comprises adding to the mud an effective amount of from about 0.01% to about 1.0% by weight based on the weight of the drilling mud of an amphoteric water-in-oil self-inverting polymer emulsion having

(a) from about 10 to about 50 parts by weight of a polymer selected from the group consisting of

(1) a copolymer having from about 30 to about 99 parts by weight of a water soluble nonionic vinyl monomer and from about 1 to about 70 parts by weight of a water soluble amphoteric vinyl monomer, and

(2) a terpolymer having from about 30 to about 98 parts by weight of a water soluble nonionic vinyl monomer, from about 1 to about 35 parts by weight of a water soluble anionic vinyl monomer and from about 1 to about 35 parts by weight of a water soluble cationic vinyl monomer,

(b) from about 10 to about 50 parts by weight of water,

(c) from about 5 to about 50 parts by weight of a hydrophobic liquid,

(d) from about 2 to about 25 parts by weight of a water-in-oil emulsifying agent, and

(e) from about 1 to about 15 parts by weight of an inverting surfactant

to control viscosity of the mud during drilling.

4,552,671

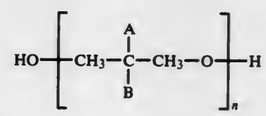
SPIN FINISH COMPOSITIONS FOR POLYESTER AND POLYAMIDE YARNS

Osamu Ogiso; Hisao Yamamoto, both of Aichi, and Akira Suzuki, Anjo, all of Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Oct. 15, 1984, Ser. No. 661,147
Claims priority, application Japan, Jun. 4, 1984, 59-69684
Int. Cl.[4] D06M *13/18, 13/50, 15/66*
U.S. Cl. 252—8.9 **1 Claim**

1. A spin finish composition adapted to be applied to polyester or polyamide yarns for ultra-high speed texturing with yarn speed 600 m/min or greater, said composition comprising

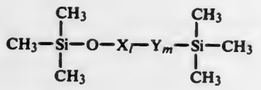
a base oil of polyether compounds which are ω-methoxypoly(oxyethylene/oxypropylene)ether derivatives synthesized from an alcohol shown by



(I)

(where A and B are independently alkyl group with 1 to 4 carbon atoms or hydroxy methyl group and n is 1 or 2), 1,2-propylene oxide and a methylator, the average molecular weight of said polyether compounds being 1500 to 6000 and the average weight ratio of oxyethylene/oxypropylene thereof being 5–50/95–50; and

0.05 to 10 weight % of polyalkylene oxide modified polysiloxane of average molecular weight no less than 2500 shown by

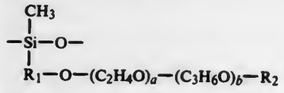


(II)

(where X is



l is an integer in the range of 20 to 100; and Y is



wherein R_1 is alkylene group with 3 to 4 carbon atoms, R_2 is hydrogen, alkyl group with 1 to 8 carbon atoms or acyl group with 2 to 8 carbon atoms; a and b are integers satisfying the conditions $15 \leqq a+b \leqq 80$ and $2/8 \leqq b/a \leqq 8/2$; the polydimethyl siloxane part shown by X and the polyalkylene oxide modified siloxane part shown by Y may be repeated either by block repetition or by random repetition; and the repetition parts marked by a and b may be either by block repetition or by random repetition).

4,552,672

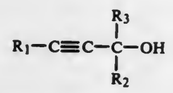
METHOD AND COMPOSITION FOR ACIDIZING SUBTERRANEAN FORMATIONS

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 21, 1984, Ser. No. 622,943
Int. Cl.⁴ E21B *43/27*
U.S. Cl. 252—8.55 C **15 Claims**

1. A method of inhibiting the corrosivity of a corrosive acid employed in acidizing subterranean formations in contact with a metal at elevated temperatures which comprises adding to said corrosive acid an inhibiting effective amount of a stabilized corrosion inhibitor composition comprising:

at least one acetylenic alcohol having the general formula



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, alkyl, phenyl, substituted phenyl and hydroxy-alkyl radicals;

a quaternary aromatic ammonium compound;

an aromatic hydrocarbon compound which exhibits high oil-wetting characteristics;

an antimony compound capable of activation by the other constituents of said corrosion inhibitor composition whereby the corrosivity of said corrosive acid in contact with said ferrous metal is reduced, said antimony compound comprising at least one member selected from group consisting of antimony trioxide, antimony pentoxide, antimony trichloride, antimony pentachloride, alkali metal salts of pyroantimonate, antimony adducts of ethylene glycol and solutions containing ethylene glycol, water and the oxidized product of hydrogen peroxide at least one member selected from the group consisting of trivalent antimony compounds; and,

a stabilizer comprising at least one member selected from the group consisting of reactive fluoride-containing compounds, compounds having alpha-hydroxy or beta-hydroxy organic acid functional groups, or non-organic acid polyhydroxy compounds having from 3 to 9 carbon atoms, present in an amount effective for preventing substantial precipitation of said antimony compound from at least partially spent acid solutions containing said corrosion inhibitor.

4,552,673

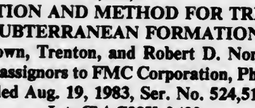
BLEND OF ALKYL PHENOL ETHOXYLATES AND ALKYL PHENOL GLYCOXYLATES AND THEIR USE AS SURFACTANTS

Marilyn A. Grolitzer, Hamden, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Oct. 24, 1983, Ser. No. 544,904
Int. Cl.⁴ C11D *17/00*; C09K *3/00*
U.S. Cl. 252—8.55 D **13 Claims**

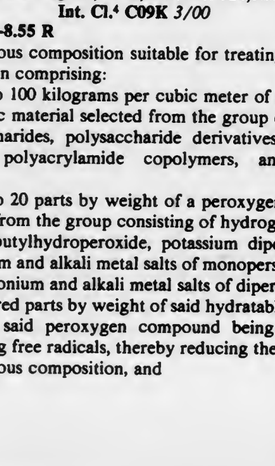
1. A surfactant composition comprising a blend of:

(a) at least one alkyl phenol ethoxylate selected from the group consisting of



wherein R is a branched or linear alkyl having from about 6 to about 18 carbon atoms and x is from about 4 to about 15; and

(b) at least one alkyl phenol glycoxylate selected from the group consisting of



wherein R' is a branched or linear alkyl having from about 6 to about 18 carbon atoms and y is from about 4 to about 15; and the weight ratio of (a) to (b) is from about 9:1 to about 1:2.

4,552,674

COMPOSITION AND METHOD FOR TREATING A SUBTERRANEAN FORMATION

Richard A. Brown, Trenton, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 19, 1983, Ser. No. 524,515
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 252—8.55 R **39 Claims**

1. An aqueous composition suitable for treating a subterranean formation comprising:

a. from 1 to 100 kilograms per cubic meter of a hydratable polymeric material selected from the group consisting of polysaccharides, polysaccharide derivatives, polyacrylamides, polyacrylamide copolymers, and mixtures thereof,

b. from 1 to 20 parts by weight of a peroxygen compound selected from the group consisting of hydrogen peroxide, tertiary butylhydroperoxide, potassium diperphosphate, ammonium and alkali metal salts of monopersulfuric acid, and ammonium and alkali metal salts of dipersulfuric acid per hundred parts by weight of said hydratable polymeric material, said peroxygen compound being capable of generating free radicals, thereby reducing the viscosity of said aqueous composition, and

c. a coordination compound of a ligand and a metal atom capable of existing in the solution in a first, or lower, oxidation state and a second, or higher, oxidation state, said coordination compound being present in sufficient quantity whereby 0.1 to 10 parts by weight of said metal atom is contained in said aqueous solution per 100 parts of said peroxygen compound.

4,552,675

COMPOSITION AND METHOD FOR TREATING A SUBTERRANEAN FORMATION

Richard A. Brown, Trenton, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 19, 1983, Ser. No. 524,680
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 252—8.55 R **42 Claims**

1. An aqueous composition suitable for treating a subterranean formation comprising:

a. from 1 to 100 kilograms per cubic meter of a hydratable polymeric material selected from the group consisting of polysaccharides, polysaccharide derivatives, polyacrylamides, polyacrylamide copolymers, and mixtures thereof,

b. from 1 to 20 parts by weight of a peroxygen compound selected from the group consisting of hydrogen peroxide, potassium dipersulfate, ammonium and alkali metal salts of monopersulfuric acid, ammonium and alcohol metal salts of dipersulfuric acid, tertiary butylhydroperoxide and mixtures thereof per hundred parts by weight of said hydratable polymeric material, said peroxygen compound being capable of generating free radicals, thereby reducing the viscosity of said aqueous composition, and

c. from 0.01 to 5 parts by weight of a free radical scavenger selected from the group consisting of unsaturated alcohols containing six or less carbon atoms, phenols, allylic monomers, and mixtures thereof per hundred parts by weight of the peroxygen compound in the aqueous composition.

4,552,676

COMPOSITION AND METHOD FOR LUBRICATING INSULATED ELECTRICAL CONDUCTORS

Henry F. Norris, 1506 Main St., Whiteford, Md. 21160

Filed Sep. 29, 1982, Ser. No. 428,191
Int. Cl.⁴ C10M *7/48, 7/52*
U.S. Cl. 252—20 **4 Claims**

1. A lubricating composition for installing an insulated electrical conductor in a conduit wherein: the ingredients are present in the following weight percentages:

powdered drying agent which is micron-mesh silica	0.1 to 1%;
powdered surfactant which is a salt of a fatty acid	2 to 6%;

and the difference from 100% being powdered lubricant which is talc.

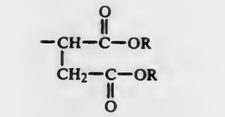
4,552,677

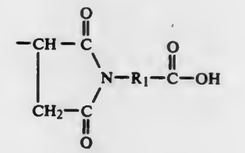
COPPER SALTS OF SUCCINIC ANHYDRIDE DERIVATIVES

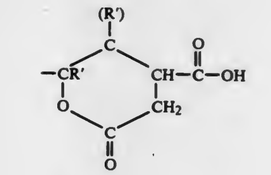
Thomas R. Hopkins, Chesterland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

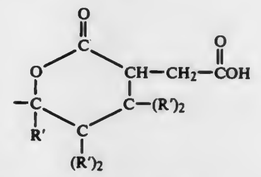
Filed Jan. 16, 1984, Ser. No. 571,247
Int. Cl.⁴ C10M *1/54*
U.S. Cl. 252—33.6 **7 Claims**

1. A composition comprising a copper salt of a substituted succinic anhydride derivative containing at least one free carboxylic acid group; wherein said substituted succinic anhydride derivative contains a succinic anhydride derivative group selected from the group consisting of:









wherein each R is independently hydrogen or a hydrocarbon-based group containing up to about 18 carbon atoms, with the proviso that at least one R is hydrogen, R_1 is a lower alkyl radical, and, each R' is independently hydrogen or a hydrocarbon-based group containing up to 27 carbon atoms; and wherein said substituted succinic anhydride derivative contains a substituent group which is a hydrocarbon-based group with the proviso that the total number of carbon atoms in said substituent group and said R' groups is no more than 35.

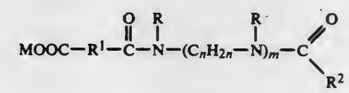
4,552,678

CORROSION INHIBITORS FOR AQUEOUS LIQUIDS FOR THE WORKING OF METALS, AND A PROCESS FOR THEIR PREPARATION

Francesco Cargnino; Giuseppe Natoli, and Horst Lorke, all of Hoechst Aktiengesellschaft, P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,362
Claims priority, application Italy, Oct. 25, 1982, 23902 A/82
Int. Cl.⁴ C10M *3/30*
U.S. Cl. 252—49.3 **5 Claims**

1. A compound of the general formula

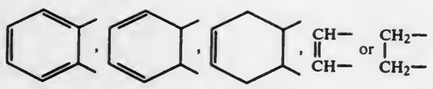


(I)

in which

R denotes hydrogen or hydroxymethyl,

R^1 denotes a group of the formulae



R^2 denotes hydrogen, C_1–C_{12}-alkyl, C_1–C_5-hydroxyalkyl, phenyl, tert.-butylphenyl or styryl,

n denotes 2 or 3,

m denotes a number from 1 to 4 and

M denotes mono-, di- or tri-ethanolammonium or isopropanolammonium.

4. A corrosion-inhibiting aqueous liquid containing therein between about 0.5% or 5.0% by weight of a compound of claim 1.

5. A cooling lubricant containing therein between about 0.5% and 5.0% weight of a compound of claim 1.

4,552,679

METHOD FOR DEODORIZING HYPOCHLORITE DENTURE CLEANSING SOLUTIONS AND PRODUCT CONTAINING A DELAYED RELEASE HYPOCHLORITE DEACTIVATOR

Alexander M. Schobel, North Plainfield, and Robert W. Schumacher, Kenvil, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 16, 1984, Ser. No. 590,129

Int. Cl.⁴ A61K *7/30;* **C11D** *7/54, 7/60, 17/00*

U.S. Cl. 252—90 **20 Claims**

1. An effervescent denture cleansing composition having two separate parts, comprising a fast dissolving effervescent first part having incorporated therein a cleansing agent comprising a hypochlorite generating agent and an effervescent second part slower disintegrating in water than the first part having incorporated therein a hypochlorite deactivator.

3. The composition according to claim 1 wherein the hypochlorite deactivator is an alkali metal perborate, alkali metal nitrite, or ascorbic acid.

4,552,680

HYPOCHLORITE BLEACH CONTAINING SURFACTANT AND ORGANIC ANTIFOAMANT

William L. Hartman; David A. O'Brien, both of Cincinnati, and Thomas H. Taylor, Middletown, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,528

Int. Cl.⁴ C11D *7/26, 7/54*

U.S. Cl. 252—102 **5 Claims**

1. A method of reducing foam in a process for fast line bottling and packing of a fragranced aqueous bleach composition from about 2% to about 16% by weight alkali metal hypochlorite compound and from about 0.05% to about 3.0% by weight hypochlorite stable surfactant, said method comprising adding to said composition a hypochlorite stable organic antifoamant at a level of from about 0.005% at about 1% by weight of said composition and wherein said organic antifoamant is present at a level in said composition which reduces foam at least 25% versus a comparable composition free of said organic antifoamant according to the Foam Reduction Test; and wherein when said hypochlorite stable surfactant is an amine oxide said level of organic antifoamant is at least 0.05% by weight of said composition, wherein said antifoamant material provides sufficient reduction of foam to facilitate faster packing line speeds in the bottling of said bleach.

4,552,681

GRANULAR, FREE-FLOWING DETERGENT COMPONENT AND METHOD FOR ITS PRODUCTION

Otto Koch, Leichlingen; Herbert Reuter, Hilden, and Wolfgang Seiter, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 541,569, Oct. 13, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 678,385

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344698

Int. Cl.⁴ C11D *3/075, 3/12, 11/02, 17/06*

U.S. Cl. 252—140 **38 Claims**



1. A method for preparing a granular, freeflowing detergent component which dissolves rapidly in water, which has a powder density of from about 550 to 800 gm/l, more than 50% by weight of which comprises droplet-like to rodlet-like particles having an average diameter of from about 0.02 to 1.5 mm, an average length of from about 0.1 to 5 mm, and a ratio of average diameter to average length of from about 1:1.2 to 1:10, which method comprises spraying an aqueous suspension of synthetic, essentially nonionic surfactants, inorganic supports, additional organic washing aids, and water bound by adsorption and in hydrate form, the suspension containing from about 35 to 55% by weight of water, through nozzles having an orifice diameter of from about 3 to 5.5 m into a spray-drying tower under a pressure of from 16 to 30 bars and at a temperature equal to or less than about 250° C., the ratio of the pressure at the nozzle entrance to the nozzle orifice diameter being from about 3 to 9 bars/mm, wherein the product, as recovered from the spray-drying step, contains about 15 to 28% by weight of alkoxylated surfactant(s).

11. The method of claim 1, wherein said inorganic supports include an anhydrous sodium tripolyphosphate having a content of from 30 to 50% of the I-type modification.

4,552,682

PEROXIDE COMPOSITION CONTAINING PHENOLIC ANTIOXIDANT

Donald J. Black, Akron, and Robert H. Tang, Norton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,058

Int. Cl.⁴ C01B *13/00, 15/00;* **C09K** *3/00*

U.S. Cl. 252—186.26 **17 Claims**

1. A peroxide composition consisting essentially of:

a. from about 10 to about 65 weight percent organic peroxide dispersed in an aqueous medium containing sufficient surfactant to provide a stable dispersion, and

b. an amount of phenolic antioxidant sufficient to reduce the rate of self induced homolytic decomposition of the organic peroxide at temperatures of from 0° C. to +5° C.

4,552,683

GAS DESULFURIZATION REACTANT

Byron E. Powell, Rolling Meadows; Virendar S. Bakhshi, Chicago, and Donald A. Randolph, Wheaton, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 426,445, Sep. 29, 1982, Pat. No. 4,424,197. This application Sep. 14, 1983, Ser. No. 532,086

Int. Cl.⁴ C09K *3/00;* **B01J** *8/00;* **C01B** *17/00*

U.S. Cl. 252—189 **8 Claims**

1. A reactant for flue gas desulfurization comprising calcium oxide particles of bulk density less than 1 gram per cc, total pore volume of at least about 0.4 cubic centimeters per gram, total pore area of at least 1 square meter per gram, median pore diameter by surface area of less than 2 micrometers, median pore diameter by pore volume of at least 0.8 micrometers and apparent skeletal density of at least about 2.7.

4,552,684

DICHROIC DYE AND LIQUID CRYSTALLINE COMPOSITION FOR COLOR DISPLAY

Yasuyuki Yamada; Tsutomu Nishizawa, both of Yokohama; Tamio Mikoda; Tooru Miyahara, both of Ohmuta, and Masaharu Kikutsugi, Mihashi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

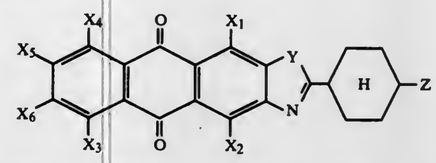
Filed Mar. 7, 1984, Ser. No. 586,981

Claims priority, application Japan, Mar. 8, 1983, 58-36613

Int. Cl.⁴ G02F *1/13;* **C09K** *3/34;* **C09B** *5/24*

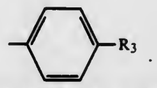
U.S. Cl. 252—299.1 **2 Claims**

1. A dichroic anthraquinonic dye represented by the following structural formula



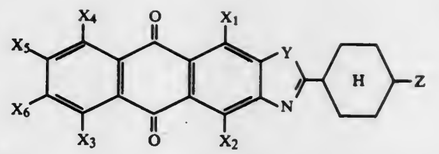
(I)

where X_1 represents a hydroxyl group, an amino group or a methylamino group; each of X_2, X_3 and X_4 represents a hydrogen atom, a halogen atom, a hydroxyl group, an amino group or a methylamino group; each of X_5 and X_6 represents a hydrogen atom, a straight or branched alkyl group having 1 to 4 carbon atoms or —$COOR_1$ in which R_1 represents an alkyl group having 1 to 4 carbon atoms; Y represents an oxygen or sulfur atom; and Z represents an alkyl group having 4 to 10 carbon atoms, —$COOR_2$ in which R_2 represents a straight or branched alky group having 4 to 10 carbon atoms, —$OOCR_2$ in which R_2 has the same meaning described above, —$C_2H_4OR_1$ in which R_1 has the same meaning described above, or



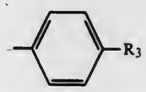
in which R_3 represents an alkyl group having 1 to 4 carbon atoms.

2. A liquid crystalline composition for color display comprising liquid crystals and dissolved therein a dichroic dye, said dichroic dye being at least one dichroic anthraquinonic dye represented by the structural formula



(I)

wherein X_1 represents a hydroxyl group, an amino group or a methylamino group; each of X_2, X_3 and X_4 represents a hydrogen atom, a halogen atom, a hydroxyl group, an amino group or a methylamino group; each of X_5 and X_6 represents a hydrogen atom, a straight or branched alkyl group having 1 to 4 carbon atoms or —$COOR_1$ in which R_1 represents an alkyl group having 1 to 4 carbon atoms; Y represents an oxygen or sulfur atom; and Z represents an alkyl group having 4 to 10 carbon atoms, —$COOR_2$ in which R_2 represents a straight or branched alkyl group having 4 to 10 carbon atoms, —$OOCR_2$ in which R_2 has the same meaning described above, —$C_2H_4OR_1$ in which R_1 has the same meaning described above, or



in which R_3 represents an alkyl group having 1 to 4 carbon atoms.

4,552,685

THICKENED AMPHOTERIC SURFACTANT SOLUTIONS

John M. Kernstock; Earl H. Johnson, and Bertha R. Vaughn, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 63,280, Aug. 2, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,028

Int. Cl.⁴ B01F *17/00*

U.S. Cl. 252—355 **18 Claims**

1. A thickened, amphoteric surfactant composition comprising an aqueous solution of a water-soluble amphoteric surfactant thickened with a pH responsive, synthetic addition copolymer which is insoluble in an aqueous liquid at a pH of less than about 2, said composition being at a pH and containing an amount of the pH responsive copolymer sufficient to increase the viscosity of the amphoteric surfactant composition without substantially reducing the clarity thereof.

4,552,686

CORROSION INHIBITING COMPOSITION AND METHOD

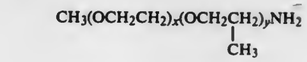
Betty J. Morris-Sherwood, and Edward C. Brink, Jr., both of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,992

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 252—392 **13 Claims**

1. An inorganic nitrite free composition which is noncorroding to metals in contact therewith comprising water, an effective amount of a glycol selected from the group consisting of an alkylene glycol, a polyoxyalkylene glycol, and mixtures thereof, and an effective amount of a polyoxyalkylene amine of the formula:



wherein x is a number between about 18 and 19, and y is a number between about 2 and 3.

4,552,687

ELECTRICALLY CONDUCTIVE PLASTICS AND PRODUCTION OF SAME

Harry H. Beacham, Langhorne, Pa., and Paul R. Mucenieks, Lawrenceville, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 8, 1983, Ser. No. 512,286
Int. Cl.[4] H01B *1/00*
U.S. Cl. 252—500 **9 Claims**

1. A polymer composition having antistatic properties comprising a thermoplastic polymer having incorporated therein an effective amount of a liquid mixture of trialkylphosphine oxides wherein each of the alkyls contain from 4 to 18 carbon atoms.

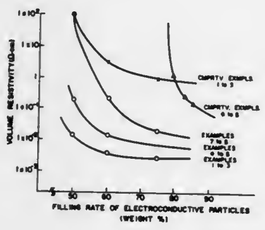
9. A polymer composition having antistatic properties comprising a thermoplastic polymer selected from the group consisting of polyethylene, polypropylene and polystyrene, said polymer having incorporated therein an effective amount of a liquid mixture of trialkylphosphine oxides wherein each of the alkyls contain from 4 to 18 carbon atoms.

4,552,688

ELECTROCONDUCTIVE SILICONE ELASTOMER COMPOSITIONS

Ryuji Sakamoto, Ohta, and Taro Yamazaki, Yokohama, both of Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,255
Claims priority, application Japan, Apr. 27, 1983, 58-74827
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—511 **8 Claims**



1. An electroconductive silicone elastomer composition comprising:

(A) 100 parts by weight of a polydiorganosiloxane having an average degree of polymerization of 500 to 12,000, wherein each polymer molecule contains at least two vinyl groups bonded to silicon atoms;

(B) 100 to 500 parts by weight of nickel-coated carbon;

(C) 0.1 to 5 parts by weight of a polyorganohydrogensiloxane, and

(D) 0.2 to 300 ppm based on the total amount of (A), (B) and (C) of platinum metal or platinum compound as platinum atom.

4,552,689

ELECTRICALLY CONDUCTIVE INORGANIC FILLER CONTAINING PROPYLENE POLYMER COMPOSITIONS

Hiroshi Yui; Yoshihiro Sobajima; Osamu Higashide; Tsuyoshi Imamura; Michiya Okamura, and Satoru Hattori, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 418,963, Sep. 16, 1982, Pat. No. 4,504,617. This application Oct. 24, 1984, Ser. No. 664,172
Claims priority, application Japan, Sep. 16, 1981, 56-145974; Dec. 22, 1981, 56-207626
Int. Cl.[4] C08K *3/26, 3/04;* H01B *1/06*
U.S. Cl. 252—511 **4 Claims**

1. An electrically conductive composition comprising 2 to 100 parts by weight of electrically conductive carbon black to 100 parts by weight of a composition which comprises 25 to 90% by weight of component (A) and 75 to 10% by weight of component (B):

(A) at least one member selected from the group consisting of

(a) a crystalline propylene copolymer composed of propylene and one or more other α-olefins;

(b) a composition prepared by blending the copolymer (a) with a synthetic rubber and/or crystalline polypropylene with a synthetic rubber, and

(c) a composition prepared by blending a crystalline polypropylene with a synthetic rubber, wherein

(1) the amount of xylene extractable soluble component at 23° C. is 10 to 50% by weight, and

(2) the propylene content in the extractable soluble component is 30% by weight or more,

(B) an inorganic filler having an average particle size of 200μ or less, measured by light transmission in a liquid-phase sedimentation system.

4,552,690

ELECTRICALLY CONDUCTIVE RESIN COMPOSITION

Nobuyuki Ikeguchi, Ibaraki; Yasunari Osaki, Tokyo, and Yoshiyuki Furuya, Kanagawa, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,398
Claims priority, application Japan, Jun. 23, 1983, 58-113489
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—512 **8 Claims**

1. An electrically conductive resin composition comprising 15–35 parts by weight of a cyanate ester compound which is a monomer, polymer thereof or mixture of monomer and polymer, wherein said monomer has the formula

$$R—O—C{\equiv}N)_m$$

wherein m is an integer of 2–10 and R is an aromatic organic group, the cyanate groups being bonded to said aromatic organic group, and

65–85 parts by weight of an electrically conductive powder selected from the group consisting of a copper powder, a copper alloy powder, and a silver powder and mixtures thereof,

the cyanate ester component content in the cyanate ester compound being more than 50% by weight in terms of monomer, and

said composition further containing 0.5–15 parts by weight of at least one acetylacetone compound selected from the group consisting of acetylacetone, acetylacetone-ethylene diamine and acetylacetoneamine.

4,552,691

ELECTRICALLY CONDUCTIVE PASTES

Takashi Shoji, and Kenji Ochiai, both of Saitama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 638,936
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—514 **13 Claims**

1. An electrically conductive paste comprising (i) 60 to 90 wt % of metal fine powders which comprise a silver fine powder having a particle size of 10 μm or less and a composite fine powder of silver and copper having a particle size of 10 μm or less, the copper content in the metal fine powders being 0.1 to 10 wt %, and (ii) 10 to 40 wt % of a vehicle component.

4,552,692

CONCENTRATED COMPOSITION FOR CLEANING RUGS AND CARPETS

Thomas W. Gillespie, 16528 Foothill Dr., Tampa, Fla. 33624

Continuation of Ser. No. 337,924, Jan. 8, 1982, abandoned, which is a continuation of Ser. No. 125,134, Feb. 27, 1980, abandoned. This application Feb. 21, 1984, Ser. No. 618,751
Int. Cl.[4] C11D *3/065, 1/22*
U.S. Cl. 252—528 **1 Claim**

1. A concentrated composition for use in cleaning rugs and carpets comprising an effective amount of each of:

a. a first detergent soluble in water, said first detergent being selected from the group consisting of sodium alkylnaphthalene and sodium lauryl sulfate wherein said first detergent is used in a concentration of 3% to 7% by volume;

b. a second detergent milder than said first detergent, said second detergent being selected from the group consisting of a sodium C_{14}–C_{16} olefin sulfate and a lower alkyl benzene sulfonate wherein said second detergent is used in a concentration of 4% to 8% by volume;

c. an anti-foam agent selected from the group consisting of cocoamide and lauramide wherein said anti-foam agent is used in a concentration of 1% to 3% by volume;

d. a water softener selected from the group consisting of tetrapotassium pyrophosphate and tetrasodium pyrophosphate wherein said water softener is used in a concentration of 8% to 12% by volume;

e. at least one lower alkanol in an amount sufficient to dissolve and loosen potentially sticky substances such as chewing gum, pancake syrup and chocolate sauce;

f. a low foam surfactant consisting of non-ionic polyglycol wherein said low foam surfactant is used in a concentration of 2% to 10% by volume;

g. an optical brightener wherein said optical brightener is used in a concentration of 0.05% to 0.2% by volume;

h. at least one thickening agent wherein said thickening agent is used in a concentration of 0.05% to 0.2% by volume;

i. at least one electrostatic conductant selected form the group consisting of aminoethylacrylate-phosphate, oblique acrylate copolymer and alkyl dimethylbenzyl ammonium chloride wherein said electrostatic conductant is used in a concentration of 0.5% to 1.5% by volume;

j. tannin in a concentration of 2% to 6% by volume; and

k. water in an amount sufficient to make a total volume of 1 gallon of the concentrated composition.

4,552,693

TRANSPARENT FRAGRANCE EMITTING ARTICLES

Zahera J. Hussain, Wyckoff, N.J., and Ronald D. Zukoski, Warwick, N.Y., assignors to Avon Products, Inc., New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,501
Int. Cl.[4] A61K *7/46;* C11B *9/00*
U.S. Cl. 252—522 A **17 Claims**

1. A composition for forming a solid transparent fragrance-emitting article comprising an admixture of

(a) 60 to 65 weight percent of a thermoplastic polyamide resin, having an average molecular weight of 5,000 to 15,000 which is formed by reaction of a polycarboxylic acid of the formula R(COOH)x wherein R is a hydrocarbon group having 20 to 44 carbon s and x is 2 or more, with a polyamine;

(b) said resin being homogeneously blended with 20 to 30 weight percent of a clear plasticizer/solvent system comprising a sulfonamide plasticizer, a gellant and a cosolvent for the plasticizer and the gellant, the solubility parameter of the polyamide resin and plasticizer system being compatible; and

(c) up to 15 weight percent of a fragrance oil,

said composition being clear, homogeneous, and fluid at a temperature below 120° C.

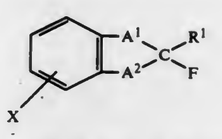
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FLUORINATED BENZODIAZEPINS

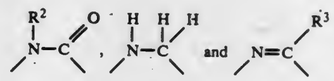
Nobuo Ishikawa, Yokohama, and Akio Takaoka, Kawasaki, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Jul. 30, 1984, Ser. No. 635,681
Claims priority, application Japan, Jul. 30, 1983, 58-140118
Int. Cl.[4] C07D *243/12*
U.S. Cl. 260—239 BD **4 Claims**

1. A fluorinated benzodiazepin of the formula



wherein A^1 and A^2 are the same or different groups, each expressed by one of the following formulas



R^2 being a hydrogen atom or a group having up to 10 carbon atoms selected from the group consisting of alkyl, alkenyl, fluorine-substituted alkyl, fluorine-substituted alkenyl, aminoalkyl, N,N-dialkylaminoalkyl and alkylsulfonylalkyl, and R^3 being a hydrogen atom or a group having up to 10 carbon atoms selected from the group consisting of alkyl, alkenyl, phenyl, halogen-substituted alkyl, halogen-substituted alkenyl and halogen-substituted phenyl, while R^1 is a hydrogen atom, phenyl, fluorine-substituted phenyl or a group having up to 5 carbon atoms selected from the group consisting of alkyl, alkenyl fluorine-substituted alkyl and fluorine-substituted alkenyl, and X is a hydrogen atom, halogen atom, nitro group or a group having up to 5 carbon atoms selected from the group consisting fo alkyl, alkenyl or fluorine-substituted alkyl and fluorine-substituted alkenyl.

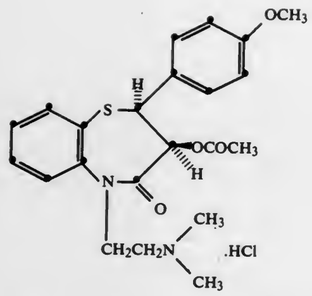
4,552,695

PROCESS FOR PRODUCTION OF DILTIAZEM HYDROCHLORIDE

Kikuo Igarashi, Hyogo, and Tsunetoshi Honma, Nara, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

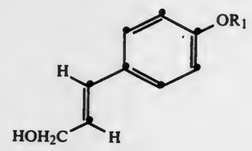
Filed Apr. 16, 1984, Ser. No. 600,405
Claims priority, application Japan, Apr. 21, 1983, 58-71138; Apr. 21, 1983, 58-71139; Apr. 21, 1983, 58-71140
Int. Cl.[4] C07D *281/02*
U.S. Cl. 260—239.3 B **1 Claim**

1. A process for production of diltiazem hydrochloride of the formula (1):



(1)

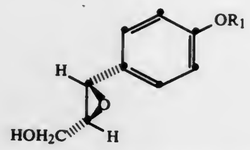
which comprises asymmetrical epoxidation of cinnamyl alcohol of the formula (2):



(2)

wherein R_1 is acyl

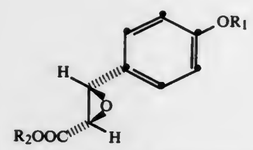
into an optically active epoxy alcohol having the absolute configuration of the formula (3):



(3)

wherein R_1 has the same meaning as defined above,

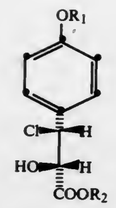
oxidizing said epoxy alcohol (3) to the corresponding carboxylic acid, esterifying the latter to a carboxylic ester of the formula (4):



(4)

wherein R_1 has the same meaning as defined above and R_2 is a lower alkyl,

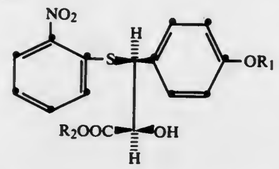
subjecting the latter (4) to hydrogen chloride addition to give a chlorohydrin having the absolute configuration of the formula (5):



(5)

wherein R_1 and R_2 each has the same meaning as defined above,

reacting the latter (5) with o-nitrothiophenol to give a thioether of the formula (6):

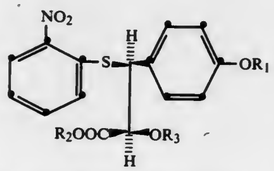


(6)

wherein R_1 and R_2 each has the same meaning as defined above,

wherein R_1 and R_2 each has the same meaning as defined above,

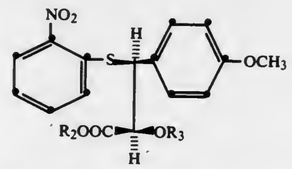
subjecting the latter (6) to hydroxy protection to give a hydroxy-protected derivative of the formula (7):



(7)

wherein R_1 and R_2 each has the same meaning as defined above and R_3 is alkoxymethyl, tetrahydrofuranyl, tetrahydropyranyl or benzyl,

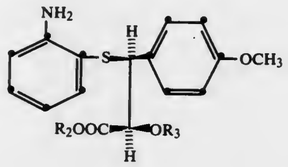
deacylating and then methylating the latter (7) into a methoxy derivative of the formula (8):



(8)

wherein R_2 and R_3 each has the same meaning as defined above,

reducing the latter (8) into an aminophenylthio derivative of the formula (9):

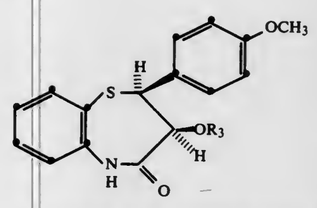


(9)

-continued

wherein R_2 and R_3 each has the same meaning as defined above,

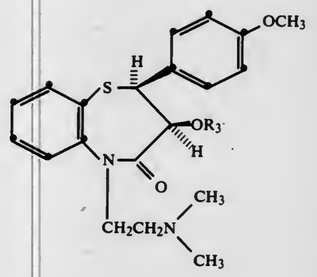
cyclizing the latter (9) to give a benzothiazepine derivative of the formula (10):



(10)

wherein R_3 has the same meaning as defined above,

to give an N-dimethylaminoethyl derivative of the formula (11):



(11)

wherein R_3 has the same meaning as defined above,

and then acetylating the final intermediate (11) in the presence of an acid catalyst under an anhydrous condition, if required followed by treatment with hydrogen chloride.

4,552,696

CARBAPENEM ANTIBIOTICS

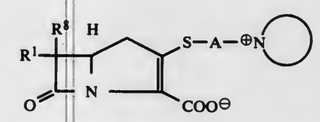
Choung U. Kim, Manlius, and Peter F. Misco, Jr., Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 366,910, Apr. 9, 1982, abandoned. This application Mar. 8, 1983, Ser. No. 471,379

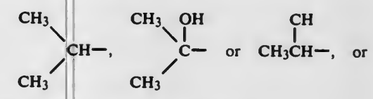
Int. Cl.[4] C07D *487/04;* **A61K** *31/40*

U.S. Cl. 260—245.2 T **5 Claims**

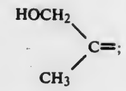
1. A compound of the formula



wherein R^8 is hydrogen and R^1 is hydrogen, CH_3CH_2—,



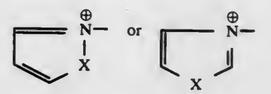
R^1 and R^8 taken together represent



(10) A is cyclopentylene, cyclohexylene or C_2–C_6 alkylene optionally substituted by one or more C_1–C_4 alkyl groups; and

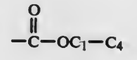


represents a radical selected from

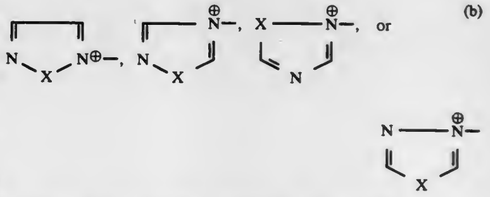


(a)

wherein X is O, S or NR in which R is C_1–C_4 alkyl or phenyl, said radical being optionally substituted on a carbon atom by one or more substituents independently selected from C_1–C_4 alkyl; C_1–C_4 alkyl substituted by hydroxy; amino, carboxy or halogen; C_3–C_6 cycloalkyl; C_1–C_4 alkoxy; C_1–C_4 alkylthio; amino; C_1–C_4 alkylamino; di(C_1–C_4 alkyl)amino; halo; C_1–C_4 alkanoylamino; C_1–C_4 alkanoyloxy; carboxy;

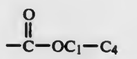


alkyl; hydroxy; amidino; guanidino, trifluoromethyl; phenyl; phenyl substituted by one, two or three amino, halo, hydroxyl, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups; and heteroaryl or heteroaralkyl in which the hetero atom or atoms in the above-named heterocyclic moieties are selected from the group consisting of 1–4 oxygen, nitrogen or sulfur atoms and the alkyl moiety associated with said heteroaralkyl moiety has 1–6 carbon atoms;



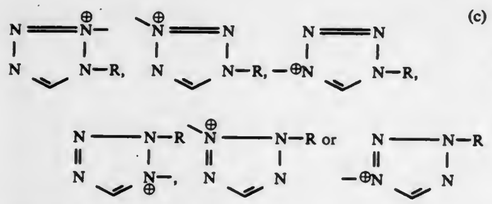
(b)

wherein X is O, S or NR in which R is C_1–C_4 alkyl or phenyl, said radical being optionally substituted on a carbon atom by one or more substituents independently selected from C_1–C_4 alkyl; C_1–C_4 alkyl substituted by hydroxy; amino, carboxy or halogen; C_3–C_6 cycloalkyl; C_1–C_4 alkoxy; C_1–C_4 alkylthio; amino; C_1–C_4 alkylamino; di(C_1–C_4 alkyl)amino; halo; C_1–C_4 alkanoylamino; C_1–C_4 alkanoyloxy; carboxy;



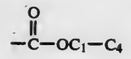
alkyl; hydroxy; amidino; guanidino, trifluoromethyl; phenyl; phenyl substituted by one, two or three amino, halo, hydroxyl, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups; and heteroaryl or heteroaralkyl in which the hetero atom or atoms in the above-named heterocyclic moieties are selected from the

group consisting of 1–4 oxygen, nitrogen or sulfur atoms and the alkyl moiety associated with said heteroaralkyl moiety has 1–6 carbon atoms; and



(c)

wherein R is C_1–C_4 alkyl or phenyl, said radical being optionally substituted on the carbon atom by a substituent selected from C_1–C_4 alkyl; C_1–C_4 alkyl substituted by hydroxy, amino, carboxy or halogen; C_3–C_6 cycloalkyl; C_1–C_4 alkylthio; amino; C_1–C_4 alkylamino; di(C_1–C_4 alkyl)amino; halo; C_1–C_4 alkanoylamino; C_1–C_4 alkanoyloxy; carboxy;



alkyl; hydroxy; amidino; guanidino; trifluoromethyl; phenyl; phenyl substituted by one, two or three amino, halo, hydroxyl, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups; and heteroaryl or heteroaralkyl in which the hetero atom or atoms in the above-named heterocyclic moieties are selected from the group consisting of 1–4 oxygen, nitrogen or sulfur atoms and the alkyl moiety associated with said heteroaralkyl moiety has 1–6 carbon atoms, or a pharmaceutically acceptable salt or ester thereof.

4,552,697

COMPOUND USEFUL IN DETECTING IONS AND METHOD OF PREPARING IT

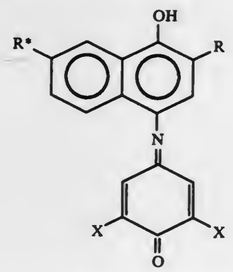
Kin F. Yip, and Steven C. Charlton, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 12, 1983, Ser. No. 493,951

Int. Cl.⁴ C07C *97/22*

U.S. Cl. 260—396 N **8 Claims**

1. A compound having the structure



in which R is H or lower alkyl, R* is intermediate alkyl, and X is halogen or pseudohalogen.

4,552,698

23,23-DIFLUORO-1α,25-DIHYDROXY-VITAMIN D_3

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, and Yoshiro Kobayashi, both of Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

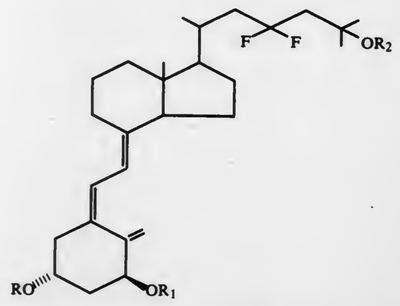
Continuation-in-part of Ser. No. 524,268, Aug. 18, 1984, Pat. No. 4,502,991. This application Aug. 13, 1984, Ser. No. 639,778

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ C07J *9/00*

U.S. Cl. 260—397.2 **4 Claims**

1. Compounds having the formula



wherein each of R, R_1 and R_2 is selected from the group consisting of hydrogen, an acyl group having from one to about four carbon atoms and benzoyl with the proviso that R, R_1 and R_2 cannot all be hydrogen.

4,552,699

PROCESS FOR THE PREPARATION OF 3-ACYLAMINOANILINES

Reinhard Hähnle, Königstein/Taunus, and Theodor Grewer, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

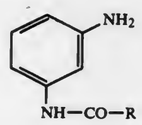
Filed Dec. 13, 1983, Ser. No. 560,919

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246367

Int. Cl.⁴ C07C *102/04*

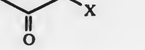
U.S. Cl. 260—404.5 **5 Claims**

1. A process for the preparation of a 3-acylaminoaniline of the formula (1)



(1)

in which R denotes a branched or unbranched alkyl radical having 1–7 carbon atoms or a phenyl group, which can be substituted by 1–2 methyl groups or by 1–2 chlorine atoms, which comprises reacting a carboxylic acid of the formula (2)



(2)

in which R has the meaning mentioned, with an excess of 1,3-diaminobenzene, and separating the reaction mixture by distillation.

4,552,700

ORGANOPOLYSILOXANES CONTAINING SULPHONATE GROUPS, METHOD FOR THE PRODUCTION AND USE THEREOF

Peter Panster, Rodenbach, and Horst Grethe, and Peter Kleinschmit, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,200

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226093

Int. Cl.⁴ C07F *7/08, 5/06, 7/28*

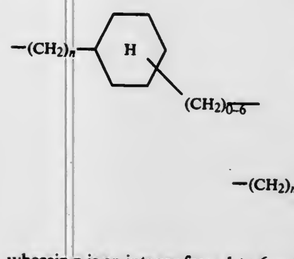
U.S. Cl. 556—9 **45 Claims**

1. An organopolysiloxane containing the same or different units represented by the structural formula:

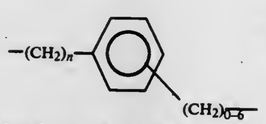


(1)

wherein R^1 is a linear or branched alkyl having 1 to 12 C-atoms, cycloalkyl with 5 to 8 C-atoms or:



or

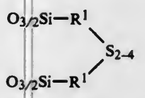


wherein n is an integer from 1 to 6 and indicates the number of sulphur attached methylene groups, x is dependent on M and is an integer from 1 to 4 and M represents hydrogen or a mono- to tetravalent metal ion and the free valences of the oxygen atoms are saturated by silicon atoms of other groups of the formula (1) and/or by cross-linking bridge members

$SiO_{4/2}$	or	$R'SiO_{3/2}$	or	$R_2'SiO_{2/2}$	or
$TiO_{4/2}$	or	$R'TiO_{3/2}$	or	$R_2'TiO_{2/2}$	or
$AlO_{3/2}$	or	$R'AlO_{2/2}$			

wherein R' is methyl or ethyl,

and/or are saturated by di-, tri- and tetrasulfide units of the general formula:



(2)

wherein R^1 has the same meaning as in formula (1) and may be the same or different, the ratio of the sum of the Si-atoms in formulas (1) and (2) to the bridge atoms silicon, titanium and aluminum ranging from 1:0 to 1:10.

4,552,701

GLYCOPEPTIDE ANTIBIOTICS AND PROCESS OF PREPARATION

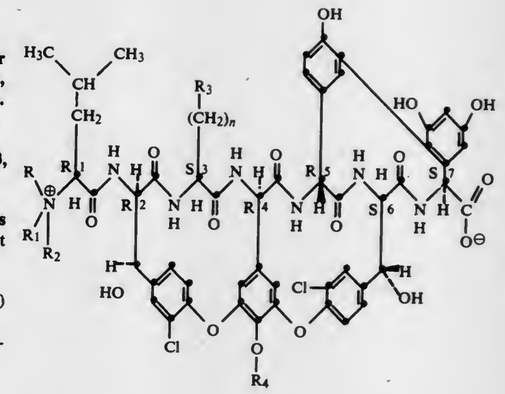
Ramakrishnan Nagarajan, and Amelia A. Schabel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 16, 1984, Ser. No. 600,727

Int. Cl.⁴ C07C *103/52;* C07H *15/20*

U.S. Cl. 260—112.5 R **14 Claims**

1. A compound of the formula:



wherein

R, R_1 and R_2 are hydrogen or methyl;

R_3 is $CONH_2$;

R_4 is hydrogen or β-O-glucosyl; and

n is 1 or 2;

provided that, (1) when n is 2, R, R_1 and R_2 must be hydrogen, and (2) when R, R_1 and R_2 are methyl, R_4 must be hydrogen; and its salts.

4,552,702

PROCESS FOR THE PREPARATION OF FATTY ACID ALKYL ESTERS HAVING IMPROVED PROCESSING PROPERTIES

Karl Schmid, Mettmann, and Horst Baumann, Leichlingen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,095

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 3128646

Int. Cl.⁴ C09F *5/10;* C11B *3/00*

U.S. Cl. 260—428 **19 Claims**

1. A process for the preparation of lower alkyl esters of higher fatty acids with improved processing properties comprising the steps of

subjecting lower alkyl esters of higher fatty acids of plant and/or animal origin, to a heat treatment above 150° C., in the presence of an effective amount to reduce the hydroxyl number of a material selected from the group consisting of esterification catalysts and carboxylic acid anhydrides, for a time sufficient to effect an improvement in further processing properties, separating purified lower alkyl esters of higher fatty acids from the treated material and recovering said lower alkyl esters of higher fatty acids with improved processing properties.

4,552,703

PRODUCTION OF OPTICALLY ACTIVE CYCLOPENTENOLONES

Takeaki Umemura; Ayumu Inoue, and Satoshi Mitsuda, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

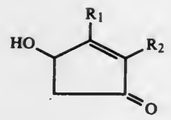
Filed Apr. 16, 1984, Ser. No. 600,389

Claims priority, application Japan, Apr. 19, 1983, 58-069568; Apr. 19, 1983, 58-069569

Int. Cl.⁴ C07C *77/00, 45/65*

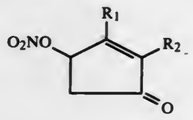
U.S. Cl. 260—466 **13 Claims**

1. A method for producing optically active cyclopentenolones having the formula (I),



(I)

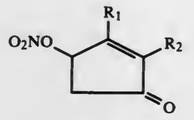
wherein R_1 is a hydrogen atom or a C_1–C_3 alkyl group, and R_2 is a C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl group, which comprises hydrolyzing nitrate ester of an optically active cyclopentenolone of the formula (II),



(II)

wherein R_1 and R_2 are the same as defined above, in a neutral or acidic medium, with an inversion of configuration at the asymmetric center of the 4-position to obtain the configurationally inverted cyclopentenolone of the formula (I).

8. A nitrate ester of an optically active cyclopentenolone of the formula (II),



(II)

wherein R_1 is a hydrogen atom or a C_1–C_3 alkyl group, and R_2 is a C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl group.

4,552,704

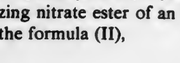
PROCESS FOR THE PRODUCTION OF AROMATIC CARBONATES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

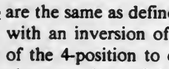
Filed Dec. 27, 1983, Ser. No. 565,896
Int. Cl.⁴ C07C *68/06*
U.S. Cl. 260—463 **18 Claims**

1. An improved process for preparing aromatic carbonates selected from aliphatic aromatic carbonates represented by the formula

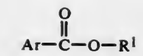
diaromatic carbonates represented by the formula



wherein Ar is independently selected from monovalent aromatic radicals and R^1 is selected from monovalent aliphatic radicals, and mixtures thereof which comprises reacting a phenolic compound represented by the formula Ar—OH with a dialiphatic carbonate represented by the formula



or an aliphatic aromatic carbonate represented by the formula



in the presence of a catalytic amount of a transesterification catalyst, the improvement comprising utilizing as the catalyst at least one compound represented by the formula



wherein:
X is selected from Sn and Ti; and
R is selected from monovalent hydrocarbon radicals.

4,552,705

METHOD OF MAKING TRI-(β-CYANOETHYL)AMINE

Dean T. Tsou, Solon; Sandra L. Denman, Brunswick Hills; James D. Burrington, Richmond Heights, and Mark C. Cesa, South Euclid, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 13, 1984, Ser. No. 670,181
Int. Cl.⁴ C07C *121/43*
U.S. Cl. 260—465.5 R **13 Claims**

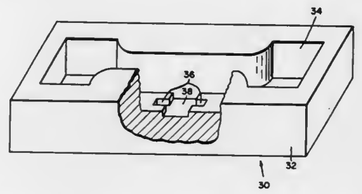
1. A process which comprises reacting acrylonitrile with ammonia in the liquid phase at a temperature in the range from 15° to 250° C. in which process the reactants and a solvent are added to the reaction zone in the ratios of from 2.5 to 30 moles of acrylonitrile and from 20 to 300 moles of said solvent, per mole of ammonia, thereby producing tri-(β-cyanoethyl)amine, said solvent being a highly polar solvent having a high dielectric constant selected from dimethylformamide, dimethyl sulfoxide, formamide, N-methylformamide, 1,2,3-propanetriol, N-methylpropionamide, diethylene glycol, hexamethylphosphoramide, triethanolamine and water.

4,552,706

LINER-PROPELLANT BOND TESTS

Marjorie E. Ducote, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 5, 1983, Ser. No. 539,201
Int. Cl.⁴ C06B *21/00, 45/10*
U.S. Cl. 264—3 R **6 Claims**



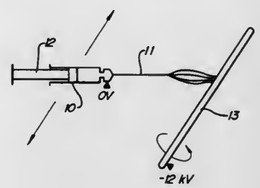
1. A method of preparing tensile strength and lap shear strength specimens for determining bond strength between a liner/insulation material and a cured hydroxyterminated polybutadiene propellant composition comprising:
(i) preparing a liner/insulation material of a predetermined dimension and thickness and having flat surfaces facing in opposite directions;
(ii) placing said liner/insulation material in a mold having a dogbone configuration and in a predetermined position in said mold;
(iii) casting a curable hydroxyterminated polybutadiene propellant composition onto a portion of said oppositely facing surfaces of said liner/insulation material;
(iv) curing said curable hydroxyterminated polybutadiene propellant composition to form a secure bond between said liner/insulation material oppositely facing surfaces and said cured propellant composition; and to provide a dogbone shaped specimen in which the hydroxyterminated polybutadiene is securely bonded to oppositely facing surfaces of said liner/insulation material; and
(v) placing said tensile strength and lap shear strength specimens in a machine and determining bond strength between said liner/insulation material oppositely facing surfaces and said cured hydroxyterminated polybutadiene propellant composition.

4,552,707

SYNTHETIC VASCULAR GRAFTS, AND METHODS OF MANUFACTURING SUCH GRAFTS

Thien V. How, Woolton, England, assignor to Ethicon Inc., Somerville, N.J. and The University of Liverpool, Liverpool, England

Filed May 9, 1983, Ser. No. 492,864
Claims priority, application United Kingdom, Jun. 2, 1982, 8216066
Int. Cl.⁴ B29C *9/00*
U.S. Cl. 264—24 **1 Claim**



1. A method of manufacturing a synthetic vascular graft by electrostatically spinning an organic polymeric material or a percusor thereof and collecting the spun fibres on a rotating mandrel, which method comprises the step of varying the speed of rotation of the mandrel such that a desired degree of anisotropy is present in the synthetic vascular graft.

4,552,708

METHOD FOR PRODUCING CROSSLINKED FOAM

Takao Kimura, and Yoshinobu Nagaoka, both of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 541,840
Int. Cl.⁴ B29D *27/00*; B29F *3/04*
U.S. Cl. 264—53 **16 Claims**



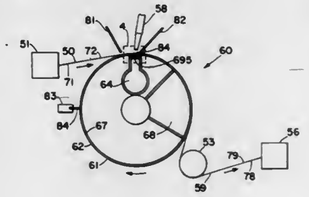
1. A method of producing a crosslinked foamed article, said method comprising:
(a) uniformly mixing a crosslinkable thermoplastic resin, a crosslinking agent which has a decomposition temperature higher than the melting point of said resin and a foaming agent which has a decomposition or volatization temperature higher than that of said crosslinking agent and generates a gas upon decomposition or volatization;
(b) extruding said mixture through a long-land die provided with a heating means and having a front or upstream portion and a rear or downstream portion, the temperature of said rear portion being higher than the temperature of said front or upstream portion, and said long-land die being further provided with a choking orifice at an intermediate portion between said front or upstream portion and said rear or downstream portion and/or at an end portion thereof, said choking orifice creating back pressure in said long-land die and having a choking ratio A/B of from 4/3–10/2, wherein A is the vertical cross-sectional area of said long-land die in front of said orifice and B is the vertical cross-sectional area of the narrowest section of said orifice, and simultaneously supplying a lubricant into an interface between the inner surface of said long-land die and said mixture;
(c) heating said conveyed mixture in said front or upstream portion of said long-land die to a temperature sufficient to cause decomposition of said crosslinking agent and crosslinking of said crosslinkable thermoplastic resin, the degree of crosslinking as defined by gel ratio being at least 5%;
(d) heating the conveyed mixture from step (c) in said rear or downstream portion of said long-land die to a temperature higher than the temperature in said front or upstream portion of the die to cause decomposition or volatization of said foaming agent; and
(e) releasing the mixture from step (d) from said long-land die into an atmospheric or controlled pressure zone to allow said mixture to expand and form said foamed article.

4,552,709

PROCESS FOR HIGH-SPEED PRODUCTION OF WEBS OF DEBOSSED AND PERFORATED THERMOPLASTIC FILM

Thurman J. Koger, II, Hamilton, Ohio; Theodore E. Farrington, Jr., Milford, Me., and Eugene Weinshenker, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,525
Int. Cl.⁴ B29C *1/14*
U.S. Cl. 264—504 **28 Claims**



1. A process for debossing and peforating a substantially continuous web of substantially planar thermoplastic film, using a forming structure having a patterned forming surface with holes and an opposed surface, said forming structure being open from said holes in said forming surface to said opposed surface, said web of film having an indefinite length, a first surface, a second surface, and a thickness, said thickness being the distance between said first surface and said second surface, said film having a melt temperature range, which process comprises the steps of:
(a) providing said web of substantially planar film with said first surface of said web of film proximate said forming surface, said forming structure moving in a direction of said length of said web of film and carrying said web of film in said direction, said web of film being substantially entirely molten;
(b) substantially continuously applying fluid differential pressure across said thickness of said web of film from a first position along said direction of movement of said forming structure to a second position, said first and second positions being fixed relative to said moving forming structure, said fluid differential pressure being sufficiently great to cause said first surface of said web of film to be urged against said forming surface; to cause perforations to be created in said web of film, whereby a web of

debossed and perforated film is formed in the image of said forming surface from said web of film, said web of debossed and perforated film having a first surface and a second surface which correspond to said first surface and said second surface, respectively, of said web of substantially planar film; and to hold said web of debossed and perforated film against said forming surface without permitting substantial spring-back of said web of film;

(c) contacting said second surface of said web of film with a fluid having low heat transfer capacity for a period of time from when said web of substantially planar film passes said first position through when said web of film is debossed and perforated, said web of film remaining substantially entirely molten throughout said period of time; and

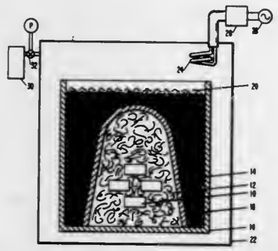
(d) applying cooling fluid to said second surface of said web of debossed and perforated film after said period of time and before said web of debossed and perforated film passes said second position, such that said web of debossed and perforated film is cooled and is set without permitting substantial spring-back of said web of debossed and perforated film by the time said web of debossed and perforated film passes said second position.

4,552,710

PROCESS OF HOT ISOSTATIC PRESSING OF FERRITE MATERIAL

Eugene B. Rigby, Tucson, Ariz.; Ralph W. Scheidecker, and Robert R. Suchomel, both of Byron, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,883
Int. Cl.⁴ B29B *1/14;* B29C *25/00*
U.S. Cl. 264—64 **13 Claims**



1. Process of hot isostatic pressing of ferrite material workpieces of a predetermined thickness in a sealed oven, said ferrite material workpieces having been previously sintered or hot pressed, comprising of steps of:

a. placing ferrite material workpieces in a covered ceramic enclosure;

b. surrounding said ferrite material workpieces by finely ground ferrite pieces of large surface area having a composition substantially similar to said ferrite material workpieces providing good chemical protection;

c. sealing said oven and introducing an inert gas atmosphere under pressure within said oven;

d. elevating said pressure and temperature to predetermined levels in said oven below that previously utilized for sintering or hot pressing said ferrite material workpieces for said sintering or hot pressing; and

e. maintaining said temperature for a predetermine time interval for said ferrite material workpieces in said oven, thereby providing that said ferrite material approaches theoretical density without significant increase in grain size of said ferrite material workpieces.

13. Process of hot isostatic pressing of ferrite material workpieces of a predetermined thickness in a sealed oven, said ferrite material workpieces having been previously sintered or hot pressed, comprising of steps of:

a. placing ferrite material workpieces in a first ceramic enclosure;

b. surrounding said ferrite material workpieces by finely ground ferrite pieces of large surface area having a composition substantially similar to said ferrite material workpieces providing good chemical protection;

c. inverting a second ceramic enclosure over said first ceramic enclosure;

d. filling space between said enclosures with a fused grain;

e. sealing said oven and introducing an inert gas atmosphere under pressure within said oven;

f. elevating said pressure and temperature to predetermined levels in said oven below that previously utilized for sintering or hot pressing said ferrite material workpieces for said sintering or hot pressing; and,

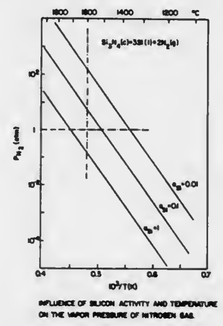
g. maintaining said temperature for a predetermine time interval for said ferrite material workpieces in said oven, thereby providing that said ferrite material approaches theoretical density without significant increase in grain size of said ferrite material workpieces.

4,552,711

USE OF FREE SILICON IN LIQUID PHASE SINTERING OF SILICON NITRIDES AND SIALONS

Rishi Raj, and Sunggi Baik, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 506,466, Jun. 21, 1983, Pat. No. 4,487,840.
This application Jul. 26, 1984, Ser. No. 634,530
Int. Cl.⁴ C04B *35/58*
U.S. Cl. 264—65 **5 Claims**



INFLUENCE OF SILICON ACTIVITY AND TEMPERATURE ON THE VAPOR PRESSURE OF NITROGEN GAS

1. In a process of forming a silicon nitride based ceramic through a liquid phase densification process wherein the ceramic forming composition contains at least about 83% silicon nitride having an average particle size ranging from 0.1 μm to about 10 μm and from about 1% to about 7% by weight of the total composition of liquid phase producing oxide, other than aluminum oxide and wherein densification involves sintering in nitrogen at a temperature ranging from about 1600° C. to about 1800° C. at one atmosphere, the improvement which comprises including in said composition from about 1% to about 7% by weight of the total composition of pulverulent free silicon to enhance densification to obtain at least about 98% of theoretical density in a sintering time of up to about 30 minutes.

4,552,712

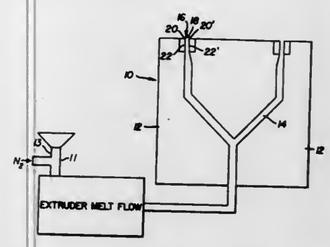
PROCESS FOR REDUCING SURFACE MELT FRACTURE DURING EXTRUSION OF ETHYLENE POLYMERS

Arakalgud V. Ramamurthy, Somerset, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 508,670, Jun. 28, 1983, abandoned. This application Jul. 3, 1984, Ser. No. 627,516
Int. Cl.⁴ B29F *3/04*
U.S. Cl. 264—85 **17 Claims**

1. A process for substantially reducing surface melt fracture during extrusion of a molten narrow molecular weight distribution, linear, ethylene copolymer, under conditions of flow rate and melt temperature which would otherwise produce such surface melt fracture which comprises adding an adhesion promoter to said ethylene polymer, extruding said polymer through a die having a die land region defining opposing surfaces terminating in a die gap, at least one of said opposing surfaces being fabricated from stainless steel to provide at least one stainless steel surface adjacent to the molten polymer and wherein the length of the die land to the width of the die gap is about 35:1 to about 60:1 whereby melt fracture is reduced on the surface of the polymer adjacent to said stainless steel surface.

12. A process for substantially reducing surface melt fracture during extrusion of a molten narrow molecular weight distribution, linear, ethylene copolymer, under conditions of flow rate and melt temperature which would otherwise produce such surface melt fracture which comprises adding to said polymer from about 50 to 1500 parts per million of a fatty diethoxylated tertiary amine, subjecting said resin to an inert gas to remove moisture and thereafter extruding said polymer through a die having a die land region defining opposing surfaces terminating in a die gap, at least one of said opposing surfaces being fabricated from stainless steel to provide at least one stainless steel surface adjacent to the molten polymer and wherein the length of the die land to the width of the die gap is about 45:1 to about 55:1 whereby melt fracture is reduced on the surface of the polymer adjacent to said stainless steel surface.

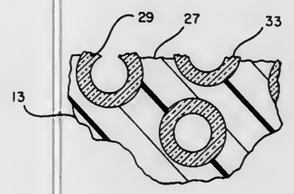


4,552,713

METHOD OF FORMING AN IMPROVED HANDGRIP HAVING NON-SLIP FEATURES

A. G. Cavicchioli, Fort Worth, Tex., assignor to Jamak, Inc., Weatherford, Tex.

Continuation-in-part of Ser. No. 463,904, Feb. 4, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 582,054
Int. Cl.⁴ B29C *59/02*
U.S. Cl. 264—162 **3 Claims**



1. A method of forming a handgrip having improved non-slip features, comprising:

blending a silicone rubber composition from an organopolysiloxane elastomer, a filler material, an organosilicon processing aid, a texturizing material, and a quantity of hollow spheres, the hollow spheres having a density in the range from 0.5 to 0.9 grams/cc;

heating said rubber composition during the blending step to evenly disperse said texturizing material and said hollow spheres within said rubber composition without reacting said texturizing material with said organopolysiloxane elastomer;

cooling and curing said composition to form a handgrip the exterior surface of said handgrip being formed to contain exposed portions of said hollow spheres which are blended throughout said silicone rubber composition;

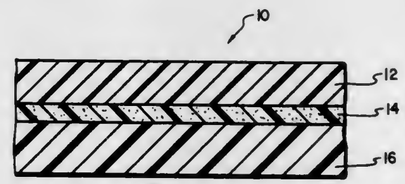
buffing the exterior surface of said handgrip to fracture the exposed portions of said hollow spheres and thereby present a roughened exterior surface to said handgrip.

4,552,714

PROCESS FOR PRODUCING COEXTRUDED FILM OF POLYPROPYLENE, POLYPROPYLENE BLEND, AND NYLON

Duane A. Krueger, Neenah, and Thomas W. Odorzynski, Green Bay, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 236,601, Feb. 20, 1981, Pat. No. 4,361,628.
This application Sep. 13, 1982, Ser. No. 417,674
Int. Cl.⁴ B29D *9/00*
U.S. Cl. 264—171 **9 Claims**



1. A process for producing a multiple layer plastic film comprising coextruding a multiple layer film from a multiple layer die, said film comprising:

(a) a layer of polypropylene;

(b) a layer of nylon; and

(c) an adhesive layer juxtaposed between said nylon layer and said polypropylene layer, said adhesive layer being functional for adhesion to said layer of nylon and said layer of polypropylene, said adhesive layer being a blend of a graft copolymer of maleic anhydride onto a polypropylene backbone, and an ungrafted polypropylene; said graft copolymer having been produced in a reaction carried out at a temperature of from about 80° Celsius up to about 10° Celsius below the melting point of the polypropylene, said graft copolymer containing from about 0.1% to 2.5% maleic anhydride based on the total weight of the graft copolymer, said graft copolymer comprising between about 5% and 30% by weight of the blend, and said ungrafted polypropylene comprising between about 70% and 95% by weight of the blend.

4,552,715

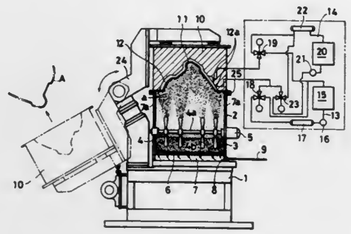
PROCESS FOR PRODUCING A MOLDED SKIN PRODUCT

Yoshio Ando, Kawagoe; Shuno Kumagai, Sayama, and Toshiyuki Kinugasa, Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1983, Ser. No. 494,103
Claims priority, application Japan, May 12, 1982, 57-78195
Int. Cl.⁴ B29C *5/02*
U.S. Cl. 264—309 **1 Claim**

1. A process for producing a molded skin material, comprising the steps of:

charging a desired amount of synthetic resin powder into a treating container disposed below and facing a predetermined shaped molding mold surface;
heating the mold surface to a temperature of at least the melting temperature of the synthetic resin;
fluidizing the charge of powder in the treating container to a level below the mold surface;



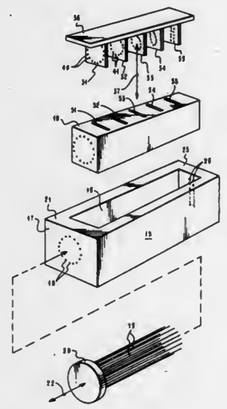
while fluidizing the powder, spattering the fluidized powder upwardly onto the mold surface by violently agitating the fluidized powder by an agitation means whereby a coating of fused resin is formed on the mold surface;
ceasing spattering when the coating reaches a predetermined thickness;
cooling the mold surface, thereby solidifying the coating to form the molded skin material; and
removing the molded skin material from the mold surface.

4,552,716

METHOD FOR MANUFACTURING A WIRE MATRIX PRINT WIRE GUIDING DEVICE

Adolph B. Habich, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,943
Int. Cl.[4] B29C *7/00, 1/14*
U.S. Cl. 264—328.1 **4 Claims**



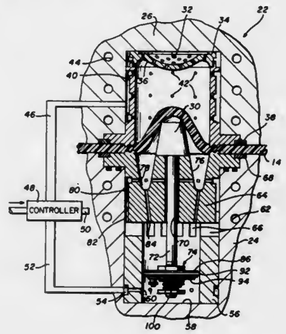
1. In a method of manufacturing a print wire guiding device for a wire matrix print head, the improvement comprising:
axially projecting a bendable manufacturing wire through an end of a mold body;
disposing a plurality of apertured inserts in said mold body, each of said inserts being closely enough spaced to adjacent ones of said inserts and having apertures closely enough aligned with a desired curved trajectory of said wire so that during said axial projection of said wire an aperture of each of said inserts through which said wire is passed directs said wire into an aperture of a next insert through which said wire is to pass, whereby said wire is self-threaded into a curved disposition through said apertures in each of said inserts by said axial projection thereof;
injecting a plastic material into said mold body;
allowing said plastic material in said mold to harden;
retracting said manufacturing wire from said hardened material; and
separating said print wire guiding device from said mold and said apertured inserts.

4,552,717

PROCESS FOR MAKING A THIN WALLED CONTAINER FROM A PLASTIC RESIN

Jackie D. Murley, Big Spring, and Marion Johnson, Baytown, both of Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jun. 26, 1984, Ser. No. 624,851
Int. Cl.[4] B29C *17/04*
U.S. Cl. 264—549 **2 Claims**



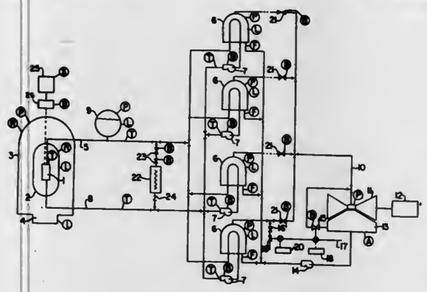
1. An improved process for making a thinwalled container from a sheet of thermoplastic resin comprising the steps of:
heating said sheet,
positioning said sheet between a pre-form mold having a cavity and an article mold aligned with said pre-form mold cavity;
closing said molds on said sheet;
introducing gas into said article mold cavity displacing said sheet into said pre-form mold cavity;
introducing gas into a chamber remote from said pre-form mold cavity to move a piston slidably located in said pre-form mold toward said sheet to displace said sheet partially into said article mold cavity; and,
establishing communication through an opening in a sidewall of said chamber between said gas in said chamber and said pre-form mold cavity on the piston side of said sheet as said piston approaches the end of its travel and thereby introducing said gas from said chamber through said opening and into said pre-form mold cavity to displace said sheet into said article mold cavity to cause said sheet to conform to said article mold forming said article while biaxially orienting said resin and maintaining a thin-walled article.

4,552,718

METHOD AND APPARATUS FOR ON-LINE MONITORING OF THE OPERATION OF A COMPLEX NON-LINEAR PROCESS CONTROL SYSTEM

Albert J. Impink, Jr., Delmont; Joseph A. Rumancik, Murrysville, and James R. Easter, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1982, Ser. No. 394,078
Int. Cl.[4] G21C *7/36*
U.S. Cl. 376—216 **45 Claims**



1. A method of operating a complex, non-linear process control system comprising the steps of:
periodically measuring designated system parameters;
storing selected setpoint values associated with each designated parameter;
sequentially comparing the measured value of selected of said designated parameters with the associated setpoint value to generate a representation of the measured range of said parameter, each parameter in the sequence being selected based upon the measured range of the preceeding parameter;
generating a representation of the current status of the system in response to the measured ranges of the sequentially selected parameters; and
operating the control system to effect changes in the measured value of at least one system parameter in response to selected representations of the status of the system to initiate a predetermined modification to the system status.

9. A method of monitoring the status of a complex non-linear control system comprising the steps of:
storing signals representative of the current on-line value of designated system parameters and periodically updating said stored signals;
generating setpoint signals for each designated system parameter;
repetitively, sequentially comparing the stored signal for selected parameters with the corresponding setpoint signal to generate a signal representative of the current range of the selected parameter, with the sequence of comparisons being determined by the current range of the preceding parameter; and
generating a representation of the status of the process control system based upon the current ranges of the sequentially selected parameters.

23. Apparatus for displaying the status of a nuclear fueled electric power generating unit comprising:
means for on-line measurement of the values of selected system parameters;
means for indicating selected set point values for each selected parameter to define preselected ranges for the selected parameters;
means for comparing the measured value of said selected parameters with the selected set point values to determine the preselected range of values into which the measured value of each selected parameter falls;
means for generating a visible pattern of lines which begins with a single line segment and successively branches out into additional line segments with the line segments emanating from each branching point each representing one of the preselected ranges of values for a successive one of said selected parameters; and
means for generating a visible indication associated with said pattern of lines representing a continuous path of line segments through said pattern with each line segment in the path representing the preselected range of values in which the measured value of one of the selected parameters falls.

38. An apparatus for monitoring the status of a complex, non-linear process control system comprising:
means for generating signals representative of the on-line value of designated system parameters;
means for generating selected setpoint signals for each designated system parameter;
means for storing said on-line value signals and said setpoint signals;
means for periodically updating the stored on-line value signals with the current on-line value signals;
means for sequentially comparing selected stored on-line value signals with the corresponding setpoint value signal to generate a signal representative of the range of said stored on-line value signal, said parameters in said sequence being selected on a predetermined basis of the value of the range signal of the preceeding parameter in the sequence; and
means responsive to the sequence of range signals for generating a representation of system status.

39. The apparatus of claim 38 in combination with the complex, non-linear process control system and including means responsive to said representation of system status for modifying the operation of the process control system to effect a predetermined change in the on-line value of at least one of said designated system parameters.

4,552,719

METHOD OF SINTERING STAINLESS STEEL POWDER

Toru Morimoto; Tsuyoshi Ohsaki; Toshio Ohkawa, and Masahito Fujita, all of Narashino, Japan, assignors to N.D.C. Co., Ltd., Chiba, Japan

Continuation of Ser. No. 212,462, Dec. 3, 1980, abandoned. This application Aug. 31, 1983, Ser. No. 528,005
Int. Cl.[4] B22F *1/00, 3/10*
U.S. Cl. 419—2 **1 Claim**

1. A method for manufacturing a porous sintered stainless steel body comprising the steps of:
(a) forming a mixture comprising stainless steel powder, Ni-Mn powder and Ni-Cr powder, wherein the particles of the Ni-Mn powder and the Ni-Cr powder are smaller than the particles of said stainless steel powder;
(b) pouring the resulting powder mixture of step (a) into a heat-proof vessel without applying any pressure to said mixture;
(c) sintering said mixture poured into said heat-proof vessel of step (b) under a non-oxidizing atmosphere without applying any pressure to said mixture such that said sintering is started at about at least 1000° C. with the temperature gradually being raised and said sintering is finished at 1200° C. to 1350° C.

4,552,720

DEBRIS COMPRESSING AUTOCLAVE

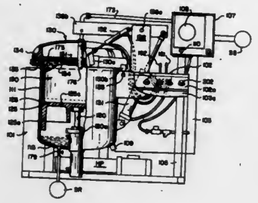
Richard E. Baker, Sr., Downey, and Richard E. Baker, Jr., Santa Ana, both of Calif., assignors to American Sterilizer Company, Erie, Pa.

Continuation-in-part of Ser. No. 432,241, Jan. 24, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,234
Int. Cl.[4] A61L *2/06*
U.S. Cl. 422—26 **5 Claims**

1. A process for rendering discarded medical articles safe for disposal comprising the steps of:

providing a sealable receptacle lined with a liner made of thermoplastic material;
introducing discarded medical articles into said liner;
injecting steam into said liner to sterilize said medical articles and to soften said liner to a deformable state;
compressing said sterilized medical articles within said deformable liner to encapsulate them within the thermoplastic material; thereby forming an encapsulated mass; and
permitting said encapsulated mass to cool, whereby said thermoplastic material of said liner retains the shape brought about by said compression step.

2. Apparatus for rendering discarded medical articles safe for disposal, comprising:
a sealable receptacle having an interior chamber;





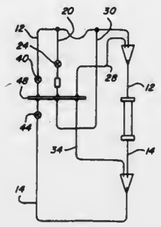
a thermoplastic liner lining the interior chamber of said sealable receptable said liner thereby forming an interior region for receiving discarded medical articles;
means for introducing steam into said sealable receptacle; said liner including means for permitting the passage of steam into the interior region to thereby sterilize discarded medical articles disposed therein and to soften said thermoplastic liner to a deformable state;
means associated with said sealable receptacle for compressing said thermoplastic liner and discarded medical articles disposed therein; and
control means for activating said compressing means after said liner has become deformable, whereby once said liner and discarded medical articles disposed therein are compressed, said liner conforms to the shape of the so compressed mass of discarded medical articles.

4,552,721
METHOD FOR DISINFECTING, FOR REUSE, SEPARATION DEVICES FOR BLOOD AND ASSOCIATED FLUID LINES

Philip W. Fentress, Deerfield; Rodney S. Kenley, Evanston, and William J. Schnell, Libertyville, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 19, 1983, Ser. No. 524,705
Int. Cl.⁴ A61L *2/18*
U.S. Cl. 422—28 **7 Claims**

1. A method of disinfecting, for reuse after a hemodialysis treatment, a dialyzer and its interconnected arterial and venous blood lines and intravenous administration set, the blood lines having device and patient ends and the device ends communicating with the dialyzer and having peripheral lines for communicating with medical devices, the patient end of the venous blood line communicating with a patient, comprising the steps of:
connecting the patient end of the arterial line to a saline solution container, the intravenous administration set being connected to the saline solution container;
allowing saline solution to flow from the saline solution container through the arterial blood line, intravenous administration set and dialyzer and through the venous blood line for rinsing back blood to a patient;
connecting the patient end of the venous blood line to a container of reuse solution;

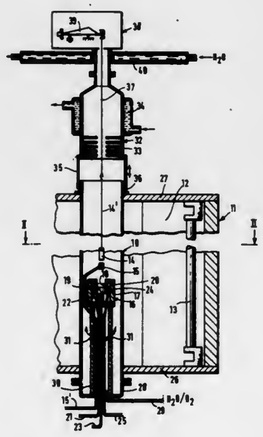


connecting the peripheral lines of the blood lines to a multiple connection manifold which provides a common connection allowing the blood lines and administration set to be in interconnected flow relation; and,
allowing reuse solution to flow from the container of reuse solution through the venous blood line and its peripheral lines, dialyzer and intravenous administration set and through the arterial blood line and its peripheral lines.

4,552,722
APPARATUS FOR THE HOT GAS CORROSION OF SAMPLES OF MATERIAL

Klaus Fritscher, Cologne, and Horst Gedanitz, Leverkusen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Jun. 9, 1983, Ser. No. 502,553
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222182
Int. Cl.⁴ G01N *17/00*
U.S. Cl. 422—53 **11 Claims**

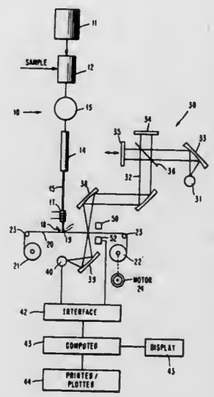


1. An apparatus for determining the corrosive effect of corrosion stimulating substances on selected material which comprises:
(a) a means for freely suspending a sample of material to be corroded by a corrosive stimulating substance comprising an upright pipe having a central axis where the sample of material is found, the wall of said pipe being substantially permeable to radiation from a radiant heat source;
(b) means for introducing a corrosive gas into said means for suspending said sample;
(c) crucible means for receiving and evaporating said corrosive stimulating substance having a peripheral wall which is impermeable to radiation from a radiant heat source, said crucible means being positioned beneath said sample of material;
(d) means for heating said sample of material comprising a radiant heat source located outside said pipe whereby radiation from said heat source is directed through said pipe wall onto said sample; and
(e) means for heating said corrosive stimulating substance receiving and evaporating means.

4,552,723
LC/FTIR SYSTEM WITH THERMOSPRAY SOLVENT SEPARATION

Gary E. Adams, Danbury; John M. Casper, Brookfield, both of Conn., and Roy J. Gritter, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,273
Int. Cl.⁴ G01J *1/00;* **G01N** *21/13, 30/02*
U.S. Cl. 422—66 **5 Claims**

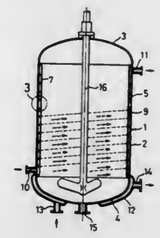


1. In a combined LC/FTIR system having an LC and an FTIR spectrometer, said LC effluxing an effluent comprising a solvent and separated sample components, said spectrometer comprising an IR detector and means for directing IR energy along an optical path terminating at said detector, the combination comprising:
a deposition media movable along a media path including first and second stations, said optical path traversing said media path at said second station; and
thermospray means located at said first station, said thermospray means being connected to said LC to receive said solvent and said separated sample components, said thermospray means being operative to vaporize said solvent and to deposit said separated sample components at different locations and at different times on said media as it moves through said first station, whereby said separated components are non-destructively analyzed by said spectrometer as said media passes through said second station.

4,552,724
REACTION AND HEAT EXCHANGER APPARATUS

Tadao Matsumoto, Takasago, and Kazuo Inoue, Kakogawa, both of Japan, assignors to Shinko-Pfandler Company, Ltd., Kobe, Japan

Continuation of Ser. No. 353,884, Mar. 2, 1982, abandoned. This application Apr. 11, 1984, Ser. No. 599,279
Claims priority, application Japan, Mar. 9, 1981, 56-34114
Int. Cl.⁴ F28D *21/00*
U.S. Cl. 422—138 **8 Claims**





1. A reaction apparatus comprising a pressure proof vessel for a reactant under relatively high pressure, said vessel being formed by:
(a) a generally cylindrical outer wall;
(b) a generally cylindrical inner liner having a substantially smooth interior surface, said liner being positioned substantially concentrically within said outer wall and spaced from said outer wall, said space between said wall and said liner being separated from the interior volume of said liner, and said inner liner having a radial dimension that is substantially less than said outer wall;
(c) a support positioned in said space, said support including a plurality of support portions that extend substantially radially from said outer wall to said inner liner, said plurality of support portions extending generally parallel to each other and being separated to form flow paths therebetween, the width of each path being substantially equal to the radial width of said support portions and the height of said paths being equal to the distance between said support portions;
(d) said liner including a plurality of strip portions having a width which is substantially equal to the distance between said support portions, said strip portions extending substantially parallel to each other and to said support portions, and said strip portions extending between the radially inner edges of two support portions;
(e) weld metal securing said strip portions to said radially inner edges of said support portions to form a substantially smooth continuous interior surface;
(f) weld metal securing said outer wall to the radially outer edges of said support portions and;
(g) said outer wall having a plurality of flow openings therein leading to said flow paths.

5. A method of making a reaction vessel including a generally cylindrical outer wall, a generally cylindrical liner spaced interiorly from said wall, and a support in the space between said wall and said liner, said method comprising the steps of:
(a) fabricating said generally cylindrical wall of a weldable metal;
(b) forming a plurality of elongated metal support portions;
(c) positioning said support portions on the interior surface of said outer wall at substantially regularly spaced locations;

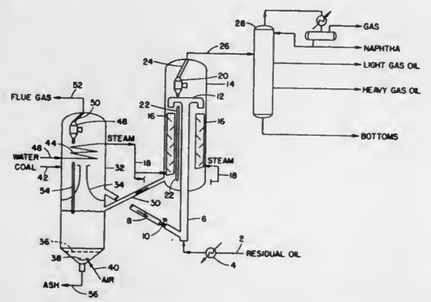
(d) welding said support portions to said wall to form said support;
(e) forming a plurality of elongated metal liner portions having a radial dimension that is substantially less than said outer wall and a width that is substantially equal to the distance between said support portions;
(f) positioning the side edges of said liner portions against the radially inner edges of said support portions; and
(g) welding said side edges of said liner portions to adjacent liner portions and to said support portions to form a substantially smooth continuous interior liner surface and flow paths between said support portions.

4,552,725

APPARATUS FOR CO-PROCESSING OF OIL AND COAL

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 271,054, Jun. 5, 1981, Pat. No. 4,390,409. This application Feb. 7, 1983, Ser. No. 464,165
Int. Cl.⁴ B01J *8/18*
U.S. Cl. 422—140 **9 Claims**



1. Apparatus for converting coal and oil to volatile hydrocarbons comprising:
(a) a combustor having an upper heating chamber and a lower combustion chamber;
(b) a combustor riser means for separating said upper heating chamber and said lower combustion chamber and for supporting feed coal thereon, said combustor riser mean comprising means for the passage of combustion gases therethrough, thereby indirectly heating the feed coal supported thereon;
(c) inlet means for a stripped non-volatile hydrocarbon portion and means for combusting the stripped non-volatile hydrocarbon portion in said combustion chamber to produce hot combustion gas;
(d) means for introducing air to said combustion chamber;
(e) means for passing water through said heating chamber wherein hot combustion gases from said combustion chamber indirectly heat the water to generate steam;
(f) means for introducing feed coal into said heating chamber on top of said combustor riser means, the feed coal being indirectly heated by hot combustion gas passing through said passage means of said combustor riser; and
(g) means for removing effluent gas from said heating chamber.

3. Apparatus for converting coal and oil to volatile hydrocarbons comprising:
(a) a riser reactor having an upper portion and a lower portion;
(b) a first inlet means in the lower portion of said reactor for introducing preheated feed coal to said reactor;
(c) a second inlet means in the lower portion of said reactor for introducing oil to said reactor for admixture with said preheated feed coal;
(d) an outlet means in the upper portion of said reactor for delivering a first cracked hydrocarbon volatilized portion and a non-volatilized hydrocarbon portion from said reactor;
(e) a steam stripping vessel having an upper portion and a lower portion, said outlet means of said reactor communicating with the upper portion of said stripping vessel wherein said first cracked hydrocarbon volatilized portion is separated from said non-volatilized hydrocarbon portion;
(f) a stripping chamber within said lower portion of said stripping vessel, said stripping chamber receiving said non-volatilized hydrocarbon portion from said upper portion of said stripping vessel;
(g) means for introducing steam to said stripping chamber, said steam contacting said non-volatilized hydrocarbon portion producing a second cracked volatilized hydrocarbon portion;
(h) means for fractionating said first and second volatilized hydrocarbon portions to obtain hydrocarbon products;
(i) means for transporting said first and second volatilized hydrocarbon portions from the upper portion of said stripping vessel to said fractionating means;
(j) a combustor having an upper heating chamber and a lower combustion chamber;
(k) a combustor riser means for separating said upper heating chamber and said lower combustion chamber and for supporting feed coal thereon, said combustor riser means comprising means for the passage of combustion gases therethrough, thereby indirectly heating the feed coal supported thereon;
(l) means for transporting the stripped non-volatile hydrocarbon portion from said stripping chamber to said combustion chamber to produce hot combustion gas;
(m) means for introducing air to said combustion chamber;
(n) means for passing water through said heating chamber wherein hot combustion gases from said combustion chamber indirectly heat the water to generate steam;
(o) means for transporting said steam generated in said heating chamber to said means for introducing steam to said stripping chamber;
(p) means for introducing feed coal into said heating chamber on top of said combustor riser means, the feed coal being indirectly heated by hot combustion gas passing through said passage means of said combustor riser;
(q) means for transporting heated feed coal from said heating chamber to said first inlet means; and
(r) means for removing effluent gas from said heating chamber.

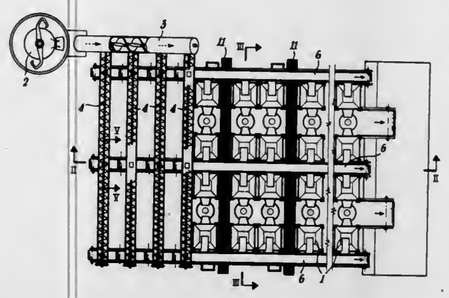
4,552,726

PLANT CONSISTING OF MODULAR ELEMENTS FOR DEGRADING ORGANIC WASTES BY MEANS OF EARTH WORMS

Adriana Grappelli; Umberto Tomati, both of Rome, and Grazio Palma, Mentana, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Jun. 15, 1984, Ser. No. 621,287
Claims priority, application Italy, Jun. 17, 1983, 48526 A/83
Int. Cl.⁴ C05F *9/02*; B65G *1/04, 37/00*
U.S. Cl. 422—184 **5 Claims**

1. A modular element plant for degrading organic wastes by means of earth worms, comprising, in combination
(a) a tank for organic wastes;
(b) a plurality of working containers symmetrically distributed in a plurality of container layers, each having at least one pair of container rows;
(c) a first horizontal conveying means for each container layer;
(d) two second horizontal conveying means for each pair of container rows, arranged beneath said first horizontal conveying means perpendicularly thereto;
(e) an inclined conveying means connecting said tank with one end of said first horizontal conveying means;
(f) output openings provided in said first horizontal conveying means to discharge organic wastes, received from said inclined conveying means, onto said second horizontal conveying means;
(g) a pluraltiy of chute means on said second conveying means for charging said organic wastes into the containers of each container row;
(h) a plurality of hopper means each arranged between two containers of adjacent container rows of a said pair of rows, except for the containers of the uppermost and lowest layers;



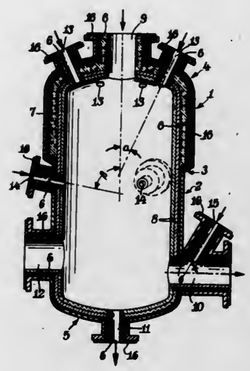
(i) opening means at the bottom of each working container for discharging the degraded material into said hopper means;
(j) a third horizontal conveying means arranged beneath said hopper means, whereby said hopper means and the container of the lowest container layer discharge the degraded material onto said third conveying means to convey it into storage chambers.

4,552,727

COOLING DEVICE

Kurt Schuchardt, Brühl; Harald Scholz, Erftstadt; Hans W. Neuss, Brühl, and Georg Pech, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,057
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309576
Int. Cl.⁴ B01J *19/02*; F27D *1/00*; F28F *21/04, 21/06*
U.S. Cl. 422—241 **10 Claims**



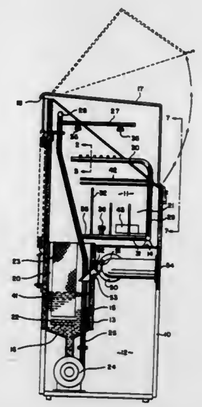
1. A cooling device for quenching hot, highly corrosive combustion gases containing chlorine and hydrogen chloride comprising an elongated steel vessel having a longitudinal axis, upper and lower portions, and rounded top and bottom end portions, an axial inlet connection means on the top end portion of the steel vessel, a plurality of quench injection connection means inclined with respect to the longitudinal axis of the vessel and disposed at regular intervals around a horizontal zone situated in the top third of the steel vessel for use in injecting quenching liquid into the vessel, a lateral outlet connection means in the lower third of the steel vessel above the rounded bottom end portion providing an outlet for quenched combustion gases and quenching liquid, an axial quench outlet connection means on the bottom end portion of the steel vessel for use in cleaning purposes and as an outlet for quenching liquid, an acid-resistant hard rubber lining extending over the interior surfaces of the steel vessel and all connection means, a first acid-resistant ceramic lining extending over the interior surfaces of the acid-resistant hard rubber lining in the upper steel vessel portion and all connection means, a refractory lining of heat insulating bricks on the interior of the first acid-resistant ceramic lining in the upper portion of the steel vessel, the upper steel vessel portion comprising 40 to 50% of the total height of the vessel and having a diameter larger than the diameter of the lower steel vessel portion, and the heat-insulating bricks in the upper steel vessel portion and the acid-resistant hard rubber lining in the lower steel vessel portion having a second acid-resistant ceramic lining on the interior surfaces thereof, the interior surfaces of the heat-insulating bricks in the upper steel vessel portion and the acid-resistant hard rubber lining in the lower steel vessel portion forming a cylindrical surface of equal diameter throughout the elongated steel vessel.

4,552,728

DECONTAMINATION APPARATUS

William R. Taylor, Lugarno, Australia, assignor to Hal Johnston Pty. Limited, New South Wales, Australia

Continuation of Ser. No. 262,453, May 11, 1981, abandoned. This application Jan. 3, 1983, Ser. No. 455,429
Int. Cl.⁴ A61L *9/00*
U.S. Cl. 422—300 **12 Claims**



1. A decontamination apparatus comprising a decontamination chamber for holding and treating articles to be decontaminated, a lid arranged to provide access to said chamber for installing articles to be decontaminated and for removal therefrom, an ancillary chamber containing decontamination fluid supply and control means for said decontamination chamber, said decontamination chamber comprising at least two regions so as to provide one relatively deep region at the rear of said apparatus wherein elongate breathing tubes can be suspended vertically to provide complete drainage, and a second relatively shallow region at the front of said apparatus wherein smaller articles such as breathing masks can be held or suspended, at least a lower portion of said deep region being defined by a trough into which decontaminating fluid can

drain from said decontamination chamber, said decontamination chamber further including support devices for holding articles to be decontaminated, spray devices defined by a plurality of downwardly directed nozzles for supplying decontamination fluid into the interior of said elongate breathing tubes, each nozzle including an adjustable jet rod for regulating the spray within said tubes, said spray devices arranged in both decontamination regions for spraying decontamination fluid into or over articles arranged in the decontamination chamber, and distributing means comprising a network of pipes and manifolds for transferring decontamination fluid from said trough to said spray devices, the spray devices and distributing means provided in said shallow region of said decontamination chamber being defined by a removable spraying assembly, the distributing means for said elongate breathing tubes including a manifold located in the upper portion of said deep region of said decontamination chamber, said manifold being provided with said spray devices.

4,552,729

METHOD FOR REMOVING TIN FROM SODIUM TUNGSTATE SOLUTION

Michael J. Miller, Towanda; Martin C. Vogt, Monroeton, and Richard A. Scheithauer, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 7, 1984, Ser. No. 679,419
Int. Cl.⁴ C01G *41/00*
U.S. Cl. 423—55 **5 Claims**

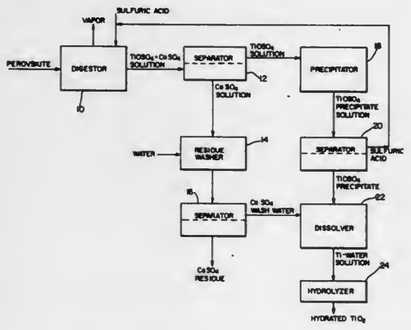
1. A process for removing tin from aqueous sodium tungstate solutions said process comprising:
(a) adding ammonia to said sodium tungstate solution;
(b) adjusting the pH of the ammonia-treated sodium tungstate solution to above about 9.5;
(c) adding magnesium chloride to the pH adjusted sodium tungstate solution to form insoluble material containing the major portion of the tin and a resulting solution containing the major portion of tungsten; and
(d) separating the insoluble material from the resulting solution.

4,552,730

RECOVERY OF TITANIUM FROM PEROVSKITE USING SULFURIC ACID LEACHING

Monte B. Shirts, South Jordan; Dale A. Martin, and Allan E. Petersen, both of Salt Lake City, all of Utah, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 27, 1984, Ser. No. 644,303
Int. Cl.⁴ C01G *23/00*
U.S. Cl. 423—82 **5 Claims**



1. A method of treating perovskite to produce a titanium-bearing solution suitable for recovering the titanium as hydrated titanium dioxide, comprising the steps of:
(a) leaching the perovskite with a strong sulfuric acid solution to produce a slurry of pregnant acid leach solution containing dissolved titanium and insoluble calcium sulfate;
(b) separating the titanium-containing pregnant acid leach solution from the insoluble calcium sulfate residue;
(c) precipitating mixed titanium sulfates from the pregnant acid leach solution by heating said solution;
(d) separating the mixed titanium sulfates precipitate from the remaining sulfuric acid solution; and
(e) redissolving the mixed titanium sulfates precipitate in water or dilute acid solution.

4,552,731

PROCESS FOR PREPARING CRYSTALLINE ZEOLITE COMPOSITION ERC-2

David E. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1983, Ser. No. 550,897
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—118 **11 Claims**

1. A process for preparing a crystalline zeolite having a composition, in terms of mole ratios of oxides, in the range:

$$0.9 \text{ to } 1.1\ M_2O:Al_2O_3:2.5 \text{ to } 5.1\ SiO_2:0 \text{ to } 6\ H_2O$$

where M is K or a mixture of K and Na, where Na is no more than 30 mole percent of the mixture, and characterized by having an X-ray powder diffraction pattern essentially identical to that given in Table IV which is characteristic of zeolite L, which comprises:
(a) preparing a reaction mixture comprising water, a source of silica, metakaolin, KOH and up to about 30 mole percent of NaOH based on total moles of KOH and NaOH, said reaction mixture having a composition, in terms of mole ratios of oxides, within the following ranges:

$M'_2O:Al_2O_3$	1.0 to 1.6
$SiO_2:Al_2O_3$	2.5 to 5.1
$H_2O:Al_2O_3$	80 to 140

where M' is either K or a mixture of K and Na; and
(b) maintaining the reaction mixture at between about 140° and 300° C. under autogeneous pressure for a sufficient period of time so as to form crystals of the zeolite.

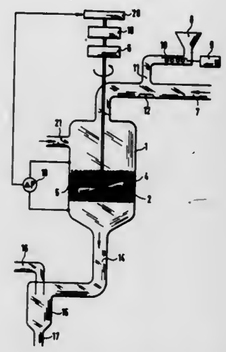
4,552,732

METHOD OF AND AN APPARATUS FOR SCRUBBING PYROLYSIS GASES

Klaus Hillekamp, Munich, Fed. Rep. of Germany, assignor to Deutsche Kommunal-Anlagen Miete GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,748
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1982, 3230472
Int. Cl.⁴ C01B *7/00*
U.S. Cl. 423—210 **5 Claims**

1. A method of scrubbing hot pyrolysis gas comprising introducing a particulate scrubbing agent into a stream of gas to be scrubbed, passing said stream with scrubbing agent downwardly into a bulk bed filter, continuously agitating the particles of the bulk bed filter, withdrawing scrubbed gas from



the bulk bed filter and controlling the degree of agitation responsive to the pressure drop in the bulk filter bed.

4,552,733

POLYFUNCTIONAL CATALYSTS AND METHOD OF USE

Charles E. Thompson, Warren; John J. Mooney, Wyckoff; Carl D. Keith, Summit, all of N.J., and William A. Mannion, San Francisco, Calif., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 519,218, Aug. 3, 1983, abandoned, which is a continuation of Ser. No. 335,128, Dec. 28, 1981, abandoned, which is a continuation of Ser. No. 28,515, Apr. 9, 1979, abandoned, which is a division of Ser. No. 833,922, Sep. 16, 1977, Pat. No. 4,157,316, which is a continuation-in-part of Ser. No. 608,084, Aug. 27, 1975, abandoned. This application Dec. 18, 1984, Ser. No. 682,978
Int. Cl.⁴ B01D *15/34, 53/00*; B01J *8/02*
U.S. Cl. 423—213.5 **31 Claims**

1. A method of reacting contaminants in combustion exhaust gases to substantially simultaneously oxidize gaseous hydrocarbons and carbon monoxide and reduce nitrogen oxides therein, comprising reacting said gases with a controlled approximately stoichiometric amount of oxygen under conditions which convert said contaminants to carbon dioxide, water and nitrogen, by contacting said gases with a catalyst consisting essentially of:
(a) an alumina support selected from the group consisting of alumina and alumina stabilized with one or more rare earth oxides;
(b) a platinum group metal component dispersed on the support and selected from the group consisting of (i) to (iv), as follows: (i) platinum plus at least one of rhodium, ruthenium and iridium; (ii) platinum plus palladium plus at least one of rhodium, ruthenium and iridium; (iii) the metals of each combination of (i) as an alloy with each other; and (iv) the metals of each combination of (ii) as an alloy with each other;
(c) a base metal oxide component, the base metal thereof being selected from metals having atomic numbers from 25 to 28 and rhenium, and mixtures thereof, said base metal oxide component being present in a weight ratio to said platinum group metal component of at least 2 to 1; and
(d) a carrier on which said support, said platinum group metal component and said base metal oxide component are deposited.

4,552,734

FLUIDIZATION PROCESS FOR REMOVING TOTAL REDUCED SULFUR COMPOUNDS FROM INDUSTRIAL GASES

Joseph Iannicelli, Jekyll Island, Ga.; Leif Caspersen, Horsholm, Denmark; Jan Hansen, Lyngby, Denmark, and Sven Pedersen, Gentofte, Denmark, assignors to Aquafine Corporation, Brunswick, Ga.

Filed Sep. 8, 1983, Ser. No. 530,267
Int. Cl.⁴ C01B *17/16, 31/20*
U.S. Cl. 423—230 **23 Claims**

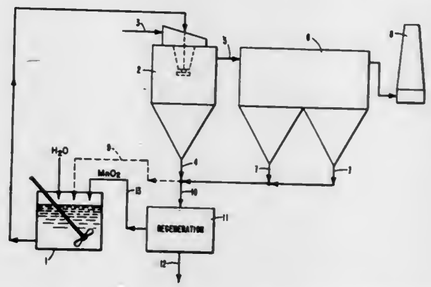
1. A process for the removal of Total Reduced Sulfur compounds from an industrial gas comprising the steps of:
(a) fluidizing substantially dry, activated manganese dioxide absorbent particles in a reaction zone with an elevated temperature stream of said industrial gas to effect oxidation of said Total Reduced Sulfur compounds and absorption of Total Reduced Sulfur compound oxidation products on said absorbent particles;
(b) recovering manganese dioxide absorbent particles containing areas of reduced manganous compounds from said reaction zone;
(c) suspending at least a part of the absorbant particles recovered in step (b) in water to produce an aqueous regeneration suspension;
(d) subjecting at least the aqueous portion of said regeneration suspension to liquid phase oxidation to produce an activated manganese dioxide absorbent-containing suspension;
(e) drying the activated manganese dioxide absorbent-containing suspension to produce substantially dry, activated manganese dioxide absorbent particles; and
(f) recycling the activated manganese dioxide absorbent to the reaction zone.

4,552,735

PROCESS FOR REMOVING TOTAL REDUCED SULFUR COMPOUNDS FROM INDUSTRIAL GASES USING MANGANESE DIOXIDE

Joseph Iannicelli, Brunswick, Ga.; Leif D. Caspersen, Horsholm; Jan M. Hansen, Lyngby, and Jens C. T. Moller, Allerod, all of Denmark, assignors to Aquafine Corporation, Brunswick, Ga.

Filed Apr. 20, 1983, Ser. No. 486,672
Int. Cl.⁴ B01D *53/34*
U.S. Cl. 423—224 **25 Claims**



3. A process for the removal of Total Reduced Sulfur compounds from an industrial gas comprising the steps of:
(a) preparing an aqueous feed suspension comprising an activated manganese dioxide absorbent;
(b) atomizing said feed suspension in a spray dryer to form fine droplets of said suspension and contacting the atomized droplets with a stream of said industrial gas, said gas at a temperature above 100° C. in said spray dryer to effect oxidation of said Total Reduced Sulfur compounds and absorption of Total Reduced Sulfur compound oxidation products on said absorbent while simultaneously drying

said atomized droplets to produce a dry powder comprising particles of unreacted manganese dioxide containing areas of reduced manganous compounds, whereby the content of Total Reduced Sulfur compounds in said industrial gas is lowered;

(c) recovering said dry powder produced in said spray dryer;

(d) providing an aqueous regeneration medium by supplying a flow of oxygen-containing gas through said aqueous medium;

(e) adding to said aqueous regeneration medium at least a part of the dry powder recovered in step (c) or an aqueous extract thereof;

(f) after the oxygen-containing gas flow of step (d) has begun, maintaining, by alkaline material addition if necessary, the pH in said regenerating medium at an alkaline level sufficient to produce an activated manganese dioxide absorbent;

(g) continuing the flow of said oxygen-containing gas through the alkaline regenerating medium for a period sufficient to regenerate an activated manganese dioxide absorbent; and

(h) recycling the activated manganese dioxide absorbent produced in step (g) for use in the preparation of said aqueous feed suspension of step (a).

4,552,736

POTASSIUM FLUORIDE STABILIZED AMMONIUM NITRATE

Indu B. Mishra, Carbondale, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed May 2, 1983, Ser. No. 490,633
Int. Cl.⁴ C05C *1/02*
U.S. Cl. 423—266 **3 Claims**

1. Ammonium nitrate-potassium fluoride mixed crystals wherein the weight per cent of potassium fluoride in the mixed crystal is within the range of from about 0.5% to about 2% by weight.

3. A method of stabilizing ammonium nitrate which comprises the steps of:

(a) heating the ammonium nitrate to the molten state,

(b) adding a stabilizing amount of KF to the ammonium nitrate, and

(c) cooling the ammonium nitrate to below the melting point.

4,552,737

METHOD TO IMPROVE YIELDS OF SODIUM HYPOPHOSPHITE

William E. Estes, Ossining, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 13, 1984, Ser. No. 570,478
Int. Cl.⁴ C01B *15/16*
U.S. Cl. 423—307 **4 Claims**

1. A process for increasing the yield of sodium hypophosphite produced by the reaction of phosphorus, sodium hydroxide, water and calcium hydroxide, comprising increasing the $NaOH/P_4$ from stoichiometric amount to within the range of from about 2.4 to about 3.0 while maintaining the lime to phosphorus ratio above about 1.21.

4,552,738

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-12

Mae K. Rubin, Bala Cynwyd, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 25, 1984, Ser. No. 614,071
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—328 **17 Claims**

1. A method for synthesizing a crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$(0.9 \text{ to } 2.5)R_2O:(0.3 \text{ to } 2.2)M_{2/n}O:(0.02 \text{ to } 0.8)Al_2O_3:(100-)SiO_2$

wherein M is at least one alkali metal cation having the valence n, and R is benzyltriethylammonium cation, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises preparing a mixture containing sources of alkali metal oxide, an organic nitrogen-containing cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	= 80–∞
H_2O/OH^-	= 40–400
OH^-/SiO_2	= 0.02–0.3
$R/(R + M)$	= 0.2–0.8

wherein M and R are as above defined, and maintaining the mixture at a temperature of from about 90° C. to about 175° C. until crystals of the crystalline silicate are formed.

6. A synthetic crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$(0.9 \text{ to } 2.5)R_2O:(0.3 \text{ to } 2.2)M_{2/n}O:(0.02 \text{ to } 0.8)Al_2O_3:(100-)SiO_2$

wherein M is at least one alkali metal cation having the valence n, and R is benzyltriethylammonium cation, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification.

4,552,739

METHOD OF PREPARING CRYSTALLINE ZEOLITE ZSM-12 AND PRODUCT

Günter H. Kühl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 559,669, Dec. 9, 1983, abandoned. This application May 3, 1985, Ser. No. 729,099
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—328 **5 Claims**

1. A method for preparing crystalline zeolite ZSM-12 which comprises preparing a reaction mixture containing a source of an alkali or alkaline earth metal oxide, an oxide of silicon, diethyldimethylammonium ion, and water and having a composition, in terms of mole ratios of oxides, within the following ranges:

SiO_2/Al_2O_3	= 40 or higher
$M_2O/(DEDMA)_2O$	= 0.2 to 2.0
H_2O/OH^-	= 50 to 400
OH^-/SiO_2	= 0.05 to 0.35

wherein M is an alkali or alkaline earth metal and DEDMA is a diethyldimethylammonium ion, and maintaining said mixture under crystallization conditions until crystals of said zeolite are formed.

5. Diethyldimethylammonium-containing ZSM-12 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification.

4,552,740

PROCESS FOR PRODUCING AMORPHOUS AND CRYSTALLINE SILICON NITRIDE

Peter E. D. Morgan, Thousand Oaks, and Eloise A. Pugar, Newbury Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1985, Ser. No. 704,979
Int. Cl.⁴ C01B *21/068*
U.S. Cl. 423—344 **10 Claims**

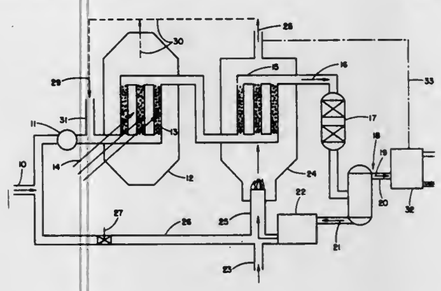
1. A process for producing silicon nitride which comprises reacting silicon disulfide in solid form with ammonia gas at temperature ranging from about 800° C. to about 1450° C. and recovering amorphous silicon nitride.

4,552,741

METHOD AND APPARATUS FOR MANUFACTURING SYNTHESIS GAS

Eckhard Melchior, Dachau, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 2, 1984, Ser. No. 656,867
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337078
Int. Cl.⁴ C01C *1/04*
U.S. Cl. 423—359 **5 Claims**



1. Method for the manufacture of a synthesis gas comprising hydrogen, through the catalytic steam reforming of hydrocarbons under the influence of heat comprising: passing a mixture of steam and hydrocarbons through two catalytic reforming reactors connected in series under conditions effective to provide synthesis gas wherein the endothermic heat of reaction in the first reactor is provided by solar energy, the endothermic heat of reaction in the second reactor is provided by combustion of the residual products obtained from the synthesis gas generation process, and the steam is generated from the flue gas heat obtained from the combustion of the residual products.

3. Apparatus for the manufacture of a synthesis gas comprising hydrogen through the catalytic steam reforming of hydrocarbons under the influence of heat comprising:

(a) a first catalytic steam reforming retractor,

(b) a second catalytic steam reforming reactor,

(c) means to pass a mixture of steam and hydrocarbons in serial fashion through said first and second reactors to provide synthesis gas,

(d) means to heat said first reactor by solar energy, and

(e) means to heat said second reactor by combustion of residual products from synthesis gas generation.

4,552,742

MATERIALS PROCESSING USING CHEMICALLY DRIVEN SPHERICALLY SYMMETRIC IMPLOSIONS

Frederick J. Mayer, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Oct. 3, 1983, Ser. No. 538,210
Int. Cl.⁴ C01B *31/06*
U.S. Cl. 423—446 **11 Claims**

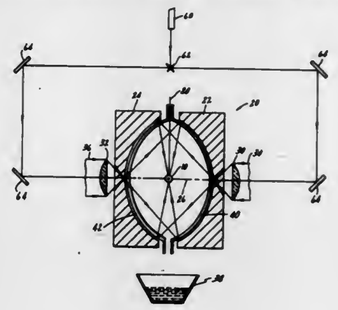
1. A method of implosive compression for obtaining changes of state in materials comprising the steps of:

(a) providing a target which includes a core having quantity of selected material with a spherical outer core surface, and a hollow spherically symmetrical shell of high explosive material concentrically surrounding said core surface and having a spherical outer shell surface concentric with said core surface

obtaining uniform surface ignition at said outer surface of said shell of high explosive material by directing at least one beam of radiant energy onto said target at uniform intensity around said outer shell surface so as to generate spherically symmetrical implosive shock compression of said quantity of material, and

(c) recovering the resulting product.

11. A method for obtaining compression-induced polymorphic transition of graphite to diamond comprising the steps of:



(a) providing a spherical core of graphite,

(b) concentrically surrounding said graphite shell with a shell of high explosive material, and

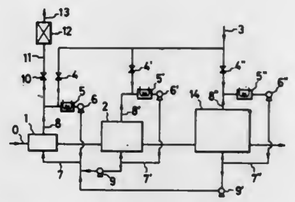
(c) igniting said shell of high explosive material by directing radiant energy at spherically symmetrical intensity onto said explosive shell.

4,552,743

PROCESS FOR PRODUCING CARBON FIBER

Hajime Torigata; Atsushi Sumida, and Nobuyuki Matsubara, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,535
Claims priority, application Japan, Dec. 22, 1982, 57-223887
Int. Cl.⁴ D01F *9/12*
U.S. Cl. 423—447.7 **9 Claims**



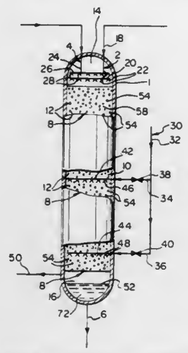
1. A process for producing carbon fiber comprising a preoxidation step in which precursor fibers are heated in an oxidizing atmosphere of about 200° to 250° C. to convert them into partially oxidized fibers with a water retention of 1 to 3% by weight, an oxidation step in which the partially oxidized fibers are heated in an oxidizing atmosphere to convert them into oxidized fibers, and a carbonization step in which the oxidized fibers obtained in said oxidation step are further heated in an inert atmosphere to convert them into carbonized fibers, wherein part or the whole of the exhaust gas from the oxidation step (oxidation exhaust gas) is supplied into said preoxidation step as the oxidizing gas for said preoxidation treatment, and the exhaust gas from said preoxidation step is subjected to a burning treatment.

4,552,744

PROCESS FOR THE PRODUCTION OF SULFURIC ACID USING COATED CATALYSTS

Karl T. Chuang, and David R. P. Thatcher, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Chalk River, Canada

Filed Jul. 30, 1984, Ser. No. 635,626
Claims priority, application Canada, Feb. 10, 1984, 447230
Int. Cl.[4] C01B *17/74, 17/98, 17/48*
U.S. Cl. 423—522 **7 Claims**



1. A method of producing sulphuric acid from sulphur dioxide, comprising:

(a) simultaneously contacting fluid streams in the form of gaseous sulphur dioxide and oxygen and liquid, primary sulphuric acid and water, and a catalyst assembly in the path of the contacting fluids, said fluid and said catalyst assembly being contacted at a process temperature in the range 150° to 280° C., the catalyst assembly comprising at least one high surface area, non-combustible, sulphuric acid resistant, catalyst support and an outer, porous membrane coating on the said at least one support and consisting of a process temperature and sulphuric acid resistant gas permeable, water repellent, gaseous sulphur dioxide and oxygen gas permeable, high molecular weight, organic, polymeric material which is polytetrafluoroethylene and crystallites of at least one catalytically active metal selected from Group VIII of the Periodic Table, with the crystallites dispersed on the porous support in the polymeric material, so that:

(i) gaseous sulphur dioxide and oxygen are catalytically combined to form sulphur trioxide,

(ii) exothermic heat generated in the catalyst assembly by the formation of sulphur trioxide therein is dissipated by the sulphuric acid and water,

(iii) the sulphur trioxide and the water combine to form secondary sulphuric acid, and

(iv) the primary sulphuric acid combines with the secondary sulphuric acid to form a relatively more concentrated sulphuric acid solution therewith, and then

(b) collecting the more concentrated sulphuric acid solution.

4,552,745

Patent Not Issued For This Number

4,552,746

PROCESS FOR THE REDUCTION OF THE SULFUR CONTENT IN A GASEOUS STREAM

Roland Kettner, Lehmweg 12, 2081 Heist; Norbert Liermann, Am Lerchenberg 17, 3103 Bergen 2, and Torsten Lübcke, Otternweg 2, 3101 Hambühren II, all of Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,832
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1981, 3143400
Int. Cl.[4] C01B *17/02*
U.S. Cl. 423—573 G **12 Claims**

1. A process for the reduction of sulfur content in a gaseous stream with the production of elemental sulfur, comprising the steps of:

(a) treating the gaseous stream by at least one of hydrogenation and hydrolysis to convert substantially all of the sulfur components therein to hydrogen sulfide;

(b) then reducing the water content of the gaseous stream to less than 10 volume percent;

(c) introducing oxygen into the gaseous stream;

(d) treating the gaseous stream in a first oxidation reactor, containing a catalyst comprising at least 80 percent by weight titanium dioxide, at a temperature of about 200° C. to 270° C. wherein substantial conversion of H_2S to elemental sulfur occurs;

(e) cooling the product gas to a temperature of 120°–140° C. to separate elemental sulfur by condensation;

(f) introducing additional oxygen into the gaseous stream in substantially stoichiometric amounts based on the sulfur content; and

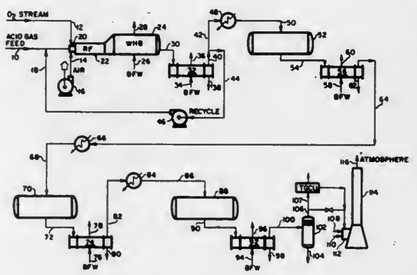
(g) treating the gaseous stream in a second oxidation reactor, containing a catalyst comprising at least 80 percent by weight titanium dioxide, at a lower temperature than that utilized in the first oxidation reactor.

4,552,747

TEMPERATURE MODERATION OF AN OXYGEN ENRICHED CLAUS SULFUR PLANT

B. Gene Goar, Tyler, Tex., assignor to GAA Engineered Systems, Inc., Tyler, Tex. and Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 20, 1984, Ser. No. 622,433
Int. Cl.[4] C01B *17/02*
U.S. Cl. 423—574 R **12 Claims**



1. In a process for recovering sulfur from a feed gas stream rich in hydrogen sulfide wherein the gas stream is partially combusted with an oxygen-enriched gas in a Claus reaction furnace zone, the combustion effluent is cooled with the attendant condensation and separation of sulfur in a first condensation zone and the remaining effluent stream is passed through at least one stage of reheating, conversion in a catalytic Claus reaction zone and cooling with attendant condensation and separation of sulfur in an additional condensation zone, the improvement comprising recycling a portion of the reacted effluent stream from the first condensation zone to the reaction furnace zone in order to moderate the temperature of the reaction furnace zone.

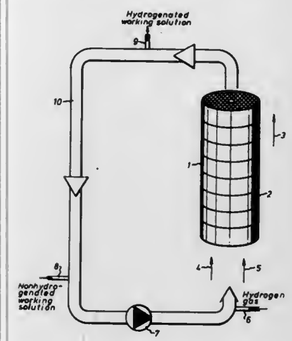
4,552,748

METHOD IN THE PRODUCTION OF HYDROGEN PEROXIDE

Carl T. Berglin, Alafors, and Wolfgang Herrmann, Gothenburg, both of Sweden, assignors to EKA AB, Surte, Sweden

Filed Sep. 6, 1983, Ser. No. 529,730
Claims priority, application Sweden, Sep. 8, 1982, 8205093
Int. Cl.[4] C01B *15/023*
U.S. Cl. 423—588 **10 Claims**

1. An improved method in the production of hydrogen peroxide by the alternate reduction and oxidation of alkylated anthraquinones which are dissolved in one or more organic solvents to form a liquid working solution, said working solution being subjected to catalytic hydrogenation in a reactor by contact with hydrogen in the presence of a hydrogenation catalyst, the improvement comprising causing an inflow of the working solution and hydrogen to flow through a fixed catalyst body having thin walls defining a multiplicity of parallel through channels of about equal length to divide said inflow into a multiplicity of partial flows of working solution and hydrogen, the central portions of said through channels generally permitting unimpeded flow, the hydrogenation catalyst being attached to said walls, whereby the contact time of the working solution and the hydrogen with the catalyst body for said partial flows is approximately equal.

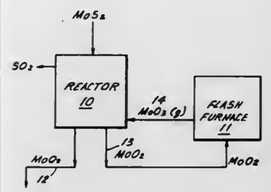


4,552,749

PROCESS FOR THE PRODUCTION OF MOLYBDENUM DIOXIDE

Lawrence F. McHugh, Fairfield, Conn.; Dale K. Huggins; Malcolm T. Hepworth, both of Golden, Colo., and John M. Lafferty, Wheat Ridge, Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 11, 1985, Ser. No. 690,708
Int. Cl.[4] C01G *39/02*
U.S. Cl. 423—606 **16 Claims**



1. A process for converting MoS_2 to MoO_2 which comprises,

feeding MoS_2 in particulate form into a reactor while flowing MoO_3 vapor therein to effect reaction thereof with said MoS_2 to form MoO_2,

the temperature in said reactor being maintained at a level sufficient to carry out the reaction,

selectively removing from said reactor a portion of said MoO_2 as a product,

selectively oxidizing the remainder of said MoO_2 at a temperature sufficient to generate gaseous MoO_3,

and causing said generated gaseous MoO_3 to flow in said reactor relative to the flow of MoS_2 therein to convert said MoS_2 to MoO_2,

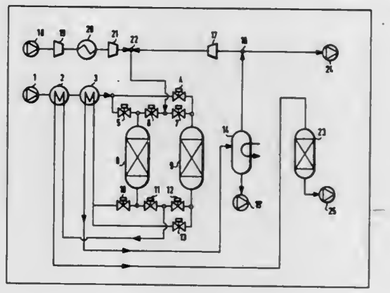
the amount of MoO_3 being at least stoichiometrically sufficient to react with substantially all of the MoS_2.

4,552,750

PROCESS FOR THE REACTION OF CARBON MONOXIDE WITH STEAM, WITH FORMATION OF CARBON DIOXIDE AND HYDROGEN AND USE OF A CATALYST FOR THIS PURPOSE

Willem J. J. van der Wal, Utrecht, and John W. Geus, Bilthoven, both of Netherlands, assignors to VEG-Gasinstituut N.V., Apeldoorn, Netherlands

Filed Jul. 27, 1983, Ser. No. 517,852
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228482
Int. Cl.[4] C01B *2/10*
U.S. Cl. 423—656 **14 Claims**



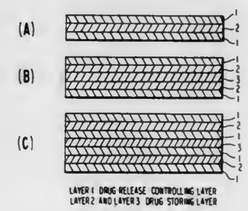
1. A process for conducting the shift reaction which comprises reacting carbon monoxide with steam to form carbon dioxide and hydrogen at elevated temperature in the presence of a catalyst which consists essentially of iron oxide placed on an inert thermostable carrier having a specific surface of more than 10 m^2 per gram, the iron oxide being present on the carrier in a quantity of at least 5% by weight calculated as elementary iron of the iron oxide and related to the weight of the carrier, and at least 20% by weight of the iron oxide present on the carrier being in finely divided form with a particle size of less than 40 nm.

4,552,751

LONG-LASTING MULTI-LAYERED FILM PREPARATION

Kohji Inaba, Neyagawa; Seiei Sasatani, Matsubara; Tatsushi Koide, Fujiidera, and Tamio Nanya, Sakai, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 19, 1981, Ser. No. 312,458
Claims priority, application Japan, Oct. 17, 1980, 55-144503
Int. Cl.[4] A01N *25/26, 25/34*
U.S. Cl. 424—19 **16 Claims**



1. A multi-layered pharmaceutical film preparation of 3, 5 or 7 layers comprising:

(i) one or more drug storing layer(s) comprising components (A), (C) and (D) as defined below; and

(ii) two or more drug release controlling layers consisting essentially of components (A), (B) and (C) as defined below:

(A) one or more biologically inactive water soluble poly-

mer compounds with an average molecular weight of 10,000–400,000 in an amount of from 10 to 80% by weight of the preparation, wherein said water soluble polymer compounds are selected from the group consisting of hydroxypropyl cellulose, polyvinylpyrrolidone and hydroxypropyl methyl cellulose;

(B) one or more biologically inactive water insoluble polymer compounds with an average degree of polymerization of 100–500, wherein said water insoluble polymer compounds are selected from the group consisting of cellulose acetate and vinyl acetate resin;

(C) one or more biologically inactive plasticizers, wherein said plasticizers are selected from the group consisting of diethyl phthalate, butyl phthalyl butyl glycolate, glycerin, triacetin, tributyrin, polyethylene glycol, polypropylene glycol, propylene glycol, diethylene glycol, triethylene glycol and dipropylene glycol and;

(D) one or more prostaglandins selected from the group consisting of prostaglandin F compounds, prostaglandin E compounds, and 6, 9 thio-prostaglandin I_1 compounds; wherein said drug release controlling layers are disposed on opposite sides of said drug storing layer(s) and wherein said drug storing layer(s) and drug release controlling layers are formulated so as to dissolve or decompose totally after administration to a mucosal site.

4,552,752

MICROBIOCIDAL ARTICLE FOR AQUEOUS SYSTEMS

David R. Amick, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 462,242, Jan. 31, 1983, which is a continuation-in-part of Ser. No. 422,056, Sep. 23, 1982,. This application Jul. 28, 1983, Ser. No. 518,237

Int. Cl.[4] A01N *25/34*

U.S. Cl. 424—21 **21 Claims**

1. A microbiocidal article useful for controlling living microorganisms in an aqueous system comprising:

(a) a porous membrane having a film thickness of from 0.5 mil to about 10 mils and having a pore size smaller than the particle size of the microbiocidal to be employed containing sealed therein:

(b) a particulate, solid isothiazolone microbiocidal composition comprising:

(i) an aqueous solution containing from about 0.1 to about 70 weight %, based on total weight of said composition, of at least one water-soluble isothiazolone microbiocidal, whose water solubility is greater than 1000 ppm, blended with and absorbed in;

(ii) from about 99.9 to about 30 weight %, based on total weight of said composition, of an inert finely-divided water-insoluble solid carrier material selected from silicaceous diatomaceous earth, high water absorption capacity calcium silicate granular material, silicas, clays, charcoal, vermiculite, corn cobs, wood, or polymeric matrices;

wherein the film-forming material is selected from a hydrophobic film-forming material having a solubility parameter of less than about 12.5.

4,552,753

PROCESS FOR MAKING ROLL-ON ANTIPERSPIRANT COMPOSITIONS

Chance R. Elm, Cincinnati, and Erlend R. Lowrey, Greenhills, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 1, 1983, Ser. No. 556,883

Int. Cl.[4] A61K *7/32, 7/34, 7/38*

U.S. Cl. 424—66 **12 Claims**

1. In an improved process for making a stable roll-on antiperspirant composition comprising the steps of preparing a composition comprising one or more volatile silicone oils, one or more non-volatile silicone oils, and an antiperspirant active, and filling a roll-on container with said composition, wherein the improvement comprises the step of deaerating said composition prior to said filling step to exhibit reduced incidence of the creep phenomenon.

4,552,754

HAIR COSMETIC COMPOSITION

Kazuhiro Muramatsu, Yachiyo; Yuuzi Watari, Chiba; Masaru Tajima, Tokyo, and Isamu Nakaju, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,574

Claims priority, application Japan, Apr. 15, 1982, 57-62957

Int. Cl.[4] A61K *7/06, 7/08*

U.S. Cl. 424—70 **11 Claims**

1. A hair conditioning composition which provides a strong conditioning effect and substantially no gelation comprising:

(A) at least one quaternary ammonium salt represented by formula (I) in an amount ranging from about 0.1 to about 10% by weight;

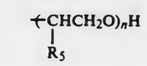
(B) at least one 1-hydroxy-2-pyridone salt represented by formula (II) in an amount ranging from about 0.05 to about 3.0% by weight;

(C) at least one polyol derivative represented by formula (III), (IV) or (V) in an amount ranging from about 0.05 to about 20% by weight; and

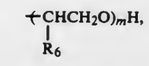
(D) a cosmetically acceptable carrier; wherein said formula (I) is:



where R_1 is a C_{10}–C_{24} alkyl group, a C_{10}–C_{24} hydroxyalkyl group, or a group having the formula $R'(OCH_2C-H_2—_{1\text{-}10}$, where R' is a C_{10}–C_{24} alkyl group or a C_{10}–C_{24} hydroxyalkyl group; R_2 is a C_{10}–C_{24} alkyl group, a C_{10}–C_{24} hydroxyalkyl group, benzyl group, a group having the formula $R''(OCH_2CH_2—_{1\text{-}10}$ where R'' is a C_{10}–C_{24} alkyl group or a C_{10}–C_{24} hydroxyalkyl group, a C_1–C_3 alkyl group, or a group having the formula

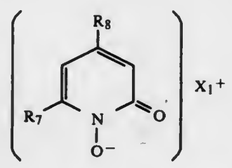


where n is an integer from 1 to 5 and R_5 is a hydrogen atom or methyl group; R_3 and R_4 are independently a C_1–C_3 alkyl group or a group having the formula



where m is an integer from 1 to 5 and R_6 is a hydrogen atom or methyl group; and X is a halogen atom or a C_1–C_2 alkyl sulfate group;

said formula (II) is:



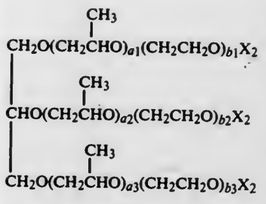
where R_7 is a C_1–C_{17} alkyl group, a C_2–C_{17} alkenyl group, a

C_5–C_8 cycloalkyl group, a C_7–C_9 bicycloalkyl group, a C_1–C_4 cycloalkyl-alkyl group where the cycloalkyl residue may optionally be substituted by a C_1–C_4 alkyl group, an aryl group, an aralkyl group containing a C_1–C_4 alkyl group, an arylalkenyl group containing a C_2–C_4 alkenyl group, an aryloxyalkyl group containing a C_1–C_4 alkyl group, an arylmercaptoalkyl group containing a C_1–C_4 alkyl group, a benzhydryl group, a phenylsulfonylalkyl group containing a C_1–C_4 alkyl group, a furyl group, or a furylalkenyl group containing a C_2–C_4 alkenyl group, provided that said aryl residue may optionally be substituted by a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, nitro group, cyano group or a halogen atom;

R_8 is a hydrogen atom, a C_1–C_4 alkyl group, a C_2–C_4 alkenyl group, a C_2–C_4 alkynyl group, a halogen atom, a phenyl group or a benzyl group; and

X_1 is an organic base, an alkali metal, an alkaline earth metal, ammonium group, or a cation of +2 to +4 valence;

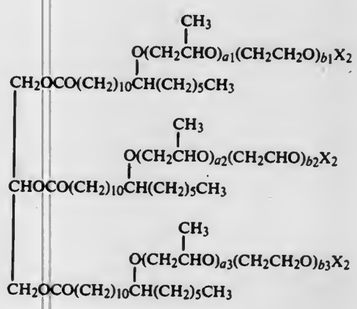
said formula (III) is:



where at least one of X_2 is a pyrrolidone carboxylic acid residue and the remaining X_2 are each independently a hydrogen atom, a higher aliphatic acid residue or a higher hydroxylaliphatic acid residue;

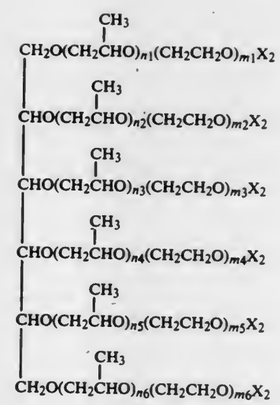
a_1, a_2, a_3, b_1, b_2 and b_3 are the same or different integers and a total sum of $a_1+a_2+a_3+b_1+b_2+b_3$ is an integer between 10 and 70;

said formula (IV) is:



where X_2, a_1, a_2, a_3, b_1, b_2 and b_3 have the same meaning as in formula (III); and

said formula (V) is:



where X_2 has the same meaning as in formula (III) above; m_1, m_2, m_3, m_4, m_5, m_6, n_1, n_2, n_3, n_4, n_5 and n_6 are the same or different integers and a total sum of $m_1+m_2+m_3+m_4+m_5+m_6+n_1+n_2+n_3+n_4+n_5+n_6$ is an integer between 10 and 100.

4,552,755

SUBSTANTIVE MOISTURIZING COMPOSITIONS

Neil A. Randen, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

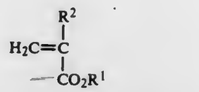
Filed May 18, 1984, Ser. No. 611,730

Int. Cl.[4] A61K *31/78, 47/00*

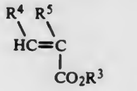
U.S. Cl. 424—81 **6 Claims**

1. A moisturizing composition for application to mammalian skin consisting essentially of an oil-in water emulsion containing:

(a) an oil phase comprising an effective amount of at least one emollient oil and from 0.5 to 20 percent by weight of an acrylate polymer having a solubility parameter of 6 to 10 $(cal/cc)^{\frac{1}{2}}$ in poorly hydrogen-bonding solvents, said polymer being derived from the same or different ester monomers of the formula:



wherein R^1 is an alkyl radical containing 4 to 18 carbon atoms in cyclic, straight- or branched-chain configuration; R^2 is hydrogen or lower alkyl, and up to 30 mole percent of the same or different monomers of the formula:



wherein R^3 is H or an alkyl radical containing 1 to 18 carbon atoms; R^4 is hydrogen, methyl, or $—CO_2R^3$ and R^5 is hydrogen, lower alkyl or $—CH_2CO_2R^3$; provided, that when R^4 is not hydrogen, R^5 is hydrogen, and when R^5 is not hydrogen, R^4 is hydrogen,

(b) about 45 to 95 percent by weight of a water phase, and

(c) an effective amount of an emulsifying agent,

said composition having a substantivity value of at least 30.

4,552,756

ALLERGENIC COMPOSITIONS

Edgar H. Relyveld, and Emile Henocq, both of Paris, France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 194,577, Oct. 6, 1980, Pat. No. 4,350,680.
This application Jun. 28, 1982, Ser. No. 392,594
Claims priority, application France, Oct. 8, 1979, 7924948
Int. Cl.[4] A61K *39/00*
U.S. Cl. 424—88 10 Claims

1. An allergenic composition for hyposensitizing allergic patients by intracutaneous administration of the composition to the patients, comprising an aqueous extract of pollen, flour, house dust, kapok, wool or molds which contains only the allergenically active substances having molecular weights in the range of from about 10,000 and 50,000, and being free from enzymes.

4. The composition according to claim 1 which contains an aqueous gel of a mineral compound having adsorbed said allergenically active substances.

4,552,757

USE IN AN ANIMAL HOST AND PRECURSORS FOR VACCINES UTILIZING AVIAN-HUMAN REASSORTANTS TO COMBAT INFLUENZA A VIRUS

Brian R. Murphy; Robert M. Chanock, both of Bethesda, Md.; Robert G. Webster, Memphis, and Virginia S. Hinshaw, Germantown, both of Tenn., assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Dec. 20, 1983, Ser. No. 563,370
Int. Cl.[4] A61K *39/145*
U.S. Cl. 424—89 6 Claims

1. A vaccine for use in animals other than avians derived from an avian-human influenza reassortant virus whose non-surface protein genes are derived from the avian influenza virus A parent and the surface antigen genes are derived from the human influenza virus parent and where at least one of the avian influenza nucleoprotein and matrix protein genes are present in the reassortant, said avian-human influenza reassortant virus selected from one member of the group consisting of A/Washington/80 (H3N2) X A/Mallard/New York/6750/78 (H2N2); A/California/78 (H1N1) X A/Mallard/New York/6750/78 (H2N2); A/Udorn/307/72 X A/Mallard/Alberta/573/78; A/Udorn/307/72 X A/Pintail/Alberta/121/79; and A/Udorn/307/72 X A/Mallard/New York/6750/78 (H2N2).

4,552,758

HUMAN USE OF AVIAN-HUMAN REASSORTANTS AS VACCINES FOR INFLUENZA A VIRUS

Brian R. Murphy; Robert M. Chanock, both of Bethesda, Md.; Robert G. Webster, Memphis, and Virginia S. Hinshaw, Germantown, both of Tenn., assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Dec. 20, 1983, Ser. No. 563,372
Int. Cl.[4] A61K *39/145*
U.S. Cl. 424—89 2 Claims

1. A method of increasing the prevention of influenza A virus in humans which comprises application by intranasal route of an effective amount of $10^{7.0}-10^{8.0}$ $TCID_{50}$ of a reassortant vaccine selected from one member of the group consisting of A/Washington/80 X A/Mallard/New York (H2N2) and A/California/78 X A/Mallard/New York (H2N2).

4,552,759

COMPOSITION FOR THE CONTROL OF COCCIDIOSIS IN POULTRY

Paul J. Davis, and James F. Reynolds, both of Bedfordshire, England, assignors to International Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Continuation of Ser. No. 339,311, Jan. 15, 1982, abandoned, which is a division of Ser. No. 228,479, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 49,070, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 959,984, Nov. 13, 1978, abandoned. This application Apr. 27, 1983, Ser. No. 487,595
Int. Cl.[4] A61K *37/00*
U.S. Cl. 424—93 1 Claim

1. A coccidiosis control composition comprising a feedstuff for poultry which contains from about 6 to about 12 percent by weight moisture and, per kg of nutrient material, from about 10 to 10,000 added viable sporulated oocysts of at least one species of coccidia to which poultry are susceptible.

4,552,760

METHOD FOR STABILIZING TISSUE PLASMINOGEN ACTIVATOR AND A STABLE AQUEOUS SOLUTION OR POWDER CONTAINING THE SAME

Akira Murakami, Tokyo, and Hideo Yoshizaki, Saitama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Kowa Co., Ltd., both of, Japan

Filed Apr. 23, 1984, Ser. No. 603,063
Claims priority, application Japan, Apr. 21, 1983, 58-69230
Int. Cl.[4] C12N *9/50;* A61K *31/715, 35/12, 35/48*
U.S. Cl. 424—94 20 Claims

1. A method for stabilizing a tissue plasminogen activator which comprises adding to an aqueous solution or powder containing a tissue plasminogen activator an effective amount of a purified gelatin having an isoelectric point of 7.0 to 9.0.

13. A stable aqueous solution or powder which contains a tissue plasminogen activator and an effective amount of a purified gelatin having an isoelectric point of 7.0 to 9.0.

4,552,761

METHOD FOR INFLUENCING THE IMMUNE SYSTEMS OF MAMMALS USING LEUKORECRUITIN

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft zur Forderung der/Wissenschaften, Gottingen, Fed. Rep. of Germany

Division of Ser. No. 300,923, Sep. 10, 1981, Pat. No. 4,452,735.
This application Apr. 12, 1984, Ser. No. 599,534
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034529
Int. Cl.[4] C07G *7/00*
U.S. Cl. 424—101 8 Claims

1. A method for influencing the immune system of mammals comprising administering an effective amount of a pharmaceutical composition including substantially pure leukocytosis inducing and leukocyte recruiting protein, leukorecruitin, having the following biological effects:

a. positive leukocytosis reaction and leukocyte recruitment from the bone marrow into the blood of animals and humans in vivo;

b. positive leukocyte mobilization directly from the bone marrow in vitro;

and the following physico-chemical properties:

a. molecular weight about 8,500 daltons;

b. a single polypeptide chain;

c. anodic electrophoretic migration at pH 7.4 in acrylamide matrices;

d. soluble in aqueous media, including 20% ethanol at pH's between about 4 and 10;

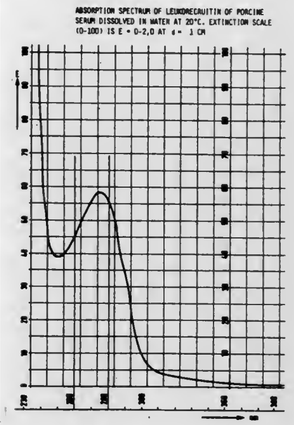
e. insoluble in $(NH_4)_2SO_4$ solutions having concentrations higher than 61%, corresponding to 2.5 mol $(NH_4)_2SO_4$/l;

f. constant temperature coefficient of solubility in ammonium sulfate solutions between −10° C. and +50° C.;

g. crystallizes in the form of double-refractive, optionally anisotopic crystals from ammonium sulfate solutions at ammonium sulfate concentrations higher than 61%;

h. insoluble in chloroform, benzene, xylene and other apolar non-aqueous and water-immiscible solvents;

i. denatures in chloroform, benzene and xylene resulting in destruction of conformational structure and loss of biological activity;



j. contains tyrosine, tryptophan, phenylalanine, alanine, glycine, lysine, serine, valine, glutamic acid, arginine, and leucine;

k. adsorbs reversibily on anion and cation exchangers, calcium phosphate gels and hydroxyapatite and is capable in native form of volume-partition chromatography; and

l. possesses extinction coefficients according to Table I:

TABLE I

Wavelength, nm	E 1mg/ml, 1cm(H_2O,20° C.) ± 6%
250 (min.)	0.36
260	0.42
277 (max.)	0.54
280	0.53
290	0.32
400–1000	0
$E280/E260$	1.26

and wherein said protein is substantially free of the following biologic properties:

a. increase of capillary permeability in the skin;

b. spasmogenic activity on smooth muscles;

c. spasmogenic activity on striated muscles;

d. significant endotoxin content or effects in animals and humans identical with or similar to those of endotoxins;

e. chemo attraction or chemotaxis of leukocytes in vitro;

f. positive or negative chemokinetic activity on leukocytes in vitro;

g. phagocytosis stimulating activity on leukocytes in vitro;

h. apparent shock or other detrimental systemic effect of immediate or protracted type in animals and humans in vivo;

i. pyrogenic activity in anaimals and humans in vivo;

j. lysis effects alone or in the presence of plasma or serum on erythrocytes, thrombocytes, and luekocytes in vitro;

k. phlogistic action in situ at reation sites of formation or application of leukorecruitin;

i. blood clot including activity alone or in presence of plasma;

m. aggregation of erythrocytes, thrombocytes and leukocytes alone, in salt solutions or in presence of plasma;

n. mitogenic activity on leukocytes in spleen, blood or bone marrow;

o. mitogenic activity on endothelial cells of arterial vessels in vivo and in vitro;

p. induction of vascularization of corneal tissues by chemotropism;

g. chalone activity on leukocytes in spleen and bone marrow; and

r. chalone activity on endothelia cells of arterial vessels.

4,552,762

METHODS OF PREPARING AN ARTHRITIS COMPOSITION

Juanita Nepon, 21640 Twelve Mile Rd., St. Clair Shores, Mich. 48081

Division of Ser. No. 190,457, Sep. 24, 1980, Pat. No. 4,436,723.
This application Dec. 8, 1983, Ser. No. 537,091
Int. Cl.[4] A61K *35/407, 35/32*
U.S. Cl. 424—106 18 Claims

1. A method for preparing a composition comprising edible bone meal and desiccated liver, wherein said edible bone meal comprises cattle bone meal including red bone marrow, and said desiccated liver comprises beef liver, comprising the steps of:

combining said edible bone meal with red bone marrow and said desiccated beef liver;

mixing the dry mixture with water so as to form a paste;

forming said paste into individual tablet-shaped portions; and

drying said tablets.

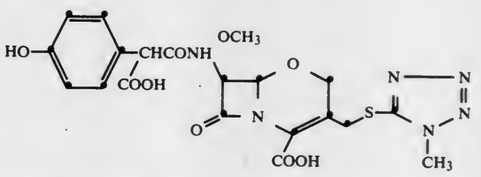
4,552,763

SYNERGISTIC ANTIBACTERIAL COMPOSITIONS AND METHOD OF TREATMENT OF INFECTIONS CAUSED BY MULTIPLE ANTIBIOTIC-RESISTANT ORGANISMS

Gordon L. Brier, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 332,774, Dec. 21, 1981, Pat. No. 4,452,778, which is a continuation-in-part of Ser. No. 135,390, Mar. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 36,263, May 4, 1979, abandoned. This application Jan. 27, 1984, Ser. No. 574,441
Int. Cl.[4] A61K *35/00*
U.S. Cl. 424—114 8 Claims

1. A method of treating infections caused by multiple-antibiotic-resistant gram-negative organisms in a warm-blooded animal which comprises administering to said animal a 1-oxa antibiotic compound of the formula



or a pharmaceutically acceptable salt thereof in an amount sufficient to produce blood levels of said compound in said animal of at least about 0.12 to about 16 mcg/ml; and administering in conjunction with said 1-oxa antibiotic amikacin in an amount sufficient to produce blood levels of amikacin in said animal of between about 0.5 mcg/ml and about 8 mcg/ml.

4,552,764

PEPTIDES FOR CONTROL OF INTESTINAL MOTILITY

Irving Goodman, and Robert B. Hiatt, both of New York, N.Y., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 488,631, Apr. 26, 1983, abandoned, which is a continuation of Ser. No. 307,638, Oct. 1, 1981, abandoned, which is a continuation of Ser. No. 175,325, Aug. 4, 1981, abandoned, which is a continuation of Ser. No. 1,473, Jan. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 935,598, Aug. 31, 1979, abandoned, which is a continuation of Ser. No. 881,819, Feb. 27, 1978, abandoned, which is a continuation of Ser. No. 787,141, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 627,777, Oct. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,806, Nov. 14, 1974, abandoned. This application Feb. 6, 1984, Ser. No. 577,450

Int. Cl.[4] C07G *7/00*; C07C *103/52*

U.S. Cl. 514—2 3 Claims

1. Coherin A_1 which is a thermally stable peptide characterized as containing aspartic acid, serine, glutamic acid, proline, glycine, alanine, and leucine, in a mole ratio of 1:1, soluble in water, slightly soluble in absolute ethanol and insoluble in acetone, having a molecular weight of from 600 to 1000, having a λ maximum of 270 nm of pH 3.5 with a corresponding minimum at 258 nm in the ultraviolet region of the spectrum, having the ability to control intestinal motility and the pharmaceutically acceptable salts thereof.

4,552,765

ALETHEINE DERIVATIVES

Itaru Mita, Ashiya; Jun-ichi Iwao, Takarazuka; Tadashi Iso, Sakai, and Masayuki Oya, Ibaraki, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

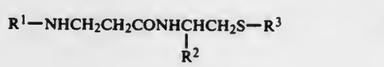
Filed Apr. 25, 1983, Ser. No. 488,100

Claims priority, application Japan, May 14, 1982, 57-82155; Oct. 20, 1982, 57-185026; Nov. 15, 1982, 57-200934

Int. Cl.[4] C07C *103/127*

U.S. Cl. 514—513 15 Claims

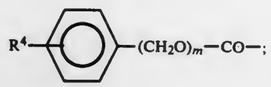
1. A compound of the formula [i] and salts thereof,



$$R^1—NHCH_2CH_2CONHCHCH_2S—R^3 \quad [I]$$
$$\qquad\qquad\quad |$$
$$\qquad\qquad\quad R^2$$

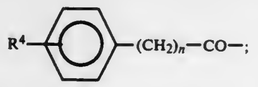
wherein

R^1 is



R^2 is hydrogen or carboxy;

R^3 is lower alkanoyl, (lower alkylamino)thiocarbonyl or



R^4 is hydrogen, lower alkyl or lower alkoxy; and

m and n, are the same or different, each is 0 or 1, said lower alkyl and lower alkoxy refer to groups having 1 to 6 carbon atoms, and lower alkanoyl refers to groups having 2 to 6 carbon atoms.

4,552,766

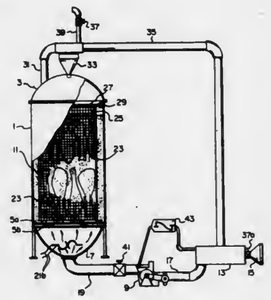
METHOD OF DRYING AND SALTING FISH

Marcel Ducharme, New Glasgow, Canada, assignor to Inno-Tech Developments Ltd., Ottawa, Canada

Filed Jul. 7, 1982, Ser. No. 396,116

Int. Cl.[4] A23B *4/02*; F26B *3/00*

U.S. Cl. 426—294 19 Claims



1. A method of drying and salting fish in the form of split fish, fish fillets, shaped portions of minced fish, or whole fish, comprising the steps of:

(a) washing and draining said fish;

(b) wrapping the fish in fabric material permeable to water;

(c) arranging said fish with suitably exposed surfaces one next to another in two or more apertured enclosures;

(d) establishing a fluidized bed of salt particles in a gaseous working fluid within a chamber operative to receive successively at one end thereof a series of said apertured enclosures for vertical suspension within said fluidized bed, said chamber being provided along its interior with means for horizontally advancing apertured enclosures suspended within said chamber through said fluidized bed to the other end of said chamber, where said apertured enclosures are successively removed;

(e) suspending a first apertured enclosure containing wrapped fish within said chamber at one end thereof so that salt particles within a fluidized bed of salt particles can impinge on a substantial portion of the surface of said wrapped fish in said last-mentioned apertured enclosure when such enclosure holding said wrapped fish is immersed within said fluidized salt bed and advancing said enclosure through said chamber sufficiently to permit the suspension of a second apertured enclosure;

(f) suspending a second apertured enclosure within said chamber at said one end thereof so that salt particles within a fluidized bed of salt particles can impinge on a substantial portion of the surface of said wrapped fish in said last-mentioned apertured enclosure when such enclosure holding said wrapped fish is immersed within said fluidized salt bed and continuing with the advancement of enclosures through said fluidized salt bed to the other end of said chamber and the introduction of subsequent apertured enclosures into said one end of said chamber until said chamber is fully charged with apertured enclosures of wrapped fish;

(g) maintaining said enclosures within said chamber until the desired degree of treatment of the fish within said first apertured enclosure has been achieved.

(h) removing said first enclosure and advancing the remaining enclosures suspended within the chamber one position towards said other end thereof;

(i) successively removing apertured enclosures from the chamber in the order of their introduction into said chamber by repeated steps similar to step (h), so that each enclosure of wrapped fish has undergone a similar degree of treatment within said fluidized salt bed.

4,552,767

METHOD OF PACKAGING COFFEE WITH CARBON DIOXIDE SORBENT

Fouad Z. Saleeb, and Bary L. Zeller, both of Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 27, 1984, Ser. No. 655,194

Int. Cl.[4] B65B *31/02*; B65D *77/24, 81/20, 90/32*

U.S. Cl. 426—395 10 Claims

1. A process for packaging roasted coffee which comprises:

packaging said coffee in a container by either backflushing roasted coffee in a container with nitrogen or vacuum packaging roasted coffee to remove substantially all of the oxygen present therein;

adding to said container containing said coffee a carbon dioxide sorbent, said carbon dioxide sorbent comprising calcium hydroxide at a level of from 70 to 95% by weight based upon the total dry weight of the sorbent and sodium hydroxide, potassium hydroxide or admixture thereof at a level of from 5 to 15% by weight based upon the total dry weight of the sorbent and 1.5% or less water by weight said sorbent being prepared by dry-blending the calcium hydroxide with the sodium hydroxide, potassium hydroxide or admixture to produce a free-flowing material containing sorbent particles less than 1 mm.

4,552,768

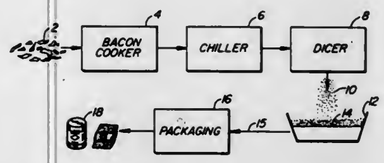
BACON BIT FINISHING METHOD

John W. Olander, Diablo, Calif., assignor to Westland Foods Corporation, Concord, Calif.

Filed Mar. 26, 1984, Ser. No. 593,343

Int. Cl.[4] A22C *0/00*

U.S. Cl. 426—480 6 Claims



1. A bacon bit finishing process comprising the following steps:

providing cooked bacon bits at a temperature below about 20° F., said bacon bits comprising larger pieces and smaller fines; and

vibrating said bacon bits sufficiently to dislodge the fines from the pieces and to remove sharp edges from the pieces without substantially separating the two.

4,552,769

COLD SOLUBLE TEA

Tito L. Lunder, and Corine M. Nielsen, both of Lausanne, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Apr. 1, 1985, Ser. No. 718,165

Int. Cl.[4] A23F *3/20*

U.S. Cl. 426—435 4 Claims

1. A process for preparing a powdered tea extract characterised in that black tea leaves are extracted with hot-water to give a first extract which is separated from the tea leaves, concentrated to a solids content of from 5% to 12.5%, and then cooled to a temperature from 5° C. to 15° C. to form an insoluble cream which is separated from the concentrated first extract and then extracted with water at a temperature of from 40° C. to 70° C. to give a second extract which is separated from the remaining insoluble cream, after which the first and second extracts are mixed and dried.

4,552,770

FLAVORING WITH 4(HYDROCARBYLTHIO)ACETOACETIC ESTERS

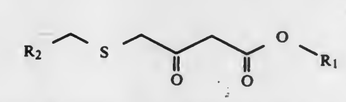
Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 589,575, Mar. 14, 1984, Pat. No. 4,521,613. This application Feb. 6, 1985, Ser. No. 698,843

Int. Cl.[4] A23L *1/226, 1/235*

U.S. Cl. 426—535 9 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff an aroma or taste augmenting or enhancing quantity in an amount of about 0.2 parts per million up to about 150 parts per million of at least one 4(hydrocarbylthio)acetoacetic ester having the structure:



wherein R_1 represents C_2–C_6 aliphatic hydrocarbyl and R_2 represents hydrogen or C_1–C_2 aliphatic hydrocarbyl.

4,552,771

ACESULFAM-CONTAINING COMPOSITION TABLETS ON THE BASIS THEREOF AND PROCESS FOR THE MANUFACTURE OF THESE TABLETS

Werner Fülberth, Kelkheim; Alfred Sickmüller, Frankfurt am Main, and Willi Stammberger, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 348,966, Feb. 16, 1982, abandoned. This application Nov. 21, 1983, Ser. No. 554,163

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105813

Int. Cl.[4] A23L *1/236*

U.S. Cl. 426—548 10 Claims

1. A composition for a sweetening tablet, which comprises acesulfam or a physiological salt thereof as a sweetening agent, a water-soluble CO_2-yielding compound to provide effervescence and from 0.6 to 2 weight % of gelatin powder as dry binder.

4,552,772

PROCESS FOR PREPARING BOILED NOODLES

Hiroshi Saitoh; Katsuyuki Kadooka; Mamoru Tsukamoto, all of Utsunomiya; Shoji Ono, Tatebayashi, and Masaki Ohkawa, Tokyo, all of Japan, assignors to Ma-Ma Macaroni Co., Ltd., Japan

Continuation of Ser. No. 312,259, Oct. 13, 1981, abandoned. This application Aug. 15, 1983, Ser. No. 523,892

Claims priority, application Japan, Jun. 12, 1981, 56-91424

Int. Cl.[4] A23L *1/16*

U.S. Cl. 426—557 17 Claims

1. In a process for preparing wheat-flour based pastas for commercial distribution at ambient temperatures which are ready for rapid cooking, comprising boiling said pastas and washing said boiled pastas with water, the improvement which comprises immersing the boiled pastas in an aqueous solution containing (a) at least one of citric acid and lactic acid and (b) table salt, then packaging and heat sterilizing the pastas which have been immersed, said aqueous solution having a pH such that the pH of the boiled pastas, after immersion, is about 3.9 to about 4.3.

4,552,773

FREEZER STABLE WHIPPED ICE CREAM AND MILK SHAKE FOOD PRODUCTS

Marvin L. Kahn, Williamsville, and Robert J. Lynch, Buffalo, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 439,129, Nov. 2, 1982, Pat. No. 4,421,778. This application Sep. 6, 1983, Ser. No. 529,766
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.[4] A23G *9/02*
U.S. Cl. 426—564 **58 Claims**

1. A whipped food product comprised of an oil-in-water emulsion of nonfat milk solids, water, sugar in a ratio to water of about 1:1.75 to about 3.0, said sugar being comprised of at least about 30% fructose and/or dextrose; fat, wherein said fat includes a solid beta phase-tending crystalline fat, and minor, effective amounts of flavoring, emulsifier, and stabilizer, wherein the stabilizer comprises a polysaccharide stabilizer effective to substantially inhibit the crystallization of the lactose present in the nonfat milk solids, wherein the product is substantially noncrystalline and spoonable at about 0° F., and the volume of the product remains substantially constant during storage at about 0° F. for at least about six months.

4,552,774

CHEESE-LIKE PRODUCT

Dennis I. Gronfor, Coon Rapids, Minn., assignor to Land O'-Lakes, Inc., Arden Hills, Minn.

Filed Nov. 14, 1983, Ser. No. 551,095
Int. Cl.[4] A23C *21/06, 21/08*
U.S. Cl. 426—582 **30 Claims**

1. A process for producing a cheese-like product comprising:
mixing cheese particles with a composition containing water, milk solids and functional whey protein along with a starch, the starch being added up to 10% of the weight of the entire mixture;
heating the mixture to a temperature range between approximately 140° F. and 190 ° F.;
holding the mixture between 140° F. and 190° F., until the starch and the functional whey protein react with the water and the cheese particles melt within the starch and functional whey protein to form a starch/whey protein matrix containing cheese particles;
processing the matrix containing cheese particles after the starch/whey protein matrix is formed to reduce in size the cheese particles to an approximate size range between 5 and 325 microns.

4,552,775

PROCESS FOR THE PRODUCTION OF ANIMAL FEED STUFF FROM A LIQUID RESIDUE OBTAINED BY FERMENTATION AND DISTILLATION OF GRAIN RAW MATERIAL

Peter Baeling, Ekero, and Lars Ehnstrom, Tullinge, both of Sweden, assignors to Alfa-Laval AB and Svenska Lantmännens Riksförbund, Förening u.p.a, both of, Sweden, by said Lars Ehnstrom

PCT No. PCT/SE82/00199, § 371 Date Feb. 28, 1983, § 102(e) Date Feb. 28, 1983, PCT Pub. No. WO83/00007, PCT Pub. Date Jan. 6, 1983
PCT Filed Jun. 7, 1982, Ser. No. 474,635
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—624 **7 Claims**

1. A process for producing high quality animal feed by the thermal dewatering of a liquid residue obtained by fermentation of grain and distillation of the fermentation product consisting essentially of mixing said liquid residue with recirculated pulverized dried product, granulating the mixture so obtained to form wet granules containing 50 to 70% by weight dry substance, a major part of said granules having a particle size of 2–6 mm. and drying the wet granules by conveying them as a porous bed in a controlled path, in contact with a drying gas having a temperature not greater than 100° C. whereby waste heat gas may be employed, said drying gas having a velocity less than that required for fluidizing said granules, discharging a first portion of said granules from said bed to provide a feed having improved nutritional value, disintegrating a second portion of said granules from said bed and recirculating said disintegrated portion to said initial mixing step.

4,552,776

PROCESS FOR PREPARATION OF TEA COLOR CONCENTRATE AND PRODUCT

Hing-Cheung Tse, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 509,267, Jun. 29, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 685,095
Int. Cl.[4] A23F *3/30*
U.S. Cl. 426—597 **17 Claims**

1. A process for preparation of a tea concentrate of enhanced color and having a pH of about 1.5 to about 3.0 comprising:
(a) heating a solution of one or more reducing sugars and acid to a temperature of from about 220° F. (104° C.) to about 300° F. (149° C.) for about 15 minutes, the ratio of acid to reducing sugar is from about 1:0.5 to about 1:5;
(b) adding soluble tea solids to the solution and heating the resulting mixture to a temperature of from about 280° F. (138° C.) to about 360° F. (182° C.) for about 30 minutes, the ratio of tea solids to reducing sugars is from about 1:6 to about 1:75;
(c) adding water to the mixture and maintaining the resulting mixture at a temperature of from about 170° F. (77° C.) to about 210° F. (99° C.) for about 45 minutes, the ratio of water to reducing sugars is from about 1:3 to about 3:1; and
(d) separating any insolubles to yield a tea concentrate of enhanced color.

4,552,777

CARPET TREATING COMPOSITIONS CONTAINING A POLYSILOXANE TO REDUCE CAKING

Stephen V. Dente, Emerson, and Kenneth J. Ward, Dumont, both of N.J., assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Nov. 8, 1984, Ser. No. 669,506
Int. Cl.[4] C11D *7/12, 7/60, 17/06*
U.S. Cl. 427—393.1 **20 Claims**

1. A powdered carpet-treating composition comprising a blend of from about 40.0–98.94%, by weight, of an inorganic salt carrier selected from the group consisting of sulfates, chlorides, carbonates, bicarbonates, borates, citrates, phosphates, nitrates and blends thereof, substantially all of the particles of said carrier being between 0.06–0.25 millimeters; from about 1.0–25.0%, by weight, of an agglomerating agent; from about 0–15.0% by weight, of an antistatic agent; from about 0.01–18.0%, by weight, of a volatile odorous agent; and from about 0.5–2.0% by weight, of a polysiloxane.

4,552,778

METHOD OF AND APPARATUS FOR APPLYING A VISCOUS MEDIUM TO A SUBSTRATE

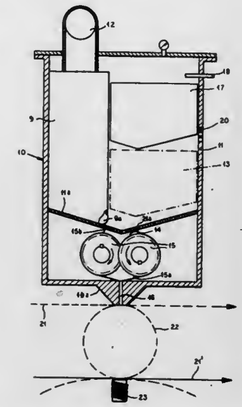
Johannes Zimmer, Ebentaler Strasse 133, A-9020 Klagenfurt, Austria

Filed May 25, 1984, Ser. No. 614,417
Claims priority, application Austria, May 25, 1983, 1911/83
Int. Cl.[4] B05D *1/26, 3/12;* **B05C** *3/04, 11/10*
U.S. Cl. 427—445 **17 Claims**

1. A method of applying a viscous medium to a continuously moving wide substrate, comprising the steps of:
pressurizing said medium to an elevated first pressure in a first pressure stage;

delivering said medium at an elevated pressure of said first pressure stage to a distribution chamber extending across the width of said substrate;
admitting said medium from said distribution chamber into a compartment maintained at a second pressure less than said first pressure in a second pressure stage over the width of said substrate;
withdrawing said medium from said compartment at said second pressure and pressurizing it to a higher third pressure in third pressure stage; and
dispensing the medium at said third pressure over the width of said substrate for application thereto, said first, second and third pressures being adjustable independently of one another.

6. An apparatus for applying a viscous flowable medium to a continuously moving wide substrate, said apparatus comprising:
means defining a first pressure stage for pressurizing said medium to a first pressure;



an elongated distributing device extending across said substrate and having a distributing chamber connected to said first pressure stage for receiving said medium therefrom and distributing said medium over the entire width of said substrate;
a compartment receiving said medium from said distributing chamber in said distributing device and extending across the entire width of said substrate for maintaining said medium at a second pressure less than said first pressure and constituting a second pressure stage, said second pressure being controlled by means for applying a force to the top of a column of said medium in said compartment; and
a pressure generator on said device for receiving said medium from said compartment over the entire width of said substrate for pressurizing said medium to a third pressure higher than said second pressure for discharging said medium at said third pressure from said device onto said substrate.

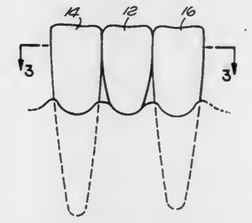
4,552,779

PROCESS FOR PREPARING A CAST METAL SURFACE STRUCTURE FOR BONDING TO A TOOTH STRUCTURE AND MATERIAL USED THEREWITH

Scott G. McClure, Fallbrook, Calif., assignor to Douglass B. Roberts, Loma Linda, Calif., a part interest

Filed Nov. 28, 1983, Ser. No. 555,644
Int. Cl.[4] A01N *1/02;* **C09K** *3/00;* **A61C** *13/22*
U.S. Cl. 427—2 **7 Claims**

1. The method of preparing a metal surface of a cast metal appliance having a multiplicity of voids which can be filled with a bonding medium for attachment of said metal surface to a tooth surface comprising:
making an impression of a patient's mouth;
making a cast from said impression;
placing an adhesive which is soluble in a predetermined fluid on the cast of a tooth;
placing particles, a portion of which are soluble in said fluid, into the adhesive medium and imbedding the particles therein;
flowing a wax or resin over the resultant surface to imbed said particles therein;



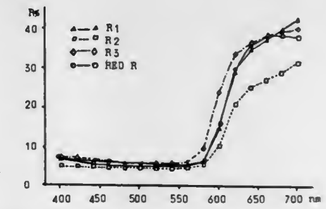
dissolving out the adhesive and any soluble particles leaving voids in the pattern utilizing said fluid;
duplicating the voids with casting investment material which is flowed or poured around the wax or resin pattern;
burning or melting the pattern out of the casting investment;
pouring molten metal into the investment; and
removing the casting investment material from the said metal surface.

4,552,780

MULTI-LAYER COATING METHOD BASED ON DIFFERENTIAL SPECTRAL REFLECTANCE

Yoshiaki Abe, 12-352 Yuden, Iseda-cho, Uji-shi, Kyoto-fu, and Masaaki Koyama, 8-5, Ishiki-cho, 2-chome, Kariya-shi, Aichiken, both of Japan

Filed Sep. 27, 1983, Ser. No. 536,762
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—8 **1 Claim**



1. In a method for forming a highly chromatic, multi-layer colored coating of a red Munsell renotation hue R series, a yellow Munsell renotation hue Y series or an orange Munsell renotation hue YR color series comprising applying over a colored intercoat, under incomplete hiding conditions, a low hiding top coat so as to give a color difference of less than 1.0 as compared with the case in which the top coat is applied under complete hiding conditions, the improvement, wherein the intercoat color is selected so as to fulfill the requirement;

$$\Sigma|\Delta R\lambda| \leqq 0.5$$

wherein $\Sigma|\Delta R\lambda|$ stands for the summation of absolute values of $\Delta R\lambda$, and $\Delta R\lambda$ is the differential between the spectral reflectance ($RM\lambda$) of the top coat applied at complete hiding and spectral reflectance ($RG\lambda$) of the intercoat applied at complete hiding at the respective wavelength (λ) at intervals of 20 nm in the selected wavelength region ranging from the point at which the reflectance difference at the same wavelength in the spectral reflectance curves over the white and black substrates of a JIS contrast chart of the top coat applied at incomplete hiding and at a defined film thickness is more that 1% to a

maximum of 700 nm, and whereby the reflectance curves of the complete hiding top coat and of the complete hiding intercoat are approximately near each other in the above said selected wavelength region only.

4,552,781

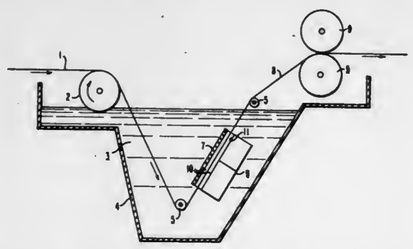
METHOD UTILIZING ULTRASONICALLY INDUCED CAVITATION TO IMPREGNATE POROUS SHEET PASSING THROUGH A RESIN BATH

Daniel L. Cannady, Jr., Allendale; Gilbert G. Berg, Hampton, both of S.C.; Walter C. Leschek, Monroeville, and Joseph F. Meier, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1984, Ser. No. 597,869
Int. Cl.⁴ B05D *3/12*
U.S. Cl. 427—57 **6 Claims**

1. A method of impregnating a flexible, porous, thick, high basis weight, cellulosic sheet material comprising the steps:

(1) continuously passing a flexible, porous cellulosic sheet material, having a basis weight of over about 150 lbs./3,000 sq. ft. and a thickness of over about 10 mils, at a rate of speed of from about 350 feet/minute to about 800 feet/minute, through a bath of liquid, organic, "B"-stageable impregnating resin, having a viscosity of from about 10 cps. to about 750 cps. at 25° C., and through a cavitated zone in close proximity to the resonant vibrating surface of at least one ultrasonic wave generator, said cellulosic sheet material passing from about ¼ inch to about 6 inches away from the surface of the ultrasonic wave generator, where a differential length of the cellulosic sheet has a dwell time in the resin bath of from about 0.2 second to



about 1 second, said ultrasonic wave generator being completely immersed in the resin and operating at a frequency of over about 10,000 Hz and at a radiated power level effective to provide a combination vibratory pressure on the resin molecules, and cavitation effect causing degassing and microstreaming of the resin, and heating of the resin within the cavitated zone along the width of the passing sheet, said heating causing a lowering of the resin viscosity, said combination of vibratory pressure and cavitation degassing and microstreaming effect causing resin impregnation throughout the void volume of the cellulosic sheet; and

(2) passing the resin impregnated sheet through a drying means to "B"-stage the resin.

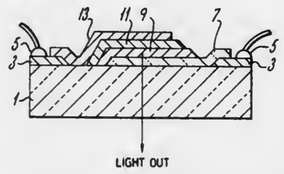
4,552,782

ELECTROLUMINESCENT DEVICE

Alan F. Cattell; John Kirton, both of Malvern, and Peter Lloyd, Great Malvern, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 26, 1984, Ser. No. 634,497
Claims priority, application United Kingdom, Jul. 29, 1983, 8320557
Int. Cl.⁴ B05D *3/02, 5/12*
U.S. Cl. 427—66 **13 Claims**

1. A method of electroluminescent panel manufacture in which a doped zinc chalcogenide phosphor film is deposited upon the surface of a transparent electrode bearing substrate, wherein this deposition is performed in an hydrogen enriched atmosphere, and following the deposition of the film, the film bearing substrate is heated rapidly to an elevated temperature



of at least 450° C. in a non-reactive environment, and, immediately upon such temperature being reached, is cooled at a rate intermediate to those which would cause thermal shock and brightness degradation respectively.

4,552,783

ENHANCING THE SELECTIVITY OF TUNGSTEN DEPOSITION ON CONDUCTOR AND SEMICONDUCTOR SURFACES

Robert W. Stoll, Schenectady; Michael R. MacLaury, Rexford, and Ronald H. Wilson, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,454
Int. Cl.⁴ H01L *21/285, 21/302*
U.S. Cl. 427—91 **20 Claims**

1. A method for enhancing the selective vapor deposition of tungsten on conductor and semiconductor surfaces of a substrate which contains insulator surfaces, said method comprising

(a) contacting the substrate with a hydrogen fluoride solution;

(b) removal of substantially all of said hydrogen fluoride from said substrate;

(c) contacting the substrate with a halogen containing solution, said halogen being selected from the group consisting of chlorine and bromine; and

(d) removing substantially all of said halogen containing solution from said substrate.

4,552,784

METHOD OF COATING A SUBSTRATE WITH A RAPIDLY SOLIDIFIED METAL

Huai-Pu Chu, and Charles L. Staugaitis, both of Silver Spring, Md., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 19, 1984, Ser. No. 590,925
Int. Cl.⁴ B05D *1/12*
U.S. Cl. 427—192 **17 Claims**

1. A process for coating a substrate comprising;

providing a mixture of rapidly solidified metal powder and peening particles; and

spraying said mixture at said substrate by ejection at a velocity which is sufficient to cause said rapidly solidified metal powder and said peening particles to impact said substrate and simultaneously bond said rapidly solidified metal powder to the surface of said substrate in the form of a metal coating.

4,552,785

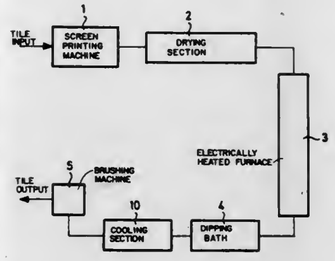
PROCESS FOR THE PRODUCTION OF PATTERNED LUSTRE COATINGS ON SURFACES OF BODIES

Erwin W. Wartenberg, Brunnenwiesen 6, 7000 Stuttgart 71, Fed. Rep. of Germany

Filed Nov. 1, 1983, Ser. No. 547,758
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242069
Int. Cl.⁴ B05D *5/06*
U.S. Cl. 427—229 **4 Claims**

1. Process for the production of patterned lustre coatings on surfaces of bodies of glazed ceramic, glass or enamel using a mask corresponding to the pattern to be produced, wherein the body is heated to a temperature above approximately 400° C., and the heated body is dipped into a liquid solution of a metallic compound kept below the temperature of the body, which metallic compound decomposes on the surface of the heated body to form a thin layer comprised of the metal and oxides of the metal, and, finally, lustre colors are created by the introduction of heat in the metal/metal oxide layer of the body whose surface has been cooled down by the dipping, characterized by the following features:

(a) producing as said mask a negative of the pattern on the surface of the body by screen printing said body with a paste which resists peeling when exposed to 400° C. and when dipped into said liquid solution of a metallic compound, said paste consisting of a liquid base medium, a finely powdered, inorganic covering substance of foliated



crystalline structure and a likewise finely powdered bonding agent which produces an adhesive connection between the surface of the body and the covering substance;

(b) heating the body with the pattern negative to a temperature above approximately 400° C.;

(c) dipping the heated body provided with the pattern negative into said solution of a metallic compound, said metallic compound reacting with the surface of the body not masked by screen printing to form the thin metal/metal oxide layer, the thickness of said layer being regulated so as to allow achievement of the desired lustre color effect, the surface of said heated body being cooled by said dipping;

(d) heating the thin metal/metal oxide layer to form the desired lustre colors; and

(e) removing the pattern negative from the body by dry brushing-off without the addition of a cleaning liquid.

4,552,786

METHOD FOR DENSIFICATION OF CERAMIC MATERIALS

Philip L. Berneburg, Forest, Va., and Val J. Krukonis, Lexington, Mass., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 9, 1984, Ser. No. 659,139
Int. Cl.⁴ C23C *11/00*
U.S. Cl. 427—249 **10 Claims**

1. A process for increasing the density of a ceramic material which comprises:

a. dissolving a ceramic precursor in a supercritical fluid;

b. infiltrating the ceramic material with the ceramic precursor-laden fluid; and

c. reducing the solubility of the ceramic precursor in the fluid to deposit the ceramic precursor in void spaces of the ceramic material.

4,552,787

DEPOSITION OF A METAL FROM AN ELECTROLESS PLATING COMPOSITION

Paul Chebiniak, Endicott; Ronald A. Kaschak, Vestal, and Lois J. Root, Whitney Point, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,960
Int. Cl.⁴ B32D *3/10*
U.S. Cl. 427—304 **17 Claims**

1. A process for the deposition of a metal onto a substrate from an electroless plating composition wherein said substrate is catalytic for the deposition of said metal comprising the steps of:

(a) plating an initial layer of an electroless platable metal from an electroless plating composition on said substrate;

(b) contacting the resulting metal-plated substrate with an an aqueous solution of an acid composition containing about 5% to about 25% by weight of the acid, for about 1 to about 5 minutes; and

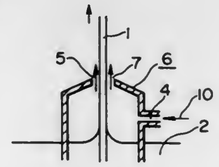
(c) plating an additional layer of an electroless platable metal from an electroless plating composition onto the resulting plated, acid-treated substrate.

4,552,788

HOT DIPPING METHOD FOR FORMING A METAL OR ALLOY COATING AROUND AN ELONGATED BODY

Kenichi Sato; Satoshi Takano, and Kenji Miyazaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,145
Claims priority, application Japan, Dec. 24, 1982, 57-234318; Dec. 25, 1982, 57-233253; Jan. 25, 1983, 58-11019
Int. Cl.⁴ B05D *1/18, 3/02*
U.S. Cl. 427—374.5 **6 Claims**



1. A method for forming a coating on an elongated member by continuous hot dipping, comprising the steps of: providing a gas container the bottom of which is submerged below the surface of a melt and which has at its top a gas discharging port that is aligned in the direction of advancement of the elongated member and which has an inside dimension greater than an outside dimension of said elongated member, supplying an interior of said gas container with a nonoxidizing gas, liquid or a mixture thereof supplied at a temperature in the range of −195 degrees C. to 0 degrees C., cold enough to prevent oxidation of the surface of the melt and to cool said elongated member rapidly, and drawing said elongated member through said gas container.

4,552,789

BACKING BOARD INSERT FOR FOOD PACKAGES

Jack W. Winchell, Madeira, Ohio, assignor to Huggitt Packaging Company, Cincinnati, Ohio

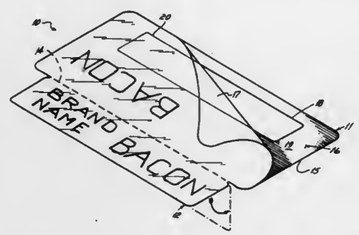
Filed Feb. 15, 1983, Ser. No. 466,596
Int. Cl.⁴ B32B *3/00*
U.S. Cl. 428—132 **10 Claims**

1. An insert for packaging of a moisture laden food product within a vacuum sealed film wrapper comprising:

a substantially planar base ply of high density polyethylene which is pigmented to render it substantially opaque, the base ply bearing printed matter on a face thereof,

a window aperture formed in the base ply, and

a ply of transparent polypropylene film adhered to the base ply and substantially covering the printed face of the base



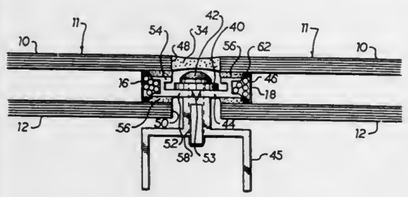
ply, the polypropylene ply forming a gas barrier window over said window aperture of the base ply.

4,552,790

STRUCTURAL SPACER GLAZING WITH CONNECTING SPACER DEVICE

Geoffrey V. Francis, 14 Woodgarden Ct., St. Catharines, Ontario, Canada

Continuation-in-part of Ser. No. 509,652, Jun. 30, 1983,. This application Feb. 24, 1984, Ser. No. 583,221
Int. Cl.⁴ E06B *3/34*
U.S. Cl. 428—34 **13 Claims**



1. A glass insulating sealed unit capable of being mounted on a building without the use of exterior stops comprising at least two spaced-apart glass plates and spacer means to join and seal the edge portions of said glass plates arranged about the entire periphery of said plates and between said plates, said spacer means including at least one connecting spacer device extending along at least one side of said unit having a channel-shaped recess that is open along the edge of the unit, structural sealant on two opposite sides of said spacer device bonding each of said sides to an adjacent inside surface of a respective glass plate, and an elongate strip of compound capable of providing both a dessicant and a vapour seal extending between the glass plates and immediately adjacent to the surface of said spacer device which faces towards the centre of the sealed unit and wherein said spacer device is adapted for the connection of said unit to an adjoining support member so that the exterior glass surface thereof is the outermost point of the unit and adjacent surrounding surfaces of said building.

4,552,791

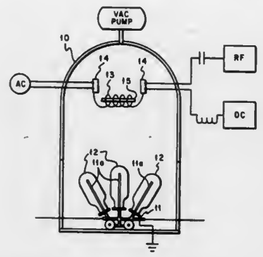
PLASTIC CONTAINER WITH DECREASED GAS PERMEABILITY

Granville J. Hahn, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Dec. 9, 1983, Ser. No. 560,065
Int. Cl.⁴ B65D *90/06*
U.S. Cl. 428—35 **15 Claims**

1. A container having decreased gas permeability through the walls thereof, said container comprising:

a thermoplastic organic resin container having at least one sidewall portion and a bottom portion made of said resin; and,



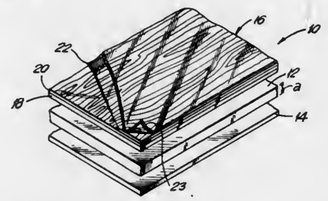
a thin layer of an inorganic oxide coating material ion-deposition plated on at least part of said sidewall portion.

4,552,792

DECORATIVE LAMINATED WALL PANEL AND PROCESS FOR MAKING SAME

Jere C. Julian; Ozzie Fogle, both of Orangeburg, and Roseann S. Helms, West Columbia, all of S.C., assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 31, 1984, Ser. No. 666,903
Int. Cl.⁴ B32B *21/06, 23/08*
U.S. Cl. 428—40 **13 Claims**



1. A composite decorative panel comprising:
a back ply formed from a kraft liner board or paper board material;
a center ply comprised of a wood material and having opposed surfaces, one surface of said center ply being adhered in face to face contact with said back ply; and
a face ply comprising a kraft liner backing layer, a decorative layer, a protective top coating secured in face to face relationship and a removable protective layer of plastic, the kraft liner backing sheet of the face ply being adhered in face to face contact with the surface of said center ply opposite said back ply.

4,552,793

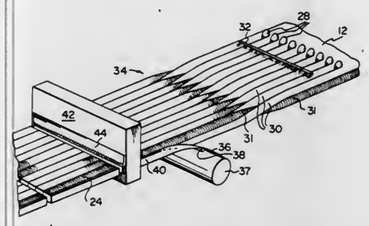
REORIENTED GLASS FIBER BOARD PRODUCT

Neil M. Cameron, Sarnia, and Phillip W. Blackmore, Camlachie, both of Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

Filed Mar. 20, 1984, Ser. No. 591,641
Claims priority, application Canada, Oct. 24, 1983, 439540
Int. Cl.⁴ B32B *3/00*
U.S. Cl. 428—53 **12 Claims**

1. A fibrous material product formed from a mat of glass fibers containing a bonding substance and having fiber laminations which have been rearranged from a first orientation in which said laminations extended generally parallel to opposite major surface of said mat to a second orientation in which at least a major portion of said fiber laminations (**24**) extend transversely across the thickness or height of said mat, said mat being heat-cured and cut perpendicular to the major surfaces of said mat to form a plurality of parallel strips (**30**) having opposite longitudinal cut faces (**31**), and means securing said strips together in side-by-side relationship to form an assembly

with said cut faces forming opposite major surfaces of said assembly, and said major portion of said fiber laminations



extending transversely across the thickness of said assembly between the opposite major surfaces thereof.

4,552,794

COMPOSITION FOR TUFTED CARPETS CONTAINING AZIDOSULFONYL SILANE CROSSLINKER

Raymond W. Goss, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 509.747, Jun. 30, 1983, Pat. No. 4,501,846. This application Aug. 20, 1984, Ser. No. 642,612
Int. Cl.⁴ B32B *3/02, 33/00*; C08K *5/01*
U.S. Cl. 428—95 **15 Claims**

1. In a hot melt adhesive material having a polymer selected from the group consisting of ethylene-vinyl acetate copolymers, amorphous polypropylenes and amorphous propylene copolymers, the improvement which comprises the addition of from about 40% to about 60% of a composition having a Brookfield viscosity of from about 25 to about 500 centipoise at about 150° C. comprising, by weight:
(a) from about 1% to about 19% of a low density polyethylene having a melt index of from about 70 to about 425;
(b) from about 0.1% to about 5% of a nitrogen-containing silane cross-linking compound having the general formula

$$X_3—Si—R—Z$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; and Z is selected from

$$—O—\overset{\overset{O}{\|}}{C}—\overset{\overset{R'}{|}}{C}N_2,\ —OCN_3,\text{ and } —SO_2N_3;$$

where R′ is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR″ radicals; where R″ is selected from alkyl, cycloalkyl, and aryl radicals;
(c) from about 65% to about 85% of a resin having a Ring and Ball softening point of from about 50° C. to about 115° C. selected from the group consisting of hydrocarbon resins and esters of rosin;
(d) from about 5% to about 7% of a hydrocarbon wax; and
(e) up to about 30% of a naphthenic oil.

8. A carpet comprising:
(a) a primary backing fabric stitched with loops of yarn on the frontside of the primary backing fabric to form a tufted structure;
(b) a composition comprising
(i) from about 1% to about 19% of a low density polyethylene having a melt index of from about 70 to about 425;
(ii) from about 0.1% to about 5% of a nitrogen-containing silane cross-linking compound having the general formula

$$X_3—Si—R—Z$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; and Z is selected from

$$—O—\overset{\overset{O}{\|}}{C}—\overset{\overset{R'}{|}}{C}N_2,\ —OCN_3,\text{ and } —SO_2N_3;$$

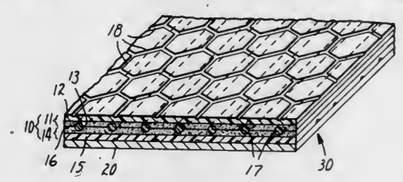
where R′ is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR″ radicals; where R″ is selected from alkyl, cycloalkyl, and aryl radicals;
(iii) from about 65% to about 85% of a resin having a Ring and Ball softening point of from about 50° C. to about 115° C. selected from the group consisting of hydrocarbon resins and esters of rosin;
(iv) from about 5% to about 7% of a hydrocarbon wax; and
(v) up to about 30% of a naphthenic oil coated on the backside of the primary backing fabric;
(c) a hot melt adhesive material as recited in claim 1 applied over the composition; and
(d) a secondary backing fabric securely applied to the hot melt adhesive material.

4,552,795

INELASTIC, HEAT-ELASTICIZABLE SHEET MATERIAL

Paul E. Hansen, Lake Elmo, and Susan K. Marquardt, Little Canada, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Dec. 27, 1983, Ser. No. 565,451
Int. Cl.⁴ B32B *5/12, 5/24*
U.S. Cl. 428—110 **16 Claims**



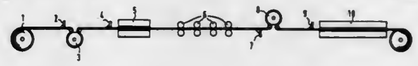
1. A substantially inelastic, flexible composite flat sheet material, dimensionally stable at room temperature, comprising in combination:
a plurality of parallel elastomeric strands, extended to at least about three times their relaxed length and heat-bonded at multiple spaced locations to at least one substantially flat inelastic planar web by thermoplastic, substantially inelastic polymeric binder, the stiffness of the combined web and binder decreasing significantly when heated, thereby permitting the elastomeric strands to contract and the sheet material to shirr at right angles to the length of the elastomeric strands.

4,552,796

COMPOSITE PRODUCT HAVING A LOW-POROSITY SUPPORT LAYER

Laurent Haag, Wiltz, Luxembourg, assignor to Eurofloor S.A., Luxembourg

Division of Ser. No. 413,746, Sep. 1, 1982, Pat. No. 4,492,606. This application Oct. 25, 1984, Ser. No. 664,533
Claims priority, application Luxembourg, Sep. 2, 1981, 83602
Int. Cl.⁴ B32B *3/24*
U.S. Cl. 428—140 **2 Claims**



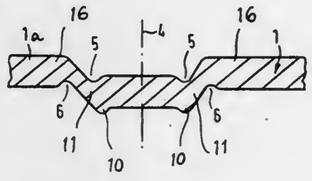
1. A composite floor covering product including:
a support substrate of low-porosity material;
a plurality of perforations in said substrate wherein said low-porosity support has perforations ranging in diameter from about 0.5 to about 3 mm, arranged in unit grid segments of from about 2 to about 20 mm in length on each side;
a coating of compact plastisol precoat on both surfaces of said perforated support substrate and extending into said perforations wherein said plastisol essentially fills said perforations, and wherein said coatings are joined and locked together through said perforations; and
a foamed plastic coating over said plastisol precoat.

4,552,797

PLATE-SHAPED COVERING PROFILE AND METHOD FOR MANUFACTURING THE SAME

Edmund Munk, Oberstenfeld, and Martin Dietz, Mainhardt, both of Fed. Rep. of Germany, assignors to Furnier-U.Sperrholzwerk, Oberstenfeld and J. F. Werz, Jr. KG, Werzalit-Pressholzwerk, Ludwingsburg, both of, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,702
Int. Cl.[4] B32B *3/30*
U.S. Cl. 428—167 3 Claims



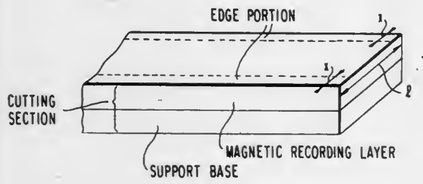
1. A plate-shaped covering profile for covering structures, said covering profile being pressed from a non-swelling mixture of fibrous material and a thermosetting binding agent, the covering profile comprising a one-piece elongated body having an upper surface provided with at least one upper groove extending transversely to the elongation of said body and having a predetermined contour, and a rear surface provided with at least two countergrooves each extending parallel to and located at a different respective side of said upper groove when projecting said upper groove on the rear surface of said body so as to form on said rear surface a bulge corresponding to the contour of said upper groove, so that said upper surface with at least one said upper groove and said lower surface with at least two said countergrooves have different shapes.

4,552,798

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Yasuhiro Abe; Shinobu Iida, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 7, 1984, Ser. No. 577,919
Claims priority, application Japan, Feb. 7, 1983, 58-18584
Int. Cl.[4] G11B *5/72*
U.S. Cl. 428—194 15 Claims



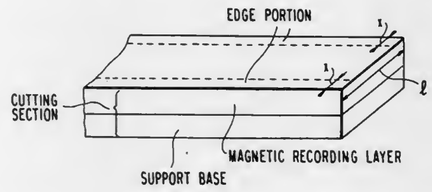
1. A magentic recording medium, comprising:
a support base having thereon
a magnetic recording layer comprised of a ferromagnetic powder dispersed in a binder; and
an aliphatic acid ester compound being present only on an edge portion or the edge portion and a cutting section of the surface of the magnetic recording layer.

4,552,799

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Shinobu Iida; Masaaki Fujiyama, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 23, 1984, Ser. No. 602,985
Claims priority, application Japan, Apr. 21, 1983, 58-70605
Int. Cl.[4] G11B *5/72*
U.S. Cl. 428—194 11 Claims



1. A magnetic recording medium comprising a non-magnetic support base having provided thereon a magnetic recording layer comprised of ferromagnetic particles dispersed in a binder wherein a compound selected from the group consisting of carboxylic acids and carboxylic acid derivatives is applied only to a cutting section of the recording medium to exude on an edge portion of the surface of the magnetic recording layer, wherein the compound selected from the group consisting of carboxylic acids and carboxylic acid derivatives is applied to the cutting section of the recording medium in an amount in the range of 0.01 to 500 g/m^2.

4,552,800

COMPOSITE INORGANIC STRUCTURES

Earl Blasch, Albany, N.Y., and Robert Smith-Johannsen, Incline Village, Nev., assignors to Blasch Precision Ceramics, Inc., Schenectady, N.Y.

Continuation of Ser. No. 423,750, Sep. 27, 1982, abandoned, which is a division of Ser. No. 260,732, May 5, 1981, , which is a continuation of Ser. No. 17,154, Mar. 2, 1979, abandoned. This application Nov. 23, 1983, Ser. No. 554,753
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.[4] C04B *35/02*
U.S. Cl. 428—212 6 Claims

1. A composite ceramic article produced by a process which comprises:
(a) forming a first slurry composed of inorganic particles and a freeze-sensitive colloidal ceramic sol,
(b) forming at least a second slurry composed of different inorganic particles having a different mass thermal coefficient of expansion than the inorganic particles used in the first slurry and a freeze-sensitive colloidal ceramic sol which can be the same as or different from the colloidal sol used in said first slurry;
(c) bringing the slurries into physical contact with each other in a layered fashion without substantial intermixing thereof; and
(d) simultaneously freezing the layered slurries in a cooling media while in contact with each other to form a unified structure having a substantially uniform porosity or void volume and which is characterized by an interfacial bond of sufficient strength to withstand temperatures of at least about 3000° F. and having high thermal shock resistance and wherein the difference between the two mass thermal coefficients of expansion, although sufficient to cause disruption of the interfacial bond resulting from conventional processes for producing composite inorganic articles, does not cause disruption of the interfacial bond at temperatures of at least about 3000° F.

4,552,801

PLASTICIZED EVOH AND PROCESS AND PRODUCTS UTILIZING SAME

Thomas W. Odorzynski, Green Bay, and Jack E. Knott, II, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 369,420, Apr. 19, 1982, Pat. No. 4,451,599, which is a division of Ser. No. 249,975, Apr. 1, 1981, abandoned. This application Jun. 20, 1984, Ser. No. 622,662
Int. Cl.[4] B32B *9/04, 27/08*
U.S. Cl. 428—220 7 Claims

1. As a composite film of relatively uniform caliper, a coextrudate comprised of successive first through fifth layers of: (1) film-forming polyamide resin, (2) a blend of about 95 to 80 weight percent of at least one ethylene vinyl alcohol copolymer, and conversely about 5 to 20 weight percent of a plasticizer therefor, (3) film-forming polyamide resin, (4) adhesive and (5) ionomer resin, respectively, said film-forming polyamide resin having a molecular weight of about 20,000 to 30,000 and a melting point temperature of about 415 degrees to 440 degrees Fahrenheit, said EVOH copolymer having a molecular weight of about 15,000 to 30,000, a vinyl alcohol moiety content of about 60 to 75 percent thereof, and a melting point temperature of about 325 degrees to 375 degrees Fahrenheit, said adhesive layer comprising an anhydride modified polyolefin or a partially hydrolyzed ethylene vinyl acetate copolymer, and said plasticizer being an aromatic sulfonamide selected from the class consisting of o,p-toluene sulfonamide, N-ethyl-o,p-toluenesulfonamide and ethylbenzene sulfonamide.

5. As a composite film, a coextrudate comprised of successive layers of (1) film-forming polyamide resin, (2) a blend of about 90 weight percent of at least one ethylene vinyl alcohol copolymer and about 10 weight percent of a plasticizer therefor, and said plasticizer being an aromatic sulfonamide selected from the class consisting of o, p-toluene sulfonamide, N-ethyl-o, p-toluene sulfonamide and ethylbenzene sulfonamide and (3) film-forming polyamide resin, respectively, said film-forming polyamide resin having a molecular weight of about 20,000 to 30,000 and a melting point temperature of about 415 degrees to 440 degrees Fahrenheit, said EVOH copolymer having a molecular weight of about 15,000 to 30,000, a vinyl alcohol moiety content of about 60 to 75 percent thereof, and a melting point temperature of about 325 degrees to 375 degrees Fahrenheit, the thickness of said EVOH layer (2), at any point across the width of said film, deviating by no more than 50 percent from the mean thickness value of said layer, and at least about 60 percent of said layer having a thickness within about 20 percent of said mean value.

4,552,802

SELF-ADHESIVE PRODUCT, PROCESS FOR ITS MANUFACTURE AND APPLICATION AS A DRESSING, PACKING SHEET OR FIXING TAPE

Jean-Claude Mechin, 109 Boulevard Malesherbes, 75008 Paris, France

Filed Jul. 15, 1983, Ser. No. 514,220
Int. Cl.[4] B32B *7/12;* B05D *5/10;* C09J *7/02*
U.S. Cl. 428—255 14 Claims

1. A self-adhesive product in the form of a sheet, band or tape comprising a support coated with at least one self-adhesive layer, which adheres to practically no product, including skin and hair, other than itself, which includes a cellular support coated with a layer of synthetic or natural elastomer previously treated by heating at a temperature between 70° and 160° C., followed by cooling.

2. The self-adhesive product as claimed in claim 1, wherein the elastomer is a natural rubber or cis-1,4-polyisoprene, a butadiene-styrene copolymer, a cis-1,4-polybutadiene, a polyoxypropylene, a polyoxychoropropylene or a polyacrylate.

3. The self-adhesive product as claimed in either of claims 1 and 2, wherein the support consists of a band of gauze.

4,552,803

FIRE RETARDANT POWDERS AND METHODS

Glenn A. Pearson, 3834 Mt. Vernon Ave., Alexandria, Va. 22305

Continuation-in-part of Ser. No. 462,078, Jan. 28, 1983, Pat. No. 4,468,495. This application Aug. 21, 1984, Ser. No. 642,772
Int. Cl.[4] B32B *7/00;* C08L *61/24*
U.S. Cl. 428—262 24 Claims

1. An article of manufacture comprising a substrate coated with a fire retardant composition comprising a powder resin which is the reaction product of the following components: (a) about 70–140 parts by weight of an aldehyde, (b) about 50–250 parts by weight of an ammonium phosphate, (c) about 50–250 parts by weight of ammonium, alkali metal or alkaline earth metal compound or salt, (d) about 70–190 parts by weight of a urea reactant, (e) about 20–60 parts by weight of hydroxy reactant, and (f) about 150–250 parts by weight of phosphoric acid, components (a), (b), (c), (d), and (e) having been mixed together and heated at temperatures of about 160°–200° F., the phosphoric acid then being added to the mixture of the other components.

4,552,804

PREVENTION OF SILICA MIGRATION IN THERMAL INSULATION WITH WATER-SOLUBLE SALTS OF INORGANIC OXYGEN-CONTAINING ACIDS OR ACIDIC GASES

Charles C. Payne, Aurora, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 21, 1982, Ser. No. 390,725
Int. Cl.[4] B05D *3/00*
U.S. Cl. 428—283 5 Claims

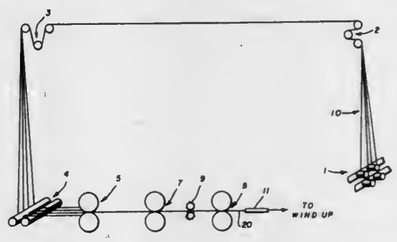
1. In a process of manufacturing discrete, ceramic fiber insulation products, comprising the steps of:
(a) slurring alumino silicate fibers with colloidal silica and vacuum drying said slurry to form a pre-treated mat;
(b) providing an alkali-stabilized water suspension of colloidal silica, which has a pH of at least 8.5, a particle size of at least 5 nanometers and a SiO_2 concentration of at least 5% by weight;
(c) incorporating from about 0.1 to about 3% by weight of a water-soluble salt of an inorganic oxygen-containing acid in said suspension to form a modified suspension;
(d) infusing the modified suspension into the pre-treated mat and then,
(e) drying said mat.

4,552,805

COMPOSITES REINFORCED WITH HIGH STRENGTH ARAMID FIBERS HAVING FIBRILLATED ENDS

Floyd H. Fish, Jr., and Herbert G. Lauterbach, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1984, Ser. No. 682,171
Int. Cl.[4] B32B *5/06*
U.S. Cl. 428—297 8 Claims



1. A composite comprising a matrix resin reinforced with sliver of high modulus p-aramid fibers of which at least 10% of the fiber ends are fibrillated into at least 2 fibrils along a termi-

nal length which is at least 5 times as long as the diameter of the unfibrillated portion of the fiber.

4,552,806
CELLULAR GLASS COATED WITH A HEAT INSULATOR

Hiroaki Hayashi, Aichi; Toshio Kandori, Seto, and Yoshiaki Fukushima, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jul. 12, 1983, Ser. No. 513,029
Claims priority, application Japan, Jul. 16, 1982, 57-124830
Int. Cl.⁴ B32B *19/04*
U.S. Cl. 428—312.6 **19 Claims**

1. A heat-insulating product comprising three distinct layers with cellular glass as a substrate, an adhesive layer composed of a solidified mixture of water glass and a porous substance containing polyvalent ions selected from the group consisting of Mg, Ca, Al and Ba, formed on said substrate, and a coating layer composed of a laminate of flakes of a laminar mineral, formed on said adhesive layer.

4,552,807
MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Takahito Miyoshi; Toshimitsu Okutsu, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

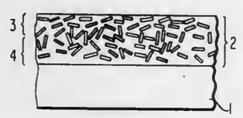
Filed May 19, 1983, Ser. No. 496,202
Claims priority, application Japan, May 19, 1982, 57-83174
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—323 **17 Claims**

1. A magnetic recording medium comprising a magnetic layer on one side of a support and a back layer on the opposite side thereto, the back layer containing a filler dispersed in a binder, in which the binder consists essentially of a cellulose-type resin, diolefin- or olefin-type synthetic rubber and poly-isocyanate.

4,552,808
MAGNETIC RECORDING MATERIAL USING PLATE-SHAPED FERROMAGNETIC PARTICLES

Masaaki Fujiyama; Takamitsu Asai, and Toshihiko Miura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 23, 1983, Ser. No. 554,658
Claims priority, application Japan, Nov. 25, 1982, 57-206521
Int. Cl.⁴ G11B *5/68, 5/70*
U.S. Cl. 428—328 **27 Claims**



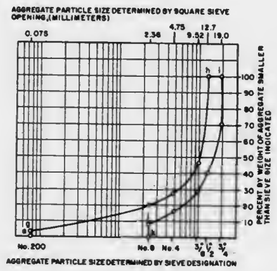
1. A magnetic recording material, comprising:
a non-magnetic support base having provided thereon;
a single magnetic recording layer comprised of plate-shaped ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles have a mean size of 0.01 μm to 10 μm, and wherein the thickness of the ferromagnetic particles is equal to or less than their diameter, wherein the plate-shaped ferromagnetic particles are present in greater numbers per unit volume in surface part of the single magnetic layer than in an inner part of the single magnetic layer and/or the plate-shaped ferromagnetic particles are aligned such that an average horizontal axis component of the particles which respect to the surface of the single magnetic layer is larger in the surface part than in the inner part thereof.

14. A magnetic recording material as claimed in claim 1, wherein said magnetic recording material is formed by subjecting the same to at least one surface particle alignment method selected from the group consisting of:
forcing the surface of the magnetic layer to come into contact with a heated roll;
forcing the magnetic recording material to pass between a compressive rubbing roll and a tape driving roll, which differ in rotating speed, in such a manner that the magnetic layer has contact with the compressive rubbing roll;
forcing the magnetic recording material to pass between a hard compressive rubbing roll and a soft roll, which differ in rotating speed, in such a manner that the magnetic layer has contact with the hard compressive rubbing roll; and
forcing the magnetic recording material to pass between a heated hard roll having a small diameter and a cooled hard roll having a large diameter in such a manner that the magnetic layer has contact with the hard roll having a small diameter.

4,552,809
PERMEABLE ASPHALTIC CONCRETE

Wayne R. Broaddus; Khalil N. Jaber, both of Dalton, and Thomas A. Orofino, Rocky Face, all of Ga., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 546,801, Oct. 31, 1983, Pat. No. 4,515,839. This application Aug. 23, 1984, Ser. No. 643,607
Int. Cl.⁴ B32B *5/16*
U.S. Cl. 428—331 **3 Claims**

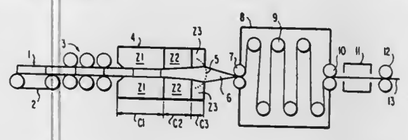


3. A permeable asphaltic concrete base for supporting artificial turf, said base comprising at least two layers of asphaltic concrete comprising asphaltic cement and a gradated mixture of aggregate rock, wherein the asphaltic concrete of a lower layer comprises a gradated mixture of aggregate rock having a size distribution such that the percentage by weight of the mixture passing through a sieve having square openings of
(a) 38.1 millimeters is 100 percent,
(b) 25.4 millimeters is 95–100 percent,
(c) 19.0 millimeters is 75–95 percent,
(d) 12.7 millimeters is 40–60 percent,
(e) 9.52 millimeters is 30–40 percent,
(f) 4.75 millimeters is 20–30 percent,
(g) 2.36 millimeters is 15–25 percent, and
(h) 0.075 millimeters is 0–3 percent;
and wherein the asphaltic concrete of an upper layer comprises a gradated mixture of aggregate rock having a size distribution the same as the lower layer except there is no aggregate having a size larger than 19.0 millimeters.

4,552,810
PNEUMATIC CELLULAR AROMATIC POLYAMIDE ARTICLES AND PROCESS FOR THE PREPARATION THEREOF

Susumu Norota, Osaka; Yasuhiko Segawa, Yamaguchi, and Shingo Emi, Osaka, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 495,927, May 19, 1983, abandoned. This application Dec. 13, 1983, Ser. No. 561,251
Claims priority, application Japan, May 19, 1982, 57-83238
Int. Cl.⁴ D02G *3/00*
U.S. Cl. 428—398 **4 Claims**



1. Pneumatic cellular aromatic polyamide articles comprising
(a) a fiber prepared substantially from aromatic polyamide,
(b) said fiber having numerous bubbles at a void ratio in the range of 10 to 95%,
(c) said bubbles being substantially enclosed in said fiber, and
(d) said fiber having an average diameter in the range of 0.2 to 10 mm on the cross section made by cutting the fiber at right angles to the longest axis, and
(e) said fiber having a surface which is substantially not porous.

4,552,811
CAPSULE MANUFACTURE

Robert W. Brown, and Richard P. Bowman, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 517,296, Jul. 26, 1983, abandoned. This application Jun. 12, 1984, Ser. No. 619,967
Int. Cl.⁴ B01J *13/02*
U.S. Cl. 428—402.21 **14 Claims**

1. A process for preparing microcapsules in an aqueous manufacturing vehicle which comprises enwrapping particles of intended capsule core material, substantially insoluble in said vehicle, with polymeric shells produced by in situ polymerization of melamine and formaldehyde, methylol melamine, methylated methylol melamine, urea and formaldehyde, dimethylol urea or methylated dimethylol urea in the presence of an acrylic acid-alkyl acrylate copolymer, wherein the weight percent and type of alkyl acrylate in said copolymer are selected from the group consisting of about 12 to about 30 ethyl acrylate, about 6 to about 14 propyl acrylate, about 4 to about 20 butyl acrylate, about 2 to about 14 amyl acrylate, about 2 to about 10 hexyl acrylate, about 4 to about 12 cyclohexyl acrylate and about 2 2-ethylhexyl acrylate and said copolymer is present as about 0.4 to about 15 percent by weight of said manufacturing vehicle.

14. Microcapsules produced by a process as claimed in claim 1.

4,552,812
PROCESS FOR THE PRODUCTION OF POLYACROLEIN MICROSPHERES AND GRAFTED MICROSPHERES

Shlomo Margel, and Uzi Beitler, both of Rehovot, Israel, assignors to Yeda Research and Development Company, Rehovot, Israel

Filed Dec. 14, 1981, Ser. No. 330,451
Claims priority, application Israel, Jul. 1, 1981, 63220
Int. Cl.⁴ B32B *5/16;* **C08F** *16/34;* **B01J** *13/02;* **C12N** *11/08*
U.S. Cl. 428—407 **25 Claims**

1. A process for producing a polyacrolein-type microsphere which comprises subjecting an aqueous mixture of a polymerizable acrolein-type monomer to polymerization in the presence of an effective amount of a suitable ionic surfactant which promotes microsphere formation upon polymerization of the monomer so as to form a microsphere, the polymerization being effected at a pH between 8.0 and 13.7, and recovering the resulting microsphere and purifying the microsphere so recovered.

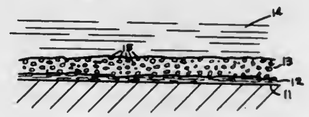


23. A grafted microsphere comprising a polyacrolein-type microsphere to which at least one polymeric microsphere having a diameter less than one-fourth the diameter of the polyacrolein-type microsphere is attached.

4,552,813
METHOD OF INHIBITING THE GROWTH OF MARINE LIFE ON SURFACES IN CONTACT WITH SEAWATER

Ralph R. Grams, 2025 NW. 24th St., Gainesville, Fla. 32605

Continuation of Ser. No. 348,504, Feb. 12, 1982, abandoned. This application Sep. 21, 1983, Ser. No. 534,499
Int. Cl.⁴ B32B *9/04*
U.S. Cl. 428—411.1 **6 Claims**



1. A method for inhibiting the growth of marine life on surfaces in contact with seawater comprising covering that surface with a suitable coating for seawater applications in which is dispersed an effective amount of particles of a polycyclic naphthacenecarboxamide available at the outer surface of the coating for contact by seawater.

4,552,814
ADVANCED EPOXY RESINS HAVING IMPROVED IMPACT RESISTANCE WHEN CURED

Michael B. Cavitt, and Neal L. Wassberg, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 612,287, May 21, 1984, abandoned. This application Jan. 30, 1985, Ser. No. 696,673
Int. Cl.⁴ C08G *59/14, 59/62*
U.S. Cl. 428—414 **18 Claims**

1. An advanced epoxy resin composition comprising a product resulting from reacting (A) a mixture containing (1) at least one polyglycidyl ether of a material having at least two aliphatic hydroxyl groups per molecule, (2) at least one epoxy resin having an average of from about 2.6 to about 6 glycidyl ether groups per molecule attached to one or more aromatic rings and optionally (3) one or more glycidyl ethers of a dihydric phenol; with (B) at least one dihydric phenol in the presence of a suitable quantity of a suitable catalyst; and wherein (i) components (A) and (B) are present in quantities which provide an epoxy to phenolic hydroxyl ratio of from about 1.4:1 to about 4:1, with the proviso that all calculations are on the basis that there are no substituent groups other than hydrogen,

hydroxyl or glycidyl ether groups attached to any aromatic rings of any of the components even when such groups are actually present and (ii) wherein the number of epoxy equivalents contributed by component (A-3) to the number of epoxy equivalents contributed by component (A-2) to the number of epoxy equivalents contributed by component (A-1) is from abut 0:0.05:1 to about 0.3:0.6:1.

4,552,815

PRESTRESSING ELEMENTS COATED WITH PLASTIC MATERIAL AND PROCESS FOR MAKING THEM

Bernd Dreher, Basel, and Wolfgang Schneider, Kaiseraugst, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Sep. 22, 1983, Ser. No. 534,995

Claims priority, application Switzerland, Oct. 1, 1982, 5808/82; Feb. 10, 1983, 756/83

Int. Cl.⁴ B32B *27/38, 27/40;* **B05D** *1/36*

U.S. Cl. 428—415 **15 Claims**

1. A prestressing element, which is metal, plastic, glass, carbon fibers or whiskers, onto which is applied an inner polymer-forming layer and an outer solid plastic layer, the said prestressing element being designed so that the inner layer consists of a moldable and thermally curable composition which is storage-stable at room temperature, and the outer layer consists of a plastic material cured by radiation.

14. A process for producing a two-layer plastic coating for a prestressing element, which is metal, plastic, glass, carbon fibers or whiskers, which comprises

(a) applying to the prestressing element an inner layer consisting of a moldable and thermally curable composition which is stable in storage at room temperature;

(b) applying an outer layer of a composition curable by radiation; and

(c) curing afterwards the outer layer by radiation.

4,552,816

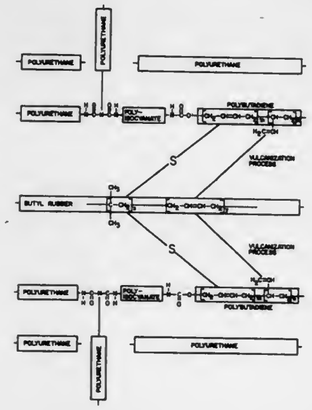
PROCESS FOR PRODUCING RUBBER LAMINATES

Bojana K. Spahic, San Jose, and George F. Green, Hayward, both of Calif., assignors to Novacor Medical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 557,856, Dec. 5, 1983, abandoned. This application Oct. 30, 1984, Ser. No. 665,011

Int. Cl.⁴ B32B *7/10, 31/06, 27/40*

U.S. Cl. 428—420 **7 Claims**



1. A process for producing covalently bonded laminates comprised of polyurethane elastomer and vulcanized rubber layers comprising:

interposing between a thickness of polyurethane elastomer composition and a thickness of vulcanizable rubber composition a thickness of grafted polyurethane joining composition, said grafted polyurethane joining composition being comprised of polyurethane elastomer segments, polyisocyanate segments and hydroxyl containing polybutadiene segments wherein said polyurethane elastomer segments and a first functional (NCO) group on said polyisocyanate segments are covalently bonded to one another, and said hydroxyl containing polybutadiene segments and a second functional (NCO) group on said polyisocyanate segments are covalently bonded to one another,

and heating the resulting assembly.

4. A bonded laminated structure comprised of polyurethane elastomer layers and vulcanized rubber layers wherein said polyurethane elastomer layers and said vulcanized rubber layers are covalently bonded by means of a grafted polyurethane joining composition comprised of polyurethane elastomer segments, polyisocyanate segments and hydroxyl containing polybutadiene segments wherein said polyurethane elastomer segments and a first functional (NCO) group on said polyisocyanate segments are covalently bonded to one another, and said hydroxyl containing polybutadiene segments and a second functional (NCO) group on said polyisocyanate segments are covalently bonded to one another.

4,552,817

INACTIVATED POLYURETHANE AND A METHOD FOR PREPARING IT

Jaan M. Uustalu, Lund, Sweden, assignor to Protector Agentur AB, Malmo, Sweden

PCT No. PCT/SE83/00169, § 371 Date Dec. 29, 1983, § 102(e) Date Dec. 29, 1983, PCT Pub. No. WO83/03837, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 28, 1983, Ser. No. 574,028

Claims priority, application Sweden, May 4, 1982, 8202776

Int. Cl.⁴ B32B *27/08*

U.S. Cl. 428—423.7 **4 Claims**

1. An article of manufacture for use by a person and comprising an inactivated polyurethane article coated with a protective layer to prevent migration of free isocyanate from the polyurethane, said protective layer characterised by a hydroxyl group containing polymer the hydroxyl groups of which are capable of reacting with free isocyanate groups in the polyurethane, said polymer comprising a member of the group polyvinyl alcohol, partly hydrolyzed polyvinyl acetate, copolymers of vinyl alcohol and hydrolyzed polyvinyl acetate, the product of polymerization of hydroxyl containing vinyl monomers, the product of polymerization of hydroxyl containing acrylate monomers, and hydroxyl group-terminated low molecular polyesters.

4,552,818

SILICONE ENCAPSULANT CONTAINING PORPHYRIN

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed May 10, 1984, Ser. No. 608,836

Int. Cl.⁴ B32B *9/04*

U.S. Cl. 428—447 **6 Claims**

1. An article of manufacture comprises an electronic device and an encapsulant thereover, said encapsulant being a polymeric silicone resin containing from 0.02 to 0.1 weight percent of a soluble colored, free porphyrin compound having a molar extinction coefficient to a wavelength in the visible spectrum of at least 1×10^4 liter mole^{-1} cm.$^{-1}$.

4,552,819

ADHESIVE AND HEAT RECOVERABLE ARTICLE HAVING A LAYER OF THE ADHESIVE

Yutaka Hibino, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 12, 1983, Ser. No. 541,181

Claims priority, application Japan, Oct. 12, 1982, 57-179633; Oct. 14, 1982, 57-180593

Int. Cl.⁴ B32B *27/08;* **C08F** *216/06*

U.S. Cl. 428—516 **18 Claims**

1. An adhesive, comprising:

50 to 90 wt% of ethylene-vinyl acetate copolymer having a hydrolysis ratio of 50 to 90 wt%;

5 to 30 wt% of polyamide resin having an amine value of 0.5 to 15, the polyamide resin being a reaction product of a dimer acid and a diamine; and

5 to 30 wt% of a block copolymer selected from the group consisting of styrene-butadiene-styrene block copolymer and styrene-isoprene-styrene block copolymer, wherein the block copolymer contains less than 30 wt% of styrene.

4,552,820

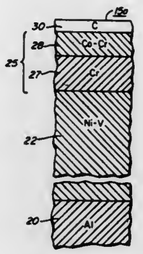
DISC MEDIA

Yeong S. Lin, Monte Sereno; Nathan T. Ballard; John T. Lee, both of San Jose, and Edward F. Teng, Sunnyvale, all of Calif., assignors to Lin Data Corporation, Santa Clara, Calif.

Filed Apr. 25, 1984, Ser. No. 603,534

Int. Cl.⁴ G11B *5/66, 5/82;* **C23C** *15/00*

U.S. Cl. 428—611 **20 Claims**



1. A method of fabricating a thin-film disc comprising the steps of:

(a) providing a base having a surface roughness less than about 250 Å;

(b) sputtering a substantially non-magnetic nickel-vanadium layer to a thickness of no more than approximately 10 microns; and

(c) depositing at least one magnetic layer to define the recording medium proper of the disc.

4,552,821

SEALED NICKEL-ZINC BATTERY

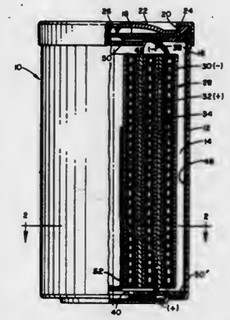
Henry F. Gibbard, Schaumburg; Richard C. Murray, Jr.; Ronald A. Putt, both of Palatine; Theodore W. Valentine, Algonquin, all of Ill., and Claude J. Menard, St. Paul, Minn., assignors to Duracell Inc., Bethel, Conn.

Continuation of Ser. No. 509,686, Jun. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 402,383, Jul. 27, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 612,290

Int. Cl.⁴ H01M *10/52*

U.S. Cl. 429—57 **11 Claims**

1. A sealed, rechargeable nickel-zinc cell comprising a sealed housing defining a cell space, an electrochemical cell element contained in said cell space, said electrochemical cell element comprising a wound roll and including a zinc electrode comprising a current collector and an active mass, a nickel electrode and a separator therebetween, a predetermined amount of an alkaline electrolyte contained in said cell housing, a positive terminal electrically connected to said nickel electrode, a negative terminal electrically connected to said zinc electrode, and means for oxidizing hydrogen evolved in service to maintain a satisfactorily low internal pressure within said cell; characterized in that said zinc electrode active mass is essentially free of zinc metal and comprises zinc oxide admixed with cadmium metal, and wherein said said electrochemical cell element is wound such that the element is under compression, and said separator comprises a microporous material and is free of coating material.



4,552,822

PHOTOCONDUCTIVE DEVICES WITH HYDROXY CONTAINING SQUARAINE COMPOSITIONS

Peter M. Kazmaier; Guiseppa Baranyi; Cheng-kuo Hsiao, and Richard A. Burt, all of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

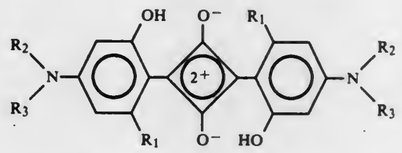
Filed Dec. 5, 1983, Ser. No. 558,246

Int. Cl.⁴ G03G *5/04, 5/14;* **C07C** *87/50*

U.S. Cl. 430—59 **61 Claims**



1. An improved photoresponsive device comprised in the order stated of (1) a supporting substrate, (2) a photoconductive layer comprised of the squaraine compositions of the following formula, and (3) a diamine hole transport layer



wherein R_1, R_2 and R_3 are independently selected from the group consisting of alkyl substituents and aryl substituents.

4,552,823

SEPARATOR PLATE FOR LEAD-ACID BATTERY

Eugene Wozniak, 12960 S. Ashland, Blue Island, Ill. 60406

Filed Jul. 5, 1984, Ser. No. 628,030

Int. Cl.⁴ H01M *2/18*

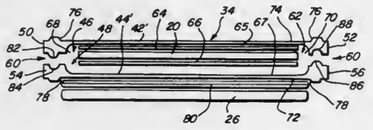
U.S. Cl. 429—81 **23 Claims**

1. In a lead acid storage battery having a casing for storing electrolyte therein and a stack of planar negative and positive electrodes in alternating assembly upstanding in the casing, an oxide material retention mat juxtaposed opposite surfaces of

each electrode, and a separator plate sandwich assembly for each said negative electrode , the improvement comprising:

A. The separator plate sandwich assembly comprised of a pair of like opposing, planar wall segments spaced one from the other by a pair of protrusions along their proximate lateral marginal edges, and joined along their proximate lateral marginal edges to form a pocket formation opening to the top and bottom edges thereof with said opposed walls sandwiching the negative electrode and juxtaposed retention mats therebetween in the pocket formation;

B. cooperatively engaged locking means integrally formed with said protrusions to lock together and seal the lateral



margins of the separator plate assembly from electrical paths therethrough effecting short circuiting between said positive and negative electrodes, said opposing planar wall segments being spaced by a distance sufficient to permit frictional engagement of the negative electrode and juxtaposed retention mats, and having a length sufficiently greater than the length of the negative plate to create vertically extending flow channels and permit flow-through of electrolyte between the negative electrode and the locked lateral margins; and

C. a pair of upstanding abutments along the lateral marginal edges of said wall segments facing diametrically opposite to said protrusions, for locating and positioning a positive plate and juxtaposed retention mat therebetween.

4,552,824

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND PROCESS FOR PRODUCTION THEREOF

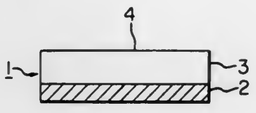
Yutaka Hirai, Tokyo; Toshiyuki Komatsu, Kawasaki; Katsumi Nakagawa, Tokyo; Teruo Misumi, Toride, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 449,842, May 3, 1984, abandoned, which is a division of Ser. No. 214,045, Dec. 8, 1980, Pat. No. 4,451,547, which is a division of Ser. No. 971,114, Dec. 19, 1978, Pat. No. 4,265,991. This application Jan. 28, 1985, Ser. No. 695,428

Claims priority, application Japan, Dec. 22, 1977, 52-154629; Jan. 23, 1978, 53-5958

Int. Cl.⁴ G03G *5/082*

U.S. Cl. 430—64 **33 Claims**



1. An electrophotographic photosensitive member comprising a substrate for electrophotography and a photoconductive layer comprising an amorphous silicon and containing 10–40 atomic % of hydrogen to provide high dark resistance and high SN ratio for electrophotographic processing.

4,552,825

PHOSPHOROUS DIKETONATE ELECTRON ACCEPTING RING COMPOUNDS AS SENSITIZERS FOR ELECTRON DONATING PHOTOCONDUCTIVE COMPOSITIONS

Chin H. Chen; Thomas E. Goliber; Jerome H. Perlstein, and George A. Reynolds, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 420,461, Sep. 20, 1982, Pat. No. 4,496,730. This application Aug. 27, 1984, Ser. No. 644,300

Int. Cl.⁴ G03G *5/04*

U.S. Cl. 430—83 **6 Claims**

1. A photoconductive composition characterized in that it comprises an electron donating organic photoconductor and a sensitizing amount of a tellurium-free compound having a tetrafluorophosphate diketonate component.

4,552,826

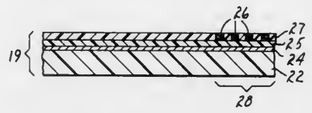
METHOD OF FORMING COMPOSITE IMAGE AS IN ADD-ON NON-SILVER MICROFICHE

Richard S. Fisch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 13, 1983, Ser. No. 541,527

Int. Cl.⁴ G03C *5/08, 5/18;* **G03F** *7/26*

U.S. Cl. 430—142 **15 Claims**



1. A method of forming a composite image in an imaging material having first and second layered structures, said method comprising:

a. providing a first layer structure comprising:
   1. a flexible support,
   2. a vapor-deposited metal layer having a conductivity in the range of 0.28 to 1.20 ohms/cm² and a thickness in the range of 10 to 800 Å on at least one surface of said support, and
   3. a non-silver-containing positive- or negative-acting photosensitive, photoresist layer overlying said metal layer,

b. imagewise exposing said photosensitive photoresist layer, in a discrete area, to radiant energy,

c. developing said first layered structure in a developer sequence to provide a positive or negative image of metal and photoresist, said metal image being of archival quality, said image being protected by photoresist material,

d. washing said imaged first layered structure with solvent to remove remaining imagewise exposed areas of negative-acting photoresist material or imagewise unexposed areas of positive-acting photoresist material,

e. providing a second layered structure comprising in sequence:
   1. a non-silver-containing positive- or negative-acting photosensitive, photoresist layer,
   2. a stripping layer, and
   3. a flexible support,

f. laminating said second photosensitive layered structure to said first imaged layered structure, said first imaged layer and said second photosensitive photoresist layer being adjacent to each other,

g. stripping said flexible support from said photosensitive photoresist layer of said second layered structure,

h. imagewise exposing said second photosensitive, photoresist layer, in a discrete area, to radiant energy, and

i. developing said second photosensitive photoresist layer in a developer solution to provide a composite positive or negative image of metal and photoresist, said metal image being of archival quality, said metal image being protected by photoresist material, wherein said metal image of step c. and step i. are in the same layer,

said photosensitive, unexposed areas of negative-acting photoresist layers and said imagewise exposed areas of positive-acting photoresist layers and said metal layer being soluble in said developer solutions and at least one of said developer solutions has a pH of at least 12.5.

4,552,827

PLANOGRAPHIC PRINTING PLATE HAVING CATIONIC COMPOUND IN INTERLAYER

Nils Eklund, Croton-on-Hudson, and Jen-chi Huang, Ossining, both of N.Y., assignors to Polychrome Corp., Yonkers, N.Y.

Division of Ser. No. 514,408, Jul. 18, 1983, Pat. No. 4,483,913. This application Aug. 29, 1984, Ser. No. 645,470

Int. Cl.⁴ G03C *1/52*

U.S. Cl. 430—160 **9 Claims**

1. In a presensitized planographic printing plate comprising an anodized, grained and/or etched metal substrate, a hydrophilic sealing layer on the substrate, and a photosensitive layer comprising a diazo light-sensitive material on the sealing layer; the improvement which comprises utilizing, between said sealing layer and said photosensitive layer, an interlayer comprising a hydrophilic monomer or polymer of an organic compound having at least one cationic, quaternary substituted ammonium group with substituents selected from the group consisting of alkyl groups having from 1 to 25 carbon atoms and aryl groups having from 1 to 20 carbon atoms.

4,552,828

DIRECT POSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSION

Ichizo Toya; Yuji Mihara, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 30, 1983, Ser. No. 527,922

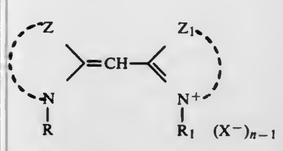
Claims priority, application Japan, Aug. 30, 1982, 57-150581

Int. Cl.⁴ G03C *1/40, 5/54, 1/16, 1/28*

U.S. Cl. 430—217 **30 Claims**

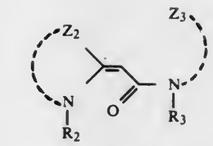
9. A diffusion transfer photographic material comprising a photosensitive unit comprising a layer of an internal latent image type silver halide emulsion associated with a non-diffusible dye image-providing material capable of releasing a diffusible dye in proportion to the amount of developed silver in said silver halide emulsion layer, and a dyeing layer for receiving said diffusible dye, and a processing composition unit for processing the photosensitive unit, said internal latent image type silver halide emulsion containing at least one sensitizing dye selected from the group consisting of dyes represented by general formula I and at least one compound selected from the group consisting of compounds represented by general formula II;

Formula I:



wherein Z and Z_1 each represents a non-metallic atomic group necessary for completing a benzoxazole nucleus, a benzothiazole nucleus, a benzoselenazole nucleus, a naphthooxazole nucleus, a naphthothiazole nucleus, a naphthoselenazole nucleus, a thiazole nucleus, a thiazoline nucleus, a pyridine nucleus, or a quinoline nucleus; R and R_1 each represents an alkyl group, a substituted alkyl group, or an allyl group; X^- represents an acid anion; and n represents 1 or 2:

Formula II:



wherein Z_2 represents a non-metallic atomic group necessary for completing a thiazole nucleus, a thiazoline nucleus, a selenazole nucleus, a selenazoline nucleus, or a pyrrolidine nucleus; Z_3 represents a non-metallic atomic group necessary for completing a rhodanine nucleus, a 2-thiohydantoin nucleus, a 2-thiooxazolidine-2,4-dione nucleus, or a 2-thioselenazolidine-2,4-dione nucleus; and R_2 and R_3 each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aromatic group, or an allyl group, said photographic material containing a fogging agent which acts during development or pre-bath processing to preferentially form surface development nuclei.

4,552,829

TRANSFER SHEET WITH COLOR PATTERN HAVING METALLIC LUSTER, AND METHOD OF MANUFACTURING SAID SHEET

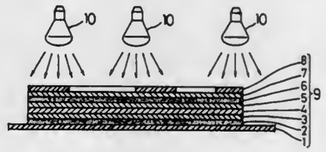
Jun Masaki, 9-11, Yamaashiya-cho, Ashiya-shi, Hyogo-ken, Japan

Division of Ser. No. 581,829, Feb. 21, 1984,. This application Sep. 14, 1984, Ser. No. 650,280

Claims priority, application Japan, Mar. 31, 1983, 58-57029; Oct. 31, 1983, 58-204588

Int. Cl.⁴ G03C *1/90;* **G03F** *7/10;* **C03C** *15/00;* **B44C** *1/22*

U.S. Cl. 430—258 **1 Claim**



1. A method of manufacturing a transfer sheet with a color pattern having metallic luster comprising the steps of:

(I) forming a mold-removing film layer on one side of a transparent or semi-transparent base film;

(II) forming a semi-aqueous transparent coloring agent layer on said mold-removing film layer;

(III) forming a vapor-coated aluminum layer on said transparent coloring agent layer;

(IV) forming a protective film layer with an oily ink on said vapor-coated aluminum layer;

(V) forming an adhesive layer with an oily paste on said oily protective film layer; and

(VI) placing an original film in which the desired pattern is negative on said sensitizer layer in close contact therewith, irradiating light rays onto said original film for printing, and removing said original film;

(VII) washing in water the base sheet obtained according to the steps (I) to (VI), thereby dissolving and removing unexposed portions of said aqueous sensitizer layer other than the exposed and solidified portions thereof;

(IX) washing in an oily solvent said base sheet, thereby dissolving and removing portions of said oily adhesive layer and said oily protective film layer other than those portions thereof located under the exposed and solidified portions of said sensitizer layer;

(X) removing the exposed and solidified portions of said sensitizer layer, and applying etching to said base sheet with the use of a suitable solvent, thereby dissolving and

removing portions of said vapor-coated aluminum layer other than those portions thereof located under the remaining portions of said oily adhesive layer and said oily protective film layer.

4,552,830

CARBONYLIC HALIDES AS ACTIVATORS FOR PHOTOTROPIC COMPOSITIONS

Edward J. Reardon, El Toro, and Melvin A. Lipson, Fullerton, both of Calif., assignors to Dynachem Corporation, Tustin, Calif.

Continuation of Ser. No. 317,954, Nov. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 195,168, Oct. 8, 1980, abandoned, which is a continuation of Ser. No. 7,095, Nov. 23, 1979, abandoned, which is a continuation of Ser. No. 904,144, May 9, 1978, abandoned. This application Nov. 25, 1983, Ser. No. 555,444

Int. Cl.⁴ G03C *1/68, 1/52*

U.S. Cl. 430—281 **63 Claims**

1. A phototropic photosensitive composition which comprises:

A. at least one compound which contains at least one polymerizable ethylenically unsaturated group of the structure

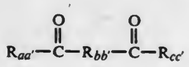


capable of curing, cross linking or polymerizing under the influence of free radicals,

B. a free radical producing photo initiator for said compound that is potentiated by actinic radiation,

C. a fluoran compound colorformer capable of becoming more intensely colored upon contact with a color activator, and

D. a latent activator, present in an effective amount to activate the colorformer under the influence of actinic radiation, comprising a proton donor and a halogenated diamide of a dicarboxylic acid, in which the said halogenated diamide of a dicarboxylic acid has the formula



where $R_{aa'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; $R_{bb'}$ is a covalent bond, alkylene or haloalkylene of one to 4 carbon atoms or the group



wherein A and B each independently is alkylene or haloalkylene of one to 4 carbon atoms; and $R_{cc'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; and wherein at least one of $R_{aa'}$, $R_{bb'}$, and $R_{cc'}$, is halogenated.

38. A phototropic photosensitive composition which comprises:

A. at least one compound which contains at least one polymerizable ethylenically unsaturated group of the structure

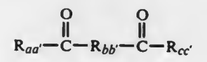


capable of curing, cross linking or polymerizing under the influence of free radicals,

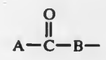
B. a free radical producing photo initiator for said compound that is potentiated by actinic radiation,

C. a colorformer capable of becoming more intensely colored upon contact with a color activator, said colorformer comprising the free base of a dyestuff whose halide salt is more intensely colored than the free base, and

D. at latent activator, present in an effective amount to activate the colorformer under the influence of actinic radiation comprising a proton donor and a halogenated diamide of a dicarboxylic acid. in which the said halogenated diamide of a dicarboxylic acid has the formula:



where $R_{aa'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; $R_{bb'}$ is a covalent bond, alkylene or haloalkylene of one to 4 carbon atoms or the group



where A and b each independently is alkylene or haloalkylene of one to 4 carbon atoms; and $R_{cc'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; and wherein at least one of $R_{aa'}$, $R_{bb'}$, and $R_{cc'}$ is haogenated.

4,552,831

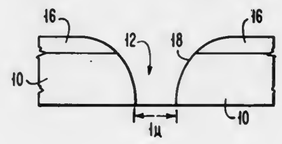
FABRICATION METHOD FOR CONTROLLED VIA HOLE PROCESS

Cheng-Yih Liu, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1984, Ser. No. 576,991

Int. Cl.⁴ G03C *5/00;* **B05D** *3/06*

U.S. Cl. 430—296 **7 Claims**



1. A method for forming via holes having a rounded sidewall profile comprising the steps of:

providing a layer of organic positive photoresist on the insulation layer,

exposing said photoresist layer to a formic gas plasma,

bombarding the surface of said photoresist layer with ions and electrons in a high voltage biased environment in which said photoresist layer is capacitively coupled whereby the solubility of the upper portion of said photoresist layer in a developer solution is increased,

imagewise exposing said photoresist layer to UV light, and developing said photoresist layer.

4,552,832

SHEAR FOIL HAVING PROTRUSIONS ON ITS SKIN-CONTACTING SURFACE THEREOF

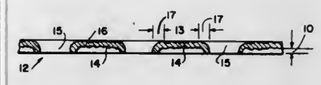
Friedrich Blume, Schwalbach, and Lutz Volgtmann, Ober-Mörlen, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,909

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208081

Int. Cl.⁴ G03C *5/00;* **B26B** *19/04*

U.S. Cl. 430—320 **9 Claims**



1. A method for producing a shear element having protrusions on the skin-contacting surface thereof, comprising the steps of:

coating an electrically conductive surface with a photoresist;

exposing said photoresist to a hole pattern and developing said photoresist to produce a grid pattern wherein said electrically conductive surface is exposed, said grid pattern defining hole areas wherein said electrically conductive surface is covered by islands of photoresist of a predetermined thickness;

introducing irregularities into the surface elevation of said exposed grid, said surface irregularities being of lesser dimension than the thickness of said photoresist islands;

depositing an intermediate foil onto said exposed grid overlying said introduced surface irregularities, said intermediate foil being of sufficient thickness to extend above said photoresist islands when deposited;

depositing a shear foil overlying said intermediate foil; and removing said shear foil from said intermediate foil;

whereby there is produced a shear foil having protrusions on the skin-contacting surface thereof but having relatively smooth surfaces in the regions surrounding shear openings which are disposed on said shear foil in correspondence with the positioning of said photoresist islands.

4,552,833

RADIATION SENSITIVE AND OXYGEN PLASMA DEVELOPABLE RESIST

Hiroshi Ito; Scott A. MacDonald; Robert D. Miller, and Carlton G. Willson, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1984, Ser. No. 609,690

Int. Cl.⁴ G03C *5/16, 1/72*

U.S. Cl. 430—325 **14 Claims**

1. A process for generating a negative tone resist image comprising the steps of:

(1) coating a substrate with a film of a polymer that contains a masked reactive functionality;

(2) imagewise exposing said film to radiation under conditions that cause unmasking of the reactive functionality in the exposed regions of the film;

(3) treating the exposed film with a reactive organometallic reagent; and

(4) developing the relief image by treatment with an oxygen plasma.

2. A process as claimed in claim **1** wherein the masking group is removed directly by exposure to radiation.

3. A process as claimed in claim **1** wherein the polymer contains an acid labile group pendant from the polymer backbone, and the film contains a monomeric species that liberates acid upon exposure.

4,552,834

ENHANCED BLEACHING OF PHOTOGRAPHIC ELEMENTS CONTAINING SILVER HALIDE AND ADSORBED DYE

Philip T. S. Lau, and Gary M. Einhaus, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

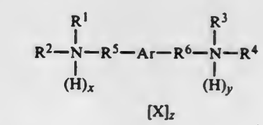
Continuation-in-part of Ser. No. 638,005, Aug. 6, 1984, abandoned. This application Mar. 28, 1985, Ser. No. 717,256

Int. Cl.⁴ G03C *7/00, 5/44, 5/42*

U.S. Cl. 430—393 **32 Claims**

1. In a process of bleaching from a photographic element silver produced by development of silver halide having a dye adsorbed to its surface comprising employing a ferric complex of a polycarboxylic acid as a bleaching agent,

the improvement comprising bleaching in the presence of a bleach enhancing amount of a compound of the formula:



wherein

Ar is an aromatic linking group,

R^1, R^2, R^3, and R^4 are hydroxy substituted lower alkyl groups,

R^5 and R^6 are lower alkanediyl groups,

X is a charge balancing counter ion,

x and y are 0 or 1, and

z is 0, 1, or 2.

4,552,835

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT HAVING A LIGHT INSENSITIVE UPPER LAYER

Taku Nakamura, and Yasuo Kasama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1984, Ser. No. 620,773

Claims priority, application Japan, Jun. 17, 1983, 58-108688

Int. Cl.⁴ G03C *1/94*

U.S. Cl. 430—523 **14 Claims**

1. A silver halide photographic light-sensitive element for use in a photomechanical process comprising a support, at least one light-sensitive silver halide emulsion layer on the support, and at least one light-insensitive upper layer on the light-sensitive silver halide emulsion layer, wherein at least one light-insensitive upper layer contains a binder, a gelation hardening agent and a polymer comprising:

(a) at least 10 mol% of a monomer unit containing at least one group having an electric change, wherein said group is selected from groups which contain an anionic charge, a cationic charge and an amphoteric charge; and

(b) at least 0.1 mol% of a monomer unit having a functional group capable of cross-linking through a gelatin hardening agent with a like functional group of another polymer chain of the same type or with gelatin, wherein said functional group is a nucleophillic group,

wherein the light-insensitive upper layer contains the polymer in an amount of 3 to 100% by weight based on the weight of the binder.

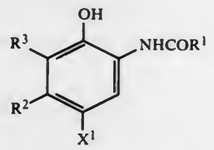
4,552,836

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

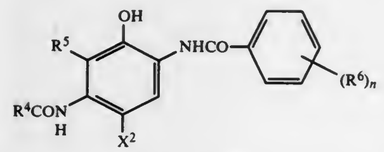
Osami Tanabe; Kozo Aoki; Akira Ogawa, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1984, Ser. No. 601,886
Claims priority, application Japan, Apr. 21, 1983, 58-70604
Int. Cl.⁴ G03C *7/26*
U.S. Cl. 430—549 **10 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a cyan dye forming coupler represented by the following general formula (I) and a cyan dye forming coupler represented by the following general formula (II):



(I)



(II)

wherein R^1 and R^4 each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group, R^2, R^3 and R^5 each represents a hydrogen atom, a halogen atom or a substituted or unsubstituted alkyl or aryl group, R^6 represents a group with which a benzene ring can be substituted, X^1 and X^2 each represents a group which can be released upon an oxidative coupling reaction with a developing agent, R^4 and R^5 may combine together to form a 5-membered or 6-membered ring, and n represents an integer of 1 to 5.

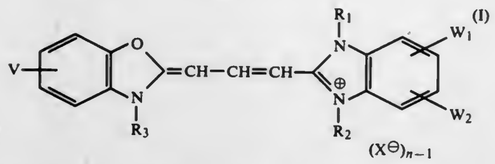
4,552,837

SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Masaki Okazaki; Osami Tanabe; Satoshi Nagaoka; Yuji Mihara, and Toshinao Ukai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

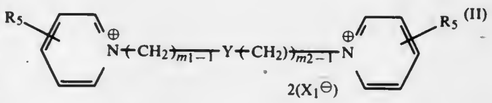
Filed Apr. 11, 1984, Ser. No. 598,945
Claims priority, application Japan, Apr. 11, 1983, 58-63408
Int. Cl.⁴ G03C *7/26, 1/02*
U.S. Cl. 430—550 **17 Claims**

1. A silver halide color photographic emulsion containing at least one sensitizing dye represented by formula (I), and at least one compound represented by formula (II), wherein formula (I) is



(I)

wherein V is a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a phenyl group, a carboxyl group, a hydroxyl group, an alkoxycarbonyl group or forms a condensed benzene ring; W_1 and W_2 may be the same or different and are each a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a substituted carbamoyl group, a sulfamoyl group, a substituted sulfamoyl group, a cyano group, a trifluoromethyl group, a hydroxyl group, or an alkylsulfonyl group; R_1, R_2 and R_3 may be the same or different and are each an alkyl group or a substituted alkyl group, provided that at least one of R_2 and R_3 is a substituted alkyl group containing a sulfo group or a carboxyl group; X is an acid anion; and n is 1 or 2; and wherein formula (II) is



(II)

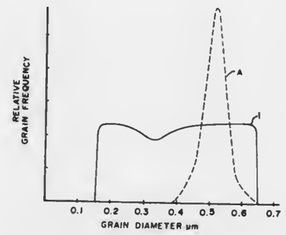
wherein R_5 is a hydrogen atom, a halogen atom, an alkyl group, an alkoxycarbonyl group, an acyloxy group, an alkoxyl group, an amino group, a substituted amino group, an acyl amide group, an alkane sulfonyl amide group or a carbamoyl group; Y is alkylene, arylene, aralkylene, —COO—, or —$COOY_1$—OCO—, where Y_1 contains from 1 to 18 carbon atoms and is alkylene, arylene, or aralkylene; X_1 is an anion; and m_1 and m_2 may be the same or different and are each an integer of from 1 to 19, and wherein said emulsion contains a color forming material.

4,552,838

PROCESSES FOR THE PREPARATION OF SILVER HALIDE EMULSIONS OF CONTROLLED GRAIN SIZE DISTRIBUTION, EMULSIONS PRODUCED THEREBY, AND PHOTOGRAPHIC ELEMENTS

Jong-Shinn Wey, Penfield; Thomas E. Whiteley, Rochester, and James M. Hamlin, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1984, Ser. No. 611,774
Int. Cl.⁴ G03C *1/02, 1/00*
U.S. Cl. 430—569 **35 Claims**



1. In a process for the preparation of a photographic silver halide emulsion comprised of concurrently introducing silver and halide ions into a reaction vessel containing a dispersing medium to produce radiation sensitive silver halide grains,

the improvement comprising producing a predetermined size distribution of the radiation sensitive silver halide grains, including selection of maximum and minimum grain diameters and selection of the distribution of grains of maximum, minimum, and intervening diameters, by the steps of

introducing into the reaction vessel a silver halide emulsion consisting essentially of a dispersing medium and stable silver halide grains forming an initial population of host grains capable of acting as deposition sites for the silver and halide ions,

introducing into the reaction vessel the silver and halide ions without producing additional stable silver halide grains, thereby depositing silver halide onto the host grains in the reaction vessel to increase their diameters,

continuing and regulating introduction into the reaction vessel of the silver halide emulsion consisting essentially of the dispersing medium and the stable silver halide grains to provide additional host grains during the course of introducing the silver and halide ions and thereby obtaining the predetermined size distribution of the radiation-sensitive silver halide grains in the photographic emulsion,

controlling the minimum diameter of the radiation sensitive silver halide grains in the emulsion by controlling the diameter of the silver halide host grains introduced, and

terminating silver halide grain growth when deposition onto the initial population of host grains has produced radiation sensitive silver halide grains of the desired maximum diameter.

4,552,839

DETERMINATION OF ANALYTES IN PARTICLE-CONTAINING MEDIUM

Dennis R. Gould, El Granada, and Robert F. Zuk, Menlo Park, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 1, 1983, Ser. No. 519,300
Int. Cl.⁴ G01N *33/54, 1/48, 33/52*
U.S. Cl. 435—7 **9 Claims**

1. A method for detecting the presence of a member of a specific binding pair ("sbp member") in a liquid assay medium, said specific binding pair consisting of ligand and homologous receptor, where said method involves particles to which are bound at least one member of a specific binding pair, a solid bibulous member and a signal-producing system which involves at least one label which is bound to said particles or an sbp member,

said method comprising:

combining in an aqueous assay medium, said sample and at least one of said particles and labeled sbp members, with the proviso that particles are added when said sample lacks particles having an sbp member; under conditions where particles only within a predetermined size, range and charge will concentrate in an area on said bibulous member adjacent the air/liquid interface, when said bibulous member is contacted with said assay medium;

contacting said bibulous member with said assay medium, whereby said assay medium is wicked past said area and particles within said predetermined size and charge concentrate at a small site in said area; and

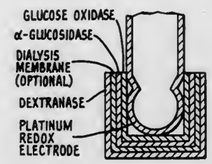
detecting the signal as a result of said signal-producing system, wherein said signal is related to the amount of label in said area and the amount of label in said area is related to the amount of said sbp member in said sample.

4,552,840

ENZYME ELECTRODE AND METHOD FOR DEXTRAN ANALYSIS

Richard Riffer, Crockett, Calif., assignor to California and Hawaiian Sugar Company, San Francisco, Calif.

Filed Dec. 2, 1982, Ser. No. 433,255
Int. Cl.⁴ C12Q *1/54, 1/34, 1/30, 1/28;* **C12N** *11/18, 11/12, 11/06;* **C12M** *1/40, 1/34*
U.S. Cl. 435—14 **12 Claims**



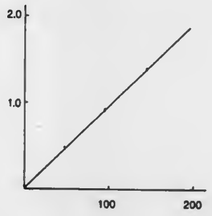
1. An electrode for the potentiometric determination of dextran in a solution comprising a platinum redox electrode, a first cellulose absorbent sheath surrounding the electrode with immobilized glucose oxidase, a second absorbent sheath thereover with immobilized enzymes selected from the group consistinng of α-glucosidase and isomaltase, with the provision that a means for excluding compounds having a molecular weight of 14,000 or greater surrounding said second sheath is included when α-glucosidase is selected and when the solution contains starch and an outer absorbent sheath with immobilized dextranase surrounding said means wherein the amounts of glucose oxidase, α-glucosidase or isomaltase and dextranase are sufficient to determine the amount of dextran.

4,552,841

N-ACETYL-β-D-GLUCOSAMINIDES FOR DETERMINING N-ACETYL-β-D-GLUCOSAMINIDASE ACTIVITY

Yasunao Ogawa; Akira Noto, both of Osaka; Sachio Mori, Hyogo, and Mitsuru Yoshioka, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 357,317, Mar. 11, 1982, Pat. No. 4,433,139.
This application Apr. 21, 1983, Ser. No. 487,703
Int. Cl.⁴ G01N *31/14*
U.S. Cl. 435—18 **1 Claim**



1. A kit for diagnostic aid consisting of the following articles

(i) a substrate reagent which is a lyophilized product of sodio-m-cresolsulfonphthaleinyl N-acetyl-β-D-glucosaminide;

(ii) a buffer agent selected from the group consisting of citrate buffer, borax-citrate buffer, and citrate acid-phosphate buffer;

(iii) an alkaline agent selected from the group consisting of sodium carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, and borate-sodium carbonate.

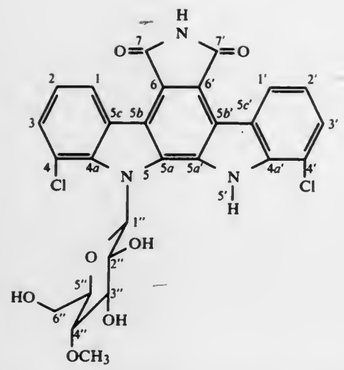
4,552,842

PROCESS FOR PRODUCING REBECCAMYCIN

Donald E. Nettleton, Jr., Jordan; James A. Bush, Fayetteville; William T. Bradner, Manlius, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 461,817, Jan. 28, 1983, Pat. No. 4,487,925.
This application Apr. 13, 1984, Ser. No. 599,918
Int. Cl.⁴ C12P *19/60;* **C12R** *1/365*
U.S. Cl. 435—75 **2 Claims**

1. A process for producing rebeccamycin having the formula



which comprises cultivating *Nocardia aerocolonigenes* ATCC 39243 or a rebeccamycin-producing mutant thereof in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions until a substantial amount of rebeccamycin is produced by said organism in said culture medium.

4,552,843

PROCESS FOR PRODUCING AN ACIDIC POLYCYCLIC ETHER ANTIBIOTIC BY CULTIVATION OF A NOVEL STRAIN OF *STREPTOMYCES ENDUS* SUBSPECIES *AUREUS*

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Hiroshi Maeda, Aichi, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

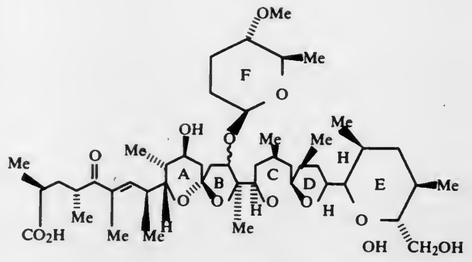
Filed Feb. 17, 1984, Ser. No. 581,384

Int. Cl.⁴ C12P *19/62, 17/18;* **C12N** *1/20;* **C12R** *1/465*

U.S. Cl. 435—76 **4 Claims**

1. A process for producing the antibiotic of the formula:

I



wherein Me is methyl; or a pharmaceutically acceptable cationic salt thereof, which comprises cultivating *Streptomyces endus* subsp. *aureus,* ATCC-39574, having the ability to produce said antibiotic or a pharmaceutically acceptable cationic salt thereof, in an aqueous culture medium, containing an assimilable source of carbon, nitrogen and inorganic salts, under submerged, aerobic fermentation conditions, until a recoverable amount of said antibiotic, or a pharmaceutically acceptable cationic salt thereof, is obtained, and recovering said antibiotic or pharmaceutically acceptable salt thereof.

3. A biologically pure culture of a strain of the species *Streptomyces endus* subsp. *aureus,* having the identifying characteristics of ATCC-39574, said microorganism being capable of producing the antibiotic of the formula:

wherein Me is methyl; or a pharmaceutically acceptable cationic salt thereof, in recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts.

4,552,844

PLANT GROWTH MEDIUM

Nicholas P. Everett, El Sobrante, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 15, 1983, Ser. No. 504,355

Int. Cl.⁴ C12N *5/00, 5/02;* **C12P** *21/00;* **G01N** *33/54*

U.S. Cl. 435—240 **6 Claims**

1. The method of screening sunflower seed lines for high oil content comprising:

(a) providing sunflower tissue from seed lines whose oil content is to be screened;

(b) providing a plant growth medium comprising:

(1) minimal salts;

(2) vitamins comprising;

inositol

thiamine HCL

nicotinic acid

pyridoxine HCl

(3) plant hormones;

(4) sucrose; and

(5) coconut water,

said medium being a sunflower cell suspension culture medium;

(c) culturing said tissue in said cell suspension culture medium for a period sufficient to obtain good cell growth; and

(d) selecting as high oil content producers those sunflower seed lines that show good cell growth wherein good cell growth is defined as about a five-fold increase in the packed cell volume of said sunflower tissue after a two week growth period.

4,552,845

METHOD FOR SEPARATING LYSOZYME FROM EGG-WHITE

Lorne S. Reid, 3304 W. Third Ave., Vancouver, British Columbia, Canada V6R 1L4

Filed Nov. 5, 1982, Ser. No. 439,408

Int. Cl.⁴ C12N *9/36;* **C07G** *7/00;* **C08L** *5/00*

U.S. Cl. 435—206 **32 Claims**

1. A method for separating lysozyme from egg-white which has a lysozyme fraction and an albumin fraction, without destroying the commercial utility of the lysozyme fraction or the albumin fraction, comprising the steps of:

(a) preferentially, reversibly binding the lysozyme fraction to an affinity resin at about the natural pH of the egg-white by contacting the egg-white with the resin;

(b) separating the albumin fraction from the resin to leave the lysozyme fraction bound to the resin and to obtain an albumin fraction of commercial value; and

(c) eluting the bound lysozyme from the resin to obtain a lysozyme solution and a reusable resin.

4,552,846

ASPARTASE FROM A *BACILLUS SUBTILIS*

Yoshihisa Tsuda, Wilmette, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 19, 1984, Ser. No. 572,108

Int. Cl.⁴ C12N *9/88, 1/20;* **C12R** *1/125*

U.S. Cl. 435—232 **6 Claims**

1. A biologically pure culture of a strain of *Bacillus subtilis* NRRL B-15536, said culture being capable of producing in a nutrient medium containing a sugar a recoverable amount of an aspartase.

4,552,847

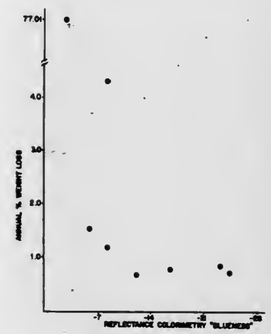
VISUAL QUALITY CONTROL METHOD FOR BARRIER TREATED CONTAINERS

Bernard D. Bauman, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 28, 1983, Ser. No. 536,602

Int. Cl.⁴ G01N *15/08, 33/44*

U.S. Cl. 136—5 **10 Claims**



1. A method for qualitatively distinguishing between a solid surface or object, which has been treated by exposure to fluorine gas, to have a measurably reduced level of permeability to a nonpolar fluid relative to a surface or object not treated with fluorine, comprising the steps of:

(a) exposing the surface or object being tested to a dilute solution of crystal violet for a fixed period of time,

(b) separating the surface or object being tested from the crystal violet solution and

(c) observing visually or instrumentally the extent to which the crystal violet has adhered to or penetrated into the surface or object, whereby uptake of the crystal violet indicates the measurably reduced level of permeability.

4,552,848

MACROMOLECULE DETERMINATION BY PHYSICAL DEVELOPMENT

Joseph S. Yudelson, and Thomas M. Johnson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 16, 1983, Ser. No. 495,216

Int. Cl.⁴ G01N *33/68*

U.S. Cl. 436—86 **10 Claims**

1. A method for determining macromolecules in polyacrylamide gels, said method comprising the steps of

(a) forming a latent stain image by nucleating the macromolecules in the gel with a palladium tetramine salt and

(b) developing the latent stain image by treating the gel with a physical developer solution comprising dimethylamine borane and a member selected from the group consisting of a transition metal salt and a tetrazolium salt.

4,552,849

METHOD FOR DETERMINATION OF FORMALDEHYDE

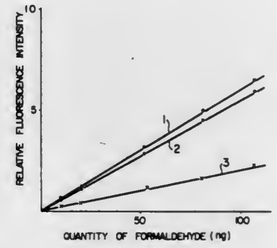
Motoo Nakajima, Noda, Japan, assignor to Kikkoman Corporation, Japan

Filed Jul. 18, 1984, Ser. No. 632,000

Claims priority, application Japan, Jul. 26, 1983, 58-135168

Int. Cl.⁴ G01N *21/64, 21/77*

U.S. Cl. 436—130 **4 Claims**



1. In a method of formaldehyde determination by measuring the fluorescence of a fluorescent substance formed by the reaction of a formaldehyde-containing solution with a fluorescence reagent capable of forming said fluorescent substance by the reaction with formaldehyde, the improvement which comprises using as said fluorescence reagent a compound represented by the general formula $CH_3C(NH_2)=CHCO_2R$, wherein R represents an alkyl group having 1 to 4 carbon atoms.

4,552,850

GLASSES AND METHODS FOR MAKING THEM

Sally Partington, Bradfield, Nr. Manningtree, and Steven F. Carter, Ipswich, both of England, assignors to British Telecommunications, London, England

Filed Dec. 2, 1982, Ser. No. 446,401

Claims priority, application United Kingdom, Dec. 3, 1981, 8136502

Int. Cl.⁴ C03C *3/10*

U.S. Cl. 501—37 **13 Claims**

1. A glass suitable for use in the core of an optical fibre and having a composition such that it is not subject to devitrification or phase separation, which glass

has a refractive index in the range from 1.540 to 1.610 and

comprises the five components Na_2O, B_2O_3, BaO, SiO_2, and ZrO_2 and not more than 5 weight percent of any further components taken together relative to the said five components taken together,

the molar ratio $Na_2O:B_2O_3$ being in the range from 1.1:1 to 1.5:1,

the proportion of BaO being in the range from 2 to 12 mole percent relative to the said five components taken together,

the proportion of SiO_2 being in the range from 40 to 63 mole percent relative to the said five components taken together,

the proportion of ZrO_2 being in the range from 1.5 to 15 mole percent relative to the said five components taken together, and

the proportion of SiO_2 and ZrO_2 taken together being not more than 65 mole percent relative to the said five components taken together.

4,552,851

FORMATION OF YTTRIUM ALUMINATE AS SINTERING AID FOR SILICON NITRIDE BODIES

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 2, 1984, Ser. No. 606,047
Int. Cl.[4] C04B 35/58
U.S. Cl. 501—98 6 Claims

1. In a process for producing silicon nitride bodies wherein a sintering aid is used, the improvement comprising forming said sintering aid by a process comprising:

(a) forming an admixture of the oxides of yttrium and aluminum in a weight ratio of yttrium to aluminum of from about 10 to 1 to about 1 to 10 and

(b) heating said admixture at a sufficient temperature and for a sufficient time to form at least some of a yttrium aluminum compound having an atomic ratio of yttrium to aluminum of either about 2 to 1 or about 3 to 5.

4,552,852

ALUMINA CERAMIC COMPRISING A SILICEOUS BINDER AND AT LEAST ONE OF ZIRCONIA AND HAFNIA

William R. Manning, Richmond, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jun. 27, 1984, Ser. No. 625,095
Int. Cl.[4] C04B 35/10, 35/48
U.S. Cl. 501—105 12 Claims

1. A ceramic composed of from 1 to 15 percent of glass and 99 and 85 percent of a mixture of particulate Al_2O_3 and at least one other particulate material selected from the group consisting of ZrO_2, HfO_2, ZrO_2—HfO_2 solid solutions and Y_2O_3, the particulates all being finer than 15 microns in ultimate particle size, ZrO_2, HfO_2 and Y_2O_3 constituting from 15 to 25 percent based upon the weight of ZrO_2, HfO_2, Y_2O_3 and Al_2O_3 in the ceramic, Y_2O_3 constituting up to 12 percent based upon the weight of the ZrO_2, HfO_2 and Y_2O_3, and said glass constituting a vitreous phase bonding the mixture of particulates into a dense, gas impervious structure, and being a calcium magnesium silicate glass containing from 45 to 80 percent of SiO_2, from 8 to 55 percent of CaO and MgO, and not more than 15 percent of Al_2O_3.

8. A method for producing a ceramic, said method comprising pressing a batch into a desired shape, firing the shape to a temperature from about 1350° to about 1650° to mature the ceramic, cooling the ceramic, and refiring the ceramic to a temperature of at least about 870° but not so high that the ceramic is subject to microcracking upon standing under ambient temperatures, said batch being one which, after firing of the shape to about 1350° to about 1650° to maturity, produces a ceramic composed of from 1 to 15 percent of glass and 99 to 85 percent of a mixture of particulate Al_2O_3 and at least one other particulate material selected from the group consisting of ZrO_2, HfO_2, ZrO_2—HfO_2 solid solutions and Y_2O_3, the particulates all being finer than 15 microns in ultimate particle size, ZrO_2, HfO_2 and Y_2O_3 constituting from 15 to 25 percent based upon the weight of ZrO_2, HfO_2, Y_2O_3 and Al_2O_3 in the ceramic, Y_2O_3 constituting up to 12 percent based upon the weight of the ZrO_2, HfO_2 and Y_2O_3, and said glass being a calcium magnesium silicate glass containing from 45 to 80 percent of SiO_2, from 8 to 55 percent of CaO and MgO, and not more than 15 percent of Al_2O_3.

9. A ceramic produced by the method claimed in claim 8, and which is free of microcracks that can be detected by a dye test.

4,552,853

DIELECTRIC CERAMIC COMPOSITION

Kenji Kawabata, and Yukio Sakabe, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 11, 1984, Ser. No. 629,715
Claims priority, application Japan, Jul. 18, 1983, 58-131748
Int. Cl.[4] C04B 35/36
U.S. Cl. 501—134 6 Claims

1. A dielectric ceramic composition comprising, in percent by weight, 32 to 47% $SrTiO_3$, 26.5 to 46% $PbTiO_3$, 8 to 16% $CaTiO_3$, 5 to 16% Bi_2O_3, 3 to 10% TiO_2, 1 to 3.8% ZnO and 1 to 3.8% SiO_2.

4,552,854

REMOVAL OF ARSENIC COMPOUNDS FROM SPENT CATECHOLATED POLYMER

Richard H. Fish, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 597,627, Apr. 6, 1984, Pat. No. 4,518,490.
This application Feb. 8, 1985, Ser. No. 699,886
Int. Cl.[4] B01J 31/40
U.S. Cl. 502—26 10 Claims

1. Process of removal of arsenic compounds which are bound to catechol ligands anchored to a polystyrene-divinylbenzene polymer thereby forming spent polymer comprising:

(a) treating said arsenic-bound-to catecholated polymer with an aqueous solution of at least one carbonate or bicarbonate selected from the group consisting of ammonium, alkali and alkaline earth metals at a temperature in the range of about 20° to 100° C., at substantially atmospheric pressure; and,

(b) separating the solids and liquids from each other.

4,552,855

METAL ZEOLITE CATALYST PREPARATION

Geoffrey A. Ozin, 63 Gormley Ave., Toronto, Canada (M4V 1Y9); Linda F. Nazar, 378 Delaware Ave., Toronto, Canada, and Francois Hugues, 2 Avenue Felix Faure, Apt. 2213, Nanterre, France (9, 92000)

Continuation of Ser. No. 454,886, Dec. 30, 1982, abandoned.
This application Nov. 30, 1983, Ser. No. 556,002
Int. Cl.[4] B01J 29/10
U.S. Cl. 502—74 24 Claims

1. A zeolite-metal catalyst having an effective amount of catalytically active metal in the form of essentially zero-valent clusters of metal atoms, at least 80% of the metal clusters within the zeolite cavity being of a size within about a five Angstrom range.

10. A process of preparing zeolite-metal catalysts having a substantial amount of catalytically active metal deposited in the cavities of the zeolite in zero-valent, small cluster form, which comprises:

vaporizing the metal in the vicinity of an organic liquid solvent which is capable of dissolving the catalytic metal;

dissolving the metal as a labile solvated zero-valent complex in the liquid solvent to form a liquid mixture of solvent and solvated zero-valent metal complex dissolved therein;

contacting said liquid mixture with a solid zeolite crystalline material so as to cause diffusion of the solvated metal complex into the cavities of the zeolite;

removing excess liquid solvent or solution;

and warming the zeolite so as to dissociate the labile solvated metal complex in the cavities and deposit zero-valent small cluster metal therein.

4,552,856

ZEOLITE CATALYST AND PREPARATION THEREOF

Samuel J. Tauster, Englishtown; David E. W. Vaughan, Flemington, and John J. Steger, Pittstown, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1983, Ser. No. 550,898
Int. Cl.[4] B01J 29/12, 29/22
U.S. Cl. 502—74 8 Claims

1. A process for preparing a catalyst which comprises substantially eliminating moisture from a zeolite L by heating the zeolite, contacting the heated zeolite L with a solution containing at least one Group VIII noble metal, separating a noble metal loaded zeolite from the solution and, calcining the loaded zeolite L at a temperature less than about 400° C.

2. The process of claim 1 wherein the zeolite L is immersed in the noble metal solution for less than about 2 minutes.

3. The process of claim 2 wherein the noble metal is platinum.

4,552,857

CATHODE COATING WITH HYDROGEN-EVOLUTION CATALYST AND SEMI-CONDUCTING POLYMER

Michael Katz, Geneva; Jean Hinden, Chambesy, and Jurgen Gauger, Thonex, all of Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Apr. 5, 1982, Ser. No. 365,185
Claims priority, application United Kingdom, Apr. 9, 1981, 8111256
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.[4] H01M 4/88; B05D 5/12
U.S. Cl. 502—101 11 Claims

1. A method of manufacturing a cathode comprising a catalytic coating for electrolytically evolving hydrogen formed on an electrically conductive electrode support, characterized by the steps of:

(a) preparing a homogeneous coating solution containing on one hand a dissolved organic polymer precursor selected from the group consisting of: poly-p-phenylene, polyacrylonitrile, a prepolymer of polybenzimidazo-pyrrolone, and a prepolymer of an adamantane-based polybenzoxazole, and further containing on the other hand a dissolved inorganic precursor compound which can be thermally converted into a catalyst for evolving hydrogen;

(b) applying said homogeneous coating solution in successive layers to said conductive electrode support;

(c) drying each of said layers of the solution applied in step (b), thereby providing a coprecipitated intimate mixture of said catalyst precursor compound and said organic polymer precursor; and

(d) subjecting each dried layer obtained in step (c) to heat treatment comprising at least one stage carried out in air at a temperature in the range from 200° C. to about 600° C., during 5 to 120 minutes, so as to thermally convert said organic polymer precursor to a semi-conducting insoluble polymer and said inorganic precursor compound to said catalyst for evolving hydrogen;

thereby providing the cathode with a consolidated adherent catalytic coating in which said catalyst is finely dispersed and uniformly distributed throughout a matrix consisting of said semi-conducting insoluble polymer formed therewith in situ on said conductive electrode support.

4,552,858

CATALYST COMPONENT FOR POLYMERIZATION OF OLEFINS

Masafumi Imai; Tadashi Yamamoto; Hiroyuki Furuhashi; Hiroshi Ueno, and Naomi Inaba, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,022
Claims priority, application Japan, Aug. 30, 1983, 58-157092
Int. Cl.[4] C08F 4/64
U.S. Cl. 502—112 22 Claims

1. A catalyst component for the polymerization of olefins obtained by (1) reacting (A) Mg(OR)(OR') with (B) a silicon compound having at least one silicon-hydrogen bond, (2) contacting the reaction product with (C) an electron donor compound, (3) contacting the resulting contact product two or more times with a titanium halide, and (4) between at least one of the multiple titanium halide contacts, contacting the titanium halide contacted solid with a halide of an element selected from the group consisting of elements from Groups IIIa, IVa and Va of the Periodic Table, wherein R and R' are radicals selected from alkyl, alkenyl, cycloalkyl, aryl and aralkyl radicals and R and R' may be the same or different.

2. The catalyst component of claim 1 wherein the reaction product obtained from step (3) is contacted with the titanium halide two times and the metal halide employed between the two titanium halide contact steps is selected from the group consisting of BCl_3, BBr_3, BI_3, $AlCl_3$, $AlBr_3$, AlI_3, $GaCl_3$, $GaBr_3$, $InCl_3$, $TiCl_3$, $SiCl_4$, $SnCl_4$, $SbCl_5$, and SbF_5.

4,552,859

OLEFIN POLYMERIZATION CATALYST AND PROCESS

Elliot I. Band, Dobbs Ferry, and Michael J. Breen, Campbell Hall, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 6, 1984, Ser. No. 637,949
Int. Cl.[4] C08F 4/64
U.S. Cl. 502—127 11 Claims

1. A catalyst for the polymerization of alpha olefins of the formula $CH_2=CHR$, where R is an alkyl radical of 1–6 carbon atoms and mixtures thereof with ethylene, comprising:

(a) a component containing titanium on a magnesium halide support which is obtained by copulverizing magnesium halide with one or more electron donors to form a copulverized product followed by reacting the copulverized product with a liquid titanium compound containing halogen; and

(b) an organoaluminum component comprising a trialkylaluminum compound in admixture with an effective amount of a dialkylaluminoxane component to give improved performance characteristics to the catalyst as compared to when the component consists of trialkylaluminum.

4. A catalyst as claimed in claim 1 wherein a phenol electron donor, polysiloxane, titanium tetrahalide and a carboxylic ester electron donor are copulverized.

4,552,860

CATALYST FOR THE PREPARATION OF UNSATURATED ALDEHYDES AND CARBOXYLIC ACIDS

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 378,294, May 14, 1982, Pat. No. 4,499,301, which is a continuation of Ser. No. 31,819, Apr. 20, 1979, abandoned. This application Sep. 21, 1984, Ser. No. 653,817
Int. Cl.[4] B01J 23/44, 23/48, 23/72, 21/06
U.S. Cl. 502—242 19 Claims

1. A method for preparing a catalyst useful for the oxidation of propylene to acrolein, acrylic acid, and mixtures thereof wherein the catalyst consists essentially of a metal selected from the group consisting of palladium, gold, silver and copper and a solid acid promoter consisting of a mixture of molybde-

num trioxide and titanium dioxide supported on a carrier which comprises:

Step (a) treating a carrier with a solution containing soluble salts of the solid acid promoter and heating to dryness;

Step (b) calcining the treated carrier in air at a temperature of about 400° C. to 600° C.;

Step (c) treating the calcined carrier with a solution of a compound of said metal and heating to dryness; and

Step (d) contacting the treated carrier with a reducing agent to reduce said metal to the metallic state under conditions whereby the solid acid is not reduced to the metallic state.

4,552,861

PROCESS FOR MANUFACTURING CATALYSTS CONTAINING COPPER, ZINC, ALUMINUM AND AT LEAST ONE METAL FROM THE GROUP FORMED OF RARE EARTHS AND ZIRCONIUM AND THE RESULTANT CATALYSTS FOR REACTIONS INVOLVING A SYNTHESIS GAS

Philippe Courty, Houilles; Daniel Durand, Rueil Malmaison; Christine Travers, Rueil Malmaison; Patrick Chaumette, Rueil Malmaison, and Alain Forestiere, Vernaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 1, 1985, Ser. No. 707,128

Claims priority, application France, Mar. 2, 1984, 84 03325

Int. Cl.[4] B01J *21/04, 23/06, 23/10, 23/72*

U.S. Cl. 502—302 **22 Claims**

1. A process for manufacturing a catalyst comprising at least, as four essential elements: copper, zinc, aluminum and at least one metal selected from the group consisting of rare earths and zirconium, characterized by the following steps of:

(a) contacting a solution of at least one ammonium and/or alkali metal compound, selected from the group consisting of hydrogen carbonates, carbonates and hydroxides with an essentially homogeneous solution containing, as salts or soluble complexes, the assembly of copper, zinc and aluminum metals, said contact taking place at a pH ranging from 6.3 to 7.3 so as to form a precipitate, at least partly crystallized, of copper, zinc and aluminum metals, said precipitate being at least partly formed of hydroxycarbonate,

(b) washing the precipitate obtained in step (a) with water, the obtained product having an alkali metal content reduced to less than about 0.06% by weight with respect to the total metals weight of the precipitate,

(c) contacting a solution containing an ammonium compound selected from the group consisting of the hydrogen carbonate, carbonate and hydroxide, with a solution of a soluble salt and/or complex of at least one metal selected from the group of the rare earths and zirconium, said contact taking place at a pH from 6 to 8, so as to form a precipitate of at least one compound of metal from the group formed of rare earths and zirconium,

(d) washing the precipitate obtained in step (c) with water so as to reduce its nitrogen content to less than 3% by weight with respect to the metals weight,

(e) admixing the precipitate, at least partly crystallized, obtained in step b with the precipitate obtained in step (d), so as to form a substantially homogeneous dispersion,

(f) drying and thermally activating the substantially homogeneous dispersion obtained in step (e).

4,552,862

STABILIZED HYDROGENATION CATALYST AND METHOD OF FORMING THE CATALYST

John M. Larkin, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 7, 1983, Ser. No. 473,168

Int. Cl.[4] B01J *23/14, 23/72, 23/80, 23/86*

U.S. Cl. 502—306 **5 Claims**

1. A method of forming a pelletized catalyst having improved physical stability during a hydrogenation process comprising the steps of mixing an effective amount of a low melting point metal or a hydrogen reducible compound of said low melting point metal selected from the group consisting of cadmium and tin with an effective catalytic hydrogenation material comprising cobalt, copper, and chromium, compressing the mixture to form at least one pellet, said pellet being too large to pass through a No. 8 screen, heating the pellet in a gas comprising hydrogen at a temperature above the melting point of said low melting point metal, and cooling the pellet.

4,552,863

PROCESS FOR THE PRODUCTION OF ACTIVATED CARBON USING WOOD AS A CARBON SOURCE

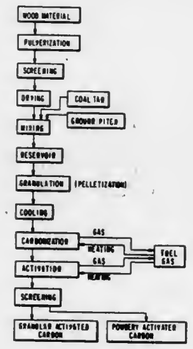
Eiichi Fujimori, Hiroshima, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,254

Claims priority, application Japan, Mar. 10, 1983, 58-38356

Int. Cl.[4] C01B *31/10;* **B01J** *20/20*

U.S. Cl. 502—418 **10 Claims**



1. A process for producing a granular activated carbon using wood as a carbon source, comprising the steps of:

pulverizing wood to produce a wood powder in a fine granular form;

drying the wood powder to produce a dry wood powder having a water content of not more than 10% by weight;

adding a binder mixture of coal tar which is in a viscous fluid state at room temperature and ground pitch which is in a solid state at room temperature in a ratio of coal tar to ground pitch of 2 to 5:7 by weight to the dry wood powder in an amount of from 5 to 20% by weight based on the total amount of the wood powder and the binder to prepare a raw material;

placing the raw material in a pellet mill;

extruding the raw material through a die hole at a temperature of 100° to 170° C. and pressure of 1,000 to 6,000 kg/cm^2 so that it is plasticized and forms a plug flow in the die hole, and simultaneously cutting it to produce pellets;

carbonizing the pellets by heating under conditions so that the pellets do not fuse to each other and do not swell;

activating the carbonized pellets in a high temperature steam atmosphere.

9. A process as claimed in claim 1, wherein the activating is carried out at a temperature in the range of 850° C. to 900° C. for a period of time of between 1.5 and 2 hours while utilizing steam in an amount of between 1.2 and 2.0 kg per kilogram of pellet.

10. A process as claimed in claim 1 wherein the raw material is extruded through a die hole having a diameter in the range of 5 mm to 7 mm and the extruded material is cut to lengths in the range of 10 mm to 15 mm, and by said carbonizing the volume and weight of the extruded pellets are reduced to 40 to 50% of original volume and to 30 to 40% of original weight.

4,552,864

GONADOLIBERIN DERIVATIVES PROCESS FOR THE PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Ferenc Antoni; Judit Erchegyi; Anikó Horváth; György Kéri; Imre Mezö ; Károly Nikolics; János Seprödi; András Széll; Balázs Szöke, and István Teplán, all of Budapest, Hungary, assignors to Reanal Finomvegyszergyar, Budapest, Hungary

PCT No. PCT/HU83/00028, § 371 Date Jan. 11, 1984, § 102(e) Date Jan. 11, 1984, PCT Pub. No. WO83/04250, PCT Pub. Date Dec. 8, 1983

Continuation of Ser. No. 576,396, Jan. 11, 1984, abandoned. This PCT application May 25, 1983, Ser. No. 608,261

Claims priority, application Hungary, May 25, 1982, 1692

Int. Cl.[4] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—15 **6 Claims**

1. A compound of the Formula (I)

Glp-His-Trp-Ser-Tyr-X-Leu-Arg-Pro-Y (I)

wherein

X represents a D-thyroxyl or D-thyronyl group, and

Y stands for a glycine-amide group or an —NH-alkyl group containing 1 to 4 carbon atoms in the alkyl moiety, or a pharmaceutically acceptable acid addition salt or metal complex thereof.

4,552,865

PSYCHOTROPIC DRUGS

Shinji Itoh, Shiga, and Takashi Moroji, Tokyo, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 503,646, Jun. 15, 1983, abandoned, which is a continuation of Ser. No. 293,265, Aug. 17, 1981, abandoned. This application Jul. 11, 1984, Ser. No. 628,964

Claims priority, application Japan, Apr. 7, 1981, 56-52551

Int. Cl.[4] A61K *37/02*

U.S. Cl. 514—15 **7 Claims**

1. A method of treatment of schizophrenia which comprises administering an effective amount of caerulein or a pharmaceutically acceptable salt thereof to a subject requiring that treatment.

4,552,866

USE OF DIAMINO ALCOHOLS AS ANALGESIC AGENTS

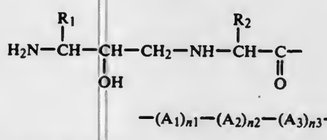
Norma G. Delaney, Princeton, and Eric M. Gordon, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 5, 1984, Ser. No. 628,004

Int. Cl.[4] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—16 **15 Claims**

1. A method of relieving pain in a mammalian host suffering therefrom, which comprises administering an effective amount of a compound having the formula



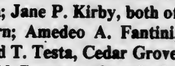
$$-(A_1)_{n1}-(A_2)_{n2}-(A_3)_{n3}-(A_4)_{n4}-(A_5)_{n5}-R_3,$$

or a pharmaceutically acceptable salt thereof, wherein

R_1 and R_2 are each independently hydrogen, alkyl, carboxyalkyl, halo substituted alkyl, hydroxyalkyl, aminoalkyl, mercaptoalkyl, alkylthioalkyl, (cycloalkyl)alkyl, (heteroaryl)alkyl, arylalkyl, carbamoylalkyl, guanidinylalkyl, or heteroaryl;

R_3 is hydroxy, alkoxy, (substituted alkyl)oxy, arylalkoxy, (heteroaryl)alkoxy or $—NY_1Y_2$, wherein Y_1 and Y_2 are each independently hydrogen, alkyl, aryl, or arylalkyl, or Y_1 is hydrogen and Y_2 is substituted alkyl or (heteroaryl)alkyl;

A_1 is glycyl, alanyl, leucyl, phenylalanyl, arginyl, sarcosyl, seryl, asparagyl, lysyl, glutamyl, histidyl, tryptophyl, cysteinyl, methionyl, threonyl, tyrosyl, leucyl, valyl, aspartyl, prolyl, norleucyl, norvalyl, or



A_2, A_3, A_4 and A_5 each is independently glycyl, alanyl, leucyl, phenylalanyl, arginyl, sarcosyl, seryl, asparagyl, lysyl, glutamyl, histidyl, tryptophyl, cysteinyl, methionyl, threonyl, tyrosyl, leucyl, valyl, aspartyl, prolyl, norleucyl, or norvalyl; and

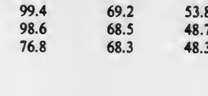
n_1, n_2, n_3, n_4 and n_5 each is independently 0 or 1; and wherein

the terms "alkyl" and "alkoxy" refer to straight and branched chain groups having 1 to 7 carbon atoms;

the term "halo substituted alkyl" refer to alkyl groups in which one, or more, hydrogens have been replaced by chloro, bromo, or fluoro groups;

the term "cycloalkyl" refers to cycloalkyl groups having 3, 4, 5, 6, or 7 carbon atoms;

the term "substituted alkyl" refers to alkyl groups substituted with one, or more, hydroxy or $—NY_3Y_4$ groups wherein Y_3 and Y_4 are the same or different and each is hydrogen or alkyl, Y_3 is hydrogen and Y_4 is aryl, or Y_3 and Y_4 together with the nitrogen atom to which they are attached form a heterocyclic group having the formula



and A is CH—Q, oxygen, or N—Q, Q is hydrogen or alkyl and m is 0 or 1;

the term "heteroaryl" refers to 2- or 3-furanyl, 2- or 3-thienyl, 2-, 3- or 4-pyridinyl, 4-imidazolyl and 3-indolyl; and

the term "aryl" refers to phenyl and phenyl substituted with 1, 2 or 3 alkyl, alkoxy, alkylthio, hydroxy, chlorine, bromine, fluorine, amino, alkylamino, dialkylamino, nitro or trifluoromethyl groups.

4,552,867

ANTIBIOTIC LL-BO1208α AND LL-BO1208β, PROCESS OF PREPARATION, PHARMACEUTICAL COMPOSITION AND METHOD OF USE

John H. E. J. Martin; Jane P. Kirby, both of New City; Donald B. Borders, Suffern; Amedeo A. Fantini, New City, all of N.Y., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 332,079, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 237,197, Feb. 23, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,694

Int. Cl.[4] A61K *37/02, 31/71;* **C12P** *19/12, 21/02*

U.S. Cl. 514—18 **6 Claims**

3. A method of treating bacterial infections in warm-blooded animals comprising administering to said animals an antibacterially effective amount of an antibiotic selected from the group consisting of:

(a) the antibiotic LL-BO1208α wherein the substantially pure form:

(i) exhibits the following significant carbon-13 nuclear magnetic resonance chemical shifts in parts per million relative to the absorption of tetramethylsilane:

182.3	169.0	126.7	71.5	60.9	38.7
178.8	166.6	119.1	70.4	60.2	37.9
178.6	165.9	113.4	69.6	58.3	34.2
177.5	164.7	99.4	69.2	53.8	34.0
173.3	159.2	98.6	68.5	48.7	24.4
173.1	153.7	76.8	68.3	48.3	20.1

-continued

172.7	149.4	75.6	66.0	43.9	16.0
170.4	138.2	74.8	62.2	41.4	13.1
170.2	135.8	74.1	61.5	39.8	12.0

(ii) has an optical rotation $[\alpha]_D^{25}$ of +19;
(iii) has an elemental analysis (percent) of about: C, 43.18; H, 5.74; N, 15.47; S, 3.39;
(iv) has a characteristic carbon-13 nuclear magnetic resonance spectrum substantially as shown in FIG. V;
(v) yields, upon hydrolysis, amino acids which include threonine, α-alanine, 4-amino-3-hydroxy-2-methyl valeric acid, 2,3-diaminopropionic acid, and β-amino-β-(4-amino-6-carboxy-5-methylpyrimidin-2-yl)propionic acid; and
(vi) yields, upon methanolysis, L-gulose and D-mannose; and
(vii) has a characteristic Proton Magnetic Resonance Spectrum substantially as shown in FIG. VI;

and the pharmaceutically acceptable acid-addition salts thereof; (b) the antibiotic LL-BO1208β wherein the substantially pure form:

(i) exhibits the following significant carbon-13 nuclear magnetic resonance chemical shifts in parts per million relative to the absorption of tetramethyl silane:

182.5	159.2	74.7	60.2	37.9
178.8	153.7	74.2	58.3	34.2
178.6	149.3	71.5	53.9	30.3
177.5	138.2	70.4	49.6	24.5
173.5	135.9	69.6	48.6	24.1
173.3	127.1	69.2	45.8	20.1
173.1	119.1	68.5	43.8	16.0
170.3	113.4	68.3	42.0	13.1
169.0	99.4	66.0	41.4	12.0
166.6	98.6	62.2	40.3	
165.9	76.7	61.5	39.8	
164.6	75.6	60.9	38.7	

(ii) has an optical rotation $[\alpha]_D^{25}$ of +17+2;
(iii) has an elemental analysis (percent) of about: C, 44.82; H, 6.50; N, 15.41; S, 3.94;
(iv) has a characteristic carbon-13 nuclear magnetic resonance spectrum substantially as shown in FIG. III;
(v) yields, upon hydrolysis, amino acids which include threonine, β-alanine, 4-amino-3-hydroxy-2-methyl valeric acid, 2,3-diaminopropionic acid, β-lysine, and β-amino-β-(4-amino-6-carboxy-5-methylpyrimidine-2-yl)propionic acid;
(vi) yields, upon methanolysis, L-gulose and D-mannose; and
(vii) has a characteristic Infrared Absorption Spectrum substantially as shown in FIG. I, a characteristic Ultraviolet Absorption Spectrum substantially as shown in FIG. IV, and a characteristic Proton Magnetic Resonance Spectrum substantially as shown in FIG. II; and the pharmaceutically acceptable non-toxic salts thereof;

(c) and mixtures thereof.

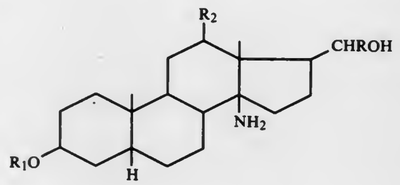
4,552,868

14-AMINO STEROID DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF AND METHOD OF USE THEREOF

Francois-Xavier Jarreau, Versailles, and Jean-Jacques Koenig, Vernou la Celle, both of France, assignors to Etablissements Nativelle S.A., Paris, France

Filed Aug. 18, 1983, Ser. No. 524,500
Claims priority, application France, Aug. 20, 1982, 82 14425; Jun. 20, 1983, 83 10130
Int. Cl.⁴ A61K *31/70*
U.S. Cl. 514—26 **16 Claims**

1. 14-amino steroid derivatives represented by general formula (I):



(I)

wherein R represents a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms, R_1 represents a substituted or unsubstituted sugar residue, and R_2 represents a hydrogen atom, a hydroxy group or an $—OR_3$ group, wherein R_3 is a substituted or unsubstituted sugar residue, and acid salts thereof.

9. Pharmaceutical compositions comprising a pharmaceutically acceptable amount of at least one 14-amino steroid derivative of claim 1 as an active ingredient and at least one pharmaceutically acceptable diluent or carrier.

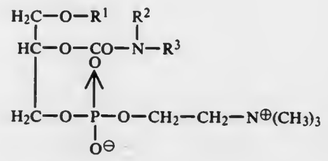
4,552,869

O-ALKYL-O-CARBAMOYLGLYCEROPHOSPHOCHOLINES AND THE USE FOR TREATING HYPERTENSION

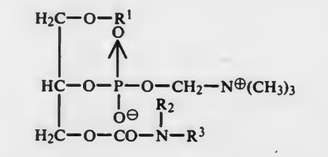
Hans-Heiner Lautenschläger, Pulheim-Stommeln; Hans Betzing, Kerpen-Horrem; Gerrit Prop, Pulheim, and Ottfried Zierenberg, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 404,716, Aug. 3, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,131
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131782; Aug. 12, 1981, 3131783; Dec. 24, 1981, 3151377; Dec. 24, 1981, 3151378
Int. Cl.⁴ A61K *31/685;* **C07F** *9/10*
U.S. Cl. 514—77 **11 Claims**

1. O-Alkyl-O-carbamoylglycerophosphocholines of the general formulae I or II



I



II

wherein R^1 denotes a straight-chain, saturated or unsaturated hydrocarbon radical having 10–20 C atoms, and R^2 and R^3 can be identical or different and denote a straight-chain or branched, saturated or unsaturated hydrocarbon radical having 1–20 C atoms, or a hydrogen atom, provided that at least one of R^2 and R^3 is a hydrocarbon radical as defined herein.

11. Process for the treatment of human beings suffering from hypertension wherein a compound according to one of claims 1 to 10 are administered to the human beings so suffering.

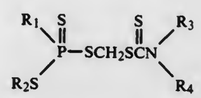
4,552,870

S-DITHIOCARBAMOYLMETHYL TRITHIOPHOSPHONATE INSECTICIDES, COMPOSITIONS AND USE

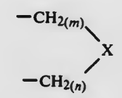
William G. Haag, Pleasant Hill, and Charles G. Chavdarian, Martinez, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 567,489, Jan. 3, 1984,. This application May 10, 1985, Ser. No. 732,338
Int. Cl.⁴ A01N *57/24;* **C07F** *9/40*
U.S. Cl. 514—89 **9 Claims**

1. A compound having the formula

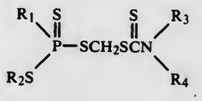


in which R_1 is an alkyl group having from 1 to 3 carbon atoms, R_2 is an alkyl group having from 1 to 6 carbon atoms, and R_3 and R_4 taken together form a ring having the formula

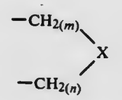


in which m and n are both 2 and X is oxygen or $—CH_2—$.

4. A method for controlling insects comprising applying to said insect or a locus at which control is desired an insecticidally effective amount of a compound having the formula



in which R_1 is an alkyl group having from 1 to 3 carbon atoms, R_2 is an alkyl group having from 1 to 6 carbon atoms, and R_3 and R_4 taken together form a ring having the formula



in which m and n are both 2 and X is oxygen or $—CH_2—$.

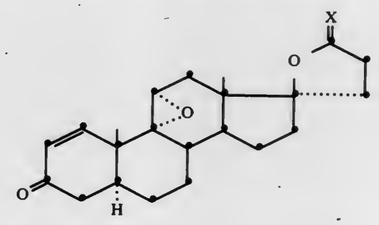
4,552,871

STEROIDS OF THE 20-SPIROXANE SERIES, PROCESSES FOR THE MANUFACTURE THEREOF, PHARMACEUTICAL PREPARATIONS CONTAINING SUCH COMPOUNDS AND THE USE OF THE LATTER

Jürgen Grob, Giebenach, and Jaroslav Kalvoda, Binningen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

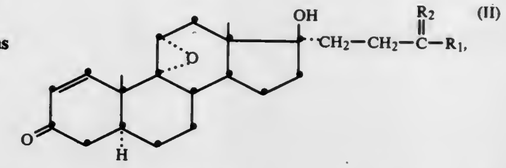
Filed Apr. 9, 1984, Ser. No. 598,132
Claims priority, application Switzerland, Apr. 13, 1983, 1979/83
Int. Cl.⁴ A61K *31/58;* **C07J** *9/00*
U.S. Cl. 514—172 **24 Claims**

1. (5α)-20-spirox-1-en-3-ones of the formula



(I)

in which X represents O or H_2, and 17-hydroxy-5α,17α-pregn-1-en-3-ones of the formula



(II)

in which R_2 represents O and R_1 represents OH, OMe, OAlk, NH_2, NHR_3, NR_3R_4, or R_2 represents H_2 and R_1 represents OH, OAlk, OAr, OAralk or OAc, wherein R_3, R_4 and Alk represent lower alkyl, Me represents a metal atom or metal equivalent or the cation of an organic base, Ar represents monocyclic aryl, Aralk represents monocyclic aryl-lower alkyl, and Ac represents lower alkanoyl, monocyclic aroyl, lower alkylsulphonyl or monocyclic arylsulphonyl, it being possible for R_3 together with R_4 also to represent a lower alkylene group optionally interrupted by a hetero atom.

22. A pharmaceutical composition containing
(a) an effective aldosterone-antagonistic amount of a compound according to claim 1, and
(b) at least one diuretic which promotes the increased excretion of sodium and potassium electrolytes.

4,552,872

PENETRATING TOPICAL PHARMACEUTICAL COMPOSITIONS CONTAINING CORTICOSTEROIDS

Eugene R. Cooper; Maurice E. Loomans, both of Cincinnati, and Mahdi B. Fawzi, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 506,274, Jun. 21, 1983, abandoned. This application Feb. 1, 1984, Ser. No. 576,065
Int. Cl.⁴ A61K *31/58, 31/56*
U.S. Cl. 514—175 **34 Claims**

1. A penetration-enhancing pharmaceutical composition for topical application, comprising:
(a) a safe and effective amount of a pharmaceutically-active corticosteroid;
(b) 0% to about 80% by weight of a solvent selected from the group consisting of water, ethanol or 2-propanol; and

(c) about 10% to about 99.9% by weight of a penetration-enhancing carrier consisting essentially of:

(i) a diol selected from the group consisting of 1,2-propanediol, 1-2,-butanediol, 1,3-butanediol, 2,3-butanediol, or mixtures thereof, and

(ii) a cell-envelope disordering compound selected from the group consisting of methyl laurate, oleic acid, myristyl alcohol, or mixtures thereof;

wherein said diol and said cell-envelope disordering compound are present in a ratio of diol:cell-envelope disordering compound of from about 1:1 to about 500:1 by weight; and wherein said penetration-enhancing composition is substantially free from any single member of the C_{16}–C_{20} straight chain, saturated normal fatty alcohols, and C_4–C_{20} straight chain, saturated mono- or dicarboxylic acids.

34. A penetration-enhancing pharmaceutical composition for topical application, comprising:

(a) a safe and effective amount of a pharmaceutically-active corticosteroid;

(b) 0% to about 80% by weight of a solvent selected from the group consisting of water, ethanol or 2-propanol; and

(c) about 10% to about 99.9% by weight of a penetration-enhancing carrier consisting essentially of:

(i) 1,2-butanediol, and

(ii) a cell-envelope disordering compound selected from the group consisting of methyl laurate, oleic acid, oleyl alcohol, monoolein, myristyl alcohol, or mixtures thereof;

wherein said 1,2-butanediol and said cell-envelope disordering compound are present in a ratio of diol:cell-envelope disordering compound of from about 1:1 to about 500:1 by weight; and wherein said penetration-enhancing composition is substantially free from any single member of the C_{16}–C_{20} straight chain, saturated normal fatty alcohols, and C_4–C_{20} straight chain, saturated mono- or dicarboxylic acids.

4,552,873

CARBAPENEM COMPOUNDS, AND COMPOSITIONS CONTAINING THEM

Tetsuo Miyadera; Yukio Sugimura; Toshihiko Hashimoto; Teruo Tanaka; Kimio Iino; Tomoyuki Shibata, and Shinichi Sugawara, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

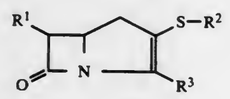
Filed Aug. 13, 1982, Ser. No. 407,914

Claims priority, application Japan, Aug. 19, 1981, 56-129648; May 14, 1982, 57-81067

Int. Cl.[4] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **14 Claims**

1. Compounds of the formula (I):

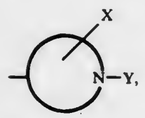


(I)

wherein

R^1 is hydroxyethyl,

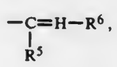
R^2 is



wherein



is a 3-pyrrolidinyl group, X is hydrogen and Y is a group of the formula



wherein R^5 and R^6 are the same or different and each is hydrogen or an alkyl group having from 1 to 4 carbon atoms,

R^3 is a carboxy group or a protected carboxy group; and pharmaceutically acceptable salts thereof.

4,552,874

PYRAZOLOOXAZINES, PYRAZOLOTHIAZINES, AND PRYAZOLOQUINOLINES AND THEIR USE AS MEDICAMENTS

Mithat Mardin, Wuppertal; Rudolf Sundermann, Leverkusen; Friedrich Hoffmeister, Wuppertal; Wolf-Dieter Busse, Wuppertal; Harald Horstmann, Wuppertal, and Siegfried Raddatz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

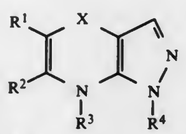
Filed Feb. 1, 1983, Ser. No. 462,864

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204126

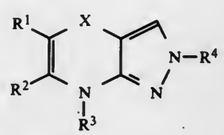
Int. Cl.[4] **A61K** *31/535, 31/54;* **C07D** *498/04, 513/04*

U.S. Cl. 514—222 **9 Claims**

1. A compound of the formulae



Ia



Ib

(I)

wherein

R^1 and R^2 represent a fused-on carbocyclic aryl or a 5- or 6-membered N—,O— or S— fused-on hetero-aryl ring, which in turn can optionally be substituted by up to 5 identical or different substituents from the group consisting of C_1–C_{18}-alkyl, -alkoxy or -alkylamino; mono- or bicyclic carbocyclic aralkyl having C_1–C_4-alkyl in the alkyl portion; C_4–C_8-cycloalkyl; dialkylamino having 1 to 18 carbon atoms in each alkyl group; carboalkoxy with C_1–C_4 in the alkoxy portion; halogenoalkyl, halogenalkoxy having 1 to 2 carbon atoms in the alkyl or alkoxy portion; X is 0, S, SO, SO_2 or CH_2;

R^3 and R^4 can be identical or different and represent hydrogen, alkyl having 1 to 18 C atoms, it being possible for the alkyl radical to be interrupted once or several times by oxygen, sulphur or nitrogen, alkenyl or alkinyl having 2 to 12 C atoms, aralkyl having 7 to 12 C atoms, it again being possible for the alkenyl, alkinyl and aralkyl radicals to be interrupted once or several times by oxygen, sulphur or nitrogen, aryl having 6 to 10 C atoms, heteroaryl, heteroaralkyl, alkylcarbonyl having 1 to 18 C atoms, heteroarylcarbonyl and arylcarbonyl having 7 to 11 C atoms, it being possible for these radicals optionally to be substituted by up to 5 identical or different substituents from the group comprising alkoxy, alkyl, aralkyl, cycloalkyl, aryl, alkylamino, dialkylamino, arylamino, aryloxy, arylthio, alkylthio, carboxyl, carboalkoxy, cyano, carbamoyl, alkylsulphonyl, halogenoalkyl, halogenoalkoxy, halogen,

amino, hydroxyl, sulphonamido, methylenecarboxyl, methylenecarboxyalkyl or propylenecarboxyalkyl, but with the proviso that:

when X is oxygen,

R^3 is other than hydrogen or alkyl and

R^4 is other than hydrogen or alkyl and,

when X is sulphur,

R^3 is other than hydrogen and R^4 is other than p-chlorophenyl or

R^3 is other than acyl and R^4 is other than aryl.

4. A pharmaceutical composition comprising a lipoxygenase-inhibiting amount of a compound of claim **1** together with an inert pharmaceutical carrier.

4,552,875

NOVEL CARBACYCLINAMIDES, THEIR PREPARATION AND USE AS MEDICINAL AGENTS

Werner Skuballa; Bernd Raduechel; Helmut Vorbrueggen, all of Berlin; Gerda Mannesmann, Cologne; Bob Nieuweboer, and Michael H. Town, both of Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

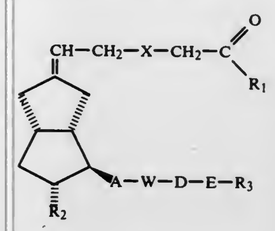
Filed Jul. 1, 1983, Ser. No. 510,125

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3225287

Int. Cl.[4] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 514—234 **19 Claims**

1. A carbacyclinamide of the formula



wherein

R_1 is NHR_4, wherein R_4 is (a) $-(CH_2)_n-R_8$, (b) C_{2-10}-alkenyl, (c) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; (d) C_{3-10}-cycloalkyl, (e) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, (f) C_{6-10}-aryl, (g) C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4}-alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; or (h) C_{2-8}-alkyl substituted by 1–5 hydroxy groups,

or R_1 or NR_4R_5, wherein R_4 and R_5 each is C_{2-8}-alkyl substituted by 1–5 hydroxy groups or R_4 and R_5 together with the adjoining N-atom form a 5- or 6-membered heterocycle containing up to 1 additional O, S or N atom wherein an additional N-atom can be substituted by C_{1-4}-alkyl,

or R_1 is NR_4R_5 wherein R_4 is (a) C_{1-10}-alkyl, (b) C_{2-10}-alkenyl, (c) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; (d) C_{3-10}-cycloalkyl or (e) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, and R_5 is (a) C_{2-10}-alkenyl, (b) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; (c) C_{3-10}-cycloalkyl, (d) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, (e) C_{6-10}-aryl, (f) C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; or (g) C_{2-8}-alkyl substituted by 1–5 hydroxy groups,

N is 1–4;

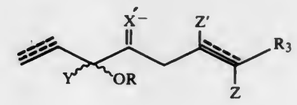
R_8 is $—CONH_2$ or $—N(C_1$–C_4-alkyl$)_2$;

R_2 is OR:

R_3 is (a) C_{1-10}-alkyl, (b) C_{2-10}-alkenyl, (c) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; (d) C_{3-10}-cycloalkyl, (e) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, (f) C_{6-10}-aryl, (g) C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; or (h) an aromatic heterocycle of 5 or 6 ring atoms one of which is O, N or S, the remainder being carbon atoms;

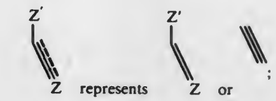
X is —O— or $—CH_2—$;

A-W-D-E-R_3 is



Y is H or CH_3;

represents an α- or β-bond; ═══ represents a single, double or triple bond, the double bond in the 13-position being in the trans-configuration;

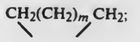


represents

or

;

$=X^{-'}$ is H, C_{1-3}-alkyl; C_{1-3}-dialkyl; H, H; H, F; or



Z and Z' each is H or C_{1-5}-alkyl;

m is 1–3; and

R is H, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid.

4,552,876

BISBENZOXAZINES AND PHARMACEUTICAL USE

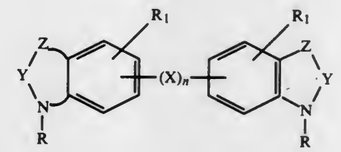
Howard Jones, Ossining; Ernest Magnien, Flushing, both of N.Y.; John H. Musser, Malvern, Pa., and Mujahid L. Shaikh, White Plains, N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,285

Int. Cl.[4] **A61K** *31/535;* **C07D** *265/36*

U.S. Cl. 514—234 **23 Claims**

1. A member of the formula:

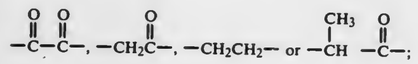


wherein,

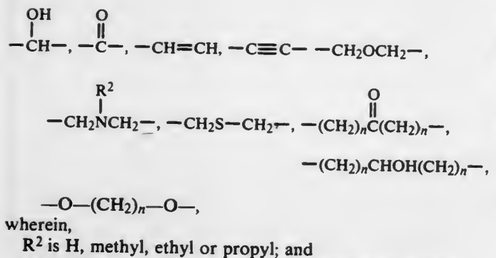
R is H, alkyl, cycloalkyl, aryl, or heteroaryl;

R_1 is H, alkyl, cycloalkyl, aryl, heteroaryl, aralkyl, substi-

tuted aryl, substituted heteroaryl, halo, OR^2, SR^2, NR_2, CF_3, NO_2, CN, $COOR^2$, CHO, SO_3H, or SO_2NH_2,
wherein,
the substituents in substituted aryl and substituted heteroaryl are H, methyl, ethyl or propyl;
R^2 is H, methyl, ethyl or propyl;
Y is

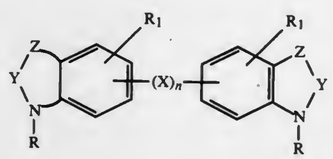


Z is O;
X is $-CH_2-$,

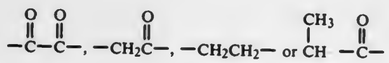


wherein,
R^2 is H, methyl, ethyl or propyl; and
n is 1–10, and pharmaceutically acceptable salts thereof.

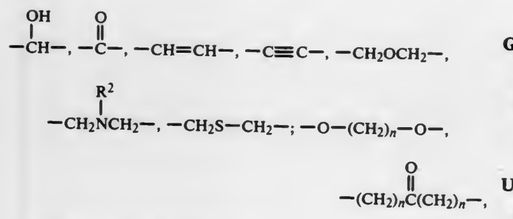
13. A pharmaceutical composition for the treatment of allergic or inflammatory conditions comprising as an active ingredient a member of the formula



wherein,
R is H, alkyl, cycloalkyl, aryl, or heteroaryl;
R_1 is H, alkyl, cycloalkyl, aryl, heteroaryl, aralkyl, substituted aryl, substituted heteroaryl, halo, OR^2, SR^2, NR_2, CF_3, NO_2, CN, $COOR^2$, CHO, SO_3H or SO_2NH_2,
wherein,
the substituents in substituted aryl and substituted heteroaryl are H, methyl, ethyl or propyl;
R^2 is H, methyl, ethyl or propyl;
Y is



Z is O;
X is $-CH_2-$,



wherein,
R^2 is H, methyl, ethyl or propyl; and
n is 1–10, or pharmaceutically acceptable salts thereof, in a pharmaceutically acceptable carrier.

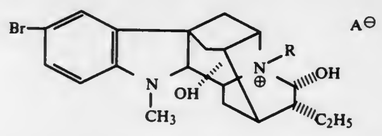
4,552,877

N_b-QUATERNARY DERIVATIVES OF SANDWICINE AND ISOSANDWICINE METHODS AND INTERMEDIATE PRODUCTS IN THE MANUFACTURE OF THEIR DERIVATIVES AND METHODS OF USING SAME AND PHARMACEUTICAL COMPOSITIONS THEREOF

Wolfgang Kehrbach, Hanover; Joachim Wegener, Algermissen; Ulrich Kuehl, Hanover; Renke Budden, Hanover, and Gerd Buschmann, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

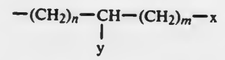
Continuation of Ser. No. 395,649, Jul. 6, 1982, abandoned, which is a continuation of Ser. No. 195,619, Oct. 9, 1980, abandoned. This application May 31, 1984, Ser. No. 615,756
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2941530
Int. Cl.⁴ A61K *31/435;* **C07D** *455/00, 471/08*
U.S. Cl. 514—239 **8 Claims**

1. A N_b-quaternary 10-bromosandwicine and 10-bromoisosandwicine compound of the formula I



(I)

wherein R is a carbon-attached organic residue containing 1 to 10 carbon atoms and having the formula II



(II)

wherein n is 0 or 1; m is 0 or 1; x is hydrogen, hydroxy, straight or branched alkyl which is unsubstituted or is substituted by hydroxy, alkoxy, halogen or dialkylamino, phenyl which is unsubstituted or is substituted by alkyl, alkoxy or halogen, dialkylamino, pyrrolidino, piperidino or morpholino; and y is hydrogen, hydroxy or methyl or x and y together form a bond with the proviso that when y is hydroxy n is 1 and that when x and y together form a bond n and m each are 1 and $A^{\ominus}$ is an anion of a pharmacologically acceptable organic or inorganic acid.

7. A pharmaceutical composition comprising a cardiac rhythm regulative effective amount of a compound as defined in claim **1** and an inert pharmaceutical carrier.

8. A method of treating heart rhythm disorders in larger mammals which comprises administering to a larger mammal an effective amount of a compound as defined in claim **1**.

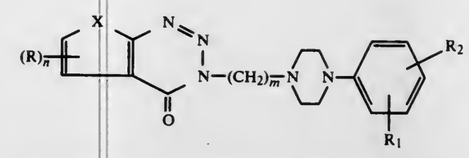
4,552,878

BENZO- AND THIENO-TRIAZINE-1,2,3 ONES-4

Gérard Ferrand, Lyons; Hervé Dumas, Villefontaine; Michel Bayssat, Charbonnieres, and Jean-Claude Depin, Lyons, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Paris, France

Filed Sep. 19, 1983, Ser. No. 534,173
Claims priority, application France, Sep. 22, 1982, 82 15934
Int. Cl.⁴ C07D *253/08, 403/06;* **A61K** *31/53*
U.S. Cl. 514—243 **6 Claims**

4. A composition comprising as active principle an amount effective for anti-depressant activity of a [(phenyl-4 piperazino-1)-3 alkyl]-3-3H-benzo- or thieno-triazine-1, 2, 3 one-4 having the formula



in which m equals 2, 3 or 4; X is the vinylene group —CH=CH— or a sulfur atom; R_1 and R_2 can be alike or different and are hydrogen, a halogen, a lower alkyl radical, a lower alkoxy radical or a trifluoromethyl radical; when X equals —CH=CH—, n is 0, 1 or 2 and R is hydrogen, a halogen, a lower alkyl radical, a lower alkoxyl radical or the nitro group radical; when X is a sulfur atom R is hydrogen or constitutes a $—(CH)_2$ 4 between the two open positions of the thiophenic ring; or a salt of a pharmaceutically acceptable inorganic or organic acid thereof; together with a pharmaceutically acceptable carrier.

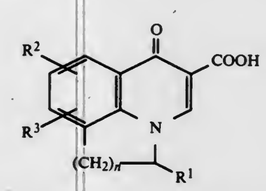
4,552,879

BENZOHETEROCYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITION THEREOF

Hiroshi Ishikawa; Testuyuki Uno; Masanobu Kano, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 320,027, Nov. 10, 1981, Pat. No. 4,399,134. This application May 25, 1983, Ser. No. 497,914
Claims priority, application Japan, Nov. 10, 1980, 55-158652; Apr. 24, 1981, 56-63170
Int. Cl.⁴ A61K *31/495;* **C07D** *487/06*
U.S. Cl. 514—253 **16 Claims**

16. An antibacterial composition comprising an antibacterially effective amount of a benzoheterocyclic compound of the formula (I)



(I)

wherein R^1 represents a hydrogen atom or a lower alkyl group; R^2 represents a hydrogen atom or a halogen atom; R^3 represents a 1-piperazinyl group substituted with an oxo group or a lower haloalkyl group, and n is an integer of 1 or 2; with the proviso that when n is 2, R^3 should not be a 1-piperazinyl group substituted with a lower haloalkyl group; or its pharmaceutically acceptable salt, as an active ingredient and a pharmaceutically, acceptable carrier.

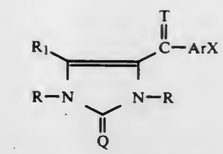
4,552,880

AROYLIMIDAZOLONES

Richard C. Dage, and Richard A. Schnettler, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 466,409, Feb. 15, 1983, abandoned. This application Dec. 21, 1983, Ser. No. 562,758
Int. Cl.⁴ C07D *233/30, 403/30, 211/70, 401/00*
U.S. Cl. 514—277 **13 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof wherein Q and T are each oxygen or a divalent sulfur atom, R is hydrogen, lower alkanoyl, or benzoyl, R_1 is hydrogen or lower alkyl, Ar is phenyl, 2-, 3- or 4- pyridyl, 2- or 3- pyrryl, 2- or 3- thienyl, and 2- or 3- furanyl and X is a substituent of the group cyano, carboxy, carboxamido, alkoxycarbonyl, amidino and imidazol-2-yl.

13. A method of treating cardiac failure in patient in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of claim **1**.

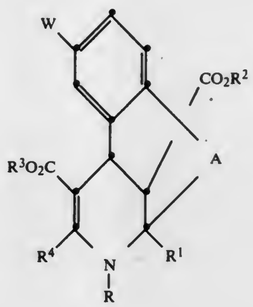
4,552,881

SUBSTITUTED AND BRIDGED PYRIDINES USEFUL AS CALCIUM CHANNEL BLOCKER

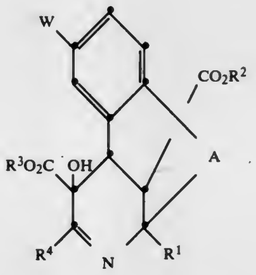
David A. Claremon, Audubon, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 1, 1984, Ser. No. 636,780
Int. Cl.⁴ C07D *221/22*
U.S. Cl. 514—295 **10 Claims**

1. A compound represented by the following general structural formulae (I) and (II):



(I)



(II)

wherein:
A is $>CHCH=CH_2$ or $>CHCH_2CH_3$;
R is hydrogen, C_{1-C8} alkyl or benzyl;
R^1 and R^4 independently are C_{1-C8} alkyl, C_{2-C8} alkenyl, C_{3-C8} cycloalkyl, C_{1-C8} hydroxyalkyl;
R^2 and R^3 independently are C_{1-C8} alkyl, C_{2-C8} alkenyl, C_{3-C8} cycloalkyl, C_{1-C8} hydroxyalkyl, C_{1-C8} dihydroxyalkyl, C_{2-C8} alkoxyalkyl, C_{3-C8} alkoxy(alkoxyalkyl), C_{1-C8} aminoalkyl wherein the amino group is NR^5R^6 in which R^5 and R^6 independently are hydrogen, C_{1-C8}

alkyl, C_{7-C14} phenylalkyl together with R^4 is methylene or ethylene; and

W is hydrogen, C_{1-C8} alkoxy, C_{1-C8} alkylthio, C_{1-C8} alkyl S(O), C_{1-C8} alkyl $S(O)_2$, CF_3, cyano, nitro, or a pharmaceutically acceptable salt thereof.

9. A method of treatment for cardiovascular disorders in which a high cellular concentration of Ca^{++} is a factor which comprises administering to a subject in need of such treatment a nontoxic therapeutically effective amount of a compound according to claim 1.

4,552,882

7-(1-PYRROLYL) DERIVATIVES OF 1-ETHYL-1,4-DIHYDRO-4-OXOQUINOLINE-3-CARBOXYLIC ACIDS AND 1-ETHYL-1,4-DIHYDRO-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS AND THEIR USE AS ANTIMICROBIAL AGENTS

José Esteve-Soler, Barcelona, Spain, assignor to Provesan, SA, Geneva, Switzerland

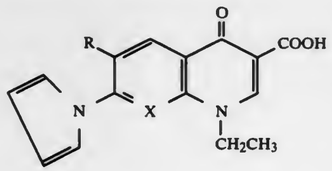
Filed Jun. 20, 1984, Ser. No. 622,647

Claims priority, application France, Jul. 6, 1983, 83 11250; Feb. 13, 1984, 84 02145

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—300 **8 Claims**

1. A compound of the general formula:



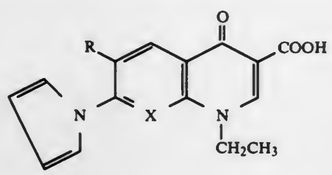
in which

X represents a carbon atom or a nitrogen atom, and

R represents a hydrogen atom or a fluorine atom;

and physiologically acceptable alkali metal salts or alkaline earth metal salts thereof.

7. An antimicrobial composition comprising an antimicrobially therapeutically effective amount of a compound of formula:



in which

X represents a carbon atom or a nitrogen atom, and

R represents a hydrogen atom or a fluorine atom, or a physiologically acceptable alkali metal salt or alkaline earth metal salt thereof, and a pharmaceutically acceptable vehicle therefor.

4,552,883

PYRAZOLO[3,4-b]PYRIDINE CARBOXYLIC ACID ESTERS AND THEIR PHARMACEUTICAL USE

Thomas M. Bare, West Chester, Pa., assignor to ICI Americas Inc., Wilmington, Del.

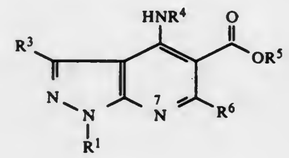
Filed May 19, 1983, Ser. No. 496,259

Claims priority, application United Kingdom, Jun. 15, 1982, 8217258

Int. Cl.⁴ A61K *31/44*; C07D *471/04*

U.S. Cl. 514—303 **9 Claims**

1. A pyrazolo[3,4-b]pyridine of the formula:



wherein

R^1 is a straight or branched chain alkyl of 1 to 10 carbons, cycloalkyl of 3 to 8 carbons, cycloalkylalkyl of 4 to 12 carbons, alkenyl or alkynyl of 3 to 10 carbons, arylalkyl of 7 to 12 carbons; straight or branched chain alkyl of 1 to 10 carbons into the backbone of which is inserted an oxygen, sulfur, sulfinyl or sulfonyl divalent moiety, or straight or branched chain alkyl of 1 to 10 carbons substituted by a hydroxy, amino, 1 to 6 carbon alkylamino, 2 to 12 carbon dialkylamino, cyano, oxo, ketal, hemiketal, acetal or hemiacetal group, wherein the alkyl group or groups of the ketal, hemiketal, acetal or hemiacetal each are of 1 to 6 carbons, or by one or more of chloro, bromo, iodo or fluoro groups;

R^3 is hydrogen or straight or branched chain alkyl of 1 to 6 carbons;

R^4 is hydrogen, straight or branched chain alkyl of 1 to 10 carbons or straight or branched chain alkyl of 1 to 10 carbons substituted by a hydroxy or oxo group;

R^5 is straight or branched chain alkenyl of 3 to 7 carbons, straight or branched chain alkynyl of 3 to 7 carbons, hydroxy(straight or branched chain)alkyl of 1 to 7 carbons, cycloalkyl of 3 to 7 carbons, cycloalkylalkyl of 4 to 10 carbons, alkoxy(straight or branched chain)alkyl of 2 to 10 carbons, straight or branched chain alkyl of 2 to 7 carbons substituted by one or more halogen atoms, straight or branched chain alkenyl of 3 to 7 carbons substituted by one or more halogen atoms, aryl(straight or branched chain)alkyl of 6 to 10 carbons in the aryl portion and 1 to 7 carbons in the alkyl portion; aryl-(straight or branched chain)alkenyl of 6 to 10 carbons in the aryl portion and 3 to 7 carbons in the alkenyl portion, or phenyl; and

R^6 is hydrogen or straight or branched chain alkyl of 1 to 8 carbons, or an N-oxide at the 7-position of the pyrazolo [3,4,-b]-pyridine ring system, or a pharmaceutically acceptable acid-addition salt thereof.

4,552,884

METHOD OF TREATING HEART DISEASE

Malcolm F. Sim, Woodborough, and David B. Yates, Farnsfield, both of England, assignors to The Boots Company PLC, Nottingham, England

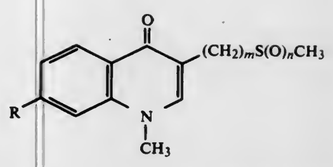
Filed Jan. 7, 1985, Ser. No. 689,180

Claims priority, application United Kingdom, Jan. 13, 1984, 8400905; Jan. 13, 1984, 8400906

Int. Cl.⁴ A61K *31/47*

U.S. Cl. 514—312 **9 Claims**

1. A method for the treatment of heart failure in a mammal which comprises the administration to a mammal with heart failure of a therapeutically effective amount of a quinolone of the formula I,



I

wherein m is 0 or 1, n is 0, 1 or 2; and R is hydrogen, halo, methyl or trifluoromethyl.

4,552,885

STABILIZED FUNGICIDE COMPOSITIONS

Peter D. Gabriele, Danbury, Conn., and Jerry E. Rademan, Pearl River, N.Y., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

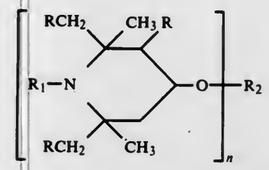
Continuation-in-part of Ser. No. 334,197, Dec. 24, 1981, abandoned. This application Dec. 22, 1982, Ser. No. 451,185

Int. Cl.⁴ A61K *31/445*; A01N *43/40*

U.S. Cl. 514—316 **26 Claims**

1. A composition of matter comprising a fungicide subject to light-induced deterioration stabilized with an effective stabilizing amount of a 2,2,6,6-tetraalkylpiperidine compound.

6. The composition of claim 1, wherein said 2,2,6,6-tetraalkylpiperidine compound corresponds to the formula (II)



(II)

in which n is a number from 1–4 inclusive; R is hydrogen or methyl; R_1 is hydrogen, oxyl, C_1–C_{18} alkyl, C_{3-C8} alkenyl, C_1–C_8 alkynyl, C_{7-C12} aralkyl, C_1–C_8 alkanoyl, C_3–C_5 alkenoyl, glycidyl or a group $—CH_2—CH(OH)—Z$ wherein Z is hydrogen, methyl or phenyl, and R_2 when n is 1 is hydrogen, C_1–C_{18} alkyl optionally interrupted by one or more oxygen atoms, cyanoethyl, benzyl, glycidyl, a monovalent radical of an aliphatic, cycloaliphatic, araliphatic or aromatic carboxylic acid, or of carbamic acid or of a phosphorus-containing acid, or a monovalent silyl radical; R_2 when n is 2 is C_2–C_{12} alkylene, C_4–C_{12} alkenylene, xylylene, a bivalent radical of an aliphatic, cycloaliphatic, araliphatic or aromatic dicarboxylic acid, of dicarbamic acid or of a phosphorus-containing acid, or a bivalent silyl radical; R_2 when n is 3 is a trivalent radical of an aliphatic, cycloaliphatic or aromatic tricarboxylic acid, of an aromatic tricarbamic acid or of a phosphorus-containing acid, or a trivalent silyl radical; and R_2 when n is 4 is a tetravalent radical of an aliphatic, cycloaliphatic or aromatic tetracarboxylic acid.

4,552,886

FUNGICIDAL PYRIDYLMETHYL-AMINES

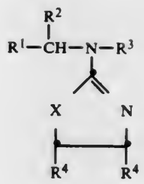
Eriks V. Krumkalns, Indianapolis, and David L. Smiley, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 385,602, Jun. 7, 1982, abandoned. This application Mar. 7, 1983, Ser. No. 472,439

Int. Cl.⁴ C07D *417/12, 413/12*; A61K *31/44*

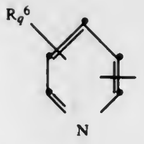
U.S. Cl. 514—342 **54 Claims**

1. A compound of the formula

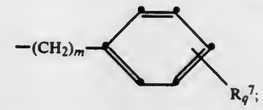


wherein

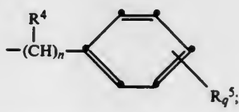
R^1 is



R^2 is hydrogen, C_1–C_4 alkyl or

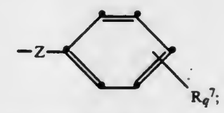


R^3 is C_2–C_{10} alkenyl, C_1–C_{10} alkoxy, C_1–C_{10} haloalkyl, C_1–C_{10} haloalkoxy, C_3–C_8 cycloalkyl, 1,3-benzodioxolyl or



each R^4 is independently hydrogen or C_1–C_4 alkyl;

each R^5 is independently C_1–C_6 alkyl, C_1–C_6 alkoxy, C_3–C_8 cycloalkyl, C_1–C_6 alkylthio, halogen, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy, nitro, cyano or



each R^6 is independently halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;

each R^7 is independently C_1–C_6 alkyl, C_1–C_6 alkoxy, C_3–C_8 cycloalkyl, C_1–C_6 alkylthio, halogen, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy, nitro or cyano;

X is O or S;

Z is O, S, $—(CH_2)_n—$ or a direct link;

m is 0 or 1;

each n is independently 0, 1, 2 or 3;

each q is independently 0, 1 or 2;

and the agronomically-acceptable salts thereof.

29. A method for controlling the growth of fungal diseases which comprises applying to the locus of the plant for which control is desired a disease inhibiting and non-herbicidal amount of a compound of claim 1.

4,552,887

BIOLOGICALLY ACTIVE AMIDES

Ian T. Kay, Wokingham, and Robert A. Noon, Maidenhead, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 408,894, Aug. 17, 1982, Pat. No. 4,415,959. This application Feb. 25, 1985, Ser. No. 705,182

Claims priority, application United Kingdom, Sep. 30, 1981, 8129521

Int. Cl.⁴ A01N *43/40, 43/56, 43/64*

U.S. Cl. 514—381 **3 Claims**

1. A process for combating fungi which comprises applying to the fungi, or to the locus thereof, a fungicidally effective amount of a compound of the formula (I):



(I)

wherein R^1 is (a) a phenyl group optionally substituted by one or more halogen atoms, cyano groups, alkoxy groups, methylene- or ethylene-dioxy groups, alkyl groups, or haloalkyl groups; or (b) a furyl or thiophenyl group optionally substituted by one or more alkyl groups, haloalkyl groups or halogen atoms; X is a pyrazolyl, tetrazolyl or 1,2,4 triazolyl radical linked by a ring nitrogen atom to the carbon atom bearing Y, and optionally substituted by one or more alkyl groups, and Y is a CN group, a $—CSNH_2$ group; or an amide group $—CONR^5R^6$ wherein each of R^5 and R^6 may be a hydrogen atom or an alkyl radical, each alkoxy, alkyl and haloalkyl referred to above containing from 1 to 6 carbons.

4,552,888

ASCORBIC ACID ETHERS IN ANGIOGENE

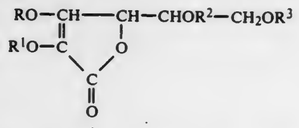
Gary A. Koppel; Russell L. Barton; Jesse R. Bewley, all of Indianapolis; Stephen L. Briggs, Clayton, and Joseph W. Parton, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 339,344, Jan. 15, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 536,474

Int. Cl.⁴ A61K *31/375*

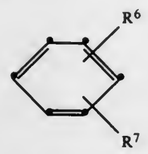
U.S. Cl. 514—474 **20 Claims**

1. The method of inhibiting angiogenesis in collagen-induced arthritis which comprises administering to a mammal in need of treatment an angiogenesis inhibiting dose of a compound of the formula



I

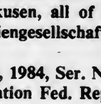
wherein R and R^1 are individually H or CH_2R^4, except that at least one of R and R_1 must be other than H, wherein R^4 is $(C_1–C_{21})$alkyl-R^5, $(C_2–C_{12})$alkenyl, $(C_2–C_{12})$alkynyl, $(C_3–C_8$-)cycloalkyl, $(C_3–C_8)$cycloalkenyl, $(C_7–C_{12})$bicycloalkyl or $(CH_2)_m$ Z, wherein R^5 is CN, OH, H, O—$(C_1–C_5)$alkyl, O—$(C_2–C_4)$haloalkyl, phthalimido, $COOR^8$, OZ or $N(CH_3)_2$; m is 0, 1 or 2 and Z is



wherein R^6 and R^7 are individually halo, CF_3, H, $(C_1–C_3)$alkyl, O-$(C_1–C_3)$alkyl or NO_2 and R^8 is H or $(C_1–C_3)$alkyl, except that when R^4 is $(C_1–C_{21})$alkyl-R^5 and R^5 is O-$(C_1–C_5)$alkyl, O-$(C_2–C_4)$haloalkyl or OZ, the total number of carbon atoms in R^4 is less than 22;

R^2 and R^3, when taken singly are H, $(C_1–C_{12})$alkyl or CH_2-phenyl;

R^2 and R^3, when taken together, are



wherein R^9 is $(C_1–C_{10})$alkyl, halo-substituted $(C_1–C_{10})$alkyl, Z, or $(C_1–C_{10})$alkyl-Z and R^{10} is R^9 or H.

4,552,889

3-MERCAPTOMETHYL-2-OXO-1-PYRROLIDINE ACETIC ACIDS AND USE FOR HYPERTENSION

William L. Scott, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 9, 1983, Ser. No. 502,861

Int. Cl.⁴ A61K *31/40;* **C07D** *207/12*

U.S. Cl. 514—424 **18 Claims**

1. A compound of the formula I



I

and pharmaceutically acceptable salts thereof wherein

m is 0 or 1;

n is 1;

R_1 is $C_1–C_3$ alkyl or benzyl;

R_2 is hydrogen or $C_1–C_3$ alkyl; and

R_3 is hydrogen or $C_1–C_3$ alkyl.

10. A method of treating hypertension comprising administering to a mammal suffering from hypertension and in need of treatment an effective amount of a compound according to claim **1**.

4,552,890

PLANT PHYTOPATHOGENIC FUNGICIDAL AGENTS BASED ON MALEIMIDE

Gerhard Marzolph, Cologne; Heinz U. Blank, Odenthal; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

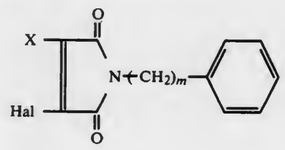
Filed Feb. 8, 1984, Ser. No. 578,232

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306844

Int. Cl.⁴ A61K *31/40;* **C07D** *207/452*

U.S. Cl. 514—425 **12 Claims**

1. A method of combatting plant pathogenic fungi which comprises applying to such fungi, to a plant, plant part, to seed or to soil a fungicidally effective amount of at least one maleic acid N-aralkyl-imide of the formula



n which

X is hydrogen or halogen,

Hal is halogen, and

m is 2, 3 or 4.

8. A halomaleic acid N-aralkyl-imide selected from the group consisting of

chloromaleic acid N-(2-phenethyl)-imide,

2,3-dibromomaleic acid N-(2-phenethyl)-imide and

2,3-dichloromaleic acid N-(4-phenylbutyl)-imide.

4,552,891

BENZOTHIOPHENE DERIVATIVES

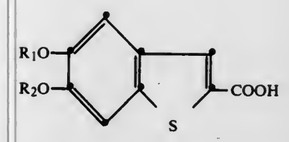
Peter P. K. Ho, Carmel, and Quentin F. Soper, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 13, 1983, Ser. No. 531,802

Int. Cl.⁴ A61K *31/38*

U.S. Cl. 514—443 **10 Claims**

1. A method of treating a mammal suffering from or susceptible to an asthmatic attack, which comprises administering to said mammal an effective amount of a compound of the formula



I

wherein each of R_1 and R_2 is independently hydrogen or $C_1–C_7$ alkyl, or a pharmaceutically acceptable salt thereof.

4,552,892

ACARICIDAL DIFLUOROETHENYLCYCLOPROPANECARBOXYLATES

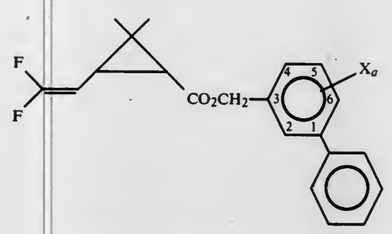
Ernest L. Plummer, Yardley; John F. Engel, Washington Crossing, both of Pa., and Richard B. Phillips, Cranbury, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 474,366, Mar. 11, 1983, abandoned. This application Apr. 25, 1985, Ser. No. 726,305

Int. Cl.⁴ C07C *69/743;* **A01N** *53/00*

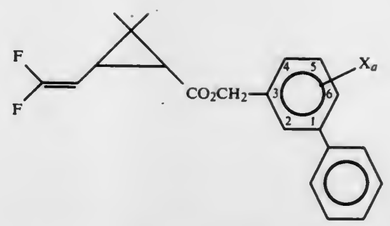
U.S. Cl. 514—531 **6 Claims**

1. A compound of the formula



in which X_a is 2-fluoro, 2,4-difluoro, 2,4,6-trifluoro, 2,4,5,6-tetrafluoro, 2-methyl, or 2,4-dimethyl.

3. An acaricidal composition comprising an acaricidally effective amount of a compound of the formula



in which X_a is 2-fluoro, 2,4-difluoro, 2,4,6-trifluoro, 2,4,5,6-tetrafluoro, 2-methyl, or 2,4-dimethyl in admixture with an agriculturally acceptable carrier.

4,552,893

LEUKOTRIENE ANTAGONISTS

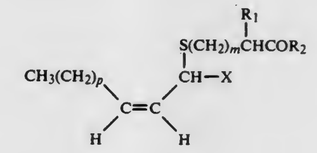
John G. Gleason, Delran; Ralph F. Hall, Robbinsville, both of N.J., and Thomas W. Ku, Dresher, Pa., assignors to Smith-Kline Beckman Corporation, Philadelphia, Pa.

Filed Mar. 7, 1983, Ser. No. 472,774

Int. Cl.⁴ A61K *31/20;* **C07C** *103/187, 57/12, 57/13*

U.S. Cl. 514—560 **15 Claims**

1. A compound represented by the structural formula (I)

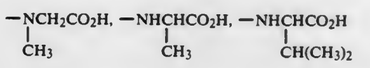


(I)

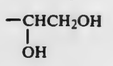
wherein m is 0, 1 or 2; p is 9, 10, 11, 12 or 13; R_1 is hydrogen, amino or



R_2 is hydroxyl, amino, $—NHCH_2CO_2H$,



or $—NHCH_2CONH_2$; and X is $—C0_2H$, $—CH_2OH$ or



with the proviso that when m is 0, R_1 is hydrogen, or a pharmaceutically acceptable salt thereof.

11. A pharmaceutical composition for inhibiting the effects of leukotriene in subjects in need of such inhibition comprising a pharmaceutical carrier or diluent and a nontoxic amount sufficient to produce said inhibition of a compound of claim **1**.

4,552,894

2-FLUOROETHOXY-SUBSTITUTED BENZENE DERIVATIVES

Tsuneo Inoue, Yokohama; Kiyoshi Nakatani, Tokyo; Kengo Oda; Tutomu Ishii, both of Yokohama; Takatoshi Udagawa, Chigasaki, and Shiro Shiraishi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

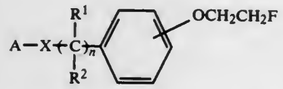
Filed Jan. 24, 1984, Ser. No. 573,472

Claims priority, application Japan, Jan. 25, 1983, 58-9396; Jan. 26, 1983, 58-9969

Int. Cl.⁴ A01N *43/16;* **C07C** *51/36;* **C07D** *317/44*

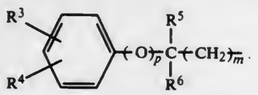
U.S. Cl. 514—464 **11 Claims**

1. A 2-fluoroethoxy-substituted benzene derivative represented by the general formula



(I)

wherein X represents an oxygen or sulfur atom, R^1 and R^2 represent a hydrogen atom or a lower alkyl group, n represents 0 or 1, and A represents a group of the general formula



(II)

in which R^3 and R^4 represent a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a lower alkylthio group, a lower haloalkyl group, a lower haloalkylthio group or a methylenedioxy group, R^5 and R^6 represent a hydrogen atom or a lower alkyl group, and p and m represent 0 or 1.

7. A method of combatting insect pests and/or acarids, which comprises contacting the insect pests or acarids with a pesticidally effective amount of a compound according to claim 1.

4,552,895

FURO[3,2-B]FURAN-2-(3H)-ONES

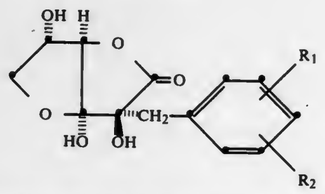
Gary A. Koppel; Russell L. Barton, both of Indianapolis, and Stephen L. Briggs, Clayton, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 14, 1983, Ser. No. 475,272

Int. Cl.⁴ C07D *307/93;* **A61K** *31/365*

U.S. Cl. 514—470 **20 Claims**

1. A compound of the formula



I

wherein each R_1 and R_2 is independently hydrogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 alkyl, halo, trifluoromethyl, nitro, or amino, with the limitation that when one of R_1 and R_2 is hydrogen, the other of R_1 and R_2 may not be hydrogen or hydroxy.

4,552,896

INSECT REPELLENT: 1-(3-PHENOXY)-PROPYL-2,3-DIBROMOPROPIONATE

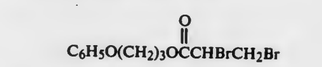
Nathan S. Bunker, Pleasant Hill, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Jun. 6, 1984, Ser. No. 618,003

Int. Cl.⁴ A01N *37/12;* **C07C** *69/635*

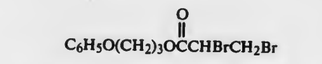
U.S. Cl. 514—550 **5 Claims**

1. A compound having the formula



wherein C_6H_5 is phenyl.

2. An insect repelling composition containing an amount of a compound having the formula



wherein C_6H_5 is phenyl, effective to repel insects from lighting or feeding and an inert diluent or carrier suitable for insect repellent compositions.

4,552,897

SALTS OF 1-(AMINODIHALOPHENYL)-2-AMINOETHANOLS AND ANTILIPOGENIC COMPOSITIONS PREPARED THEREFROM

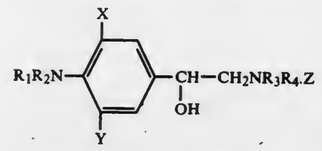
Goro Asato, Titusville, and Lawrence J. Ross, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 1, 1983, Ser. No. 462,746

Int. Cl.⁴ C11C *3/00;* **C07C** *91/04*

U.S. Cl. 514—554 **6 Claims**

1. A soluble salt of structural formula



wherein R_1 is hydrogen or C_1–C_{14} alkyl; R_2 is hydrogen or methyl, provided that when R_1 is C_2–C_{14} alkyl then R_2 is hydrogen; R_3 and R_4 are hydrogen or C_1–C_6 alkyl; X and Y are bromine, chlorine, fluorine or iodine; and Z is oleic acid, abietic acid or mixtures thereof.

4,552,898

[3.2.0]BICYCLOHEPTANONE OXIME ETHERS WITH VALUABLE THERAPEUTIC PROPERTIES

Tsung-Tee Li, Los Altos Hills, and Michael Marx, Mountain View, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

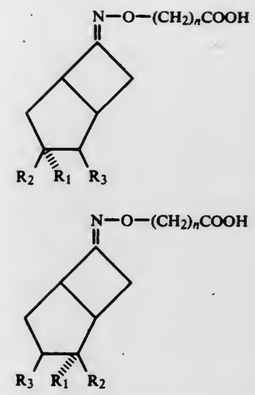
Continuation-in-part of Ser. No. 397,951, Jul. 14, 1982, Pat. No. 4,423,068. This application Aug. 19, 1983, Ser. No. 524,711

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.⁴ A61K *31/19, 31/215;* **C07C** *131/02*

U.S. Cl. 514—561 **49 Claims**

1. A compound or its optical isomers chosen from those represented by the formulas



and the pharmaceutically acceptable non-toxic salts and esters thereof, wherein:

n is an integer from one to four;

R_1 is hydroxy;

R_2 is hydrogen; or

R_1 and R_2 together are an oxo group; and

R_3 is —A—CHOH—R_4 wherein

A is —CH_2—CH_2—; trans—CH=CH—; or —C≡C—; and

R_4 is linear or branched alkyl of one to twelve carbons, preferably 1–10 carbons, most preferably 3–8 carbons, cycloalkyl of three to eight carbons; phenyl optionally substituted with one or two identical substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, trifluoromethyl and halo; or phenyl-loweralkyl optionally substituted with one or two identical substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, and halo.

48. A pharmaceutical composition for preventing or treating cardiovascular disorders in mammals which comprises an effective dosage of a compound of claim 1 or a pharmaceutically acceptable non-toxic salt and ester thereof in admixture with at least one pharmaceutically acceptable excipient.

4,552,899

COUGH/COLD MIXTURES COMPRISING NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Filed Apr. 9, 1984, Ser. No. 598,502

Int. Cl.⁴ A61K *31/19, 31/135*

U.S. Cl. 514—568 **20 Claims**

1. A pharmaceutical composition of matter for use in the treatment of cough, cold, cold-like and/or flu symptoms in a mammalian organism, said composition comprising a sympathomimetically, analgesically and anti-inflammatorily effective amount of (i) at least one of the propionic acid NSAIDs, ibuprofen, naproxen, benozaprofen, flurbiprofen, fenoprofen, fenbufen, ketoprofen, indoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, trioxaprofen, suprofen, alminoprofen, tiaprofenic acid, fluprofen, bucloxic acid, or pharmaceutically acceptable salt thereof, in combinatory immixture with (ii) at least one of the sympathomimetic amines, pseudoephedrine, phenylpropanolamine, phenylephrine, or pharmaceutically acceptable salt thereof.

4,552,900

(1) 3-(PYRIMIDIN-5-YL-OXYPHENYL)-1-BENZOYL-(THIO)-UREA COMPOUNDS USEFUL AS PESTICIDES

Wilhelm Sirrenberg, Sprockhoevel; Fritz Maurer, Wuppertal; Erich Klauke, Odenthal; Benedikt Becker, Mettmann, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

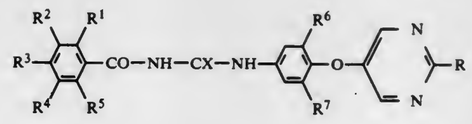
Filed Mar. 15, 1984, Ser. No. 589,986

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311703

Int. Cl.⁴ A61K *31/505;* **C07D** *239/02*

(2) **U.S. Cl. 514—269** **12 Claims**

1. A 3-(pyrimidin-5-yl-oxy-phenyl)-1-benzoyl-(thio)-urea of the formula



in which

R represents hydrogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, halogeno-C_1–C_6-alkyl, phenyl or a phenyl radical which is substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, halogeno-C_1–C_4-alkyl, halogeno-C_1–C_4-alkoxy and/or halogeno-C_1–C_4-alkylthio,

R^1 represents hydrogen, nitro, halogen, C_1–C_4-alkyl or C_1–C_4-alkylthio,

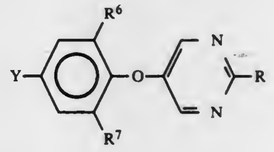
R^2, R^3, R^4 and R^5 are identical or different and represent hydrogen or halogen, and

R^6 and R^7 are identical or different and represent hydrogen, halogen or C_1–C_4-alkyl, and

X represents oxygen or sulphur.

10. A method of combatting arthropods which comprises administering to such arthropods or to an arthropod habitat an arthropodicidally effective amount of a compound according to claim 1.

12. A compound of the formula



in which

R represents hydrogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, halogeno-C_1–C_6-alkyl, phenyl or a phenyl radical which is substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, halogeno-C_1–C_4-alkyl, halogeno-C_1–C_4-alkoxy and/or halogeno-C_1–C_4-alkylthio,

R^6 and R^7 are identical or different and represent hydrogen, halogen or C_1–C_4-alkyl, and

Y represents NO_2, NH_2 or NCX, wherein X denotes oxygen or sulphur.

4,552,901

NONSLUMPING, FOAMABLE POLYORGANOSILOXANE COMPOSITIONS CONTAINING ORGANOSILOXANE GRAFT COPOLYMERS

Therese M. Bauman, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Substitute for Ser. No. 664,913, Oct. 26, 1984,. This application Apr. 8, 1985, Ser. No. 720,768

Int. Cl.⁴ C08J *9/14*

U.S. Cl. 521—122 **11 Claims**

1. A foamable composition which is stable when confined under superatmospheric pressure and when released into an area under atmospheric pressure forms a nonslumping, moisture-curable foam, said composition consisting essentially of the product obtained by mixing under substantially anhydrous conditions

(A) a moisture-curable RTV elastomeric organosiloxane composition comprising the product obtained by mixing in the absence of atmospheric moisture at least one polydiorganosiloxane curable in the presence of a moisture reactive crosslinker, a moisture reactive crosslinker and, optionally, a curing catalyst, the amount of said crosslinker being sufficient to cure said polymer;

(B) less than 12 percent by weight, based on the weight of said foamable composition of a finely divided filler;

(C) from 10 to 50 percent by weight of said foamable composition, of a liquified blowing agent sufficient to form a foam following release of said composition into an area under atmospheric pressure; and

(D) from 5 to 80 percent, based on the combined weight of all diorganosiloxane polymers present in said composition, of an organosiloxane graft copolymer obtained by the peroxide catalyst polymerization of at least one ethylenically unsaturated organic monomer in the presence of a liquid, hydroxyl endblocked polydiorganosiloxane.

4,552,902

PROCESS FOR PREPARING STABLE SOLUTIONS OF TRIMERIZED ISOCYANATES IN MONOMERIC POLYISOCYANATES

John L. Nafziger, Lake Jackson; Mark A. Snyder, Angleton, and Larry W. Mobley, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 685,269

Int. Cl.⁴ C08G *18/14, 18/18*

U.S. Cl. 521—129 **11 Claims**

1. A process for preparing a trimerized isocyanate having improved solubility in a polyisocyanate, which process comprises the steps of (a) forming a first isocyanate terminated prepolymer by reacting a first low equivalent weight polyahl and a stoichiometric excess of a first polyisocyanate, (b) forming a cotrimer by reacting said first isocyanate-terminated prepolymer with a diphenylmethane diisocyanate or polymeric derivative thereof or mixtures thereof in the presence of a trimerization catalyst and (c) reacting a stoichiometric excess of said cotrimer with a second low equivalent weight polyol to form a second isocyanate-terminated prepolymer.

4,552,903

FLEXIBLE POLYURETHANE FOAMS PREPARED FROM COTRIMERS OF ALKYLENE-BRIDGED POLYPHENYLENE POLYISOCYANATES

John L. Nafziger, Lake Jackson; Mark A. Snyder, Angleton, and Larry W. Mobley, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 685,290

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—137 **10 Claims**

1. A flexible polyurethane foam comprising the reaction product of a reaction mixture comprising:

(a) a dispersion of polymer particles in a continuous polyahl phase which continuous phase comprises a relatively high equivalent weight polyahl,

(b) an isocyanate-terminated prepolymer containing dissolved or dispersed therein a plurality of isocyanurate groups formed by the trimerization of an alkylene-bridged polyphenylene polyisocyanate and at least one other polyisocyanate and

(c) a blowing agent.

4,552,904

RIGID THERMOPLASTIC RESIN FOAM AND PROCESS FOR PREPARATION THEREOF

Takao Kadota, Kanuma; Masayuki Hashimoto, and Itsuo Hamada, both of Suzuka, all of Japan, assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/JP83/00232, § 371 Date Mar. 19, 1985, § 102(e) Date Mar. 19, 1985, PCT Pub. No. WO85/00553, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 20, 1983, Ser. No. 717,268

Claims priority, application Japan, Jan. 25, 1982, 57-8838

Int. Cl.⁴ C08J *9/36*

U.S. Cl. 521—145 **1 Claim**



1. A foam obtained by foaming a rigid thermoplastic resin, said foam having a density (D) of 3 $Kg/m^3 \leqq D \leqq 17$ Kg/m^3, a multi:cellular structure including many wrinkles having one end in the boundary portion where at least 3 cells are adjacent to one another and extending toward the central portion of the cell wall, an average cell diameter (A) of $A \leqq 2.0$ mm, a closed cell ratio (B) of $B \geqq 50\%$, a kinetic spring constant (K) of $K \leqq 40 \times 10^6 N/m^3$, and a minimum value (C), among 60% compression set values determined with respect to three directions rectangular to one another, of $C \leqq 25\%$.

4,552,905

COPOLYMER, A PROCESS FOR ITS PREPARATION AND ITS USE AS A SORBENT

Karl-Heinz Keil, Hanau-Mittelbuchen; Ulrich Greiner, Schöneck; Fritz Engelhardt, Frankfurt am Main; Klaus Kühlein, Kelkheim; Reinhold Keller, Bad Soden, and Merten Schlingmann, Königstein, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,707

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324834

Int. Cl.⁴ C08J *9/00*

U.S. Cl. 521—149 **11 Claims**

1. Crosslinked bead-like porous copolymer containing 75 to 99.9% by weight of recurring units of a pyridyl, quinolyl, isoquinolyl or pyrazinyl compound containing a polymerisable olefinic group or of several such compounds, 0.1 to 25% by weight of units of an n-valent polyunsaturated crosslinking agent or of several n-valent polyunsaturated crosslinking agents and 0 to 25% by weight of units of a polymerisable organisilicon and/or organoboron compound or of several such compounds and, based on 100% by weight of the sum of the above-mentioned units, 5 to 350% by weight of units of an N-vinyl-amide of the general formula I $CH_2{=}CH{-}N(R^1){-}C(R^2){=}O$, wherein R^1 denotes hydrogen, methyl or ethyl

and R^2 denotes hydrogen or (C_1–C_3)-alkyl, or of several such N-vinyl-amides, and 0 to 40% by weight or units of another polymerisable compound or of several such com-pounds, n being a number equal to or greater than 2 and it being possible for the pyridyl, quinolyl, isoquinolyl or pyrazinyl compound also additionally to have one other or several other substituents.

4,552,906

POLYMERIZABLE DENTAL COMPOSITIONS AND MOLDED DENTAL ARTICLES PRODUCED THEREFROM

Wolfgang Podszûn, Cologne; Fritjof Bley, Achberg, and Michael Walkowiak, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 605,012

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316851

Int. Cl.⁴ A61K *6/08*

U.S. Cl. 523—115 **9 Claims**

1. In a polymerizable dental composition comprising a polyfunctional (meth)acrylic ester as binder, and about 5 to 50% by weight of a microfine inorganic filler, the improvement which comprises about 0.5 to 25% by weight of a non-crosslinked polymer having a glass transition temperature $\leqq 0°$ C. and a molecular weight M_w of about $10^3 - 5 \times 10^5$.

4,552,907

EPOXY RESIN COMPOSITION

Shigeyuki Sato, Toyota, and Mitsumasa Matsushita, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 27, 1984, Ser. No. 635,012

Claims priority, application Japan, Jul. 29, 1983, 58-139777; Aug. 11, 1983, 58-147127; Oct. 14, 1983, 58-193065; Oct. 25, 1983, 58-199729; Nov. 8, 1983, 58-209593; Nov. 24, 1983, 58-221230; Jun. 26, 1984, 59-131536; Jun. 26, 1984, 59-131537; Jun. 28, 1984, 59-133877

Int. Cl.⁴ C08G *59/02;* **C08K** *5/09*

U.S. Cl. 523—455 **53 Claims**

1. An epoxy resin composition having improved moisture resistance and rust preventing properties, comprising an epoxy resin, a hardener and at least one additive selected from the group consisting of lanolin, lanolin fatty acids and lanolin fatty acid metal salts, the additive present in an amount sufficient so that a portion of said additive does not react with the epoxy resin and exudes to the surface of the epoxy resin composition when the composition is used.

4,552,908

WATER-DILUTABLE AQUEOUS COATING COMPOSITIONS

Peter F. Nicks, Maidenhead, England, and Gillian A. Young, Toronto, Canada, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 17, 1984, Ser. No. 641,777

Claims priority, application United Kingdom, Aug. 30, 1983, 8323241

Int. Cl.⁴ C09D *5/40, 3/64, 5/02, 3/72*

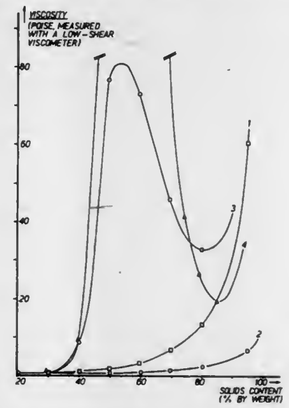
U.S. Cl. 523—504 **10 Claims**

1. A water-dilutable aqueous coating composition which comprises:

(A) X parts of a water-dispersible film-forming polymer of molecular weight in the range 2,000–30,000, the polymer comprising

(a) anionisable groups, at least partially neutralised with a base when required, selected from —COOH, $-SO_3H$ and $-PO_4H_2$, or cationisable groups, at least partially neutralised with an acid when required, of structure $-N\,R^1R^2$, where R^1 and R^2 are H or C_{1-18} alkyl or substituted alkyl groups, the same or different, or R_1 and R_2 represent part of a cyclic structure, and

(b) non-ionisable water-soluble moieties selected from moieties of polyethylene glycol or its monoethers of molecular weight not greater than 1,000; and moieties of poly(-meth)acrylamide, of polyvinylpyrrolidone or of poly 2-ethyl oxazoline and its hydrolysates, all being of molecular weight not greater than 2,000;



(B) Y parts of an organic coupling solvent for the film-forming polymer which has a boiling point greater than that of water, where $Y = X(Z/100)$, Z being in the range 0–150, and

(C) water,

which is characterised in that when a solution of X parts of the water-dispersible polymer in Y parts of the organic coupling solvent or, when $Y = O$, in water is progressively diluted with water, there is no increase in viscosity of the diluted aqueous solution as measured at 25° C. by a low shear viscometer.

4,552,909

THIXOTROPIC COMPOSITIONS COMPRISING LEATHER FIBERS AND METHOD FOR RENDERING POLYMERIC COMPOSITIONS THIXOTROPIC

Richard W. Czerwinski, Nashville; Graham W. Gregory; Richard H. Miller, both of Old Hickory, and Stanley A. Rafalowski, Jr., Nashville, all of Tenn., assignors to Genesco Inc., Tenn.

Filed Sep. 26, 1984, Ser. No. 654,592

Int. Cl.⁴ C08L *89/06*

U.S. Cl. 524—11 **51 Claims**

1. A thixotropic composition comprising:

(1) a liquid; and

(2) a thixotropic agent consisting essentially of leather fibers in an amount sufficient to render the liquid thixotropic.

4,552,910

AQUEOUS COMPOSITIONS CONTAINING AN ORGANOSILICON COMPOUND

Bernward Deubzer, Burghausen, and Hermann Wilhelm, Braunau, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 474,391, Mar. 11, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,796

Int. Cl.⁴ B01F *17/54, 17/52, 17/48;* **C09D** *5/02*

U.S. Cl. 524—43 **6 Claims**

1. An aqueous composition which is obtained by mixing water with an organosilicon compound having at least one



group per molecule and having aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl, sec-butyl and methoxy ethylene radicals bonded to silicon via oxygen, from 1 to 15 percent by weight based on the weight of the organosilicon compound of a compound selected from the group consisting of polyvinyl alcohol, a water soluble cellulose ether containing hydroxyl groups and mixtures thereof, and sufficient acid to provide a composition having a pH of from 1 to 5 and then subsequently neutralizing the composition.

4,552,911

POLYCARBONATE MOLDING COMPOSITIONS HAVING IMPROVED FLAME RETARDANCE

Wolfgang Cohnen; Klaus Kircher; Peter R. Müller, all of Leverkusen, Fed. Rep. of Germany; Sivaram Krishnan, and Dieter Neuray, both of New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,152

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203905

Int. Cl.⁴ C08K *5/34, 3/10, 5/56*

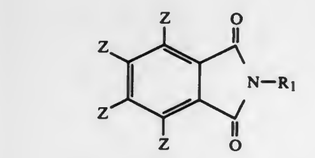
U.S. Cl. 524—94 **4 Claims**

1. A molding composition comprising

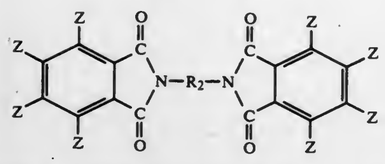
(a) a branched thermoplastic aromatic polycarbonate,

(b) an alkali or an alkaline earth metal salt of an organic or an inorganic acid

(c) a tetrahalogenophthalimide of the general formula I or II



(I)



(II)

wherein R_1 denotes a hydrogen atom, C_1–C_4 alkyl, C_6H_5, $C_{10}H_7$, C_6H_4X, $C_6H_3X_2$ or $C_6H_2X_3$ where X is chlorine or bromine and wherein R_2 is a bond, C_2–C_8 alkylene, C_6H_4 or p-diphenylene, and wherein Z is chlorine or bromine characterized in that it contains about 0.1 to about 7 percent relative to the weight of the composition of requisite bromine, said requisite bromine being obtained by either condensing into said (a) monomeric compounds containing aromatically bonded bromine or by admixing with said (a) a member selected from the group consisting of decabromodiphenyl ether, decabromodiphenyl, pentabromophenoxyethane di(tribromophenyl) tetrabromophthalate and low molecular weight polycarbonate based on tetrabromobisphenol A, provided that said (b) is present in an amount of from about 0.01 to about 1 percent, said (c) is present in an amount of from about 0.05 to about 5 percent and said monomeric compounds are condensed or said member is added at an amount of between about 0.5 and about 30 percent, said percents being relative to the weight of said composition.

4,552,912

FLAME RETARDENT POLYAMIDE COMPOSITIONS

Ian G. Williams, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 29, 1984, Ser. No. 584,907

Claims priority, application United Kingdom, Mar. 17, 1983, 8307407

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.⁴ C08L *77/00;* **C08K** *5/34*

U.S. Cl. 524—100 **5 Claims**

1. A glass-reinforced, fire-retardant, arc-track resistant polyamide composition characterised in that it contains:

(a) at least 35% by weight of a fibre-forming polyamide,

(b) 15 to 30% by weight of glass fibres or particulate fillers,

(c) 16 to 30% by weight of melamine or melamine cyanurate,

(d) 1 to 10% by weight of brominated fire retardants selected from a brominated polyphenylene oxide or a brominated epoxy resin, and

(e) a synergist selected from zinc oxide, zinc borate, a mixture of zinc oxide and zinc borate and a mixture of antimony oxide and zinc borate, wherein the concentration of oxide present in the synergist is between 0 and 5%, the concentration of borate present is between 0 and 25% by weight, and the total weight of synergist is at least 1%, the weight percentages of the constituents (a), (b), (c), (d) and (e) totalling 100%.

4,552,913

ONE COMPONENT POLYURETHANE SMC SURFACE COAT

James D. Wolfe, North Canton, Ohio; Michael E. Kimball, West Brook, Me., and Richard E. Fruzzetti, Wadsworth, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 14, 1985, Ser. No. 691,247

Int. Cl.⁴ C08L *75/08*

U.S. Cl. 524—240 **4 Claims**

1. A method of in-mold coating a molded shaped article composed of epoxy/glass fibers or vinyl ether/glass fibers comprising applying a stable one component polyurethane precursor comprising a polyurethane prepolymer having about 3 to 15% NCO by weight and a salt complex of a diamine to a shaped surface of the article closing the mold on the shaped article under a pressure of about 500 to 900 psi (34,475 to 1,379,000 pascals) and a temperature of at least 80° C. to spread the precursor over the surface of the shaped article and cure it, and open the mold to remove the polyurethane coated article.

4,552,914

HYDROCARBON BLOCK COPOLYMER WITH DISPERSED POLYSILOXANE

Robert E. Sterling, New Port Richey, Fla., assignor to Medical Research Associates, Ltd. #2, Clearwater, Fla.

Division of Ser. No. 465,586, Feb. 10, 1983, Pat. No. 4,511,354, which is a division of Ser. No. 147,475, May 7, 1980, Pat. No. 4,386,179. This application Dec. 4, 1984, Ser. No. 678,218

Int. Cl.⁴ C08K *5/54*

U.S. Cl. 524—269 **9 Claims**

1. The composition of matter comprising:

(A) an elastomeric, thermoplastic hydrocarbon block copolymer, said copolymer having a total molecular weight of about 50,000 to 600,000

(B) polysiloxane dispersed substantially uniformly throughout said copolymer, having a viscosity of about 20 to 13,000 centistokes, and comprising about 0.1 to 8 percent of the total weight of said composition; and

(C) mineral oil dispersed substantially uniformly throughout said copolymer and comprising less than about 60 percent of the total weight of said composition.

4,552,915

LOW-TEMPERATURE SINTERED PORCELAIN COMPOSITION SUITABLE FOR FORMING

Toshio Fujita, and Kazuhiro Watanabe, both of Ohbu, Japan, assignors to Nippon Kouatsu Electric Co., Japan

Filed Mar. 27, 1984, Ser. No. 593,868

Claims priority, application Japan, Apr. 4, 1983, 58-58988

Int. Cl.⁴ C08K *3/40, 5/09;* **C04B** *33/24, 35/81*

U.S. Cl. 524—322 **6 Claims**

1. A composition suitable for forming a low-temperature sintered porcelain, which comprises:

at least one thermoplastic resin selected from the group consisting of polystyrene, polyethylene and polypropylene . . . ca. 6–20 wt. parts;

butyral resin . . . ca. 1–11 wt. parts; and

lubricant . . . ca. 1–6 wt. parts;

mixed with 100 wt. parts of a mixture having the following composition:

vitreous component . . . ca. 40–60 wt. %;

aluminum oxide . . . ca. 10–30 wt. %;

clay component . . . ca. 10–25 wt. %; and

binder . . . ca. 5–15 wt. %.

4,552,916

POLYMER COMPOSITIONS BASED ON SULFONATED IONOMERS AND AMINE CONTAINING POLYMERS

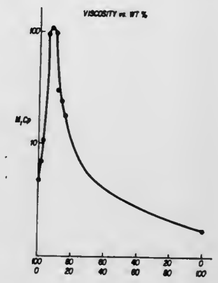
Robert D. Lundberg, Bridgewater; Dennis G. Peiffer, East Brunswick, and Robert R. Phillips, Spring Lk. Heights, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 547,911, Nov. 2, 1983, Pat. No. 4,480,063. This application Oct. 22, 1984, Ser. No. 663,123

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C08K *5/05, 5/01;* **C08L** *91/00*

U.S. Cl. 524—399 **26 Claims**



1. A composition comprising interacting a blend of a neutralized sulfonated polymer containing from about 4 meq. of metal sulfonate per 100 g. of polymer up to 200 meq. per 100 g. of polymer, said sulfonate polymer being at least 95% neutralized, complexed with a second polymer containing basic nitrogen atoms incorporated, pyridine copolymerized or grafted thereon, said polymer containing basic nitrogen from about 4 meq. up to 500 meq. per 100 g. of polymer, wherein the molar ratio of metal sulfonate groups to that of basic nitrogen atoms varies from about 0.03 to about 30.

4,552,917

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 203,212, Nov. 3, 1980, abandoned. This application Oct. 24, 1983, Ser. No. 544,049

Int. Cl.⁴ C08L *75/00*

U.S. Cl. 524—590 **23 Claims**

1. A polyurethane liquid polymer composition comprising a urethane oligomer and a heat activated free radical generating catalyst, said urethane oligomer having a final free NCO content from 0% to about 20% and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyante with

(2) a polyether polyol having

(i) an average equivalent weight of about 75 to about 500,

(ii) an average functionality of at least about 3, with

(b) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of

(1) hydroxyalkyl acrylates,

(2) hydroxyalkyl methacrylates and

(3) hydroxyalkyl acrylamides.

4,552,918

FLAME RESISTANT STARCH-SULFAMATE PRODUCTS

Jürgen Lörcks, Rees-Bienen; Peter Obradovic, Kleve-Rindern; Peter Hochbahn, Kleve, and Hermann Feeser, Norderstedt, all of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 4, 1984, Ser. No. 616,865

Int. Cl.⁴ C08L *3/00;* **C08J** *3/02*

U.S. Cl. 524—734 **24 Claims**

1. A process for preparing a flame-resistant starch sulfamate product comprising contacting starch with at least one sulfamate selected from the group consisting of alkali sulfamate and alkaline earth sulfamate in an amount from 3 to 40% by weight, based on starch dry substance, in the presence of at least 30% by weight water, based on total weight of the reaction mixture, at a temperature from 40° to 250° C., followed by incorporating a synthetic polymer in the starch-sulfamate product in an amount up to 80% by weight, based on total dry substance, by polymerizing a monomer in an aqueous-colloidal dispersion of the starch-sulfamate product.

4,552,919

ROOM TEMPERATURE-CURABLE POLYORGANOSILOXANE COMPOSITION WHOSE CURED PRODUCTS RESIST SOILING

Ryuzo Mikami, Ichihara, and Toshio Saruyama, Narashino, both of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 624,161

Claims priority, application Japan, Jul. 8, 1983, 58-124124

Int. Cl.⁴ C08L *83/04*

U.S. Cl. 524—860 **15 Claims**

1. A room temperature-curable polyorganosiloxane composition consisting essentially of

(A) a polyorganosiloxane which possesses at least one silicon-bonded oxyalkylene radical of the general formula $-R^1O(R^2O)_nR^3$ wherein each R^1 and R^2 represent a divalent alkylene radical, R^3 is a radical selected from alkyl, acyl, and hydrogen and n is 0 or an integer with a value $\geqq 1$, and said polyorganosiloxane having at least 2 silanol groups per molecule and

(B) a curing agent.

4,552,920

SOLID RESIN COMPOSITION

Jugo Goto, Kawanishi, and Tsutomu Kubota, Mishima, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

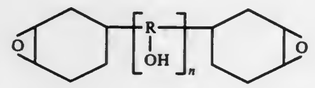
Filed Jan. 13, 1984, Ser. No. 570,587
Claims priority, application Japan, Jan. 17, 1983, 58-6257
Int. Cl.[4] C08L *29/04, 67/02*
U.S. Cl. 525—58 **12 Claims**

1. A solid resin composition which comprises

(a) 10 to 65 parts by weight of a carboxyl-modified product of a hydroxyl-containing polymer that is obtained by hydrolyzing an ethylene/vinyl acetate copolymer,

(b) 20 to 70 parts by weight of a carboxyl-terminated saturated polyester resin with not less than 30 weight % of alicyclic and/or spiro rings in the molecule, selected from the group consisting of (1) a reaction product of hydrogenated bisphenol A, trimethylolpropane and hexahydrophthalic anhydride, (2) a reaction product of spiroglycol, hydrogenated bisphenol A, trimethylolpropane and methylhexahydrophthalic anhydride, and (3) a reaction product of hydrogenated bisphenol A and succinic anhydride, and

(c) 5 to 25 parts by weight of a solid epoxy resin having two or more epoxy groups in the molecule and an epoxy equivalent of 80 to 400, selected from the group consisting of triglycidyl isocyanurate, diglycidyl terephthalate, diglycidyl ether of bisphenol S, and an epoxy resin of the formula:



wherein
R is

$$-C_lH_{2l-m}-\underset{|}{CH}-,$$

l is an integer of 2 to 40, m is 0, 1 or 2, and n is an integer of 1 to 10,
the sum of the components (a), (b) and (c) being 100 parts by weight.

4,552,921

METHOD OF FORMING A NONAQUEOUS STABLE EMULSION OF RUBBER IN POLYMERIZABLE MONOMER, AND THE POLYMERIZATION PROCESS AND THERMOPLASTIC COPOLYMER PRODUCED THEREBY

Wen B. Shyu, Chagrin Falls, Ohio; David A. Woodhead, Llantwit Major, Wales, and Vincent P. Quigley, Maple Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Feb. 25, 1985, Ser. No. 705,266
Int. Cl.[4] C08L *53/00*
U.S. Cl. 525—96 **38 Claims**

1. A method of fabricating a nonaqueous stable emulsion feedstock composition comprising a rubber, a mixture of at least two miscible organic monomers, at least one of said monomers being a solvent for the rubber, the mixture of said monomers being substantially a nonsolvent for said rubber, and a block copolymer having at least one component miscible with said rubber and at least one component miscible with at least one of said monomers, said block copolymer maintains the rubber in emulsified form within the mixture of organic monomers comprising mixing at least a portion of one of the rubber soluble monomers with the rubber and the block copolymer to form a first nonaqueous solution, mixing the remaining portion of said rubber soluble monomers with the remaining monomers to form a second nonaqueous solution, and combining said first and second solutions to form said nonaqueous stable emulsion feedstock comprising rubber or rubber-rich particles dispersed in said monomer mixture.

4,552,922

METHOD FOR MULTIPOLYMER SYNTHESIS OF ORGANIC COMPOUNDS

Abraham Patchornik, Ness Ziona; Yechiel Shai, Yehud, and Shimeon Pass, Kiryat ONO, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 506,862, Oct. 22, 1983, abandoned. This application Jun. 24, 1983, Ser. No. 507,443
Claims priority, application Israel, Jun. 22, 1982, 66094
Int. Cl.[4] C08L *89/00;* **C07C** *103/52;* **C07H** *15/12*
U.S. Cl. 525—54.11 **23 Claims**

1. In the method for synthesizing an organic compound B—A synthesizable by the reaction scheme

$$B+\alpha-A \rightarrow B-A+\alpha \qquad (I)$$

comprising reacting B with the compound α—A under conditions sufficient to permit said reaction, to thereby yield α and the compound B—A, all of A, B, α—A and α being selected to permit said reaction (I) to proceed, the improvement by which said reaction (I) may proceed such that compound B—A is produced and recovered selectively and at high yield with excellent economy of reactants, comprising:

binding the reactant A to a first chemically modifiable polymeric support P by means of a functional group α', which may be the same as α, said first polymeric support and α'being selected with respect to any given set of reactants capable of reacting according to reaction (I) such that α' is attachable to said first polymeric support and, after being attached to said first polymeric support, is reactable with A to form the compound Ⓟ—α'—A, with bonds between α' and said first polymeric support and between α' and A which are of sufficient strength to permit A to detach from Ⓟ—α'—A when Ⓟ—α'—A is reacted with α under reaction conditions sufficient to form α—A and to prevent detachment of α' from said first polymer support under the same reaction conditions;

binding the reactant B to a second chemically modifiable polymeric support Ⓟ', said second polymeric support being capable of reacting with B to form Ⓟ —B with a bond between said second polymeric support and B sufficiently strong to prevent detachment of B under reaction conditions under which said reaction scheme (I) may proceed to form Ⓟ —B—A;

placing said first polymeric support in a first reaction zone having an entrance and a separate exit;

placing said second polymeric support in a second reaction zone having an entrance and a separate exit;

feeding α, in a liquid medium which does not interfere with any of the reactions, to the entrance of the first reaction zone, and causing the liquid medium carrying α to contact said first polymeric support having α'—A bound thereto, under reaction conditions sufficient to permit the following reaction to take place:

$$Ⓟ-\alpha'-A+\alpha \rightarrow Ⓟ-\alpha'+\alpha-A \qquad (II)$$

removing the liquid medium which has contacted the first polymeric support through the exit of the first reaction zone;

feeding the liquid medium removed from the exit of the first reaction zone to the entrance of the second reaction zone and causing the liquid medium to contact said second polymeric support having B bound thereto, under reaction conditions sufficient to permit the following reaction to take place:

$$Ⓟ'-B+\alpha-A \rightarrow Ⓟ'-B-A+\alpha \qquad (III)$$

removing the liquid medium which has contacted the second polymer support through the exit of the second reaction zone;

repeating said feeding and removing steps, using the liquid medium removed from the exit of the second reaction zone as the source of α in reaction (II), thereby circulating the liquid medium between the two reaction zones, until a desired amount of Ⓟ —B—A is produced;

cleaving B—A from said second polymeric support; and

recovering B—A.

4,552,923

OFFSET PRINTING INK COMPOSITION

Shozo Tsuchiya, Tokyo; Makoto Sasaki, Yokohama; Akio Oshima, Yokohama, and Hideo Hayashi, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 542,552, Oct. 17, 1983, abandoned, which is a continuation of Ser. No. 290,288, Aug. 6, 1981, abandoned. This application Nov. 14, 1984, Ser. No. 671,796
Claims priority, application Japan, Aug. 14, 1980, 55-111055
Int. Cl.[4] C08L *61/10*
U.S. Cl. 525—68 **12 Claims**

1. An offset printing ink composition containing a vehicle resin (III) prepared by reating 5 to 100 parts by weight of a phenolic resin (component D) with 100 parts by weight of a modified resin (II) modified with an acid, said phenolic resin (component D) being prepared by the condensation of a phenol having an alkyl substituent group having 4 to 9 carbon atoms with formalin, said modified resin (II) modified with an acid, said modified resin (II) being prepared by reacting 1 to 15 parts by weight of a component C selected from the group consisting of unsaturated carboxylic acids, unsaturated carboxylic acid anhydrides and mixtures thereof with 100 parts by weight of a resin (I) obtained by copolymerizing 5 to 100 parts by weight of a straight-chain α-olefin (component B) with 100 parts by weight of a cyclic compound (component A) selected from the group consisting of cyclopentadiene, dicyclopentadiene, and mixtures thereof.

4,552,924

COMPATIBILIZATION OF POLYCARBONATE BLENDS

Niles R. Rosenquist, Evansville, and John A. Tyrell, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 557,006, Dec. 1, 1983, Pat. No. 4,496,693. This application Aug. 20, 1984, Ser. No. 642,093
Int. Cl.[4] C08L *69/00*
U.S. Cl. 525—146 **11 Claims**

1. A process of molding a polymer admixture with improved compatibility which comprises

a. preparing an admixture of (i) an aromatic carbonate polymer, (ii) a polyolefin or modified polyolefin in sufficient quantity to impact modify the aromatic carbonate polymer, and (iii) an amount of catalyst sufficient to compatibilize (i) and (ii) selected from the group consisting of hydroxides, oxides and amides of alkali and alkaline earth metals and

b. molding said admixture.

4,552,925

TETRAFLUOROETHYLENE/HEXAFLUOROPROPYLENE COPOLYMER HAVING IMPROVED EXTRUDABILITY

Shinichi Nakagawa, Nara; Kohzoh Asano, Osaka; Shinsuke Sakata, Osaka; Toklo Adachi, Osaka, and Shoji Kawachi, Nishinomiya, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 7, 1983, Ser. No. 472,838
Claims priority, application Japan, Mar. 8, 1982, 57-37067
Int. Cl.[4] C08F *214/26, 214/28*
U.S. Cl. 525—200 **12 Claims**

1. A mixture of tetrafluoroethylene/hexafluoropropylene copolymers comprising:

(a) 10 to 70% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 100×10^4 to $1{,}000\times10^4$ poise; and

(b) 90 to 30% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 0.1×10^4 to 60×10^4 poise,

said mixture having a specific melt viscosity at 380° C. of from 1×10^4 to 60×10^4 poise, a melt flow ratio of at least 3.5 and a zero strength time (ZST, second) at 380° C. satisfying the following equation:

$$ZST \geq \tfrac{1}{4}x^2+17x+107$$

wherein x is (specific melt viscosity)$\times10^4$.

5. A process for preparing the mixture of tetrafluoroethylene/hexafluoropropylene copolymers according to claim 1, which comprises mixing 10 to 70% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 100×10^4 to $1{,}000\times10^4$ poise and 90 to 30% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity of from 0.1×10^4 to 60×10^4 poise.

6. A process for preparing the mixture of tetrafluoroethylene/hexafluoropropylene copolymers according to claim 1, which comprises (a) polymerizing tetrafluoroethylene and hexafluoropropylene to form a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 100×10^4 to $1{,}000\times10^4$ poise and (b) polymerizing tetrafluoroethylene and hexafluoropropylene to form a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 0.1×10^4 to 60×10^4 poise, the steps (a) and (b) being effected in any order or alternately and the mixture produced comprising 10 to 70% by weight of portion (a) and 90 to 30% by weight of portion (b).

11. The mixture of copolymers according to claim 1, wherein at least one of said copolymer portions contains a third comonomer component selected from the group consisting of perfluorovinyl ethers, perfluoroallyl ethers, trifluorochloroethylene, trifluoroethylene, vinylidene fluoride, ethylene, and propylene in an amount of not more than about 5% by weight.

12. The mixture of copolymers according to claim 1, which further comprises a perfluorocopolymer selected from the group consisting of polytetrafluoroethylene, copolymers of tetrafluoroethylene and perfluorovinyl ethers, and perfluoroallyl ethers in an amount of not more than about 20% by weight.

4,552,926

SUBSTITUTED 4-HYDROXYPHENYLTHIO BENZOATE STABILIZERS

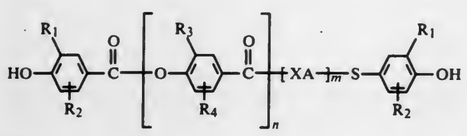
John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,069

Int. Cl.[4] C08K *5/20, 5/36*

U.S. Cl. 524—219 **9 Claims**

1. A composition of matter comprising an organic material subject to oxidative thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of formula I



(I)

wherein

R_1, R_2, R_3 and R_4 are independently hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms.

X is —NH— or —S—;

A is alkylene of 1 to 10 carbon atoms, phenylene or cycloalkylene of 5 to 6 carbon atoms,

m is 1, and

n is 0 or 1.

4,552,927

CONDUCTING ORGANIC POLYMER BASED ON POLYPYRROLE

Leslie F. Warren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 9, 1983, Ser. No. 530,843

Int. Cl.[4] C08L *25/08, 33/26, 39/04*

U.S. Cl. 525—279 **10 Claims**

5. A conducting organic polymer comprising:

a polypyrrole; and

a non-nucleophilic polymeric anion.

4,552,928

DI- AND TRIPHENYLATED CATION RADICAL POLYMERS AND THEIR USE AS DIELS-ALDER CATALYSTS

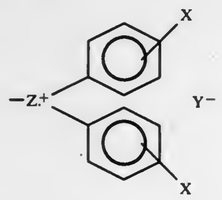
Nathan L. Bauld, and Dennis J. Bellville, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 317,109, Nov. 2, 1981, Pat. No. 4,503,195. This application Sep. 17, 1984, Ser. No. 651,059

Int. Cl.[4] C08F *8/44*

U.S. Cl. 525—326.2 **9 Claims**

1. A catalyst composition comprising an insoluble, solid polymer substrate having covalently attached thereon a plurality of diphenylated cation radical units of the formula:



wherein

Z^+ represents a monovalent cation radical selected from the group consisting of nitrogen, phosphorus, arsenic, antimony, and bismuth;

each X independently represents hydrogen or a substituted functional group selected from the group consisting of lower alkyl, halogen, hydroxy, alkyl halide, carbonyl, cyano, nitrile, and nitro groups; and

Y^- represents a monovalent anion;

said diphenylated cation radical covalently attached through one or more of its phenyl groups to the polymer substrate.

4,552,929

SULPHUR-CONTAINING POLYMERS USEFUL AS STABILIZING AGENTS FOR RUBBER VULCANIZATES

Albert F. L. G. Devaux, Mont Saint Guibert, and Philippe G. Moniotte, Heron, both of Belgium, assignors to Monsanto Europe, S.A., Brussels, Belgium

Filed Jun. 4, 1984, Ser. No. 617,064

Claims priority, application United Kingdom, Jun. 10, 1983, 8315977

Int. Cl.[4] C08C *19/20*

U.S. Cl. 525—332.6 **7 Claims**

1. A vulcanisable rubber composition comprising a diene rubber, sulphur and a vulcanisation accelerator, characterised in that the composition also contains a polymeric trithiocarbonate having a structure comprising repeating units of the formula

(I)

where R is a straight- or branched-chain alkylene group containing 5 to 16 carbon atoms.

4,552,930

VISBROKEN PROPYLENE-ETHYLENE RANDOM COPOLYMERS, PROCESS AND FILMS

Kiwami Hirota; Hideki Tamano, and Fumio Sakaguchi, all of Oita, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,479

Claims priority, application Japan, Aug. 22, 1981, 56-130855; Sep. 4, 1981, 56-138317; Apr. 20, 1982, 57-64654; Apr. 20, 1982, 57-64655; Jul. 2, 1982, 57-114057

Int. Cl.[4] C08F *8/06*

U.S. Cl. 525—333.8 **6 Claims**

1. A process for producing a propylene-ethylene random copolymer comprising the steps of:

copolymerizing propylene and ethylene in the presence of a Ziegler-type catalyst to form a random copolymer having an MFI, determined at 230° C. under a load of 2.16 kg, of 0.01 to 0.3 g/10 min; and

visbreaking the resultant copolymer in the presence of a peroxide to form a random copolymer having the following characteristics:

(a) a melting point of 115° C. to 140° C.;

(b) an ethylene content, determined by the C^{13}-NMR method, of 6 to 20 mol %;

(c) a block index, calculated according to the C^{13}-NMR method, of 1.1 or less;

(d) an MFI, determined at 230° C. under a load of 2.16 kg, of 0.5 to 100 g/10 min; and

(e) a ratio of the MLMFI, determined at 230° C. under a load of 10.0 kg, to the MFI, determined at 230° C. under a load of 2.16 kg, of 10 to 16, said peroxide having a half life-decomposition time of one second to ten minutes at the melting point of said copolymer.

4,552,931

PROCESS OF END-CAPPING A POLYIMIDE SYSTEM

Terry L. St. Clair, Poquoson, and Harold D. Burks, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

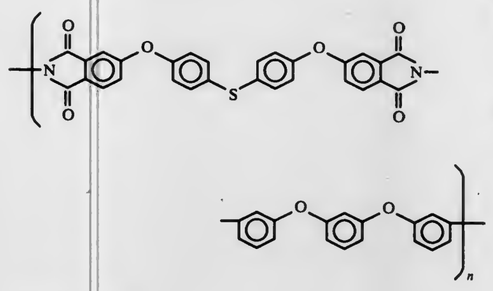
Filed Sep. 11, 1984, Ser. No. 649,328

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] C08G *73/10*

U.S. Cl. 525—432 **7 Claims**

1. A process of endcapping a polyimide system having the uncapped chemical structure of



where n=5-100

comprising reacting an endcapping agent with the uncapped polyimide system for a controlled period of time and wherein the endcapping agent is selected from the group consisting of:

where R is any alkyl moiety,

where Ar is any aryl moiety,

a monofunctional amine of the general type $R—NH_2$ where R is any alkyl moiety, and $Ar—NH_2$ where Ar is any aryl moiety.

4,552,932

RADIATION CURABLE POLYURETHANES

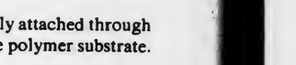
Charles S. Schollenberger, Hudson, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 30, 1984, Ser. No. 605,514

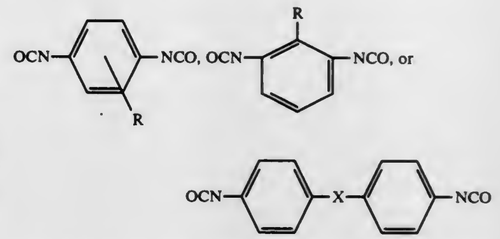
Int. Cl.[4] C08F *283/04;* **C08G** *18/38*

U.S. Cl. 525—440 **11 Claims**

1. Radiation curable terminal ethylenic unsaturated polyesterurethanes crystallizable at about 30° C. to about 80° C. comprising the reaction product of polyester glycols having molecular weights from about 2000 to about 6000, consisting of aliphatic glycols containing 2, 4, or 6 carbon atoms and selected from the group consisting of ethylene glycol, 1,4-butanediol, and 1,6-hexamethylene glycol, and aliphatic dicarboxylic acids of the formula HOOC—R—COOH wherein R is a divalent alkylene —R— radical containing 4 or 6 carbon atoms, an organic diisocyanate, and hydroxy acrylates and alkacrylates having the formula



wherein Z is hydrogen, methyl or ethyl and R' is a divalent alkylene —R— radical containing 2 to 6 carbon atoms, in a molar ratio of 1 mol of polyester glycol to about 2 to 3 mols of organic diisocyanate to about 2 to 5 moles of hydroxy acrylate or alkacrylate, the organic diisocyanates have the general formulae



wherein R is hydrogen or methyl and X is a valence bond or a divalent alkylene —R"— radical containing 1 to 3 carbon atoms; and there is used an excess of said hydroxyacrylate or alkacrylate in relation to the free isocyanate group.

4,552,933

EXTENDED AMINE CURING AGENTS AND EPOXY RESINS CURED THEREWITH

Kathy B. Sellstrom, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,848

Int. Cl.[4] C08L *75/08, 63/02*

U.S. Cl. 525—454 **44 Claims**

1. A method for curing a 1,2-epoxy resin which comprises intimately mixing said epoxy resin with an effective amount of an amine curing agent comprising a solution of a normally solid cured polyurethane elastomer in a 1,2-epoxy-interactive polyamine curing agent, whereby reaction of aminohydrogens of said amine with epoxy groups in said epoxy resin composition will result in the curing of said epoxy resin.

4,552,934

SAG RESISTANT AT ESSENTIALLY 1:1 RATIO TWO COMPONENT ADHESIVE

Thomas G. Rabito; Richard L. Cline, both of Ashland; Stephen M. Oswalt, Mansfield; Marvin T. Randleman, New London, and Michael E. Kimball, Ashland, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 6, 1981, Ser. No. 251,458

Int. Cl.[4] C08L *75/08*

U.S. Cl. 525—458 **11 Claims**

1. A two component adhesive composed of a polyurethane component containing 3 to 15 percent by weight of free NCO and a curative component composed of a mixture of 0.01 to 0.1 equivalents of a polyamine having a molecular weight less than about 1000 and 0.1 to 1.0 equivalent of a hydroxyl terminated prepolymer formed by reacting 0.1 to 1.5 equivalents of a 150 to 3000 molecular weight polyol having 2 to 6 hydroxyls with 0.1 to 0.4 equivalents of an organic polyisocyanate.

4,552,935
HEAT-CURABLE EPOXY RESIN MIXTURES CONTAINING IMIDE COMPOUNDS AND CONDENSATION PRODUCTS OF PHENOLS, AMINES AND ALDEHYDES OR KETONES

Theobald Haug, Frenkendorf, and Friedrich Stockinger, Hölstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,845

Claims priority, application Switzerland, Jan. 13, 1983, 175/83

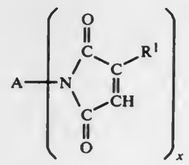
Int. Cl.[4] C08L *61/00;* **C08G** *8/32, 14/06*

U.S. Cl. 525—488 **17 Claims**

1. A heat-curbale mixture which comprises

(a) an epoxy resin having on average more than one 1,2-epoxy group per molecule,

(b) a momoimide or polyimide of an unsaturated dicarboxylic acid of formula I



in which A is an x-valent organic radical having at least 2 and at most 30 C atoms, R^1 is an H atom or methyl, and x is 1, 2 or 3, and

(c) a product of condensing (1) a phenol, (2) an amine and (3) an aldehyde or ketone in an acid medium by reacting with one another at a pH no higher than 6, wherein (1), (2) and (3) are

(1) a substituted monohydric phenol which is unsubstituted in the p-position and in one of the two o-positions or in both o-positions; an unsubstituted dihydric mononuclear phenol or an unsubstituted or substituted dihydric or polyhydric dinuclear or polynuclear phenol which has at least two reactive ring positions for reaction with an aldehyde or ketone;

(2) a substituted aromatic monoamine which has at least one reactive ring position for reaction with an aldehyde or ketone; an unsubstituted aromatic mononuclear or dinuclear diamine or an substituted aromatic mononuclear or dinuclear diamine which has at least two reactive ring positions for reaction with an aldehyde or ketone, and

(3) an aldehyde or ketone, in a mixing ratio on a molar basis in the reaction mixture of phenol to amine to aldehyde or ketone of 1:1:1.2 to 6:1:8, and

in the presence, in the curable mixture, of at least 1 equivalent of imide group per equivalent of amine-hydrogen and of at least 1 equivalent of phenolic hydroxyl group per epoxy equivalent.

4,552,936
WEATHERABLE ABRASION RESISTANT ETHERIFIED AMINOPLAST DERIVED COATING FOR PLASTIC SUBSTRATES

James E. Moore, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 17, 1984, Ser. No. 641,914

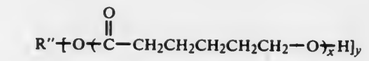
Int. Cl.[4] C08L *67/04*

U.S. Cl. 525—519 **4 Claims**

1. A curable protective coating composition for thermoplastic materials consisting essentially of

(i) an aminoplast derived compound;

(ii) polycaprolactone polyol of the general formula:



wherein R'' is a residue of a polyhydric alcohol; y is 2 or 3; x is on average greater than 3 but less than the value at which said polycaprolactone polyol is insoluble in a nonagressive solvent, and said polycaprolactone polyol has a molecular weight greater than 1000;

(iii) a solvent.

4,552,937
POLYMERIZATION CATALYST SYSTEM

(I) **Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

Division of Ser. No. 412,347, Aug. 27, 1982, Pat. No. 4,472,519. This application May 1, 1984, Ser. No. 606,066

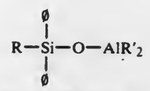
Int. Cl.[4] C08F *4/64, 10/02*

U.S. Cl. 526—125 **19 Claims**

1. A method of polymerizing an olefin comprising contacting said olefin under polymerization conditions with a catalyst system comprising

(1) an olefin polymerization catalyst comprising a compound containing a metal of Groups IVb, Vb, and VIb, and

(2) a cocatalyst comprising at least one compound of the formula



wherein each Ø is an aryl radical, R is —O—AlR'_2 and wherein each R' is individually selected from hydrogen, halides, alkyl, aryl, alkoxy, and aryloxy radicals, with the further requirement that if one of the R' radicals attached to an Al atom is a halide, the other must be a radical other than hydrogen and that only one of the R' radicals attached to each Al atom can be hydrogen.

4,552,938
PROCESS FOR PREPARING DRY SOLID WATER ABSORBING POLYACRYLATE RESIN

Muneharu Mikita, Takatsuki; Shozo Tanioku, Nara, and Takayasu Touda, Osaka, all of Japan, assignors to American Colloid Company, Skokie, Ill.

Filed Oct. 25, 1982, Ser. No. 436,428

Claims priority, application Japan, Oct. 26, 1981, 56-171559; Jul. 21, 1982, 57-128266

Int. Cl.[4] C08F *220/06*

U.S. Cl. 526—240 **10 Claims**

1. A process for preparing a solid water absorbing resin comprising mixing an aqueous monomer solution of (A) potassium acrylate; and (B) a water-miscible or water-soluble polyvinyl monomer in a combined concentration of 55 to 80 wt. %; to form a mixed monomer solution wherein the monomers of the mixed monomer solution consist essentially of (A) and (B) and initiating polymerization of monomers (A) and (B) such that during polymerization, the exothermic heat of reaction is substantially the only heat energy used to accomplish polymerization, cross-linking and to drive off sufficient water to obtain a solid cross-linked resin.

4,552,939
PREPARATION OF SULFONATED COPOLYMERS BY SUSPENSION COPOLYMERIZATION

Warren A. Thaler, Flemington, N.J.; S. Richard Turner, Pittsford, N.Y., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1983, Ser. No. 563,062

Int. Cl.[4] C08F *228/02;* **C08K** *5/17*

U.S. Cl. 526—287 **4 Claims**

1. A water insoluble copolymer of a hydrocarbon monomer of the structure:



where R_1=aryl, aralkyl, alkaryl, vinyl, propenyl, isopropenyl or allyl and R_2=H, alkyl, aryl, aralkyl and alkaryl, and the tertiary amine salt of a sulfonate monomer where the total carbons of the amine salt are 14 to 24, where the sulfonate monomer represents a weight ratio of 0.005 to 0.8 where the product is a particle of 10 to 5,000 μm, wherein said unsulfonated monomer is selected from the group consisting of diolefins, styrene, alkylstyrene, butadiene, isoprene, and the sulfonated monomer is selected from the group consisting of amine salts of vinyl sulfonate, acrylamidomethyl propane sulfonate, sulfoethyl methacrylate.

4,552,940
STYRENE VISCOSITY MODIFIER OF GRAFTED STARCH POLYMER SOLUTIONS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 585,731, Mar. 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 501,577, Jun. 6, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 647,770

Int. Cl.[4] C08L *3/06*

U.S. Cl. 527—312 **17 Claims**

1. A grafted starch polymer comprising from about 5 weight percent to about 95 weight percent of a starch substrate; from about 95 to about 5 weight percent of vinyl polymer segments comprising at least 50% by weight of said vinyl polymeric segments acrylamide monomer residue; and a sufficient amount of styrene to significantly reduce the viscosity of a solution of said graft polymer.

4,552,941
POLYSILOXANES FROM ACYLOXYSILANES USING ORGANO METALLIC CATALYST

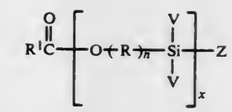
Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 294,784, Aug. 10, 1981, Pat. No. 4,369,289, which is a continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,327,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Nov. 5, 1982, Ser. No. 439,173

Int. Cl.[4] C08G *77/08, 77/18*

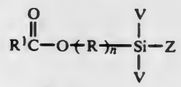
U.S. Cl. 528—16 **28 Claims**

1. A polysiloxane having the formula:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, R^1 is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is an alkoxy radical having one to 18 carbon atoms inclusive, n is an integer having a value of one to 18 inclusive and x is an integer having a value of at least 2.

5. A process of preparing a polysiloxane as defined in claim 1 which comprises reacting a mixture containing a metal carboxylate and a silane having the formula:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, R^1 is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is an alkoxy radical having one to 18 carbon atoms inclusive and n is an integer having a value of one to 18 inclusive.

4,552,942
SILANES AND COMPOSITIONS PREPARED THEREFROM

Franz-Heinrich Kreuzer, Martinsried; Gisela Glauberman, Munich, and Erhard Bosch, Burghausen, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 454,810, Dec. 30, 1982, Pat. No. 4,511,728. This application Sep. 14, 1984, Ser. No. 650,603

Claims priority, application Fed. Rep. of Germany, May 20, 1982, 3210337

Int. Cl.[4] C08G *77/04*

U.S. Cl. 528—34 **6 Claims**

1. A composition which is stable under anhydrous conditions, but when exposed to moisture at room temperature, crosslinks to form an elastomer is prepared by mixing a diorganopolysiloxane containing terminal condensable groups selected from the class consisting of hydroxyl groups, alkoxy groups and mixtures thereof, with a silane selected from the group consisting of $R_nSi(OCR_2^1COZR)_{4-n}$ and oligomers thereof having at least three condensable groups per molecule and at least one additional substance, where R is selected from the group consisting of monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals, R^1 is selected from the group consisting of hydrogen and R, Z is selected from the group consisting of oxygen and the group



where R^1 is the same as above and n is 0 or 1.

4,552,943

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 506,179, Jun. 20, 1983, Pat. No. 4,463,158, which is a division of Ser. No. 364,575, Apr. 1, 1982, Pat. No. 4,439,577, which is a continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Mar. 12, 1984, Ser. No. 588,821

Int. Cl.[4] C08G *18/16*

U.S. Cl. 528—50 **14 Claims**

1. A process for preparing a polyurethane polymer product comprising mixing a polyurethane oligomer, a heat activated free radical generating catalyst, and at least one additional component selected from the group consisting of a reinforcing agent and a filler to a homogeneous blend, and then heating said mixture at a temperature adequate to activate said catalyst and cure said mixture, said polyurethane oligomer having an equivalent ratio of NCO to active hydrogen from about 0.5/1 to about 2/1 and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyanate with

(2) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of hydroxyl group-containing or amino group-containing:

(i) acrylates,

(ii) substituted acrylates,

(iii) methacrylates,

(iv) substituted methacrylates, and

(v) mixtures thereof, with

(b) a polyol reactant comprising

(1) a high functionality polyol having an average equivalent weight of from about 75 to about 500 and an average functionality of at least about 3, said high functionality polyol being prepared by reacting an alkylene oxide, or a mixture of alkylene oxides, with a polyhydric initiator comprising a carbohydrate or a carbohydrate derivative, and

(2) a chain extender having an average equivalent weight from about 31 to about 4,000 and an average functionality of about 2, said chain extender being employed in an amount ranging from about 20 to about 1,500 parts by weight per 100 parts by weight of said high functionality polyol.

4,552,944

PROCESS FOR PREPARING THERMALLY STABLE SUPER-SOFT POLYURETHANE ELASTOMER

Masayuki Kamiyama; Takashi Saito, and Kiyotsugu Asai, all of Kanagawa, Japan, assignors to Mitsui-Nisso Corporation, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,480

Claims priority, application Japan, Sep. 22, 1983, 58-174172

Int. Cl.[4] C08G *18/48*

U.S. Cl. 528—55 **22 Claims**

1. A process for preparing a super-soft polyurethane elastomer which comprises reacting a polymeric hydroxy compound with one organic polyisocyanate in the presence of at least an organometallic catalyst selected from the group consisting of nickel, cobalt, manganese, iron, copper, and zinc compounds, thereby producing a super-soft polyurethane elastomer which does not undergo substantial change in Shore hardness nor 100 percent tensile modulus upon storage at 100° C. for two weeks.

4,552,945

POLYAMIDE-POLYUREA POLYMERS BY THE RIM PROCESS

Louis M. Alberino, Cheshire; Dale F. Regelman, Wallingford, and Nancy P. Vespoli, Guilford, all of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 19, 1984, Ser. No. 683,457

Int. Cl.[4] C08G *18/30, 18/32*

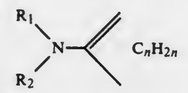
U.S. Cl. 528—62 **21 Claims**

1. A polyamide-polyurea containing polymer comprising the product of reaction injection molding of,

A. an organic polyisocyanate;

B. an organic compound having at least two active hydrogen containing groups and a M.W. of about 1500 to about 12,000; and C. from about 15 to about 160 parts per 100 parts of said (B) of a chain extender combination comprising

(i) an enamine having the formula



wherein C_nH_{2n} represents alkylene having 3 carbon atoms in succession in the chain R_1 and R_2 when taken separately are independently selected from the group consisting of lower-alkyl, aralkyl, cycloalkyl, and, when taken together with the nitrogen atom to which they are attached, represent a heterocyclic group having from 5 to 7 ring atoms,

(ii) an aromatic diamine having a M.W. of about 108 to about 400 wherein (i) and (ii) are present in the proportions by weight based on their combined weight of about 5 to about 45 percent and 95 to 55 percent respectively and optionally,

(iii) about 5 to about 50 percent by weight of the total weight of (i), (ii), and (iii) of an extender diol of M.W. of about 60 to about 400;

wherein the ratio of equivalents of said polyisocyanate to total equivalents of (B) and (C) is within the range of about 0.90:1 to 1.10:1.

4,552,946

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS, THE COMPOUNDS WHICH MAY BE OBTAINED ACCORDING TO THIS PROCESS, AND THE USE THEREOF FOR THE PRODUCTION OF POLYURETHANES

Hans-Joachim Scholl; Josef Pedain; Bernd Riberi, all of Cologne, and Gerhard Mennicken, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 571,982

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303221

Int. Cl.[4] C08G *18/76*

U.S. Cl. 528—67 **16 Claims**

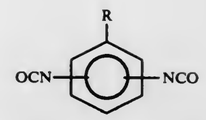
1. A process for the production of polyisocyanates containing isocyanurate groups which comprises

(1) trimerizing a portion of the isocyanate groups of organic polyisocyanates in the presence of a trimerization catalyst, and

(2) terminating the trimerization reaction at the desired degree of trimerization by the addition of a catalyst poison or by thermal decomposition of the trimerization catalyst or a combination of both,

wherein said organic polyisocyanates comprise

(a) from about 5 to 100 NCO equivalent percent of a compound or mixture of compounds corresponding to the formula:



wherein R represents a saturated, aliphatic hydrocarbon radical having from 8 to 15 carbon atoms and

(b) up to about 95 NCO equivalent percent, of organic polyisocyanates other than those in (a),

said NCO equivalent percent being based on the total number of isocyanate groups present in (a)+(b).

4,552,947

HEAT-RESISTING AROMATIC POLYESTER AND PROCESS FOR PREPARING THE SAME

Hiroshi Iwakiri; Masahiro Asada, and Kazuya Yonezawa, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

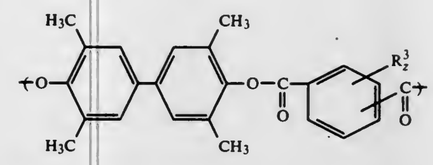
Filed Apr. 14, 1983, Ser. No. 484,848

Claims priority, application Japan, Apr. 19, 1982, 57-66121

Int. Cl.[4] C08G *63/18*

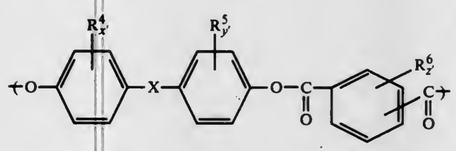
U.S. Cl. 528—126 **9 Claims**

1. An aromatic polyester comprising (a) 30 to 99% by mole of units of the formula (I):



(I)

and (b) units of the formula (II):



(II)

wherein R^3, R^4, R^5 and R^6 are the same or different and each is an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, chlorine atom or bromine atom, z, x', y' and z' are 0 or an integer of 1 to 4, and X is a bivalent group selected from the group consisting of an alkylidene group having 1 to 8 carbon atoms, a cycloalkylidene group having 1 to 8 carbon atoms, —O—, —S—, —SO_2— and —CO—.

4,552,948

POLYESTER RESINS CAPABLE OF FORMING CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, and Thomas H. Wicker, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,929

Int. Cl.[4] C08G *63/66*

U.S. Cl. 528—194 **10 Claims**

1. A polyester composition capable of being formed into molded containers having good gas barrier properties comprising the reaction product of

(A) a diol containing up to about 8 carbon atoms, and

(B) a diacid component comprising

(i) about 5 to 50 mole percent of at least one first diacid selected from the group consisting of 1,4-phenylenedioxy diacetic acid, 1,3-phenylenedioxy diacetic acid and 1,2-phenylenedioxy diacetic acid, and,

(ii) about 50 to about 95 mole percent of terephthalic acid, wherein said polyester has an inherent viscosity of about 0.5 to 1.5.

4,552,949

POLYCARBONATE OF SPIRO DIHYDRIC PHENOL

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Oct. 21, 1983, Ser. No. 544,004

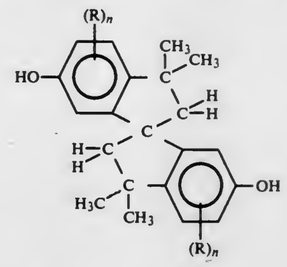
Int. Cl.[4] C08G *63/62*

U.S. Cl. 528—201 **15 Claims**

1. Aromatic thermoplastic polymer exhibiting improved heat distortion temperatures derived from:

(i) a carbonate precursor; and

(ii) at least one spiro dihydric phenol selected from spiro dihydric phenols represented by the general formula



wherein:

R is independently selected from monovalent hydrocarbon radicals or halogen radicals; and

n is independently selected from positive integers having a value of from 0 to 3 inclusive.

4,552,950

POLYETHERIMIDE ESTERS

Russell J. McCready, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 11, 1985, Ser. No. 691,029

Int. Cl.[4] C08G *69/08, 69/44*

U.S. Cl. 528—292 **20 Claims**

1. A polyetherimide ester composition comprising the reaction product of

(a) one or more low molecular weight diols, and

(b) one or more polyoxyalkylene diimide diacids.

4,552,951

DISPERSE AND ACID AZO DYES HAVING ONE OR TWO CINNAMOYL SUBSTITUENTS ON A PHENYL DIAZONIUM MOIETY AND CONTAINING AN ANILINE, TETRAHYDROQUINOLINE OR BENZOMORPHOLINE COUPLER

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 23, 1984, Ser. No. 573,243

Int. Cl.[4] C09B *29/01, 29/085, 29/36, 29/44*

U.S. Cl. 534—770 **11 Claims**

1. A dye having the structure:

4,552,952

DISPERSE AND ACID AZO DYES HAVING ONE OR TWO CINNAMOYL SUBSTITUENTS ON A BENZOTHIAZOLE OR BENZOISOTHIAZOLE DIAZONIUM MOIETY AND HAVING AN ANILINE, TETRAHYDROQUINOLINE OR BENZOMORPHOLINE TYPE COUPLER

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

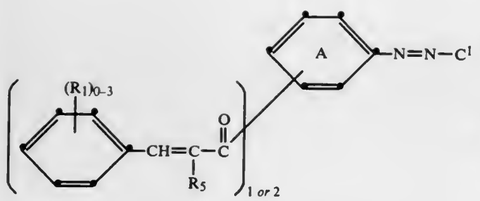
Filed Jan. 23, 1984, Ser. No. 573,241

Claims priority, application United Kingdom, Oct. 7, 1983, 8326868

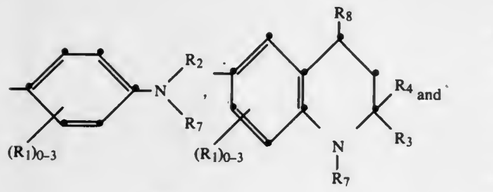
Int. Cl.⁴ C09B *29/039, 29/045, 29/09, 29/36*

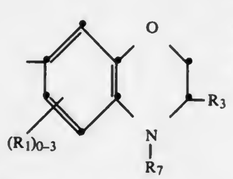
U.S. Cl. 534—782 **8 Claims**

1. A dye having the structure:

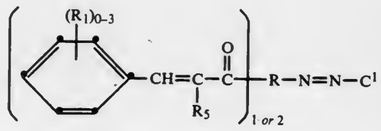


wherein the A ring is unsubstituted or substituted in any positions not occupied by cinnamoyl groups; R_5 is H or alkyl; and each R_1 and each A ring substituent is selected from alkyl, alkenyl or 2–6 carbon atoms, aryl, cyclohexyl, alkoxy, halogen, hydroxy, alkylsulfonyl, cyano, carbamoyl, alkanoyl, alkanoyloxy, aroyl, alkoxycarbonyl, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, alkanoylamino, $SO_3C_6H_5$, amino, alkylthio, thiocyano, arylsulfonyl, formyl, alkylcarbamoyl, dialkylcarbamoyl, NO_2, $—SO_3M$, $—OSO_3M$, —COOH, aryloxy, arylthio, alkylsulfonylamino, aroylamino, arylsulfonylamino, and cyclohexylthio, wherein each of the alkyl, alkenyl, aryl, and cyclohexyl moieties of the above groups, is unsubstituted or substituted with 1–3 substituents different from the said moiety and independently selected from alkanoyloxy, alkyl, alkenyl, succinimido, $—NO_2$, alkanoylamino, alkylsulfonylamino, 1-(2-pyrrolidono), halogen, cyano, alkoxy, aryl, cyclohexyl, hydroxy, $—SO_3M$, $—OSO_3M$, aryloxy, furyl, aroyloxy, alkoxycarbonyl, $—SO_2N$-(alkyl)$_2$, —NHCOO-alkyl, —NHCONH-alkyl, glutarimido, phthalimido, $CONH_2$, CONH-alkyl, CON(alkyl)$_2$, alkoxyalkoxy, alkylthio, arylthio, alkylsulfonyl, and arylsulfonyl, wherein M is selected from H^+, NH_4^+, Na^+, K^+, and the colorless cations of sulfuric or sulfonic acid salts of trimethylamine, triethylamine, tri(2-hydroxyethyl)amine, di(2-hydroxyethyl)amine, or N,N-dimethylaniline; and the coupler C^1 is selected from

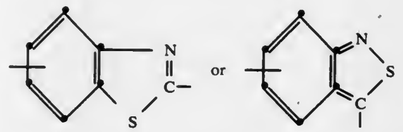




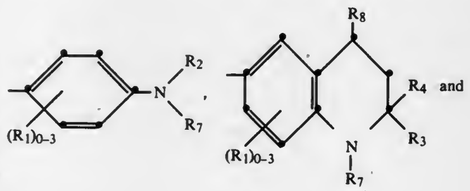
wherein each R_1 is as defined above; R_2 and R_7 are each selected independently from hydrogen, alkyl, alkenyl of 2–6 carbon atoms, aryl, and cyclohexyl, all of which groups are unsubstituted or substituted as defined above for the substituted R_1 groups; and R_3, R_4 and R_8 are each selected from hydrogen and alkyl.



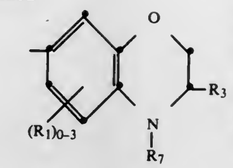
wherein R is a divalent radical of the formula



which may be substituted in any position not occupied by a cinnamoyl group with an R_1 group comprising alkyl, alkenyl of 2–6 carbon atoms, aryl, cyclohexyl, alkoxy, halogen, hydroxy, alkylsulfonyl, cyano, carbamoyl, alkanoyl, alkanoyloxy, aroyl, alkoxycarbonyl, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, alkanoylamino, $SO_3C_6H_5$, alkylthio, thiocyano, arylsulfonyl, formyl, alkylcarbamoyl, dialkylcarbamoyl, NO_2, $—SO_3M$, $—OSO_3M$, —COOH, aryloxy, arylthio, alkylsulfonylamino, aroylamino, arylsulfonylamino, and cyclohexylthio, wherein each of the alkyl, alkenyl, aryl, and cyclohexyl moieties of the above groups, is unsubstituted or substituted with 1–3 substituents different from the said moiety and independently selected from alkanoyloxy, alkyl, alkenyl, succinimido, $—NO_2$, alkanoylamino, alkylsulfonylamino, 1-(2-pyrrolidono), halogen, cyano, alkoxy, aryl, cyclohexyl, hydroxy, $—SO_3M$, $—OSO_3M$, aryloxy, furyl, aroyloxy, alkoxycarbonyl, $—SO_2N—$(alkyl)$_2$, —NHCOO—alkyl, —NHCONH—alkyl, glutarimido, phthalimido, $CONH_2$, CONH—alkyl, CON(alkyl)$_2$, alkoxyalkoxy, alkylthio, arylthio, alkylsulfonyl, and arylsulfonyl, wherein M is selected from H^+, NH_4^+, Na^+, K^+, and the colorless cations of sulfuric acid or sulfonic acid salts of trimethylamine, triethylamine, tri(2-hydroxyethyl)amine, di(2-hydroxyethyl)amine, and N,N-dimethylaniline; and the coupler C^1 is selected from



-continued



wherein R_1 is as defined above; R_2 and R_7 are each selected independently from hydrogen, alkyl, alkenyl of 2–6 carbons, aryl, and cyclohexyl, all of which groups are unsubstituted or substituted as defined above for the substituted R_1 groups; R_3, R_4 and R_8 are each selected from hydrogen and alkyl; and R_5 is H or alkyl.

4,552,953

WATER-INSOLUBLE MONOAZO DYESTUFFS, THEIR PREPARATION AND THEIR USE

Ulrich Bühler, Schöneck; Klaus Kühlein, Kelkheim; Horst Tappe, Dietzenbach; Maria Kallay, Königstein; Uwe Kosubek, Büttelborn, and Rudolf Löwenfeld, Dreieich, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

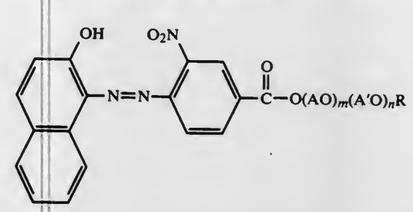
Continuation of Ser. No. 308,262, Oct. 5, 1981, abandoned. This application Dec. 16, 1982, Ser. No. 450,191

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049180

Int. Cl.⁴ C07C *107/108*

U.S. Cl. 534—886 **6 Claims**

1. Monoazo dyestuffs, free of carboxylic acid moieties or sulphonic acid moieties, of the formula



wherein A and A′ independently of one another are linear or branched alkylene having 2 to 6 carbon atoms;

R is hydrogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 5 to 6 carbon atoms, alkenyl having 3 to 5 carbon atoms, phenyl, benzyl, phenethyl, alkylcarbonyl having 1 to 4 carbon atoms or benzoyl;

m is a number from 1 to 5 and n is a number from 0 to 1.

4,552,954

CONCENTRATING NIKKOMICIN MIXTURES

Heinrich-Ferdinand Moeschler, Cologne; Christian Gölker, Wuppertal, and Peter M. Lange, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 265,049, May 19, 1981, abandoned. This application May 26, 1983, Ser. No. 497,433

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020722

Int. Cl.⁴ C07H *17/00*

U.S. Cl. 536—24 **12 Claims**

1. A process for concentrating nikkomicins (X) and (Z) from a dilute impure aqueous solution thereof containing ≧0.5% of a mixture of Nikkomicin (X) and (Z) comprising bringing the solution to a pH between about 4 and 7, with acetic acid, contacting the solution with a weakly basic ion exchanger selected from the group consisting of basic macroporous or gel-like polystyrene resins which are cross-linked with divinylbenzene and which are partly or completely substituted by primary, secondary, tertiary and quaternary nitrogen groups, basic macroporous or gel-like cross-linked polyacrylamides, basic macroporous or gel-like acrylates or methacrylates which are transamidated, basic macroporous aminomethylated polystyrene cross-linked with about 6% of divinylbenzene and basic gel-like dextrans, and eluting the adsorbed material with a lower aliphatic carboxylic acid thereby to obtain a concentrated mixture of nikkomicin (X) and nikkomicin (Z).

4,552,955

PROCESS FOR THE SYNTHESIS OF 4′,5′-UNSATURATED NUCLEOSIDES

Hiroshi Takaku, Chiba, and Takeshi Noda, Kanagawa; both of Japan, assignors to Sankyo Chemical Company, Limited, Tokyo, Japan

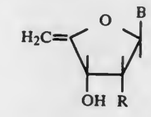
Filed Jun. 29, 1982, Ser. No. 393,254

Claims priority, application Japan, Jun. 29, 1981, 56-99708; Jun. 29, 1981, 56-0699709

Int. Cl.⁴ C07H *17/00*

U.S. Cl. 536—24 **18 Claims**

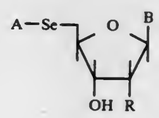
1. A process for the production of a 4′,5′-unsaturated nucleoside represented by the formula (I):



(I)

wherein R is a hydrogen atom or a hydroxyl group and B is a base selected from the group consisting of a purinyl group, a pyrimidinyl group, a pyrazolyl group, an imidazolyl group, a triazolyl group, a tetrazolyl group, a succinimido group, entenocytosine and entenoadenine; provided that B is a purinyl group, a pyrimidinyl group or a triazolyl group when R is a hydrogen atom, which process comprises:

(1) reacting a 5′-Se-(nitrophenyl)selenonucleoside represented by the formula (II):

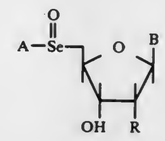


(II)

wherein R and B each has the same meaning as defined above and A is 2- or 4-nitrophenyl group, with hydrogen peroxide to obtain a selenoxide derivative, and

(2) reacting said selenoxide derivative with a tertiary amine.

18. A selenoxide derivative represented by the formula (III):



(III)

wherein R is a hydrogen atom or a hydroxyl group, A is 2- or 4-nitro-phenyl group and B is a base selected from the group consisting of a purinyl group, a pyrimidinyl group, a pyrazolyl group, an imidazolyl group, a triazolyl group, a tetrazolyl group, a succinimido group, entenocytosine and entenoadenine, provided that B is a purinyl group, a pyrimidinyl group or a triazolyl group when R is a hydrogen atom.

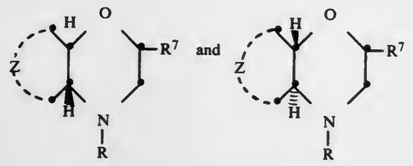
4,552,956

PARTIALLY HYDROGENATED PYRAZOLO, PYRIMIDO AND THIAZOLO[1,4]BENZOXAZINES

Richard N. Booher, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

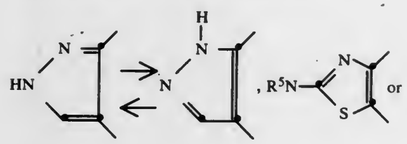
Filed Aug. 15, 1984, Ser. No. 640,897
Int. Cl.⁴ C07D *498/04*
U.S. Cl. 544—101 **22 Claims**

1. A trans-(±) racemate composed of enantiomers of the formulas



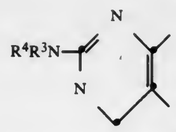
and

wherein Z is one of the part structures



,

or



wherein R is C_{1-3} straight chain alkyl, R^7 is H, CH_2OH, CH_2X, $CH_2—Y—C_{1-3}$ alkyl, CH_2CN or CH_2CONH_2 wherein X is a leaving group and Y is S, SO_2 or O; R^5 is H, lower alkyl or NR^3R^4, and R^3 and R^4 are individually H or R, and when R^3 is H, R^4 can additionally be acetyl; and pharmaceutically-acceptable, acid addition salts thereof.

4,552,957

METHOD OF SEPARATING PRIMARY AMINES FROM TERTIARY AMINES USING NON-POLAR HYDROCARBON SOLVENT WITH OR WITHOUT POLYHYDROXYLIC COMPOUND

Edward E. McEntire, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,465
Int. Cl.⁴ C07D *265/30, 265/32, 295/12;* C07C *87/00*
U.S. Cl. 544—177 **14 Claims**

1. A method for the separation of primary and tertiary amines having close boiling points comprising

extracting a mixture comprising a primary amine and a tertiary amine having close boiling points with a non-polar hydrocarbon selected from the group consisting of aliphatic, aromatic and alkylaryl hydrocarbons and unreactive halocarbons which have from 1 to 30 carbon atoms to selectively remove the tertiary amine with the non-polar hydrocarbon.

4,552,958

METHOD OF SEPARATING PRIMARY AMINES FROM TERTIARY AMINES USING NON-POLAR HYDROCARBON SOLVENT AND WATER

Simon P. Burns, Austin; John M. Walton, Georgetown, and Edward E. McEntire, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,464
Int. Cl.⁴ C07D *265/30, 265/32, 295/12;* C07C *87/00*
U.S. Cl. 544—177 **11 Claims**

1. A method for the separation of primary and tertiary amines having close boiling points comprising

extracting a mixture comprising a primary amine and a tertiary amine having close boiling points with a non-polar hydrocarbon; selected from the group consisting of methane, butane, isopentane, cyclohexane, heptane, dodecane, dodecene, kerosene, mineral oil, toluene, chlorobenzene and mixtures thereof, and water to selectively remove the tertiary amine with the non-polar hydrocarbon.

4,552,959

PROCESS FOR PRODUCING A SUSPENSION OF CYANURIC CHLORIDE IN WATER

Marianne Punzar, Bottmingen; Franz Marti, Dornach; Robert Mercier, Basel; Paul Tobler, and Rudolf Büttiker, both of Riehen, all of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Filed May 12, 1983, Ser. No. 493,920
Claims priority, application Switzerland, May 18, 1982, 3082/82; May 24, 1982, 3184/82
Int. Cl.⁴ C07D *251/28;* B01J *13/00*
U.S. Cl. 544—190 **5 Claims**

1. A process for producing a suspension of cyanuric chloride in water having a temperature between 0° and 40° C., by bringing melted cyanuric chloride into contact with water, which process comprises spraying through a heated nozzle, which is immersed in the liquid, melted cyanuric chloride at a temperature of between 146° and 190° C.

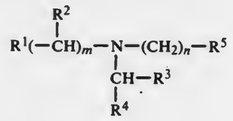
4,552,960

FUNGICIDAL AMINES

Eriks V. Krumkalns, Indianapolis, and David L. Smiley, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

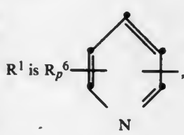
Continuation-in-part of Ser. No. 506,174, Jun. 20, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 595,866
Int. Cl.⁴ C07D *241/20*
U.S. Cl. 544—336 **21 Claims**

1. A method for controlling the growth of fungal diseases which comprises applying to the locus of the plant for which control is desired a disease inhibiting and non-herbicidal amount of a compound of the formula

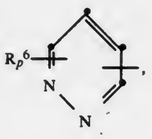


wherein:

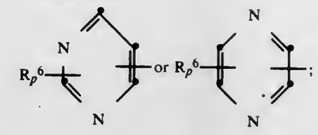
R^1 is R_p^6



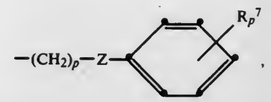
,



-continued



R^2 is hydrogen, C_1–C_6 alkyl, phenyl or phenyl monosubstituted with C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;
R^3 is hydrogen or phenyl;
R^4 is hydrogen, C_1–C_{12} alkyl, C_1–C_{10} haloalkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl,

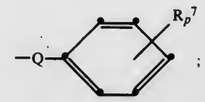


C_3–C_8 cycloalkyl, 1,3-dioxyl or naphthalenyl;
R^5 is



;

R^6 is C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;
R^7 is C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogen, C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;
R^8 is C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogen, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy



Q is O, S or a direct link;
Z is O, S, —CH=CH— or a direct link;
m is 0, 1 or 2;
n is 0, 1, 2 or 3;
each p is 0, 1 or 2;
with the proviso that m and n are not simultaneously 0;
and the agronomically acceptable salts thereof.

4,552,961

PREPARATION OF POLYALKYLENE POLYAMINES USING PHOSPHORUS AMIDE CATALYST

William B. Herdle, Greenburgh, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 373,725, Apr. 30, 1982, abandoned. This application May 3, 1984, Ser. No. 606,000
Int. Cl.⁴ C07D *295/12, 403/12, 403/14;* C07C *85/06*
U.S. Cl. 544—402 **22 Claims**

1. A process for producing predominantly linearly extended polyalkylene polyamines comprising:

(a) contacting (i) an alkylenediamine with (ii) a difunctional hydroxy alkylene compound selected from the group consisting of alkylene glycols and alkanolamines; (iii) in the presence of a catalytically effective amount of a phosphorus amide compound having at least one phosphorus-nitrogen bond; and

(b) recovering the polyalkylene polyamines.

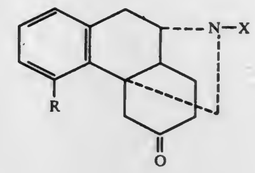
4,552,962

ANTITUSSIVE 6-KETO MORPHINANS OF THE (+)-SERIES

Arnold Brossi, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 21, 1983, Ser. No. 459,796
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.⁴ C07D *221/28*
U.S. Cl. 546—74 **6 Claims**

1. The unnatural isomer free from its optical antipode



R=H, OMe
x=H, Me
and pharmaceutically acceptable acid addition salts.

4,552,963

PREPARATION OF 1-ALKYL-1,4-DIHYDRO-4-OXO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLIC ACID

Venkataraman Ramachandran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 23, 1983, Ser. No. 497,026
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.⁴ C07D *215/16, 211/70, 211/72*
U.S. Cl. 546—156 **16 Claims**

15. In a process for preparing a 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid by (a) reacting a haloprene with a 4-vinylpyridine to form a 4-(4-halocyclohex-3-enyl)pyridine, (b) aromatizing the 4-(4-halocyclohex-3-enyl)-pyridine to a 4-(4-halophenyl)pyridine, (c) nitrating the 4-(4-halophenyl)-pyridine to a 4-(4-halo-3-nitrophenyl)pyridine, (d) reducing the 4-(4-halo-3-nitrophenyl)pyridine to a 4-(3-aminophenyl)pyridine, (e) reacting the 4-(3-aminophenyl)pyridine with a dialkyl ethoxymethylenemalonate to form a dialkyl 3-(4-pyridyl)anilinomethylenemalonate, (f) cyclizing the dialkyl 3-(4-pyridyl)anilinomethylenemalonate to an alkyl 1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate, (g) N-alkylating the alkyl 1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate to an alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate, and (h) hydrolyzing the resultant ester; the improvement which comprises conducting the haloprene/4-vinylpyridine reaction in the presence of a boron trifluoride catalyst.

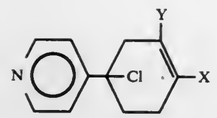
4,552,964

4-(1-CHLOROCYCLOHEX-3-ENYL)PYRIDINES AND PREPARATION OF 1-ALKYL-1,4-DIHYDRO-4-OXO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLIC ACID

Venkataraman Ramachandran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 16, 1983, Ser. No. 532,703
Int. Cl.⁴ C07D *215/16, 211/72, 211/70*
U.S. Cl. 546—156 **8 Claims**

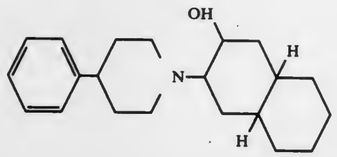
1. A 4-(1-chlorocyclohex-3-enyl)pyridine corresponding to the formula:



wherein one of X and Y is hydrogen and the other is hydrogen, halo or an alkyl of 1–6 carbons.

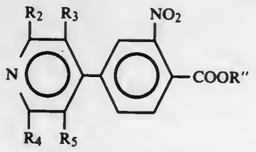
4,552,965
2α, 3β, 4Aβ, 8Aα-DECAHYDRO-3-(4-PHENYL-1-PIPERIDINYL)-2-NAPHTHALENOL
Stanley M. Parsons, Santa Barbara, Calif., assignor to University of California, Berkeley, Calif.
Filed Jul. 31, 1984, Ser. No. 636,183
Int. Cl.⁴ C07D *211/14*
U.S. Cl. 546—206 **1 Claim**

1. A compound denominated (2α, 3β, 4a β, 8aα)-decahydro-3-(4-phenyl-1-piperidinyl)-2-naphthalenol (DPPN) having the chemical structure:



4,552,966
2-NITRO-4-(4-PYRIDINYL) BENZOIC ACIDS AND DERIVATIVES
Paul F. Ranken, and Thomas J. Walter, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
Filed Jul. 8, 1983, Ser. No. 511,844
Int. Cl.⁴ C07D *211/72, 215/16, 265/26*
U.S. Cl. 546—290 **4 Claims**

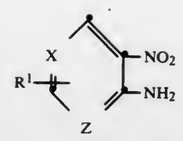
1. A compound corresponding to the formula:



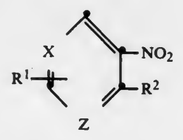
wherein R″ is hydrogen, an alkali metal, or an alkyl group containing 1–6 carbons, and R_2, R_3, R_4, and R_5 are independently selected from hydrogen and aryl, aryloxyaryl, and halo substituents.

4,552,967
PROCESS FOR THE SYNTHESIS OF INTERMEDIATES IN THE PREPARATION OF DIAMINOPYRIDINES
James M. Greene; Edward R. Lavagnino; Andrew J. Pike, all of Indianapolis, Ind., and Edward C. Taylor, Princeton, N.J., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Jan. 12, 1984, Ser. No. 570,144
Int. Cl.⁴ C07D *213/61*; C07B *29/00*
U.S. Cl. 546—307 **12 Claims**

1. A process for preparing an aminonitropyridine of the formula



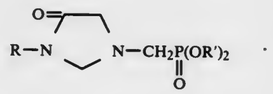
wherein R^1 is hydrogen or C_1–C_4 alkyl and one of X and Z is CH and the other is N, comprising reacting an alkoxynitropyridine of the formula



or a salt thereof, wherein R^2 is C_1–C_4 alkoxy, with ammonium acetate at a temperature in the range of from about 50° C. to about 150° C.

4,552,968
O,O-DI-(SUBSTITUTED)-1-PHOSPHONOMETHYL-3-(SUBSTITUTED)-1,3-IMIDAZOL-4-ONE INTERMEDIATES
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 544,037, Oct. 24, 1983, , which is a division of Ser. No. 442,401, Nov. 17, 1982, Pat. No. 4,425,283. This application Feb. 15, 1985, Ser. No. 702,115
Int. Cl.⁴ C07F *9/65*
U.S. Cl. 548—112 **4 Claims**

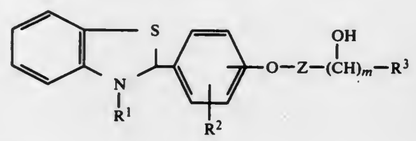
1. Compounds of the formula



wherein R is C_1–C_6 alkyl or C_3–C_6 alkenyl and R′ is C_1–C_8 alkyl or C_3–C_6 alkenyl.

4,552,969
3-ALKANOYL BENZOTHIAZOLINE COMPOUNDS USEFUL FOR TREATING CARDIOVASCULAR DISEASE
Jun-ichi Iwao, Takarazuka; Tadashi Iso, Sakai, and Masayuki Oya, Ibaraki, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan
Division of Ser. No. 503,160, Apr. 14, 1983, Pat. No. 4,479,949. This application May 21, 1984, Ser. No. 612,322
Claims priority, application Japan, Sep. 12, 1981, 56-144148
Int. Cl.⁴ C07D *91/16, 417/00*
U.S. Cl. 548—179 **24 Claims**

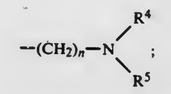
1. A compound of the formula (I) and salts thereof,



(I)

wherein
R^1 is lower alkanoyl;
R^2 is at least one group selected from the group consisting of

hydrogen, lower-alkyl, lower-alkoxy, hydroxy, halogen, nitro, halogeno-lower-alkyl and sulfamoyl;
R^3 is

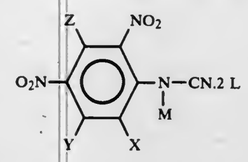


R^4 and R^5, may be same or different and are selected from the group consisting of hydrogen, lower alkyl, cyclohexyl, phenyl-lower alkyl and substituted phenyl-lower alkyl wherein the phenyl nucleus is substituted by at least one group selected from the group consisting of lower alkyl, hydroxy, chloro, bromo, loweralkoxy, nitro, cyano, acetamino and lower alkylamino, hydroxy-lower alkyl, 3-pyridyl-lower alkyl, 1-piperidyl-lower alkyl and phenylcarbonyl-lower alkyl;
Z is straight or branched alkylene having 1 to 6 carbon atoms;
m is 0 or 1;
n is 0 or 1;
wherein the terms lower alkyl, lower alkoxy and lower alkanoyl refer to groups having 1 to 6 carbon atoms.

20. A method of treatment for cardiovascular diseases which comprises administering a composition comprising a compound as in claim **1** and at least one pharmaceutically acceptable excipient.

4,552,970
SOLVATED SALTS OF DINITROPHENYLCYANAMIDES, AND A PROCESS FOR THE PREPARATION THEREOF
Otto Arndt, Hofheim am Taunus; Theodor Papenfuhs, Frankfurt am Main, and Wolfgang Tronich, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 328,484, Dec. 8, 1981, abandoned. This application Feb. 1, 1984, Ser. No. 576,168
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046490
Int. Cl.⁴ C07C *125/08, 127/19*
U.S. Cl. 548—543 **3 Claims**

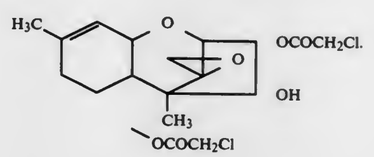
1. A solid crystalline solvated salt of the formula



wherein
X is hydrogen, fluorine, chlorine, or bromine;
Y and Z are hydrogen, lower alkyl, or lower alkoxy;
M is sodium, potassium, or one molar equivalent of calcium; and
L is a dipolar aprotic solvent.

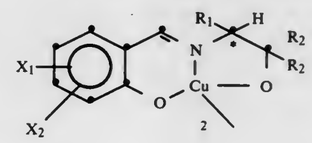
4,552,971
3α,15-BIS(CHLOROACETOXY)-4β-HYDROXY-12,13-EPOXYTRICHOTHEC-9-ENE USEFUL AS AN ANTITUMOR AGENT
Henry Schmitz, Syracuse; Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.
Division of Ser. No. 506,133, Jun. 20, 1983, Pat. No. 4,456,765, which is a division of Ser. No. 339,581, Jan. 15, 1982, Pat. No. 4,413,134, which is a division of Ser. No. 240,340, Mar. 4, 1981, Pat. No. 4,332,732, which is a division of Ser. No. 137,336, Apr. 4, 1980, Pat. No. 4,284,568. This application Feb. 27, 1984, Ser. No. 584,051
Int. Cl.⁴ C07D *311/78*
U.S. Cl. 549—332 **1 Claim**

1. The compound having the formula



4,552,972
CHIRAL COPPER COMPLEX
Tadatoshi Aratani, Hyogo; Hiroshi Yoshihara, and Gohfu Susukamo, both of Osaku, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed May 24, 1984, Ser. No. 614,224
Claims priority, application Japan, Jun. 3, 1983, 58-99955
Int. Cl.⁴ C07F *1/08*
U.S. Cl. 556—35 **5 Claims**

1. A chiral copper complex which is produced by the reaction of a chiral copper complex of the formula:



wherein R_1 is (a) alkyl group, or (b) aralkyl group; R_2 is (a) 2-alkoxyphenyl group, or (b) 2-alkoxy-5-alkylphenyl group; either one of X_1 and X_2 is (a) hydrogen atom, (b) halogen atom, (c) alkyl group, (d) alkoxy group, or (e) nitro group, or adjacent X_1 and X_2 together form a benzo group, with a mono-substituted hydrazine of the formula:

R_3NHNH_2

wherein R_3 is (a) aryl group, (b) aralkyl group, or (c) alkyl group.

4,552,973
PROCESS FOR THE PREPARATION OF DIMETHYLDICHLOROSILANE
Kurt Feldner, and Wolfgang Grape, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 19, 1985, Ser. No. 713,501
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410644
Int. Cl.⁴ C07F *7/12*
U.S. Cl. 556—469 **4 Claims**

1. A process for the preparation of dimethyldichlorosilane

from the low-boiling and high-boiling by-products of the direct synthesis of methylchlorosilanes, comprising reacting methyltrichlorosilane simultaneously with the low-boiling components having a high content of methyl groups and with the high-boiling non-cleavable components, in the presence of a catalyst, at a temperature between about 250° C. and 400° C. and under a pressure of up to 100 bar.

4,552,974

PROCESS FOR PRODUCING DIPHENYLMETHANE DICARBAMATES

Shinsuke Fukuoka, and Tomonari Watanabe, both of Okayama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 559,114

Claims priority, application Japan, Dec. 7, 1982, 57-213424; Dec. 9, 1982, 57-215911

Int. Cl.⁴ C07C *125/073, 125/075*

U.S. Cl. 560—25 **33 Claims**

1. A process for producing a diphenylmethane dicarbamate, comprising the steps of:

a first reaction Step (A) for reacting a methylenating agent in liquid phase with at least 2 mols of an N-phenylcarbamate per mol equivalent of the methylene group of the methylenating agent in the presence of an aqueous solution containing 20 to 70 wt% of an inorganic acid selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid, polyphosphoric acid, hetero polyacid, and boric acid, at a temperature of 40° to 150° C., to obtain a first reaction mixture;

a first separation Step (B) for separating the first reaction mixture into the aqueous solution of an inorganic acid and an organic-phase reaction mixture substantially free from the inorganic acid;

a second reaction Step (C) for reacting the organic-phase reaction mixture under heat treatment at a temperature of 40° to 200° C. with an N-phenylcarbamate and in the presence of a carboxylic acid having a pKa of not more than 4 or a solid acid or a mixture of said carboxylic acid and said solid acid;

wherein the carboxylic acid is selected from the group consisting of formic acid, halogenated acetic acids, α-halogenated or α,α-dihalogenated aliphatic carboxylic acids, α-cyanoaliphatic carboxylic acids, acylacetic acids, alkoxy- or phenoxyacetic acids, halogenated benzoic acids, hydroxybenzoic acids, nitrated benzoic acids, glycolic acid, lactic acid, malic acids, tartaric acids, citric acid, malonic acid, maleic acid, fumaric acid, mandelic acid, phthalic acids, halogenated phthalic acids, furancarboxylic acids, thiophencarboxylic acids, thioacetic acid, cyclopropane-1,1-dicarboxylic acids, sulfoacetic acids, halogenated malonic acids, and halogenated succinic acids, and

wherein the solid acid is selected from the group consisting of

(i) acidic clay minerals and inorganic cation exchangers, or these acidic clay minerals and inorganic cation exchangers that have been treated with inorganic acids, and ammonium salts of these acidic clay minerals and inorganic cation exchangers which have been subjected to protonation treatment by calcination;

(ii) solidified acids that are prepared by supporting liquid acids on a carrier, followed by heat treatment;

(iii) solid sulfuric acid products that are prepared by first gelling water-soluble sols in the presence of sulfuric acid, adding sulfuric acid to dissolve the gel, and then cooling the solution to solidify, or precipitating a crystal from the solution, or heating the solid obtained to a temperature between 100° and 600° C.;

(iv) metal oxides or mixed metal oxides;

(v) acidic solid sulfates, nitrates, and phosphates, or these sulfates, nitrates and phosphates that are supported on a carrier;

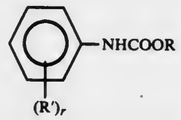
(vi) organic cation exchange resins having at least one acidic group of fluoroalkyl sulfonic acid group, fluoroalkyl carboxylic acid group or alkyl phosphoric acid group; and

(vii) inorganic oxides having either —R'''—SO^3—H or —R'''—COOH or both bound thereto wherein R''' is a divalent organic residual group or organometallic compound having not more than 30 carbon atoms;

in order to convert intermediate compounds having a methylene amino bond to the desired diphenylmethane dicarbamates by the intermolecular transfer reaction of the intermediate compounds with the N-phenylcarbamate, whereby a second reaction mixture is obtained; and

a second separation Step (D) for separating the acid away from the second reaction mixture to obtain a diphenylmethane dicarbamate,

said N-phenylcarbamate used in Step (A) to (C), which may be the same or different, being represented by the formula (I):



(I)

wherein R is an alkyl group having from 1 to 20 carbon atoms, an aromatic group or an alicyclic group having 3 to 30 carbon atoms; R' is hydrogen or a substituent selected from the group consisting of an alkyl group having from 1 to 20 carbon atoms, halogen atom, nitro group, cyano group, an alkoxy group having from 1 to 20 carbon atoms and an alicyclic group havng from 3 to 20 carbon atoms, provided that said substituents are bonded at the ortho- or meta-position to the urethane group; r is an integer of 0 to 4; when r is 2 or more, R' may represent the same or different substituents; and at least one hydrogen in R may be substituted by any of said substituents.

4,552,975

MANUFACTURING PROCESS FOR N-CARBOBENZYLOXY-L-GLUTAMIC ACID-α-CHOLINESTER SALT

Yoshito Nishizawa, deceased, late of Tokushima, Japan (by Hisako Nishizawa, heir), and Matao Kanaoka, Toyama, Japan, assignors to Moringa Milk Industry, Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1984, Ser. No. 640,190

Claims priority, application Japan, Aug. 13, 1983, 58-147289

Int. Cl.⁴ C07C *125/065*

U.S. Cl. 560—163 **3 Claims**

1. A process for manufacturing N-carbobenzyloxy-L-glutamic acid-α-cholinester salt characterized by comprising the steps of;

(a) that N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-dicyclohexyl-ammonium salt is reacted with dimethyl-aminoethylchloride to form N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-dimethylaminoethyl ester,

(b) that obtained N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-dimethylaminoethyl ester is reacted with a quaternerizing agent for the dimethylamino-group to form N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-cholinester salt, and

(c) that obtained N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-cholinester salt is subjected to mild acid treatment selectively removing of the tert.butyl-group at γ-position to obtain N-carbobenzyloxy-L-glutamic acid-α-cholinester salt.

4,552,976

PROCESS FOR OXIDATIVE DICARBONYLATION OF BUTADIENE

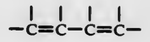
Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,470

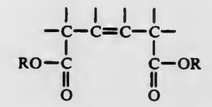
Int. Cl.⁴ C07C *67/38*

U.S. Cl. 560—204 **8 Claims**

1. A process for oxidative carbonylation of aliphatic conjugated diolefins containing 4 to 12 carbon atoms per molecule of the formula:



wherein each carbon is bonded either to hydrogen or a hydrocarbyl group, by reaction with carbon monoxide and oxygen in the presence of an alkanol coreactant containing 1 to 20 carbon atoms per molecule, to form an aliphatic dicarboxylic acid ester having the formula:



wherein R is a saturated alkyl group, said process being conducted in the presence of a heterogeneous supported palladium catalyst, a copper-containing cocatalyst and a lithium-containing cocatalyst, at a temperature of 80° C. to 150° C. and a pressure of from 500 psi to 1800 psi to effect the desired carbonylation reaction, wherein the carbon monoxide to oxygen ratio is from 5:1 to 20:1, the palladium catalyst is deposited on said support in a concentration range of 0.1 to 20 wt %, the concentration of copper-containing cocatalyst is between 0.1 wt % and 50 wt % and the concentration of lithium-containing cocatalyst is between 0.0001 wt % and 1.0 wt %.

4,552,977

PROCESS FOR THE PREPARATION OF (PHENOXY- OR BENZYL-)-PHENOXYPROPIONIC ACIDS AND THEIR ALKALI METAL SALTS

Manfred Koch, Eppstein, and Peter Herbrechtsmeier, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

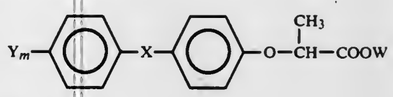
Continuation of Ser. No. 158,596, Jun. 11, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,712

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854492; Dec. 11, 1979, 2949681

Int. Cl.⁴ C07C *79/46*

U.S. Cl. 562—435 **8 Claims**

1. A process for the preparation of phenoxy- or benzyl-phenoxypropionic acid and the alkali metal salts thereof having the formula



(I)

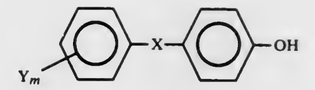
wherein

Y is a radical selected from the group consisting of halogen, CF_3, NO_2 and CN,

X is oxygen or CH_2,

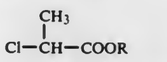
W is hydrogen, sodium or potassium, and

m is 1 or 2, and optically active D-isomers thereof, consisting essentially of dissolving in an organic solvent a phenol having the formula



(II)

wherein Y and m are as defined above and at least an equimolar amount of 2-chloropropionic acid or 2-chloropropionic acid lower alkyl ester having the formula



wherein R is hydrogen or (C_1–C_4)-alkyl to form an azeotropic mixture and water, adding at least twice the molar amount relative to said 2-chloropropionic acid or ester of an aqueous alkali hydroxide at its boiling temperature, removing by azeotropic distillation substantially all of the water introduced to or formed by the reaction and avoiding the formation of excess alkali by controlling the feed rate of said aqueous alkali hydroxide and the reaction temperature.

4,552,978

OXIDATION OF UNSATURATED ALDEHYDES

Wilfrid G. Shaw, Lyndhurst, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 12, 1983, Ser. No. 560,289

Int. Cl.⁴ C07C *51/25, 57/055*

U.S. Cl. 562—535 **4 Claims**

1. A vapor phase process for producing acrylic acid from acrolein by oxidation of the unsaturated aldehyde with molecular oxygen, optionally in the presence of steam, and in the presence of a complex oxide catalyst having the elements and the ratios thereof represented by the empirical formula

$$Mo_aV_bZr_cX_dY_eO_f$$

wherein

X is one or more of Cu and Mg

Y is one or more of K, Rb, Cs, Sn, Ti, Cr, Re, Sb, Mn, Ge, Ca, Ba, Zn, Ag, Cd, La, As, Bi, B and W, and

a is 9–15

b is 0.5–5

c is 0.1–3

d is 0.01–2

e is 0–1

f is a number sufficient to satisfy the valence requirements of the other elements present, and

wherein the catalyst is essentially free of P, Ce, Fe, Al and Ni.

2. A vapor phase process for producing acrylic acid by oxidation of acrolein with molecular oxygen, optionally in the presence of steam, and in the presence of a complex oxide catalyst having the elements and the ratios thereof represented by the empirical formula:

$$Mo_aV_bZr_cX_dY_eO_f$$

wherein

X is one or more of Cu and Mg

Y is one or more of K, Rb, Cs, Sn, Ti, Cr, Re, Sb, Mn, Ge, Ca, Ba, Zn, Ag, Cd, La, As, Bi and B, and

a is 9–15

b is 0.5–5

c is 0.1–3

d is 0.01–2

e is 0–1

f is the number sufficient to satisfy the valence requirements of the other elements present, and

wherein the catalyst is essentially free of P, Ce, Al, Fe, W, and Ni.

4,552,979

PROCESS FOR TREATMENT OF UREA PLANT PROCESS CONDENSATE

Keith J. Stokes, Weston, Conn., assignor to James Chemical Engineering Inc., Greenwich, Conn.

Filed Aug. 27, 1984, Ser. No. 644,355
Int. Cl.[4] C07C *126/06*
U.S. Cl. 564—69 **16 Claims**

1. In a continuous process for the treatment of process condensate from a synthetic urea plant, said condensate containing urea values, the steps comprising:
   (a) continuously subjecting said concentrate to the action of steam introduced countercurrently in a series of stripping zones, the residence time in at least one of said zones being sufficient to effect hydrolysis of a major portion of said urea values to yield ammonia and carbon dioxide;
   (b) continuously subjecting the partially stripped process condensate to further stripping using a stream of hydrocarbon gas introduced counter-currently under pressure;
   (c) continuously collecting liquid condensate from the latter step, passing the same through a heat exchanger to raise the temperature thereof and recycling the heated liquid to one of the first series of stripping zones; and
   (d) continuously recovering as overhead from the first of the stripping zones, a gaseous stream comprising steam, hydrocarbon gas, ammonia and carbon dioxide; wherein substantially the whole of the process condensate introduced in step (a) is continuously converted into steam, ammonia and carbon dioxide and recovered in said gaseous stream taken as overhead.

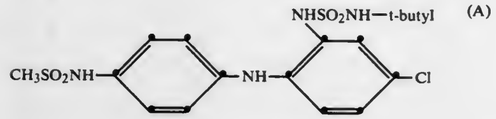
4,552,980

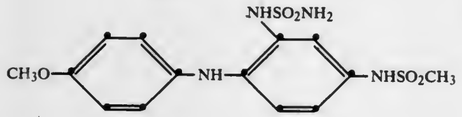
DYE PRECURSORS AND THEIR USE IN PHOTOGRAPHIC MATERIALS AND PROCESSES

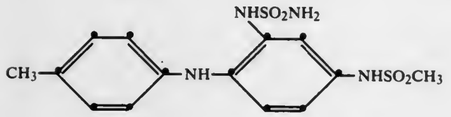
Rolf S. Gabrielsen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

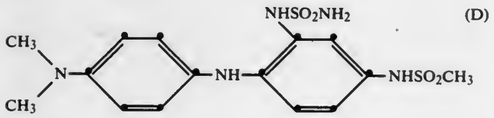
Division of Ser. No. 373,915, May 3, 1982, Pat. No. 4,411,984. This application Apr. 25, 1983, Ser. No. 488,222
Int. Cl.[4] C07C *161/00*
U.S. Cl. 564—79 **1 Claim**

1. A diphenylamine selected from the group consisting of:

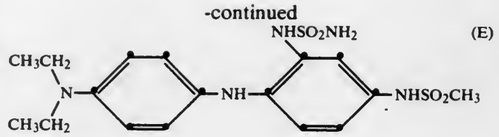

(A)


(B)


(C)


(D)

-continued


(E)

and combinations thereof.

4,552,981

PROCESS FOR THE PRODUCTION OF 5-NITRO-ACET-2,4-XYLIDINE

Karl W. Thiem, Charleston, and Daniel P. Vanderpool, Hanahan, both of S.C., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1981, Ser. No. 325,540
Int. Cl.[4] C07C *102/00*
U.S. Cl. 564—146 **8 Claims**

1. A process for preparing 5-nitro-acet-2,4-xylidine comprising:
   (a) dissolving acet-2,4-xylidine in an aqueous sulfuric acid solution, said aqueous solution containing from 86 to 92% by weight of sulfuric acid, the weight ratio of sulfuric acid to acet-2,4-xylidine being from 3.5:1 to 6.5:1,
   (b) nitrating the resultant solution at a temperature of from 0° to 15° C. in a mixed acid containing nitric acid, sulfuric acid and from 10 to 25% by weight water, and
   (c) recovering 5-nitro-acet-2,4-xylidine.

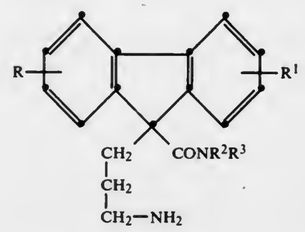
4,552,982

SYNTHESIS OF 9-CARBAMOYL-9-(3-AMINOPROPYL)FLUORENES

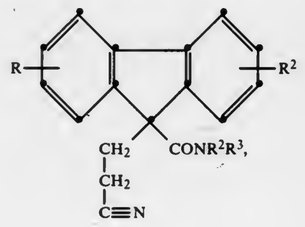
William B. Lacefield, and William Pfeifer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 1, 1983, Ser. No. 519,166
Int. Cl.[4] C07C *103/28*
U.S. Cl. 564—164 **7 Claims**

1. In a process for preparing a compound of the formula



wherein:
R and R^1 independently are hydrogen, C_1–C_4 alkyl, fluoro or chloro; and
R^2 and R^3 independently are hydrogen or C_1–C_6 alkyl;
which includes catalytically hydrogenating a compound of the formula



the improvement comprising conducting the reaction in the presence of an acid medium stronger than glacial acetic acid.

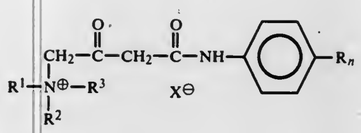
4,552,983

PROCESS FOR THE PRODUCTION OF 4-(TRIALKYLAMMONIUM)-ACETOACETARYLIDES

Leander Tenud, and Synése Jolidon, both of Visp, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Division of Ser. No. 501,898, Jun. 7, 1983,. This application Sep. 20, 1984, Ser. No. 652,484
Claims priority, application Switzerland, Jun. 18, 1982, 3769/82
Int. Cl.[4] C07C *103/42*
U.S. Cl. 564—200 **20 Claims**

1. 4-trialkylammonium)-acetoacetarylide having the formula:



wherein: R is H, a lower alkyl, —OCH_3, —OC_2H_5, —Cl, —Br, —NO_2 or —$NHCOCH_3$; n is 1 to 3; R^1, R^2 and R^3 each is an alkyl having 1 to 18 C atoms; and X is Cl or Br.

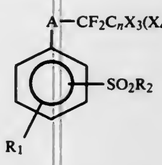
4,552,984

PROCESS FOR PREPARATION OF α,α-DIFLUOROALKOXY OR α,α-DIFLUOROALKYLTHIOPHENYL SULFONES

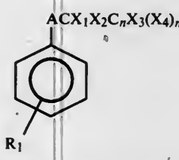
Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 28, 1982, Ser. No. 392,884
Claims priority, application France, Jan. 21, 1982, 82 00878
The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.
Int. Cl.[4] C07C *149/34*
U.S. Cl. 568—29 **8 Claims**

1. A process for the preparation of α,α-difluoroalkoxy or α,α-difluoroalkylthiophenyl sulfones having the formula:


(I)

said process comprising reacting a polyhaloalkoxybenzene or a polyhaloalkylthiobenzene having the formula:


(II)

in a reaction vessel with a sulfonic acid, derivative, or precursor thereof having the formula:

$$R_2SO_2X_6 \quad \text{(III)}$$

in the presence of boron trifluoride in an amount such that the absolute pressure of the boron trifluoride within the reaction vessel exceeds 1 bar and in the presence of hydrofluoric acid as a solvent; wherein
A represents O or S;
X_1 and X_2 are identical or different and represent Cl, Br, I, or F;
X_3, X_4, and X_5 are identical or different and represent H, Cl, Br, I, or F;
X_6 represents halogen, OH, OR_3, NH_2, NHR_4, or NR_5R_6, wherein each of R_3, R_4, R_5, and R_6 is an aromatic or aliphatic radical;
n is zero or an integer equal to or less than 5 and when n equals zero X_3 in formula I is F or H;
R_1 represents at least one element or moiety selected from hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than the $ACX_1X_2C_nX_3(X_4)_n(X_5)_n$ group; and
R_2 is a radical selected from the group consisting of alkyl, phenyl, alkylphenyl, phenylalkyl, and phenyl bearing at least one halogen, NO_2, CN, NH_2, or COOH substituent.

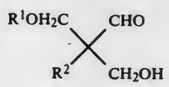
4,552,985

PREPARATION OF ALDOLS

Franz Merger, Frankenthal; Peter Hettinger, Edingen-Neckarhausen, and Arno Lange, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,558
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321517
Int. Cl.[4] C07C *47/19*
U.S. Cl. 568—497 **4 Claims**

1. A process for the preparation of an aldol of the formula (I)


(I)

where R^1 is a straight-chain or branched alkyl radical of not more than 5 carbon atoms and R^2 is a straight-chain or branched alkyl radical of not more than 6 carbon atoms, wherein a corresponding 2-alkylacrolein compound of the formula $H_2C{=}CR^2{-}CHO$ with R^2 being a straight or branched chain alkyl of not more than 6 carbon atoms, a corresponding alcohol of the formula R^1OH with R^1 being a straight or branched alkyl of not more than 5 carbon atoms together with formaldehyde are reacted in the presence of a tertiary amine having a pK_B of from 9 to 11, and wherein from 4–6 moles of said alcohol and from 1 to 1.5 moles of formaldehyde are employed per mole of said 2-alkylacrolein in said reaction.

4,552,986

PROCESS FOR PREPARATION OF ETHANOL

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Nastuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 296,120, Aug. 25, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 538,008
Claims priority, application Japan, Sep. 5, 1980, 55-123032
Int. Cl.[4] C07C *29/00, 31/08*
U.S. Cl. 568—902 **37 Claims**

1. A process for preparing ethanol from methanol, carbon monoxide and hydrogen, which comprises using an insoluble catalyst selected from the group consisting of the following two catalyst:
   the first catalyst consisting of one of a powdery cobalt phosphate, a molded cobalt phosphate, and cobalt phosphate supported on a carrier; and
   the second catalyst consisting of (a) one of a powdery cobalt phosphate, a molded cobalt phosphate, and cobalt phosphate supported on a carrier plus (b) at least one of a platinum group metal itself, an oxide of a platinum group metal, a chloride of a platinum group metal, a fluoride of a platinum group metal supported on a carrier, and an alkyl phosphine.

4,552,987

INITIATOR FOR A CONTACTLESS SWITCH

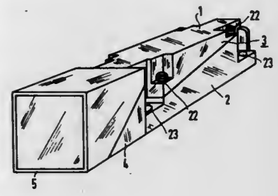
Josef Stebegg, Erlangen, and Wolfgang Miek, Amberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,904

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326401

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 174—52 R **11 Claims**



1. In an initiator for a contactless switch comprising, in combination:

(a) a support section having a face side and a plurality of lateral sides, said support section defining a longitudinal axis substantially perpendicular to said face side;

(b) a prism-shaped fastening element having a triangular profile formed by three sides, a first one of said three sides being mounted on said face of said support section and being selectively rotatable about said longitudinal axis, and a second of said three sides defining a central axis perpendicular thereto which is at an acute angle with respect to said longitudinal axis;

(c) a control section having an actuation side and a bevelled side, substantially opposite said actuation side, said control section being mounted on said second side of said fastening element and being selectively rotatable about said central axis, thereby permitting said actuation side of said control section to assume different positions with respect to said front and lateral sides of said support section where it faces away from said face side or is arranged in parallel with said lateral sides;

the improvement wherein the corner of said support section between said face side and two of said lateral sides thereof is bevelled such that, after said fastening element has been rotated through a predetermined angle about said longitudinal axis, said control section can be rotated about said central axis by 180° and, thereafter, can be rotated together with said fastening element about said longitudinal axis.

4,552,988

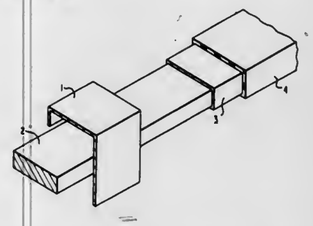
STRIPPABLE INSULATED WIRE AND METHOD OF MAKING SAME

Norman G. Haderer, Briston, Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,423

Int. Cl.⁴ H02G *15/02;* **H01B** *7/00, 13/00*

U.S. Cl. 174—74 R **17 Claims**



1. A method of making an insulated single conductor, the insulation of which can be easily removed from at least one predetermined location, comprising

(A) covering the entire circumference of a bare conductor only at each predetermined location with a metal foil that does not adhere to said conductor; and

(B) completely covering said conductor and said metal foil with said insulation.

13. An insulated wire that can be easily stripped only at predetermined locations along its length comprising

(A) a single bare wire;

(B) a metal foil that does not adhere to said wire covering the entire circumference of said wire only at said predetermined locations; and

(C) insulation that completely covers said foil and said wire.

4,552,989

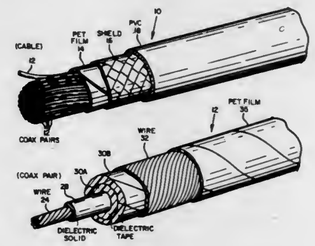
MINIATURE COAXIAL CONDUCTOR PAIR AND MULTI-CONDUCTOR CABLE INCORPORATING SAME

Richard G. Sass, Portland, Oreg., assignor to National Electric Control Company, Portland, Oreg.

Filed Jul. 24, 1984, Ser. No. 634,316

Int. Cl.⁴ H01B *11/00*

U.S. Cl. 174—103 **12 Claims**



1. A coaxial conductor pair, comprising:

(a) an inner electrical conductor:

(b) a dielectric system comprising

(i) a tubular layer of substantially solid dielectric material, selected from the group consisting essentially of polymeric fluorocarbon, high density polyethylene and mixtures thereof, surrounding said inner conductor in physical contact therewith, and

(ii) a wrapping of dielectric tape material, surrounding said tubular layer and having a dielectric constant less than 2 and a radial thickness greater than that of said tubular layer; and

(c) an outer electrical conductor surrounding said dielectric system.

10. The flexible cable of claim **9** wherein said coaxial conductor pairs are laid helically within said cover layer.

4,552,990

INSULATED CONDUCTOR FOR TRANSFORMER WINDINGS AND OTHER INDUCTIVE APPARATUS

Bo G. Persson, and Erich Spicar, both of Ludvika, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Continuation of Ser. No. 214,570, Dec. 8, 1980, abandoned. This application May 19, 1983, Ser. No. 495,727

Claims priority, application Sweden, Dec. 11, 1979, 7910171; Oct. 20, 1980, 8007350

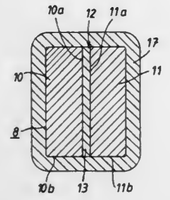
Int. Cl.⁴ H01B *11/02*

U.S. Cl. 174—117 FF **11 Claims**

1. An insulated winding electrical conductor for electrically inductive apparatus, comprising:

two uninsulated, at least substantially rectangular-shaped, conductor strands positioned with a flat side of one conductor strand confronting a flat side of another conductor strand;

an electrically insulating layer being sandwiched between the flat sides of said two uninsulated conductor strands and including a solid electrically insulating spacer material for permanently maintaining said two uninsulated conductor strands in spaced relationship with one another, and



having material forming a glue joint joining said electrically insulating layer and said two uninsulated conductor strands; and

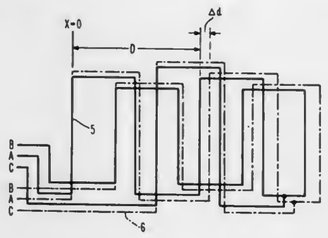
an insulating material surrounding the exposed surfaces of said two uninsulated conductor strands.

4,552,991

ABSOLUTE POSITION COORDINATE DETERMINING DEVICE EMPLOYING A SINGLE PHASE DIFFERENCE MEASUREMENT TO DETERMINE CURSOR POSITION

Leonard R. Hulls, North Falmouth, Mass., assignor to Numonics Corporation, Lansdale, Pa.

Filed Nov. 3, 1983, Ser. No. 548,317
Int. Cl.⁴ G08C *21/00*
U.S. Cl. 178—19 **6 Claims**



1. Apparatus for determining position coordinates of points on a surface, said apparatus including:

a. two conductive grid-structure systems orthogonally disposed relative to each other in planes parallel to said surface, each system comprising first and second multi-terminal conductive grid structures each grid structure having 'n' terminals, where 'n' is an odd integer greater than one, each grid structure comprising a plurality of substantially equally-spaced parallel grid conductors located parallel to said surface with adjacent conductors being connected to different terminals, each of said conductors having its one end remote from its terminal electrically connected to a corresponding remote end of each of the other of said conductors, said parallel grid conductors being at right angles to a first axis of said surface, each of said conductors of said first grid structure having the same pitch and each of said conductors of said second grid structure having the same pitch, the pitch of said second grid structure being slightly different from the pitch of the first grid structure;

b. a cursor structure having a conductive coil element adapted to be moved in any direction parallel to and in close cooperative relationship to the plane of said grid conductors;

c. input means for applying to said cursor coil an alternating-current excitation signal for inducing signal voltages in said grid structures;

d. first phase-shift network means for combining signal voltages induced in said first grid structure to produce a first signal;

e. second phase-shift network means for combining signal voltages induced in said second grid structure to produce a second signal;

f. phase difference measuring means; and

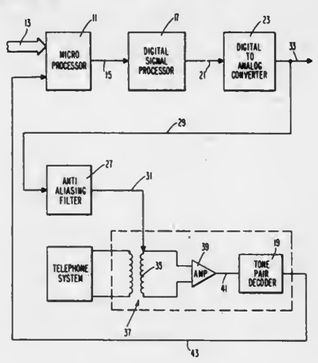
g. means for applying said first and second signals to said phase-difference measuring means for making a single phase-difference measurement for producing a monotonic signal indicating the absolute position of said cursor.

4,552,992

ANALOG SIGNAL VERIFICATION CIRCUIT

Edward Bruckert, Maynard; David Conroy, Acton; Richard Ellison, Worcester, and Martin Minow, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 12, 1983, Ser. No. 560,237
Int. Cl.⁴ H04L *25/02*; G06F *15/46*
U.S. Cl. 178—69 G **6 Claims**



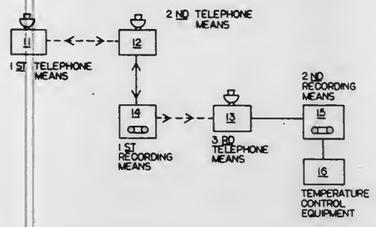
1. In a system which produces analog signals from digital signals, and which system includes a data processing means, having input and output means, and which is formed to produce groups of coded digital signals, each group representative of a different character, means to verify that the system is acceptably handling digital signal transmissions, as well as digital to analog transformations, comprising in combination: high speed digital signal processing means, connected through first circuitry means to receive said coded digital signals and formed to have program means which in response to said coded digital signals cause said high speed digital signal processing means to generate, at high speeds, a pair of digitized waveforms, each of said waveforms representing a different frequency; said high speed digital signal processing means further formed to combine said pair of digitized waveforms into a combined waveform signal; digital to analog converter means connected to said high speed digital signal processing means to receive said combined waveform signal therefrom in order to convert said combined waveform signal into an analog waveform signal, whereby said analog waveform signal represents a tone, and said tone represents one of said groups of coded digital signals; tone pair decoder means connected, through second circuitry, to said digital to analog converter, to transform said analog waveform signal received therefrom into a group of coded digital signals; and third circuitry means connecting the said tone pair decoder means to said data processing means to transmit coded digital signals thereto to be compared with said coded digital signals originally sent to said high speed digital signal processing means.

4,552,993

TELEPHONE ACTIVATION APPARATUS

Paul D. Hales, P. O. Box 7573, High Point, N.C. 27264

Filed Apr. 12, 1984, Ser. No. 599,719
Int. Cl.⁴ H04M *11/00*
U.S. Cl. 179—2 A **8 Claims**



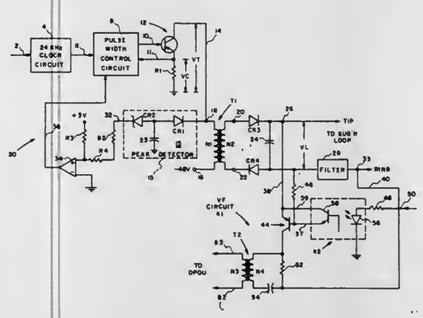
1. Telephone activation apparatus comprising: a first remote telephone means, a second telephone means, said remote telephone means for first communicating with said second telephone means, third telephone means, recording means, said recording means in communication with said second and said third telephone means for activating said third telephone means upon communication from said remote telephone means to said second telephone means, said third telephone means upon activation by said recording means being communicable with said remote telephone means, said third telephone means for activating equipment upon communication from said remote telephone means whereby said remote telephone means by secondly communicating with said third telephone means can thereby activate equipment from a remote location.

4,552,994

APPARATUS FOR ISOLATING THE VOICE FREQUENCY PATH FROM THE FLOATING BATTERY FEED DURING SIGNALLING

Constantine V. Skidanenko, Menlo Park, and Gregor D. McGibbon, San Carlos, both of Calif., assignors to GTE Lenkurt Incorporated Communication Systems, Phoenix, Ariz.

Filed Dec. 13, 1982, Ser. No. 449,026
Int. Cl.⁴ H04M *7/00*
U.S. Cl. 179—16 AA **4 Claims**



1. In a circuit for providing floating battery feed current to a subscriber loop, apparatus for disassociating an associated voice frequency circuit from the subscriber loop tip and ring leads during signaling, which comprises:

said associated voice frequency circuit including a voice frequency transformer having a primary winding connected to a voice frequency path, and having a secondary winding;

a DC blocking capacitor electrically connected between one terminal of said secondary winding and said ring lead;

a dial pulse originating channel unit means having input leads connected to said voice frequency path and having a control lead on which appears a signal of one binary state to indicate the termination of dial pulsing and after a prolonged delay an output signal of the other binary state; and

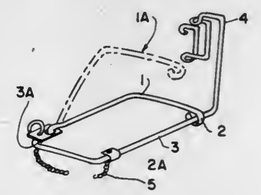
transfer means electrically connected between the other terminal of said secondary winding and said tip lead, said transfer means being responsive to the output state signal on said control lead so as to insulate the voice frequency circuit from the tip and ring leads when dial pulsing occurs.

4,552,995

PORTABLE CORDLESS PHONE HOLDER

James B. Huntley, Washington, D.C., assignor to 2JT, Inc., Washington, D.C.

Filed Jul. 9, 1983, Ser. No. 515,250
Int. Cl.⁴ H04M *1/02*
U.S. Cl. 179—147 **1 Claim**



1. An apparatus for holding a cordless phone comprising a first generally L-shaped wire having a short leg and a longer leg, wherein the shorter leg rests in front of the neck and across the chest of a user, the first L-shaped wire further including an extension from the longer leg including a bracket means for removably attaching a cordless telephone, a second L-shaped wire having a short and longer leg wherein the end of said longer leg is pivotally attached to the end of said shorter leg of said first L-shaped wire and wherein an end of said shorter leg of said second L-shaped wire is included a latch means for connection to the end of said longer leg of said first L-shaped wire thereby forming a rectangle with said first and second L-shaped wires and an adjustable strap means connected between the two ends of the short arm of said first L-shaped wire for fastening under the arm of the user.

4,552,996

METHOD AND APPARATUS FOR EVALUATING NOISE LEVEL ON A TELEPHONE CHANNEL

Guy de Bergh, Chatou, France, assignor to Compagnie Industrielle des Telecommunications, Paris, France

Filed Nov. 10, 1983, Ser. No. 550,661
Claims priority, application France, Nov. 10, 1982, 82 18854
Int. Cl.⁴ H04M *3/32*
U.S. Cl. 179—175.2 C **15 Claims**

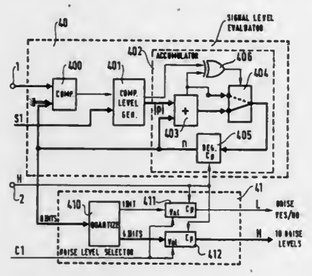
1. A method of evaluating a noise level on a telephone channel on the basis of a signal present on the channel during successive time intervals of substantially equal duration, the method comprising the steps of:

assigning the noise level on said channel to a given "noise level" range made up of a limited defined set of discrete level values;

observing successive signal level values present on the channel and selecting those observed values which lie in said noise level range; and

keeping records of different selected signal level values

expressed in terms of said discrete values to take as being representative of the noise level on the channel that one of



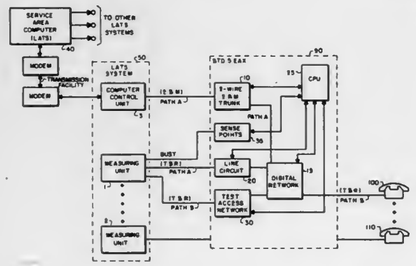
the discrete values on which the majority of the selected signal level values are concentrated.

4,552,997

ARRANGEMENT FOR LOOP ANALYSIS TESTING FOR A DIGITAL SWITCHING SYSTEM

William R. Daniels, Chicago, Ill., and John S. Young, Scottsdale, Ariz., assignors to GTE Automatic Electric Incorporated, Northlake, Del.

Filed Dec. 28, 1983, Ser. No. 566,247
Int. Cl.[4] H04B *3/46*
U.S. Cl. 179—175.3 R **21 Claims**



1. In an arrangement for loop analysis testing for a digital switching system, a loop analysis and test system (LATS) having a computer control unit and at least one measuring unit, each being connectable to said digital switching system for testing connections of said digital switching system to a plurality of subscriber's lines, said arrangement for loop analysis testing comprising:

CPU means;

a plurality of sense point means connected to said CPU means;

a plurality of connections, a connection from each of said plurality of sense point means to a corresponding measuring unit;

each said sense point means being operated to contain a first logic value for a busy condition of said corresponding measuring unit or alternatively each said sense point means being operated to contain a second logic value for an idle condition of said corresponding measuring unit; and

said CPU being operated to interrogate each said sense point means for determining said busy and said idle condition of each said corresponding measuring unit;

first means for connecting being connectable to said computer control unit of said LATS and being connected to said CPU means, said first means for connecting being operated in response to a request from said computer control unit and said CPU means to connect said computer control unit to said digital switching system;

digital switching means connected to said first means for connecting and to said CPU means, said digital switching means being operated in response to said CPU means to selectively connect said first means for connecting through said digital switching means to a particular output port of said digital switching means;

second means for connecting being connectable between said output port of said digital switching means and a corresponding measuring unit of said LATS, said second means for connecting being operated in response to said CPU means to connect said corresponding measuring unit to said output port for transmitting messages between said computer control unit and said measuring unit;

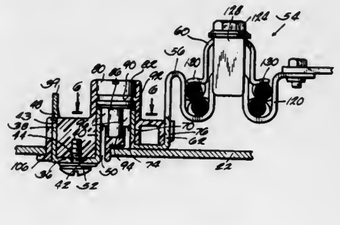
test access means connected to said corresponding measuring unit and to said CPU means, said test access means being operated in response to said CPU means to provide a path from said corresponding measuring unit to a selected one of said plurality of subscribers for testing said subscriber's outside plant and line facilities.

4,552,998

APPARATUS FOR ALTERNATIVELY AND SELECTIVELY CONNECTING TELEPHONE CABLE SHIELD GROUND STRAPS TO A GROUND ROD AND INCLUDING A GROUND BRACKET

Hans J. Ziegler, 4828 N. Newhall St., Milwaukee, Wis. 53217

Filed May 16, 1983, Ser. No. 494,977
Int. Cl.[4] H01H *21/00*
U.S. Cl. 200—11 R **34 Claims**



1. Apparatus adapted to be supported by a support structure and for use in selectively connecting an electrically conductive shield of a cable to an eelctrical ground to ground the electrically conductive shield, and for selectively providing for disconnection of the electrically conductive cable shield from the electrical ground to facilitate testing of the electrical continuity of the electrically conductive cable shield, the apparatus comprising:

a ground disconnect block body comprised of electrically insulative material, the ground disconnect block body being adapted to be supported by the support structure,

a first contact member supported by said ground disconnect block body, a first portion of said first contact member being housed in said ground disconnect block body, a second portion of said first contact member projecting from a first portion of said ground disconnect block body and comprising an electrically conductive test member, and a third portion of said first contact member projecting from a second portion of said ground disconnect block body and for connection to an electrically conductive shield of a first cable.

a second contact member supported by said ground disconnect block body, a first portion of said second contact member being housed in said ground disconnect block body and being spaced from said first portion first contact member, and a second portion of said second contact member projecting from said ground disconnect block body and being adapted to be connected to said electrical ground.

an electrically conductive member supported by said ground disconnect block body and positioned between said first

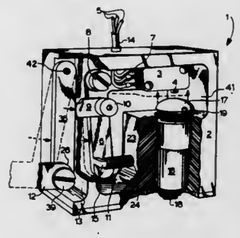
portion of said first contact member and said first portion of said second contact member, said electrically conductive member being shiftable between a first position wherein a first portion of said electrically conductive member engages said first portion of said first contact member and a second portion of said electrically conductive member engages said first portion of said second contact member and wherein said electrically conductive member provides an electrical connection between said first contact member and said second contact member, and a second position wherein said first portion of said electrically conductive member is spaced from said first contact member and said second portion is spaced from said second contact member.

4,552,999

TIME DELAY SWITCH

Dulin L. Annas, Hickory, N.C., assignor to Anteg, Inc., Hickory, N.C.

Filed Jul. 23, 1984, Ser. No. 633,358
Int. Cl.[4] H01H *43/00*
U.S. Cl. 200—34 **16 Claims**



1. A time delay switch comprising a housing containing actuating means, a biasing means, a switch means and a pneumatic means wherein:

(a) a part of the actuating means is disposed outside and a part inside of the housing and is movable from a first to a second position by the part located outside of the housing;

(b) the biasing means is attached to that part of the actuating means located inside of the housing and to the housing to bias the actuating means towards the first position;

(c) the switch means is in a first state when in contact with the penumatic means and a second state when not in contact with the pneumatic means; and,

(d) the penumatic means is aligned with the switch means adapted to be in compressed, intermediate and expanded states and when in its compressed and expanded states it is in contact with the switch means and when in its intermediate state it is not in contact with the switch means.

4,553,000

PLUG AND RECEPTACLE WITH SEPARABLE SWITCH CONTACTORS

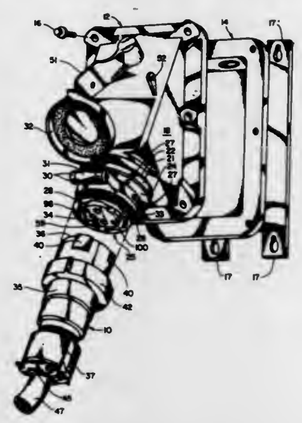
Arthur I. Appleton, Miami Beach, Fla., assignor to Appleton Electric Company, Chicago, Ill.

Filed Nov. 14, 1983, Ser. No. 551,285
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 B **14 Claims**

1. An electrical connector including a plug and receptacle for connecting an electrical load to a power source, said plug including a housing having a front end and a rear end with a plurality of terminals proximate its front end, said receptacle including a housing having a plug receiving end with means therein for receiving said plug terminals, said receptacle also including receptacle terminals, the improvement comprising:

said plug terminals, during and after full insertion into the receptacle, being spaced from said receptacle terminals so as to avoid resistance to insertion thereby;

and multiple function actuator means forming a part of one of said plug and receptacle which is moveable from a first position to a second position, but only when said plug terminals are fully inserted into the receptacle, for indirectly connecting said plug terminals and receptacle terminals electrically after the plug is fully inserted into the receptacle.

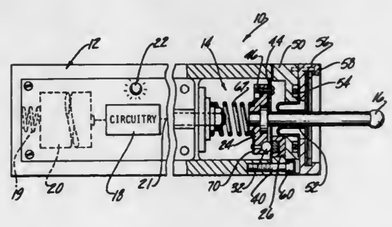


4,553,001

TOUCH PROBE HAVING NONCONDUCTIVE CONTACT CARRIERS

Charles F. Kroetsch, Warren, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Division of Ser. No. 557,754, Dec. 5, 1983, Pat. No. 4,523,063.
This application Apr. 26, 1985, Ser. No. 727,837
Int. Cl.[4] H01H *3/00*; G01B *5/00*
U.S. Cl. 200—61.41 **6 Claims**



1. In a battery operated probe having a movable stylus for contacting an object, with the probe including circuit means therein for generating an electrical signal which is transmitted from the probe when the stylus contacts the object, the improvement comprising:

an electrically conductive probe housing, with one end of the battery being connected to the probe housing and another end of the battery being connected to said circuit means;

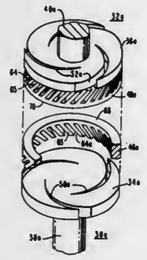
a first carrier member transversely connected to the stylus and having a first set of electrically conductive contacts affixed thereto;

a second carrier member in the form of a nonconductive plastic insert supported on a fixed conductive member extending transversely to the stylus, said second carrier member having a second set of electrically conductive contacts thereon opposing said first set of contacts;

first means for connecting said first and second set of contacts together in a series circuit whereby movement of

the stylus results in a change of electrical characteristics between the two sets of contacts;
second means for connecting said circuit means to at least one of the contacts of the first set;
third means passing through said plastic insert for electrically connecting at least one contact of the second set with said fixed conductive member; and
fourth means for electrically connecting said fixed conductive member to the probe housing thereby completing the electrical circuit back to said battery.

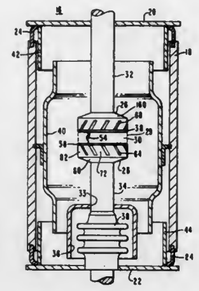
4,553,002
AXIAL MAGNETIC FIELD VACUUM-TYPE CIRCUIT INTERRUPTER
Paul G. Slade, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 5, 1983, Ser. No. 557,793
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B **6 Claims**



1. A vacuum-type circuit interrupter, comprising:
an evacuated housing;
a pair of opposed contacts at least one of which is movable with respect to the other and is movable between a closed position in engagement with the other contact to an open position spaced apart from the other contact to form an arcing gap therebetween wherein an arc can form during circuit interruption, the contact pair positioned within the housing, each contact including a disc-shaped backing plate having at least two radially spiraling slots therethrough with the slots having a similar direction of spiraling, the backing plates being substantially parallel to one another with direction of the spiraling slots therethrough being reversed with respect to those of opposing contact; and
a contact and arcing ring secured to the opposed face of each of the spiral backing plates for ensuring current flow through the spiral arms of the disc shaped backing.

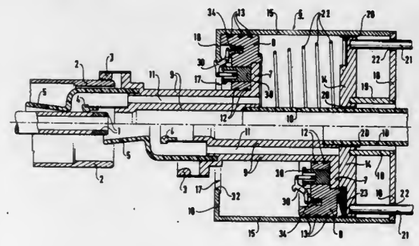
4,553,003
CUP TYPE VACUUM INTERRUPTER CONTACT
Sidney J. Cherry, Elmira, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 30, 1984, Ser. No. 595,071
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B **10 Claims**

1. A vacuum type circuit interrupter comprising, a pair of relatively movable contacts, said contacts being relatively movable between a closed position in engagement and an open position, when in the open position said contacts form an arcing gap therebetween across which an arc can form during circuit interruption; an evacuated housing disposed about and enclosing said pair of contacts; at least one of said contacts comprising a cupshaped holder portion and a contacting portion, said cup-shaped holder portion comprising a flat, round base and a circular side wall, said side wall being disposed perpendicular from the periphery of said flat base portion, at least said side wall having slots formed therein, said side wall extending from said base portion to a rim, said cup-shaped holder consisting of a precipitation-hardened copper alloy, said contacting portion of said contact being disposed on and af-



fixed to said rim of said side wall, said contacting portion being approximately the same shape and cross-sectional area as said rim, said contacting portion being comprised of a copper alloy.

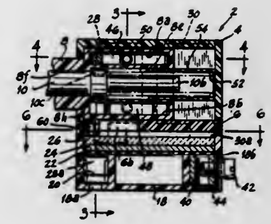
4,553,004
PUFFER-TYPE GAS-BLAST CIRCUIT-BREAKER
Edmond Thuries, Meyzieu, France, assignor to Alsthom-Atlantique, Paris, France
Filed Mar. 12, 1984, Ser. No. 588,174
Claims priority, application France, Mar. 11, 1983, 83 04040
Int. Cl.⁴ H01H *33/88*
U.S. Cl. 200—148 A **10 Claims**

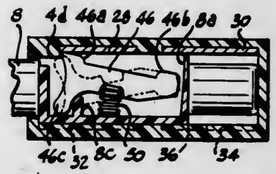


1. In a puffer-type gas-blast circuit-breaker including an interrupter comprising; a gas-blast arc-extinguishing mechanism having a fixed cylinder (**6**) with a top (**16**) and bottom (**14**) joined by a cylindrical end wall, fixed main contact fingers (**2**) and arcing contact fingers (**1**), movable main contact fingers (**3**) and arcing contact fingers (**4**), a mechanism of said gas-blast arc-extinguishing assembly for moving said movable main contact fingers (**3**) and arcing contact fingers (**4**) relative to said fixed main contact fingers (**2**) and arcing contact fingers (**1**), the improvement wherein the gas-blast assembly includes two concentric pistons (**7, 8**) mounted within the cylinder (**6**) for axial movement therein between said top and bottom and including a first piston (**7**) driven by the mechanism and serving to move the moving contacts (**3, 4**); and a second free piston (**8**), said pistons (**7, 8**) and said cylinder (**6**) delimiting a volume of blast-gas in a current loop used by the opening current which passes via the arcing contacts (**2, 4**), said opening current passing therethrough in the same radial direction as it passes through the bottom (**14**) of the cylinder; resilient return means (**23**) placed inside the cylinder (**6**) between the bottom (**14**) and the second piston (**8**) to urge said second piston (**8**) against the top (**16**) of the cylinder in such a manner as to maximize the volume of the blast-gas; and coupling means (**30**) for locking the second piston (**8**) to the top (**16**) when it reaches the top (**16**) of the cylinder under the action of the resilient return means **923**) and means responsive to movement

of said first piston (**7**) when it leaves the vicinity of the top (**16**) of the cylinder for releasing said coupling means (**3**) at opening of the interrupter.

4,553,005
TRIGGER OPERATED ELECTRIC SWITCH
Robert L. Glenn, Arab, Ala., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 8, 1984, Ser. No. 587,728
Int. Cl.⁴ H01H *13/08, 9/06*
U.S. Cl. 200—153 LA **29 Claims**

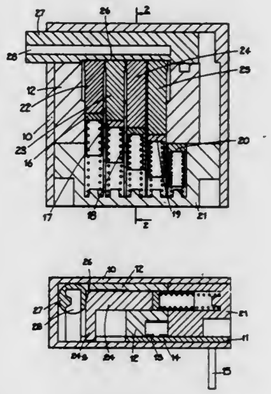




1. A trigger operated electric switch comprising, in combination:
an insulating housing;
an actuator mounted for linear reciprocal movement in said housing and having a trigger operator extending outwardly of said housing;
means biasing said actuator to an extended position of said trigger with respect to said housing;
stationary contacts mounted against internal surfaces of opposite sidewalls of said housing, said stationary contacts being linearly spaced apart in the direction of said linear reciprocal movement of said actuator;
a pair of contactors carried by said actuator for linear movement therewith, said contactors being disposed at opposite sides of said actuator adjacent respective ones of said internal surfaces and being movable in opposite laterally outward directions with respect to said actuator; and
means on said housing engagable with said contactors and responsive to depression of said trigger operator for moving said contactors laterally outward of said actuator in opposite directions into bridging engagement with said stationary contacts.

4,553,006
KEY OPERATED SECURITY SWITCH TO PREVENT UNAUTHORIZED USE OF EQUIPMENT
Philip V. Little, Keighley, England, assignor to Lucas Industries, Birmingham, England
Filed Mar. 21, 1984, Ser. No. 591,685
Claims priority, application United Kingdom, Mar. 25, 1983, 8308296
Int. Cl.⁴ H01H *27/08*
U.S. Cl. 200—43.05 **3 Claims**

1. A security switch comprising a housing, a plurality of fixed contacts in said housing, a slider mounted in the housing for slidable non-rotary movement therein, a plurality of contacts on said slider movable with the slider relative to said fixed contacts, a plurality of locking pins transversely mounted in said housing and each movable in a direction transverse to the direction in which the slider can slide relative to the housing, a plurality of plungers mounted in the slider and each having an adjacent and a remote end, said plungers being respectively engageable at the adjacent end with a locking pin, at least some of said plungers being of different lengths, a plurality of resilient members respectively urging said locking pins towards an operative, locking position in which at least some of said locking pins extend partly into the slider to prevent sliding movement thereof, a barrel disposed in said housing so as to be axially and angularly movable therein, said barrel having a key slot extending through a wall of the barrel



and adapted to receive a key having an edge which is of stepped configuration and which, when the key is inserted into the key slot of the barrel will project through the barrel wall, said key slot then being in a position in which said stepped edge of the key does not engage the remote ends of the plungers as the key is inserted into the barrel, whereas upon subsequent turning of the key and the barrel, said stepped edge will engage at least some of said remote ends of the plungers and cause movement of said plungers to push the locking pins into an inoperative unlocked position in which they do not extend into the slider and in which the plungers do not extend outwardly of the slider so as to permit sliding movement thereof, such sliding movement of the slider then being effected by axially moving the key and the barrel.

4,553,007
ARC RESISTANT VAPOR CONDENSING SHIELD FOR VACUUM-TYPE CIRCUIT INTERRUPTER
Paul O. Wayland, Montour Falls, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 30, 1983, Ser. No. 537,997
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B **6 Claims**

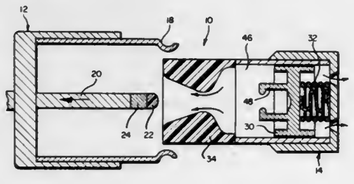
1. A vacuum-type circuit interrupter including in combination:
(a) means defining an evacuated envelope;
(b) a pair of two-component metallic electrical contacts disposed within the evacuated envelope, said contacts being separable to establish arcing;
(c) a vapor condensing shield disposed within said evacuated envelope to prevent the deposition of metal particles, emitting from the arcing region, on the envelope and to prevent heat flux from damaging the envelope; and

(d) at least that portion of the vapor condensing shield adjacent to said separable contacts and within the arcing area



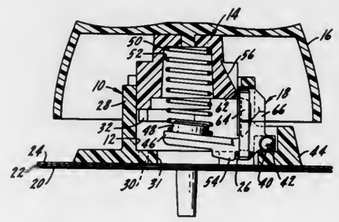
being comprised of the same two metallic components as the separable electrical contacts.

4,553,008
LOAD INTERRUPTER
Edward F. Veverka, Franksville; Nils V. Holmgren, Greendale, and Donald R. Martin, Racine, all of Wis., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 14, 1984, Ser. No. 620,515
Int. Cl.[4] H01H *33/82*
U.S. Cl. 200—148 R **14 Claims**



1. A load interrupter, comprising:
(a) a generally cylindrical hollow casing having two ends, an interrupting end and an oppositely disposed vented end;
(b) a moving contact which is adapted to move relative to said casing and towards and away from the interior of said casing, said moving contact defining a free end and a fixed end, said free end being formed from an electrically insulating material with the remainder of said moving contact being formed from electrically conducting material;
(c) a piston which is sealingly disposed within said casing and which is free to move between said interrupting end and said vented end, said piston dividing the interior of said casing into two chambers, an interrupting chamber and a venting chamber;
(d) contacting means, carried by said piston, for electrically making contact with the free end of said moving contact and for transferring electrical current from said piston to said casing;
(e) biasing means, carried by one of said casing and said piston, for biasing said piston towards the interrupting end of said casing;
(f) flow control means, carried at the interrupting end of said casing, for directing the flow of fluid into and out of said interrupting chamber, said flow control means defining a throat formed from an electrically insulating material which is adapted to receive said free end of said moving contact, said moving contact when passed from the exterior of said casing and through said throat of said flow control means being of sufficient axial length so as to engage said contacting means and overcome said biasing means to position said piston intermediate said interrupting end and said vented end of said casing, the axial separation between said throat and the position of said piston when said piston is at the interrupting end of said housing being such that said contacting means is disengaged from said moving contact before the non-conducting tip of said moving contact is within said throat,
whereby the electrical arc formed by separating said moving contact from said contact means is drawn between the exterior conducting portion of said moving contact and said throat such the flow of fluid out of said interrupting chamber is discharged around the periphery of said moving contact and in direct contact with said arc.

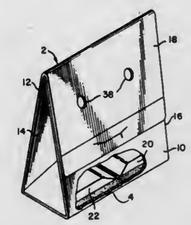
4,553,009
KEYBOARD SWITCH WITH PIVOTAL ACTUATOR LEVER
Anthony J. Van Zeeland, Crystal Lake, and Ronald S. Denley, Woodstock, both of Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.
Continuation-in-part of Ser. No. 414,629, Sep. 3, 1982,. This application Nov. 21, 1983, Ser. No. 553,966
Int. Cl.[4] H01H *5/08;* **B41J** *5/26*
U.S. Cl. 200—340 **11 Claims**



1. A low profile keyboard switch having tactile feel for use in combination with a membrane switch array, including a housing adapted to be positioned on a membrane switch array, an upright opening in said housing, a plunger reciprocal in said housing, an actuator lever pivotally mounted on said housing and positioned for engagement by said plunger, spring means seated upon said lever and urging said plunger outwardly in said opening, cooperating cam surfaces on said plunger and lever preventing movement of said lever to a membrane switch closing position until said plunger has moved inwardly a given distance, inward movement of said plunger compressing said spring means with movement of said plunger beyond the given distance causing the sudden application of a switch closing force, from said compressed spring means, by said lever on the underlying switch array.

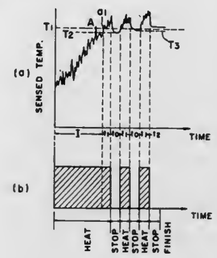
4,553,010
PACKAGING CONTAINER FOR MICROWAVE POPCORN POPPING AND METHOD FOR USING
Timothy H. Bohrer; Thomas D. Pawlowski, both of Neenah, and Richard K. Brown, Appleton, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.
Filed Jul. 5, 1983, Ser. No. 510,735
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **17 Claims**

1. An expansible package for shipping and microwave popping of popcorn, comprising:
(a) a predetermined quantity of popcorn kernels which will occupy a predictable volume when popped;
(b) an expansible package containing said predetermined quantity of popcorn constructed for expansion from a collapsed condition having a compact configuration for shipping to an expanded configuration having a predetermined internal volume at least equal to said predictable volume occupied by said popcorn kernels when popped, said expansible package having a wall adapted to rest in a generally flat horizontal configuration upon a horizontal support surface in a microwave oven, said flat wall having an interior surface that is large enough for said predetermined quantity of unpopped popcorn to be spread thereon in a generally unclumped and scattered manner with each kernel being generally spaced an average kernel's diameter away from said interior surface or less when said predetermined quantity of kernels is evenly spread over said interior surface; and
(c) a microwave converting means integrally connected with said expansible package for converting microwave energy into heat for transfer in a sufficient amount to the popcorn kernels when scattered and unclumped to reduce substantially the number of burned or unpopped kernels



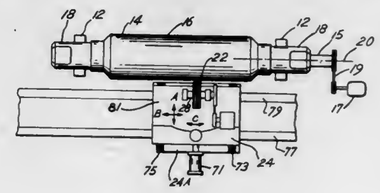
that could result if the kernels were popped solely by direct impingement of microwave energy, said microwave converting means including a microwave interactive material whose temperature increases in response to impinging microwaves, said microwave interactive material being connected with said flat wall and co-extensive with an area of said interior surface which is sufficiently large to permit said predetermined quantity of popcorn to be spread in said unclumped and scattered manner to cause each kernel to be generally spaced an average kernel's diameter away or less from said microwave interactive material.

4,553,011
TEMPERATURE CONTROL FOR MICROWAVE OVEN
Takeshi Nakata; Atsushi Horinouchi, and Kazuo Taino, all of Otsu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Dec. 31, 1984, Ser. No. 687,698
Claims priority, application Japan, Dec. 29, 1983, 58-249517
Int. Cl.[4] H05B *6/68*
U.S. Cl. 219—10.55 B **5 Claims**



1. A microwave oven which comprises microwave oscillating means for oscillating the microwave for heating food, temperature sensing means for sensing the temperature of the food to be heated, control means for controlling the oscillation of the oscillating means and instruction means for instructing activation of the oscillating means, said control means including
(a) input detecting means for detecting the instruction fed from the instruction means,
(b) means for activating said oscillating means in response to the instructions fed from the instruction means,
(c) first detecting means for detecting whether the output value of the sensing means exceed a first value continuously during a first predetermined period,
(d) first means for deactivating said oscillating means corresponding to the detection of the first detecting means,
(e) second detecting means for detecting whether the output value of the sensing means exceed a second value continuously during a predetermined second period while said oscillation means is stopped, and
(f) means for enabling said input detecting means in response to the output of the second detecting means.

4,553,012
ELECTRICAL DISCHARGE SURFACE CONDITIONING DEVICE
Alex L. Anderson, 3714 Fairway Pl., Rockford, Ill. 61107
Filed Apr. 18, 1984, Ser. No. 601,719
Int. Cl.[4] B23P *1/08, 1/12, 1/20*
U.S. Cl. 219—69 R **8 Claims**

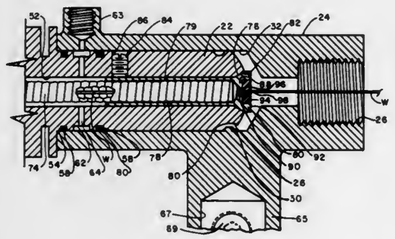


1. Apparatus for electric discharge machining the surface of a workpiece wherein the workpiece is mounted for rotation about a longitudinal axis for cooperation with an electrode that moves over the surface and including means for directing a dielectric fluid flow in the gap between the electrode and workpiece, said electrode providing an electric discharge therefrom to the workpiece surface to alter the surface condition into a desired form, said apparatus comprising:
an electrode including a plurality of alternating generally cylindrical discs of conductive and non-conductive material arranged in a composite stack to form a cylinder defining a face, said cylinder having an axis;
means for mounting the electrode for rotation about the axis of the cylinder, said means for mounting also including means for aligning the axis of the cylinder parallel to the workpiece axis so as to maintain the cylinder face generally parallel to an incremental workpiece surface;
means for maintaining a defined gap between the electrode and the workpiece surface, said gap being located on a line generally perpendicular to the axes and connecting the axes;
means for providing electric current for discharge to the conductive discs and for controlling the current to said discs;
means for rotating the composite stack electrode; and
means for moving the composite stack of discs transversely along the axis of the workpiece.

4,553,013
GAS SEAL FOR MIG GUN SYSTEMS
William H. Colman, Cape Girardeau County, Mo., assignor to Lenco, Inc., Jackson, Mo.
Filed Aug. 8, 1984, Ser. No. 639,003
Int. Cl.[4] B23K *9/16*
U.S. Cl. 219—74 **17 Claims**

1. Means to prevent the escape of gas from the inlet end of a wire feed connector assembly through which welding wire passes from a wire feed unit to a welding location comprising an inlet connector assembly having a bore with an inlet end

adapted to communicate with a supply of welding wire, means positioned in said bore through which the welding wire passes from the feed unit including an elongated tubular member having inlet and outlet ends and sized to extend into the inlet end of said bore, said tubular member having an upstream end defined by an inwardly extending flange having an opening therethrough sized to receive and guide welding wire as it



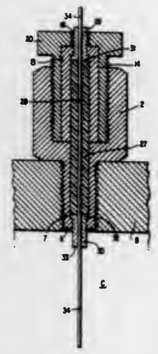
passes therethrough, and a seal member mounted on the tubular member on the upstream side of the inwardly extending flange, said seal member including a resilient member having an orifice therethrough positioned to register with the opening defined by the inwardly extending flange, the opening in the resilient member being sized to resiliently engage the welding wire passing therethrough.

4,553,014

SELF-SEALING ELECTRODE GUIDE

Thomas F. Culbreth, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,611
Int. Cl.⁴ B23K *9/28;* **H01B** *17/30;* **F16J** *15/48*
U.S. Cl. 219—75 **5 Claims**



1. Welding apparatus comprising:

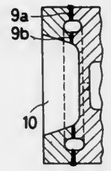
a welding chamber having an electrode port, a generally constant diameter electrode, and a self-sealing electrode guide for supporting said electrode in said electrode port of said welding chamber, said electrode guide including a housing adapted to be mounted in the electrode port, said housing including housing walls defining a housing channel; a sealing sleeve accommodated in said housing channel; said sealing sleeve having opposite first and second ends and a passage extending within said sealing sleeve and being open at said first and second ends; said passage being adapted to receive the electrode; said first end being disposed for exposure to an external force oriented in a direction extending from said first end towards said second end; said force being derived from a pressure in the welding chamber; and abutting means held in said housing and cooperating with said second end for preventing displacement of said sealing sleeve in said direction relative to said housing; said sealing sleeve being resiliently deformable by said external force for assuming a deformed state in which said sealing sleeve is sealingly pressed about the electrode and against said housing walls; and said electrode and said passage of said sealing sleeve having diametral dimensions such that said electrode is axially displaceable with respect to said sealing sleeve in the absence of said external force.

4,553,015

METHOD OF FABRICATING PISTON BY WELDING

Masami Ishii, Toyota; Fuminao Arai, Chiryu; Noriaki Hattori, Toyota, and Junichi Mita, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 9, 1983, Ser. No. 559,925
Claims priority, application Japan, Dec. 26, 1982, 57-232688
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 ED **4 Claims**



1. A method of fabricating a piston having an exterior portion by welding, the method comprising the steps of:

fabricating the head section and the skirt section of the piston separately such that said sections form the top wall portion of the piston when joined together and the abutting surfaces of these sections form a portion of an oil circulating passage;

causing the abutting surfaces of the head section and the skirt section to abut each other to form the oil circulating passage; and

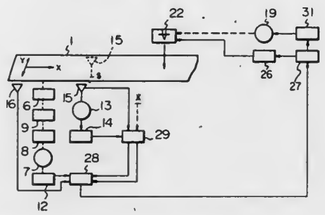
welding together the abutting surfaces by using an electron beam such that inner end portions of the weld seams are exposed to said exterior portion of said piston.

4,553,016

ELONGATED NON-METALLIC SHEET HAVING A METAL EMBEDDED THEREIN OR ATTACHED THEREON

Hiroyuki Kunii; Hirohisa Sente, and Kouji Hironaka, all of Icihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Jun. 9, 1982, Ser. No. 386,616
Int. Cl.⁴ B23K *27/00*
U.S. Cl. 219—121 LG **3 Claims**



1. A method of trimming an elongated nonmetallic sheet having a metal portion in intimate contact therewith over the entire length thereof, comprising the steps of:

applying a cutting device for cutting the sheet, said cutting device being stationary in the longitudinal direction of the sheet;

transferring the sheet in the longitudinal direction along a predetermined straight transfer passage;

profiling the periphery of each of the longitudinal sides of the metal portion gradually while the sheet is being transferred along said transfer passage and obtaining a first information signal indicative of a position a predetermined lateral distance from the periphery of the profile, said metal portion being a wire arranged in a reversing path and having turning ends on each longitudinal side of said sheet, said first information signal being obtained by detecting the positions of at least three consecutive turning ends on at least one side of said sheet, generating a profile signal indicative of the positions of each of said turning ends, synthesizing the three signals to produce a signal component representing a part of a line parallel to said periphery of the profile and a predetermined distance outwardly from the periphery of the profile, generating a profile signal of a fourth turning end and synthesizing the signals indicative of the position of the fourth turning end and the positions of the two previous turning ends to produce a signal component representing a subsequent part of said line; and

detecting the longitudinal moving distance of the sheet and obtaining a second information signal indicative of the distance of movement of the sheet; and

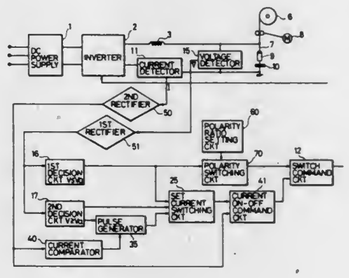
controlling the lateral movement of said cutting device in response to said first and second information signals so that the sheet is cut continuously on each of the longitudinal sides of the sheet along a line parallel to and a predetermined distance from the periphery of the outline of the corresponding turning ends of the metal.

4,553,018

SHORT CIRCUITING TRANSFER ARC WELDING MACHINE

Masatsune Kondo, Aichi; Youichiro Tabata; Shigeo Ueguri, both of Hyogo; Takaji Mizuno; Hirohisa Segawa, both of Aichi, and Seigo Hiramoto, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Oct. 27, 1983, Ser. No. 545,977
Int. Cl.⁴ B23K *9/09*
U.S. Cl. 219—130.51 **20 Claims**



1. A short circuiting arc welding machine comprising:

(a) a wire feed motor for feeding a wire electrode toward a workpiece;

(b) a DC power supply circuit for supplying a welding current between the wire electrode and the workpiece;

(c) an inverter for controlling said welding current;

(d) a voltage detector for detecting a voltage between the wire electrode and the workpiece;

(e) a current detector for detecting the welding current; and

(f) a current control device for controlling said inverter in response to detected values from said voltage detector and said current detector, said current control device comprising:

(1) a first decision circuit for issuing a signal when said detected voltage is smaller than a first reference voltage;

(2) a second decision circuit for issuing a signal when said detected voltage is larger than a second reference voltage which is higher than said first reference voltage;

(3) a current comparator for issuing a signal when said detected current is smaller than a predetermined current;

(4) a pulse generator for issuing a pulse signal in response to the outputs from said second decision circuit and said current comparator;

(5) a set current switching circuit for selecting and issuing one of a plurality of set current values in response to the outputs from said first decision circuit, said second decision circuit, and said pulse generator;

(6) a current on-off command circuit for issuing a current on-off command through comparison between the output from said set current switching circuit and the detected current; and

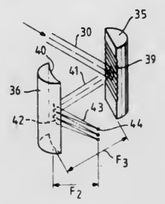
(7) a switch command circuit responsive to the on-off command from said current on-off command circuit for issuing a signal to control conduction of said inverter.

4,553,017

ENERGY BEAM FOCUSING APPARATUS AND METHOD

Robert L. Addleman, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 29, 1983, Ser. No. 490,115
Claims priority, application United Kingdom, Mar. 14, 1983, 8306951
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LA **10 Claims**



1. An apparatus for increasing the power density of an energy beam said apparatus comprising first means for focusing the beam to an anisometric configuration and second means for focusing the anisometric beam to a modified, preferably substantially isometric, configuration.

4,553,019

GOUGING WIRE ELECTRODE

Masanori Maeda, Higashiosaka; Koji Ishihara, Hirakata, and Tetsuo Ikebata, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP83/00258, § 371 Date Apr. 6, 1984, § 102(e) Date Apr. 6, 1984, PCT Pub. No. WO84/00724, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 10, 1983, Ser. No. 599,438

Claims priority, application Japan, Aug. 12, 1982, 57-140604

Int. Cl.⁴ B23K *35/368*

U.S. Cl. 219—146.22 **1 Claim**



1. A gouging wire electrode comprising a metal shell, and a powdery or particulate filler packed into said metal shell, the composition of said filler section comprises 80–95% by weight of carbon and 5–20% by weight of thermosetting resin binder, the bulk density of the filler being 1.2–1.7 g/cm^3 and the cross-sectional area of the filler being 60–90% of the total cross-sectional area.

4,553,020

ELECTRONIC COMPONENT PACKAGE COMPRISING A MOISTURE-RETENTION ELEMENT

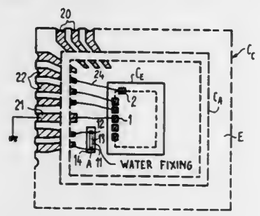
Christian Val, St. Remy-les-Chevreuses, France, assignor to Compagnie d'Informatique Militaire, Spatiale et Aeronautique, Paris, France

Filed Dec. 23, 1983, Ser. No. 565,042

Claims priority, application France, Dec. 28, 1982, 82 21871

Int. Cl.⁴ H01L *23/26;* **H05B** *1/00*

U.S. Cl. 219—209 **12 Claims**



1. A package for an electronic component, comprising a base for receiving said component and a cover placed over said component and fixed on said base in an air-tight manner, a retaining element which chemically reacts with and retains water molecules, positioned within said package, and also located inside said package, means for heating said element after said tight fixing of said cover.

4,553,021

PINCER-GUN FOR ELECTRICALLY HEATING METAL HINGES OF THERMOPLASTIC EYEGLASS FRAMES

Gianfranco Conti, Viale Corsica, 39 Milano, Italy

Filed Nov. 8, 1982, Ser. No. 440,025

Claims priority, application Italy, May 10, 1982, 21165 A/82

Int. Cl.⁴ B23K *9/28, 3/04;* **H05B** *3/02*

U.S. Cl. 219—234 **13 Claims**

1. A manually operated pincer-gun utilizing an electric current source for heating metal hinges of thermoplastic eyeglass frames, comprising:

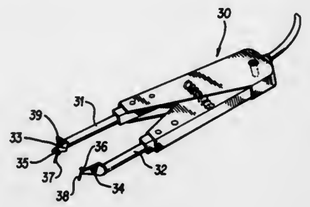
two hand grips of electrical insulating material and movable toward and away from each other;

two arms each rigidly connected with a respective hand grip and having an extremity, each of said extremities being electrically conductive;

two picking-up tips of electrically conductive material and each provided on the extremity of a respective arm

two heating tips of electrically conductive material and each also provided on the extremity of a respective arm, said picking-up tips and said heating tips being arranged at different locations on said respective extremities and being spaced from one another and electrically connected to the respective extremities;

means for connecting said extremities and thereby said picking-up tips and said heating to an electric current source; and



pivot means for connecting said hand grips to each other such that said hand grips together with the respective arms and their extremities are movable toward each other to enable said picking-up tips to engage one portion of a hinge to apply electric heating current thereto and enable said heating tips to contact another portion of the hinge to apply electric heating current thereto to heat the hinge and to soften an eyeglass frame around the hinge for insertion or extraction of the hinge, said two picking-up tips being formed as opposing tapered heads to be able to easily penetrate into eyeholes of the hinge, said two heating tips being formed as pins extended substantially parallel to each other to be able to be placed on bases of the hinges to be extracted.

4,553,022

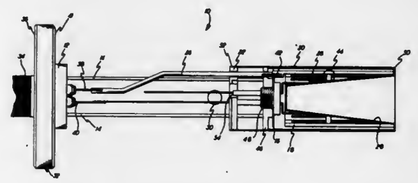
EFFUSION CELL ASSEMBLY

Paul Colombo, New Brighton, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 4, 1984, Ser. No. 616,743

Int. Cl.⁴ C23C *13/12*

U.S. Cl. 219—275 **2 Claims**



1. An ultra-high vacuum effusion cell for operating at a temperature of about 1500° C. comprising, in combination:

a self supporting high emissivity heater filament having a serpentine path which is formed in a generally cylindrical configuration, said filament providing a substantially uniform radiation therefrom when electrical current passes therethrough;

a support ridge projecting inwardly of said heater filament and forming a support ring; and

a crucible supported by said support ring and disposed radially inward of said heater filament to hold a material to be heated.

4,553,023

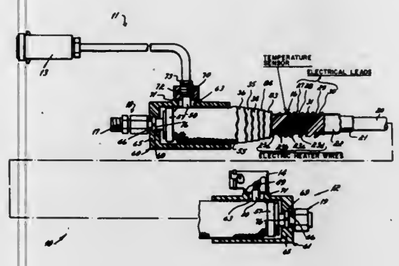
THERMALLY INSULATED ELECTRICALLY HEATED HOSE FOR TRANSMITTING HOT LIQUIDS

Calvin R. Jameson, Atlanta, and Robert G. Baker, Buford, both of Ga., assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 325,389, Nov. 27, 1981, Pat. No. 4,455,474. This application Jan. 11, 1984, Ser. No. 569,976

Int. Cl.⁴ H05B *3/58;* **F16L** *11/12, 53/00;* **B67D** *5/62*

U.S. Cl. 219—301 **6 Claims**



1. A flexible heated hose of substantially uniform construction throughout its length for transmitting hot liquid material comprising:

a flexible polymeric tube contained within a braided stainless steel covering, said tube having metallic hydraulic fittings sealingly attached to opposite ends,

a first layer of woven fiberglass helically wound around said braided stainless steel covering, said first layer being coated on its opposite sides with a thermosetting adhesive,

at least one electrical heating line helically wound around and adhesively secured to said first layer of woven fiberglass, by said adhesive coating on said first layer,

electrical leads connected to said at least one electrical heating line for supplying electrical power thereto,

temperature detecting means adhesively secured to said first layer of woven fiberglass by the adhesive coating on said first layer, and electrical leads helically wrapped around said first layer of woven fiberglass and extending from said temperature detecting means to one end of said hose,

a second layer of woven fiberglass helically wound over said at least one electrical heating line, said temperature detecting means, and said temperature detecting means leads, said second layer of woven fiberglass being coated on the inside surface with a thermosetting adhesive so as to secure said at least one electrical heating line, temperature detecting means and temperature detecting means leads against movement relative to said tube,

a third layer of thermal-insulative material helically wound over said second layer, said third layer acting as a thermal barrier to heat loss from said hose,

a fourth layer of at least one thickness of polyester felt helically wrapped over said third layer,

a fifth layer of vinyl electrical tape helically wrapped over said fourth layer, said fifth layer providing a moisture barrier for said hose,

at least two electrical leads operative to transmit electrical power for the length of the hose helically wrapped along said tube internally of said fifth layer and

a braided polyester cover over said fifth layer

4,553,024

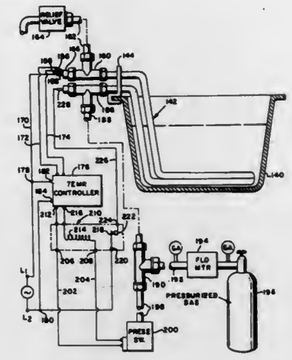
GAS-PURGED FLEXIBLE CABLE-TYPE IMMERSION HEATER AND METHOD FOR HEATING HIGHLY CORROSIVE LIQUIDS

Gordon R. Findlay, Northfield, Ohio, assignor to Lufran, Inc., Macedonia, Ohio

Filed Apr. 7, 1983, Ser. No. 482,909

Int. Cl.⁴ H05B *1/02, 3/78;* **F24H** *1/20*

U.S. Cl. 219—335 **2 Claims**



2. An immersion heating apparatus for heating in highly corrosive liquid baths comprising:

(a) a flexible cable-type immersion heater for immersion in a corrosive bath, said heater having a wall sufficiently thin to be subject to permeation of the vapors of highly corrosive liquids; said heater including

(i) a continuous coiled element of electrically resistive material disposed in axially closed spaced pitches and operative upon connection to a source of power to provide heat;

(ii) a continuous tubular outer jacket, said jacket formed of flexible plastic material received over said coiled element in closely fitting relationship and resistant to chemical attack by acidic and alkaline solutions, said tubular jacket having the wall thickness thereof sufficiently thin to provide heat transfer from said heater to the corrosive bath, said tubular jacket wall being sufficiently thin so as to be subjected to permeation of the corrosive vapors through said jacket to said coiled element;

(b) means operative to provide a source of dry gaseous medium under controlled fluid pressure;

(c) means isolating the ends of said tubular jacket from the corrosive liquid bath;

(d) means operative to direct a continuous flow of said dry gaseous medium into one end of said jacket and surrounding said coiled element to said opposite end at said controlled pressure for purging the corrosive vapors.

4,553,025

INSULATED ELECTRIC HEATING ELEMENT

Herman E. Raskov, 6312 Seward Park Ave. S., Seattle, Wash. 98118

Continuation-in-part of Ser. No. 401,640, Jul. 26, 1982, Pat. No. 4,480,176. This application Oct. 3, 1984, Ser. No. 657,345

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

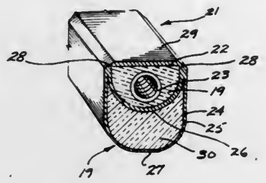
Int. Cl.⁴ H05B *3/68*

U.S. Cl. 219—461 **2 Claims**

1. An insulated, electric heating element suitable for use in an electric heating system designed to emit heat in a predetermined direction comprising:

(a) a heating element housing having an upper chamber and lower chamber, the cross-sectional configuration of the

upper chamber including a flat top, the top having opposing longitudinal edges and a generally U-shaped bottom, the cross-sectional configuration of the lower chamber including a generally U-shaped bottom, the legs of the lower chamber bottom unitarily joining the longitudinal edges of the top of the upper chamber, the cross-sectional shape of the top of the lower chamber being defined by the bottom of the upper chamber;



(b) an electric resistive heating element mounted in said upper chamber; and

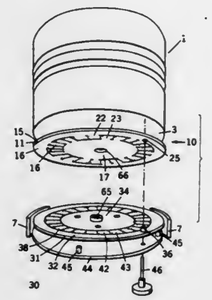
(c) thermal insulation material housed in said lower chamber, said thermal insulation material preventing downward and sideward heat radiation from said heating element housing.

4,553,026

CAPACITIVE LABEL READER

H. Duane Arlowe, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 15, 1983, Ser. No. 514,126
Int. Cl.⁴ G06K *7/08*
U.S. Cl. 235—451 **9 Claims**



1. A monitoring system for monitoring the identity of a container at a storage location, said system comprising:

a capacitive label reader for mounting near a storage location, said reader comprising an insulated board having a conductive surface including a first transmitting portion, a second transmission portion spaced from and electrically insulated from said first portion, a plurality of receiving portions, each of said receiving portions extending between said first and second transmitting portions and each receiving portion being electrically insulated from each adjacent receiving portion and from said transmitting portions; pulse means for simultaneously transmitting a first electrical pulse having a first distinct characteristic to said first transmitting portion and a second electrical pulse having a second distinct characteristic to said second transmitting portion; and receiving means connected to said receiving portions for identifying the characteristics of pulses received by said receiving portions;

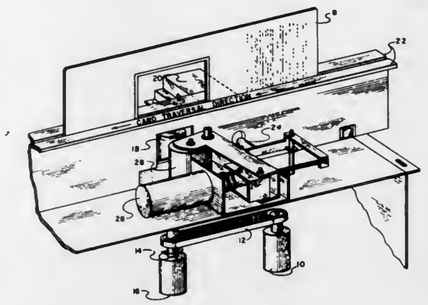
a capacitive identifying label for mounting on a container, said label comprising an insulated board having a conducting surface forming essentially a mirror-image of said reader conductive surface, said label surface including a first coupling portion corresponding in size and shape to the first transmitting portion of said reader, a second coupling portion electrically insulated from said first coupling portion and corresponding in size and shape to said second transmitting portion, and a plurality of identifying portions, each indentifying portion corresponding in size and shape to a receiving portion of said reader, and each portion being electrically insulated from each adjacent portion and from only one of said coupling portions, whereby the pattern of connections between said identifying portions and said coupling portions defines a unique code for the label; whereby when said label is aligned with said reader and said transmitting portion energized, the pulses are coupled to said coupling portions and, depending upon the pattern of connections, each receiving portion receives either a first or second pulse.

4,553,027

APPARATUS FOR READING ENCODED INFORMATION ON A CARRIER SUBJECT TO NON-UNIFORM MOTION

Ronald W. Silkman, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1984, Ser. No. 657,312
Int. Cl.⁴ G06K *7/016*
U.S. Cl. 235—474 **4 Claims**



1. Oscillation compensating means for an apparatus for reading machine-readable information encoded on a record element transported by a transport mechanism that subjects the coded record element to oscillations as it is transported, said apparatus comprising:

guide path defining means for defining a guide path for the record element;

motive means for moving the record element along the guide path;

sensor means for sensing the information encoded on the record element and producing a signal corresponding thereto as the record element is moved along the guide path past the sensor means;

detector means for detecting the forward and reverse motion of said record element and for providing corresponding output signals;

signal means responsive to the output signals of said detector means for generating a signal that is directly proportional to the absolute forward motion of the record element; and

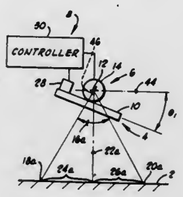
processor means responsive to the information signal derived from the sensor means and said signal means for accurately decoding the information read from said record element.

4,553,028

APPARATUS AND METHOD FOR COMPENSATING ROLL OF A SCANNER PLATFORM

Dennis K. Reust, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 11, 1982, Ser. No. 407,139
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—201 **4 Claims**



1. A roll-compensating scanning apparatus, comprising:

a scanner platform having a scanner platform reference position and being susceptible to rotation from said scanner platform reference position about an axis;

scanner means, mounted on said scanner platform, for scanning an object in discrete paths, said scanner means including:

receptor means for receiving input from said object, said receptor means being positionable in a receptor means reference position; and

rotator means for continuously rotating said receptor means in a scanning direction through a scanning angle, said scanning angle commencing at a first location relative to said receptor means reference position when said scanner platform is at said scanner platform reference position;

detector means for detecting a roll angle through which said scanner platform rotates from said scanner platform reference position about said axis; and

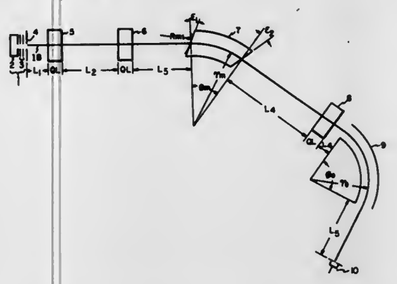
control means, responsive to said detector means, for commencing said scanning angle at a second location relative to said receptor means reference position when said roll angle is in a direction opposite said scanning direction and for commencing said scanning angle at a third location relative to said receptor means reference position when said roll angle is in said scanning direction.

4,553,029

MASS SPECTROMETER

Hisashi Matsuda, Hyogo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,427
Claims priority, application Japan, May 24, 1983, 58-91315
Int. Cl.⁴ H01J *49/32*
U.S. Cl. 250—296 **4 Claims**



1. A mass spectrometer having an ion source, an ion detector for detecting the ions emitted from the ion source, a uniform magnetic field set up between the ion source and the ion detector, an electric field set up between the magnetic field and the ion detector, and two electrostatic quadrupole lenses disposed between the ion source and the magnetic field in spaced relation to each other for converging the beam of the ions in a direction perpendicular to the plane of the orbit of the beam and for diverging the beam radially of the beam,

another electrostatic quadrupole lens disposed between the magnetic field and the electric field to converge the beam in the direction of the plane of said orbit, such that the deflection angle ϕ_m of the beam in the magnetic field, the radius r_m of the circle described by the beam in the magnetic field, the deflection angle ϕ_e of the beam in the electric field, and the radius r_e of the circle described by the beam in the electric field are so set as to satisfy the following relations:

$$82° \leqq \phi_e \leqq 88°$$

$$39° \leqq \phi_m \leqq 41°$$

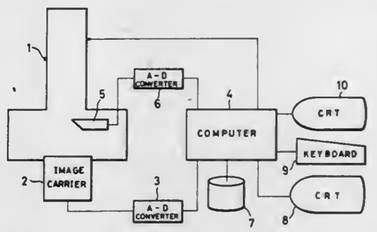
$$0.715 \leqq r_e/r_m \leqq 0.755$$

4,553,030

METHOD FOR AUTOMATIC ANALYSIS OF ELECTRON BEAM DIFFRACTION PATTERN

Moriyasu Tokiwai, Komaeshi; Sakumi Moriguchi, and Takao Shinkawa, both of Akishimashi, all of Japan, assignors to Jeol Ltd. and Central Research Institute of Electric Power Industry, both of Tokyo, Japan

Filed Feb. 29, 1984, Ser. No. 584,602
Claims priority, application Japan, Mar. 9, 1983, 58-38622
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—307 **5 Claims**



1. Method for automatic analysis of an electron beam diffraction pattern obtained by a transmission type electron microscope comprising:

(a) a step for capturing said electron beam diffraction pattern as a two dimensional array of digitized intensity values, each element in the array having a value Uxy;

(b) a step for building a frequency distribution of intensity values from said two dimensional array;

(c) a step for deciding whether said diffraction pattern is composed of only diffraction spots, only diffraction rings, or both diffraction spots and rings, on the basis of said frequency distribution of intensity values;

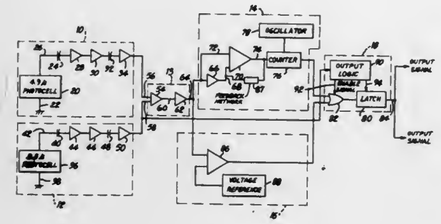
(d) a step for accumulating lattice spacing d-values corresponding to each diffraction spot or ring appearing in said diffraction pattern from the two dimensional array by an algorithm selected on the basis of the result of said step (c); and

(e) a step for determining the specimen material corresponding to said electron diffraction pattern by collating said lattice spacing d-values determining in step (d) with the d-values of the various materials in a crystal database.

4,553,031
OPTICAL FIRE OR EXPLOSION DETECTION SYSTEM AND METHOD

John M. Cholin, Oakland; Ray Voorhis, Midland Park, both of N.J., and Jeffrey G. Cholin, Pound Ridge, N.Y., assignors to Firetek Corporation, Hawthorne, N.J.

Filed Sep. 6, 1983, Ser. No. 529,275
Int. Cl.[4] G08B *17/12*
U.S. Cl. 250—339 15 Claims

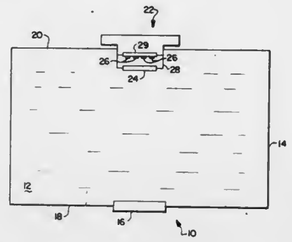


1. A fire and explosion detection system comprising:
(a) at least one of a first channel means, including a first photocell, for the conversion of incident radiant energy of a first narrow band of wavelengths characteristic of a fire into a first electrical signal;
(b) at least one of a second channel means, including a second photocell, for the conversion of incident radiant energy of a second narrow band of wavelengths corresponding to background black body emissions into a second electrical signal;
(c) circuit means for determining the ratio between said first and second electrical signals, said means for determining the ratio producing a third electrical signal when the ratio of the first to the second electrical signal exceeds a predetermined number;
(d) first circuit means responsive to said third electrical signal to detect the flicker frequency, including a low and high frequency component, of said third electrical signal and to produce a first warning signal if the frequency of said high frequency component is a predetermined number, said first cirucit means including averaging amplifier means, comparator means and signal frequency counting circuit means, one input of said comparator means and the input to said averaging amplifier means connected to the output of said ratio determining circuit means, the output of said averaging amplifier means connected to a second input of said comparator means, the output of said comparator means connected to the input of said signal frequency counting means, the output of said signal frequency counting means producing said first warning signal, said averaging amplifier means filtering said third electrical signal to produce a floating reference signal at the input to the comparator means proportional to the low frequency component, the output of the comparator means producing a signal corresponding in frequency to the high frequency component of said third electrical signal, said signal frequency counting means producing said first warning signal when the number of cycles counted per period of time exceed a preset count; and,
(e) second circuit means responsive to the magnitude of said third electrical signal to produce a second warning signal if the third electrical signal exceeds a predetermined signal magnitude.

4,553,032
INFRARED ENERGY GAGE

Saukwan Lo, Fridley, and Richard J. Borken, St. Louis Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 431,437
Int. Cl.[4] G01J *1/00*
U.S. Cl. 250—339 20 Claims

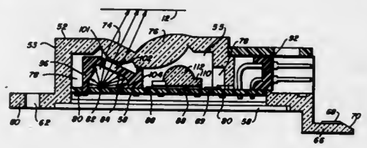


1. An infrared energy device for measuring the energy content of a hydrocarbon fuel, comprising:
an infrared light source adapted to emit infrared light of incident intensity I_o into said hydrocarbon fuel including wavelengths absorbed by the CH and C—C groups;
means for detecting the absorbency of said infrared light by said groups;
means for determining the concentration of said groups from the absorbency of said infrared light; and
means for determining the energy content of said fuel from said concentrations.

4,553,033
INFRARED REFLECTANCE DENSITOMETER

Fred F. Hubble, III, Rochester, and James P. Martin, Dansville, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1983, Ser. No. 525,849
Int. Cl.[4] G01N *21/47*; G03G *15/08*
U.S. Cl. 250—353 11 Claims

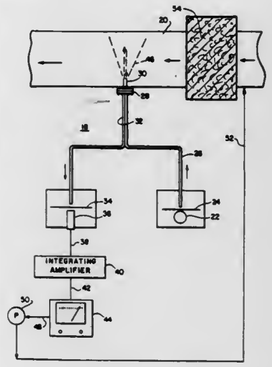


1. An infrared densitometer for measuring the relative reflectance of a specularly reflecting surface of a photosensitive web manifesting degrees of translation during measurement including:
a collimating lens,
a light source positioned to project light rays through the collimating lens,
means for measuring and controlling the intensity of light from said source, said means comprising a control photodetector disposed near the light source,
an aperture box, the aperture box enveloping the light source and the control photodetector and having an elliptical surface, the elliptical surface positioned to focus a portion of the light rays projected from the light source onto the control photodetector,
a collector lens positioned to receive light rays reflected from the surface of said web,
a signal photodetector,
a field lens, the field lens positioned to focus the light rays received from the collector lens onto the signal photodetector, the collector lens and field lens positioned to project a relatively constant amount of light rays reflected from the surface of said web onto the signal photodetector such that signal photodetector signals are independent of the translation of said surface of said web.

4,553,034
ION EXCHANGE RESIN INTRUSION MONITOR

William A. Byers, Penn Hills, and Steven H. Peterson, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1983, Ser. No. 557,569
Int. Cl.[4] G01N *21/38*; G01J *1/58*
U.S. Cl. 250—458.1 15 Claims



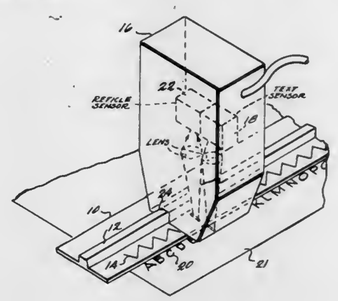
1. A monitor for detecting the presence of fluorescent particles of ion exchange resin in a water flow channel that receives effluent from an ion exchange system comprising
(a) probe means comprising a first bundle of optical fibers disposed to inject fluorescence-stimulating light into said water flow,
(b) detector means disposed to receive emitted fluorescent light from any particles in said water illuminated by the light emitted from said probe means,
(c) means actuatable by said detector means for generating a signal to indicate the presence of particles in said water; and
(d) adjustment means to adjust the water flow rate in said ion exchange system to a value which minimizes resin leakage.

4,553,035
DATA ACQUISITION CONTROL METHOD AND SYSTEM FOR A HAND HELD READER

Igor Malinsky, N. Miami Beach; Jose B. Cofino, and Richard J. McKay, both of Miami, all of Fla., assignors to Mylex Corporation, Hialeah Garden, Fla.

Filed Aug. 30, 1983, Ser. No. 527,811
Int. Cl.[4] G06K *7/10*
U.S. Cl. 250—566 17 Claims

1. Apparatus for controlling the acquisition of data in an optical character recognition system having a manually movable optical head for converting optical data to a plurality of electrical signals, said apparatus comprising:
a manually positionable aligning means for guiding manual movement of said head along a series of characters on said medium;
a reticle forming a sequence of optically differentiable portions extending on and along said aligning means in the direction of scanning at positions unrelated to the positions of said characters in the direction of scanning;
means, attached to said head, for reading said characters and reticle; and

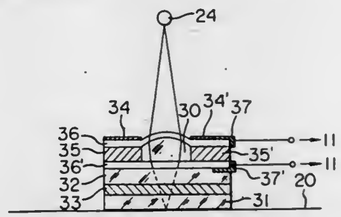


means, responsive to said reading means, for causing said head to generate one of said electrical signals every time said head has moved a predetermined distance.

4,553,036
INFORMATION DETECTING APPARATUS

Naoto Kawamura, Inagi, and Kazuya Matsumoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 464,579, Feb. 7, 1983, Pat. No. 4,467,195, which is a continuation of Ser. No. 244,259, Mar. 16, 1981, abandoned, which is a continuation of Ser. No. 967,392, Dec. 7, 1978, abandoned. This application May 2, 1984, Ser. No. 606,158
Claims priority, application Japan, Dec. 8, 1977, 52-147600; Dec. 8, 1977, 52-147601; Jul. 5, 1978, 53-81792; Dec. 2, 1978, 53-149204
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 1 Claim



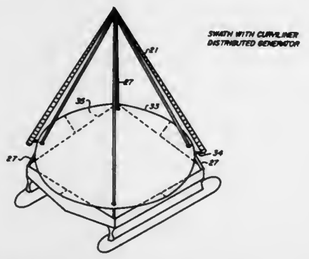
1. An information detecting apparatus, comprising:
a transparent carrier member having a face in contact with an original information-bearing member;
a light source for illuminating the original member through said transparent carrier member;
a light-receiving sensor on said transparent carrier member between said light source and the original member, said light-receiving sensor being a substantially one-dimensional array extending in a major scanning direction;
an opaque member on said transparent carrier member for substantially preventing impingement of light on said light-receiving sensor directly from said light source and for providing substantially one-dimensional illumination of the original member in the major scanning direction; and
driving means for producing relative movement between said light-receiving sensor and the original member.

4,553,037

SOLAR BREEZE POWER PACKAGE AND SAUCER SHIP

Sidney E. Veazey, Box 497, Rte. 2, Fredericksburg, Va. 22405

Filed Nov. 26, 1982, Ser. No. 444,554
Int. Cl.⁴ F03D *3/00*
U.S. Cl. 290—55 **37 Claims**



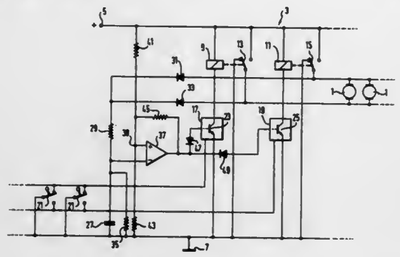
1. An apparatus for use on a land site and land vehicle for gathering and converting natural energy into electrical energy comprising:
(a) a vertical axis wind turbine means suitably attached to a support means for providing energy to a energy storage system, said attached position of the vertical axis wind turbine means is interfaced with a curvilinear generator located at the bottom of the windmill blade which doubles as a railing for the land site apparatus location and land vehicle,
(b) a solar cell means suitably attached to said vessel for providing energy to said energy system, and
(c) an energy storage system suitably affixed and interfaced with said vertical axis wind turbine means and said solar cell means sufficient to accept energy therefrom and store for later use.

4,553,038

CENTRAL LOCKING INSTALLATION

Rainer Fey, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,935
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314573
Int. Cl.⁴ H01H *47/22*
U.S. Cl. 307—10 AT **5 Claims**



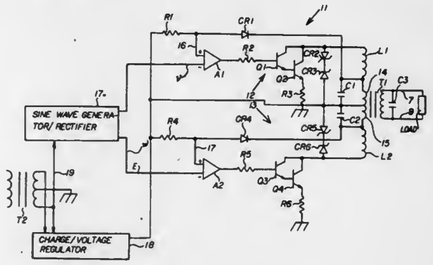
1. Central locking installation for motor vehicles, comprising:
(a) a plurality of locking drives;
(b) at least one control switch manually switchable between one first switch position and one second switch position;
(c) a time control coupled to the control switch and to one locking drive, which in a first switch position of the control switch transmits a first drive signal to the locking drives, which drives said locking drives during a first predetermined time period in a locking direction and which in a second switch position of the control switch transmits a second drive signal to the locking drives, which drives said locking drives during a second predetermined time period in an unlocking direction;
(d) a condenser;
(e) a first circuit connected to the condenser and the time control for permitting a charging current to the condenser in a first current direction, as long as the time control transmits the first or the second drive signal;
(f) a second circuit connected to the condenser which enables a charging current to the condenser in a second current direction opposite to the first current direction, as long as the time control transmits none of the drive signals; and
(g) a threshold value stage with hysteresis property connected to the condenser and the time control which responds to the condenser voltage and prevents at least the transmittal of the second of the two drive signals to the locking drive if the condenser voltage exceeds a first predetermined voltage value because of the charging current flowing in the first current direction and permits the transmittal of the drive signal if the condenser voltage reaches a second predetermined voltage value differing from the first value because of the charging current flowing in the second current direction.

4,553,039

UNINTERRUPTIBLE POWER SUPPLY

Francis J. Stifter, 171 S. Main St., Natick, Mass. 01760

Filed Nov. 3, 1983, Ser. No. 548,517
Int. Cl.⁴ H02M *7/537;* **H02V** *9/00*
U.S. Cl. 307—66 **21 Claims**



1. A variable voltage power supply comprising:
power source means;
voltage output means connectable between said power source means and a load, said voltage output means when connected to the load providing an AC output voltage therefor and electrical energy transfer between said power source and the load;
electronic switching means comprising first and second switching means each coupled to said power source means and said voltage output means;
reference source means comprising an AC source and means for producing from alternate half cycles thereof, respectively, first and second reference waveforms;
voltage comparator means comprising first comparator means for comparing said first reference waveform with one phase of said AC output voltage and a second comparator means for comparing said second waveform with the opposite phase of said AC output voltage, said first comparator means being operatively coupled to said first switching means so as to produce switching thereof that causes said output voltage to track said first waveform and said second comparator means being operatively coupled to said second switching means so as to produce switching thereof that causes said output voltage to track said second waveform; and

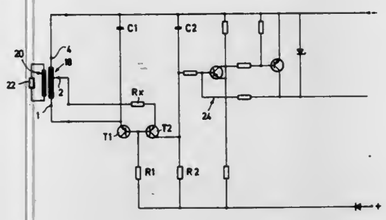
electrical energy storage means coupled to said voltage output means and storing energy provided by said source means during said switching of said first and second switching means.

4,553,040

INDUCTIVE PROXIMITY SWITCH

Dirk Trüper, Württhstr. 6, 6800 Heidelberg, and Klaus Hermle, Römerstrasse 11, 7303 Neuhausen/Fildern, both of Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,738
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225193
Int. Cl.⁴ H01H *35/00*
U.S. Cl. 307—116 **10 Claims**



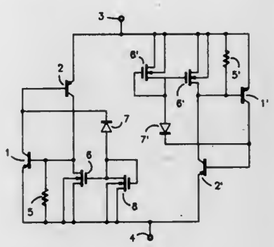
1. Inductive proximity switch comprising a feeler head with a feeler coil as a component of an LC oscillator circuit of a high frequency oscillator with said feeler coil being disposed in the interior of a cup core being open at one end thereof, said feeler head serving to generate a directionally oriented, alternating magnetic field, wherein the feeler coil of the feeler head is coupled with a closed circuit loop being disposed at the open end of the cup core and adjacent to its outer wall, said closed circuit loop comprising an inductance and an ohmic resistance such that the oscillator is damped when the field is undisturbed and such that damping of the oscillator is reduced when the field is disturbed by a non-magnetic metal object such that an oscillation occurs.

4,553,041

MONOLITHIC ZERO CROSSING TRIAC DRIVER

Hyung J. Yim, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 22, 1983, Ser. No. 525,196
Int. Cl.⁴ H03K *17/72*
U.S. Cl. 307—252 A **9 Claims**



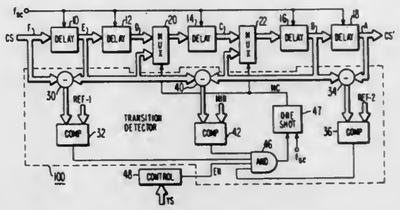
1. A monolithic triac driver having a first terminal and a second terminal coupled for receiving an AC voltage, comprising:
a first thyristor having an anode coupled to said first terminal, a cathode coupled to said second terminal, a base and a gate;
a first field effect transistor having a gate, and having current-carrying electrodes coupled between said gate of said first thyristor and said cathode of said first thyristor; and
a first photovoltaic diode having a cathode coupled to said base and an anode coupled to said gate of said first field effect transistor.

4,553,042

SIGNAL TRANSITION ENHANCEMENT CIRCUIT

Eric P. Batterman, No. Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 517,833, Jul. 27, 1983,. This application Aug. 30, 1984, Ser. No. 646,032
Int. Cl.⁴ H03K *5/12, 6/04, 5/153*
U.S. Cl. 307—263 **20 Claims**



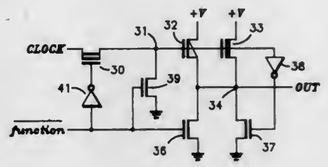
1. A signal processing circuit comprising:
an input for receiving input signals and an output at which output signals responsive to said input signals are produced;
a plurality of delaying means coupled in cascade between said input and said output for successively delaying said input signals;
detecting means, coupled to said plurality of delaying means and responsive to ones of said successively delayed input signals, for detecting a magnitude transition of said input signals; and
means, coupled to said plurality of delaying means and to said detecting means, for selectively coupling an input of one of said delaying means to an input of another one of said delaying means in response to said detecting of said magnitude transition.

4,553,043

HIGH SPEED DRIVE CIRCUIT

Lanny L. Parker, Mesa, Ariz., assignor to Codex Corporation, Mansfield, Mass.

Filed Mar. 28, 1983, Ser. No. 479,226
Int. Cl.⁴ H03K *17/04, 17/693*
U.S. Cl. 307—270 **5 Claims**



1. A line driver circuit having an input and an output terminal, comprising: a controllable coupler for coupling an input signal present at the input terminal; a first transistor having a control electrode coupled to the controllable coupler to receive the input signal from the controllable coupler, the first transistor being for coupling voltage from a voltage terminal to the output terminal; a second transistor coupled in parallel with the first transistor and having a control electrode coupled to the controllable coupler to receive the input signal from the controllable coupler, and wherein the first transistor has a

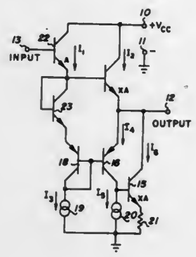
lower threshold voltage than the second transistor; and a third transistor coupled to the output terminal for discharging the output terminal and having a control electrode coupled to a control signal input.

4,553,044

INTEGRATED CIRCUIT OUTPUT DRIVER STAGE

Harry J. Bittner, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 11, 1983, Ser. No. 493,539
Int. Cl.⁴ H03K *17/60, 3/26*
U.S. Cl. 307—270 **6 Claims**



1. A monolithic integrated circuit output stage having input and output terminals and first and second power supply rails connectable to a source of operating power, said stage comprising:

a pair of like conductivity type transistors having their emitter-collector circuits coupled in series between said first and second rails with the juncture of said pair providing said output terminal;

means for driving the base of one of said pair from said input terminal;

current mirror means having an input coupled to said input terminal and an output coupled to drive the base of the other of said pair, said current mirror means including a pair of constant current devices, one coupled to said current mirror input and the other coupled to said current mirror output; and

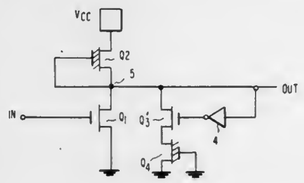
an emitter follower coupled to drive said input of said current mirror and having an input coupled to said input terminal.

4,553,045

LOGIC CIRCUIT WITH IMPROVED HYSTERESIS CHARACTERISTICS

Tatsunori Murotani, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,392
Claims priority, application Japan, Feb. 10, 1982, 57-19914
Int. Cl.⁴ H03K *3/356, 19/094*
U.S. Cl. 307—279 **12 Claims**



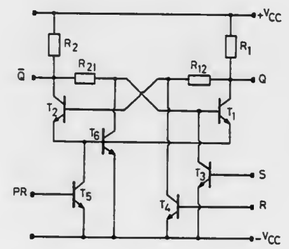
1. A logic circuit comprising a first terminal to which a first potential is applied, a second terminal to which a second potential is applied, an output terminal, a first field effect transistor of an enhancement type whose drain-source path is connected in series between said output terminal and said second terminal, means for receiving an input signal, means for supplying a gate of said first transistor with said input signal, a second field effect transistor of a depletion type whose drain source path is connected in series between said first terminal and said output terminal said second transistor having its gate connected to provide operation as a load element, a series circuit of a third field effect transistor of an enhancement type and a fourth field effect transistor of a depletion type connected directly to said output terminal at its one end and to said second terminal at its other end, inverting means responsive to a signal at said output terminal for generating an inverted signal having an opposite phase to the signal at said output terminal, and means for supplying a gate of said third transistor with said inverted signal.

4,553,046

MONOLITHICALLY INTEGRATABLE BISTABLE MULTIVIBRATOR CIRCUIT HAVING AT LEAST ONE OUTPUT THAT CAN BE PLACED IN A PREFERENTIAL STATE

Angelo Alzati, Bollate; Claudio Diazzi, Milan, and Fabrizio Stefani, Cardano al Campo, all of Italy, assignors to SGS-ATES Componenti Elettronici SpA, Milan, Italy

Filed May 26, 1983, Ser. No. 498,595
Claims priority, application Italy, May 26, 1982, 21486 A/82
Int. Cl.⁴ H03K *3/286, 3/353, 3/287*
U.S. Cl. 307—289 **4 Claims**



1. A monolithically integratable bistable multivibrator circuit having a pair of inputs and a pair of outputs, said circuit comprising a first transistor, a second transistor, a third transistor, and a fourth transistor, each of said transistors having a first terminal and a second terminal and a control terminal, and each of said transistors being of the same conductivety type, wherein:

said second terminal of said first transistor is connected through a resistance means to a first pole of a DC supply voltage generator and to said control terminal of said second transistor;

said second terminal of said second transistor is connected through another resistance means to said first pole of said DC supply voltage generator and to said control terminal of said first transistor;

said second terminal of said first transistor comprises a first output of said pair of circuit outputs;

said second terminals of said third transistor and said fourth transistor are respectively connected to said control terminals of said first transistor and said second transistor;

said first terminals of said third and said fourth transistor are connected to a second pole of said DC supply voltage generator;

said control terminals of said third and fourth transistors comprise said pair of input terminals of said circuit;

said circuit further comprising a fifth transistor and a sixth transistor, each of said transistors having a first terminal and a second terminal and a control terminal, and being of the same conductivity type as that of said first through fourth transistors, wherein:

said first terminal of said fifth and sixth transistors are connected to said second pole of said DC supply voltage generator;

said second terminal of said fifth transistor is connected to said control terminal of said sixth transistor and to said first terminals of said first and second transistors;

said second terminal of said sixth transistor is connected to said control terminal of said first transistor;

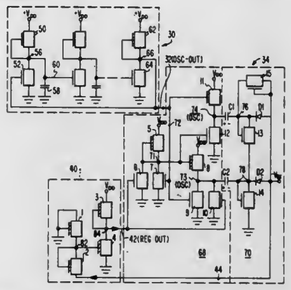
and said control terminal of said fifth transistor comprises a control terminal for placing said first output in a preferential prescribed state in response to an input applied thereto irrespective of input signals applied to said pair of inputs.

4,553,047

REGULATOR FOR SUBSTRATE VOLTAGE GENERATOR

Thomas E. Dillinger, Madison, Wis., and Terrance W. Kueper, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,145
Int. Cl.⁴ H03L *1/00*
U.S. Cl. 307—297 **5 Claims**



1. A substrate voltage generator for converting a supply voltage of a first polarity to a substrate voltage of an opposite polarity with reference to a ground potential, said generator including an oscillator for producing an alternating voltage from said supply voltage, a charge pump coupled to said oscillator for producing a direct voltage of said opposite polarity, and a regulator for controlling said charge pump so as to resist changes of said direct voltage from a nominal value, characterized in that said regulator comprises:

a voltage divider means having a pair of depletion-mode FETs coupled between said ground potential and said substrate for obtaining a portion of the voltage difference between said ground potential and said substrate voltage; and

an amplifier means for coupling an amplified portion of said voltage difference from said voltage divider to said charge pump for controlling said direct voltage.

4,553,048

MONOLITHICALLY INTEGRATED THERMAL SHUT-DOWN CIRCUIT INCLUDING A WELL REGULATED CURRENT SOURCE

Byron G. Bynum, and David L. Cave, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1984, Ser. No. 582,358
Int. Cl.⁴ H03K *17/30*
U.S. Cl. 307—350 **10 Claims**

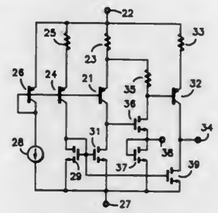
1. A monolithic integrated thermal shut-down circuit including a first supply voltage terminal, a second supply voltage terminal, and a voltage output terminal, said circuit comprising:

transistor means having a first path coupled between said first and said second supply voltage terminals for conducting a first current and having a second path coupled between a node and said second supply voltage terminal for conducting a second current, said first and second currents having substantially the same value;

first resistive means having a first terminal coupled to said node for conducting a third current;

second resistive means coupled between said first supply voltage terminal and said node for conducting said first current and said third current;

third resistive means having a first terminal coupled to said first supply voltage terminal and having a value substantially the same as said second resistive means for conducting a fourth current;



current establishing means coupled between said second terminal of said first resistive means and said second supply voltage terminal, and coupled to said transistor means for establishing said first current substantially the same as said second current; and

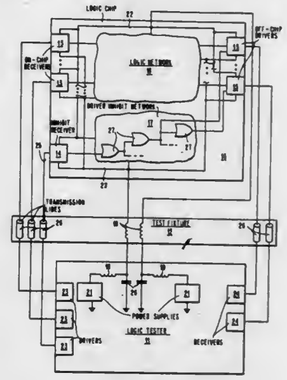
output means coupled between a second terminal of said third resistive means and said second supply voltage terminal, and coupled to a second terminal of said first resistive means for providing an output signal at said voltage output terminal.

4,553,049

OSCILLATION PREVENTION DURING TESTING OF INTEGRATED CIRCUIT LOGIC CHIPS

Charles W. Cha, Yorktown Heights; John W. Hartman; David A. Kiesling, both of LaGrangeville, and William J. Scarpero, Jr., Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1983, Ser. No. 540,072
Int. Cl.⁴ H03K *19/092, 17/62*
U.S. Cl. 307—443 **12 Claims**



1. An integrated circuit logic chip comprising:

a plurality of on-chip receivers;

a plurality of off-chip drivers;

a logic network for connecting said on-chip receivers and said off-chip drivers in a predetermined logic configuration; and

driver inhibit means, responsive to an inhibit signal, for forcing said plurality of off-chip drivers to the same logi-

cal state at predetermined times during testing of said integrated circuit logic chip, said same logical state being the natural logical state of said off-chip drivers upon intial application of electrical power to said integrated circuit chip;

whereby integrated circuit logic chip oscillation during testing is prevented.

4,553,050

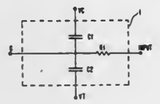
TRANSMISSION LINE TERMINATOR-DECOUPLING CAPACITOR CHIP FOR OFF-CHIP DRIVER

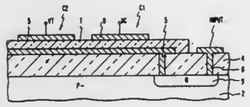
Irving Feinberg, Poughkeepsie; Leon L. Wu, Hopewell Junction, both of N.Y., and Leo Yuan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,318

Int. Cl.[4] H03H *5/02, 7/38*

U.S. Cl. 307—443 **5 Claims**





1. A signal line terminator for a driver circuit energized by at least one source of voltage relative to ground and formed on a first semiconductor chip, said terminator comprising:

one capacitor for each said voltage source and at least one resistor formed on a second chip,

said first and second chips being connected to each other,

one terminal of said resistor and one terminal of each said capacitor being connected to said ground,

the other terminal of said resistor being connected to said driver circuit,

the other terminal of each said capacitor being connected to a respective one of said at least one voltage source,

said resistor being formed of a doped region of one conductivity type in said second chip and covered by a first dielectric layer apertured to provide first and a second conductive contacts to said region, and

each said capacitor being formed of a first conductive layer on the upper surface of said first dielectric layer and a respective second conductive layer spaced from said first layer by a second dielectric layer,

said first conductive layer and one of said contacts being connected together and to said ground.

4,553,051

PMOS INPUT BUFFER COMPATIBLE WITH LOGIC INPUTS FROM AN NMOS MICROPROCESSOR

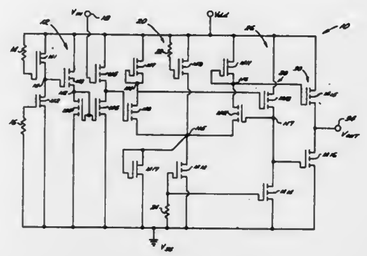
Cordell E. Prater, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 18, 1983, Ser. No. 514,431

Int. Cl.[4] H03K *19/094, 3/037, 3/356*

U.S. Cl. 307—475 **6 Claims**

1. An input buffer comprising means responsive to logic input signals at selected voltage levels for providing corresponding control signals at level-shifted voltage levels, Schmitt trigger means responsive to said control signals for providing corresponding trigger output signals with selected hysteresis, and output means responsive to said trigger signals for providing buffer output signals having improved compatibility for driving selected circuit means, said level-shifting means comprising MOS transistor means forming voltage divider means for providing a reference voltage at a selected level, a pair of MOS transistor means forming a current mirror means, MOS transistor means biased by said reference voltage to provide



desired current levels in one of said current mirror transistor means, and additional MOS transistor means responsive to said logic input signals and to said current mirror means for assuring said corresponding control signals are provided at desired level-shifted voltage levels.

4,553,052

HIGH SPEED COMPARATOR CIRCUIT WITH INPUT-OFFSET COMPENSATION FUNCTION

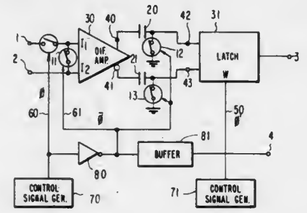
Kazukiyo Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,224

Claims priority, application Japan, Apr. 23, 1982, 57-68456; Apr. 23, 1982, 57-68460

Int. Cl.[4] H03K *5/24, 17/16*

U.S. Cl. 307—494 **14 Claims**



1. A comparator circuit comprising first and second signal terminals, a differential amplifier having first and second input terminals and first and second output terminals, a first switch coupled between said first signal terminal and said first input terminal of said differential amplifier, a second switch coupled between said first and second input terminals of said differential amplifier, first and second nodes, a first capacitor coupled between said first output terminal of said differential amplifier and said first node, a second capacitor coupled between said second output terminal of said differential amplifier and said second node, a third switch coupled between said first node and a reference potential, a fourth switch coupled between said second node and said reference potential, a latch circuit having first and second input terminals, a write control terminal and an output terminal, means for connecting said first node to said first input terminal of said latch circuit, means for connecting said second node to said second input terminal of said latch circuit, means for supplying control terminals of said second to fourth switches with a first clock signal, means for supplying a control terminal of said first switch with a second clock signal having the opposite phase to said first clock signal, and means for supplying said write control terminal of said latch circuit with a third clock signal having a higher frequency than said

first clock signal, in which a comparison result of signals at said first and second signal terminals are derived a plurality of times from said output terminal of said latch circuit in response to said third clock signal during the same period that said second clock signal takes an active level for said first switch.

4,553,053

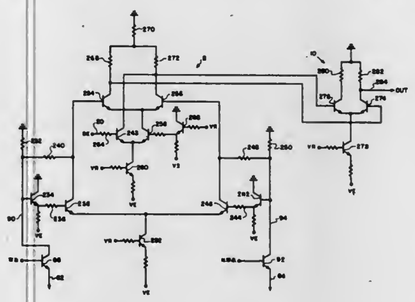
SENSE AMPLIFIER

Richard H. Ong, Phoenix, and Peter C. Economopoulos, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 3, 1983, Ser. No. 538,394

Int. Cl.[4] H03K *5/24;* **G11C** *7/06*

U.S. Cl. 307—530 **5 Claims**



1. A sense amplifier for a computer memory unit, said sense amplifier comprising:

(a) an input stage differential amplifier means, having input terminals adapted to receive differential input signals and output terminals adapted to transmit first differential output signal, for generating said first differential output signals;

(b) a second stage differential amplifier means, operatively connected to said input stage differential amplifier means, for generating second differential output signals in response to said first differential output signals;

(c) output amplifier means, operatively connected to said second stage differential amplifier means, for generating an output signal in response to said second differential output signals; and

(d) feedback means, operatively connected to said input terminal and said output terminal of said input stage differential amplifier means, for providing a negative feedback loop of said input stage differential amplifier means to reduce the effective voltage swing of said differential input signals thereby enhancing the speed of response of said sense amplifier.

4,553,054

POWER ON RESET CIRCUIT FOR MICROPROCESSOR

Kiyoshi Kase, Chiba, and Masaru Fukuta, Yokohama, both of Japan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1983, Ser. No. 463,709

Int. Cl.[4] H03K *5/153*

U.S. Cl. 307—597 **4 Claims**

1. A pulse generating circuit for generating a pulse when a voltage is applied thereto comprising:

an input for receiving an applied voltage;

an output;

a first capacitance to be charged from said input;

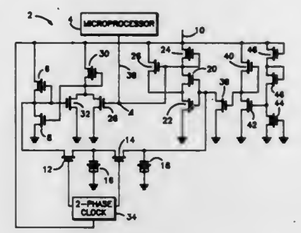
first switch means having a first end coupled to said input and a second end coupled to said first capacitance to control the charging of said first capacitance;

a second capacitance larger than said first capacitance to be charged by said first capacitance;

second switch means coupled between said first capacitance and said second capacitance to control the charging of said second capacitance;

control means connected to said first switch means and said second switch means to enable alternately said first switch means to charge said first capacitance and second switch means to charge said second capacitance;

third switch means connected to said second capacitance to apply a first predetermined voltage to said output when the voltage on said second capacitance is less than a predetermined value and to apply a second predetermined voltage different from said first predetermined voltage to said output when the voltage on said second capacitance is greater than the predetermined value;



inverter means having an output coupled to said first end of said first switch means and having an input; and

NOR gate means having an output coupled to said inverter means input, a first input coupled to the output of said pulse generating circuit, and a second input coupled to said inverter means output.

4,553,055

COOLING ARRANGEMENT FOR AN ENCLOSED ELECTRIC MACHINE

Erich Auernhammer, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,644

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 8321093[U]

Int. Cl.[4] H02K *9/06*

U.S. Cl. 310—62 **1 Claim**



1. In a cooling arrangement for an enclosed electric machine having a shaft on one end and an end plate end face on the other with an internal fan and with an external fan lodged in a fan shell disposed in front of the end plate end face, the external fan blowing the cooling air between the hollow fins traversed by internal air, said hollow fins being applied axially on the circumference of a stator housing which is closed on the drive side by a first bearing bracket and communicating through ports in both end regions of the stator housing with the interior of the machine, there being provided, between the ports adjacent to the external fan and a stator, an air deflection surface which closely hugs and is supported by the stator housing on the circumferential side and extends crosswise to the shaft with concentric spacing, the improvement wherein a second bearing bracket, connected to and disposed inside of the stator housing between the stator and the air deflection surface on the stator housing, has openings for the internal air, and the stator housing is releasably closed by the end plate end face on which internally a motor for the internal fan is mounted which in

spaced relation surrounded by correlated ports borders laterally on the air deflection surface, and between the motor and internal end of the shaft; a rotation sensor coupled with the latter is disposed in the internal air stream and a fan shell having a motor-driven external fan is releasably engaged to the front of the end plate end face.

4,553,056

CONFIGURATION AND BEARING FOR A MOTOR-DRIVEN LINEAR ACTUATOR

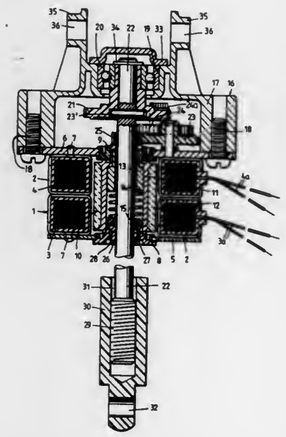
Jean-Francois Pfister, Sonceboz, Switzerland, assignor to Societe Industrielle de Sonceboz S.A., Sonceboz, Switzerland

Filed Mar. 22, 1984, Ser. No. 592,129

Claims priority, application Switzerland, Mar. 30, 1983, 1777/83

Int. Cl.⁴ H02K *7/06*

U.S. Cl. 310—80 **12 Claims**



1. In a linear actuator of the type comprising an electric motor having a stator, a rotor comprising a cylinder of magnetic material mounted for rotation adjacent said stator, and a rotary assembly coaxial with and driven by said rotor, a speed-reducer having a driving gear integral with said driven rotary assembly of said motor and a further gear that is driven by said driving gear, a rotary actuating stem which rotates with said driven gear of said speed-reducer and which includes a threaded portion situated outside of said motor and said speed-reducer, a driven linear-motion part including a thread meshing with said threaded portion of said stem and cooperating with said stem to move said linear-motion part linearly parallel to the longitudinal axis of said stem when said stem rotates, and means for preventing rotation of said linear-motion part, the improvement wherein

said speed-reducer is disposed coaxially with and adjacent to said motor, said driving gear and said driven gear of said speed-reducer being coaxial with each other and with said driven rotary assembly and said rotor of said motor, said stem passing axially through said rotor and said rotary assembly of said motor, and said threaded portion of said stem being situated in proximity to the side of said motor remote from said speed-reducer,

a first stem bearing disposed at the end of said speed-reducer remote from said motor, and

a further bearing fixed at the end of said motor remote from said speed reducer, said further bearing having two portions which are attached to one another and which are radially movable relative to one another, one of said portions comprising a second stem bearing which is situated at said end of said motor whereby said stem is supported for rotation between said first and second stem bearings which are axially spaced from one another by a distance at least equal to the combined axial dimensions of said motor and said speed reducer, the other of said portions of said further bearing being a radially fixed bearing for at least one of said rotor and said driven rotary assembly, said second stem bearing taking the form of a socket portion of said further bearing which is capable of resiliently moving radially relative to the portion of said further bearing constituting said radially fixed bearing,

said stem extending as a cantilever from said radially movable socket portion of said further bearing outwardly of said motor into thread engagement with said linear motion part.

4,553,057

CARBON BRUSH WITH PIN FOR LIMITING MOVEMENT

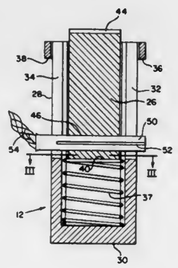
Abdul Saeed, Hünstetten, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 14, 1984, Ser. No. 651,053

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337125

Int. Cl.⁴ H02K *13/00*

U.S. Cl. 310—242 **12 Claims**



1. A carbon brush assembly, comprising:

a brush box having a slit along one side thereof;

a carbon brush slidably mounted in said brush box;

a spring connected between said brush box and said brush, and acting on one end of said brush to resiliently urge the other end of said brush outwardly from an outer end of said brush box;

an electrically conductive pin inserted transversely in said brush in electrical contact therewith and extending through said slit for movement therealong;

a brush lead electrically connected to said pin;

a stop associated with said slit adjacent said outer end for limiting movement of said pin along said slit under the influence of said spring and so retaining said pin in said slit when said brush wears out;

part of said pin being elastically deformable transversely to the longitudinal extent of said pin, and said brush having a transverse bore therein which deforms said part whereby said pin is retained in said bore; and

said pin having a longitudinal incision extending from one end thereof, and said brush lead being connected to the other end thereof.

4,553,058

LOW PROFILE DIRECT CURRENT MOTOR

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 30, 1984, Ser. No. 595,483

Int. Cl.⁴ H02K *23/54*

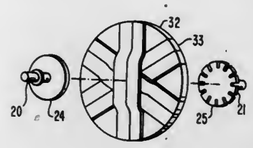
U.S. Cl. 310—268 **9 Claims**

6. A low profile electric motor, said motor comprising:

an armature having a disk-shaped core with front and rear faces, each of said faces having a plurality of armature windings in physical contact with said armature, each turn of said windings being wound along said front and rear faces and terminating in first and second free ends, each turn extending across each face over the cental portion of the face;

a first shaft assembly centrally located with respect to said armature and rigidly connected to said windings along said rear side;

a molded enclosure covering said armature and said windings, said first and second shaft assemblies extending through respective sides of said enclosure, said first and second free ends extending through one side of said enclosure;



front and rear plates each having a pair of arc-shaped magnetic poles of opposite polarity, said plates being mounted on said first and second shaft assemblies, respectively, in spaced parallel position with said armature carrying said covering therebetween and arranged to provide a flow of magnetic flux perpendicular to said front and rear faces;

commutator means positioned on one of said shaft assemblies and operatively connected to said first and second free ends for intermittently supplying a power source to a selected one of said windings; and

brush means operatively coupled to said commutator means for connecting said power source to said commutator.

4,553,059

PIEZOELECTRIC ACTUATOR AND A PIEZOELECTRIC PUMP INJECTOR INCORPORATING THE SAME

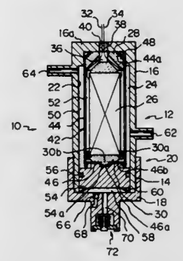
Seiko Abe, Okazaki; Yasuyuki Sakakibara, Nishio; Masahiro Tomita, Anjyo, and Kazuo Shinoda, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 26, 1984, Ser. No. 654,676

Claims priority, application Japan, Nov. 10, 1983, 58-209875

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—328 **9 Claims**



1. A piezoelectric actuator comprising:

a hollow casing having an axial cavity;

a column of piezoelectric elements received coaxially in said cavity and supported at an end by said casing;

means for applying an electric field to said column of piezoelectric elements to develop piezoelectric stress therein causing displacement of the other end of said column of elements;

output means connected to said other end of the column of piezoelectric elements for transmitting the displacement of said other end to the outside of said casing;

an axially deformable enclosure fluid-tightly surrounding said column of piezoelectric elements and disposed at least in part between said casing and said column of piezoelectric elements to divide said cavity into an outer space and a sealed inner space;

a flowable, electrically insulative, thermally conductive material filled in said inner space; and

means for circulating a cooling medium through said outer space.

4,553,060

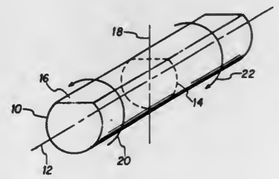
ELECTROMECHANICAL RESONATOR APPARATUS

William J. Domino, Santa Ana; Donald P. Havens, Costa Mesa, and Robert A. Johnson, Tustin, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 21, 1983, Ser. No. 553,614

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—333 **3 Claims**



1. Torsional resonator apparatus comprising in combination:

resonator base means having a longitudinal and transverse axis and at least one flat surface; and

unitary extensional transducer means having the shape of a rhomboid, attached to said resonator base means on said one flat surface thereof at an angle between said longitudinal and transverse axis of said resonating means, said transducer means being polarized in a single direction.

4,553,061

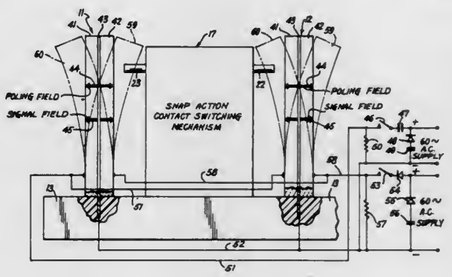
PIEZOELECTRIC BIMORPH DRIVEN DIRECT CURRENT LATCHING RELAY

Carmen P. Germano, Lyndhurst, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,672

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—332 **21 Claims**



1. A direct current latching relay including in combination a pair of electrically actuated bender-type piezoelectric drive members, a latching type snap-action switch mechanism having a set of electrical contacts that are selectively latched to remain either in the open or the closed condition in a snap-action manner upon successive actuation of the switch mecha-

nism, a push rod member for actuating the snap-action switch mechanism and engaged by the free end of the bender-type piezoelectric drive members whereby bending of the bender-type drive members selectively operates the snap-action switch mechanism and selectively operable direct current electric excitation circuit means connected to said bender-type drive members for selectively and respectively exciting each piezoelectric plate element thereof with a direct current excitation field which is always in-phase with the prepoling electric field previously permanently induced in the piezoelectric plate element whereby substantially no depolarization of the piezoelectric plate element occurs during successive operation of the relay, wherein the snap-action switch mechanism is of the type wherein axial movement of the push rod member in a first direction results in snap-action setting of the relay contacts in either an open or closed condition and reverse movement of the push rod member results in snap-action setting of the relay contacts in the opposite condition and wherein the free ends of said bender-type piezoelectric drive member engage opposite ends of the push rod member for respectively driving the push rod member in either of the two directions to thereby selectively set the relay in either an open or closed position.

4,553,062

CURVED GAS-FILLED DETECTOR WITH AVALANCHE OF ELECTRONS, AND STRIP

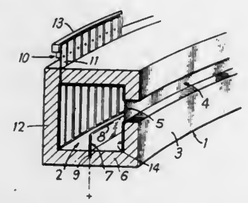
Jean Ballon, Saint Jean de Moirans; Vincent Comparat, and Joseph Pouxe, both of Grenoble, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Dec. 9, 1983, Ser. No. 559,794

Claims priority, application France, Dec. 30, 1982, 82 22219

Int. Cl.⁴ H01J *1/90;* **G01T** *1/18*

U.S. Cl. 313—93 **9 Claims**



1. A curved gas-filled detector of the type comprising a curved body defining an enclosure containing a gaseous fluid under a certain pressure, and provided with a window for the admission of a radiation to be detected and comprising on the inside, at least one elongated element which is parallel to cathode electrodes of which one may be coinciding with the window, said elongated element being insulated from the body, and receiving a high positive voltage, and forming means of picking up the avalanche of electrons created by the impact of a particle or radiation caused to traverse the gaseous fluid detector wherein the pick-up means is constituted by a structure of the type with at least one curved conducting strip held in such a way by the body that it projects into the enclosure and that one of its longitudinal edges is parallel to the axis of the window.

4,553,063

ELECTRICAL DISCHARGE ELECTRODE AND METHOD OF PRODUCTION THEREOF

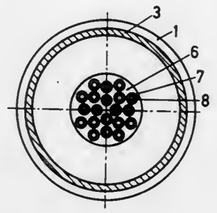
Karl F. Geibig, Sandhausen; Adolf Schwab, Karlsruhe-Durlach, and Dieter Stöckel, Birkenfeld, all of Fed. Rep. of Germany, assignors to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,884

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233584

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 313—325 **16 Claims**



1. An electrical discharge electrode for an electrical discharge gap, said electrode consisting of:

a metallic composite material including tubes of a metallic material having a high burn-off resistance embedded in and contacting a metallic matrix material of high electrical conductivity and filled with a core material; and

said core material consisting of a filler material which differs from said matrix and tube material and which promotes the emission of electrons from a surface of said electrode.

4,553,064

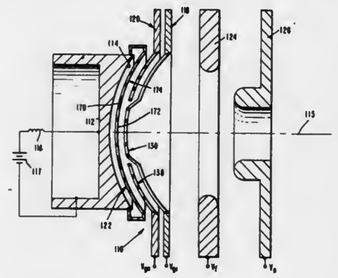
DUAL-MODE ELECTRON GUN WITH IMPROVED SHADOW GRID ARRANGEMENT

Kurt Amboss, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 30, 1983, Ser. No. 527,724

Int. Cl.⁴ H01J *29/48*

U.S. Cl. 313—448 **4 Claims**



1. A dual-mode electron gun comprising:

a cathode having an electron emissive surface defining a figure of revolution about a predetermined axis; a radially inner control grid spaced from said electron emissive surface along said axis and defining a figure of revolution about said axis along a surface substantially conforming to said electron emissive surface, said radially inner control grid projecting over the central portion of said electron emissive surface; an annular control grid coaxially disposed about said axis radially outwardly from said radially inner control grid along an extension of said surface substantially conforming to said electron emissive surface, said annular control grid projecting over an annular peripheral portion of said electron emissive surface; and a shadow grid coaxially disposed along said axis between said electron emissive surface and said radially inner and said annular control grids and defining a figure of revolution about said axis along a surface substantially conforming to said electron emissive surface, said shadow grid being substantially aligned with said radially inner and said annular control grids, wherein the improvement comprises:

said shadow grid having a ring of electrically conductive material disposed radially between inner and outer grid portions of said shadow grid, said ring having an inner circumference substantially aligned with the circumference of said radially inner control grid along a direction normal to said electron emissive surface and having an outer circumference substantially aligned with the inner circumference of said annular control grid along a direction normal to said electron emissive surface.

4,553,065

GETTER ASSEMBLY WITH IMPROVED SUPPORT

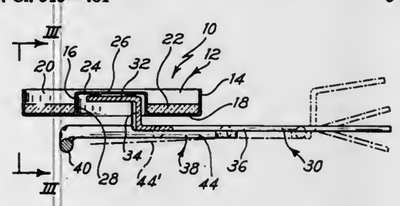
Franco Pirota, Milan, Italy, assignor to Saes Getters S.p.A., Milan, Italy

Filed Nov. 7, 1983, Ser. No. 549,405

Claims priority, application Italy, Nov. 23, 1982, 24382 A/82

Int. Cl.⁴ H01J *29/94;* **H01K** *1/52*

U.S. Cl. 313—481 **5 Claims**



1. A getter assembly for cathode ray tubes comprising a container (12) of getter material having an external sidewall (14) and a bottom wall (18) which contains powdered getter material (22), a mounting tab (30) for attachment of the getter assembly to the cathode ray tube, said mounting tab extending radially outwards from a central upraised zone of the getter assembly, and a support means (38) in the form of a wire which distances the container (12) from the wall of the cathode ray tube characterized by the fact that said support (38) has a first portion (42) that extends in a direction perpendicular to the mounting tab and approximately parallel to the bottom wall (18); a second portion (44) integral with said first portion, which extends forming an angle with respect to the first portion (42), extending approximately parallel to the bottom wall (18); and a third portion (48) integral with and in continuation of said second portion, which extends perpendicularly to said mounting tab (30), curving initially downwardly and then upwardly to form a concave surface (50) facing said bottom wall (18) of the container.

4,553,066

MULTIPLE FILAMENT LAMP HAVING WIRE GRID TO PROVIDE FILAMENT REDUNDANCY

Larry R. Fields, Winchester, and George B. Kendrick, Lexington, both of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 8, 1983, Ser. No. 521,499

Int. Cl.⁴ H01K *1/26, 9/00*

U.S. Cl. 313—580 **14 Claims**

1. A multi-filament lamp comprising:

a tubular envelope having at least one pinch seal at an end thereof;

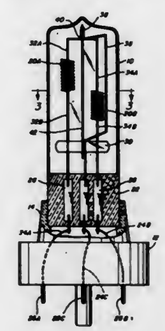
a halogen atmosphere within said tubular envelope;

at least two spaced apart, coiled filaments disposed in said tubular envelope;

means for supporting said coiled filaments in parallel to each other in the longitudinal direction within said tubular envelope;

lead-in wire means extending through the pinch seal and including a lead-in wire associated with each filament and a common lead-in wire;

means connecting said lead-in wire means to said means supporting said coiled filaments; and



a wire grid in the form of a single, electrically conductive wire extending longitudinally within said tubular envelope substantially in parallel to said coiled filaments and disposed therebetween so as to isolate one filament from the other, thereby providing filament redundancy in the event of failure of one of said coiled filaments during lamp operation, an arc being formed between said failed filament and said wire grid as said filament approaches said wire grid, said wire grid being electrically coupled to said common lead-in wire.

4,553,067

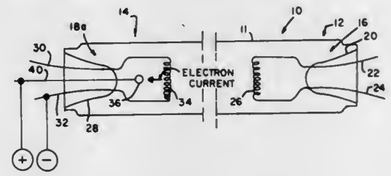
METHOD OF DISPENSING MERCURY INTO A FLUORESCENT LAMP AND LAMP TO OPERATE WITH METHOD

William J. Roche, Merrimac, and Ralph P. Parks, Jr., Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 347,605, Feb. 10, 1982, abandoned. This application Oct. 9, 1984, Ser. No. 658,454

Int. Cl.⁴ H01J *61/28*

U.S. Cl. 313—546 **3 Claims**



1. The method of releasing mercury into an arc discharge lamp having a tubular glass envelope with two ends, a mount sealed into each of said ends, each of said mounts including a glass stem having a pair of lead-in conductors sealed therein, and an electrode supported between each of said pairs of said lead-in conductors, one of said mounts having a third lead-in conductor, said method comprises the steps of positioning a mercury containing target on said third lead-in conductor within said lamp, and bombarding said target with a directed

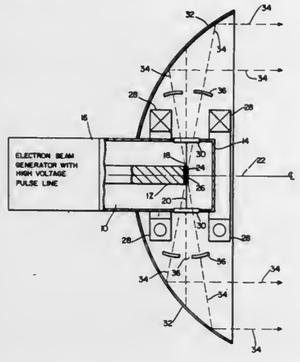
stream of electrons of sufficient energy to heat said target and release said mercury.

4,553,068

HIGH POWER MILLIMETER-WAVE SOURCE

Howard E. Brandt, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1983, Ser. No. 545,571
Int. Cl.⁴ H01J *25/00*
U.S. Cl. 315—4 **20 Claims**



1. A device called a turbutron for producing millimeter wave pulses in the gigawatt power range, comprising in combination:

a high voltage diode configuration which is maintained under vacuum and comprised of an explosive, cylindrical cathode; an extended cylindrical anode structure and a gap spacing between said anode and cathode;

a megavolt coaxial pulse line for producing a beam of electrons under conditions of charge saturation, said beam of electrons being explosively emitted from said cathode to create an intensely oscillating relativistic turbulent electron plasma in and beyond said gap of said diode configuration, thereby producing pulsed high power millimeter waves radiating out radially and polarized parallel to the axis of said electron beam;

a plurality of microwave windows located transverse to the diode configuration gap at the outer cylindrical wall of said anode structure;

annular magnet coils located external and coaxial to said diode configuration that produce a strong uniform axial magnetic field in order to restrict the electrons in said turbulent electron plasma to pure longitudinal motion along said magnetic field;

wherein said relativistic turbulent electron plasma is predominately confined between said emission cathode and a virtual cathode and confined radially about said electron beam axis; and

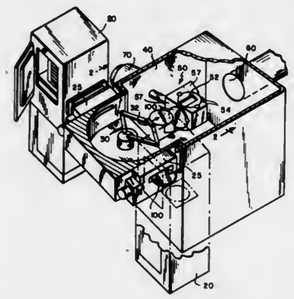
wherein said virtual cathode is an imaginary boundary beyond which few electrons pass and is oscillating both in electrical potential and position, the latter centered at a distance which is approximately twice the cathode anode gap.

4,553,069

WAFER HOLDING APPARATUS FOR ION IMPLANTATION

Kenneth H. Purser, Manchester, Mass., assignor to General Ionex Corporation, Newburyport, Mass.

Filed Jan. 5, 1984, Ser. No. 568,175
Int. Cl.⁴ A61K *27/02*
U.S. Cl. 315—111.81 **23 Claims**



1. An apparatus for the implantation of ion into semiconductor wafers comprising:

a plurality of storage compartments that are loaded with a plurality of said wafers at atmospheric pressure;

means for pumping down each of said storage compartments to a vacuum;

a vacuum chamber for receiving an ion beam directed into said chamber;

valve means connected between each of said storage compartments and said vacuum chamber, each of said valve means being opened when its corresponding storage compartment has been pumped down to a vacuum;

a rotatable block located within said vacuum chamber for holding said wafers in position with respect to said ion beam so as to obtain ion implantation into said wafer, said rotatable block having a rear end, a front end and a plurality of sides connecting the rear end to the front end;

clamping means on each side of said block for holding a wafer against said block; and

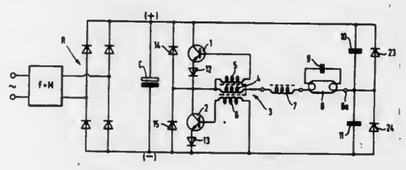
wafer handling means located within said vacuum chamber for transferring said wafers between said storage compartments and said wafer holding means.

4,553,070

ELECTRONIC BALLAST FOR A DISCHARGE LAMP

Martti Sairanen, Espoo, and Matti Virta, Helsinki, both of Finland, assignors to Oy Helvar, Helsinki, Finland

Filed Jul. 6, 1982, Ser. No. 395,269
Claims priority, application Finland, Sep. 18, 1981, 812930; Oct. 21, 1981, 813298; Jan. 12, 1982, 820095; Jan. 12, 1982, 820094
Int. Cl.⁴ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **6 Claims**



1. An electronic ballast for discharge lamp (8) for restriction and stbilization of the current, comprising:

a high frequency oscillator electrically connected between the terminals of a direct current supply and including a pair of series connected transistors (1, 2) with a first base drive transformer (3) coupled therebetween so as to bring said transistors (1, 2) into alternating phase operation,

a resonance circuit including an inductor (7) connected in a series between the primary winding (4) of the transformer (3) and said lamp (8), resonance capacitors (10, 11) connected in series with said lamp (8) and in series between the terminals of sid direct current supply, and an igniting capacitor (a) coupled parallel to said lamp (8), said igniting capacitor (9) being coupled parallel to the lamp (8) between the opposite ends of the electrode filaments thereof, and having a capacitance about ½–¼ of the sum of the capacitances of said resonance capacitors (10 and 11),

a filter capacitor (c) having a high charging ability and being coupled between the terminals of said direct current supply,

a first set of diodes (23, 24) connected parallel to said resonance capacitors (10, 11),

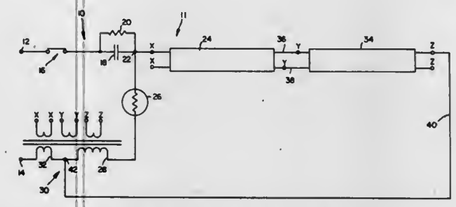
said sries connection of said inductor (7) and said lamp (8) being connected to a point common for said resonance capacitors (10, 11) and said diodes (23, 24).

4,553,071

ELECTRONIC BALLAST FOR FLUORESCENT LAMP

Gerald D. Boyd, Grants Pass, Oreg., assignor to Energies Technologies Corp., Grants Pass, Oreg.

Filed Jul. 18, 1983, Ser. No. 514,725
Int. Cl.⁴ H05B *37/02*
U.S. Cl. 315—244 **5 Claims**



1. An electronic ballast unit for a fluorescent lamp comprising: a circuit assembly having a capacitor and an inductor in series relationship with each other comprising a circuit tuned to a first frequency, said circuit assembly having a pair of input terminals for applying an AC voltage having a second frequency to the circuit assembly, wherein said first frequency is less than said second frequency, such that said circuit assembly is not tuned to the frequency of said AC voltage; means across said inductor for coupling a fluorescent lamp to the circuit assembly, said inductor being sufficiently reactive to produce a starting voltage a number of times greater than the input voltage, whereby the starting voltage can be used for energizing the fluorescent lamp; and a bleed resistor connected across said capacitor.

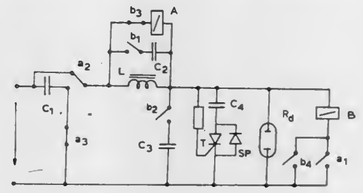
4,553,072

CIRCUIT CONNECTED IN SERIES WITH A DISCHARGE VALVE SOURCE

Frantisek Nemec; Petr Moos; Milan Bytesník; Jan Kuba, and Tomislav Lacina, all of Prague, Czechoslovakia, assignors to Ceske vysoke uceni technicke v Praze, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 325,976, Nov. 30, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,668
Int. Cl.⁴ H05B *37/00*
U.S. Cl. 315—244 **4 Claims**

1. A circuit connected in series with a discharge valve source having an inductor connected in series with a discharge valve and a starting capacitor connected in parallel to the voltage source for compensation of the power factor, characterized in that the circuit further comprises a reasonance inductor capacitor connected in parallel to the inductor, and a resonance discharge valve capacitor connected in parallel to the discharge valve, the ratio of the capacity of the resonance inductor capacitor to the capacity of the resonance discharge



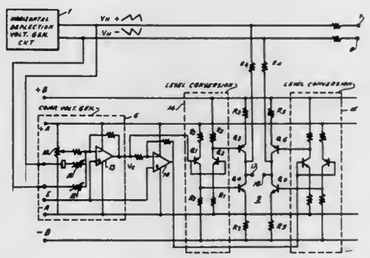
valve capacitor being between 3:2 and 4:1 and the magnitude of the inductance of the inductor and the magnitude of the capacity of the resonance inductor capacitor being determined by the resonant frequency within the range of 30 to 150 cycles.

4,553,073

DEFLECTION CONTROL CIRCUIT WITH LEVEL CONVERSION

Takashi Nakamura, and Kazunori Yamaji, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 9, 1982, Ser. No. 356,283
Claims priority, application Japan, Mar. 11, 1981, 56-35075
Int. Cl.⁴ H01J *29/70*
U.S. Cl. 315—370 **21 Claims**



1. Apparatus for supplying adjusted deflecting signals to respective horizontal and vertical deflecting inputs of each of several pickup tubes in a plural pickup tube television camera; comprising:

a source of horizontal and vertical deflecting signals;

means for supplying said horizontal and vertical deflecting signals to respective horizontal and vertical deflecting inputs of a predetermined pickup tube of said camera;

compensating voltage generating circuit means having a plurality of inputs and a plurality of outputs, said inputs receiving said horizontal and vertical deflecting signals, and said compensating voltage generating circuit means being responsive to said horizontal and vertical deflecting signals for generating deflection compensating voltages respectively enabling adjustment of the deflections of selected ones of the pickup tubes of said camera; and

combining circuit means for combining said respective deflection compensating voltages with corresponding ones of said horizontal and vertical deflecting signals to generate adjusted horizontal and vertical deflecting signals for application to the respective horizontal and vertical deflection inputs of said selected pickup tubes;

wherein said compensating voltage generating circuit means has a power input connected to a voltage supply of a first level and said combining circuit means has a power input connected to a voltage supply of a second level of substan-

tially greater magnitude than said first level; and further comprising

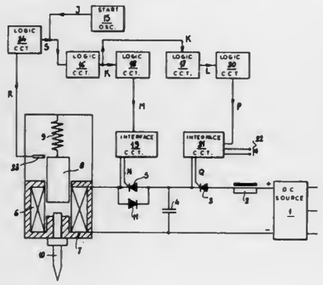
level converting circuit means having an input coupled to an output of said compensating voltage generating circuit means and an output coupled to an input of said combining circuit means for converting the level of the deflection compensating voltage applied thereto from a level corresponding to said first level to a level corresponding to said second level.

4,553,074

METHOD OF AND APPARATUS FOR THE AUTOSYNCHRONIZATION OF AN ELECTROMAGNETIC HAMMER

Georges Jacquemet, Caluire, France, assignor to MARTELEC Societe Civile Particuliere, Caluire, France

Filed Aug. 3, 1983, Ser. No. 520,116
Claims priority, application France, Aug. 3, 1982, 82 13950
Int. Cl.[4] H02K *33/00*
U.S. Cl. 318—130 **13 Claims**



1. In a method of autosynchronously operating an electromagnetic hammer comprising an electromagnet having a coil within which an elastically suspended plunger armature is displaceable in successive operation cycles by energization of the coil to generate an impact upon the discharge of a condenser under the control of a discharge thyristor through the coil, the condenser being charged from a direct current source through an inductance under the control of a charging thyristor in series with the coil, the improvement which comprises:

generating a command pulse triggering said discharge thyristor at a predetermined interval at least equal to the half period of the natural oscillation frequency of said plunger armature and its elastic suspension after the negative amplitude of the discharge current from the condenser through the coil attains a zero value for the first time in each operating cycle of the hammer so that triggering of the hammer is controlled on an impact-by-impact basis in accordance with its position resulting from a previous triggering.

4,553,075

SIMPLE BRUSHLESS DC FAN MOTOR WITH REVERSING FIELD

Fred A. Brown, and Alan F. Grouse, both of Woodstock, N.Y., assignors to Rotron Incorporated, Woodstock, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,154
Int. Cl.[4] H02K *29/02*
U.S. Cl. 318—254 **21 Claims**

1. A DC motor comprising:

a rotor with an annular permanent magnet defining magnetic segments oppositely polarized in the radial outward direction, wherein said segments are arranged circumferentially to comprise the magnet, and wherein the rotor is free of encircling stator iron;

a stator having an electromagnet structure outside said annular magnet, proximate the periphery thereof, said electromagnet structure including coil means comprising a core having two electrically independent coil windings wound thereon, said electromagnetic structure further including electromagnetic flux conducting means in flux conducting relation to the coils and core and located for establishing magnetic fields of opposite polarities to attract the oppositely polarized segments of, and for applying continuous rotational torque to, the annular magnet; and

position detecting means located outside said annular magnet for detecting the position of the rotor relative to the stator and for commutating electrical current to the coil means to repeatedly produce said opposite polarity fields and attract said segments in dependence on said relative positioning.

16. A DC motor comprising:

a rotor with an annular permanent magnet defining magnetic segments oppositely polarized in the radial outward direction, wherein said segments are arranged circumferentially to comprise the magnet;

a stator having an electromagnet structure outside said annular magnet, proximate the periphery thereof, said electromagnet structure including two electrically independent and concentrically wound coil windings, and wherein the electromagnetic structure defines at least one pole piece and wherein the coil windings are wound on a core in electromagnetic flux conducting relationship to the pole piece and located for establishing magnetic fields of opposite polarities to attract the oppositely polarized segments of, and for applying rotational torque to, the annular magnet; and

position detecting means located outside said annular magnet for detecting the position of the rotor relative to the stator and for commutating electrical current to the coil means to repeatedly produce said opposite polarity fields and attract said segments in dependence on said relative positioning.

4,553,076

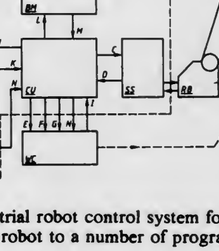
IDLE SPEED CONTROLLER IMPROVEMENT

Richard D. Doerr; J. Joseph Muller, both of St. Louis, and William A. Green, St. Charles, all of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Oct. 5, 1984, Ser. No. 657,990
Int. Cl.[4] H02P *1/22*
U.S. Cl. 318—282 **15 Claims**

6. In a controller for controlling the idle speed of an internal combustion engine, the controller having a reversible d.c. motor, an extendible and retractable member, a first switch which is normally closed but which is opened by movement of the member as it approaches its extreme extended position and a second switch which is normally closed but which is opened by movement of the member as it approaches its extreme retracted position, the position of the switches relative to each other being such that both switches are closed when the member is at a position intermediate its extreme positions and one switch is closed and the other switch open when the member is at a respective extreme position, the improvement comprising: logic means responsive to the position of the switches and the direction in which the member is to be driven by the motor for energizing the motor to retract the member when the member is at its essentially fully extended position as signified by the first switch being open, the signal provided to the motor to drive he motor indicates the member is to be retracted, and the second switch, which should be closed, is open due to dirt or debris, whereby the member, which otherwise could not be retracted, is retracted.

11. In a controller for controlling the idle speed of an internal combustion engine, the controller having a reversible d.c. motor, an extendible and retractable member, a first switch



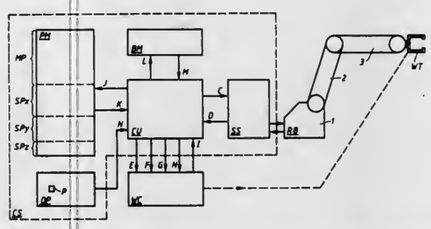
which is normally closed but which is opened by movement of the member as it approaches its extreme extended position and a second switch which is normally closed but which is opened by movement of the member as it approaches its extreme retracted position, the position of the switches relative to each other being such that both switches are closed when the member is at a position intermediate its extreme positions and one switch is closed and the other switch is open when the member is at a respective extreme position, the improvement comprising: logic means responsive to the position of the switches and the direction in which the member is to be driven by the motor for energizing the motor to extend the member when the member is at its essentially fully retracted position as signified by the second switch being open, the signal provided to the motor to drive the motor indicates the member is to be extended and the first switch, which should be closed, is open due to dirt or debris, whereby the member, which otherwise could not be extended, is extended.

4,553,077

INDUSTRIAL ROBOT

Hakan Brantmark, Västerås, and Johan Ennerfelt, Växjö, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 29, 1983, Ser. No. 508,976
Claims priority, application Sweden, Jun. 29, 1982, 82040007
Int. Cl.[4] G05B *19/00*
U.S. Cl. 318—568 **4 Claims**



1. In an industrial robot control system for controlling the positioning of a robot to a number of programmed operating

positions and the execution of programmed operations in association with these operating positions, the control system comprising:

first control means for positioning, during programming, the robot successively to said operating positions and for storing, at each operating position, information for positioning the robot to that operating position and information for controlling an operation to be carried out in association with that operating position,

first memory means for storing information fed in via the first control means during programming, said information comprising a main program with a sequence of instructions which, during automatic operation of the robot, are successively executed; and

second control means for controlling the robot during automatic operation in accordance with the information stored in said first memory means;

the improvement wherein:

the control system comprises second memory means for storing information defining a sub-program, which contains information for control of one of said operations;

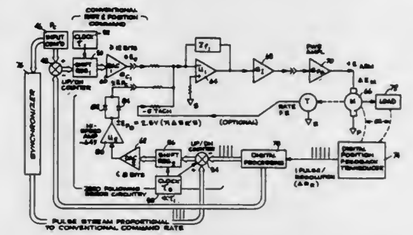
the first control means comprising an operating member arranged, upon a single activation during programming with the robot at an operating position, to cause storage in the first memory means of an instruction which, during automatic operation causes positioning of the robot to that operating position as well as calling for an execution of said sub-program.

4,553,078

SERVO CONTROL BOOSTER SYSTEM FOR MINIMIZING FOLLOWING ERROR

William L. Wise, Mountain View, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 61,114
Int. Cl.[4] G05B *11/18*
U.S. Cl. 318—592 **6 Claims**



1. A closed-loop feedback control system for precisely controlling the instantaneous position of a machine element along an axis for all operational speeds, in accordance with numerical input commands, said system comprising:

a source of numerical input command signals;

first circuit means for producing feedback signals representing the position of said machine element;

first comparing means for comparing the numerical input command signals from said source with the position feedback signals from said first circuit means;

means responsive to said first comparing means for generating first position correction signals being proportional to the difference between said numerical input command signals and said position feedback signals;

means responsive to the said means for generating first position correction signals to generate an amplified signal output for producing motion of said machine element;

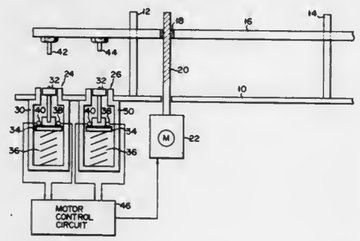
synchronizer means responsive to the numerical input command signals from said source for providing a pulse stream command signal having a pulse rate directly proportional to the input command signal;

second comparing means for continually comparing said position feedback signals with said pulse stream command signal and producing a difference signal representing the difference therebetween;
gating means responsive to said difference signal and second comparing means for producing a command correction signal when a predetermined position correction limit is exceeded;
means for combining the numerical input command signals with the command correction signals to produce a composite numerical input command signal representing second position correction signals; and
amplifier and motor means responsive to said composite numerical input command signal for driving said machine element along said axis when said predetermined position correction limit is exceeded.

4,553,079
METHOD FOR RETURNING A MOVABLE PART TO THE ORIGINAL POINT

Makoto Igarashi, Tokyo; Naoki Kumagami, Sagamihara, and Kiichiro Okano, Chiba, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,082
Claims priority, application Japan, Apr. 13, 1983, 58-65030
Int. Cl.[4] G05G *5/00*
U.S. Cl. 318—626 **5 Claims**

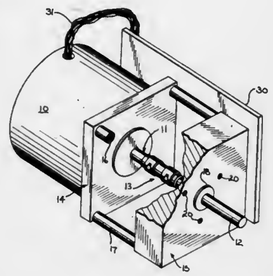


1. A method for returning a movable part to the original point which comprises:
a first step of moving a movable part in one direction to the original point at a first speed causing the movable part to stop at a point a little beyond the original point;
a second step of moving the movable part in the opposite direction away from the original point at a second speed lower than said first speed for a prescribed length of time causing the movable part to be slightly removed from the original point;
a third step of moving the movable part which has been moved away from said original point for said prescribed length of time to the original point at a third speed lower than said second speed and, thereby stopping the movable part at said original point; and,
providing an original point switch at the original point and an overrun switch at a point a little beyond the original point such that, in the first step, the movable part continues to move until the movable part contacts the overrun switch, and in the third step, the movable part continues its travel until the movable part contacts the original point switch.

4,553,080
POSITION TRANSDUCER

Lee E. Cannon, Bozeman, Mont.; Peter C. Schmitt, West Bloomfield, Mich., and Dan R. Cheever, Bozeman, Mont., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 25, 1983, Ser. No. 516,742
Int. Cl.[4] H02K *29/04*
U.S. Cl. 318—696 **3 Claims**

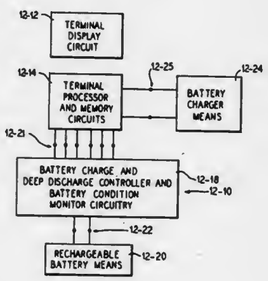


1. A position transducer for manual input which comprises:
a stepping motor having a plurality of pairs of windings and a rotatable shaft;
a bias current source connected to provide current to one of said pairs of windings to generate a magnetic detent force which defines increments of stepping motor shaft rotation;
a detector circuit connected to another pair of stepping motor windings and being operable to produce an output signal indicative of the direction of stepping motor shaft rotation each time the shaft is rotated one increment; and
a handwheel shaft which is rotatably supported adjacent to the stepping motor shaft and connected to the stepping motor shaft by means of a flexible coupler to impart rotation to the stepping motor shaft when the handwheel is rotated.

4,553,081
PORTABLE BATTERY POWERED SYSTEM

Steven E. Koenck, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 385,830, Jun. 7, 1982, Pat. No. 4,455,523. This application May 21, 1984, Ser. No. 612,588
Int. Cl.[4] H02J *7/00*
U.S. Cl. 320—43 **30 Claims**



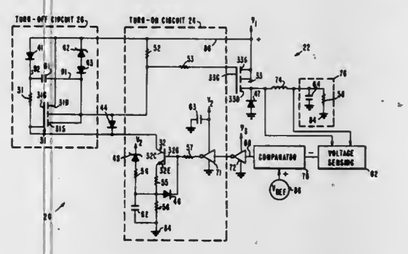
1. In a portable battery powered system,
a portable battery powered utilization device for operating from battery power during portable operation thereof,
battery means operatively coupled with said utilization device for supplying operating power thereto, and
battery conditioning system means operatively coupled with said battery means and comprising battery conditioning means for controlling conditioning of said battery means,

and battery parameter sensing means for sensing battery parameters,
said utilization device together with said battery means and said battery conditioning system means having a size and weight to be carried by an individual person, and
said battery conditioning system means including operating means operatively coupled with said battery conditioning means and controlling conditioning of said battery means in conjunction with said battery parameter sensing means.

4,553,082
TRANSFORMERLESS DRIVE CIRCUIT FOR FIELD-EFFECT TRANSISTORS

John J. Nesler, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 25, 1984, Ser. No. 614,079
Int. Cl.[4] G05F *1/56*
U.S. Cl. 323—288 **10 Claims**

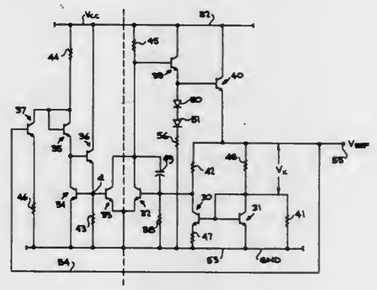


1. A drive circuit for operating an electronic switch having a control terminal for receipt of a control signal, said switch being in circuit with a device utilizing current switched by said switch, said switch being connected between a supply terminal of a source of power and said utilization device which is connected to a return terminal of said power source, said switch conducting current upon a first voltage of said control signal and terminating the current upon a second and different voltage of said control signal, said drive circuit comprising:
a turn-on circuit coupled between said supply and said return terminals of said power source and connecting with said control terminal, said turn-on circuit including a first transistor and a switching means coupled in a series circuit between said control terminal and said return terminal of said power source, said first transistor being responsive to an input signal applied thereto initiating a first current in said series circuit to produce said first voltage of control signal, said switching means being connected between said control terminal and said first transistor;
a turn-off circuit connected with said first switching means and being coupled in circuit with said supply terminal of said power source, said turn-off circuit comprising a second transistor in circuit with said control terminal for initiating a second current in the reverse direction of said first current to produce said second voltage of said control circuit;
said turn-off circuit further comprising a capacitive circuit connected to said second transistor, said capacitive circuit including a capacitor for powering said second transistor subsequent to a charging of the capacitor; and
said drive circuit further comprising means responsive to said first current for charging said capacitor; and wherein
upon a termination of said first current in response to a change of state of said input signal, said switching means operates to permit said capacitor to apply a voltage and a current to said second transistor resulting in said second current and in saturation of said second transistor, said second current flowing via said second transistor from the supply terminal of said power supply to said control terminal of said switch, said saturation raising the voltage of the control signal to a magnitude substantially equal to that of the voltage of said power supply for turning off said electronic switch.

4,553,083
BANDGAP REFERENCE VOLTAGE GENERATOR WITH V_{CC} COMPENSATION

Tsen-Shau Yang, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1983, Ser. No. 556,770
Int. Cl.[4] G05F *3/20*
U.S. Cl. 323—313 **8 Claims**

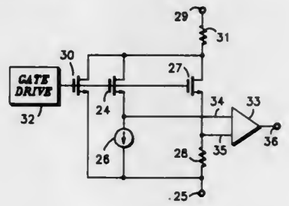


1. In a bandgap reference voltage generator for producing a stable reference voltage, V_{REF}, in an integrated circuit, including parallel current paths, a means for supplying current through the parallel paths and a self-regulating means for establishing a V_{REF} voltage, the improvement comprising:
compensation circuitry to render the operation of the bandgap reference voltage generator independent of the supply voltage, V_{CC}, said compensation circuitry providing compensating terms of opposite sign for a V_{CC} dependent term in one of the network equations which describe the operation of the bandgap reference voltage generator, wherein said one network equation is given by $V_{REF}=V_{R42}+V_{BE32}$, where V_{R42}=voltage across a resistor **42** and V_{BE32}=Base-emitter voltage of a transistor **32**, and wherein V_{BE32} is said V_{CC} dependent term, said compensation circuitry including feedback means connected to the ends of said parallel current paths to assist in controlling the conductance of said compensation circuitry as changes in supply voltage, V_{CC}, occur.

4,553,084
CURRENT SENSING CIRCUIT

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

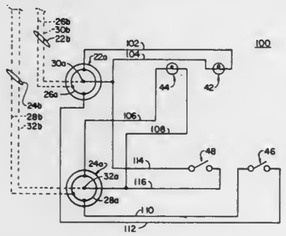
Filed Apr. 2, 1984, Ser. No. 595,764
Int. Cl.[4] G05F *3/16*
U.S. Cl. 323—316 **8 Claims**



1. A current sensing circuit coupled between a load having a load current passing therethrough and a supply voltage terminal, comprising:

a first current means coupled between said load and said supply voltage terminal for carrying a first portion of said load current;
resistive means coupled to said supply voltage terminal for providing a voltage drop;
second current means coupled between said load and said resistive means for carrying a second portion of said load current, said first portion being substantially larger than said second portion;
control means coupled to said first current means and said second current means for biasing said first current means and said second current means;
output means coupled to a first node between said second current means and said resistive means for providing an output.

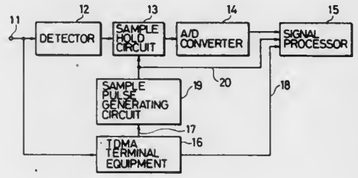
4,553,085
COAXIAL CABLE TESTER DEVICE
Domenic A. Canzano, 32 Hobson St., Lawrence, Mass. 01841
Filed May 13, 1983, Ser. No. 494,377
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—51 **10 Claims**



1. A coaxial cable tester device comprising:
a transmitter unit including first and second coaxial connectors, each having a center conductor and a ground conductor; means for isolating the ground conductors of said first and second connectors from each other; a power supply having first and second terminals, one connected to said center conductors and the other to said ground conductor of said first connector; and a short indicator circuit connected across said terminals, said short indicator circuit including a short switch and an indicator device in series;
a receiver unit including third and fourth coaxial connectors, each having a center conductor and a ground conductor; means for isolating the ground conductors of said third and fourth connectors; a first switch connected between said ground conductors of said third and fourth connectors; a second switch connected between said center conductors of said third and fourth connectors; first indicator means connected between the center and ground conductors of said third connector; and second indicator means connected between the center and ground conductors of said fourth connector.

4,553,086
CARRIER POWER TO NOISE POWER RATIO MEASURING SYSTEM FOR TDMA SIGNALS
Tatsuo Watanabe; Michihisa Ohkawa, and Toshio Mizuno, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1983, Ser. No. 472,292
Claims priority, application Japan, Apr. 2, 1982, 57-53921
Int. Cl.[4] G01R *27/00*
U.S. Cl. 324—57 N **2 Claims**

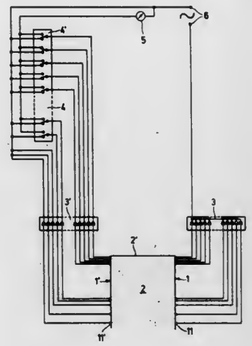
1. A system for measuring the carrier power to noise power ratio in a noise-containing TDMA signal, which comprises:
a detector for detecting said TDMA signal,
means for detecting a unique word in said TDMA signal and operative to supply a detection pulse in response to the unique word in the reference burst portion of said signal and a further detection pulse in response to the unique word in a data burst portion of said signal,
means for predicting an unmodulated carrier wave of the preamble portion of said TDMA signal based on the output timing of said detection pulse of the unique word in the reference burst portion of said signal and operative to generate a pulse signal for sampling said unmodulated carrier wave,
means disposed after said detector for sampling the output signal of said detector based on said pulse signal for sampling,
a circuit for holding the detector output samples,



an A/D converter coupled to said holding circuit for converting said detector output samples into a digital quantity, and
a signal processor for receiving said digital quantity, said pulse signal for sampling, and said detection pulse of the unique word in the data burst as inputs, said signal processor being operative to nullify said A/D converter output whenever the deviation of the input timing between said pulse signal for sampling and said detection pulse of the unique word in the data burst exceeds a prescribed tolerance, said signal processor being further operative to find at least one of the squared average value, the average value, and the dispersion of the A/D converter output, and to calculate the carrier power to noise power ratio based on said value.

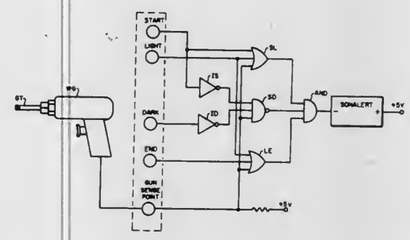
4,553,087
METHOD AND APPARATUS FOR DETERMINING THE PENETRATION AND LEACHING PROCESS OF CONDUCTIVE PHASES
Wilhelm Kühn, and Claus Bunnenberg, both of Hanover, Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen- und Umweltforschung mbH, München, Neuherberg bei München, Fed. Rep. of Germany
Filed Jun. 30, 1982, Ser. No. 393,825
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139835
Int. Cl.[4] G01N *5/02, 25/56;* **G01R** *27/02*
U.S. Cl. 324—65 P **11 Claims**

1. Method for the nondestructive determination of the penetration and leaching process of conductive phases in materials, comprising measuring the conductivity of the material to be examined in thin superposed layers from the penetration surface by:
providing a respective pattern, of thin parallel conductors on each of two opposite side surfaces of the material to be examined to produce pairs of oppositely disposed conductors with each pair being associated with one of said layers; simultaneously applying a voltage across each of said pairs of oppositely disposed conductors to cause current to flow between the conductors of each pair through separate layers of said material; and separately measuring the current flowing through each pair of oppositely disposed conductors to determine the current through the individual layers, whereby an increase of the



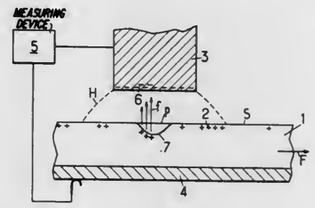
current in increasingly deep layers indicates the advance of the penetration front of the conductive phase.

4,553,088
WIRING PAIR REVERSAL DETECTOR
Kenneth R. Fox, Berwyn, Ill., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.
Filed Dec. 19, 1983, Ser. No. 562,645
Int. Cl.[4] G01R *19/00*
U.S. Cl. 324—66 **8 Claims**



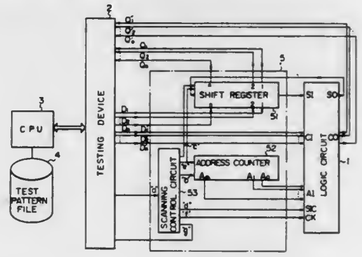
1. Alarm apparatus for use with a numerical control wire wrap gun wiring machine that mechanically indicates the position for a wire placement and visually indicates by indicator lights the first or second end and light or dark wire of a pair of wires that is to be wired onto the indicated terminal comprising:
a gun sense point terminal on said wire wrap gun;
audible alarm means;
a first gate means having an output and including a first input from said first indicator light means, a second input from said light indicator light means and a third input from said wire wrap gun sense point;
means connecting said first gate output to said audible alarm means;
said inputs from said indicator lights normally having a logic high level except when operated when they have a logic low level signal;
said wire wrap gun sense point normally biased to a logic high level;
said first gate means operated to activate said audible alarm means upon said gun sense point placing a wire on a grounded terminal.

4,553,089
DEVICES DESIGNED TO MEASURE LOCALLY THE ELECTRIC CHARGES CARRIED BY DIELECTRICS
Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint Cloud, and Georges Charpak, 14, rue du Clos, Geneve, both of France
Filed Mar. 17, 1983, Ser. No. 476,195
Claims priority, application France, Mar. 17, 1982, 82 04545
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—71.1 **10 Claims**



1. A measuring device for measuring locally the electric charges carried superficially by a dielectric sheet, said device comprising a first electrode, facing the surface of the sheet carrying the electric charges to be measured and constituting a probe, a second electrode placed against the side of the sheet opposite to the surface of said sheet carrying the electric charges, means for providing a relative displacement of the probe along the sheet, means for measuring at each instant of time the charges induced on the probe by the charges to be measured, and means for deforming the sheet, during very short time periods, at a spot p the size of which is very small relative to that of the probe and the surface, and is on the order of the required spatial resolution and which is fixed in position relative to the probe and the surface in directions parallel to the surface, the sheet being deformed in a way such that only the spot p is concerned with this deformation, and the sheet being repeatedly deformed at a frequency f_0 large enough, in relationship to the speed of the relative displacement of the sheet with respect to the probe, that sequential deformations of different spots p overlap at least partially.

4,553,090
METHOD AND APPARATUS FOR TESTING A LOGIC CIRCUIT USING PARALLEL TO SERIAL AND SERIAL TO PARALLEL CONVERSION
Yoshinori Hatano, Tokyo; Kiyoshi Wada, Kawasaki, and Ichiro Midorikawa, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 23, 1980, Ser. No. 171,273
Claims priority, application Japan, Jul. 26, 1979, 54-94198
Int. Cl.[4] G01R *15/12*
U.S. Cl. 324—73 AT **6 Claims**



2. A device for testing a logic circuit, operatively connected to receive input data, having a scanning-in terminal and a scanning-out terminal, having a plurality of first flip-flops

associated with a scanning path between the scanning-in and scanning-out terminals, and having a combination circuit including logic gates for performing a logic operation and for providing output data to the first flip-flops, said device comprising:

means for providing the input data in parallel;

addressing means, operatively connected to th first flip-flops, for supplying an address to sequentially select each of the first flip-flops so as to output the output data provided to the first flip-flops;

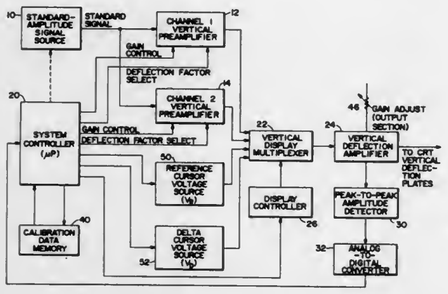
a single shift register, connected to said scanning-in and scanning-out terminals, the first flip-flops and said means for providing the parallel input data, for receiving the parallel input data and for, in turn, transmitting the input data in series to each selected one of the first flip-flops through the scanning-in terminal, and for receiving the output data, resulting from the logic operation of the combination circuit, stored in each selected one of the first flip-flops, through the scanning-out terminal and for, in turn, outputting the output data in parallel.

4,553,091

AUTOMATIC VERTICAL CALIBRATION METHOD AND SYSTEM FOR AN OSCILLOSCOPE

L. Rodney Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 7, 1983, Ser. No. 464,285
Int. Cl.⁴ G01R *35/00, 13/30*
U.S. Cl. 324—74 **13 Claims**



4. A system for calibrating the vertical deflection system of an oscilloscope, comprising:

means for applying a standard-amplitude signal to the input preamplifier of said oscilloscope, said preamplifier having a plurality of selectable deflection factor settings and a controllable gain stage;

means for measuring the amplitude of said standard signal after preamplification thereof at a first preselected deflection factor setting by detecting the peak-to-peak voltage of said preamplified standard signal;

means for converting said detected peak-to-peak voltage to reference data corresponding to said measured amplitude and storing said reference data;

means for automatically selecting a new deflection factor setting and a new predetermined amplitude of said standard signal, said measuring means measuring the new preamplified amplitude of the standard signal to provide new reference data corresponding to said new measured amplitude value;

means for comparing the new reference data with the stored reference data and developing a gain control signal therefrom; and

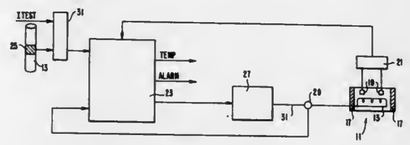
means for applying said gain control signal to said preamplifier to control the gain thereof.

4,553,092

APPARATUS AND METHOD FOR TEMPERATURE ESTIMATION OF OVERHEAD CONDUCTORS

Robert B. Purves, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1982, Ser. No. 451,433
Int. Cl.⁴ G01R *5/22*
U.S. Cl. 324—106 **12 Claims**



1. A device for monitoring an overhead high voltage power line conductor having current flowing therethrough, the device comprising:

a simulation conductor positioned in the same ambient conditions as the overhead conductor to be monitored;

means for heating said simulation conductor;

means responsive to a signal representative of the actual value of the current flowing through the overhead conductor, and representative of the temperature of the simulation conductor, for calculating the electrical resistivity of said overhead conductor and for selectively supplying power to said heating means to generate heat in said simulation conductor equal to the heat dissipated in the overhead conductor;

means for sensing the actual temperature of said simulation conductor; and

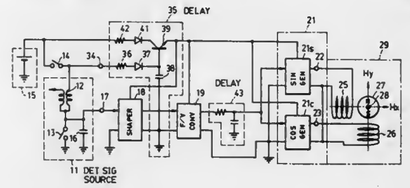
means for indicating if said temperature of said simulation conductor exceeds a predetermined temperature.

4,553,093

TACHOMETER

Hideo Chikasue, Shimada, Japan, assignor to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,504
Int. Cl.⁴ G01P *3/48, 3/54*
U.S. Cl. 324—169 **7 Claims**



1. A tachometer comprising:

a detection signal source operative to generate a detection signal having a frequency corresponding to a rotational frequency to be measured;

a frequency-voltage converter coupled to said detection signal source, for converting said detection signal into a voltage signal having a voltage value corresponding to said frequency;

a sine-cosine current generator connected to said frequency-voltage converter for generating a sine-wave current signal having a substantially sine value corresponding to the voltage value of said voltage signal and for generating a cosine-wave current signal having a substantially cosine value corresponding to the voltage value of said voltage signal, one cycle of each of the sine-wave and cosine-wave current signals corresponding to the range from minimum to maximum voltage values of said voltage signal;

a cross-coil type indicator comprising first and second coils connected to the output side of said sine-cosine current generator, said coils being disposed with their axes substantially perpendicular intersecting each other and said coils being supplied with said sine-wave current signal and said cosine-wave current signal, respectively, said indicator including a rotary magnet rotatably disposed in a composite magnetic field of the magnetic fields set up by currents flowing through the first and second coils, a pointer being mounted on the rotary shaft of the rotary magnet and a dial being provided adjacent said pointer for indicating the rotational angular position of the pointer as a rotational frequency; and

delay means connected between said frequency-voltage converter, said sine-cosine current generator and a power source, for delaying interruption of the operation of the frequency-voltage converter and the sine-cosine current generator when the supply of their operating voltages is cut off;

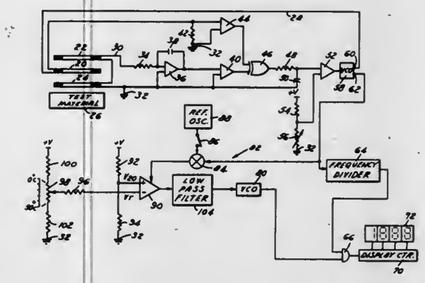
said cross-coil type indicator including a square-shaped frame of a synthetic resinous material in which said rotary magnet is mounted and on which said first and second coils are wound with their axes perpendicular to said rotary shaft of said rotary magnet, said frame having a plurality of depressions formed in one outer face thereof and arranged around said rotary shaft, and a zero-resetting magnet fitted in one of said depressions in opposing relation to a marginal portion of said rotary magnet so that when said pointer is brought near to a zero-point of said dial, said zero-resetting magnet magnetically interacts with said rotary magnet to force said pointer to move to said zero-point.

4,553,094

METHOD AND APPARATUS FOR MEASURING CONDUCTIVITY USING EDDY CURRENTS WITH TEMPERATURE COMPENSATION FEATURE

Robert E. Gehrke, Wixom, Mich., assignor to K. J. Law Engineers, Inc., Farmington Hills, Mich.

Filed Jun. 20, 1983, Ser. No. 505,881
Int. Cl.⁴ G01R *33/12;* **G01N** *27/72*
U.S. Cl. 324—225 **17 Claims**



14. Apparatus for determining conductivity of test alloy materials having a preselected non-ferrous base metal comprising means for inducing eddy currents in a test material at a measurement temperature and developing a first signal which varies as a function of conductivity of the test material at said measurement temperature,

means for developing a second signal which varies as a function of said measurement temperature,

means for providing a third signal as a function of a predetermined conductivity characteristic of the test material,

means for providing a fourth signal as a function of the product of said first, second and third signals, and

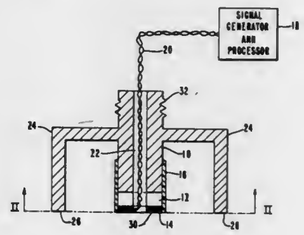
means for determining conductivity of the test material as a combined function of said first and said fourth signals.

4,553,095

EDDY CURRENT THICKNESS GAUGE WITH CONSTANT MAGNETIC BIAS

Harold L. Schenk, Jr., and Warren R. Junker, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,051
Int. Cl.⁴ G01B *7/10;* **G01R** *33/12*
U.S. Cl. 324—230 **13 Claims**



1. A probe for measuring the thickness of a layer containing small quantities of ferromagnetic material clad on a ferromagnetic base, said probe comprising:

an air core measuring coil;

said measuring coil having an electrical characteristic being variable as a function of the magnetic conductivity of said base; and

means for producing a constant magnetic field, said magnetic field being of sufficient strength to substantially magnetically saturate said small quantities of ferromagnetic material in a layer being measured, thereby substantially eliminating any influence of the magnetic conductivity of said layer on said electrical characteristic of said measuring coil, and said magnetic field being of insufficient strength to magnetically saturate said base;

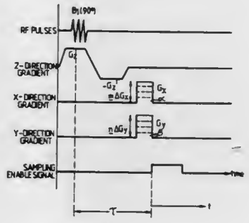
wherein said measuring coil is disposed between said layer and said means for producing a constant magnetic field.

4,553,096

NUCLEAR MAGNETIC RESONANCE METHOD AND APPARATUS

Christopher P. Randell, London, England, assignor to Picker International Limited, Wembley, England

Filed Jul. 19, 1983, Ser. No. 515,356
Claims priority, application United Kingdom, Jul. 28, 1982, 8221852
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—309 **6 Claims**



1. A method of determining the spatial distribution of the chemical shift spectra of a chosen element across a slice of a body comprising: exciting nuclear magnetic resonance for said element preferentially in said slice of said body; applying first and second pulsed magnetic gradient fields having magnetic field gradients in first and second mutually orthogonal directions in the plane of said slice to produce phase dispersion in

said resonance along said first and second directions respectively; stepping the value of the gradient of said first field through a range of first values, for each of said first values stepping the value of the gradient of said second field through a range of second values and measuring the free induction decay signal after each set of one first and second field pulses to form a set of free induction decay signals; subjecting said set of signals to a two dimensional Fourier Transform process with respect to said first and second directions, and to an additional Fourier Transform process with respect to time to obtain chemical shift spectra for said chosen element at each of a plurality of different locations in said slice.

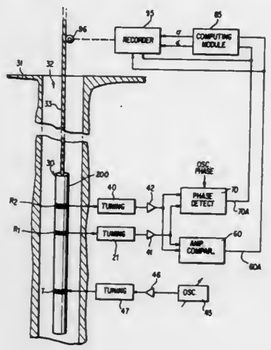
5. An apparatus arranged to perform a method of determining the spatial distribution of the chemical shift spectra of a chosen element across a slice of a body comprising: means arranged to excite nuclear magnetic resonance for said element preferentially in said slice of said body; means arranged to apply first and second pulsed magnetic gradient fields having magnetic field gradients in first and second mutually orthogonal directions in the plane of said slice; means for stepping the value of the gradient of said first field through a range of first values; means for stepping the value of the gradient of said second field through a range of second values for each of said first values; means for measuring the free induction decay signal after each set of one first and second field pulses to form a set of free induction decay signals; and means for subjecting said set of signals to a two dimensional Fourier Transform process with respect to said first and second directions, and to an additional Fourier Transform process with respect to time.

4,553,097

WELL LOGGING APPARATUS AND METHOD USING TRANSVERSE MAGNETIC MODE

Brian Clark, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,571
Int. Cl.[4] G01V *3/30*; G01F *9/30*
U.S. Cl. 324—338 **54 Claims**



1. Apparatus for investigating properties of earth formations surrounding a borehole, comprising:

a logging device moveable through the borehole, said device including a generally tubular electrically conductive body portion;

energizing means;

transmitting antenna means, mounted on said logging device and coupled to said energizing means, for generating electromagnetic energy, guided by said conductive body portion and having primarily transverse magnetic mode components with respect to said conductive body portion, a portion of said energy passing through said formations;

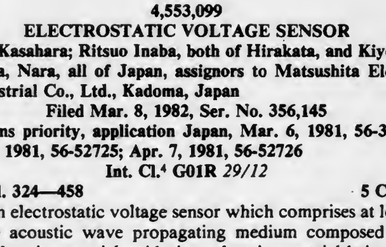
receiving antenna means, mounted on said logging device in spaced relation to said transmitting antenna means, for receiving the transmitted electromagnetic energy, said receiving antenna means being adapted to have primarily sensitivity to the transverse magnetic mode components of electromagnetic energy, the received signal being indicative of properties of said formations.

4,553,098

BATTERY CHECKER

Kanji Yoh, Kokubunji, and Osamu Yamashiro, Omiya, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 10,961, Feb. 9, 1979, abandoned. This application Apr. 12, 1983, Ser. No. 484,263
Claims priority, application Japan, Apr. 5, 1978, 53-39242; Sep. 13, 1978, 53-111722
Int. Cl.[4] G01N *27/46*
U.S. Cl. 324—433 **16 Claims**



1. A battery checker for checking a battery voltage comprising:

a differential amplifier comprising a differential amplifier stage which is comprised of first and second insulated gate field-effect transistors (IGFETs) and a current source which is commonly coupled to sources of said first and second IGFETs, said first and second IGFETs having a difference of thresholds voltages corresponding to a difference of Fermi levels of gate electrodes thereof, both said gate electrodes of said first and second IGFETs being made of an identical semiconductor material and different from each other in the conductivity types of the identical semiconductor material, a gate of said first IGFET being used as a first input terminal of said differential amplifier while a gate of said second IGFET is used as a second input terminal of said differential amplifier, said differential amplifier having an output terminal for deriving an output signal in response to a drain signal produced from at least one of the drains of said first and second IGFET, and said differential amplifier having an input offset corresponding to said difference of threshold voltages;

a voltage input terminal coupled to said first input terminal of said differential amplifier for applying a voltage of the battery thereto; and

a reference input terminal coupled to said second input terminal of said differential amplifier for applying a reference potential thereto, whereby an output signal in response to a potential difference between said battery voltage and said input offset of said differential amplifier is derived from said output terminal of said differential amplifier.

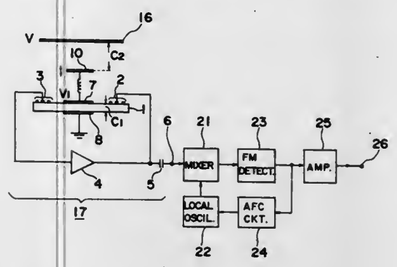
4,553,099

ELECTROSTATIC VOLTAGE SENSOR

Yukio Kasahara; Ritsuo Inaba, both of Hirakata, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 8, 1982, Ser. No. 356,145
Claims priority, application Japan, Mar. 6, 1981, 56-32979; Apr. 7, 1981, 56-52725; Apr. 7, 1981, 56-52726
Int. Cl.[4] G01R *29/12*
U.S. Cl. 324—458 **5 Claims**

1. An electrostatic voltage sensor which comprises at least a surface acoustic wave propagating medium composed of a piezo-electric material, said piezo-electric material being substantially an insulator, a pair of transmitting and receiving transducer means for transmitting and receiving a surface acoustic wave provided on said surface acoustic wave propagating medium, an oscillating means including an amplifier having its input terminal connected to said receiving transducer means and having its output terminal connected to said transmitting transducer means, an electrode means for applying an electric field in a direction perpendicular to a major surface of said medium on which said surface acoustic wave propagates, and a voltage collecting member disposed in the



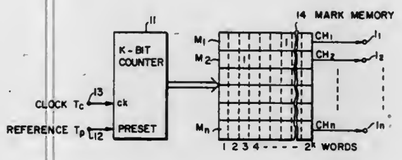
vicinity of an object whose voltage is to be measured and connected to said electrode means, a voltage varying means for varying a voltage which is supplied to said electrode means from said voltage collecting member at a predetermined constant frequency, and a voltage detecting means for detecting said voltage of said object whose voltage is to be measured by detecting an output frequency of said oscillating means, wherein said voltage detecting means includes a mixing circuit whose input is connected to said receiving transducer, a frequency modulation detecting circuit which is connected to an output of said mixing circuit, and a local oscillation circuit.

4,553,100

COUNTER-ADDRESS MEMORY FOR MULTI-CHANNEL TIMING SIGNALS

Junji Nishiura, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Gyoda, Japan

Filed Jun. 7, 1983, Ser. No. 501,864
Claims priority, application Japan, Jun. 7, 1982, 57-97415
Int. Cl.[4] H03L *7/24*
U.S. Cl. 328—63 **22 Claims**



1. A device for generating timing signals corresponding to reference signals and clock signals, comprising

counting means for being preset by each said reference signal, for counting the clock signals which occur after each said reference signal, and for outputting the count value,

memory means for storing marks in addresses corresponding to delay times of said timing signals with respect to said reference signals, and

means for synchronizing said timing signals with said clock signals,

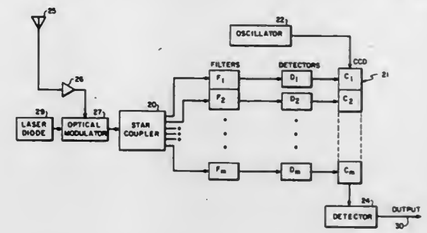
wherein said count value of said counting means is used to access the addresses of said memory means so that said marks are provided from said memory as said timing signals, said timing signals are provided on a plurality of channels, said memory means includes a corresponding plurality of channels, each said channel of said memory has the same set of addresses to be accessed by the count value of said counting means, and said marks are selectively stored in the addresses of said channels in correspondence to the desired timing signals to be output from each of said channels.

4,553,101

FAST FREQUENCY HOPPING DEMODULATION SYSTEM WITH SERIAL ACCUMULATION OF SIGNAL

Ronald F. Mathis, San Diego, Calif., assignor to General Dynamis Electronics Division, San Diego, Calif.

Filed Sep. 21, 1983, Ser. No. 525,162
Int. Cl.[4] H03D *3/18, 3/00*; H03K *17/296*
U.S. Cl. 329—50 **22 Claims**



1. A system for demodulating a received signal containing repetitive blocks of m frequency hopped pulses having a predetermined hopping sequence, where "m" is an integer greater than one, comprising

m filters respectively tuned to the frequencies of said predetermined hopping sequence;

means for distributing said received signal to all m filters in parallel; and

means for integrating the output signals from said filters over intervals each corresponding to a respective one of said blocks of pulses, said integrating means comprises

a signal accumulator having a series of cells respectively coupled to different filters, wherein signals are accumulated in the cells from the filters at the integer-multiple of the hop rate and accumulated signals progress serially from cell to cell at the integer-multiple of the hop rate to provide a serial output from an end cell, and means for detecting when the serial output of the accumulator exceeds a predetermined threshold to determine the arrival of each block.

4,553,102

MULTILEVEL AMPLITUDE MODULATION DEMODULATOR WITH DC DRIFT COMPENSATION

Yasuharu Yoshida, Tokyo, Japan, assignor to NEC Corp., Tokyo, Japan

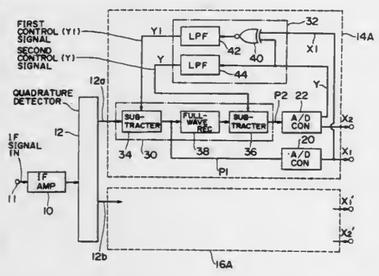
Filed Jul. 23, 1984, Ser. No. 633,315
Claims priority, application Japan, Jul. 22, 1983, 58-134119; Jul. 22, 1983, 58-134120
Int. Cl.[4] H03D *1/06*
U.S. Cl. 329—133 **11 Claims**

1. A demodulator for a multilevel amplitude modulation system, said demodulator comprising a discriminator which receives demodulated multilevel baseband signals and recovers a plurality of binary digital signals according to a plurality of discriminating levels, said discriminator including:

a full-wave rectifying section which receives said multilevel baseband signals and produces first and second outputs, said first output being controlled by a first control signal with respect to the DC components thereof, said second output being full-wave rectified and controlled by a second control signal with respect to the DC components thereof;

an analog-to-digital converting means which receives said

first and second outputs and produces the recovered binary digital signals and an error signal; and



a controller which receives at least one of the recovered binary digital signals and said error signal and which produces said first and second control signals after logic operations.

4,553,103

RC-ACTIVE FILTERS

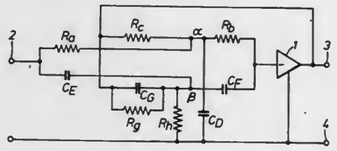
John M. Rollett, Suffolk, England, assignor to British Telecommunications, London, England

Filed Jun. 27, 1983, Ser. No. 508,187

Claims priority, application United Kingdom, Jun. 29, 1982, 8218770

Int. Cl.⁴ H03F *1/34*

U.S. Cl. 330—107 **18 Claims**



1. A second-order filter section comprising:

a single high-gain, high input impedance, inverting amplifier with low output impedance whose output terminal provides the output terminal of the section,

an input terminal, and

a twin-tee network, comprising resistance and capacitance elements and having:

a first resistance element (R_a),

a first capacitance element (C_E),

a first node (α) connected to the inverting input of the amplifier via a second resistance element (R_b), to the output terminal of the amplifier via a third resistance element (R_c), and to circuit ground via a second capacitance element (C_D); and

a second node (β) connected to the inverting input of the amplifier via a third capacitance element (C_F), to the output terminal of the amplifier via the parallel combination of a fourth capacitance element (C_G) and a fourth resistance element (R_g), and to circuit ground via a fifth resistance element (R_h),

the input terminal being connected to the first node (α) via the first resistance element (R_a) and to the second node (β) via the first capacitance (C_E).

4,553,104

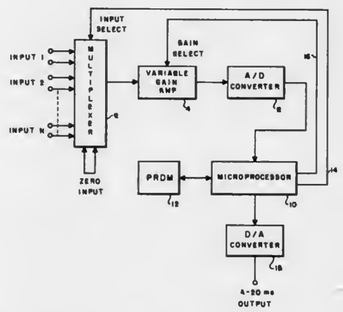
METHOD OF COMPENSATING AN AMPLIFIER SYSTEM HAVING A VARIABLE GAIN AMPLIFIER TO ACHIEVE A CONSTANT OVERALL SYSTEM SIGNAL GAIN AND AN APPARATUS UTILIZING THE SAME

Arthur M. Olsen, Pennsburg, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1984, Ser. No. 585,048

Int. Cl.⁴ H03G *3/20*

U.S. Cl. 330—129 **10 Claims**



4. A signal amplifier system comprising

analog-to-digital converter means for converting an analog input signal into a digital equivalent, said converter means having a plurality of selectable signal gains for correspondingly amplifying the analog input signal,

a non-volatile memory for storing data on the available signal gains of said converter means and on a desired overall signal gain of the amplifier system, and

digital computer means connected to said converter means and said memory for computing a digital output signal from said amplifier system representative of the analog input signal in accordance with the overall predetermined system signal gain and a control signal for selecting a signal gain of said converter means to maintain the overall predetermined system signal gain.

4,553,105

MULTISTAGE LINEAR AMPLIFIER FOR A WIDE RANGE OF INPUT SIGNAL LEVELS

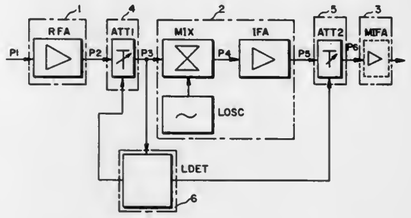
Susumu Sasaki, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 30, 1984, Ser. No. 575,275

Claims priority, application Japan, Jan. 31, 1983, 58-14407

Int. Cl.⁴ H03G *7/06;* **H04B** *7/08*

U.S. Cl. 330—145 **21 Claims**



1. A multistage linear amplifier, operatively connected to receive an input signal having a first level which varies over a wide range, comprising:

first stage amplifying means, operatively connected to receive the input signal, for linearly amplifying the input signal to produce a first amplified signal having a second level;

level compressor means, operatively connected to said first stage amplifying means, for compressing the second level to produce a compressed signal having a third level;

interstage amplifying means, operatively connected to said level compressor means, for amplifying the compressed signal to produce a second amplified signal having a fourth level;

level expander means, operatively connected to said interstage amplifying means, for expanding the fourth level to produce an expanded signal having a fifith level; and

level detecting means, operatively connected to said level compressor means and said level expander means, for detecting the third level and for controlling said level compressor means and said level expander means so that the expanding of said level expander means complements the compressing of said level compressor means and the input signal is amplified linearly to produce the expanded signal over all of the wide range of the first level.

4,553,106

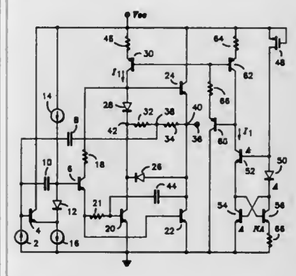
OUTPUT STAGE FOR AN OPERATIONAL AMPLIFIER

Robert L. Vyne, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 26, 1984, Ser. No. 593,165

Int. Cl.⁴ H03F *3/30, 1/30*

U.S. Cl. 330—272 **4 Claims**



1. An operational amplifier for providing load current to an output terminal comprising:

an input stage;

an output stage including first, second and third NPN output transistors each having base, emitter and collector terminals, said first NPN output transistor having an emitter coupled to said output terminal for conducting load current thereto and said second and third NPN output transistors having collectors coupled to said output terminal for sinking load current therefrom;

at least a first emitter follower transistor coupled between the output of said input stage and the base of said second PNP output transistor; and

a current source coupled to said output stage for supplying a thermal current thereto, said thermal current having a positive temperature coefficient.

4,553,107

CURRENT MIRROR CIRCUIT HAVING STABILIZED OUTPUT CURRENT

Atsushi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 2, 1983, Ser. No. 557,254

Claims priority, application Japan, Dec. 3, 1982, 57-212152

Int. Cl.⁴ H03F *3/68*

U.S. Cl. 330—288 **9 Claims**

1. A current mirror circuit responsive to a current input comprising:

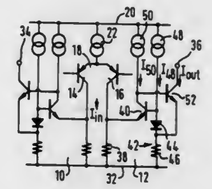
a first impedance path connected to said current input to receive an input current;

a first transistor whose emitter is connected to a junction of said first impedance path and said current input;

means for providing a voltage offset equivalent to the base-emitter voltage of said first transistor connected to the base of said first transistor;

a second impedance path connected in series with said voltage offset providing means;

a first current source connected to the collector of said first transistor for producing a first current of substantially constant value;



a second current source connected to said voltage offset providing means for producing a second current of substantially constant value; and

a second transistor whose base is connected to the collector of said first transistor, whose collector is connected to a current output, and whose emitter is connected solely and directly to the junction of said voltage offset providing means and said second impedance path for producing a feedback loop to output a collector current which is substantially linearly related to said current input.

4,553,108

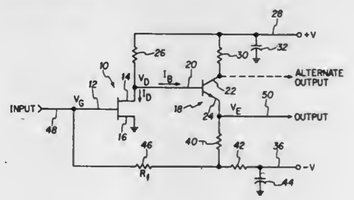
LOW NOISE FEEDBACK AMPLIFIER

James P. Young, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 9, 1983, Ser. No. 550,271

Int. Cl.⁴ H03F *3/16*

U.S. Cl. 330—300 **5 Claims**



1. A feedback signal amplifier consisting of:

a gallium arsenide field effect transistor having gate, source and drain electrodes;

a bipolar transistor having base, collector and emitter electrodes, said drain electrode of said field effect transistor being directly connected to said base electrode of said bipolar transistor;

means for providing a feedback from the emitter of said bipolar transistor to the gate of said field effect transistor; and

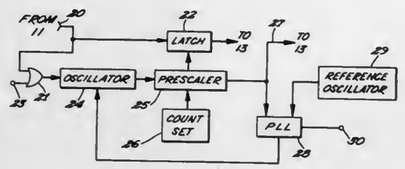
means for biasing said field effect transistor and said bipolar transistor for operation in a signal amplifying range.

4,553,109

DIGITAL DATA ACQUISITION APPARATUS

James R. Hyatt, Madison, Wis., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Jan. 3, 1984, Ser. No. 567,927
Int. Cl.⁴ H03L *7/00*
U.S. Cl. 331—25 **15 Claims**



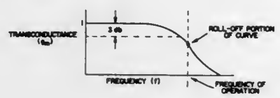
1. In digital data acquistion apparatus of the type wherein a waveform is periodically sampled and having means for providing periodic data acquisition signals at predetermined intervals and means responsive to said data acquisition signals for sampling said waveform at said predetermined intervals, the apparatus having at least a first operation mode wherein said sampling is initiated on the occurrence of a trigger event, the improvement for increasing the effective sample rate of the apparatus wherein said data acquisition signals providing means is initiated, in said first operation mode, by said trigger event and including means for generating a first data acquisition signal at an interval after a trigger event that is shorter than said predetermined intervals and for generating subsequent data acquisition signals at said predetermined intervals.

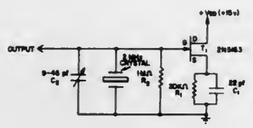
4,553,110

JFET REFLECTION OSCILLATOR

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,240
Int. Cl.⁴ H03B *5/12, 5/36*
U.S. Cl. 331—116 FE **11 Claims**





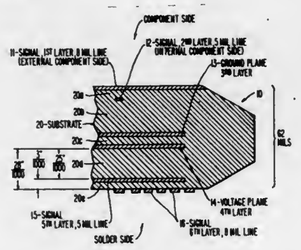
6. An oscillator circuit comprising:
a network including a resistor in parallel with a capacitor;
a field effect transistor having a source, a drain and a gate, said source being connectable to one side of a power supply through said network and said drain being connectable to the other side of the power supply;
a tuned circuit connected to said gate; and
said field effect transistor operating in the roll-off portion of its transconductance versus frequency curve, its operating point frequency on said curve being established by said tuned circuit and capacitance reflected from the source to the gate.

4,553,111

PRINTED CIRCUIT BOARD MAXIMIZING AREAS FOR COMPONENT UTILIZATION

Michael Barrow, Laguna Hills, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 30, 1983, Ser. No. 527,841
Int. Cl.⁴ H01P *5/00*
U.S. Cl. 333—1 **5 Claims**



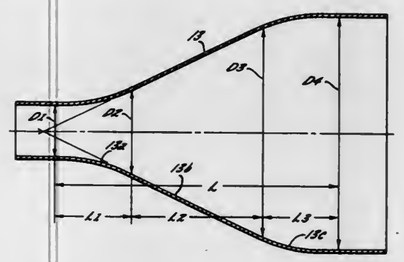
1. A method for enhancing component density and component interconnectability by making a multi-layer printed circuit board of less than 69 mils thickness with multiple layers of microstrip transmission lines on each side of two central conductive planes, where each microstrip transmission line provides a 100 ohm±10% characteristic impedance and enables maximum connectivity per square unit surface area, for mounted components, including the steps of:
(a) separating two conductive copper planes by a central dieletric substrate of from 1–5 mils thickness having a dielectric constant of 4.2–5.0 to form an upper central conductive plane and a lower central conductive plane;
(b) placing, over said upper central and under said lower central conductive planes, an upper and a lower internal plane of microstrip transmission lines having a width/thickness ratio of 5 mils/0.7 mils, and separated by a first upper and lower internal dielectric substrate of 25 mils thickness from said respective upper and lower central conductive planes, and wherein said upper and lower microstrip transmission lines run in a direction at right angles to each other;
(c) placing an upper and lower outer dielectric substrate, each of 3 mils thickness, over said upper and under said lower internal planes of said microstrip transmission lines;
(d) depositing, over and under said respective upper and lower outer dielectric substrates, an upper and lower external plane of longitudinal microstrip transmission lines in which said upper external plane of microstrip lines run in a direction at right angles to said lower external plane of transmission lines, and where each external microstrip transmission line has a width/thickness ratio of 8 mils/1.4 mils;
(e) depositing conductive land areas on said upper external plane using a 16 mil grid separation pattern between centers of said conductive land areas;
(f) forming transverse interconnecting conductive paths between selected ones of said land areas, of said microstrip transmission lines, and of said upper central and lower central conductive planes.

4,553,112

OVERMODED TAPERED WAVEGUIDE TRANSITION HAVING PHASE SHIFTED HIGHER ORDER MODE CANCELLATION

Saad S. Saad, Chicago, and Charles M. Knop, Lockport, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed May 31, 1983, Ser. No. 499,318
Int. Cl.⁴ H01P *1/162*
U.S. Cl. 333—21 R **18 Claims**



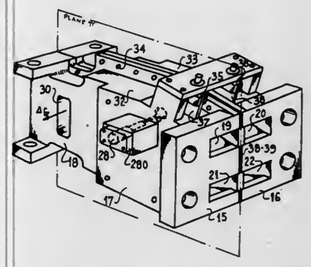
1. A phased-overmoded, tapered waveguide transition for coupling two waveguides for the propagation of desired microwave signals therethrough, said waveguides being displaced along a longitudinal direction and having different transverse dimensional cross-sections, the inside walls of said transition tapering from one of said waveguide cross-sections to the other, said transition comprising
a central section which is tapered with a constant slope along its longitudinal section and two end sections which are tapered with a variable slope resulting in a curvature along the longitudinal section, each of said end sections having the same slope as said central section where the respective end sections join with said central section,
one of said end sections and at least a portion of the other of said end sections being over-moded and, therefore, giving rise to higher order modes of the desired microwave signals propagated therethrough,
said linearly tapered central section shifting the phase of higher order modes generated along one end section of the transition so that at least the major portion of such higher order modes is cancelled by higher order modes generated along the other end section of the transition.

4,553,113

COMPACT DIFFERENTIAL COUPLER FOR MONOPULSE RADAR

Pierre Blanchard, Paris, France, assignor to Thomson CSF, Paris, France

Filed Apr. 5, 1982, Ser. No. 365,386
Claims priority, application France, Apr. 10, 1981, 8107205
Int. Cl.⁴ H01P *5/20*
U.S. Cl. 333—122 **8 Claims**



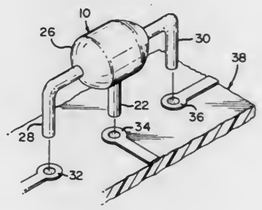
1. A compact differential coupler for a monopulse radar constituted by four magic T's, comprising two metal members which are symmetrical with respect to a plane π and which are assembled facing one another along said plane of symmetry π and are machined in such a way that their assembly constitutes the four magic T's, two of which are of the bent branch type, the third is of the coaxial load type and the fourth of the fork type said coaxial load type magic T being connected between said two bent branch type magic T's, and said bent branch type magic T's being connected to said fork type magic T.

4,553,114

ENCAPSULATED PRINTED CIRCUIT BOARD FILTER

James M. English, Coplay; Nicholas L. Gurreri, York, and John P. Kling, Mt. Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 29, 1983, Ser. No. 527,041
Int. Cl.⁴ H03H *7/01;* **H05K** *1/16*
U.S. Cl. 333—182 **8 Claims**



1. A filter assembly for providing RF/EMI filtering on a circuit board comprising:
a cylindrical filter element having a bore therethrough;
a conductive pin extending through the bore of said filter element and secured in electrical and mechanical engagement with the inner surface thereof, said conductive pin having end portions which extend outwardly from said bore said conductive pin end portions arranged so as to electrically engage respective conductive paths on said circuit board; and
a ground pin having a first leg portion disposed about and substantially encircling the exterior surface of said filter element and in electrical and mechanical engagement therewith, and a second leg portion which extends outwardly from said first end and in electrical engagement with another respective conductive path on said circuit board.

4,553,115

MOLDED CASE CIRCUIT BREAKER WITH SINGLE SOLENOID OPERATOR FOR RECTILINEAR HANDLE MOVEMENT

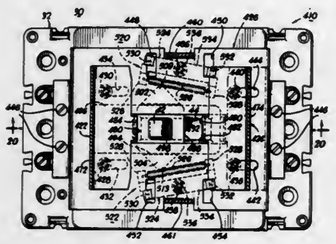
Kurt A. Grunert, Beaver, and Walter K. Huffman, Towamencin Township, Montgomery County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,054
Int. Cl.⁴ H01H *75/00*
U.S. Cl. 335—14 **11 Claims**

1. An electrical circuit breaker comprising
a pair of separable electrical contacts,
operating means for moving said contacts into a CLOSED position and into an OPEN position, said operating means including a manually engageable handle, and
solenoid actuated means for moving said handle between an OFF position corresponding to said OPEN position of said contacts and an ON position corresponding to said CLOSED position of said contacts, said solenoid actuated means comprising a single coil solenoid, a first bistable mechanical latch having first and second stable states for alternately placing said handle in said ON position or in said OFF position upon successive actuations of said

solenoid, and a second bistable mechanical latch having said first and second stable states,

said first bistable mechanical latch being movable into said first state or said second state in response to the movement of said handle and including a first stop engageable with a first component of said solenoid actuated means when said first bistable mechanical latch is in said first state and being



disposed out of engagement with said first component when said first bistable mechanical latch is positioned in said second state,

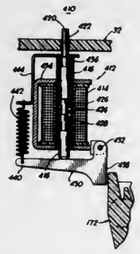
said second bistable mechanical latch being engageable with said first component in said first state and being disposed out of engagement with said first component when positioned in said second state.

4,553,116

MOLDED CASE CIRCUIT BREAKER WITH RESETTABLE COMBINED UNDERVOLTAGE AND MANUAL TRIP MECHANISM

Dante Bagalini, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,058
Int. Cl.⁴ H01H *73/00*
U.S. Cl. 335—20 **13 Claims**



1. An undervoltage trip mechanism comprising

an electrical coil having an elongated centrally disposed aperture,

an elongated compression spring,

a first elongated ferromagnetic plunger,

a second elongated ferromagnetic plunger, and

manually engagable reset means, said first and second plungers being serially disposed in said aperture and being movable relative to each other into and out of physical engagement along the longitudinal axis of said aperture,

said compression spring being disposed between and in engagement with said plungers for biasing said first plunger out of physical engagement with said second plunger,

said coil when energized by a voltage greater than a predetermined voltage being capable of supplying an electromagnetic force across abutting portions of said plungers of a magnitude greater than the magnitude of the spring force applied by said compression spring to maintain said first plunger in physical engagement with said second plunger,

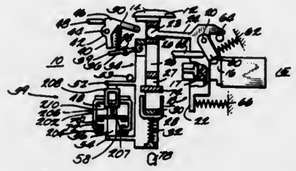
said reset means achieving the reengagement of said first plunger with said second plunger subsequently to the disengagement thereof and comprising an elongated manually engagable and depressible reset button in engagement with one longitudinal end of said first plunger.

4,553,117

PNEUMATIC TIMING ATTACHMENT FOR AN ELECTROMAGNETIC DEVICE

Allin W. Schubring, Milwaukee, Wis., assignor to Square D Company, Palatine, Ill.

Filed Sep. 2, 1983, Ser. No. 528,907
Int. Cl.⁴ H01H *7/03*
U.S. Cl. 335—61 **18 Claims**



1. A timer attachment for an electromagnetically operated device wherein the device includes:

a housing having a front end, a member movable along an axis perpendicular to the front end and an electromagnet coupled to the member for moving the member along the axis from a deenergized position to an energized position in response to the deenergization and energization of the electromagnet, said timer attachment comprising:

an adapter assembly including an adapter part secured at the front end of the housing and an actuator secured to a front end of the member and movable along the axis by the member, said actuator having an end spaced forwardly of a front side of the adapter part,

a base assembly having a base part mounted on a front side of the adapter part, said base assembly including:

a bellcrank having a pivot mounted on a front side of the base part, said bellcrank having a first arm extending from the pivot to an end that is engagable with the end of the actuator for rotating the bellcrank in a first direction when the electromagnet is energized and a second arm extending from the pivot at an angle to the first arm, a spring reacting on the bellcrank and urging the bellcrank toward rotation in a second direction that is opposite the first direction, a spring biased lever having a portion engagable with the bellcrank for supplying an additional force for rotating the bellcrank in the second direction, and

a timer assembly including a housing part that is mountable in either of two selected positions on the base part, said timer assembly including:

a slider having a first portion coupled with an end on the second arm when the housing is mounted on the base in one of the two positions and a second portion that is coupled with the end of the second arm when the housing is mounted on the base in the other of the two positions and movable along an axis in response to rotation of the bellcrank when the housing is mounted on either of the two positions,

an operator mounted in the housing for reciprical movement along the axis,

a guide and a spring providing a lost motion connection between the slider and the operator for translating movement between the slider and operator, and

a timing mechanism having a member movable from a first position to a second position during a timed interval,

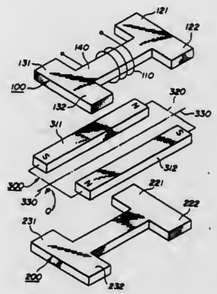
a latch mechanism including a pair of latch levers each having a central portion rotatable about a pivot with a first of the latch levers having an arm extending from its associated pivot to an end that is coupled to the operator and the second of the latch levers having an arm extending from its associated pivot to an end that is spaced from the timing member when the timing member is at the first position and is engaged by the timing member when the timing member is at the second position, said latch levers each having a second arm extending from its associated pivot to ends that are positioned to mutually engage each other when the timing member is at its first position, and a spring positioned between the arms of the levers urging the levers in the same rotary direction.

4,553,118

POLARIZED ELECTROMAGNETIC DEVICE

Shunichi Agatahama, Osaka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 1, 1982, Ser. No. 384,051
Claims priority, application Japan, Jun. 15, 1981, 56-92860; Jun. 15, 1981, 56-92861; Jun. 29, 1981, 56-101732
Int. Cl.⁴ H01H *51/22*
U.S. Cl. 335—79 **4 Claims**



1. A polarized electromagnetic device comprising:

a core made of a soft-magnetic material and wound with a magnetizing winding for generating magnetic flux in a first direction in response to excitation by a first voltage polarity and for generating magnetic flux in a second direction opposite to said first direction in response to excitation by a second voltage polarity opposite said first voltage polarity, said core including a pair of separated pole pieces;

a yoke, made of the same material as said core, being separated from said core to define an air gap, said yoke having facing-surfaces opposingly disposed to said pair of pole pieces of said core through said air gap so as to be magnetically connected with said core through said air gap to form a first closed magnetic path of magnetic flux generated by said magnetizing winding; and

an armature including a body having a permanent magnet, both magnetic poles of said permanent magnet being disposed in said air gap so as to form second and third closed magnetic paths with said core through said air gap and with said yoke through said air gap, respectively, said armature mounted so as to pivotally move said both magnetic poles between said pole pieces of said core and said facing-surfaces of said yoke; wherein

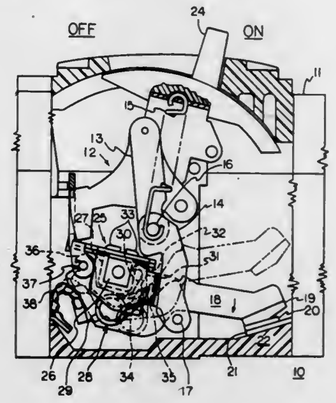
when said magnetizing winding is excited to generate magnetic flux in said first direction, the magnetic flux in said first closed magnetic path opposes magnetic flux in said third closed path so as to allow said magnetic poles of said permanent magnet to be attracted to said core, and when said magnetizing winding is excited to generate magnetic flux in said second direction, the magnetic flux in said first closed magnetic path opposes magnetic flux in said second closed path so as to allow said magnetic poles of said permanent magnet to be attracted to said yoke.

4,553,119

ELECTRIC CIRCUIT BREAKER HAVING REDUCED ARC ENERGY

Roger N. Castonguay, Terryville, and Charles L. Jencks, Avon, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 10, 1984, Ser. No. 609,053
Int. Cl.⁴ H01H *77/10*
U.S. Cl. 335—147 **5 Claims**



1. A molded case circuit breaker comprising:

a trip unit for sensing current flow through a pair of fixed and movable contacts and for activating a linked toggle operating mechanism to interrupt current flow through the contacts for generating an arc voltage across said contacts;

a contact carrier for supporting a movable contact arm having said movable contact at one end and a pivot at an opposite end;

a contact spring mounted on said contact carrier and arranged on said movable contact arm to provide a first force on said movable contact arm at a first predetermined distance from said pivot when a first amount of current flows through said contacts and becomes displaced to a second predetermined distance from said pivot to provide a second force on said movable contact arm when a second amount of current flows between said contacts, said second current being larger than said first current and said second force being larger than said first force to thereby control the magnitude of said arc voltage.

4,553,120

SELF-CENTERING DEFLECTION YOKE ASSEMBLY

Robert Dam, Lombard, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 26, 1984, Ser. No. 686,316
Int. Cl.⁴ H01F *7/00*
U.S. Cl. 335—210 **10 Claims**

1. A self-centering magnetic deflection yoke assembly for use with a cathode ray tube comprising:

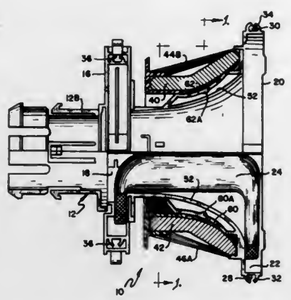
an annular housing symmetrical about a longitudinal axis and including inner recessed portions and an outer tapered portion;

a horizontal deflection coil symmetrically aligned about the longitudinal axis of the annular housing and positioned within the inner recessed portions thereof;

an annular magnetic core positioned about the outer tapered portion of the annular housing;

a vertical deflection coil symmetrically wound around portions of said magnetic core; and

a plurality of spaced, resilient members positioned on the outer tapered portion of said annular housing and in contact with portions of an inner surface of said magnetic core around which said vertical deflection coil is not



wound for compensating for variations in the dimensions of said magnetic core in maintaining radial alignment between said magnetic core and the longitudinal axis of said housing and for permitting rotational displacement of the combination of said magnetic core and said vertical deflection coil relative to said horizontal deflection coil.

4,553,121

CORE STRUCTURE FOR ELECTROMAGNETIC DEVICES

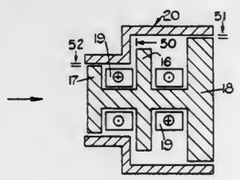
Frank M. Logie, London, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Apr. 25, 1984, Ser. No. 603,779

Claims priority, application United Kingdom, May 13, 1983, 8313170

Int. Cl.⁴ H01F *7/08*

U.S. Cl. 335—261 **1 Claim**



1. An electromagnetic device comprising a core or stator structure, an armature movable relative to the core structure, at least one pole piece defined by said core structure, an energising winding wound about a part of the core structure and which when supplied with electric current drives magnetic flux through said pole piece, said pole piece defining a pole face between which and the armature magnetic flux can traverse an air gap extending in the direction of relative movement of the armature, and core structure and a return air gap defined between the armature and core structure, characterised in that said return air gap extends in a direction substantially at right angles to the direction of relative movement of the core structure and armature, the core structure carrying a further winding for driving flux in the same direction through said pole piece as said first mentioned winding, the device including a further return air gap for the flux produced by said further winding, said further return air gap also extending in a direction substantially at right angles to the direction of relative movement of the core structure and armature.

4,553,122

CORED MAGNET WITH LIGHTWEIGHT LARGE AREA POLE PIECES

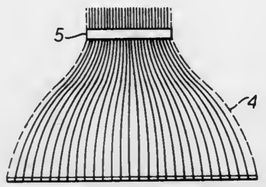
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Middlesex, England

Filed Feb. 9, 1984, Ser. No. 578,510

Claims priority, application United Kingdom, Feb. 25, 1983, 8305303

Int. Cl.⁴ H01F *7/20*

U.S. Cl. 335—296 **14 Claims**



1. A magnet comprising a magnetic core extending between opposed pole pieces, at least one of which pole pieces comprises a plurality of wires of magnetic material, corresponding ends of which are spaced from each other by spacing means such that their end surfaces form a planar array which faces the opposite pole piece, the density of the end surfaces per unit area being sufficiently great for the field within the space between the pole pieces to be substantially free of variations corresponding to the positions of said end surfaces, the parts of the wires which are adjacent the core being held in close contact with each other and with the core.

4,553,123

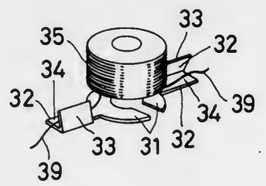
MINIATURE INDUCTOR

Minoru Tamada; Takashi Kumokawa, and Ichiji Shimamoto, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 3, 1982, Ser. No. 414,666

Int. Cl.⁴ H01F *15/10*

U.S. Cl. 336—83 **11 Claims**



1. An inductor, comprising:

a closed magnetic circuit core comprising an outer core for substantially enclosing a coil space, said outer core having defined therein a plurality of windows; said closed magnetic circuit core further comprising an inner coil core located in said coil space;

at least one coil in said coil space wound around said inner coil core; said coil comprising at least one wire having a plurality of lead wires, each lead wire extending out of said coil space through a respective one of said windows; and

a plurality of plates, each plate being mounted to said closed magnetic circuit core and comprising a respective terminal extending outward from a respective one of said windows in said outer core, each said respective terminal having first and second portions and being bendable for holding said respective lead wire between said first and second portions;

each said respective terminal comprising a solder layer on at least one of said first and second portions for being melted when said respective lead wire is held between said first and second portions and for connecting said first and second portions to each other and to said respective lead wire;

said wire of said coil having a heat-meltable coating material for insulating said wire and for melting from said lead wires of said wire when said solder layer of each said terminal is melted.

4,553,124

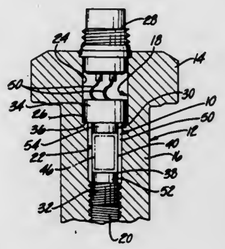
STRAIN GAUGE TRANSDUCER ASSEMBLY

Raymond W. Malicki, Dearborn Heights, Mich., assignor to Carron & Company, Inkster, Mich.

Continuation of Ser. No. 532,666, Sep. 16, 1983, abandoned. This application May 10, 1985, Ser. No. 733,396

Int. Cl.⁴ G01L *1/22*

U.S. Cl. 338—5 **11 Claims**



1. A strain gauge transducer assembly comprising: a bolt having a central axis and including a head having a counterbored hole extending therethrough along the central axis of the bolt; said counterbored hole including a threaded inner portion, an intermediate portion extending outwardly from the threaded inner portion, an outer portion of a larger size than the intermediate portion, and an outwardly facing surface that extends between the intermediate and outer portions in a perpendicular relationship to the central axis; a transducer received within the counterbored hole of the bolt; said transducer including a body having a central axis coaxial with the central axis of the bolt and including a threaded inner end threaded into the inner portion of the counterbored hole; said transducer body also including an outer end having an enlarged head; said enlarged head having an annular seat that faces toward the inner end thereof extending perpendicular to the central axis thereof in engagement with the outwardly facing surface of the counterbored hole in the bolt; the transducer body also including an intermediate portion having a web that connects the inner and outer ends thereof and has oppositely facing parallel surfaces; said web having a thickness in the range of about 0.020 to 0.060 of an inch and also having a width that is a plurality of times the thickness thereof and less than the diameter of the threaded inner end; at least two strain gauges each of which is mounted on one of the surfaces of the web to sense deformation of the web; a wire passage through one end of the transducer body; and wires connected to the strain gauges and extending through the wire passage to permit sensing of the web deformation and stress of the bolt.

4,553,125

HIGH VOLTAGE RESISTANCE ELEMENT

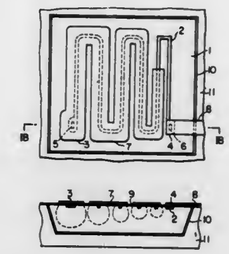
Yoshitaka Sugawara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 434,057

Claims priority, application Japan, Oct. 14, 1981, 56-162651

Int. Cl.⁴ H01C *3/10*

U.S. Cl. 338—283 **4 Claims**



1. A resistance element capable of withstanding a high voltage, comprising:

(a) a resistive region of a first conductivity type formed in a major exposed surface of a single crystal island of a semiconductor integrated circuit, said island having a second conductivity type opposite to that of said resistive region; and

(b) said resistive region being reciprocatively folded by at least one and a half turns in a planar pattern;

(c) wherein pitch at which said resistive region is folded is progressively decreased as viewed in the direction in which an extent of a depletion layer formed within said single crystal island upon application of a voltage between both ends of said resistive region is decreased.

4,553,126

RESISTANCE HEATING ELEMENT

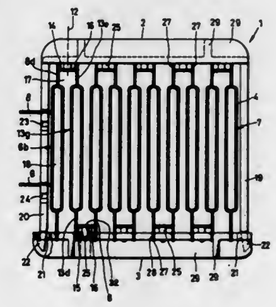
Manfred Brandstäter, and Alfred Könnemann, both of Wuppertal, Fed. Rep. of Germany, assignors to Grote & Hartmann GmbH & Co., KG, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,413

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328078

Int. Cl.⁴ H01C *10/14*

U.S. Cl. 338—319 **29 Claims**



1. A resistance heating element comprising:

an integral one-piece sheet metal stamped part strip disposed between bearing elements fabricated from electrically insulating material;

said one-piece strip having a longitudinal meander pattern;

said one-piece strip being bent to provide at least first and

second segments connected by arch means to position said first segment in front of said second segment;

each of said first and second segments having a transverse meander pattern;

said first segment having first and second electrical terminal means to complete a conductive path from said first terminal means through said first segment and said arch means to said second segment, and then back from said second segment through said arch means and said first segment to said second terminal means;

said longitudinal and transverse meander patterns providing said conductive path;

bearing means for securing said first and second segments to the bearing elements, said bearing means being bearing pins constructed as part of said one-piece strip; and

slide means for freely projecting through openings in the bearing elements to permit expansion and shrinkage of said first and second segments while maintaining said first and second segments in position between the bearing elements, said slide means being slide pins constructed as part of said one-piece strip;

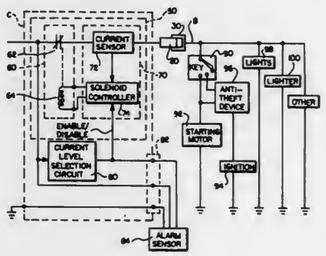
whereby the one-piece construction of said strip avoids damage thereof during use when subjected to forced movements, jarrings and vibrations.

4,553,127

BATTERY LOCK ANTI-THEFT SYSTEM

Darrell E. Issa, 7544 Richmond Rd., Oakwood Village, Ohio 44146

Filed Jun. 30, 1983, Ser. No. 509,333
Int. Cl.⁴ B60R *25/04*
U.S. Cl. 340—64 **18 Claims**



3. An access control for a vehicle having an electrical system including a battery and a starter motor, the access control system comprising:

(a) current passing means for selectively passing current limited to a first, preselected current level which is insufficient to operate the starter motor and current of a second current level which is sufficient current to operate the starter motor, the first current level being sufficiently high to operate vehicle electrical devices which draw less current than the starter motor, the current passing means including:

(1) a normally closed switch means for passing current of the second level between the battery and the starter motor, whereby the starter motor is normally able to draw sufficient current to operate, and

(2) a current limiting means for limiting current passed to the starter motor generally to the first current level, the current limiting means including:

(i) a current sensor for sensing current passed to the starter motor, and

(ii) means for opening the normally closed switch means in response to the sensed current exceeding the first current level, whereby the passage of current to the starter motor through the normally closed switch means is stopped in response to the passed current exceeding the first current level, and then allowing the normally closed switch means to close after the current level has dropped below the first current level,

the current passing means being connected electrically between the battery and the starter motor;

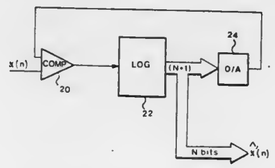
(b) current level selection means for selective enabling the current passing means to pass one of the first and second current levels, the current level selection means selectively enables and disables the current limiting means from opening the normally closed switch, whereby when the current passing means is enabled, the vehicle operates normally and, when the current passing means is disabled, the vehicle operates as if it has a low battery.

4,553,128

ANALOG-TO-DIGITAL CONVERTER

Daniel Pilost, LaGaude, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 25, 1983, Ser. No. 555,313
Claims priority, application European Pat. Off., Dec. 28, 1982, 82430046.1
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 AD **3 Claims**



1. An analog-to-digital converter for converting each sample of an analog signal into an N bit long rounded-off digital value expressed in two's complement code by means of a dichotomous process, said converter including:

a two-input comparator the first input of which is fed with the sample of the signal to be digitally converted;

a logic device connected to said comparator and providing an (N+1) bits long word;

a digital-to-analog converter connected to said logic device and converting said (N+1) bit long word into an analog value which analog value is applied to the second input of said converter;

said logic device including, initiating means for initially forcing each of the (N+1) bits produced by the logic device to the binary "1" value and second means for initiating an N step sequential operation of the logic device, in which the output of the logic device in sequence starting with the highest order bit first is conditionally determined based on the value provided by the comparator while The immediately adjacent lower order bit provided by the logic device is unconditionally forced to a binary "0" value and each of said conditionally determined bits remains unchanged for the remainder of the N step sequence; and,

means for taking the N most significant bits obtained at the output of said logic device, at the end of the N steps long conversion process.

4,553,129

DATA TRANSMISSION BY SUBRATE GROUPING

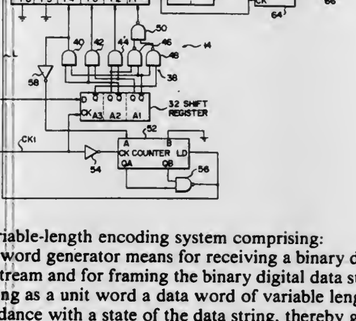
John B. McNesby, Mesa, Ariz., and Erik K. Walker, Denver, Colo., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Aug. 5, 1983, Ser. No. 520,669
Int. Cl.⁴ H03K *13/24*
U.S. Cl. 340—347 DD **18 Claims**

1. In a data transmission system, apparatus for converting a serial subrate binary data stream into a binary signal at the line transmission rate, comprising:

first means for periodically accepting a data byte from said subrate data stream with data in other than a first bit position;

second means for expanding said data byte by one additional bit by adding a control bit in the first bit position of said accepting means;



third means for recirculating said expanded data byte through said accepting means a predetermined number of times;

fourth means for causing said one additional bit in the first bit position to be one of a binary 1 and 0 in the first expanded byte outputted from said first means and applied to said third means and to be the other of a binary 1 and 0 for recirculated bytes for the same expanded byte; and

fifth means for serially reading out said bits of said expanded data byte at the line transmission rate.

4,553,130

VARIABLE-LENGTH ENCODING-DECODING SYSTEM

Masaaki Kato, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 6, 1984, Ser. No. 586,743
Claims priority, application Japan, Mar. 11, 1983, 58-40372
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 340—347 DD **10 Claims**

6. A variable-length encoding system comprising:

(a) data word generator means for receiving a binary digital data stream and for framing the binary digital data stream by using as a unit word a data word of variable length in accordance with a state of the data string, thereby generating a data word string, said data word of variable length being any one of three 2-bit data and two 3-bit data in accordance with the state of said digital data string, said 2-bit data being first three data words constituted by a first combination of three 2-bit data selected from a second combination of four 2-bit data (0,0), (0,1), (1,0) and (1,1), said 3-bit data being second data words produced such that a remaining one of said second combination is used as upper bits of each of said 3-bit data and is combined with each of two 1-bit data as a lower bit of said 3-bit data;

(b) first logic circuit means, connected to said data word generator means, for sequentially receiving the data words and performing a predetermined logic operation for converting each one of the data words such that a given data word of said data words which is subjected to encoding is encoded to a corresponding one of 4-bit code words when the given data word corresponds to one of the 2-bit data, and the given data word is encoded to a corresponding one of 6-bit code words when the given data word corresponds to one of the 3-bit data, and producing a code word string;

(c) second logic circuit means, connected to said first logic circuit means, for detecting a specific data array (1,0,1) included in the code words generated from said first logic circuit means and converting the specific data array to another data array; and

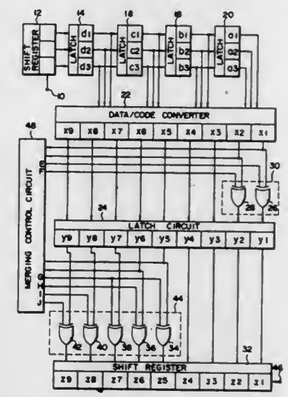
(d) flip-flop circuit means, connected to said second logic circuit means, for producing a recording signal which has a waveform subjected to alternate transition between first and second signal levels in correspondence to positions of logic "1" data in a code word bit of stream and which is directly recorded on a predetermined magnetic recording medium.

4,553,131

METHOD AND APPARATUS FOR ENCODING A BINARY DATA STREAM INTO A BINARY CODE STREAM

Naoki Endoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,869
Claims priority, application Japan, Mar. 31, 1983, 58-53539
Int. Cl.⁴ H03K *13/24*
U.S. Cl. 340—347 DD **10 Claims**



1. A method for encoding a binary data stream into a binary code stream comprising the following steps of:

dividing a binary data stream into data codes each of 3 bits;

determining which groups, each data word belongs to first, second or third group;

encoding unconditionally a data word into a binary code word of 9 bits when the data word belongs to the first group, encoding a data word into a binary code word of 9 bits in consideration of preceding or succeeding two data words when the data word belongs to the second group, encoding a data word into a binary code word of 9 bits in consideration of a preceding data word and a succeeding data word when the data word belongs to the third group;

inverting the bit codes at predetermined bit locations in each code word and one preceding code word according to a pattern of code bits "0" and "1" in both said code word to merge said code words so that in the code word stream the code bits 37 0" from 5 to 19 are consecutively arrayed between two adjacent code bits "1"; and

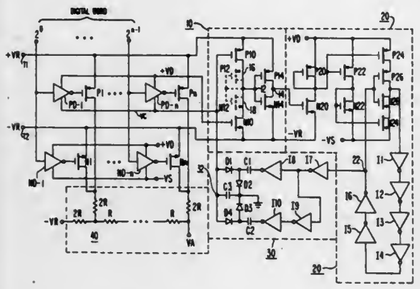
converting each of said code words into a binary code stream.

4,553,132

APPARATUS FOR MATCHING FET SWITCHES AS FOR A VIDEO DIGITAL-TO-ANALOG CONVERTER

Andrew G. F. Dingwall, Bridgewater, and Victor Zazzu, Montvale, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 24, 1983, Ser. No. 460,656
Int. Cl.⁴ H03K *13/03*
U.S. Cl. 340—347 DA **18 Claims**



1. Apparatus for converting binary digital values, each consisting of a plurality of binary bit values, to analog levels, comprising:

a source of first and second reference potentials;

means for applying a first control potential;

a resistive network having a plurality of input terminals each corresponding to a respectively different one of the binary bit values of said binary digital values and having an output terminal for providing analog levels representing said binary digital values;

a plurality of first field-effect transistors of a first conductivity type having respective gate electrodes and conductive channels for selectively coupling said first reference potential to respective ones of the input terminals of said resistive network, the conductivity of the channel of each transistor being controllable in response to said first control potential applied to its gate electrode;

a plurality of second field-effect transistors of a second conductivity type complementary to said first conductivity type having respective gate electrodes and conductive channels for selectively coupling said second reference potential to respective ones of the input terminals of said resistive network, the conductivity of said channel of each transistor being controllable in response to a second control potential applied to its gate electrode;

means for developing said second control potential including:

bridge circuitry coupled to said first and second reference potential applying means and responsive to said first and second control potentials for developing a signal indicative of the relative conductivities of the respective channels of said first and second field-effect transistors; and

variable voltage generating means responsive to the signal provided by said bridge means for developing a variable potential for application as said second control potential to adjust the conductivity the channels of said second field-effect transistors to achieve a desired relationship between the conductivities of the corresponding channels of said first and second field-effect transistors; and

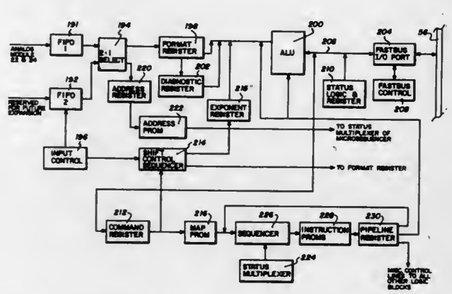
means coupled to said means for applying said first control potential and to said means for developing said second control potential and responsive to the binary bit values of said binary digital values for selectively applying said respective first and second control potentials to the gate electrodes of corresponding ones of said first and second field-effect transistors.

4,553,133

SERIAL FLOATING POINT FORMATTER

Robert D. Peterson, Plano, and Wayne A. Penner, Farmers Branch, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1982, Ser. No. 417,922
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 340—347 DD **13 Claims**



1. In a system where seismic data is detected, then preamplified, a floating point formatter comprising:

first means for receiving fixed point serial data from the preamplifier;

scaling means connected to said first means for removing bias added by said preamplifier;

second means for shifting said serial digital data a predetermined number of bits;

third means for determining an exponent representing the number of bits said serial digital data has been shifted by said second means;

combining means for combining said shifted serial digital data and said exponent to produce a floating point number; and

prestacking means connected to said combining means for dividing said floating point number by powers of the number two.

4,553,134

ELECTRICAL ALARM SYSTEM FOR INSTALLATION IN A WINDOW CASING

William Holt, Claymont, Del., assignor to Alarm Accessory Ltd., Claymont, Del.

Filed Dec. 23, 1982, Ser. No. 452,734
Int. Cl.⁴ G08B *13/08*
U.S. Cl. 340—545 **8 Claims**



1. An electrical alarm system for installation in a window having a casing comprising a rod inserted into a tube in telescope fashion, said rod having a compression spring affixed thereto, said spring extending into said tube and affording spring loading means for removably affixing said rod and tube within said casing of said window such that both ends of said rod and tube are removably held against said casing by the force of said compression spring but are not otherwise fastened thereto, said rod having sensor means located adjacent to or within said rod and being electrically unconnected to either of said rod or tube, said sensor means being connected in closed or open circuit to alarm means,

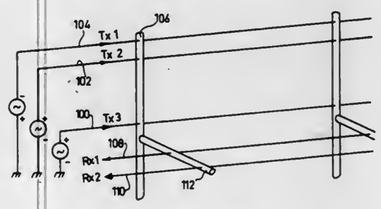
whereby when said spring loaded rod and tube assembly installed in said window is jarred or moved, said sensor means opens or closes the circuit and the alarm means sounds.

4,553,135

ELECTROMAGNETIC FIELD PERIMETER DETECTION APPARATUS

Ami Grynberg, Neve Monosson, and Ya'Acov Ronen, Rishon Le-Zion, both of Israel, assignors to Israel Aircraft Industries Ltd., Israel

Filed Apr. 5, 1982, Ser. No. 365,324
Claims priority, application Israel, Apr. 5, 1981, 62589
Int. Cl.⁴ G08B *13/24*
U.S. Cl. 340—564 **29 Claims**



1. Detection apparatus comprising:

at least one receiving conductor for sensing an electromagnetic field;

at least three mutually spaced elongate transmitting conductors each coupled to a source of electromagnetic energy and cooperating to produce a desired electromagnetic field along the length of said receiving conductor;

alarm indicating circuitry coupled to said at least one receiving conductor for providing an alarm indication in response to a sensed disturbance of said electromagnetic field,

said source of electromagnetic energy for each transmitting conductor comprising an AC voltage source of selected amplitude and phase, the selection of amplitude and phase determining the configuration of the overall electromagnetic field produced by said transmitting conductors, there being a non-zero phase relationship between the voltage sources of at least two of said transmitting conductors.

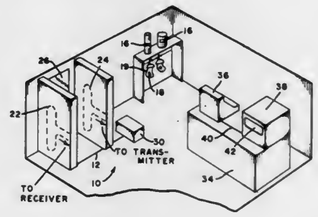
4,553,136

AMORPHOUS ANTIPILFERAGE MARKER

Philip M. Anderson, III, Chatham; Ryusuke Hasegawa, Morristown, and Robert M. VonHoene, Basking Ridge, all of N.J., assignors to Allied Corporation, Morris Township, N.J.

Filed Feb. 4, 1983, Ser. No. 463,743
Int. Cl.⁴ G08B *13/26*
U.S. Cl. 340—572 **11 Claims**

1. For use in a magnetic theft detection system, a marker adapted to generate magnetic fields at frequencies that are harmonically related to an incident magnetic field applied within an interrogation zone and have selected tones that provide said marker with signal identity, said marker comprising an elongated, ductile strip of amorphous ferromagnetic material having a value of magnetostriction near zero and retaining its signal identity under stress.

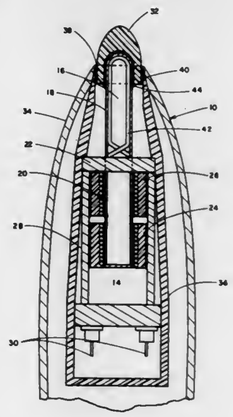


4,553,137

NON-INTRUSIVE ICE DETECTOR

John E. Marxer, Apple Valley, and John W. Kowles, Minneapolis, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 1, 1983, Ser. No. 499,819
Int. Cl.⁴ G08B *19/02*
U.S. Cl. 340—582 **19 Claims**



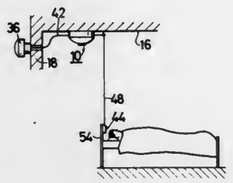
17. In an ice detector comprising a vibrating element, said vibrating element having a front portion, vibrating means suitably disposed with respect to the vibrating element for exciting the vibrating element into vibration, and means for sensing a shift of the frequency of vibration of said vibrating element resulting from a change of mass of said vibrating element due to accumulating thereon, the improvement comprising a case enclosing and supporting the ice detector, an aperture in said case, cap means rigidly affixed to the front portion of the vibrating element, said cap means being exposed to the air stream through said aperture and formed to be substantially conformal to such surface, the cap means being made of substantially non-compliant material and disposed to be substantially non-intrusive to the air stream with respect to such surface, and isolation means disposed between the aperture and the cap means for substantially water sealing the case interior and substantially vibrationally isolating the cap means from the case.

4,553,138

FIRE ALARM SYSTEM

Yoshitaka Nakanishi, 12-9, Yawata 5-chome; Hiroshi Nakanishi, 16-18, Yawata 6-chome, both of Ichikawa-shi, Chiba-ken, and Takashi Nakanishi, 1-11, Kandaizumi-cho, Chiyoda-ku, Tokyo, all of Japan

Filed Mar. 23, 1982, Ser. No. 360,907
Claims priority, application Japan, Sep. 28, 1981, 56-152227
Int. Cl.[4] G08B *17/00, 25/00*
U.S. Cl. 340—584 **5 Claims**



1. A fire alarm system comprising a first unit mounted on a wall or ceiling surface of a room of a building and a second unit located more conveniently to an occupant of the room,

said first unit comprising fire sensing means, acoustic alarm means controlled by said fire sensing means, and power supply means for supplying power to said fire sensing means and said alarm means, and

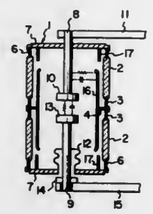
said second unit comprising a switch box, an on-off control switch in said switch box and electrically connected with said alarm means of said first unit additionally to control said alarm means, and vibration means provided in said switchbox and also directly actuated by said control switch, said vibration means comprising a vibration type buzzer mounted in said switch box and operable to produce an audible alarm signal and to vibrate said switch box to provide a tactile signal when actuated.

4,553,139

VACUUM MONITOR FOR VACUUM INTERRUPTER

Shuzo Tanigaki, Tokyo, and Masayuki Sakaki, Numazu, both of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed Jun. 22, 1983, Ser. No. 506,662
Claims priority, application Japan, Jul. 5, 1982, 57-116505; Aug. 17, 1982, 57-142388
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—626 **17 Claims**



1. A vacuum monitor for a vacuum interrupter provided with high-voltage conductors connected to the interrupter, said vacuum monitor comprising:

(a) detector terminal means disposed near the high voltage conductors and non-galvanically coupled to the high voltage conductors for receiving impulsive electromagnetic wave signals superimposed upon an alternating voltage, said impulsive signals being generated by electric discharge caused when vacuum pressure increases within the vacuum interrupter; and

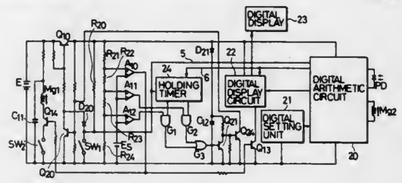
(b) detecting means connected to said detector terminal means for electrically processing the impulsive electromagnetic wave signals received through said detector terminal means and for outputting an alarm signal, indicative of abnormal vacuum pressure within the vacuum interrupter, when the voltage level of the processed impulsive electromagnetic wave signal exceeds a predetermined reference value.

4,553,140

POWER SUPPLY CONTROL CIRCUIT

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,427
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—636 **7 Claims**



1. A power supply control circuit for controlling supply of power from a battery to a battery-operated circuit, the control circuit comprising:

manually operable power switch means;

means responsive to manual operation of said power switch means for supplying power from said battery to said battery-operated circuit as long as said power switch means is manually operated;

a time-measuring circuit having means for starting time-measuring upon termination of manual operation of said switch means and producing a time-measuring signal for a predetermined time period that begins with the starting of time-measuring;

a holding circuit having means for supplying power from said battery to said battery-operated circuit while said time-measuring signal is being produced; and

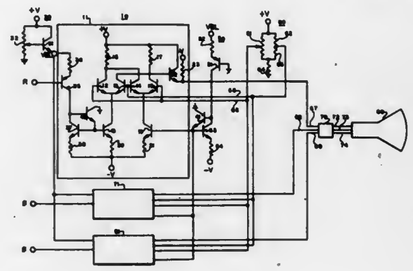
a detection circuit for detecting the battery voltage and reducing said predetermined time period as the battery voltage goes down.

4,553,141

PICTURE CONTROL FOR RGB MONITOR

Michael D. Flasza, Schaumburg, and David K. Nienaber, Des Plaines, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 21, 1982, Ser. No. 420,759
Int. Cl.[4] G09G *1/28*
U.S. Cl. 340—703 **10 Claims**



1. A color monitor for developing a color display in response to input R G and B color signals, each of which color signals includes both chrominance information and luminance information, said display being produced by a color picture

tube and exhibiting color balance and color black level determined by the amplitude of said input color signals and the characteristics of said color picture tube, comprising:

a plurality of inputs for receiving said input color signals and a corresponding plurality of outputs for supplying said color signals to said picture tube;

a plurality of matched gain blocks coupled between said inputs and said outputs for amplifying said color signals, each said gain block including balanced multiplier means for enabling simultaneous control of the levels of said color signals in said gain blocks without upsetting said color balance and said black level of said display; and

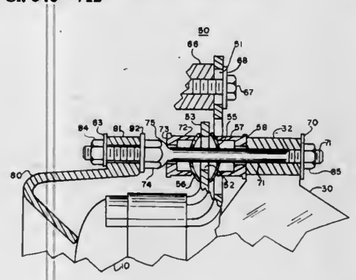
picture control means applying a common gain control voltage to said gain blocks.

4,553,142

APPARATUS FOR MOUNTING A TOUCH CONTROL PANEL ASSEMBLY TO A CRT

Paul Strauss, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 20, 1982, Ser. No. 420,147
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—712 **10 Claims**



1. A support system for a CRT touch panel assembly having accurately aligned energy sources and receptors producing a grid of crossing energy paths adjacent to the faceplate of a CRT that includes mounting elements permanently affixed thereto, said mounting elements being subject to variations in location and including surfaces that are not coplanar comprising:

a lightweight rigid frame for holding said sources and said receptors in proper alignment; and

positioning means for mounting said rigid frame to said mounting elements of said CRT in fixed position, said positioning means including means for compensating for said variations in location of said mounting elements and means for compensating for said surfaces not being coplanar and thereby effectively eliminating stress in said rigid frame when said rigid frame is mounted to said CRT.

4,553,143

LOW COST PANEL DISPLAY ADDRESSING STRUCTURE

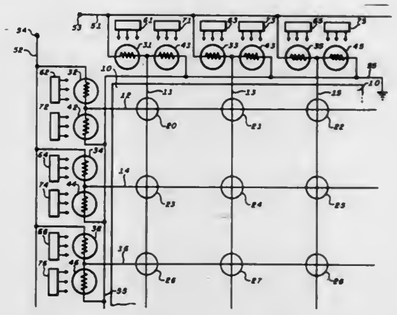
Claude D. Lustig, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 12, 1982, Ser. No. 397,657
Int. Cl.[4] G09G *03/20*
U.S. Cl. 340—719 **5 Claims**

1. A flat panel display comprising:

a scanning discharge light source including: coupling light sources for sequentially illuminating a plurality of coupling photoresistors, said sequential illumination being substantially in synchronism with addressing pulses applied to said coupling photoresistors, and decoupling light sources for sequentially illuminating a plurality of decoupling photoresistors at a predetermined interval subsequent to illumination of said coupling photoresistors;

photoresistor divider means on a first substrate including a plurality of conductive output leads on said first substrate and further including at least one terminal adapted to receive said addressing pulses, for coupling said addressing pulses through selected coupling photoresistors to selected ones of said plurality of conductive output leads upon selective illumination by said coupling light source, wherein said photoresistor divider means comprises said plurality of coupling photoresistors each coupled at a first end to said terminal means and at a second end to each of said plurality of decoupling photoresistors, each of said



decoupling photoresistors is coupled between ground potential and a corresponding one of said plurality of coupling photoresistors, each of said plurality of conductive output leads is coupled to a junction between each of said coupling photoresistors and decoupling photoresistors; and

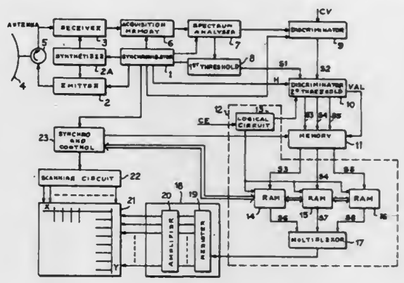
optical display means on a second substrate having a plurality of conductive input leads coupled to said plurality of conductive output leads for providing optical signals in response to said addressing signals.

4,553,144

GROUND SURVEILLANCE DOPPLER RADAR

Charles Houdard, and Guy Le Parquier, both of Boulogne-Billancourt, France, assignors to LMT-Radio Professionnelle, Boulogne-Billancourt, France

Filed Nov. 23, 1982, Ser. No. 443,935
Claims priority, application France, Nov. 24, 1981, 81 21958
Int. Cl.[4] G01S *13/52*
U.S. Cl. 343—7.7 **10 Claims**



1. A ground surveillance Doppler radar of the type comprising a transmitter for transmitting recurrent pulses of given frequency; a receiver for receiving these pulses subject to a Doppler modulation and for supplying an incoming signal formed from video frequency carrier pulses of the same modulation; storage and selection means for isolating in said incoming signal at least one group of recurrent video frequency

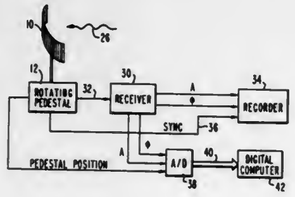
pulses corresponding to a given distance gate; spectral analysis means for forming a signal indicating the Doppler modulation lines of the pulses from said group of pulses; a first threshold circuit for discriminating these lines from the noise and for supplying a signal indicating the presence or absence of moving targets in the distance gates; a display means making it possible to locate these targets; and wherein said radar further comprises a discriminator making it possible to classify the detected targets as a function of their speed into classes representing relative degrees of danger; a second threshold circuit receiving k successive binary informations relative to each distance gate for each input signal from the discriminator and the threshold circuit, making it possible to store these k informations (k being an integer equal to or greater than 2) and supplying a binary signal indicating the presence or absence of a target for each class with probability of 1 among k (1 being an integer equal to or less than 2); a storage circuit making it possible to independently store the informations contained in the signals relative to each class for each distance gate and to supply an output signal containing the informations for all the distance gates in sequential series for each class; a fluorescent screen of the matrix type comprising first and second electrode systems; and a scanning control circuit controlling the first system of electrodes, the second system of electrodes being controlled by the output signal of the storage circuit, which thus makes it possible to locate the targets and distinguish those representing the greatest danger by an overbrightness and a flashing or flickering on the screen.

4,553,145

METHOD OF FORMING THE FAR-FIELD BEAM PATTERN OF AN ANTENNA

Gary E. Evans, Trappe, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 31, 1984, Ser. No. 575,643
Int. Cl.[4] H01Q *3/00*
U.S. Cl. 343—360 **7 Claims**



1. A method of determining the far-field beam pattern of an antenna from antenna field measurements taken at a short range, said method comprising the steps of:

causing said antenna to receive radar signaling having a carrier wavelength λ from a source located at a short range R away from said antenna;

rotating said antenna beam pattern through a rotational angle about the line-of-sight of said source of radar signaling;

taking measurements of the field of said antenna at predetermined angular increments during said rotation thereof; and

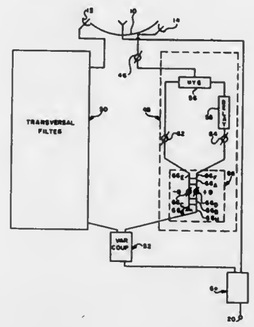
forming the far-field beam pattern of said antenna by deriving discrete values thereof for corresponding angle increments along said angular rotation, each discrete value derived as a function of a multiplicity of antenna field measurements taken about the angle increment corresponding thereto, said multiplicity being substantially less than the full spectrum of antenna field measurements corresponding to said angular rotation; whereby method steps of transforming the near-field beam pattern measurements to an antenna aperture distribution to remove phase curvature effects and inverse transforming the corrected aperture distribution to form the desired far-field beam pattern are avoided.

4,553,146

REDUCED SIDE LOBE ANTENNA SYSTEM

Jesse L. Butler, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 19, 1983, Ser. No. 543,669
Int. Cl.[4] G01S *3/16, 3/28*
U.S. Cl. 343—379 **15 Claims**



1. An antenna system comprising:

A. a first directional antenna;

B. an array of auxiliary antennas, said array being directed in the direction of a single side lobe of the pattern of said first antenna; and

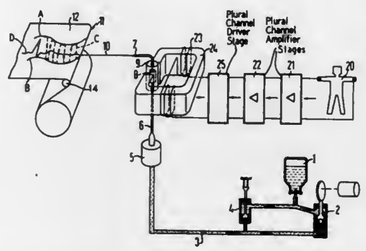
C. a network for combining the signal of said first antenna with the signals of said array so as to reduce energy transmitted or received by said first antenna in the direction of said side lobe.

4,553,147

METHOD AND A LIQUID JET PRINTER FOR GENERATING AT LEAST TWO SEPARATELY DISPOSED POINTS ON A RECORDING MEDIUM

Bruno Slettenmark, Jaerfaella, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,805
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237797
Int. Cl.[4] G01D *15/18, 9/40, 9/00*
U.S. Cl. 346—75 **16 Claims**



1. In a method for generating at least two separately disposed points on a recording medium of a liquid jet printer, wherein writing fluid is continuously supplied from a nozzle in the direction toward the recording medium with a prescribable speed and, for the purpose of changing between the points, the nozzle is moved at high speed through an angle corresponding to the spacing between the points, the improvement of:

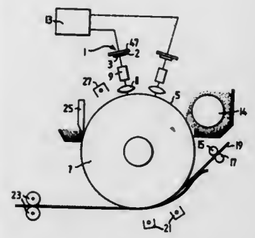
moving the nozzle through said angle upon transition from the one point to the other point according to such a selected time function such that the writing fluid always moves substantially in the direction toward the other point on said recording medium after departing the nozzle, as soon as the nozzle moves away from said one point for preventing printing of writing fluid on said recording medium between said two points.

4,553,148

OPTICAL PRINTER FOR LINE-BY-LINE IMAGE FORMING

Herbert Behrens, Neuenburg; Jürgen Schmitt, Stadland; Rainer Marx; Helmut Heidemann, both of Wilhelmshaven, and Gerhard Schipper, Rechtsupweg, all of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,399
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1982, 3223031
Int. Cl.[4] G01D *9/42, 15/14*
U.S. Cl. 346—107 R **17 Claims**



1. A printer including a carrier having a light sensitive surface and being driven in a feed direction and an optical printing head for a line-by-line image forming of design and text information; said optical printing head having a plurality of light emitting elements arranged in a row and each having a light emitting surface, said light emitting surfaces being spaced from one another; and an optical device for reproducing the light, emitted by the light emitting elements, in one line on said light sensitive surface; the improvement wherein said light emitting surface of each said light emitting element has, parallel to said feed direction, a dimension several times the dimension, in the feed direction, of image dots to be reproduced on said light sensitive surface, and further wherein said optical device has an image reproducing first optical lens means and a second optical lens means situated between said first optical lens means and said light sensitive surface for reducing the image of the light emitting surface of each light emitting element solely in a direction parallel to said feed direction to a required light dot size on said light sensitive surface.

4,553,149

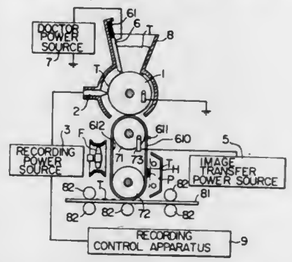
ELECTROSTATIC IMAGE RECORDING METHOD AND APPARATUS

Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 102,832, Dec. 12, 1979, Pat. No. 4,446,471. This application Sep. 22, 1983, Ser. No. 534,700
Claims priority, application Japan, Dec. 20, 1978, 53-160643; May 29, 1979, 54-66621
Int. Cl.[4] G01D *15/06*
U.S. Cl. 346—153.1 **9 Claims**

1. A recording method comprising the steps of:

bringing a multi-stylus electrode, to which a pattern signal is applied, into contact with toner having a charge retention property, forming a charge distribution in said toner on a donor, corresponding to said pattern signal to be applied to said multi-stylus electrode, utilizing the charge injection into said toner by said multi-stylus electrode, bringing an image transfer medium capable of having a dielectric layer on an electrically conductive surface thereof into contact with said toner having said charge distribution



corresponding to said pattern signal to form a visible pattern on said image transfer medium, and

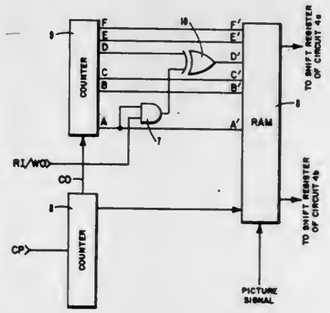
transferring said visible pattern to a recording member which can be brought into contact with said image transfer medium.

4,553,150

DRIVING CIRCUIT FOR AN ELECTROSTATIC RECORDING HEAD

Shunsuke Katahira, Hino, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 21, 1983, Ser. No. 515,763
Claims priority, application Japan, Aug. 26, 1982, 57-148251
Int. Cl.[4] G01D *15/06*
U.S. Cl. 346—154 **8 Claims**



1. A driving circuit for generating control voltages corresponding to a picture image to be recorded by an electrostatic recording head, said driving circuit comprising:

a plurality of pin electrodes grouped into a plurality of multi-electrode arrays positioned on the recording head in the order A_1, B_1, A_2, B_2. . . A_k, B_k. . . , where A designates an odd array and B designates an even array;

first pin electrode control means for supplying to said pin electrodes of said odd arrays control voltages corresponding to the image to be recorded;

second pin electrode control means for supplying to said pin electrodes of said even arrays control voltages corresponding to the image to be recorded;

a plurality of control electrodes, each positioned adjacent at least one associated pin electrode;

control electrode controlling means for supplying to said control electrodes control voltages corresponding to the image to be recorded;

a control electrode order circuit for controlling said control electrode controlling means; and

a pin electrode order control circuit for controlling said first pin electrode control means and said second pin electrode control means, said pin electrode order control circuit comprising:

i. a random access memory (RAM) for storing the recording picture signals;

ii. an upper counter and a lower counter for designating addresses for writing said picture signal information or reading said picture signal information from said random access memory; and

iii. an address control circuit coupled to said upper counter and said random access memory of said picture signal information in accordance with said recorded image order;

said control electrode order circuit and said pin electrode order control circuit comprising order control circuit means for controlling said first pin electrode control means, said second pin electrode control means, and said control electrode controlling means so that the control voltages are supplied to said arrays and said control electrodes in the following order, alternating between odd and even arrays:

$A_{N+1}, B_1 \ldots A_{2N}, B_N,$

$A_1, B_{N+1} \ldots A_N, B_{2N},$

$A_{3N+1}, B_{2N+1} \ldots A_{4N}, B_{3N},$

$A_{2N+1}, B_{3N+1} \ldots A_{3N}, B_{4N},$

where N is an integer greater than or equal to 2.

4,553,151

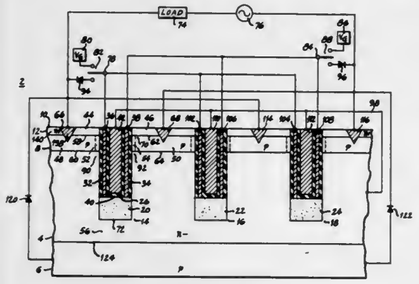
BIDIRECTIONAL POWER FET WITH FIELD SHAPING

Herman P. Schutten, Milwaukee, Wis.; Robert W. Lade, Fort Myers, Fla., and James A. Benjamin, Waukesha, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1982, Ser. No. 421,931

Int. Cl.⁴ H01L *29/10, 29/78, 29/06, 27/02*

U.S. Cl. 357—23.4 **19 Claims**



1. A bidirectional FET, comprising:

a first source region of one conductivity type semiconductor material;

a first channel region of opposite conductivity type semiconductor material forming a junction with said first source region;

a single drift region of said one conductivity type semiconductor material forming another junction with said first channel region;

a second channel region of said opposite conductivity type semiconductor material forming a junction with said drift region;

a second source region of said one conductivity type semiconductor material forming a junction with said second channel region;

notch means extending between and separating said first and second source regions and said first and second channel regions, and extending into said drift region;

insulated gate means in said notch means proximate said first and second channel regions and adapted for application of an electrical potential for producing electric fields of sufficient intensity to invert the conductivity type in said first and second channel regions;

whereby upon application of voltage of either polarity to said first and second source regions, electric current can flow in a respective corresponding direction between them under control of said electrical potential of said gate means, the conductive current path through said drift region traversing along one side of said notch means then around the end thereof then along the other side of said notch means, said FET having an OFF state in the absence of said electric gate potential, said single drift region around said notch means supporting OFF state blocking voltage in both directions;

a field shaping region of said opposite conductivity type semiconductor material forming a junction with said drift region and extending symmetrically thereacross opposite both said channel region junctions with said drift region; and

steering means for referencing said field shaping region to substantially the same potential as one of said source regions for one polarity voltage applied to said first and second source regions, and to substantially the same potential as the other of said source regions for the other polarity voltage applied to said first and second source regions,

such that in one polarity of said OFF state, depletion from said first channel region junction and from said field shaping region junction extend towards each other through said drift region to straighten field lines in the latter and prevent curvature crowding of field lines at the edges of said notch means,

and such that in the other polarity of said OFF state, depletion from said second channel region junction and from said field shaping region junction extend towards each other through said drift region to straighten field lines in the latter and prevent curvature crowding of field lines at the edges of said notch means.

4,553,152

MONOLITHIC INFRARED RAY CHARGE TRANSFER ELEMENT

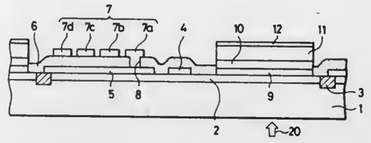
Kazuo Nishitani, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 548,755

Claims priority, application Japan, Nov. 6, 1982, 57-195441

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—24 **6 Claims**



1. A monolithic infrared ray charge transfer element comprising: a semiconductor substrate, a semiconductor layer formed on said semiconductor substrate, a charge transfer element consisting of Schottky barrier transfer gates formed directly on a first area of said semconductor layer, signal line conductors contacting said gates, and an infrared detector element directly formed on a second area of said semiconductor layer; wherein said semiconductor layer is formed of a material selected from the group consisting of gallium and silicon and said infrared ray detecting element is formed of a layer of cadmium telluride and of a material selected from the group consisting of mercury cadmium telluride and lead tin telluride, said material is formed on said layer of cadmium telluride which in turn is formed on said second area of said semiconductor layer.

4,553,153

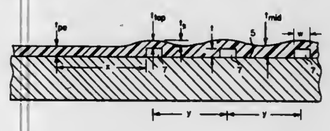
PLANARIZING LAYER FOR SEMICONDUCTOR SUBSTRATES SUCH AS SOLID STATE IMAGERS

William C. McColgin, Pittsford, and Laurel J. Pace, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,154

Int. Cl.⁴ H01S *3/00*

U.S. Cl. 357—30 **13 Claims**



1. In a device comprising a semiconductor substrate including an array of circuit elements having a non-planar topography, the device including a planarizing layer permanently covering said circuit elements;

the improvement wherein said planarizing layer comprises a composition prepared from a monomer that produces, on a test substrate comprising a planar surface from which projects a topography of measurable height t, undulations in the top surface of said planarizing layer that have a height t_1 less than or equal to said height t of the topography of said substrate, less one-half the height t_{pe} of the planarizing layer measured on a smooth, planar portion of said substrate.

4,553,154

LIGHT EMITTING DIODE ELECTRODE

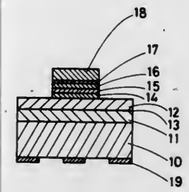
Katsumi Tsujii, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 337,289, Jan. 5, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 681,710

Claims priority, application Japan, Jan. 13, 1981, 56-4494; Jan. 13, 1981, 56-4495

Int. Cl.⁴ H01L *23/48*

U.S. Cl. 357—71 **12 Claims**



1. An electrode adapted for a semiconductor device, comprising:

a first layer being disposed on the semiconductor device and comprising material selected from the group consisting of Au-Be and Au-Zn for providing an ohmic contact with the semiconductor device;

a second layer of TiN adjacent said first layer;

a third layer of Ti adjacent said second layer;

a fourth layer of Al adjacent said third layer of Ti; and an external lead for said semiconductor device bonded to said Al layer.

4,553,155

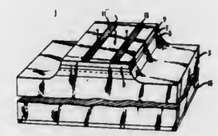
HIGH SPEED BIAS-FREE PHOTODETECTOR

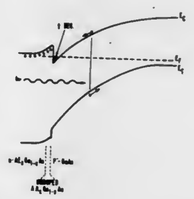
Chung Y. Chen, Scotch Plains, and Alfred Y. Cho, Summit, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 389,778, Jun. 18, 1982,. This application Mar. 22, 1984, Ser. No. 592,724

Int. Cl.⁴ H01L *27/14*

U.S. Cl. 357—30 **17 Claims**





1. A photodetector comprising: a first layer comprising a first semiconductor having a first conductivity type; a second layer comprising a second semiconductor having a second conductivity type; a semi-insulating substrate; said first and second layers forming a p-n junction and being disposed on said substrate; the first of said layers having a first electrode for connection to an external electrical circuit; and a second electrode on said substrate for connection to an external electrical circuit.

4,553,156

CIRCUIT AND PROCESS FOR CHROMINANCE DECODING WITH ANALOG OR DIGITAL DELAY LINE IN A TELEVISION SYSTEM OF A PAL OR SECAM TYPE

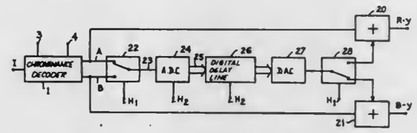
Patrick Douziech, Rives sur Fures, and Michel Imbert, Seyssin, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 8, 1983, Ser. No. 559,607

Claims priority, application France, Dec. 10, 1982, 82 20775

Int. Cl.⁴ H04N *9/50, 9/47, 9/40*

U.S. Cl. 358—24 **5 Claims**



1. A process for manufacturing a chrominance decoding circuit, comprising the following steps;

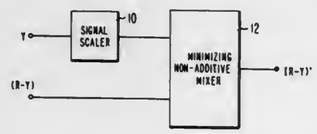
using a conventional chrominance decoding circuit formed more especially from an integrated circuit whose two terminals are intended to be connected to a conventional analog delay line and whose two output terminals are intended to supply the chrominance signals B−Y and R−Y,

not connecting the analog delay line,

connecting the outputs of the circuit to a digital-delay line matching circuit comprising:

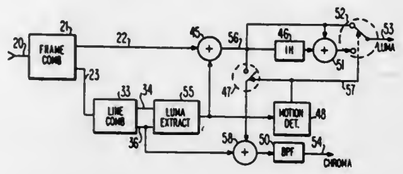
a first channel connecting the first output terminal to a first input of a first summator,
a second channel connecting the second output terminal to a first input of a second summator,
a third channel comprising successively:
a switch with two inputs and one output in which each input is connected alternately to each of the outputs of the integrated circuit, at a frequency H1,
an analog-digital convertor actuated at a frequency H2,
a digital delay line actuated at the frequency H2,
a digital-analog convertor,
a switch with one input and two outputs, each output being connected to a second input of the first and second summators at frequency H1, the outputs of the summators supplying signals B--Y and R--Y.

4,553,157
APPARATUS FOR CORRECTING ERRORS IN COLOR SIGNAL TRANSITIONS
Robert N. Hurst, Jr., Hopewell Borough, and Robert A. Dischert, Burlington Township, Burlington County, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Dec. 5, 1983, Ser. No. 558,373
Int. Cl.[4] H04N *9/535*
U.S. Cl. 358—27 **14 Claims**



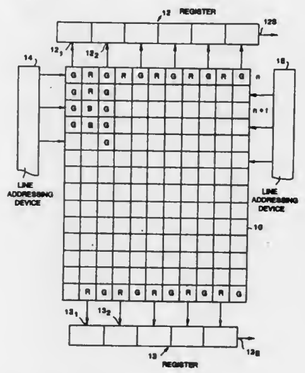
1. In a color television receiver for processing composite color video signals inclusive of a wide bandwidth luminance signal component and a relatively narrow bandwidth chrominance signal component, said color television receiver including: chrominance signal processing means responsive to said chrominance signal component for developing a plurality of color information signals of color difference signal form, each of lesser bandwidth than said wide bandwidth luminance signal; a matrix having a plurality of color difference signal input terminals for algebraically combining said wide bandwidth luminance signal with respective color difference signals appearing at said plurality of color difference signal input terminals to form a set of color information signals or primary color signal form; an image reproducing means having a plurality of primary color signal input terminals for reproducing a color image in response to respective color information signals of primary color signal form appearing at said plurality of primary color signal input terminals; apparatus for correcting the color information signal input to one of said signal input terminals, said correcting apparatus comprising:
means responsive to said wide bandwidth luminance signal for providing a wide bandwidth color limit signal proportional to said luminance signal;
signal combining means accepting a color information signal and said color limit signal as input signals and providing an output signal which has instantaneous amplitude values proportional to the least of the instantaneous amplitude values of its input signals; and
means for utilizing said output signal to form a corrected color information signal for delivery to said one signal input terminal.

4,553,158
CIRCUITRY FOR CORRECTING MOTION INDUCED ERRORS IN FRAME COMB FILTERED VIDEO SIGNALS
Alfonse Acampora, Staten Island, N.Y., assignor to RCA Corporation, Princeton, N.J.
Filed Feb. 6, 1984, Ser. No. 577,505
Int. Cl.[4] H04N *9/535, 5/21*
U.S. Cl. 358—31 **9 Claims**



1. Apparatus for correcting interframe motion induced signal distortion in comb filtered luminance signal derived from a frame-to-frame comb filter, which filter provides comb filtered luminance signal and comb filtered chrominance signal, comprising:
means responsive to said comb filtered chrominance signal for extracting wide band interframe image motion induced luminance cross components therefrom;
signal combining means responsive to the comb filtered luminance signal and said extracted wide band luminance cross components for inserting said cross components into the comb filtered luminance signal to produce corrected luminance signal;
a luminance output terminal;
an interline luminance comb filter responsive to said corrected luminance signal for removing interframe image motion induced chrominance cross components therefrom; and
means for coupling said interline luminance comb filter to said luminance output terminal.

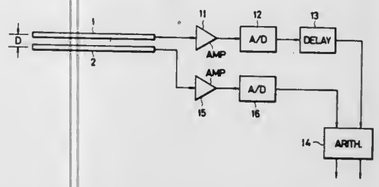
4,553,159
COLOR TELEVISION CAMERA COMPRISING A TRICHROME MATRIX FILTER
Jean-Yves Moraillon, Paris, France, assignor to Thomson-Brandt, Paris, France
Filed Feb. 16, 1983, Ser. No. 467,050
Claims priority, application France, Feb. 19, 1982, 82 02792
Int. Cl.[4] H04N *9/07*
U.S. Cl. 358—44 **3 Claims**



1. A color television camera comprising:
a trichrome matrix filter covering a photosensitive matrix;

the matrix filter having vertical bands and horizontal lines defining adjacently positioned color elements; elements of a first color located in all alternating bands; second and third color elements intermixed in second remaining alternating bands in a repeated pattern; and a first charge coupled register for reading the first alternating bands on a line by line basis; and a second charge coupled register for reading the second alternating bands on a line by line basis; wherein all stages of first register include at any instant of time data corresponding to elements of the first color; and further wherein all stages of the second register include at sequential instants of time, data corresponding to elements of the second and third colors, respectively.

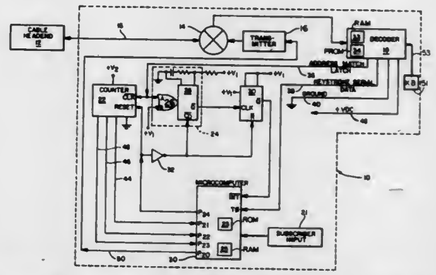
4,553,160
PICTURE DATA READING DEVICE
Tadashi Yamamoto, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1983, Ser. No. 487,663
Claims priority, application Japan, Apr. 23, 1982, 57-67332
Int. Cl.[4] H04N *1/46*
U.S. Cl. 358—75 **7 Claims**



1. A picture data reading device, comprising:
an optical system for scanning an original line by line and for forming the image of picture data of a scanned position at a plurality of positions;
one-dimensional image sensors respectively arranged at the image forming surfaces of said optical system, for subjecting picture data to photo-electric conversion for each line;
means for binary-encoding picture signals outputted by said one-dimensional image sensors; and
delay means for receiving, from among said picture signals thus binary-encoded, a picture signal other than one which is latest in reading in an auxiliary scanning direction, and for delaying said picture signal thus received by a time corresponding to the number of lines corresponding to a reading position difference between said picture signal and said latest picture signal.

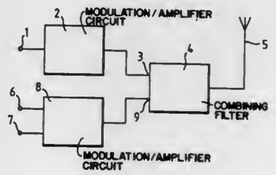
4,553,161
UPSTREAM DATA PACKET TIME SLOT SYNCHRONIZATION WITH DOWNSTREAM VBI FOR TWO-WAY CATV SYSTEM
Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Continuation-in-part of Ser. No. 560,028, Dec. 9, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 648,569
Int. Cl.[4] H04N *7/10, 7/14*
U.S. Cl. 358—86 **16 Claims**

1. A time sloted aloha two-way CATV system wherein video signals having a vertical rate signal component are transmitted downstream on a cable from a headend to a plurality of subscriber terminals and each subscriber terminal may in turn transmit upstream data packets to said headend on said cable, said system comprising:
signal detection means for detecting said vertical rate signal component and generating a timing reference signal in response thereto; and
signal processing means coupled to said signal detection means and responsive to said timing signal for dividing the next succeeding raster scan field into a plurality of equal time slots in predetermined time relation to said timing



signal in which said data packets may be inserted for upstream transmission.

4,553,162
TELEVISION TRANSMITTER
Geoffrey C. Peel, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 7, 1983, Ser. No. 549,117
Claims priority, application United Kingdom, Dec. 17, 1982, 8236036
Int. Cl.[4] H04W *7/04, 5/38*
U.S. Cl. 358—144 **3 Claims**



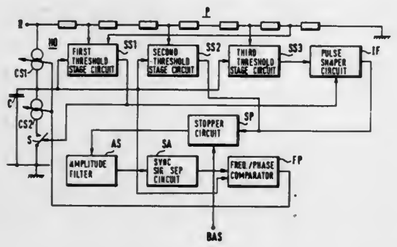
1. A television transmitter comprising a vision signal amplifier, a sound signal amplifier, a sound and vision combining filter, means for generating two frequency modulated sound carrier signals, and means for feeding the frequency modulated sound carrier signals to the sound signal amplifier, characterized in that the sound signal filter in the combining filter is narrow band and that to reduce the effect of the amplitude modulation due to frequency modulation produced in the combining filter, said television transmitter further comprises means for amplitude modulating the two frequency modulated sound carrier signals in the opposite sense to that produced by said combining filter prior to or within said sound signal amplifier.

4,553,163
INTEGRATED CIRCUIT FOR COLOR TELEVISION RECEIVERS
Wolfgang Sauer, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Continuation of Ser. No. 651,647, Sep. 17, 1984, abandoned, which is a continuation of Ser. No. 389,516, Jun. 17, 1982, abandoned. This application Feb. 27, 1985, Ser. No. 705,864
Claims priority, application European Pat. Off., Jul. 8, 1981, 81105291.9
Int. Cl.[4] H04N *5/04*
U.S. Cl. 358—158 **6 Claims**

1. An integrated circuit for color television receivers, comprising a voltage- or current-controlled horizontal sweep generator (HO), an amplitude filter (AS), a synchronizing-signal separating circuit (SA) and a frequency/phase comparator (FP) which serves to synchronize the horizontal sweep genera-

tor (HO), with said generator being a sawtooth generator containing a single capacitor (C) and a first threshold stage circuit (SS1) having two fixed thresholds, said integrated circuit further comprising:

a second and a third threshold stage circuit (SS2, SS3) each being supplied with the sawtooth signal on the input side, comprising each time one threshold which, approximately 2μs prior to the reaching of the upper or the lower peak value of the sawtooth signal, is being passed thereby;



a pulse shaper circuit (IF) coupled to the output of said third threshold stage circuit (SS3) which pulse shaper circuit reduces the duration of the output pulse thereof to about the duration of the output pulse of said second threshold stage circuit (SS2), and

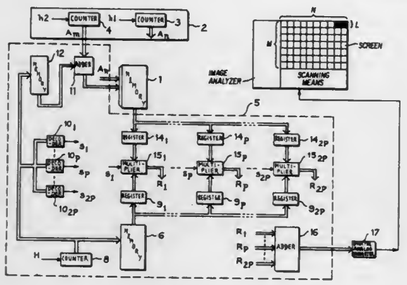
a stopper circuit (blocking stage) (SP) coupled to the outputs of both said pulse shaper circuit (IF) and said second threshold stage circuit (SS2), said stopper circuit having a signal input to which there is applied a composite video signal (BAS) and a signal output which is coupled to the input of said amplitude filter (AS).

4,553,164

SPATIAL CORRECTION DEVICE FOR AN IMAGE ANALYZER

Georges Labb, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 13, 1982, Ser. No. 417,592
Claims priority, application France, Oct. 2, 1981, 81 18638
Int. Cl.⁴ H04N *5/14*
U.S. Cl. 358—163 **4 Claims**



1. A spatial correction device for supplying a correction signal to an image analyzer having a screen divided into M groups of L lines each and N columns thereby forming MN rectangles and scanning means for scanning said screen, said device comprising:

a correction memory for storing, for each of the MN rectangles, a predetermined correction signal;

a sequencer for addressing the correction memory for applying a correction signal corresponding to each of said MN rectangles scanned by said scanning means; and

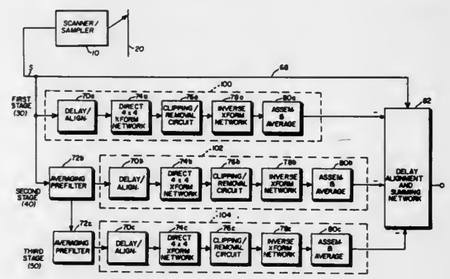
interpolation means coupled to said correction memory for calculating a value of the correction signal to be applied during passage of the scanning means through each of the L lines of each of said rectangles, so as to avoid derivative ruptures of the correction signal during transitions between said each rectangle and the adjacent rectangles situated in the same column, wherein said interpolation means comprises a means for restituting successively during the passage of the scanning means through each of the lines of said rectangle, the values of the correction signals stored in the correction memory associated with 2P−1 (P being an integer greater than 0) rectangles situated on each side of said each rectangle scanned by the scanning means, means for storing 2P smoothing coefficients associated with each line of said each rectangle scanned by the scanning means, and for restituting the 2P smoothing coefficients during the passage of the scanning means through each line of a rectangle, and means for calculating the sum of the 2P correction signals weighted by the corresponding smoothing coefficients wherein said means for calculating the sum of the 2P correction signals supplies the output signal of the interplation means.

4,553,165

TRANSFORM PROCESSING METHOD FOR REDUCING NOISE IN AN IMAGE

Bryce E. Bayer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1983, Ser. No. 522,284
Int. Cl.⁴ H04N *1/40, 5/14*
U.S. Cl. 358—167 **21 Claims**



1. A method of processing an image for noise reduction, comprising the steps of:

generating image signals representative of the light value of elements of the image;

forming the image signals into signal arrays each aligned to a group of image elements;

transforming each array of image signals into a set of coefficient signals corresponding to combinations of image signals representative of a smoothed light value over an image region including said group of image elements and differences in light value within said group of image elements;

selecting a subset of coefficient signals that represent differences in light value between elements of the image and a smoothed light value over an image region smaller than the area defined by said group of image elements;

modifying one or more of the coefficient signals in said selected subset in order to reduce noise in the processed image; and

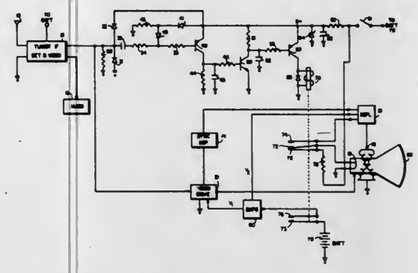
generating a processed image of reduced noise from said modified subset of coefficient signals.

4,553,166

VIDEO SYSTEM WITH AUTOMATIC POWER UP

Leroy A. Sutton, Wheeling, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 7, 1983, Ser. No. 559,166
Int. Cl.⁴ H04N *3/18*
U.S. Cl. 358—190 **8 Claims**



1. A high brightness video system comprising:

a CRT including a filament circuit;

first power supply means for energizing said filament circuit at a below normal level;

second power supply means for energizing said filament circuit at a normal level; and

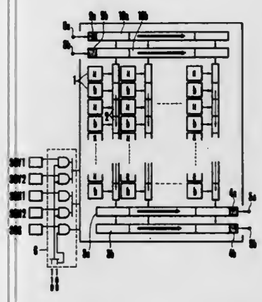
means responsive to an input signal for switching between said first and said second power supply means, said first power supply means comprising a battery and said second power supply means comprising a switch mode power supply.

4,553,167

IMAGE SIGNAL PROCESSING DEVICE

Takao Kinoshita, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 406,060
Claims priority, application Japan, Aug. 8, 1981, 56-124215; Aug. 8, 1981, 56-124216; Aug. 21, 1981, 56-131085; Sep. 4, 1981, 56-140014; Sep. 8, 1981, 56-141535; Sep. 9, 1981, 56-142818; Sep. 10, 1981, 56-142641; Sep. 12, 1981, 56-144270
Int. Cl.⁴ H04N *5/78*
U.S. Cl. 358—213 **6 Claims**



1. An image signal processing device comprising:

(a) memory means, storing image information constituting lines and rows;

(b) register means for storing information in two adjacent lines in the memory means; and

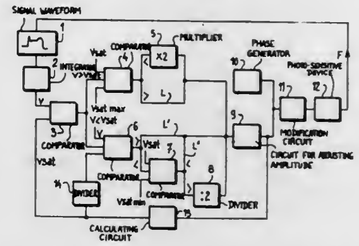
(c) control means for entering information in one of the two adjacent lines of the register means into the memory means and reading the information from the other of the two adjacent lines in the register means.

4,553,168

METHOD AND APPARATUS FOR ADJUSTING THE OPERATING CONDITIONS OF A PHOTOSENSITIVE CHARGE TRANSFER DEVICE

Jacques Chautemps, St. Egreve, and Pierrick Descure, Biviers, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 6, 1983, Ser. No. 558,506
Claims priority, application France, Dec. 10, 1982, 82 20763
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **6 Claims**



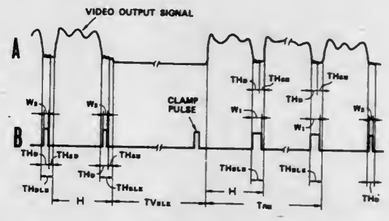
1. A method of adjusting the operating conditions of a photosensitive charge transfer device having a photosensitive zone which is constituted by charge transfer registers each having electrodes connected to a periodic bias voltage which creates potential wells having a saturation value fixed by said bias voltage, the improvement wherein the method consists in cyclically integrating the charges induced by the light image to be scanned, and, during each integration cycle, in calculating the total amplitude of the signal corresponding to said image, in comparing said calculated amplitude with a threshold amplitude value which is a function of said saturation value fixed by said bias voltage, and in modulating the amplitude of said potential wells created by said bias voltage as a function of the result of said comparison.

4,553,169

CLAMP CIRCUIT FOR USE IN VIDEO CAMERA HAVING IMAGE PICK-UP DEVICE

Osamu Yoshioka; Isao Kajino, both of Kanagawa, and Seisuke Yamanaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 564,029
Claims priority, application Japan, Dec. 29, 1982, 57-234233
Int. Cl.⁴ H04N *5/30*
U.S. Cl. 358—221 **6 Claims**



1. A clamp circuit for use in a video camera which has an area for detecting pictures and which has a horizontal blanking interval and vertical blanking interval and which has an image pick-up device, said image pick-up device having a first optical black-detecting portion, which is mounted outside said area for detecting pictures, said clamp circuit receiving said output signal from said image pick-up device, and comprising:

a clamp switch operated at a horizontal scanning frequency

and receiving said output signal from said image pick-up device;

a clamp voltage source connected to said clamp switch to operate it so as to clamp said output signal to a level equal to the voltage supplied by said clamp voltage source; and

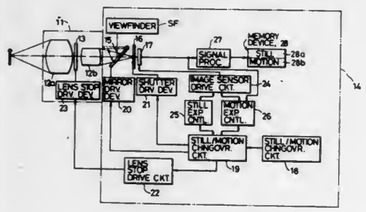
a clamp pulse generating means for generating a train of clamp pulses and controlling said clamp switch, the pulse width of at least one of said clamp pulses which is supplied immediately after said vertical blanking interval being greater than that of clamp pulses which are not supplied immediately after said vertical blanking interval.

4,553,170

ELECTRONIC CAMERA

Harumi Aoki; Tahei Morisawa; Koji Suzuki, and Kimiaki Ogawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 18, 1984, Ser. No. 601,469
Claims priority, application Japan, Apr. 30, 1983, 58-76472
Int. Cl.⁴ H04N *5/76*
U.S. Cl. 358—225 **5 Claims**



1. An electronic camera in which a still picture photographing operation and a motion picture photographing operation can be switched over to each other, comprising:

an image reflecting mirror for introducing a light beam passing through a photographing lens to viewfinder means in a still picture photographing operation;

a first drive mechanism for driving said image reflecting mirror;

a still picture photographing focal plane shutter disposed in front of an image pickup device;

a second drive mechanism for driving said focal plane shutter;

a changeover switch for selecting between said still picture photographing operation and said motion picture photographing operation; and

a shutter release switch used for both of said photographing operations,

said first drive mechanism being activated to retract said image reflecting mirror from the photographing optical path when said still picture photographing operation is switched over to said motion picture photographing operation and when said shutter release switch is turned on in said still picture photographing operation, and

said second drive mechanism causing said shutter to be open when said motion picture photographing operation is selected by said changeover switch.

4,553,171

TILE ENCODING IN IMAGE PRINTING

Thomas M. Holladay, Webster, N.Y., and L. Bayles Holt, San Jose, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1984, Ser. No. 574,506
Int. Cl.⁴ H04N *1/00*
U.S. Cl. 358—263 **7 Claims**

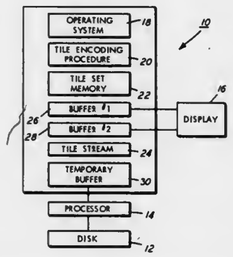
1. A method for displaying a digital image comprising the steps of

(a) segregating the digital image into a plurality of blocks of pixels,

(b) assigning a first identifier associated with the first block of pixels,

(c) comparing the second block to the first block and assigning a second identifier with the block if the blocks are different and assigning the first identifier to the second block if the blocks are identical,

(d) comparing the third block to the first and second blocks and assigning a third identifier associated with the third block if the third block is different from the first and second blocks and the first and second blocks are different



and assigning the associated identifier of either the first or second block to the third block if the third block is identical to either the first or second block,

(e) repeating the sequence for said plurality of blocks,

(f) preparing a block set for each nonidentical block, correlating the block set with the associated identifier,

(g) preparing a block set stream of identifiers associated with each successive block of the image, and

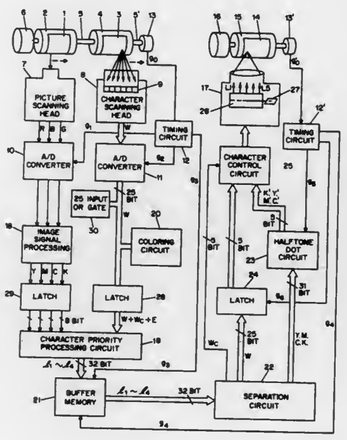
(h) displaying the image by scanning the identifiers in the block set stream and loading the associated block sets into a display buffer.

4,553,172

PICTURE SCANNING AND RECORDING METHOD

Mitsuhiko Yamada, and Toshiaki Nakade, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 3, 1983, Ser. No. 471,869
Claims priority, application Japan, Mar. 13, 1982, 57-39877
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—280 **7 Claims**



2. A method of scanning an original picture and a character document and recording a synthesized image on a photosensitive material, comprising the steps of:

photoelectrically scanning at the same time the original picture and the character document in a subscanning direction when the original picture and character document are in a predetermined positional relationship with respect to each other and are synchronized in a main scanning direction;

producing in parallel from said photoelectric scanning graphic signals corresponding to picture elements from the original picture and character signals corresponding to picture elements from the document, wherein a matrix of multiple picture elements from the document positionally corresponds to one picture element of the original picture;

organizing graphic signals corresponding to one picture element of the original picture into a block of data in accordance with a first data format;

organizing character signals corresponding to the matrix of multiple picture elements into a block of data in accordance with a second data format having the same length as the first data format;

providing a discrimination signal to indicate whether a block of data is graphic data or character data;

presenting blocks of data simultaneously produced from graphic signals and character signals in parallel to a circuit means for priority processing which prevents graphic data from passing therethrough to a memory device whenever the discrimination signal indicates character data is also present, thereby allowing the character data to have priority in passing therethrough to the memory device; and

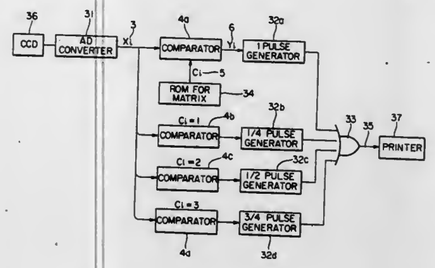
operating plural exposure beams of light in accordance with the data which has passed through the priority processing means to the memory device to record the synthesized image on the photosensitive material, wherein the plural exposure beams reproduce plural picture elements from the character document simultaneously and reproduce individual picture elements from the original picture through subdivision of each such element in a matrix of multiple fine elements.

4,553,173

IMAGE PROCESSING APPARATUS

Naoto Kawamura, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,264
Claims priority, application Japan, Dec. 26, 1981, 56-209563
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **18 Claims**



1. An image processing apparatus comprising:

A/D converting means for A/D converting an input analog image signal;

threshold level signal generating means for generating a threshold level signal; and

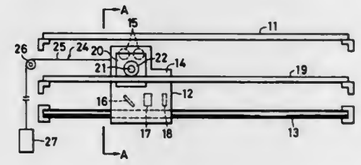
output means for outputting a reproduction signal from an image signal from said A/D converting means and the threshold level signal, said output means having controlling means for controlling the reproduction signal so that a dot pitch of an image recorded or displayed in accordance with the reproduction signal is substantially constant; wherein said controlling means controls the reproduction signal in accordance with the image signal and the threshold level signal generated by said threshold level signal generating means; and wherein said controlling means has pulse width mdoulating means for changing a pulse width of the reproduction signal in accordance with the threshold level signal.

4,553,174

DRIVE DEVICE IN A PLANE READING DEVICE

Fujio Moriguchi, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,365
Claims priority, application Japan, Jan. 8, 1982, 57-913
Int. Cl.⁴ H04N *1/04*
U.S. Cl. 358—285 **6 Claims**



1. In a plane reading device in which the image data of an original placed on a platen are read by a reading mechanism moved with respect to said platen; a drive device comprising:

a rack arranged parallel to said platen;

a stepping motor provided on said reading mechanism;

a pinion mounted on an output shaft of said stepping motor and engaged with said rack; and

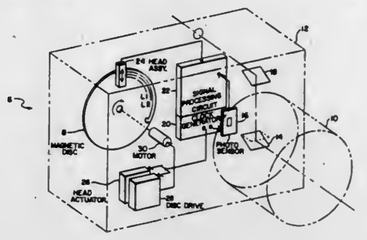
a backlash eliminating mechanism for eliminating backlash between said rack and said pinion.

4,553,175

METHOD/APPARATUS FOR PLAYBACK OF COLOR VIDEO STILL PICTURES FROM A MAGNETIC DISK

Hans-Peter Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,035
Int. Cl.⁴ H04N *5/781*
U.S. Cl. 358—310 **10 Claims**



1. Apparatus for playing back a color video signal composed of separate color and luminance component signals recorded on respective color and luminance tracks on a recording medium, said apparatus comprising:

a playback head;

means for positioning said head adjacent either the color track or the luminance track;

means responsive to the position of said head adjacent the color track for reading the color component signal;

means for storing the color component signal;

means responsive to the position of said head adjacent the luminance track for reading the luminance component signal; and

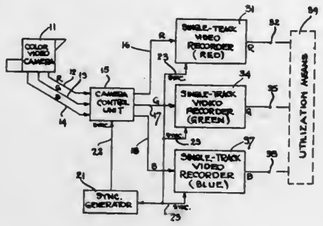
means for generating the color video signal from a combination of the stored color component signal and the luminance component signal.

4,553,176

VIDEO RECORDING AND FILM PRINTING SYSTEM QUALITY-COMPATIBLE WITH WIDESCREEN CINEMA

James A. Mendrala, 1048 Hollister St., San Fernando, Calif. 91340

Filed Dec. 31, 1981, Ser. No. 336,452
Int. Cl.⁴ H04N *9/495*
U.S. Cl. 358—334 **32 Claims**



1. A method of color-video recording in preparation for image transfer to motion picture film, the method comprising the steps of:

generating a multiplicity of video frames in sequence, each video frame comprising a set of three simultaneous independent video primary color signals, each set containing image information that corresponds to a single visual image in color;

recording the set of three independent primary color signals for each frame simultaneously on three corresponding independent monochrome storage channels of a video signal triple parallel-readout storage medium;

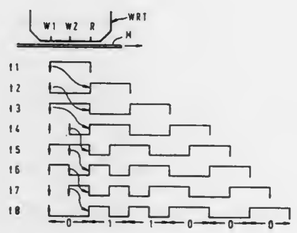
after the recording step, transferring the signals from at least two of the three storage channels to sequential-readout video storage means, by editing at least two of each set of three simultaneous signals from the parallel-readout storage medium into a set of corresponding sequential signal frames on the sequential-readout storage means.

4,553,177

METHOD AND APPARATUS FOR RECORDING DATA

Peter Scholich, Schloss-Neuhaus, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 550,243
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1982, 3241400
Int. Cl.⁴ G11B *5/09, 5/27*
U.S. Cl. 360—43 **5 Claims**



1. A method of writing data on a magnetic storage medium which travels relative to a magnetic head of the type having a first write gap and a read gap spaced apart along a travel axis by a distance which establishes a bit spacing in the medium, and a second write gap between the first write gap and the read gap, which method comprises the steps of:

A. causing relative movement between the head and medium along the travel axis;

B. actuating the first write gap to cause a flux transition in the medium;

C. generating a signal representing the arrival of said flux transition at the read gap; and

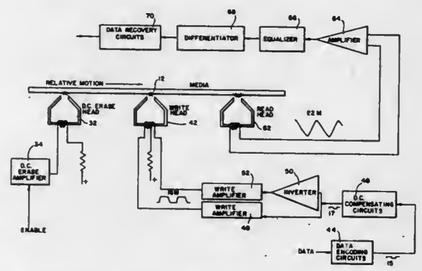
D. using said signal to substantially contemporaneously activate the first write gap to cause a second flux transition which, in combination with the first transition, represents a data value.

4,553,178

MAGNETIC RECORDING SYSTEM WITH PEAK SHIFT COMPENSATION

Donald F. Lynch, Littleton, Colo., assignor to Electronic Processors, Inc., Englewood, Colo.

Filed Jan. 18, 1983, Ser. No. 458,965
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 360—45 **4 Claims**



1. A system for writing digital data on magnetic recording medium which is D.C. premagnetized in a substantially single polarized direction, which system compensates to avoid peak shift during read-out due to the subsequent magnetic recording of data on said medium which magnetic data traverses said medium in substantially the said polarized direction as the polarized direction of D.C. premagnetization, said system including:

a magnetic write head transducer for selectively applying magnetic data to D.C. premagnetized magnetic recording medium in a polarized direction which traverses such medium in substantially the same direction and its D.C. premagnetized polarized direction and in at least one other direction;

means for providing digital data encoding signals for activating said magnetic transducer to selectively apply polarized magnetic data to D.C. premagnetized magnetic recording medium in subsantially the same direction as the direction of D.C. premagnetization and in at least one other direction; and

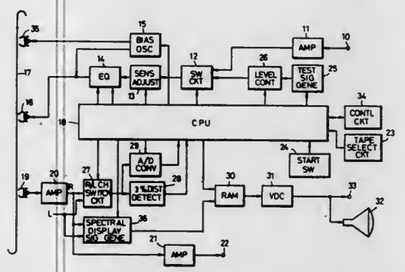
means for adjusting the timing of the digital data encoding signal means when its activating signal is of the kind which would activate said magnetic transducer to apply magnetic data to D.C. premagnetized magnetic recording medium in substantially the same direction of polarization as the direction of the polarized D.C. premagnetization of said medium, wherein said timing adjusting means includes a resistor, a capacitor, and a first and second inverter, said resistor and said capacitor being in parallel with one another, said resistor and capacitor also both being in series with said signal encoding means, and wherein said first inverter is located in series between said signal encoding means and said resistor and capacitor and said second inverter is located in series after said resistor and capacitor; whereby peak shift due to the recording of data which traverses D.C. premagnetized magnetic medium in substantially the same polarized direction as the polarized direction of D.C. premagnetization of said medium is compensated to avoid shift in the read-out of data recorded on said D.C. premagnetized magnetic medium.

4,553,179

AUTOMATIC RECORDING BIAS CURRENT SETTING APPARATUS

Mamoru Inami, Yokohama; Zenju Ohtsuki, Tokyo; Yoshiaki Tanaka, Fujisawa; Tomohiro Mori, and Akio Hasegawa, both of Maebashi, all of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

Filed Oct. 13, 1982, Ser. No. 434,101
Claims priority, application Japan, Oct. 15, 1981, 56-164501; Dec. 2, 1981, 56-194247
Int. Cl.⁴ G11B *15/02, 5/47*
U.S. Cl. 360—66 **14 Claims**



1. An automatic recording bias current setting apparatus in a magnetic recorder for recording and reproducing an audio signal on and from a magnetic recording medium which is arbitrarily selected from among different types of magnetic recording mediums, said apparatus comprising:

bias current generating means for generating a bias current with varied level of the bias current;

testing signal generating means for sequentially generating two kinds of testing signals having different mid and high frequencies of the audio signal, said testing signal generating means including means for varying the levels of the testing signals;

recording and reproducing means for recording said two kinds of testing signals with said bias current onto the selected magnetic recording medium and for reproducing the same, said recording and reproducing means repeating an operation in which the two kinds of testing signals whose levels have been varied are recorded on the recording medium under the same bias current and are then reproduced, with respect to two or more different bias currents; and

bias current setting means for detecting the the levels of the testing signals reproduced by the recording and reproducing means, and for setting the output bias current of said bias current generating means to an optimum level for the selected recording medium;

said bias current setting means having MML detecting means for detecting maximum modulation levels of the mid frequency testing signal for said two or more different bias currents, respectively, wherein the maximum modulation levels are output levels reproduced with a predetermined distortion factor, and SOL detecting means for detecting saturation output levels from among the detected levels of the high frequency testing signal for said two or more different bias currents, respectively,

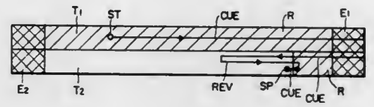
said bias current setting means detecting a bias current level at a point where a difference between a respective said maximum modulation level and a respective said saturation output level for the same bias current level becomes equal to a preset predetermined value, and setting the thus detected bias current level as said optimum level for the selected recording medium.

4,553,180

RECORDING START POSITION SETTING DEVICE FOR USE IN A TAPE RECORDER

Tsunao Hasegawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 347,856, Feb. 11, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 646,491
Claims priority, application Japan, Feb. 12, 1981, 56-19331; Feb. 16, 1981, 56-21011
Int. Cl.⁴ G11B *15/00*
U.S. Cl. 360—74.4 **2 Claims**



1. A recording start position setting device for a tape recorder, comprising:

cue mode operation instruction means for instructing implementation of a cue mode operation for movement in a first direction of a tape in said tape recorder in response to a control start signal;

signal detection means for detecting from a playback head data recorded on a magnetic tape;

first means for instructing implementation of a review mode operation, said review mode operation causing movement in a second direction of said tape:

when said signal detection means fails to detect recorded data from the playback head for more than a first predetermined period of time during said cue mode operation;

second means for instructing implementation of a play mode operation for said first direction movement of said tape when said signal detection circuit detects recorded data from the playback head during the review mode operation, and for instructing the halting of the play mode operation when the play mode operation is implemented for more than a second predetermined period of time;

a tape end detection circuit for detecting a tape end and producing an end signal; and

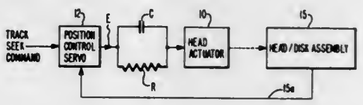
third means for instructing implementation of the review mode operation when the end signal is produced during the cue mode operation, said second means being enabled by the review mode implemented by said first means or said third means.

4,553,181

DISK DRIVE POSITIONING SYSTEM PROVIDING FAULT-FREE PROTECTION AGAINST ENDSTOP HEAD CRASHES BY USE OF A PASSIVE NETWORK IN THE ACTUATOR DRIVING SIGNAL PATH

Eugenio Berti, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

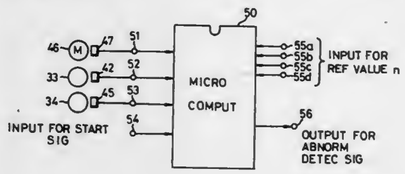
Filed Jul. 12, 1983, Ser. No. 512,873
Int. Cl.⁴ G11B *21/02*; G05G *5/00*
U.S. Cl. 360—75 **9 Claims**



1. In a disk drive system, the combination comprising:

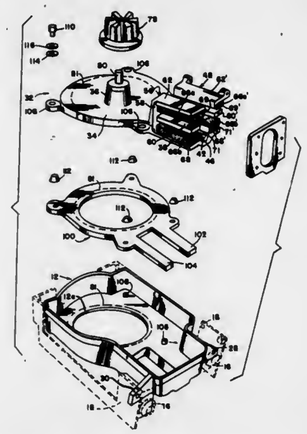
a head/disk assembly including a rotatable disk and a radially movable head cooperating therewith;
said head/disk assembly providing a position signal indicative of the radial position of said head;
a head actuator for radially positioning said head relative to said disk in response to applied electrical energy;
a position control servo responsive to said position signal for producing a servo output signal;
a passive network interposed between said position control servo and said head actuator such that said servo output signal causes electrical energy to be applied to said actuator via said network, said servo output signal having a maximum amplitude which in the absence of said network would cause said head to reach a velocity which could result in a damaging crash of said head;
said passive network being chosen in conjunction with said servo output signal so that, even if said servo signal rises to its maximum value and remains there, said network will limit the energy applied to said actuator to prevent said head from reaching a velocity which could result in a damaging crash of said head.

4,553,182
DEVICE FOR DETECTING ABNORMALITIES IN TAPE TRAVEL
Shuichi Narita, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Japan
Filed Sep. 26, 1983, Ser. No. 535,852
Claims priority, application Japan, Sep. 28, 1982, 57-169237
Int. Cl.⁴ G11B *15/00, 15/54*
U.S. Cl. 360—96.1 **5 Claims**



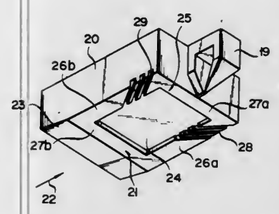
1. A detecting device for detecting abnormality in the tape travel, said detecting device comprising:
first detecting means for detecting capstan rotation pulses which have a frequency in accordance with the rotational speed of a capstan which drives and causes a tape to travel;
second detecting means for detecting supply reel rotation pulses which have a frequency in accordance with the rotational speed of a supply reel which pays out the tape;
third detecting means for detecting take-up reel rotation pulses which have a frequency in accordance with the rotational speed of a take-up reel which takes up the tape; and
abnormality detecting means supplied with said capstan rotation pulses, said supply reel rotation pulses, and said take-up reel rotation pulses, for detecting abnormality in the tape travel and for producing an abnormality detection signal which indicates that an abnormality has been detected in the tape travel,
said abnormality detecting means comprising a microcomputer for carrying out a processing operation which includes steps of counting the received capstan rotation detection pulses until a counted value of the capstan rotation pulses reaches a predetermined counted value, discriminating whether a supply reel rotation pulse was received during a period in which said capstan rotation pulses are counted until the predetermined counted value is reached, discriminating whether a take-up reel rotation pulse was received during a period in which said capstan rotation pulses are counted until the predetermined counted value is reached, discriminating whether a capstan rotation pulse was received within a predetermined time period, and generating said abnormality detection signal when any one of the three discriminated results is "NO".

4,553,183
MEMORY STORAGE APPARATUS HAVING IMPROVED HOUSING AND BASE PLATE ARRANGEMENT
Stanley F. Brown, Cupertino, and Garold W. Plonczak, Santa Clara, both of Calif., assignors to Atasi Corporation, San Jose, Calif.
Filed Jun. 28, 1982, Ser. No. 392,505
The portion of the term of this patent subsequent to Nov. 1, 2002, has been disclaimed.
Int. Cl.⁴ G11B *23/02, 17/26*
U.S. Cl. 360—98 **15 Claims**



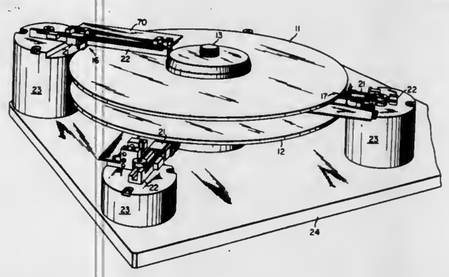
1. A rotating disc memory storage apparatus comprising:
an apparatus housing including a top cover, surrounding side walls and a bottom housing wall portion;
said bottom housing wall portion having a circular opening therein;
an electric motor including a stator and rotor;
a spindle shaft operatively connected to the motor;
a base plate within said housing and including an annular platform portion having hub means at its center for receiving said spindle shaft so that the spindle shaft may be rotated about an axis that is perpendicular to said platform portion;
means for mounting the base plate to the housing wall portion so that said hub means is concentrically disposed within said circular opening formed in the housing wall portion and the base plate and the housing wall portion are in firm air-tight sealing engagement;
means for operatively connecting the motor to the base plate and the spindle shaft to rotate the spindle shaft when the motor is energized;
at least one disc operatively mounted to the spindle shaft so that the disc rotates in a plane that is coaxial with and normal to the spindle shaft;
at least one transducer mounted on a carriage within said housing for accessing data recorded in the disc; and
actuator means mounted to the base plate at a position remote from the spindle shaft for moving said carriage and translating the transducer along the disc to selected track locations thereon.

4,553,184
MAGNETIC HEAD SLIDER
Kiichiro Ogishima, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jul. 19, 1982, Ser. No. 399,264
Claims priority, application Japan, Jul. 31, 1981, 56-120134
Int. Cl.⁴ G11B *5/60, 15/64, 17/32*
U.S. Cl. 360—103 **8 Claims**



1. A magnetic head slider for a rearwardly mounted magnetic head comprising:
a bottom surface which faces the surface of a magnetic disc, said bottom surface having a central area which is recessed and high pressure-applying areas surrounding said central area which are not recessed, thereby provided for an enclosed depression; and
pressure reducing grooves formed in opposed said high pressure-applying areas and extending diagonally from said central area and through said high pressure-applying areas, said grooves being inclined monotonically to the rear of said head slider;
whereby compressed air streams caused by a rotation of a magnetic disc flow between said magnetic disc and said head slider bottom surface and along said high pressure-applying areas, said grooves acting to partially deflect said compressed air stream away from said slide by said pressure reducing grooves.

4,553,185
METHOD AND APPARATUS FOR RECORDING AND REPRODUCING TELEVISION OR OTHER BROAD BAND SIGNALS WITH AN ALTERED TIME BASE EFFECT
Burnet M. Poole, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Mar. 18, 1968, Ser. No. 713,901
Int. Cl.⁴ H04N *5/781*
U.S. Cl. 360—10.1 **21 Claims**



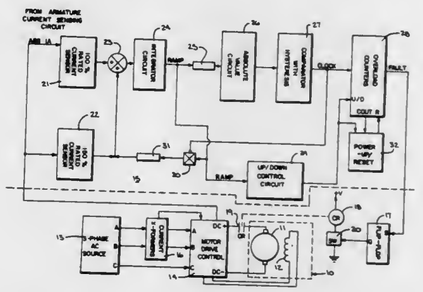
1. A method of magnetically recording broad band signals and reproducing the signals with an altered time base effect, said method comprising recording sequentially occurring, equal time periods of the broad band signals in sequence on at least two magnetic mediums with respective periods being recorded at a predetermined head-to-magnetic medium writing speed, the first occurring time period being recorded on one of said mediums and the next time period being recorded on the second of said mediums, reproducing the respective recorded periods with the same predetermined head-to-medium speed as during recording with at least certain of the periods being repeated a predetermined number of times, and forming a continuous output signal from the reproduced periods.

4,553,186
TAPE DRIVE MEMBER AND MANUFACTURING METHOD FOR THE SAME
Hiroshi Kawakami, Fujisawa, and Shigeyoshi Torii, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
PCT No. PCT/JP81/00378, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02110, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 14, 1981, Ser. No. 414,358
Claims priority, application Japan, Dec. 15, 1980, 55-176846
Int. Cl.⁴ G11B *15/28, 15/60;* **B65H** *17/20*
U.S. Cl. 360—130.21 **5 Claims**



1. A tape drive member consisting essentially of an alloy of a soft metal material and a hard metal material, said member having an outer surface portion that is roughened by removing mainly said soft metal material to form projecting portions made of the hard metal material.

4,553,187
OVERCURRENT DETECTION DEVICE
James A. Burns, Menomonee Falls, and Dennis C. Nolan, Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed Sep. 14, 1983, Ser. No. 532,066
Int. Cl.⁴ H02H *3/087*
U.S. Cl. 361—96 **6 Claims**



1. An overcurrent detection device of the type having a first sensor circuit, a pulse generating circuit and a counter, wherein the sensor circuit is responsive to current feedback from an electrically powered device to produce an overcurrent signal when current exceeds a first current level, wherein the pulse generating circuit is responsive to the overcurrent signal to generate pulses at a rate that is responsive to the magnitude of the overcurrent, wherein the counter is responsive to the

pulses to generate a fault signal when enabled by the accumulated count, and wherein an improvement comprises:

a second sensor circuit coupled to the pulse generating circuit and responsive to current feedback from the electrically powered device to couple an overcurrent signal to the pulse generating circuit when current exceeds a second current level in excess of the first current level, wherein said overcurrent signal accelerates the pulse rate to the counter and the occurrence of the fault signal.

4,553,188

SECTIONALIZER

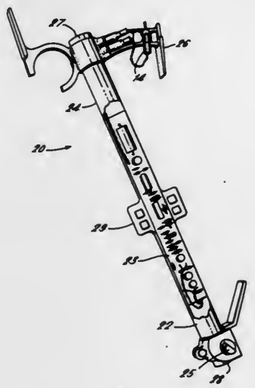
David R. Aubrey, Chester, and Stephen J. Kearley, Merseyside, both of England, assignors to The Electricity Council, England

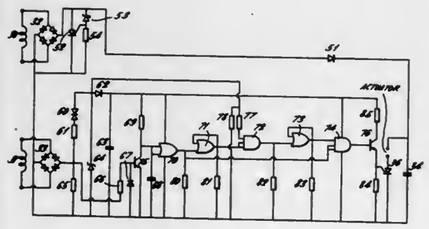
Filed May 25, 1983, Ser. No. 497,938

Claims priority, application United Kingdom, May 28, 1982, 8215641

Int. Cl.⁴ H02H *3/07*

U.S. Cl. 361—115 **9 Claims**





1. A sectionaliser for isolating a spur line of an electrical power transmission system from a main line of the system, the main line being protected from current overload by a multi-shot resetting circuit breaker, the sectionaliser comprising means providing a current path through the sectionaliser when closed, means for detecting at least two successive current surges through the sectionaliser followed by a current dead period, and an actuating means responsive to detection of said successive current surges to actuate the sectionaliser to break the current path through the sectionaliser during the subsequent current dead period, said means for detecting including a current transformer coupled to said current path means and a logic circuit connected to the current transformer for registering the current surges, the sectionaliser being formed as a sectionaliser module and a mount having physically spaced connection points between which the sectionaliser module is mounted to provide said current path and from which the sectionaliser module is expelled to break said path, the sectionaliser module comprising two end fittings co-operating with the spaced connection points of the mount and a hollow metal tube interconnecting the end fittings and providing said current path, said logic circuit being located within the metal tube.

4,553,189

SURGE PROTECTION DEVICE

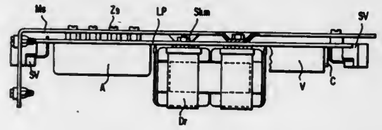
Erich Pivit, Allmersbach; Helmut Setzer, Untermünkheim; Raimund König, Neumarkt/Opf.; Peter Distelrath, Backnang; Peter Hasse, Neumarkt/Opf., and Manfred Zeidler, Pilsach, all of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,482

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214400

Int. Cl.⁴ H02H *9/04*

U.S. Cl. 361—119 **12 Claims**



1. In an arrangement for protecting devices connected to transmission lines against excess or interfering voltages resulting from lightning strokes and the action of EMP or EMI, which arrangement includes first connecting means for establishing connections with such transmission lines, second connecting means for establishing connections with the devices, a ground conductor extending between the first and second connecting means, lightning protection chokes connected in series between the first and second connecting means to be interposed between the transmission lines and the devices, first excess voltage arresters connected to the connecting means for effecting coarse overvoltage protection for the devices, second excess voltage arresters connected to the connecting means for effecting fine overvoltage protection for the devices, and a network with frequency dependent behavior connected to the second connecting means and located between the second connecting means and the second excess voltage arresters, the improvement wherein: said arrangement further comprises a circuit board carrying said arresters, said chokes and said network; said ground conductor is constituted by a large-area metal plate oriented parallel to said circuit board; said first excess voltage arresters are constructed to carry lightning-induced current; said first and second excess voltage arresters, said chokes and said network cooperate for protecting the devices against EMI influences; said first and second connecting means are disposed at respectively opposite sides of said circuit board; and, in the direction from said first connecting means to said second connecting means, there are arranged, in the order recited and close to one another, said first excess voltage arresters, said lightning protection chokes, said second excess voltage arresters and said network.

4,553,190

TRANSPARENT CONTAINER FOR ELECTROSTATIC SENSITIVE ELECTRONIC COMPONENTS

Gerald E. Mueller, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Aug. 26, 1982, Ser. No. 411,348

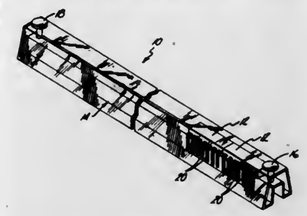
Int. Cl.⁴ H05F *1/00*

U.S. Cl. 361—212 **24 Claims**

1. A container adapted to receive a plurality of electrostatic sensitive electronic components, comprising:

a rigid, transparent, elongated channel being open on at least one end;

said channel having a transparent, insulative layer and a transparent, conductive layer at least partially transversely surrounding said insulative layer whereby direct coupling of electric potential or electrostatic discharge to said electronic components is prevented.



4,553,191

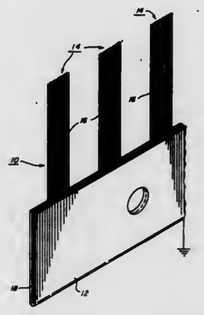
STATIC ELIMINATOR

William S. Franks, Jr., Penfield; John M. Randall, Fairport, and Joseph A. Swift, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1982, Ser. No. 446,738

Int. Cl.⁴ H05F *3/00*

U.S. Cl. 361—212 **24 Claims**



1. A device for neutralizing static electrical charge on a surface comprising a support means, a plurality of resiliently flexible thin ohmic partially carbonized polyacrylonitrile fibers having an electrical resistivity of from about 2×10^3 ohm-cm to about 1×10^6 ohm-cm, said fibers being supported by said support means in such manner that said fibers are oriented and extend in a uniform direction in a brush like configuration from the support means so that the distal ends of the fibers may extend toward a said surface to afford reduction of any static electrical charge on said surface, and means for attaching said fibers to said support means.

4,553,192

HIGH DENSITY PLANAR INTERCONNECTED INTEGRATED CIRCUIT PACKAGE

Robert Babuka; John L. Piechota, and Leonard J. Poch, all of Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,190

Int. Cl.⁴ H05K *1/14*

U.S. Cl. 361—395 **6 Claims**

2. A module to planar board interconnection system for mitigating solder joint failure, comprising;

an integrated circuit module having circuit pads on one surface thereof;

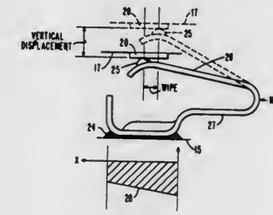
a printed circuit board having circuit pads on one surface thereof;

a housing for said integrated circuit module;

a board stiffener fastened to said printed circuit board;

means for pivotally connecting said module housing to said circuit board stiffener and loading the module and housing onto said circuit board; and

a plurality of spring contacts, each of said contacts having a U-shapelike configuration, said configuration having an upper end portion adapted to make contact with a circuit pad of said integrated circuit module, and a bottom end portion surface bonded by a solder joint to a circuit pad of said printed circuit board, said spring contacts and said means coacting to place each aforesaid solder joint under compression when said module is loaded by said means, whereby solder joint failure is mitigated.



4,553,193

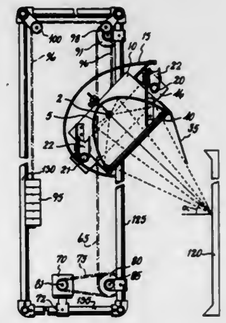
SCANNING LIGHT SYSTEM

Edwin C. Evans, Manhasset, N.Y., assignor to Gamma One Conversions, Inc., New York, N.Y.

Filed Feb. 1, 1983, Ser. No. 462,942

Int. Cl.⁴ G03B *15/02*; F21V *21/26*

U.S. Cl. 362—8 **12 Claims**



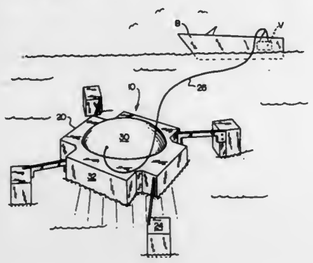
1. A scanning light system for successively illuminating the several areas of a painting or other planar target for the purpose of reproducing it, the system comprising:

a light source;

a reflector for directing and focusing light from the light source at an area of the target plane at an angle more than 40° and less than 80° to a perpendicular to the plane at said area; and

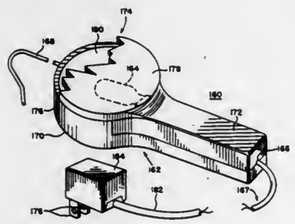
means for moving the light source and reflector as a unit in a plane parallel to that of the target and in directions alternately longitudinally and transversely thereof to cause the light to scan other portions of the target to be successively illuminated.

4,553,194
PORTABLE FLOATING FISHING LIGHT
Nathan M. Bailey, 215 W. 12th St., Winston-Salem, N.C. 27101
Filed Dec. 13, 1984, Ser. No. 681,204
Int. Cl.[4] F21V *31/00*
U.S. Cl. 362—267 **4 Claims**



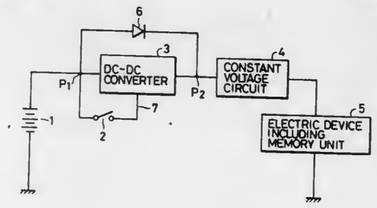
1. A floating illumination device comprising:
(a) a light source including means for releasably connecting said light source to a voltage source
(b) a housing means including means for mounting said light source therein;
(c) a plurality of arms pivotally attached to said housing at spaced positions therearound and movable between a folded compact position and an extended operable position;
(d) a buoyant block attached to the free end of each of said arms;
(e) whereby said arms and buoyant blocks serve to support said light on the surface of a body of water when in said extended position, yet can be folded into said compact position for ease of storage and convenience of transportation.

4,553,195
LAMP
Lorrain W. Prester, Box 38, Dorchester, Nebr. 68343
Filed Dec. 12, 1977, Ser. No. 859,304
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—310 **7 Claims**



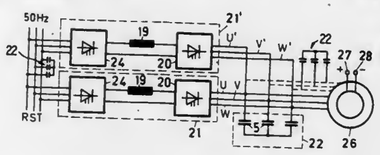
1. A lamp comprising:
an incandescent light bulb;
a plastic housing;
said incandescent light bulb being within said plastic housing;
said plastic housing having two relatively wide parallel walls and a narrower connecting edge;
conductors extending from said incandescent light bulb from said housing and being electrically connected to opposite ends of the filaments thereof within said housing;
said plastic housing having a clear portion capable of passing light;
said portion capable of passing light being shaped as a convex lens;
said housing including a handle portion;
said clear portion being formed as a lens integrally formed with at least a portion of said handle portion; and
a reflector positioned on the opposite side of said incandescent lamp from said lens.

4,553,196
POWER SOURCE SYSTEM FOR VEHICULAR ELECTRONIC DEVICE
Keiichi Tokuyama; Shotaro Naito, and Shizuhisa Watanabe, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
PCT No. PCT/JP82/00223, § 371 Date Feb. 1, 1983, § 102(e) Date Feb. 1, 1983, PCT Pub. No. WO82/04487, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 9, 1982, Ser. No. 466,340
Claims priority, application Japan, Jun. 12, 1981, 56-89621
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **8 Claims**



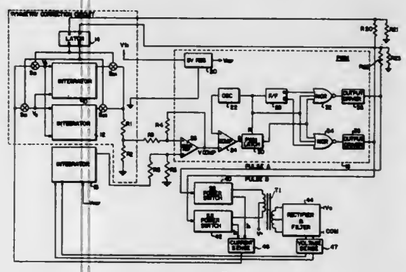
1. A vehicular power source system comprising: a battery; a vehicle electrical operating system; and a vehicle ignition switch for selectively connecting said electrical operating system to said battery during the entire time said vehicle is being operated; said electrical operating system including boosting means connected to said battery for boosting the voltage of said battery, a constant voltage circuit connected to said boosting means, control means including said vehicle ignition switch for controlling the operation of said boosting means so that said boosting means is enabled to operate only when said ignition switch is closed, and bypass means connected in parallel with said boosting means between said battery and said constant voltage circuit so that the voltage of said battery is applied through said bypass means to said constant voltage circuit when the battery holds its normal voltage level.

4,553,197
CONVERTER WITH FAST-ACTING OVERVOLTAGE PROTECTION
Herbert Stemmler, Kirchdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Oct. 24, 1983, Ser. No. 544,639
Claims priority, application Switzerland, Nov. 3, 1982, 6387/82; European Pat. Off., Oct. 6, 1983, 83109993.2
Int. Cl.[4] H02M *5/45*
U.S. Cl. 363—37 **6 Claims**



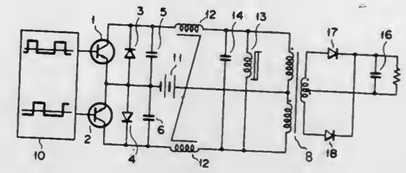
1. A converter having fast-acting overvoltage protection, comprising:
plural bridge circuits each having a.c. voltage terminals and d.c. voltage terminals, wherein each a.c. voltage terminal of each bridge circuit is coupled with every other a.c. voltage terminal of the plural bridge circuits by means at least one capacitor;
said plural bridge circuits each having an a.c. side and a d.c. side and said plural bridge circuits being phasewise parallel-connected on the a.c. side thereof;
said plural bridge circuits connected in pairs in which the d.c. sides of each pair are parallel-connected to each other by means of at least one intermediate circuit reactor; and
said plural bridge circuits, comprising bridge arms having GTO thyristors that can be switched off, being driven out of phase with respect to one another.

4,553,198
POWER CONVERTER SYMMETRY CORRECTION CIRCUIT
Edward Y. Chan, Lowell; Ross Henderson, and Anthony J. Vaudo, both of North Reading, all of Mass., assignors to Powercube Corporation, Billerica, Mass.
Filed Dec. 10, 1982, Ser. No. 448,622
Int. Cl.[4] H02P *13/22*
U.S. Cl. 363—56 **9 Claims**



1. For use in a power converter having a magnetic core transformer having a primary and a secondary winding, a pair of solid state power switches for push-pull drive of the transformer and an output circuit for providing an output voltage derived from the transformer, a circuit comprising:
output voltage sense means for producing an output voltage sense signal from the secondary winding;
a pulse width modulator coupled to the solid state power switches and operative to apply pulse width modulated pulses alternately to the power switches for push-pull drive of the transformer having pulse duration controlled according to said output voltage sense signal;
a symmetry correction circuit operative in response to the output currents of the power switches to provide a single error signal being time-multiplexed to include a representative sample of the magnitude of each current, further including:
first and second integrators each operative to provide a respective error voltage derived from and representing the output current of respective ones of the power switches; and
means for actuating each of the first and second integrators in alternating sequence to alternately receive said error signal and provide the integrator error voltages; and
means for selectively applying the single error signal to the pulse width modulator to cause adjustment of the duration of the modulated pulses to compensate for the difference in characteristics between the power switches.

4,553,199
HIGH FREQUENCY POWER SUPPLY DEVICE
Koosuke Harada, Fukuoka, and Katsuaki Murata, Kumamoto, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Oct. 13, 1983, Ser. No. 541,653
Claims priority, application Japan, Apr. 13, 1983, 58-67179
Int. Cl.[4] H02P *13/24*
U.S. Cl. 363—75 **23 Claims**

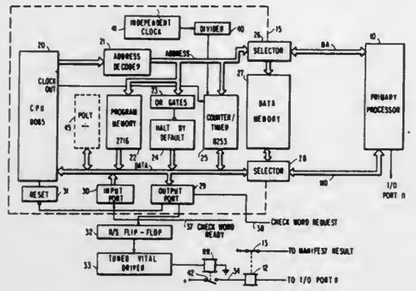


1. A ferroresonant converter comprising:
signal generator means for generating first and second drive signals;
first switch means, having a first circuit path, for on/off switching said first circuit path in accordance with said first drive signal;
a first diode connected in parallel to said first circuit path;
second switch means, having a second circuit path, for on/off switching said second circuit path in accordance with said second drive signal, said second circuit path being connected in series to said first circuit path to form a first series circuit;
a second diode connected in parallel to said second circuit path;
inductor means, connected to said first series circuit and having a given inductance, for generating said AC output in accordance with the on/off switching of said first and second switch means; and
capacitor means having a given capacitance and being coupled with said inductor means, for forming a resonance circuit with said inductor means,
wherein said first and second drive signals are so controlled that one of said first and second circuit paths is switched-on after a period of dead time from when the other thereof is switched-off, said period of dead time being sufficient to allow the phase of said AC output to become inverted by said resonance circuit.

4,553,200
MODULAR OUTPUT DRIVER FOR VITAL PROCESSOR SYSTEMS
Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.
Filed Nov. 10, 1983, Ser. No. 550,431
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—200 **24 Claims**

1. Processor apparatus, for producing a given signal with time sensitive parameters determined from data passed to said processor on a batch basis wherein said given signal may be produced by widely different data, comprising:
program means including a plurality of program segments, including first program segments which, when executed by said processor, produce segments of said given signal, and second program segments which, when executed by said processor produce a fixed portion of said signal;
means responsive to said data for calling corresponding program segments for execution;
whereby data, having predetermined characteristics, made

available to said processor on a batch basis, and at appropriate times, results in execution of a sequence of said



program segments so as to produce said given signal with said time sensitive parameters.

4,553,201

DECOUPLING APPARATUS FOR VERIFICATION OF A PROCESSOR INDEPENDENT FROM AN ASSOCIATED DATA PROCESSING SYSTEM

Frank S. Pollack, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 28, 1983, Ser. No. 479,790
Int. Cl.⁴ G06F *11/22, 9/22*
U.S. Cl. 364—200 **4 Claims**

1. In a data processing system having a plurality of central processing units (CPUs), each CPU being operatively connected to other portions of the data processing system through a system interface unit, the other portions of said data processing system including at least one main memory unit, the CPU including a cache memory for storing information which includes instructions and data, an execution unit for manipulating data in accordance with the instruction currently being executed, and a control unit for controlling sequences of operation of said CPU, and further wherein each CPU includes an apparatus for verifying the operability of said CPU independent from the operation of said data processing system, said apparatus comprising:

(a) switch means, interposed between a first port of said CPU and said system interface unit, for decoupling said CPU from said system interface unit in response to a decoupling control signal thereby decoupling said CPU from the data processing system;

(b) detecting means, operatively connected to said switch means, for detecting whether the CPU and the system interface unit are operatively connected to generate a configuration signal indicating the status of the operative connection therebetween; and

(c) a maintenance panel operatively connected to said switch means and to said detecting means via a second CPU port, said maintenance panel including:

(i) means for activating said switch means;

(ii) means for sensing said configuration signal thereby recognizing the decoupling of the CPU from the system interface unit;

(iii) means for overriding the presence of a fault condition indicated by said configuration signal generated by the decoupling of said system interface unit from said CPU thereby permitting said CPU to continue its normal operation;

(iv) means for providing sequences of information to said control unit;

(v) means for controlling said control unit to permit said sequences of information to be stored in said cache memory;

(vi) means for causing said sequences of information in said cache memory to be executed by said CPU;

(vii) means for causing results of executing the sequences of information to be transferred to said maintenance panel; and

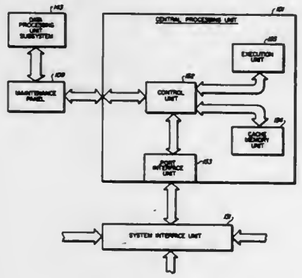
(viii) means for comparing said results to expected results to indicate whether the CPU is functioning correctly thereby verifying the operability of the CPU.

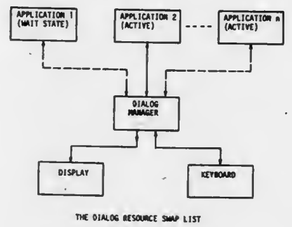
4,553,202

USER CONTROLLED DIALOG RESOURCE SWITCHING IN A MULTI-TASKING WORD PROCESSOR

Nicholas Trufyn, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1982, Ser. No. 375,432
Int. Cl.⁴ G06F *9/46*
U.S. Cl. 364—200 **3 Claims**





THE DIALOG RESOURCE SWAP LIST

1. A method for the real time reassignment of input or output means coupling a multi-tasking processor in which switching from task to task is selectively invoked by interrupts including interrupts invoked through the input means, comprising the steps of:

building a linked list of identities of those tasks which call the input or output means and embedding pointers defining a dispatching order there among in counterpart task descriptions; and

responsive to an interrupt invoked through the input means, reassigning the input or output means from the task currently executing to the next task in order on the linked list;

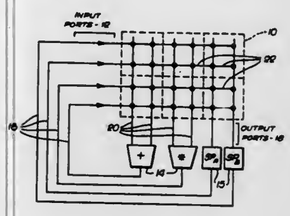
whereby assignment of the input or output means is rotatable among only those tasks in linked list order.

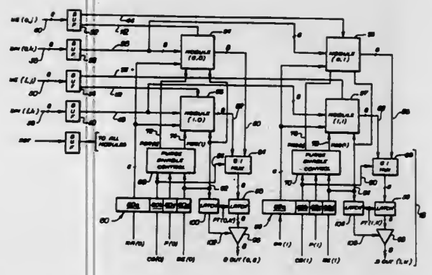
4,553,203

EASILY SCHEDULABLE HORIZONTAL COMPUTER

Bantwal R. Rau, Los Gatos; Christopher D. Glaeser, Fremont, and Philip J. Kuekes, Berkeley, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 28, 1982, Ser. No. 425,796
Int. Cl.⁴ G06F *15/31, 13/02, 9/38*
U.S. Cl. 364—200 **14 Claims**





1. A parallel processing computer system for scheduling data transfers among concurrently operating data processing elements within the computer system, said computer system comprising:

a plurality of data processing elements operating concurrently and parallel each processing element having one or more inputs and one or more outputs; and

an interconnect circuit for transferring data from each processing element output to one or more processing element inputs after various time delays established by a predetermined schedule determined according to each specific data processing problem to be solved by said computer system wherein one or more of said processing element inputs may belong to the same processing element as said processing element output there being at least one processing element input to which the interconnect circuit transfers data at different times from at least two different processing element outputs, each combination of a processing element output and a processing element input between which the interconnect circuit transfers data being designated as a processing element output/input pair;

wherein the interconnect circuit comprises a plurality of cross-point modules, there being a separate module for each processor element output/input pair, so that each module is connected to one input of one processor element and one output of one processor element; and

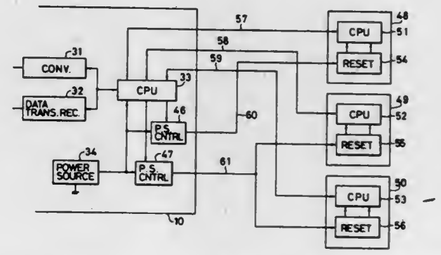
wherein each cross-point module comprises (i) a module input for receiving data from the processing element output connected to that module, (ii) a module output for outputting data to the processing element input connected to that module, and (iii) memory means, having a plurality of storage locations, for temporarily storing in said storage locations one or more data words successively received from the module input and for outputting through the module output a stored data word at one or more selected times when that data word is needed by said processing element input connected to said module, said selected times being established by said predetermined schedule.

4,553,204

CENTRAL PROCESSING UNIT RESTORING MECHANISM FOR A SYSTEM HAVING A PLURALITY OF CENTRAL PROCESSING UNITS

Takashi Hashimoto, Tokyo, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,201
Claims priority, application Japan, Jul. 9, 1981, 56-108006
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 364—200 **4 Claims**



1. In a system comprising a plurality of central processing units wherein two-way data communication is effected between said central processing units; the improvement comprising a central processing unit restoring mechanism, comprising:

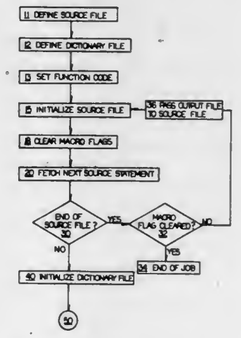
at least one power source control section connected to and responsive to a first of said central processing units for controlling the application of power to a group of remaining ones of said central processing units, said group comprising at least one of said central processing units, a power supply unit connected directly to said first central processing unit and, via said power source control section, to said group of central processing units, and a group of reset sections, each said section connected to and associated with a respective one of said central processing units in said group, each said reset section being connected to and operated by said power source control section to reset a respective central processing unit, said group of reset sections comprising at least one reset section.

4,553,205

FLEXIBLE MACRO EXPANSION PROCESS

Salvatore Porchia, 1948 Zollinger Rd., Columbus, Ohio 43212

Filed Sep. 21, 1982, Ser. No. 420,730
Int. Cl.⁴ G06F *9/00, 13/00*
U.S. Cl. 364—300 **8 Claims**



1. A process for transformation of source code from an

origin system of known characteristics for operation of a destination system of different known characteristics, with the aid of a digital computer, comprising the steps of:

(a) providing said computer with a source file containing said source code, comprising a plurality of sequential source code statements, some of which incorporate at least one macro name and parameter, and with an output file;

(b) providing said computer with a library file containing a plurality of sequential entries, each said entry comprising a macro name, a plurality of model statements, each said model statement comprising an expanded code field and a parametric triplet field, said expanded code field comprising expanded code which may incorporate parameters, and said triplet field comprising a number of triplets corresponding to the number of parameters in said expanded code field and each triplet identifying a parameter in said expanded code field and a condition of presence or absence of said parameter in said source code statements;

(c) sequentially fetching a source code statement from said source file, and initializing said library file;

(d) sequentially fetching an entry from said library file, and comparing said macro name of said entry with said source code statement;

(e) repetition of step (d) until said library file is exhausted and, if no macro name is found in said source code statement, passing said source code statement to said output file and reversion to step (c);

(f) sequentially fetching a model statement from said entry, if said macro name of said entry is found in said source code statement;

(g) sequentially fetching a triplet in said parametric triplet field of said model statement, and a parameter identified by said triplet in said expanded code field of said model statement;

(h) examining said source code statement for presence of said parameter;

(i) repetition of steps (g) and (h) until said triplets are exhausted and, if each said condition identified by each said triplet is not satisfied, then passing said expanded code field of said model statement to said output file;

(j) repetition of steps (f) through (i) until said model statements of said entry are exhausted; and

(k) repetition of steps (c) through (j) until said source code statements are exhausted.

creating an index header for the indexes containing information including image identity, wherein the structure of the

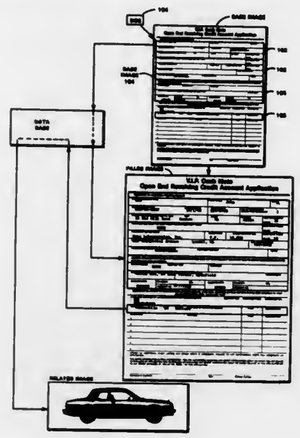


image information in the blocks is different from that of the indexes and header.

4,553,206

IMAGE STORAGE AND RETRIEVAL

John M. Smutek, Billerica; Robert I. Wenig, Lowell, both of Mass.; Nancy J. Webb, Derry, and Amnon Waisman, Nashua, both of N.H., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 3, 1983, Ser. No. 538,682
Int. Cl.⁴ G06F *15/40*
U.S. Cl. 364—300 **29 Claims**

1. A method of storing digital information representing an image comprising the steps of:

storing said digital information in a plurality of blocks,

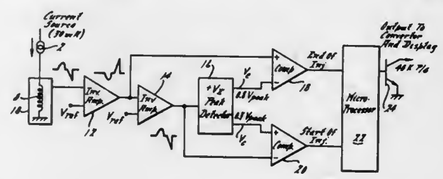
for each block creating an index containing information including the storage location for the block, and

4,553,207

METHOD AND APPARATUS FOR DERIVING FUEL CONSUMPTION DATA FROM A HYDRAULICALLY DRIVEN FUEL INJECTOR

Marcello Veneziano, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 430,221
Int. Cl.⁴ G01M *15/00;* **F02D** *5/02;* **F02M** *51/06*
U.S. Cl. 364—431.01 **4 Claims**



1. A circuit for monitoring a hydraulically driven fuel injector valve comprising:

a sensor means on said injector valve for producing an electrical signal proportional to the velocity of valve movement each time said valve is driven into opened and closed positions;

means connected to said sensor means for detecting the peak valve of said electrical signal each time said valve is driven into its opened position and providing first and second threshold voltages having values proportional to said detected peak value; and

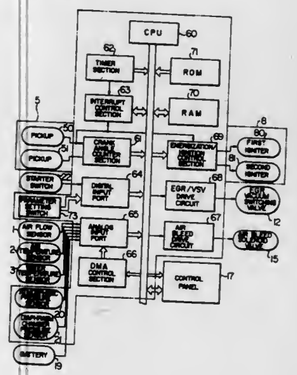
comparator means for comparing the next subsequent electrical signal against said first and second threshold voltages to provide a first output pulse during the time the compared electrical signal exceeds the first threshold voltage and a second output pulse during the time the compared electrical signal is below said second threshold voltage.

4,553,208

ENGINE CONTROL EVENT TIMING EMPLOYING BOTH CRANK ANGLE ROTATION AND TIME MEASUREMENTS

Susumu Akiyama, Kariya; Kenzo Ito, Okazaki; Hiroyasu Fukaya, Nagoya; Haruhiko Ogiso, Kariya; Yuji Hirabayashi, Aichi, and Takahide Kawamura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Division of Ser. No. 409,349, Aug. 18, 1982, Pat. No. 4,476,532, which is a division of Ser. No. 103,942, Dec. 14, 1979, Pat. No. 4,347,570. This application May 25, 1984, Ser. No. 614,138
Claims priority, application Japan, Dec. 18, 1978, 53-157782
Int. Cl.⁴ F02P *5/08, 9/00;* **F02B** *5/02*
U.S. Cl. 364—431.05 **2 Claims**



1. A method of controlling an engine having a rotatable output shaft, a programmed computer and an electric device controlled by said programmed computer, said method comprising the steps of:

providing a position pulse at a predetermined angular position of said output shaft;

providing an angular pulse each time said output shaft rotates a predetermined angular amount between said position pulses;

counting by first counter means of said programmed computer the number of said angular pulses provided after said position pulse;

calculating by central processing means of said programmed computer a first angular position at which said electric device is to be controlled and a required time interval between said first angular position for controlling said electric device and a second angular position at which one of said angular pulses is to be provided just prior to said first angular position;

transferring said calculated required time interval from said central processing means to second counter means when said processing means detects that the number of said angular pulses counted by said first counter means indicates a third angular position at least one of said angular pulses before said second angular position;

generating clock pulses at a fixed frequency;

counting by said second counter means said clock pulses from the time when said central processing means detects that the number counted by said first counter means indicates said second angular position; and

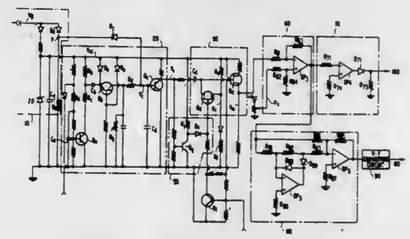
controlling said electric device when said second counter means indicates that the counted number of said clock pulses reaches said required time interval.

4,553,209

AUTOMOBILE SPEED CONTROL SYSTEM

Hitoshi Hyodo, Okazaki; Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 21, 1982, Ser. No. 451,912
Claims priority, application Japan, Dec. 21, 1981, 56-206458; Dec. 21, 1981, 56-206459
Int. Cl.⁴ B60K *31/00*
U.S. Cl. 364—431.07 **3 Claims**



1. An automobile speed control system for automatically controlling the speed of an automobile comprising means for generating a constant voltage, means for generating a pulsating signal corresponding to the actual automobile speed, frequency-voltage converting circuit means including an integrating capacitor for integrating said pulsating signal, said integrating capacitor connected between a base of an output transitor and ground, said base being set to a terminal voltage, circuit means providing a reference voltage, memory circuit means including a memory capacitor having one terminal connected to the output of said frequency-voltage converting circuit means and another terminal connected to the reference voltage means through a switching means, means for providing a comparative voltage, comparing means for comparing an output signal of said memory circuit means and said comparative voltage, means for controlling a throttle valve of an automobile in accordance with the output signal of said comparing means and a discharge means connected to said base of said output transistor for providing a path to ground for discharging said integrating capacitor when said terminal voltage is higher than said constant voltage;

whereby said memory circuit means of said automobile speed control system will not be affected by momentary voltage interruptions.

4,553,210

COMPLEMENTED ROLL ATTITUDE FLIGHT CONTROL SYSTEM

John P. Centala, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 17, 1982, Ser. No. 408,962
Int. Cl.⁴ G06F *15/30*
U.S. Cl. 364—434 **11 Claims**

1. A system for producing an aircraft roll steering signal comprising:

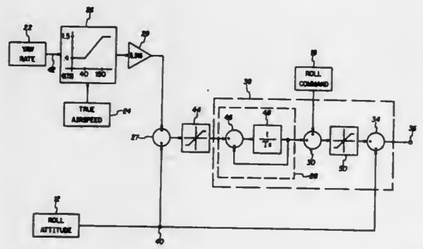
means for providing a signal representing aircraft roll attitude;

means for providing a signal representing a combination of aircraft yaw rate and aircraft airspeed;

means for modifying said roll attitude signal with said com-

bined yaw rate and airspeed signal to produce a modified roll attitude signal;

means for combining said modified roll attitude signal with



an aircraft roll command signal to produce a signal output; and

means for combining said roll attitude signal with said signal output to produce a roll steering signal.

4,553,211

VENDING MACHINE WITH DOORS

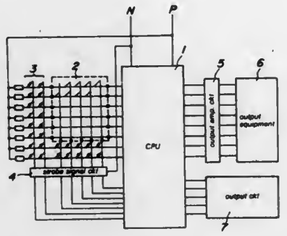
Kikuo Kawasaki, and Tomomi Sano, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 261,193, Apr. 22, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,500

Claims priority, application Japan, Aug. 29, 1979, 54-109017; Aug. 29, 1979, 54-109018

Int. Cl.⁴ G07F *7/08;* **G06K** *19/06*

U.S. Cl. 364—479 **5 Claims**



1. A vending machine with doors, comprising:

a storage member for accommodating a plural kinds of articles, with one or a plurality of articles of each kind of article being allotted at a predetermined portion therein;

an inner door attached to said storage member for allowing a supplement of said article while said inner door is opened and for allowing a delivery of said article while said inner door is closed;

an outer door provided outside of said inner door for prohibiting a delivery of said article while said outer door is closed;

means for sensing as sales information the respective numbers of said a plural kinds of articles accommodated in said storage member;

a first memory means for storing reference number data indicative of the number of articles to be accommodated in said storage member, sales number data indicative of the number of articles sold and remaining number data indicative of the number of articles left in said storage member after said outer door is closed, separately by each kind of article of said plural kinds of articles;

means for clearing said sales number data to initialize the respective ones of said reference number data and the respective ones of said remaining number data to the respective ones of said number of articles sensed by said sensing means;

sales counting means to be started after the operation of closing said outer door for modifying the respective ones of said remaining number data by the respective ones of said number of articles sensed by said sensing means, for subtracting the respective ones of modified remaining number data from the respective ones of the stored reference number data to calculate respective ones of said sales number data and for storing the respective ones of the calculated sales number data;

supplementary counting means to be started at least after the operation of closing said inner door for modifying the respective ones of said remaining number data by the respective ones of said number of articles sensed by said sensing means, for adding the respective ones of modified remaining number data to the respective ones of the stored reference number data to calculate respective ones of said reference number data and for storing the respective ones of the calculated reference number data; and

reading means to be started after the termination of the operation of said sales counting means for reading out said sales number data from said first memory means to transfer the sales number data read out to a second memory means provided outside of said vending machine.

4,553,212

LEAKAGE INSPECTION DEVICE FOR BRAKE HOSES

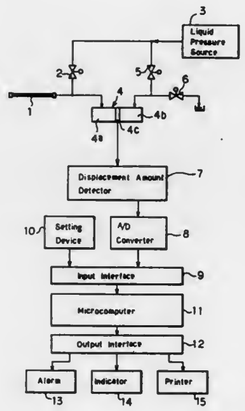
Chikahisa Hayashi, Anzyou, and Masakatsu Kanayama, Inazawa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 11, 1983, Ser. No. 483,754

Claims priority, application Japan, Apr. 14, 1982, 57-61977

Int. Cl.⁴ G01M *3/26*

U.S. Cl. 364—507 **4 Claims**



1. A leakage inspection device for brake hoses, comprising:

(a) a first cylinder chamber adapted to communicate with a brake hose to be inspected;

(b) a second cylinder chamber connected to a fluid pressure source;

(c) a leakage detecting cylinder with a piston disposed between said first and second cylinder chambers;

(d) displacement amount detecting means for detecting displacement of said piston of said leakage detecting cylinder and generating a signal corresponding to the displacement amount; and

(e) processing means for receiving the displacement detecting signal from said displacement amount detecting means, calculating leakage amount per unit time for a prescribed time based on the received signal, comparing

data of the leakage amount per unit time with an upper limit value based on leakage of good products, and generating a failed product signal when said leakage amount exceeds said upper limit value.

4,553,213

COMMUNICATION SYSTEM

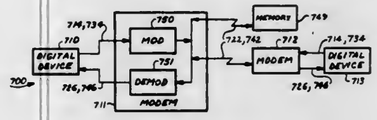
Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, and Ser. No. 849,733, Nov. 9, 1977, abandoned, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 402,520, Oct. 1, 1973, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 134,958, Apr. 19, 1971, and Ser. No. 101,881, Dec. 28, 1970.

This application Sep. 27, 1982, Ser. No. 425,134

Int. Cl.⁴ G06F *3/04, 15/40*

U.S. Cl. 364—514 **26 Claims**



20. A communication system comprising:

overlapping signature signal communication means for communicating information as a plurality of overlapping signature signals, said communication means including,

(a) means for generating the information to be communicated,

(b) means for generating an overlapping signature signal in response to the information to be communicated, and

(c) means for communicating the overlapping signature signal to a remote location; and

filter means at the remote location for reconstructing the information to be communicated to the remote location in response to the overlapping signature signal.

4,553,214

ANGLE BASED STROKE GENERATOR

Jay R. Dettmer, Columbia, Md., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,362

Int. Cl.⁴ G06F *15/40, 15/20*

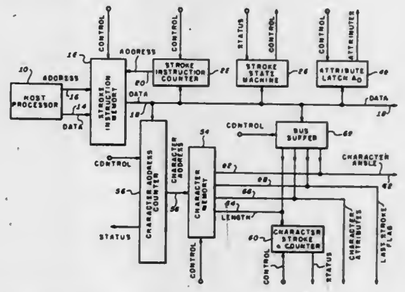
U.S. Cl. 364—521 **5 Claims**

1. Stroke display apparatus having display means with display face and writing means positonable along x and y display axes for writing vectors of predetermined length, origin, and slope, and for dynamically rotating said vectors by a predetermined offset angle supplied by a host computer, said stroke display apparatus comprising:

means for representing said vectors in terms of a vector angle with respect to a reference axis of said display face including first memory means for storing a plurality of vector angles, and first memory addressing means coupled to said first memory means for addressing said plurality of vector angles,

means for latching said predetermined offset angle provided by said host computer,

means for summing said vector angle and said latched offset angle, thereby providing a draw angle,



means responsive to said draw angle for providing first and second orthogonal signals representing incremental steps defining said vector rotated by said predetermined offset angle, and

means responsive to said first and second orthogonal signals for writing said vector rotated by said offset angle on said display face.

4,553,215

GRAVURE SCREEN AND METHOD OF MAKING THE SAME

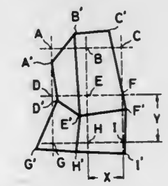
Toshiro Masuda, Tokyo, and Yoichi Tanaka, Hachioji, both of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Aug. 25, 1981, Ser. No. 296,179

Claims priority, application Japan, Jan. 22, 1981, 56-8212

Int. Cl.⁴ G06F *15/20;* **G03F** *5/00*

U.S. Cl. 364—525 **3 Claims**



1. A method for preparing an irregular pattern of transparent or opaque lines for a gravure screen, said method comprising the steps of recording positional information concerning a plurality of points having regular positional relationships such as the points of intersection of a plurality of parallel straight vectors crossing at right angles or in an oblique manner so as to form a regular pattern; calculating, from the respective positions of said plurality of points, positions of new points which correspond to said plurality of points and which are irregularly located within a defined range; recording the positional information of said new points; determining combinations of said new points which correspond to combinations obtained by connecting said plurality of points to one another; connecting said new points to one another with straight or curved lines on the basis of said determined combinations in order to form said irregular pattern, said irregular pattern including a plurality of figures, each of which is surrounded by a number of said

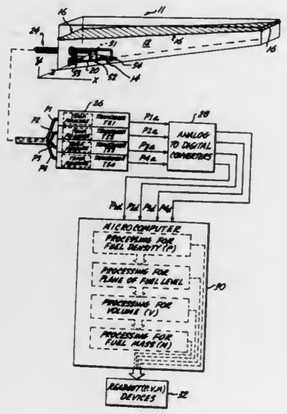
straight or curved lines; calculating the area of each of said figures; judging whether or not said area of each of said figures is within a predetermined area range; cancelling each combination of said new points which corresponds to at least one of said straight or curved lines surrounding a particular figure so as to combine said figure with another figure if said area of said figure is smaller than said predetermined area range; determining a further combination of said new points which corresponds to a straight or curved line which divides a particular figure into two smaller figures if said area of said figure is larger than said predetermined area range; and connecting said new points to one another with straight or curved lines in order to reform said irregular pattern.

4,553,216

LIQUID STORAGE GAUGING METHOD AND APPARATUS

Glenn G. Stevens, and Roger C. Kennedy, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1982, Ser. No. 452,966
Int. Cl.[4] G01F *23/26*
U.S. Cl. 364—558 **14 Claims**



5. An apparatus for measuring density ρ of a liqud from a plurality of pressure measurements, comprising:

first, second, third and fourth pressure sensor means adapted to be disposed at known, spaced-apart locations beneath a surface plane of the liquid, wherein said locations are defined by position vectors $\vec{r_i}$ (i=1,2,3,4) and are disposed at different, unknown distances from said surface plane, said position vectors $\vec{r_i}$ (i=1,2,3,4) being related to a coordinate system and defined by associated coordinates x_i, y_i, z_i (i=1,2,3,4);

electrical means associated with said pressure sensor means for producing first, second, third and fourth electrical signals representing pressures P_1, P_2, P_3, and P_4 existing within the liquid respectively at said associated locations defined by position vectors $\vec{r_i}$ (i=1,2,3,4), said density ρ being a function of said first, second, third and fourth electrical signals representing pressures P_1, P_2, P_3, and P_4 and said coordinates x_i, y_i, z_i (i=1,2,3,4);

computing means for computing density ρ as a function of said first, second, third and fourth electrical signals and said coordinates x_i, y_i, z_i (i=1,2,3,4); and

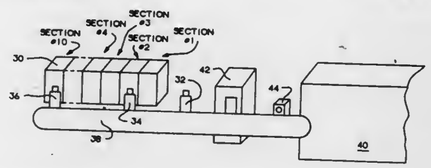
output means connected to said computing means for indicating the density ρ.

4,553,217

GLASSWARE GAUGING SYSTEM

Stephen W. Daudt, Longmont; George W. Gleason, Boulder; William C. Hermanson, Boulder, and Arthur A. Olsen, Boulder, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 281,467, Jul. 8, 1981, Pat. No. 4,476,533.
This application Jul. 11, 1984, Ser. No. 629,891
Int. Cl.[4] G06F *15/20*; G01B *11/00*
U.S. Cl. 364—560 **21 Claims**



21. A system for measuring the roundness of an article of glassware in transit on a conveyor comprising:

a plurality of non-contact gauging means for measuring the diameter of the article of manufacture from a plurality of views, each of said gauging means including

means for sensing the transit time of a first edge of the article of glassware from a first predetermined position to a second predetermined position and for generating a velocity signal proportional thereto;

means for detecting the interval of time associated with the passage of the first edge of the article of glassware past a third predetermined position and the passage of a second edge of the piece of glassware past the third predetermined position and for generating a time interval signal proportional thereto; and

means for combining the velocity and time interval signals to generate diameter data proportional to the diameter of the article of glassware at each of said plurality of optical views; and

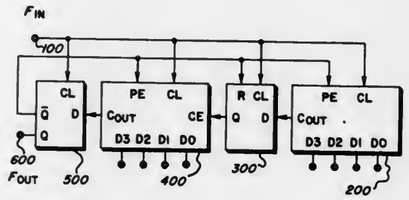
means for comparing the diameter measurements made by each of said gauging means for determining the roundness of said articles of glassware.

4,553,218

SYNCHRONOUS CARRY FREQUENCY DIVIDER AND METHOD OF USING THEREFOR

Thad J. Genrich, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1983, Ser. No. 470,687
Int. Cl.[4] G06F *7/68*; H03K *21/16, 21/32*
U.S. Cl. 364—703 **16 Claims**



1. A frequency divider comprising:

means for applying a clock signal;

a series of counters, at least all but the initial counter in said series having a count enable input, each counter in said series having a terminal count output for providing a terminal count signal and each counter in said series being coupled to said means for applying;

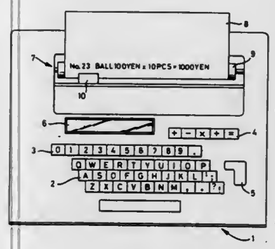
means, coupled between the terminal count output of a first counter in each successive pair of counters and the count enable input of a second counter in each successive pair of counters and coupled to said means for applying, for synchronizing application of a terminal count signal to a count enable input with said clock signal.

4,553,219

TYPEWRITER HAVING CALCULATING CAPABILITY

Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 28, 1982, Ser. No. 426,136
Claims priority, application Japan, Sep. 30, 1981, 56-145947
Int. Cl.[4] G06F *7/00*
U.S. Cl. 364—705 **8 Claims**



1. A typewriter having a calculating function which comprises:

a keyboard having a plurality of character keys including letter keys, numeral keys and arithmetic symbol keys;

arithmetic means for performing an arithmetic operation designated by at least one of said arithmetic symbol keys, based on plural sets of numeric data each representing a numerical value and entered through said numeral keys said arithmetic means comprising a first and a second operand memory;

main control means, connected to said keyboard and said arithmetic means, for selecting said plural sets of numeric data as operands from among successive sets of data entered through corresponding to the sequential operation of said letter, numeral and arithmetic symbol keys, such that only the set of numeric data which is entered last prior to each operation of any one of said arithmetic symbol keys is regarded as one of said plural sets of numeric data, said main control means generating an arithmetic instruction signal corresponding to the operation of said arithmetic symbol keys, temporarily storing one set of numeric data in said first operand memory, updating said firt operand memory by replacing said one set of numeric data with another set of numeric data in a repeated manner until said arithmetic instruction signal is generated, and storing a subsequent set of numeric data in said second operand memory after generation of said arithmetic instruction signal, thereby making the selection of said plural sets of numeric data as said operands, said main control means directing said arithmetic means to perform the arithmetic operation based on the selected plural sets of numeric data, and reading out a result of said arithmetic operation from said arithmetic means; and

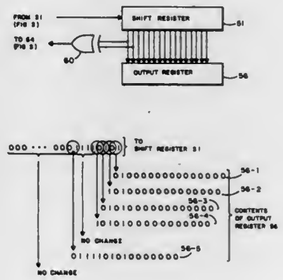
a printing device connected to said main control means for printing a succession of characters entered by said letter, numeral and arithmetic symbol keys, and said result of arithmetic operation read out by said main control means, said result being printed following said succession of characters.

4,553,220

MATRIX MULTIPLIER WITH NORMALIZED OUTPUT

William E. Swanson, San Diego, Calif., assignor to GTI Corporation, San Diego, Calif.

Filed May 19, 1983, Ser. No. 496,240
Int. Cl.[4] G06F *5/00*
U.S. Cl. 364—715 **16 Claims**



1. Apparatus for normalizing a plurality of multiple bit data streams for minimizing the size of the data streams while substantially preserving the information content thereof, said apparatus comprising:

a plurality of first register means, each of said first register means receiving therein a respective multiple bit data stream one bit at a time,

detection means interconnected with each of said plurality of first register means and responsive to the signal levels of successive bits which form each of the respective data streams, and

a plurality of second register means, each of which being interconnected with a respective one of said plurality of first register means,

said detection means generating an output signal for causing the contents of said plurality of first register means to be concurrently loaded into respective ones of said plurality of second register means whenever said detection means detects particular signal levels for any successive bits which form any of said respective data streams in said plurality of first register means, the last data bits loaded into said plurality of second register means providing a normalized representation of each of said corresponding plurality of data streams.

4,553,221

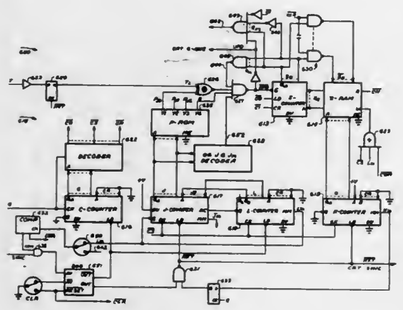
DIGITAL FILTERING SYSTEM

Gilbert P. Hyatt, P.O. Box 846, Cypress, Calif. 90630

Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, and Ser. No. 849,733, Nov. 9, 1977, abandoned, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 849,812, Nov. 9, 1977, , Ser. No. 844,765, Oct. 25, 1977, , Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 402,520, Oct. 1, 1973, , Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, , Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,943, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, , Ser. No. 134,958, Apr. 19, 1971, , and Ser. No. 101,881, Dec. 28, 1970,. This application Sep. 27, 1982, Ser. No. 423,961

Int. Cl.⁴ G06F *15/31*; G01V *1/28*

U.S. Cl. 364—724 **42 Claims**



8. A spacial filter system comprising:

spacial input means for generating single bit spacial input signal samples and

a spacial filter processor for generating filtered spacial output signal samples in response to the single bit spacial input signal samples generated with said spacial input means, wherein said spacial filter processor includes

reference means for generating spacial reference signal samples;

output means for storing spacial output signal samples; and

update means for updating the spacial output signal samples in response to the single bit spacial input signal samples generated with said spacial input means, said update means including

(a) product means for generating product signal samples by multiplying the single bit spacial input signal samples generated with said spacial input means and the reference signal samples generated with said reference means and

(b) summing means for adding the product signal samples generated with said product means and the spacial output signal samples stored with said output means.

22. A filter system comprising:

a plurality of spacial domain filter processors for generating filtered signal samples, wherein each of the spacial domain filter processors includes

(a) input means for generating input signal samples,

(b) reference means for generating reference signal samples, and

(c) multiplying means for generating product signal samples by multiplying the input signal samples generated with said input means by reference signal samples generated with said reference means;

summing means for generating filtered spacial signal samples by summing product signal samples generated with a plurality of said multiplying means from said plurality of spacial domain filter processors;

a memory for storing the filtered spacial signal samples generated with said summing means; and

output means for outputting the filtered spacial signal samples stored in said memory.

4,553,222

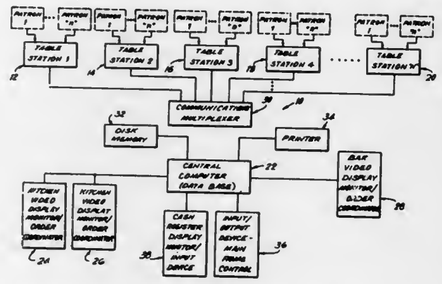
INTEGRATED INTERACTIVE RESTAURANT COMMUNICATION SYSTEM FOR FOOD AND ENTERTAINMENT PROCESSING

Lawrence G. Kurland, 26 Farmington La., Melville, N.Y. 11747, and Eli Gilbert, 545 West End Ave., New York, N.Y. 11024

Filed Mar. 14, 1983, Ser. No. 474,984

Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—900 **41 Claims**



1. An interactive integrated restaurant information communication system for enabling both individualized food and entertainment interactive information communication with a central remote data base from each of a plurality of different multipurpose table station terminals utilizable by a plurality of different restaurant patrons, said system comprising a central computer means for remotely retrievably storing information comprising a plurality of food menu modules and entertainment modules for selective retrieval of said remotely stored information by each of said table station terminals over a common transmission media and for processing information received from each of said table station terminals; and a plurality of said table station terminals, each of said table station terminals comprising microcomputer means for controlling the operation thereof, said microcomputer means being connected to said common transmission media for receiving and transmitting information between said central computer means and said table station terminals, each of said table station terminals further comprising food and entertainment selection and control means connected to said microcomputer means for enabling retrievable selection of said remotely stored food and entertainment modules from said central computer means and interaction therewith at said table station terminal, a local storage means connected to said microcomputer means for locally storing said selected ones of said food and entertainment modules and a common local video type display means connected to said microcomputer means and said common transmission media for connecting each of said table station terminals to said central computer means for enabling communication of said respective information therebetween and for commonly displaying data corresponding to said selected module; each of said remotely stored food and entertainment modules information comprising a different set of control instructions for said table station terminal, each of said sets of control instructions corresponding to a different selectable food menu or entertainment function respectively, for said terminal, said information transmittable from said central computer means over said common transmission media comprising said retrievably stored sets of control instructions for down-line loading of said local storage means at said table station terminal of a selected set of said control instructions in response to a request therefor by a restaurant patron via said selection means, said sets of control instructions for said table station terminal comprising sets of control instructions for said microcomputer means; each of table station terminals further comprising means connectable to said microcomputer means, to said selection means and to said local storage means for selectively controlling the local storage of said remotely transmitted information in said local storage means dependent on at least said selected interactive food or entertainment function for said terminal, said microcomputer means being operable in accordance with at least a first one of said locally stored remotely transmitted selected sets of control instructions and comprising means capable of processing incoming data provided via said selection and control means in accordance therewith, processed food menu selection data processed by said incoming data processing means being transmittable from said table station terminal to said central computer means over said common transmission media, said central computer means further comprising central display means for commonly displaying said processed food menu selection data from said plurality of table station terminals, said remotely stored entertainment modules comprising interactive activities, said microcomputer incoming data processing means comprising means capable of processing incoming interactive entertainment activity data provided from said selection and control means corresponding to a selected down-line loaded interactive entertainment activity for providing a displayable processed output therefrom on said common local video type display means; whereby each table station terminal may independently provide both interactive entertainment and food selection on a common video type display terminal in cooperation with a central data base.

4,553,223

STATIC DISTURBANCE SIGNAL RECORDING SYSTEM HAVING DETACHABLE PROGRAMMING TERMINAL & PROGRAMMABLE FIXED PART WITH SELECTIVELY POWERED BUFFER MEMORY

Francis Bouheller, and Claude Vialatte, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Jul. 6, 1982, Ser. No. 395,313

Claims priority, application France, Jul. 17, 1981, 81 13977

Int. Cl.⁴ G06F *3/00, 11/30, 15/16, 15/20*

U.S. Cl. 364—900 **10 Claims**

1. A disturbance signal recording system comprising: a fixed unit located at a point suitable for detecting a disturbance, said fixed unit including:

(a) processing signal means for continuously receiving input signals and outputting corresponding digital signals;

(b) pretriggering memory means for receiving and delaying said digital signals received from said processing signal means;

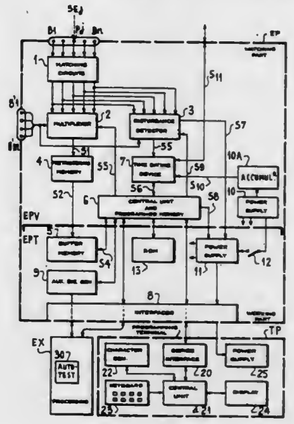
(c) disturbance detector means for receiving said digital signals from said processing signal means and detecting which ones of said digital signals are disturbance signals, said disturbance detector means outputting first and second control signals at the beginning of each detected disturbance signal and a third control signal at the end of each detected disturbance signal;

(d) solid state buffer memory means for recording, from said pretriggering memory, said ones of said digital signals which have been detected to be disturbance signals by said disturbance detection means, said recording occurring in response to a record control signal;

(e) programmable control means for receiving said first and third control signals from said disturbance detector means and in response to said first control signal issuing said record control signal to said buffer memory means and in response to said third control signal issuing a power cut-off signal;

(f) first power supply means for continuously supplying power to said processing signal means, said pretriggering memory means, said disturbance detector means and said programmable control means; and

(g) second power supply means for supplying power to said buffer memory means in response to said second control signal from said disturbance detector means and for cut-



ting off power to said buffer memory means in response to said power cut-off signal from said programmable control means;

a peripheral unit including a storage recording means for recording said disturbance signals recorded in said buffer memory means, and a detachable programming terminal, including a control display unit, for programming said programmable control means; and

digital interface means for linking said fixed unit and said peripheral unit;

wherein said programmable control means reads said disturbance signals recorded in said buffer memory means and transmits said read disturbance signals via said digital interface means to said peripheral unit for recording in said storage recording means.

4,553,224

MULTIPLEXED DATA HANDLER FOR PROGRAMMABLE CONTROLLER

Odo J. Struger, Chagrin Falls, Ohio, and Barry E. Sammons, Whitefish Bay, Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 4, 1983, Ser. No. 520,429

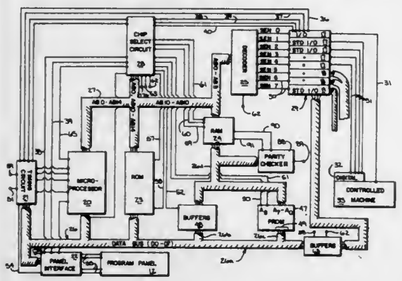
Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—900 **10 Claims**

1. A programmable controller which comprises: a memory for storing I/O data and a user control program; definition means responsive to a control instruction in the user control program for establishing an array of n rows by m columns in the memory for storing a block of I/O data associated with a designated I/O port;

I/O scan means for coupling I/O data between the established array and its designated port; and

control instruction execution means responsive to an operation code in control instructions in the user control pro-



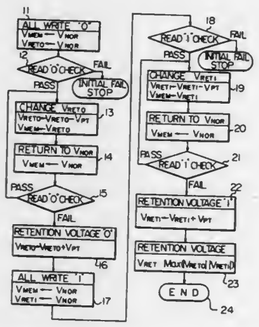
gram for performing a logical operation on a single bit in the established array.

4,553,225

METHOD OF TESTING IC MEMORIES

Yoshikazu Ohe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1982, Ser. No. 423,645
Claims priority, application Japan, Sep. 26, 1981, 56-151439
Int. Cl.⁴ G11C *11/40, 29/00*
U.S. Cl. 365—201 **5 Claims**



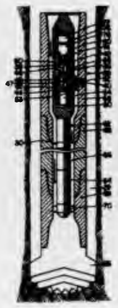
4. A method of testing a memory, comprising the steps of:
(a) writing data into memory cells of the memory at a normal operating voltage;
(b) lowering the operating voltage to a test voltage for a predetermined period of time;
(c) returning the operating voltage to normal;
(d) reading out the data and comparing it to the written data after the operating voltage is returned to normal;
(e) repeating steps (b)–(d) in cycles using successively lower values for the test voltage until the data written into the memory cells does not match the data read out; and
(f) designating, as a minimum memory cell data holding voltage limit, the test voltage value used in the cycle immediately before the data written into the memory cells does not match the data read out.

4,553,226

SYSTEMS, APPARATUS AND METHODS FOR MEASURING WHILE DRILLING

Serge A. Scherbatskoy, 3921 Clayton Rd. E., Fort Worth, Tex. 76116

Continuation of Ser. No. 110,848, Jan. 10, 1980, Pat. No. 4,351,037, which is a division of Ser. No. 857,677, Dec. 5, 1977, abandoned. This application Jun. 17, 1982, Ser. No. 389,247
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 367—83 **4 Claims**



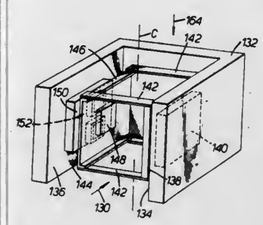
3. A system for performing measurements in a drill hole during drilling operations using a drill string, said drill string defining a part of a fluid passage through which drilling fluid is forced to flow under pressure downwardly through said drill string from the earth's surface towards the lower end of said drill string and then upwardly through the annulus surrounding said drill string from said lower end of said drill string to the earth's surface, sensor means for sensing the magnitude of a downhole parameter and data signalling means for generating a series of signal pulses representing said magnitude, a restriction within said passage, said restriction causing a pressure drop within said passage and as a consequence thereof creating a high pressure zone and a low pressure zone within said passage on different sides of said restriction with a consequent pressure difference therebetween, pressure signalling means comprising a bypass valve in a bypass between said zones for providing fluid communication between said high pressure zone and said low pressure zone said bypass valve having an open position and a closed position;
means for producing a plurality of electrical voltage changes in response to each of said signal pulses and including
electronic means for controlling the time interval between selected ones of said electrical voltage changes;
means for controlling said pressure signalling means and operated in accordance with a selected one of said electrical voltage changes for causing initiation of the movement of said valve into one of said positions and in accordance with a selected other of said electrical voltage changes for causing initiation of the movement of said valve into the other of said positions, thereby causing pressure changes to be generated in said drilling fluid; and,
a transducer means at the earth's surface to detect said pressure changes and to provide a measure of the magnitude of said parameter.

4,553,227

OPTICAL PICKUP

Fusayoshi Kido; Atsushi Takahashi, both of Yokohama; Shitta Shingu, Tokyo; Yoshinori Higuchi, and Akira Yamada, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 15, 1983, Ser. No. 485,459
Claims priority, application Japan, Apr. 23, 1982, 57-67190; Apr. 23, 1982, 57-67193
Int. Cl.⁴ G11B *7/08*
U.S. Cl. 369—44 **16 Claims**



1. An optical pickup comprising:
a magnetic yoke having first and second surfaces facing each other, said first and second surfaces defining a magnetic gap therebetween;
at least one first flexible supporting member having first and second ends, said first end being fixed to said yoke at said first surface portion and said at least one first flexible supporting member being flexible in a first direction;
a first movable member attached to said second end of said at least one first flexible supporting member;
at least one second flexible supporting member having first and second ends, said first end of said second member being fixed to said first movable member, said second member being flexible in second direction perpendicular to said first direction;
a second movable member attached to said second end of said at least one second flexible supporting member;
an objective lens fixed to said second movable member and having an optical axis;
first permanent magnetic supporting means for producing a first magnetic field to support said first movable member in said magnetic gap;
second permanent magnetic supporting means for producing a second magnetic field to support said second movable member in said magnetic gap;
first electromagnet means for altering the distribution of said first magnetic field to move said objective lens in said first direction;
second electromagnet means for altering the distribution of said second magnetic field to move said objective lens in said second direction;
light source means for providing light to said objective lens;
a focusing lens for receiving light from said objective lens; and
a photo detector which receives light from said focusing lens.

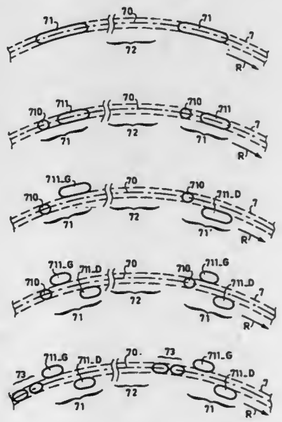
4,553,228

MOBILE PRE-ETCHED DATA CARRIER AND AN OPTICAL TRACKING DEVICE USING SUCH A CARRIER

Jean L. Gerard, Claude Bricot and Pierre Berthet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 7, 1983, Ser. No. 472,995
Claims priority, application France, Mar. 12, 1982, 82 04218
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—46 **23 Claims**

1. An optical memory system for recording data, in optically readable form, in the reference surface of a preformatted recording medium, said recording data being assigned to a trackable path having a circumferential axis extending along a plurality of evenly spaced convolutions about a center of said preformatted recording medium, said system comprising:
scan means illuminating said reference surface at the circular impact area of a focussed beam for lengthwise following of any one of said convolutions;
photodetector means arranged for sensing optical energy emerging from the illuminated portion of said reference surface; and
modulation means for controlling the intensity of said beam so that said recording data are storable in said reference surface in the form of a local change of optical characteristics induced by said beam;
said reference surface having preformatted flag means for embodying said trackable path, said preformatted flag means occupying a plurality of spaced sections in each of said convolutions thereby providing therebetween predetermined data storage sections specifically alloted to time shared recording of said recording data with said beam, said preformatted flag means comprising a serial pattern of optically readable island shaped items whose optical interaction with an illuminating spot projected by said scan means produces at the output of said photodetector means a recognition signal representative of the optical scanning of at least one of said items and at least one further signal sensing the radial offset of at least one of said items optically interacting with said spot;



identifying means for identifying said recognition signal to supply a timing signal controlling said modulation means for preserving the integrity of said preformatted flag means while scanned by said beam; and
tracking means responsive to said further signal, the one of said items optically interacting with said spot being arranged to produce effective optical interaction with said spot centered on said circumferential axis.

4,553,229

APPARATUS FOR READING INFORMATION

Shunichiro Wakamiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,315
Claims priority, application Japan, May 8, 1982, 57-75967
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—110 **8 Claims**

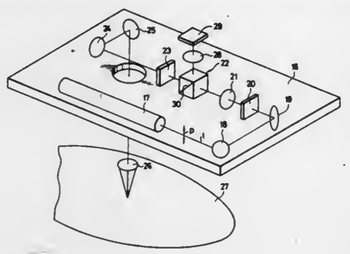
1. An apparatus for reading information from an optical recording medium, comprising:
a laser beam source for generating a laser beam;
a beam splitter; and
at least one fixed mirror disposed in an optical path of said

laser beam between said laser beam source and said beam splitter to reflect said laser beam toward said laser beam splitter;

means for receiving said laser from said beam splitter and directing said laser beam at an optical recording medium for generating a reflected laser beam for information carrying light;

means for receiving said information carrying light;

said laser beam source being arranged so that a linearly polarized, light oscillating plane including an optical axis and an oscillating direction of said leaser beam is perpendicular to a plane including a normal of said fixed mirror and said optical axis of said laser beam;



wherein a plane including a normal of a reflection plane of said beam splitter and said optical axis of said laser beam is parallel to said linearly polarized, light oscillating plane;

said fixed mirror comprises a multi-layered, dielectric film structure formed by alternately stacking high refractive index films and low refractive index films on a glass substrate; and

wherein said high refractive index films are made of zirconium oxide and said low refractive index films are made of silicon dioxide, and a number of said films is less than 14.

4,553,230

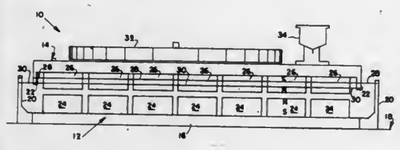
VIBRATION FREE TURNTABLE APPARATUS

Rollie W. Paulson, 6119 9th Ave. South, Gulfport, Fla. 33707

Filed Aug. 20, 1984, Ser. No. 642,548

Int. Cl.⁴ G11B *1/00*

U.S. Cl. 369—263 **5 Claims**



1. An apparatus for supporting portable articles of the type desired to be protected from vibrations, comprising:

a substantially rectangular in configuration base member having a flat bottom;

a support means for supporting said base member in a substantially horizontal plane;

a plurality of upstanding post members disposed at preselected positions about the perimeter of said base member,

a substantially rectangular in configuration platform member having a flat bottom;

a plurality of depending post members disposed at preselected positions about the perimeter of said platform member;

a plurality of base magnet members fixedly secured to the top of said base member;

a plurality of platform magnet members fixedly secured to the bottom of said platform member;

said platform member being disposed upwardly of said base member;

said base magnet members and said platform magnet members having an opposite polarity and being disposed in vertically spaced relation to one another so that the repulsive forces therebetween maintain said base member and said platform member in spaced apart relation to one another;

alignment means for maintaining said base member and said platform member in said magnetically-established spaced relation to one another;

said alignment means comprising eight in number taut guy wires disposed in interconnecting relation to preselected ones of said upstanding post members and said depending post members, a pair of parallel, vertically spaced guy wires being associated with each of the sides of said base and platform members;

said platform member having length and width dimensions less than the corresponding dimensions of said base member so that the depending post members of the platform member are spaced inwardly of the upstanding post members of the base member when said base magnet members and said platform magnet members are aligned with respect to one another;

each of said guy wire members having a first end secured to an upstanding post member and a second end secured to a depending post member;

a first guy wire in a pair of wires having its first end secured to an upstanding post member and its second end secured to a depending post member;

a second guy wire in a pair of wires having its first end secured to a depending post member and its second end secured to an upstanding post member;

whereby an article sought to be supported and insulated from vibrations may be disposed atop said platform member and protected from vibrations by the inability of vibrations to traverse the gap between said platform magnet members and said base magnet members.

4,553,231

MOTION DAMPING SUSPENSION SYSTEM FOR RECORD PLAYBACK MACHINES

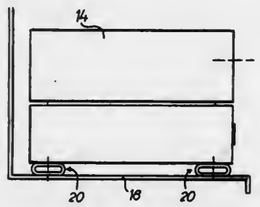
Stéphane A. M. d'Alayer de Costemore d'Arc, Ways, Belgium, assignor to Staar S. A., Belgium

Filed May 10, 1984, Ser. No. 608,879

Claims priority, application Belgium, Jun. 16, 1983, 211,016

Int. Cl.⁴ G11B *1/00, 17/00, 23/00*

U.S. Cl. 369—263 **8 Claims**



1. A motion damping suspension system for mounting a machine, such as a record playback machine, vertically above a movable support comprising:

movable support members providing substantially flat, horizontal supporting surfaces;

machine mounting members providing substantially flat mounting surfaces substantially parallel to and above said supporting surfaces;

a plurality of elastic rings secured between said machine mounting surfaces and said support supporting surfaces with said elastic rings in flattened condition between said surfaces and the axis of each ring arranged substantially horizontally and opposite segments of each ring adjacent said mounting and supporting surfaces extending substantially horizontally;

means for securing a portion of one of said horizontally extending segments of each ring to the machine and a portion of the other of said horizontally extending segments of each ring to the support to support the weight of the machine by compressing vertically extending segments of each ring such that stress applied to the machine having a component in the direction of the horizontal segments of a flattened ring produces limited rolling movement of said horizontally extending segments of the flattened ring along said mounting surfaces and said supporting surfaces which damps motion of the machine;

said flattened ring also damping motion of the machine vertically and laterally relative to said direction.

4,553,232

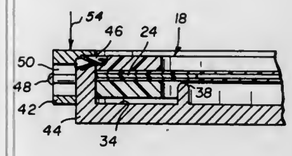
CLAMPING DEVICE FOR OPTICAL DISK ASSEMBLIES

Roger G. Covington, and Stephen H. Miller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,491

Int. Cl.⁴ G01D *15/32*; G11B *7/24*

U.S. Cl. 369—287 **2 Claims**



1. Optical disk write and/or read apparatus adapted for use with an optical disk assembly which includes (1) a flexible, disk-shaped support web carrying a record layer and (2) an annular retaining ring engaging the support around its peripheral region; said apparatus comprising:

(a) lens means for focusing light at a focal plane normal to a predetermined axis;

(b) an annular locating surface rotatable about said axis in a plane normal to said axis; and

(c) a clamping device for holding the annular retaining ring in a position bringing the support web into a predetermined abutting force against said locating surface

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4,553,233

MULTIPLE-RING COMMUNICATION SYSTEM

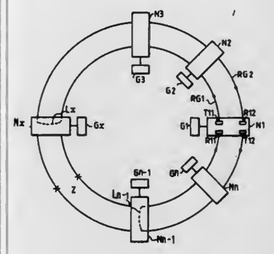
Pierre L. Debuysscher, Nazareth; Hugo J. P. Peeters, Brasschaat, and Christiaan G. M. M. Hennebel, Mortsel, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,133

Claims priority, application Belgium, Dec. 22, 1982, 2/59974

Int. Cl.⁴ H04J *1/16, 3/14*

U.S. Cl. 370—16 **18 Claims**



1. Multiple-ring communication system which includes a plurality of nodes intercoupled in at least two rings and operating on an equal basis without central control, each node including a plurality of message receiver/transmitter equipments associated to distinct ones of said rings respectively, each of said equipments able to receive messages on said associated distinct ring and transmit messages thereon in a direction opposite to other said distinct rings, and processing means for checking the receipt or absence of receipt of signals on the receiver ring portions connecting the receivers of said node to transmitters of its neighbouring nodes and for performing reconfiguration operations in response to the result provided by said checking operation, characterized in that said receiver/transmitter equipments of each said node (N1) are able to transmit on said rings (RG1, RG2) ring test messages (RTM11, RTM12) the destination of which is said node (N1) itself, said processing means (MP1, MEM1) controlling said receiver/-transmitter equipments of said node and being able to check the receipt or absence of receipt of said ring test messages prior to possibly executing said reconfiguration operations.

4,553,234

METHOD AND SYSTEM OF TRANSMITTING DIGITAL INFORMATION IN A TRANSMISSION RING

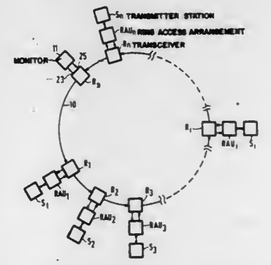
Johan R. Brandsma; Alphons A. M. L. Bruekers, and Jozef L. W. Kessels, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 30, 1983, Ser. No. 566,945

Claims priority, application Netherlands, Jan. 6, 1983, 8300033

Int. Cl.⁴ H04J *3/00*

U.S. Cl. 370—86 **22 Claims**



1. A method of transmitting digital information between a plurality of stations which are coupled to a unidirectional transmission ring having a monitor for generating a frame in the ring said frame comprising a plurality of types of time slots which differ from each other in the number of bits which can be accommodated in the time slots, time slots of the same type forming in consecutive frames a corresponding number of numbered channels for transmitting the digital information between stations, said frame comprising at least one time slot for transmitting the channel numbers to be utilized from the monitor to the stations, and the relevant corresponding time slots in consecutive frames form together a monitor transmit channel, at least one time slot per frame is provided for transmitting channel numbers which are no longer utilized from the stations to the monitor, and corresponding time slots in consecutive frames form together a monitor receive channel, at least one time slot constituting a message field, is provided for transmitting protocol messages from one station to another addressed station, the method comprising the following steps:

(a) obtaining a channel to be utilized by reading at a station a channel number from the time slot of the monitor transmit channel and entering therein a dummy channel number ("nihil");

(b) repeating step (a) until the read channel number is a "non-nihil" channel number;

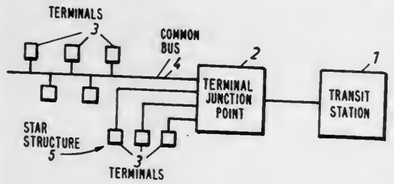
(c) transmitting from said station the obtained channel number to be utilized to an addressed station;
(d) repeatedly writing at said station a sub-packet of digital information in the transmission ring into a time slot of the channel obtained;
(e) repeatedly reading at said addressed station the sub-packet of information in a time slot of the given channel in the ring;
(f) writing the channel number which is no longer required after the transmission of the digital information, into a time slot of the monitor receive channel after reading the channel number present there; and
(g) repeating step (f) with the read information until the read channel number is a "nihil" channel number.

4,553,235

APPARATUS FOR CONNECTING DIGITAL TERMINALS TO A DIGITAL EXCHANGE

Lars T. E. Svensson, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00167, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/04115, PCT Pub. Date Nov. 24, 1983
PCT Filed Apr. 27, 1983, Ser. No. 574,101
Claims priority, application Sweden, May 7, 1982, 8202896
Int. Cl.⁴ H04J *6/00*
U.S. Cl. 370—94 **5 Claims**



1. Apparatus in a digital communication system for connecting digital terminals to a terminal junction point which in turn is connected to a digital exchange, characterized in that the terminal junction point includes a directing means (**9**) sending in a first state a flag signal to all terminals (**3**) as well as to the exchange (**1**) where said signal is utilized, for filling out empty space in the information flow, and in its second state sending an information packet received from a terminal toward the exchange as well as to do all terminals; the terminals including means (**27, 28**) for sending out an information packet, in response to the flag signal having been received a given number of times, the reception of said information packet at the junction point resetting said directing means to its second state; the terminal including comparison means (**34**) for determining whether the packet information sent back from the junction point corresponds to the terminal's own sent-out packet information, and means responsive to said comparison means for disconnecting the terminal if the sent back packet information is different from the sent-out packet information.

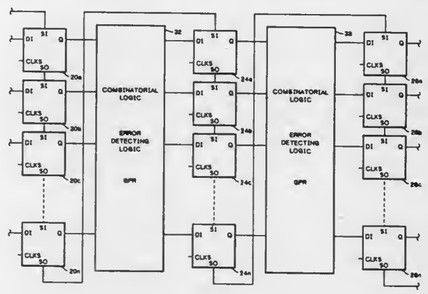
4,553,236

SYSTEM FOR DETECTING AND CORRECTING ERRORS IN A CMOS COMPUTER SYSTEM

John J. Zasio, Sunnyvale, and Larry Cooke, Cupertino, both of Calif., assignors to Storage Technology Partners, Louisville, Colo.

Division of Ser. No. 460,952, Jan. 25, 1983, Pat. No. 4,495,629. This application Jul. 5, 1984, Ser. No. 592,125
Int. Cl.⁴ G06F *11/26*
U.S. Cl. 371—15 **4 Claims**

1. An improved system for detecting and correcting errors in a computer system comprising a plurality of scannable latch circuits connected in series as a shift register circuit and each having its output coupled to combinatorial logic circuitry and error detecting circuitry, said scannable latch circuits being operable as a latch under control of at least one clock signal that defines a clock cycle, the improvement comprising:
means for isolating the latch output of each scannable latch circuit that is connected to the combinatorial logic and error detecting circuitry from the shift register output of each scannable latch circuit that is connected to the next stage of the series shift register circuit, comprising latch means coupled to the latch output of said scannable latch circuit for allowing a data signal appearing on the latch output to be selectively clocked into said latch means, said



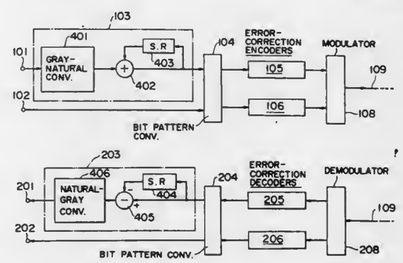
latch means having an output terminal that operates as the shift register output, whereby the latch output is not loaded down by the shift register output; and
means for allowing the latch output to be monitored during substantially all of said clock cycle, comprising an asymetrical clock signal, having first and second states, supplied as said clock signal of said scannable latch circuits, said asymetrical clock signal assuming the first state for a substantially longer time period during each clock cycle than it assumes the second state, whereby errors may be detected by the error detecting circuitry for a longer time, without having to slow down said clock cycle, by detecting errors during said first state.

4,553,237

ERROR-CORRECTION SYSTEM FOR TWO-DIMENSIONAL MULTILEVEL SIGNALS

Katsubiro Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 532,935
Claims priority, application Japan, Sep. 17, 1982, 57-161876
Int. Cl.⁴ G06F *11/10;* **H04L** *5/12*
U.S. Cl. 371—37 **9 Claims**



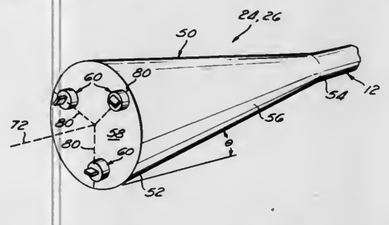
1. A method for correcting errors comprising, differentially encoding part of the data bits of first multilevel input data to form second data comprising the differentially encoded data bits and the remainder data bits, converting the bit patterns of the second data into third data in two-dimensional multilevel signal space according to a predetermined transfer function, deriving a transparent error-correcting code from each of the different phases of the third data and appending the error-correcting code to each different phase to thereby form fourth data, modulating said fourth data in two-dimensional multilevel signal space for transmission to a destination, demodulating the modulated fourth data, separating the appended error-correcting code from each different phase of the demodulated fourth data, correcting an error which might exist in the different phase of the fourth data with the separated error-correcting code, reconverting the bit pattern of the error-corrected data to recover the original second data and differentially decoding part of the data bits of the second data to recover the original first data.

4,553,238

FIBER OPTIC AMPLIFIER

Herbert J. Shaw, Stanford; Michel J. F. Digonnet, and Robert A. Lacy, both of Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Filed Sep. 30, 1983, Ser. No. 537,493
Int. Cl.⁴ H01S *3/30*
U.S. Cl. 372—6 **13 Claims**



1. An improved fiber optic amplifier, comprising an optical laser fiber, formed of a laser material, the improvement comprising an apparatus for providing light to pump said optical laser fiber, comprising:
a cone shaped rod, comprising:
a first fiber sized end for
coupling light to said laser fiber:
a second end having a diameter substantially larger than said first end and having an end face for receiving light; and
means for preferentially introducing pump light into said end face of said second end at a location which is offset from the central axis of said cone shaped rod to non-uniformly illuminate said end face to preferentially excite high order modes in said cone shaped rod, said cone shaped rod focusing said pump light from said second end to said first fiber sized end for introduction to said laser fiber to pump said laser material and cause an electronic population inversion in said laser material.

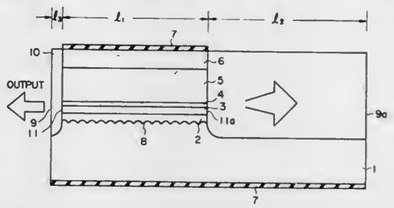
4,553,239

DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER

Shigeyuki Akiba, Tokyo; Katsuyuki Utaka, Musashino; Kazuo Sakai, Tokyo, and Yuichi Matsushima, Tokorozwa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,889
Claims priority, application Japan, Feb. 16, 1982, 57-22123
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—50 **4 Claims**

1. In a distributed feedback semiconductor laser comprising a substrate, a distributed light region, having a light emitting layer, an adjoining layer and corrugations causing refractive index variations in the travelling direction of light, and electrodes on the distributed light region for injection of a current into the light emitting layer thereby causing laser oscillation, the improvement characterized in that a semiconductor region having an energy gap larger than an energy gap of said light emitting layer is defined as at least one layer of an end extension of the distributed light region, said substrate having in the semiconductor region a thickness less than that in the distributed light region, and the semiconductor region being uniformly and substantially thicker than a width dimension of said distributed light region and effective to widespread therein light received from the distributed light region and to maintain from feeding back of the light to the distributed light region.

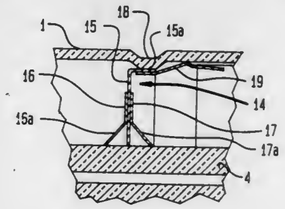


4,553,240

GAS LASER WITH A SPRING-SUPPORTED CAPILLARY

Rudolf Schmid, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,079
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329872
Int. Cl.⁴ H01S *3/03*
U.S. Cl. 372—61 **11 Claims**

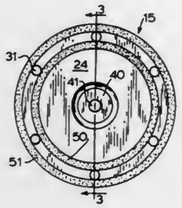


1. In an improved gas laser of the type having
a gas-filled casing which contains an elongated glass jacket,
a capillary enclosed by the jacket, one end of the capillary being permanently connected to the jacket while another end is supported by a supporting spring,
the improvement comprising:
a perforated disc forming part of the spring, the disc extending perpendicular to the axis of the capillary, contacting an annular constricted zone of the jacket, and being made of a material which satifies a formula

$$\left|\frac{\alpha_2 - \alpha_1}{\alpha_1}\right| \leqq .1$$

where α_1 equals a coefficient of thermal expansion of the jacket and α_2 equals a coefficient of thermal expansion of the disc; and
an annular constricted zone in the jacket, said zone forming a shrink mount for the disc.

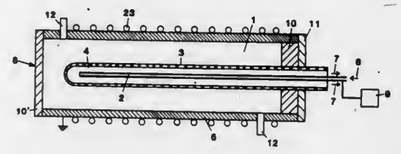
4,553,241
LASER TUBE STRUCTURE
Edwin G. Chaffee, Salt Lake City, Utah, assignor to Laser Corporation, Salt Lake City, Utah
Filed Jul. 18, 1983, Ser. No. 514,701
Int. Cl.⁴ H01S *3/03*
U.S. Cl. 372—62 **9 Claims**



1. A gas laser tube, comprising:
(a) a plurality of axially-aligned, elongated, thin wall, cylindrical segments of electrically-insulating material successively disposed between electrodes at anode and cathode ends in hermetically-bonded relationship with one another and forming an outer wall of the laser tube, each said cylindrical segment defining within the wall thereof an axial longitudinal cylindrical cavity aligned with the said axial longitudinal cavity of each other said cylindrical segment, each said cylindrical segment further defining through the wall thereof a plurality of off-axis longitudinal circular holes therethrough in gas communicating relationship and aligned with the said off-axis longitudinal holes of each other said cylindrical segments to establish a corresponding plurality of elongated cylindrical gas return paths;
(b) a thin metallic support member within each said cavity of each said segment, said support member having an outer peripheral portion located between the sides of said segment and bonded to the wall surface of said segment surrounding said cavity and integral with said peripheral portion a disc portion having an axial aperture therein and aligned with the said axial aperture of each other said cylindrical segments;
(c) a refractory metal disc secured to one side of each said disc portion concentric with and over said axial aperture and having an axial opening therethrough defining an axial bore for the laser discharge and aligned with the said axial opening of each other said refractory metal disc, the cross sectional area of said axial openings being circular and greater than the cross sectional area of said holes; and
(d) metallic securing means disposed between and bonded to the facing end surfaces of adjacent ones of said cylindrical segments in a manner precluding establishment of an electrical path between either electrode associated with said laser and any cooling medium flowing external of the tube while allowing gas communication between said holes at each interfacing pair of segments and in a further manner of hermetically sealing said gas in said holes from said discharge.

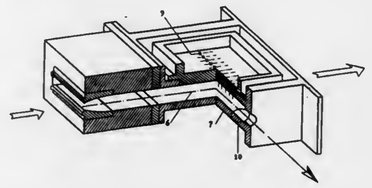
4,553,242
GAS LASER
Hans Opower, Krailling, and Volker Ernst, Neu-Esting, both of Fed. Rep. of Germany, assignors to W.C. Heraeus GmbH, Hanau, Fed. Rep. of Germany
Filed Apr. 19, 1984, Ser. No. 602,121
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316778; Nov. 2, 1983, 3339574
Int. Cl.⁴ H01S *3/097*
U.S. Cl. 372—87 **18 Claims**

1. An electrically excited gas laser having an optical resonator, the laser comprising an inside conductor in the form of a metal tube connected to a high-frequency voltage source, the inside conductor being surrounded, with a first intervening space, by a symmetrical outside conductor that is at ground potential, the first intervening space between the inside and outside conductors forming an excitation chamber in which an electrical discharge takes place between the inside and outside conductors, wherein the outside conductor consists of a tube of



electrical conductive material and is coaxially disposed with the inside conductor which in turn is surrounded, by a spaced jacket tube to form a second intervening space, and a dielectric cooling liquid of electrical insulating quality and low loss factor for high-frequency fields flowing through the second intervening space for continuous or modulated continuous beam operation of the laser.

4,553,243
CHEMICAL LASER
Salman Rosenwaks, 20/3 Sinai St., Beer-Sheva, and David Chuchem, 11 Hakerem St., Omer, both of Israel
Filed Sep. 21, 1982, Ser. No. 420,624
Claims priority, application Israel, Jan. 28, 1982, 64884
Int. Cl.⁴ H01S *3/095*
U.S. Cl. 372—89 **16 Claims**

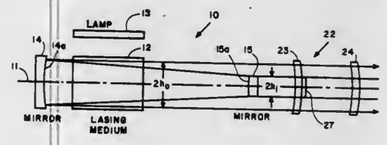


1. A chemical laser operating in a quasi-continuous manner comprising a subsonic stagnation premixing chamber having an inlet and an outlet, means for continuously introducing reactants through the inlet into said chamber forming a gaseous mixture on the fly in said chamber, a supersonic nozzle located at the outlet from said chamber, said nozzle having an outlet, a laser cavity located at the outlet from said nozzle receiving the mixture of gaseous chemical reactant at a velocity exceeding the combustion velocity of said mixture, means for applying a pulsed electrical discharge to said reactants in said laser cavity, and means for exhausting the spent cases from said laser cavity to the atmosphere.

4,553,244
LASER BEAM ENERGY PROFILE SYNTHESIZER
George J. Benedict; Edward D. Reed, Jr., both of Sunnyvale, and Robert W. Jones, San Jose, all of Calif., assignors to GTE Communications Products Corporation, Stamford, Conn.
Filed Apr. 25, 1984, Ser. No. 603,809
Int. Cl.⁴ H01S *3/08*
U.S. Cl. 372—95 **5 Claims**

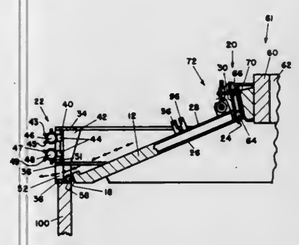
1. In a laser system having an optical axis, a lasing medium, means to energize said medium to produce along said axis a laser beam having a predetermined diameter, and first and second mirrors spaced from opposite ends of said medium along said axis, said first mirror having a concave surface facing said medium and having a diameter no less than the diameter of said beam, said second mirror having a convex

surface facing said medium and having a diameter less than that of said beam whereby said first and second mirrors define an unstable laser resonator, the portion of said laser beam propagating beyond said second mirror constituting the output beam from said resonator and having an annular cross-sectional shape with an outer portion and a central portion, said beam having substantially less energy in said central portion than in said outer portion, the improvement of beam energy profile synthesizer means comprising:
third and fourth mirrors traversing and being spaced along said axis, said third mirror being proximate to said second mirror, said fourth mirror having a concave surface opposite said third mirror and being partially optically trans-



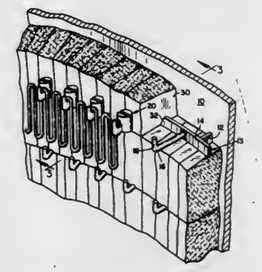
mitting and intersecting said output beam whereby to reflect part of said output beam toward said third mirror and to transmit the balance of said output beam; and
said third mirror having a totally reflective convex surface opposite said fourth mirror and having a diameter substantially the same as the diameter of said central portion of said beam, the radii of curvature of the convex and concave surfaces of said third and fourth mirrors, respectively, being predetermined whereby part of the output beam is transmitted by said fourth mirror and the balance is reflected thereby to said convex surface of the third mirror and is again reflected by a highly reflective disc-shaped coating disposed on said convex surface toward said fourth mirror in said central portion of the beam.

4,553,245
ROOF ASSEMBLY FOR AN ELECTRIC ARC FURNACE
Robert L. Kerr, Poland, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.
Filed Jun. 24, 1983, Ser. No. 507,416
Int. Cl.⁴ F27D *1/12*
U.S. Cl. 373—74 **15 Claims**



1. A roof assembly for an electric arc furnace having a centrally located electrode area, comprising:
a first support ring means defining the outer periphery of said roof assembly,
a second support ring means located concentrically and inwardly of said first ring means and defining the outer periphery of said electrode area, and
a plurality of trapezoidal-shaped panel units assembled between said first and said second ring means in a circular fashion which forms a frustonically cross-sectional shaped main roof section,
and first support ring means includes means providing a line contact with said panel units,
said second support ring means includes means providing contact between said second support ring means and said panel units,
each said panel unit has arcuate bases with one shorter than the other and longitudinal sides, and are arranged in a manner that along the length of said sides a non-contacting relationship exists relative to an immediate arranged adjacent panel unit, and said arcuate bases are constructed such that said line and other contact of said each panel unit enables a compressive fit to occur between said first and said second support ring means in a manner so that each panel unit is totally supported by and between said first and second support ring means with all of the weight of each panel unit transferred to said first and second support ring means.

4,553,246
CONSTRUCTION METHOD AND APPARATUS FOR INSTALLING A HANGER-SUPPORTED HEATING ELEMENT IN AN ELECTRICAL RESISTANCE FURNACE
C. T. Christie, P.O. Box 54, Scio, Oreg. 97374
Filed Oct. 17, 1983, Ser. No. 542,734
Int. Cl.⁴ H05B *3/66*
U.S. Cl. 373—130 **14 Claims**



2. Apparatus for installing insulation in an electric furnace having a heating element comprising:
(a) a support ring affixed to a wall of said furnace and spaced inwardly of said wall said support ring having a plurality of rods mounted thereon at a vertical distance below the top of said ring thereby forming a vertical ridge;
(b) heat insulating material being placed adjacent said wall and on top of said ring, said material having a groove in at least one surface thereof mating with said ridge and said material forming at least a vertical slice of an inner wall of said furnace when placed contiguously about the periphery of said wall; and
(c) electrically insulative means mounted to said rods supporting said heating element.

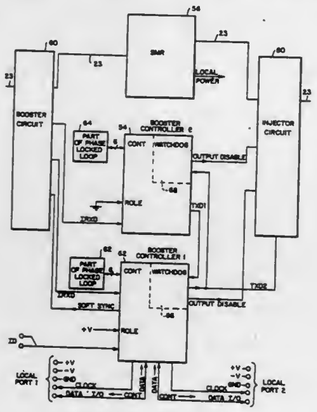
4,553,247
TELEMETRY SYSTEM WITH SIGNAL BOOSTER FOR DIGITAL DATA TRANSMISSION THROUGH A TRANSMISSION LINE
Robert W. Harris, Crofton, Md., assignor to Gould Inc., Rolling Meadows, Ill.
Division of Ser. No. 323,599, Nov. 20, 1981, Pat. No. 4,468,785, which is a continuation-in-part of Ser. No. 272,125, Jun. 10, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,698
Int. Cl.⁴ H04J *3/08*
U.S. Cl. 375—4 **19 Claims**

1. A telemetry system, comprising:
an electronic transmission line having a first end;
clock means, operatively connected to said electronic transmission line, for generating a sync signal for transmission on said electronic transmission line;

N receiving means for receiving digital data, where N is an integer greater than or equal to 2;

N booster subsystems coupled to said electronic transmission line between said clock means and the first end of said electronic transmission line, the first booster subsystem being coupled to said electronic transmission line at a position between said clock means and the Nth booster subsystem, the Kth booster subsystem being coupled to said electronic transmission line at a position between said clock means and the (K+1)th booster subsystem (where K is an integer and $1 \leqq K < N$), the Kth booster subsystem being operatively connected to the Kth receiving means, said Kth booster subsystem including means for injecting the digital data onto said electronic transmission line, as a digital data signal, in the direction of the first end of said electronic transmission line in dependence upon said sync signal, said Kth booster subsystem further including means for injecting a booster signal onto said electronic transmission line to enhance the amplitude and rise time of the digital data signals injected onto said electronic transmission line by each of said N booster subsystems which is coupled to said electronic transmission line at a position between said clock means and said Kth booster subsystem, said Kth booster subsystem including:

a booster circuit, coupled to said electronic transmission



line, for receiving the sync signal and the digital data signals injected onto said electronic transmission line by each of said N booster subsystems which is coupled to said electronic transmission line at a position between said clock means and said Kth booster subsystem, for generating a received data signal, and for injecting the booster signal onto said electronic transmission line to combine with each of the digital data signals travelling on said electronic transmission line, in order to enhance the amplitude and rise time of each of the digital data signals, said booster circuit including:

a first coupling network, coupled to said electronic transmission line, for sensing the current on said electronic transmission line and for generating a first sensing signal; and

a second coupling network, coupled to said electronic transmission line, for sensing the voltage on said electronic transmission line and for generating a second sensing signal;

switching means, operatively connected to said first and second coupling networks, for alternately switching between first and second states, so that said booster circuit injects the booster signal onto said electronic transmission line, wherein the booster signal includes a voltage signal injected onto said electronic transmission line through said first coupling network and a current signal injected onto said electronic transmission line through said second coupling network; and

booster controller means, operatively connected to said booster circuit, said Kth receiving means, and said electronic transmission line, for receiving the digital data from said Kth receiving means and the received data signal from said booster circuit, and for generating a transmit data signal to be injected onto said electronic transmission line, by said digital data injecting means of said Kth booster subsystem, as the digital data signal.

4,553,248

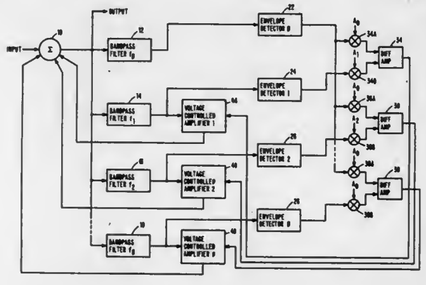
ANALOG ADAPTIVE MAGNITUDE EQUALIZER

Todd R. Reed, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 10, 1983, Ser. No. 502,920

Int. Cl.⁴ H04B *3/14*

U.S. Cl. 375—14 **12 Claims**



9. An adaptive magnitude equalizer in a signal channel for equalizing a magnitude transfer function as adapted for an input signal spectrum, said equalizer comprising:

sample means for generating a plurality of sampled bandpass signals having amplitudes characteristic of the input signal;

means for detecting the amplitude of each of said plurality of sampled bandpass signals;

means for supplying a reference signal;

difference means for generating a plurality of difference signals indicative of the difference between the amplitude of each of said plurality of sampled bandpass signals and said reference signal;

means for amplifying each of said plurality of sampled bandpass signals by a gain factor proportional to the absolute value of its associated difference signal to produce a plurality of modified signals; and

means for summing the input signal with the plurality of modified signals to produce an output signal equalized to the desired transfer function for the input signal spectrum.

4,553,249

METHOD AND CIRCUIT ARRANGEMENT FOR CONVERTING A BINARY SIGNAL, ALTERNATING BETWEEN TWO LEVELS, TO A PULSE CODE SIGNAL WHICH COMPRISES DATA PULSES AND RENEWAL PULSES

Jan Goerne, and Hans-Norbert Toussaint, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,965

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1982, 3247120

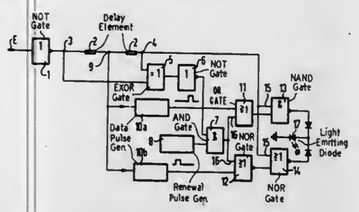
Int. Cl.⁴ H03K *5/15*

U.S. Cl. 375—25 **7 Claims**

1. A method of converting a binary signal, alternating between a first level and a second level, into a pulse code signal which includes a data pulse having a first polarity when the

binary signal changes from the first level to the second level and having a second polarity when the binary signal changes from the second level to the first level, and renewal pulses between the data pulses and having the same polarity as a last-occurring data pulse, comprising the steps of:

generating the renewal pulses with a renewal pulse generator independently of the level changes of the binary signal and at a predetermined pulse repetition frequency; gener-



ating the individual data pulses, in relation to the respective level change of the binary signal and each individual data pulse delayed by a first predetermined time interval; and

producing an inhibit signal from each level change of the binary signal and inhibiting the output of the renewal pulse generator with the inhibit signal for a second predetermined time interval beginning at the time of the respective level change.

4,553,250

SIGNAL TRANSMISSION SYSTEM

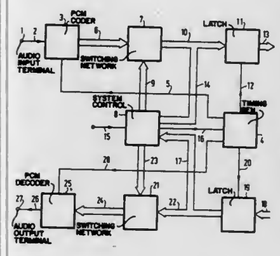
Stewart F. Bryant, Reading, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,891

Claims priority, application United Kingdom, Dec. 2, 1981, 8136349

Int. Cl.⁴ H04L *1/22*

U.S. Cl. 375—34 **4 Claims**



1. A signal transmission system comprising a transmitter and a receiver at each end of a transmission link in which a signal to be transmitted is pulse code modulated, characterized in that the transmission link comprises an individual channel for each bit of a word of the pulse code modulated signal and the transmission system comprises means for assessing the quality of each channel and means for assigning the bits of the word to the channels according to the quality of each channel, so that the higher the significance of the bit the better the quality of the channel that is assigned to that bit.

4,553,251

METHOD AND SYSTEM FOR SYNCHRONIZING THE CODING AND DECODING DURING THE TRANSMISSION OF DIGITAL CODED DATA

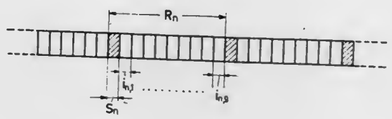
Peter Hartmann, Hausen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 12, 1983, Ser. No. 522,652

Claims priority, application Switzerland, Aug. 19, 1982, 4952/82

Int. Cl.⁴ H04L *7/00*

U.S. Cl. 375—114 **8 Claims**



1. A method for synchronizing coding and ecoding during transmission of digital, coded data from a transmitter to a receiver, comprising:

generating at the transmitter a sequence of transmitter synchronization signals at a first clock frequency;

periodically inserting said sequence of transmitter synchronization signal into a data stream transmitted at a second clock rrequency so as to form an encoded signal sequence in the form of plural frames each equal to the cycle duration of the first clock frequency and each including plural slots equal to the cycle duration of the second clock frequency;

transmitting said encoded signal sequence so as to be received by the receiver;

generating at said receiver at least one sequence of receiver synchronization signals which coincides with the sequence of transmitter synchronization signals and which is synchronized with the transmitter synchronization signals of the received encoded signal sequence;

dividing the received encoded signal corresponding to the cycle duration of the first clock frequency, into plural time slots equal to the cycle duration of the second clock frequency;

successively storing the data content of each slot offset by a clock cycle duration of the second clock frequency in a respective subsignal generator;

thereafter switching all subsignal generators over to self-production of the signal sequences read into the respective subsignal generator;

correlating the self-produced signal sequences of the subsignal generators with the data content of the corresponding slots of the incoming received data sequence;

determining that synchronization has occurred as a function of a predetermined correlation of a self-produced signal sequence with the received signal sequence in any said subsignal generator;

synchronizing all other subsignal generators upon determining a synchronmization of one of said subsignal generators; and

thereafter switching over all subsignal generators over to autonomous operation in which each subsignal generator produces the sequence of synchronization signals transmitted, but offset by the cycle duration of the second clock frequency.

4,553,252

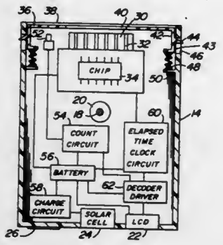
COUNTING COMPUTER SOFTWARE CARTRIDGE

Harris H. Egendorf, 8016 Bustleton Ave., Philadelphia, Pa. 19152

Continuation-in-part of Ser. No. 332,783, Dec. 21, 1981, Pat. No. 4,475,222. This application Dec. 6, 1982, Ser. No. 446,847

Int. Cl.⁴ G11B *23/04;* G06M *1/08*

U.S. Cl. 377—15 **7 Claims**



7. In a cartridge adapted for insertion and use in a computer, the cartridge including electronic memory containing a stored program for use with the computer, the combination comprising a housing, sensing means for sensing insertion of the cartridge in the computer and for generating an electrical signal indicating the same, counting means electrically coupled to the sensing means so as to receive said electrical signal and for maintaining an electronic count of the number of insertions of the cartridge in the computer, and display means electrically coupled to said counting means and located on the housing for displaying the count maintained by said counting means.

4,553,253

PLANE-GRATING MONOCHROMATOR

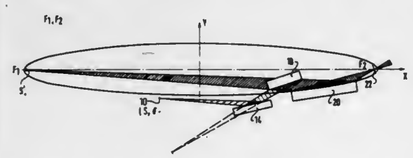
Helmuth Petersen, Berlin, Fed. Rep. of Germany, assignor to Berliner Elektronenspeicherring Gesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 327,657, Dec. 4, 1981,. This application Jun. 20, 1984, Ser. No. 704,131

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045931

Int. Cl.⁴ G01J *3/18;* G02B *27/44;* G21K *1/06*

U.S. Cl. 378—084 **9 Claims**



1. A plane-grating monochromator, having a flat diffraction grating, an entry aperture through which a bunch of wave radiation to be spectrally decomposed passes and strikes the diffraction grating, an exit aperture, a hollow mirror for focusing the radiation decomposed by the diffraction grating into the exit aperture and an adjusting device, which effects a predetermined adjustment of the angle of incidence and emergence of the radiation with respect to the plane of the diffraction grating in accordance with the wavelength of the decomposed, substantially monochromatic radiation focused by the hollow mirror into the exit aperture, characterized in that the adjusting device keeps the quotient of the sine of the angle of emergence (β) divided by the sine of the angle of incidence (α) onto the diffraction grating, and thus the distance of a virtual source (S') of the decomposed radiation from the diffraction grating (16), constant and that the hollow mirror (20) is an ellipsoid mirror, which focuses the virtual source (S') into the exit aperture (22).

4,553,254

X-RAY DIAGNOSTIC SYSTEM COMPRISING AT LEAST ONE X-RAY GENERATOR AND X-RAY APPARATUS

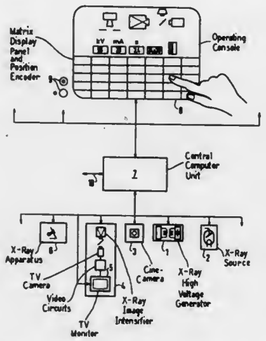
Eric Bach, Spardorf, and Dieter Schmidt, Hetzles, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 299,147, Sep. 3, 1981,. This application Dec. 23, 1983, Ser. No. 564,915

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034933

Int. Cl.⁴ A61B *6/00*

U.S. Cl. 378—098 **2 Claims**



1. An x-ray diagnostic system comprising at least one x-ray high voltage generator, x-ray apparatus and auxiliary apparatus, such as a sheet film camera or an image intensifier television chain, and operating consoles for generator and apparatus control, the operating consoles each comprising an intelligent data display apparatus having a display screen with data representing regions, a central computer unit which controls the x-ray high voltage generator and the x-ray apparatus and effects the display of data of the x-ray diagnostic system on the data display apparatus, the data display apparatus of each operating console being connected with the central computer unit and including means providing respective data transmitting locations associated with respective data representing regions of the display screen for the purpose of data input to the central computer unit through contacting of the display screen at selected data representing regions so as to actuate the corresponding data transmitting locations.

4,553,255

REGULATING AND STABILIZING CIRCUIT FOR X-RAY SOURCE

Heikki Kanerva, Helsinki, Finland, assignor to Philips Medical Systems, Shelton, Conn.

Continuation of Ser. No. 215,582, Dec. 11, 1980, which is a continuation of Ser. No. 940,760, Sep. 8, 1978,. This application Aug. 7, 1984, Ser. No. 638,545

Claims priority, application Finland, Sep. 23, 1977, 772806

Int. Cl.⁴ G03B *41/16*

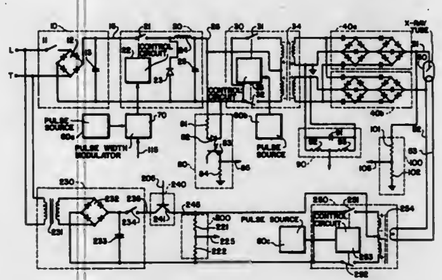
U.S. Cl. 378—110 **16 Claims**

1. A method for regulating and stabilizing the radiation intensity level of an X-ray source including an X-ray tube, high voltage circuitry means for forming an electrical signal acting on the anode and cathode of said tube and filament power circuitry having a controllable means for supplying voltage to the filament of said tube, said method comprising:

(a) forming a feedback signal from the output of the controllable means in said filament power circuitry;

(b) forming a feedback signal from the anode current of the X-ray tube, or quantities proportional thereto;

(c) forming a control signal from said feedback signals; and



(d) supplying said control signal to a control input of said controllable means.

4,553,256

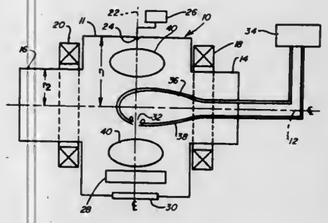
APPARATUS AND METHOD FOR PLASMA GENERATION OF X-RAY BURSTS

Kenneth G. Moses, 6330 Sattes Dr., Rancho Palos Verdes, Calif. 90274

Filed Dec. 13, 1982, Ser. No. 449,255

Int. Cl.⁴ H01J *3/02, 35/30*

U.S. Cl. 378—137 **32 Claims**



1. An x-ray burst generator comprising:

target means for retaining a high Z target in a target location;

plasma means for producing and magnetically confining a ring plasma, including plasma electrons heated to a mean temperature in excess of about 1 MeV, with a portion of said confined ring plasma being proximate to and magnetically separated from said target; and

diverter means for bringing said ring plasma electrons into contact with a high Z target disposed at said target location to produce a burst of x-rays.

4,553,257

AUTOMATIC SOUND VOLUME CONTROL DEVICE

Shuichi Mori; Yasumasa Fukatsu, and Takashi Sakakibara, all of Saitama, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,291

Claims priority, application Japan, Apr. 28, 1982, 57-71908; May 26, 1982, 57-90403

Int. Cl.⁴ H03G *3/00*

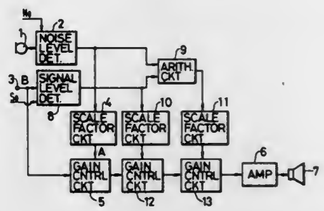
U.S. Cl. 381—57 **13 Claims**

1. In a device for amplifying and reproducing a sound signal in the presence of ambient noise, an automatic sound volume control device having the improvement comprising:

means for separately detecting a level of said ambient noise relative to a reference noise level;

means for separately detecting a level of sound signal relative to a reference sound level;

means for producing a control signal having a level determined in accordance with outputs of both said ambient noise level detecting means and said sound level detecting means;



means for setting an amplification gain of said sound signal in accordance with said control signal; and

means for amplifying and reproducing said sound signal in accordance with said gain.

4,553,258

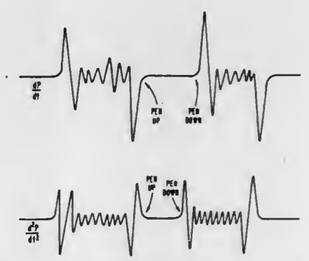
SEGMENTATION ALGORITHM FOR SIGNATURE VERTIFICATION

Timothy J. Chainer, Mahopac, and Thomas K. Worthington, South Salem, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,200

Int. Cl.⁴ G06K *9/34*

U.S. Cl. 382—3 **8 Claims**



1. In a process for verifying a signature which comprises producing at least a first signal representative of the first time derivative of pressure transmitted by a writing instrument during the writing of at least one signature by a person whose identity is to be verified, the improved method of segmentating said first signal based on lifting said writing instrument from a writing surface comprising the steps of

computing from said first signal the second time derivative of the pressure,

examining said first and second time derivatives to detect quiet times indicative of lifting said writing instrument from a writing surface,

determining if the detected quiet times have a duration which exceeds a predetermined time period, and

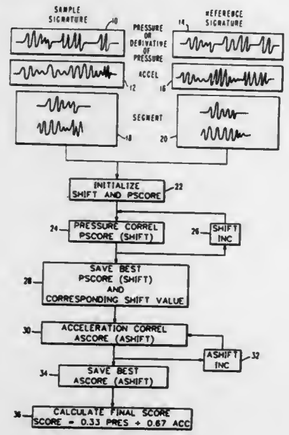
testing the polarity of said second time derivative to determine if it is positive at the beginning and end of each detected quiet time.

4,553,259

SEMI-INDEPENDENT SHIFTING TECHNIQUE FOR SIGNATURE VERIFICATION

Timothy J. Chainer, Mahopac; Steven C. Gundersen, Peekskill, and Thomas K. Worthington, South Salem, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,202
Int. Cl.[4] G06K *9/22*
U.S. Cl. 382—3 **3 Claims**



1. In a signature verification process including the steps of obtaining acceleration data and pressure data related to a given signature and comparing said data with reference data previously obtained from an identified signer, the improvement which comprises a method of enhancing the correlation or representative segments of the acceleration data which includes the steps of

performing correlations of respective segments of a reference pressure signal and a sample pressure signal by successively measuring the correlation as the two signals are shifted with respect to one another,

storing the shift values which produce the maximum correlation between each pair of pressure signal segments, and

shifting corresponding segments of acceleration data with respect to one another by an amount which is ± 1 time units of the stored shift values during subsequent correlations of the acceleration data.

4,553,260

MEANS AND METHOD OF PROCESSING OPTICAL IMAGE EDGE DATA

Ronald A. Belt, Plymouth, and James D. Joseph, Oakdale, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 18, 1983, Ser. No. 476,743
Int. Cl.[4] G06K *9/46*
U.S. Cl. 382—22 **11 Claims**

1. A method of processing edge data concerning an edge of an image where the edge gradient magnitude Si at a point i in space is approximated by an expression of the form $Si=(Xsi^2+Ysi^2)^{\frac{1}{2}}$, where Xsi and Ysi are the vertical and horizontal edge gradient components for point i lying along mutually orthogonal axes in said space, comprising:

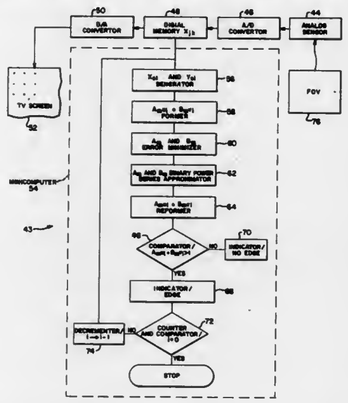
sensing light from a scene, said scene including an object;

generating electrical signals with said sensed light, said electrical signals representing the intensity of said sensed light with sensed light from said object providing said image;

digitizing said electrical signals;

generating Xsi and Ysi from said digitized electrical signals;

forming the expression AmUi+BmVi where
m is an index and an integer greater than or equal to 1.



Am and Bm are constant coefficients to be determined,

$$Ui = \begin{cases} |Xsi| \text{ if } |Xsi| \geqq |Ysi| \\ |Ysi| \text{ if } |Xsi| < |Ysi| \end{cases} \text{ and}$$

$$Vi = \begin{cases} |Ysi| \text{ if } |Xsi| \geqq |Ysi| \\ |Xsi| \text{ if } |Xsi| < |Ysi|; \end{cases}$$

determining the values of Am and Bm which minimize the error in the value of Si according to a selected error computation when Si is approximated by AmUi+BmVi;

reforming AmUi+BmVi with said error minimizing values of Am and Bm; and

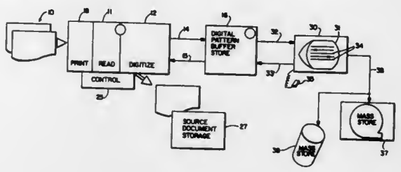
determining whether or not the ith point is an edge point so that further processing of edge data can proceed.

4,553,261

DOCUMENT AND DATA HANDLING AND RETRIEVAL SYSTEM

Horst Froessl, Gutenbergstrasse 2-4, D-6944 Hemsbach, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,500
Int. Cl.[4] G06K *9/82*
U.S. Cl. 382—57 **29 Claims**



1. An apparatus for gathering data from a plurality of source documents comprising

means for sequentially receiving documents, optically scanning each document and forming a series of digitalized signals representative of digital patterns closely approximating patterns on each document from which an image of each document can be reproduced;

means for imprinting in a predetermined area of each document a set of characters uniquely identifying each document and for producing electrical signals representative of said characters;

buffer means for storing the series of digitalized signals along with said signals representative of said characters;

means for recalling from said buffer means groups of said digitalized signals and for producing on a viewable screen an image of the digitalized patterns of the document from which said signals were formed;

manually operable control means for selecting a plurality of locations in said document image to identify selected segments of the digital patterns therein and for adding to said selected segments address information to control subsequent disposition of said segments; and

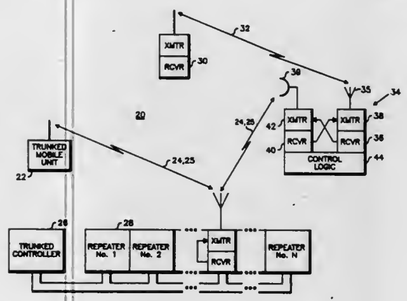
a mass data file for receiving and storing said segments in digitalized form and said address information.

4,553,262

COMMUNICATIONS SYSTEM ENABLING RADIO LINK ACCESS FOR NON-TRUNKED RADIO UNITS TO A MULTIFREQUENCY TRUNKED TWO-WAY COMMUNICATIONS SYSTEMS

Richard H. Coe, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 25, 1983, Ser. No. 555,102
Int. Cl.[4] H04B *7/155, 7/26;* H04Q *7/02*
U.S. Cl. 455—15 **20 Claims**



10. In a multifrequency trunked, two-way radio communications system having a trunked controller and a plurality of trunked remote stations selectively operating in an assigned one of plurality of information channels, a radio access link for providing one or more non-trunked remote stations operating on a separate, single fixed information channel access to the trunked system, said radio access link comprising:

means for receiving transmissions on the separate single channel from any of the one or more non-trunked remote stations and means to request a channel assignment from the trunked controller in response thereto, and

in response to a received assigned channel signal from the trunked controller to permit the said one or more non-trunked remote stations to operate on said assigned channel in the same manner as the plurality of trunked remote stations.

4,553,263

QUEUED COMMUNITY REPEATER MOBILE

Paul F. Smith, Fort Worth; Eric Schorman, Bedford; Timothy M. Burke, Fort Worth, and Charles N. Lynk, Jr., Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

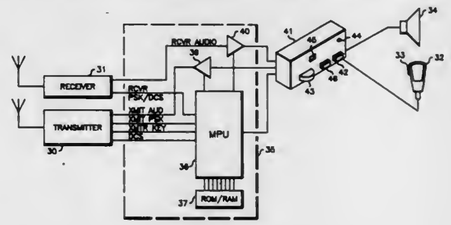
Filed Dec. 22, 1983, Ser. No. 564,855
Int. Cl.[4] H04B *1/00, 1/40*
U.S. Cl. 455—54 **8 Claims**

1. A plurality of remote units each comprising a transmitter and a receiver and adapted to transmit and receive messages within a predetermined fleet of such remote units operating on a single communications channel shared by a plurality of other remote unit fleets and regulated by a central control station which assigns the single communications channel to a requesting remote unit fleet, each message having at least one transmission on the single communications channel, each remote unit comprising:

means for requesting service from the central control station on the single communications channel in response to a control signal received from the central station during a period of time following a served remote unit transmission;

means for receiving a grant of service to the predetermined remote unit fleet transmitted by the central control station on the single communications channel in response to said service request;

means for enabling the transmitter of the requesting remote unit in response to said grant of service and for enabling



the receiver of each of the other remote units in the predetermined fleet;

means for indicating an end-of-transmission condition at the conclusion of a real time transmission of the requesting remote unit to inform the central control station of said conclusion and stimulate said control signal from the central control station;

means for disabling the receiver of each remote unit of the predetermined fleet in response to the central control station recognizing an end-of-transmission condition; and

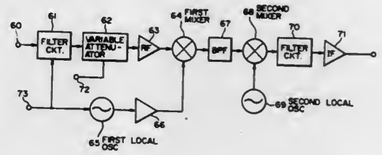
means for inhibiting the transmitter of each remote unit of the predetermined fleet if no additional transmissions are made by the predetermined fleet following said received control signal.

4,553,264

DOUBLE SUPERHETERODYNE TUNER

Makoto Hasegawa; Hiroshi Ohnishi, both of Tokyo, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 19, 1983, Ser. No. 533,810
Claims priority, application Japan, Sep. 17, 1982, 57-162503; Jul. 28, 1983, 58-138015
Int. Cl.[4] H04B *1/26*
U.S. Cl. 455—189 **7 Claims**



1. A double superheterodyne tuner comprising:

(a) an input filter having a frequency response for selectively passing a desired signal with the frequency response thereof being changed in accordance with a desired tuning frequency;

(b) a first local oscillator for producing a first local oscillator frequency having a predetermined frequency difference from that of said desired signal;

(c) a first mixer responsive to an output signal from said

input filter and said first local oscillator frequency for producing a first intermediate frequency which is larger than $3f_{Rmax}$ and is smaller than $3.4f_{Rmax}$ wherein f_{Rmax} is the upper limit of a receiving range of said tuner, the mixing by said first mixer being such that said first intermediate frequency is produced by subtracting the desired signal frequency from said first local oscillator frequency which is higher than said first intermediate frequency;

(d) a fixed-frequency filter for passing said first intermediate frequency from said first mixer;

(e) a second local oscillator for producing a predetermined second local oscillator frequency having a predetermined frequency difference from said first intermediate frequency;

(f) a second mixer responsive to an output signal from said fixed-frequency filter and said second local oscillator frequency for producing a second intermediate frequency.

4,553,265

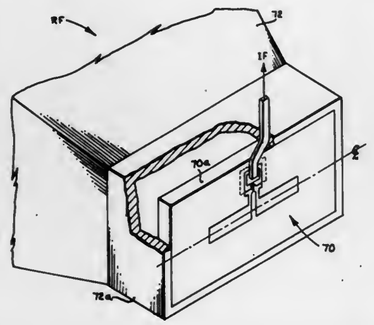
MONOLITHIC SINGLE AND DOUBLE SIDEBAND MIXER APPARATUS

Brian J. Clifton, 45 Millpond Rd., Sudbury, Mass. 01776, and Gary D. Alley, 17 Holton Cir., Londonderry, N.H. 03053

Filed Dec. 8, 1983, Ser. No. 559,609

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—325 **8 Claims**



1. A monolithic mixer apparatus comprising in combination:

a dielectric substrate mounted in a rectangular waveguide having a broad wall and a narrow wall, said dielectric substrate having a top and bottom surface, said dielectric substrate including a ground plane on said top surface, said dielectric substrate having a predetermined length, width, thickness, and dielectric constant, said length being slightly less than the dimension of the broad wall of said rectangular waveguide, said width being slightly less than the dimension of the narrow wall of said waveguide,

a slot coupler means formed on the top surface of said dielectric substrate,

a coplanar transmission line means disposed on said top surface of said dielectric substrate, said coplanar transmission line means being electrically connected to said slot coupler means,

a Schottky-barrier diode located on said top surface of said dielectric substrate, said Schottky-barrier diode having an anode and a cathode, said anode of said Schottky-barrier diode being connected by said coplanar transmission line to said slot coupler means,

a bypass capacitor located on said top surface of said dielectric substrate, one plate of said bypass capacitor being electrically connected to the cathode of said Schottky-barrier diode, the other plate of said bypass capacitor being electrically connected to a portion of said ground plane, and,

a bonding pad attached to said first capacitor plate to provide an IF signal output terminal, an RF signal and a local oscillator signal being applied to said dielectric substrate, said dielectric substrate establishing a dielectric surface wave resonance upon receipt of said RF signal and said local oscillator signal, said dielectric surface wave resonance propagating within and along the top surface of said dielectric substrate, said RF signal and said local oscillator signal propagating through said dielectric substrate to said slot coupler means, said slot coupler means being adjusted in position with respect to the centerline of the width of said dielectric substrate, said slot coupler means thereby utilizing said dielectric surface wave resonance to provide a reactive image termination at the upper sideband of said RF signal, said slot coupler means coupling said RF signal and said local oscillator signal through said coplanar transmission line means to said Schottky-barrier diode, an IF signal appearing in response to said RF and local oscillator signal at said IF signal output terminal.

4,553,266

R.F. CIRCUIT ARRANGEMENT

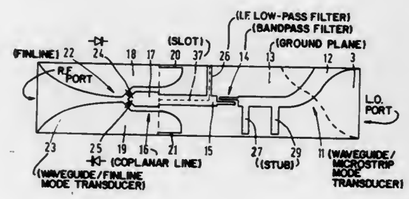
Robert N. Bates, Redhill, and Philip M. Ballard, Crawley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,501

Claims priority, application United Kingdom, Aug. 27, 1982, 8224612

Int. Cl.⁴ H04B *1/16, 1/26*

U.S. Cl. 455—327 **6 Claims**



1. An R.F. circuit arrangement comprising an insulative substrate, at least one R.F. strip-type transmission line including a strip conductor and a ground plane conductor disposed on the substrate, and first and second diodes each electrically-connected between the strip conductor and a respective one of first and second portions of the ground plane conductor, said circuit arrangement including coupling means for D.C.-isolating and R.F.-coupling said first and second portions, comprising:

(a) a slot in the ground plane conductor for D.C. isolating the first and second portions thereof, said slot being sufficiently narrow to inhibit the coupling of R.F. energy into the slot;

(b) a housing comprising first and second conductive portions adjacent to the first and second portions of the ground plane conductor; and

(c) an insulative layer disposed between at least said first housing portion and said first ground plane portion;

said housing and said insulative layer effecting said R.F. coupling of the first and second portions of the ground plane conductor.

4,553,267

INFRARED TELEPHONE EXTENSION MODULATION SYSTEM

James W. Crimmins, 15 Nutmeg La., Wilton, Conn. 06897

Filed Jul. 31, 1981, Ser. No. 288,735

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—606 **8 Claims**

1. A portable telephone network extension system comprising:

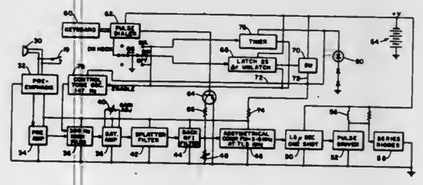
a portable transmitting unit having:

a plurality of series connected infared emitters positioned to emit in a pattern external of said transmitting unit;

means for generating audio signals;

means for providing FM low duty cycle pulses having a defined voltage amplitude of predetermined duration representative of said audio signals;

means for switching current through an inductor solely in response to each low duty cycle pulse and for directing the switched current through said plurality of emitters at a voltage in excess of said defined voltage amplitude, directly subsequent to each low duty cycle pulse;



telephone network coupled means including:

means for receiving infrared emissions from said portable transmitting unit and for providing FM pulse demodulation thereof to receover said audio signals;

means for applying said demodulated audio signals to said telephone network;

means for receiving signals from said telephone network and broadcasting them to the region of said portable transmitting unit.

4,553,268

CIRCUIT ARRANGEMENT WITH A LASER DIODE FOR TRANSMISSION OF COMMUNICATION SIGNALS THROUGH A LIGHT WAVEGUIDE

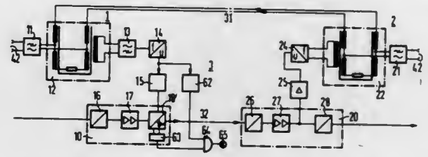
Bodo Tilly, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 249,653, Mar. 31, 1981, abandoned. This application May 14, 1984, Ser. No. 609,525

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1980, 3013533

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—607 **2 Claims**

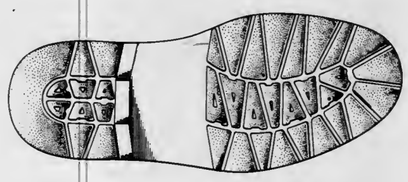


1. A circuit arrangement with a laser diode for the transmission of communications signals through a transmission link comprising a light waveguide, a transmitting device, a modulator in said transmitter, said laser diode in said modulator and connected to one end of said light waveguide, a receiving device connected to the second end of said light waveguide, a regulating device connected to said laser diode for controlling the optical output power, a return channel connected between said transmitting device and said receiving device, an analysis device in said receiving device which analyses the mean value or the peak value of the received communication signal which is characteristic of the optical transmitted power, and depending upon the characteristic value forms a control signal, means for transmitting said control signal through said return channel to said transmitting device from said receiving device, and said regulating device receiving said control signal to control the optical output power of the laser diode as a function of the received control signal, and characterized in that a signalling device is provided for analyzing both the control signal received by way of the return channel and the bias current of the laser including first means for producing an output when said return signal is less than a preset limit and second means for producing an output when said laser exceeds a predetermined limit, gate means connected to said first and second means, and an indicator connected to said gate means.

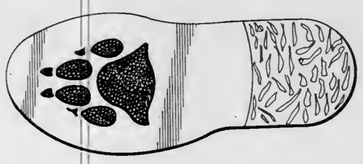
281,285
SPORT SHOE
Robert B. Campbell, New York, N.Y., and Junichi P. Landau, Taipei, Taiwan, assignors to BBC International Ltd., New York, N.Y.
Filed Mar. 23, 1983, Ser. No. 478,149
Term of patent 14 years
U.S. Cl. D2—309



281,286
FOOTWEAR OUTER SOLE
Victor P. Mangini, Sudbury, and Anthony M. McAlear, Jr., Scituate, both of Mass., assignors to American Footwear Corporation, Fitchburg, Mass.
Filed Jul. 5, 1983, Ser. No. 510,955
Term of patent 14 years
U.S. Cl. D2—320



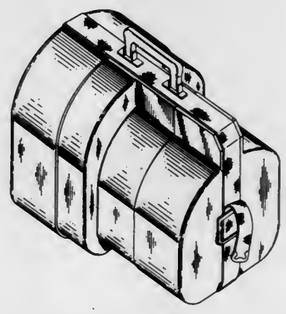
281,287
SHOE SOLE
Jean F. Vitrac, Scivira La., New Braintree, Mass. 01531
Filed Feb. 28, 1983, Ser. No. 470,764
Term of patent 14 years
U.S. Cl. D2—321



281,288
COMBINED UMBRELLA AND DOG REPELLENT HOLDER
Jack G. Richardson, and Dorothy L. Richardson, both of 5842 Candlewood St., Lakewood, Calif. 90713
Filed May 6, 1983, Ser. No. 492,184
Term of patent 14 years
U.S. Cl. D2—400



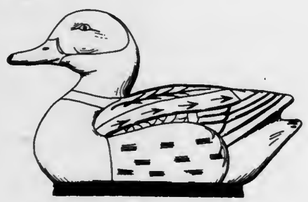
281,289
DRUM CASE
Neal E. Graham, 7230 Pana Dr., Fort Wayne, Ind. 46815
Filed Aug. 19, 1983, Ser. No. 524,652
Term of patent 14 years
U.S. Cl. D3—30.1



281,290
RACKET BAG
Bonny Beigel, 140-55 34th Ave., Linden Hill, N.Y. 11354
Filed Sep. 1, 1983, Ser. No. 528,589
Term of patent 14 years
U.S. Cl. D3—36



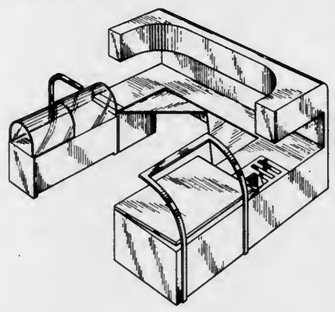
281,291
LINT BRUSH OR SIMILAR ARTICLE
John H. Schuler, II, Littlestown, Pa., assignor to The J. H. Schuler Company, Hanover, Pa.
Filed Apr. 1, 1983, Ser. No. 481,562
Term of patent 14 years
U.S. Cl. D4—137



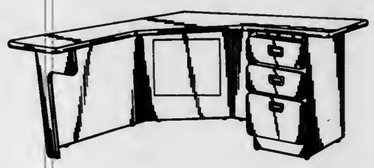
281,292
CHAIR
Hartmut Engel, Freiberg am Neckar, and Manfred Elzenbeck, Steinheim, both of Fed. Rep. of Germany, assignors to August Froscher GmbH & Co., K.G., Steinheim, Fed. Rep. of Germany
Filed Dec. 29, 1982, Ser. No. 454,267
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, Band XII Nr. 1167
Term of patent 14 years
U.S. Cl. D6—380



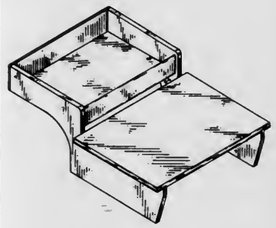
281,293
COMPUTER WORK STATION
Joan O. Johnston, 2000 E. 12th Ave., Denver, Colo. 80206
Filed Feb. 7, 1983, Ser. No. 464,389
Term of patent 14 years
U.S. Cl. D6—420



281,294
DESK
Rolf Hoppe, 162 Passaic Ave., Roseland, N.J. 07068
Filed May 20, 1982, Ser. No. 379,845
Term of patent 14 years
U.S. Cl. D6—422



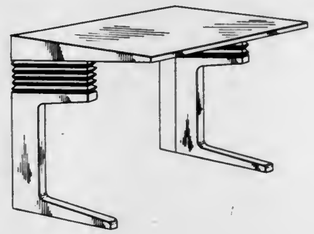
281,295
COMBINED PRINTER AND PAPER STAND
Maurice H. Gunyon, 402 N. Branson St., Marion, Ind. 46952
Filed Sep. 23, 1983, Ser. No. 535,319
Term of patent 14 years
U.S. Cl. D6—474



281,296
CANDY DISH DISPLAY
Martin Umanoff, 26 Windsor Rd., Great Neck, N.Y. 11021
Filed Jan. 20, 1983, Ser. No. 459,398
Term of patent 14 years
U.S. Cl. D6—474



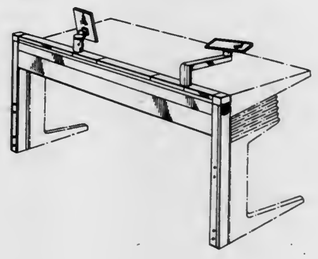
281,297
WORKTABLE OR SIMILAR ARTICLE
Hartmut H. Esslinger, Altensteig, Fed. Rep. of Germany, assignor to Konig & Neurath Kommanditgesellschaft, Fed. Rep. of Germany
Filed Feb. 10, 1983, Ser. No. 465,445
Term of patent 14 years
U.S. Cl. D6—484



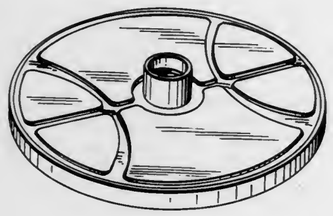
281,298
TABLE
Frank Gayeski, Hackensack, N.J., and Marlene Andrich, New York, N.Y., assignors to Gayeski Furniture Coordinates, Inc., Panama City, Fla.
Filed Dec. 8, 1982, Ser. No. 447,985
Term of patent 14 years
U.S. Cl. D6—486



281,299
APPLIANCE HOLDER FOR ATTACHMENT TO A WORK TABLE
Hartmut H. Esslinger, Altensteig, Fed. Rep. of Germany, assignor to Konig & Neurath Kommanditgesellschaft, Fed. Rep. of Germany
Filed Feb. 10, 1983, Ser. No. 465,449
Term of patent 14 years
U.S. Cl. D6—491



281,300
BASE FOR SUPPORTING AN EXHIBITION STALL UPRIGHT POST
Harry Glück, Vienna, Austria, assignor to Ellesse International S.p.A., Ellera Umbra, Italy
Filed Oct. 14, 1982, Ser. No. 434,356
Term of patent 14 years
U.S. Cl. D6—495



281,301
SPAGHETTI MEASURING GAUGE
Dicksie Spolar, 17376 Filbert, Fontana, Calif. 92335
Continuation of Ser. No. 379,884, May 19, 1982, abandoned.
This application Nov. 21, 1984, Ser. No. 674,356
Term of patent 14 years
U.S. Cl. D7—50



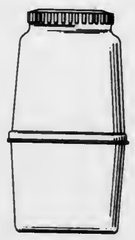


281,302
BOTTLE
Philip F. Hartung, 655 Main St., East Greenwich, R.I. 02818
Filed Jul. 11, 1983, Ser. No. 512,595
Term of patent 14 years
U.S. Cl. D9—370

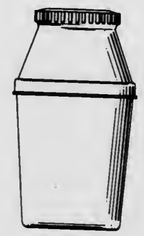


281,303
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,561
Term of patent 14 years
U.S. Cl. D9—398

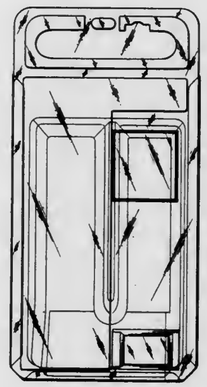
281,304
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,564
Term of patent 14 years
U.S. Cl. D9—398



281,305
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,581
Term of patent 14 years
U.S. Cl. D9—398



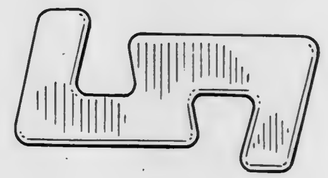
281,306
PACKAGING CONTAINER FOR A TELEPHONE
Kenneth Reichenstein, Floral Park, N.Y., assignor to Webcor Electronics, Inc., Garden City, N.Y.
Filed Apr. 15, 1983, Ser. No. 485,262
Term of patent 14 years
U.S. Cl. D9—415



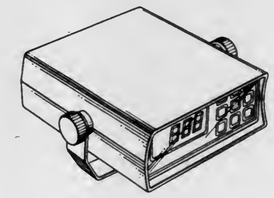
281,307
BOTTLE CAP
Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414, and Gino H. Cassai, 924 E. 96 St., Brooklyn, N.Y. 11236
Filed Mar. 5, 1982, Ser. No. 355,051
Term of patent 14 years
U.S. Cl. D9—443

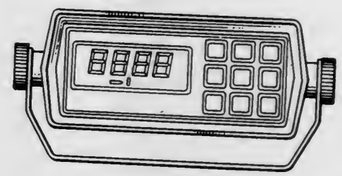


281,308
LOOSE FILL PACKING ELEMENT
Harry Bussey, Jr., P.O. Box 115, Serpentine Rd., Navesink, N.J. 07752
Filed May 2, 1983, Ser. No. 490,876
Term of patent 14 years
U.S. Cl. D9—456

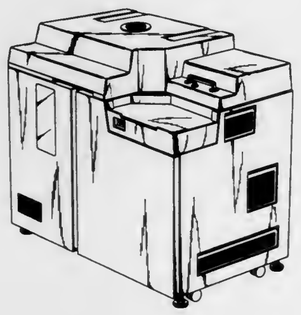


281,309
DIGITAL DEPTH METER
Rebecca A. Highstreet, Azusa; Raymond G. Shield, West Covina, and Nancy A. Jensen, Pasadena, all of Calif., assignors to Signet Scientific Co., El Monte, Calif.
Filed Apr. 25, 1983, Ser. No. 488,123
Term of patent 14 years
U.S. Cl. D10—70

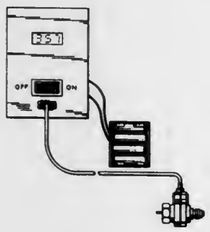




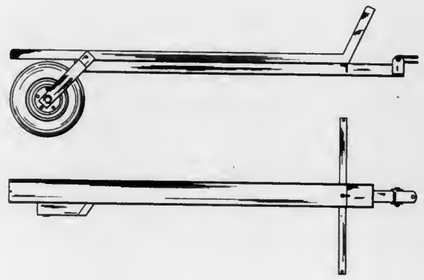
281,310
AUTOMATIC CHEMICAL ANALYZER
Yasuo Hattori, Hachioji; Masaharu Kame, Sagamihara, and Masahiko Sakurada, Machida, all of Japan, assignors to Olympus Optical Company Ltd., Japan
Filed Apr. 8, 1983, Ser. No. 483,112
Claims priority, application Japan, Oct. 19, 1982, SHO/57-47731
Term of patent 14 years
U.S. Cl. D10—81



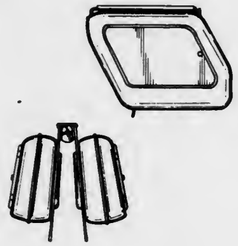
281,311
SPEEDOMETER RATIO CHECKER
William C. Spate, 2652 Lapeer Rd., Pontiac, Mich. 48057
Filed Sep. 30, 1982, Ser. No. 430,136
Term of patent 14 years
U.S. Cl. D10—98



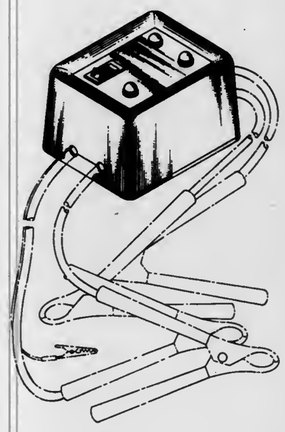
281,312
SINGLE-RAIL MOTORCYCLE TRAILER
Gerald B. Russell, 2800 Idle Creek, Arlington, Tex. 76016
Filed Jan. 31, 1983, Ser. No. 462,347
Term of patent 14 years
U.S. Cl. D12—101



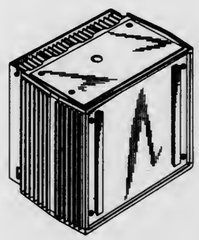
281,313
BICYCLE CARRIER BAGS
Brian R. Bepristis, San Jose, and Richard A. Bepristis, Campbell, both of Calif., assignors to Astro Nautics Plastic Mfg. Corporation, Santa Clara, Calif.
Filed Feb. 16, 1983, Ser. No. 467,092
Term of patent 14 years
U.S. Cl. D12—158

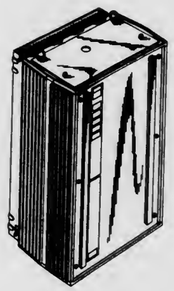


281,314
JUNCTION HOUSING FOR BATTERY JUMPER CABLES
Bobby L. Bates, San Dimas, Calif., assignor to Bates - Johnson & Co., Inc., San Dimas, Calif.
Filed May 24, 1982, Ser. No. 381,057
Term of patent 14 years
U.S. Cl. D13—10



281,315
CASING FOR ELECTRICAL EQUIPMENT
Lehmann Kjeld, Sondorborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 7, 1983, Ser. No. 539,930
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1983, URA 413/83
Term of patent 14 years
U.S. Cl. D14—40

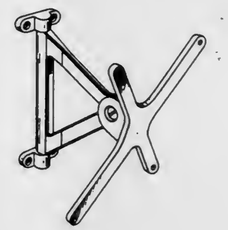




281,316
OMNI-DIRECTIONAL SPEAKER ENCLOSURE
Phillip A. Gary, P.O. Box 414, Tipp City, Ohio 45371
Filed Jul. 28, 1983, Ser. No. 518,257
Term of patent 14 years
U.S. Cl. D14—33



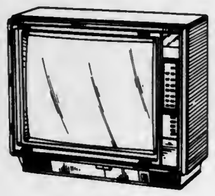
281,317
WALL MOUNTED SUPPORT FOR LOUDSPEAKER OR THE LIKE
Richard J. Whitaker, Guernsey, Channel Islands, assignor to Broadaker Co., Ltd., Guernsey, Channel Islands
Filed Oct. 28, 1983, Ser. No. 546,297
Claims priority, application United Kingdom, Apr. 28, 1983, 1012754
Term of patent 14 years
U.S. Cl. D14—38



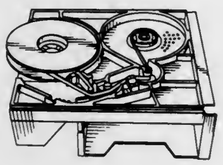
281,318
TV BAND RADIO RECEIVER
Grant Davidson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 2, 1982, Ser. No. 414,170
Term of patent 14 years
U.S. Cl. D14—68



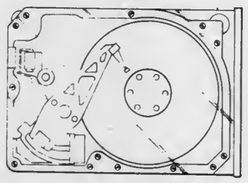
281,319
TELEVISION RECEIVER
Toshikatsu Hirose; Teruo Ishikawa, both of Osaka; Takahiro Satoh, Hyogo, and Yoshitaka Shigeta, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Jun. 20, 1983, Ser. No. 505,861
Claims priority, application Japan, Dec. 20, 1982, 57-57126
Term of patent 14 years
U.S. Cl. D14—80



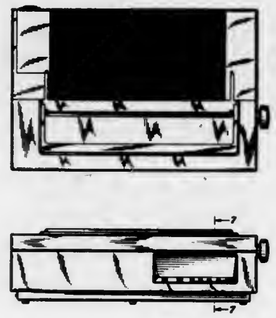
281,320
MAGNETIC TAPE TRANSPORT
John Knott, Wells, England, assignor to EMI Limited, Hayes, England
Filed Mar. 9, 1982, Ser. No. 356,741
Claims priority, application United Kingdom, Sep. 11, 1981, 1002445
Term of patent 14 years
U.S. Cl. D14—108



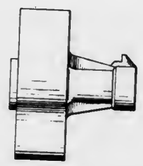
281,321
WINCHESTER DISC DRIVE
Harold T. Wright, Santa Clara, Calif., assignor to Maxtor Corporation, San Jose, Calif.
Filed Nov. 24, 1982, Ser. No. 444,466
Term of patent 14 years
U.S. Cl. D14—109



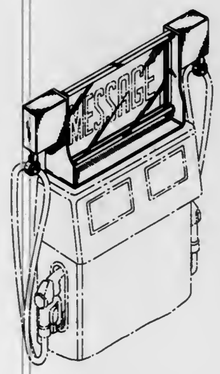
281,322
ELECTRONIC PRINTER
Kenji Ekuan, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan
Filed Apr. 6, 1983, Ser. No. 482,660
Claims priority, application Japan, Oct. 12, 1982, 57-46327
Term of patent 14 years
U.S. Cl. D14—111



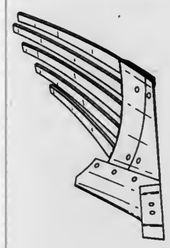
281,323
THROTTLE POSITION SENSOR
Donald A. Overcash, San Juan Capistrano; Lloyd E. Hall, Fullerton, and Guenter W. Mueller, Santa Ana, all of Calif., assignors to Duncan Electronics, Costa Mesa, Calif.
Filed May 3, 1983, Ser. No. 491,074
Term of patent 14 years
U.S. Cl. D15—5



281,324
COMBINED FUEL PUMP DISPLAY AND HOSE RETRACTOR ASSEMBLY
Douglas C. Badgley, 630 Brandt St., Dayton, Ohio 45404
Filed May 6, 1983, Ser. No. 492,235
Term of patent 14 years
U.S. Cl. D15—9.2



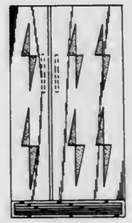
281,325
PLOW-BOTTOM
Johan Nordland, Kvernaland, Norway, assignor to Kverneland A/S, Kvernaland, Norway
Filed Aug. 11, 1983, Ser. No. 522,236
Term of patent 14 years
U.S. Cl. D15—11



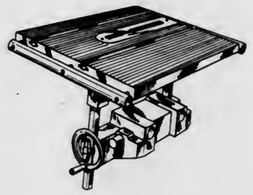
281,326
TOOTH FOR BUCKETS ON DIGGING AND LOADING MACHINES
Olav Nja, Kvernaland, Norway, assignor to Kverneland A/S, Kvernaland, Norway
Filed Jun. 6, 1983, Ser. No. 501,117
Claims priority, application Norway, Dec. 28, 1982, 63617
The portion of the term of this patent subsequent to Sep. 25, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—29



281,327
FRONT PANEL FOR REFRIGERATOR OR SIMILAR ARTICLE
Joseph Pota, 9727 Mt. Pisgah Rd., Apt. 1009, Silver Spring, Md. 20903
Filed Sep. 29, 1982, Ser. No. 426,378
Term of patent 14 years
U.S. Cl. D15—81



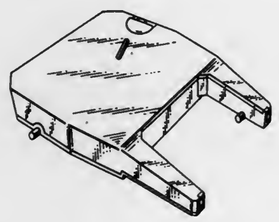
281,328
SAW TABLE
Edward A. Irelan, Columbia, Mo.; Harold E. Folkerth, Dayton, Ohio; John G. Legler, Huber Heights, and Garry W. Woods, Dayton, both of Ohio, assignors to Shopsmith, Inc., Vandalia, Ohio
Filed Nov. 16, 1983, Ser. No. 552,575
Term of patent 14 years
U.S. Cl. D15—133



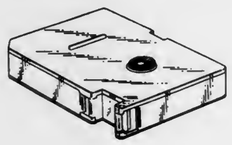
281,329
TRANSPARENT NOVELTY GLASSES WITH PHOTOGRAPHIC INSERT
Benjamin T. Harrell, 200 Townview Terrace Dr., Apt. 1252, Knoxville, Tenn. 37915
Filed Oct. 12, 1982, Ser. No. 433,789
Term of patent 14 years
U.S. Cl. D16—104



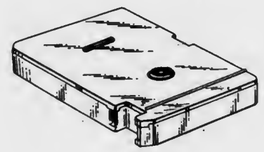
281,330
INK RIBBON CARTRIDGE FOR ELECTRONIC TYPEWRITER
Masahiro Kando, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 28, 1983, Ser. No. 555,508
Claims priority, application Japan, Jun. 1, 1983, 58-23457
Term of patent 14 years
U.S. Cl. D18—12



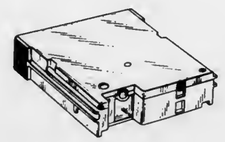
281,331
INK RIBBON CASSETTE FOR TYPEWRITER
Richard Nibley, Tokyo, and Masasumi Nagashima, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,452
Claims priority, application Japan, Jun. 13, 1983, 58-25419
Term of patent 14 years
U.S. Cl. D18—12



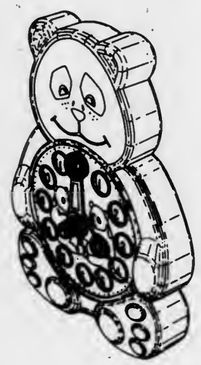
281,332
INK RIBBON CASSETTE FOR WORD PROCESSOR
Richard Nibley, Tokyo, and Masasumi Nagashima, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,456
Claims priority, application Japan, Jun. 13, 1983, 58-25413
Term of patent 14 years
U.S. Cl. D18—12



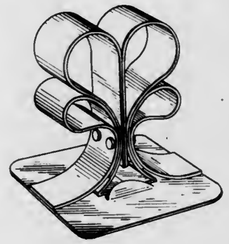
281,333
INK CARTRIDGE FOR PRINTER
Richard Nibley, Tokyo, and Akira Miyagawa, Tanashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,454
Claims priority, application Japan, Jun. 13, 1983, 58-25417
Term of patent 14 years
U.S. Cl. D18—22



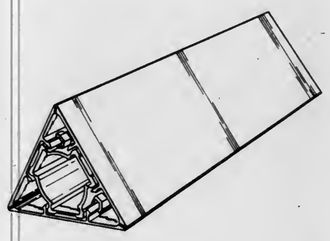
281,334
CHILD'S CLOCK FIGURE TOY
Peter G. Adams, East Grinstead, England, assignor to Hestair Kiddicraft Limited, Surrey, England
Filed May 2, 1983, Ser. No. 490,861
Claims priority, application United Kingdom, Nov. 12, 1982, 1009673
Term of patent 14 years
U.S. Cl. D19—64



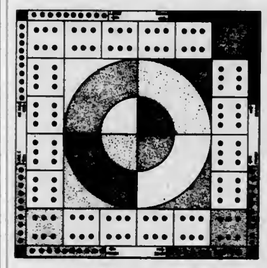
281,335
STORAGE RACK
Stephen R. Welch, 1227 S. Wilke Rd., Arlington Heights, Ill. 60005
Filed Apr. 15, 1983, Ser. No. 485,406
Term of patent 14 years
U.S. Cl. D19—86



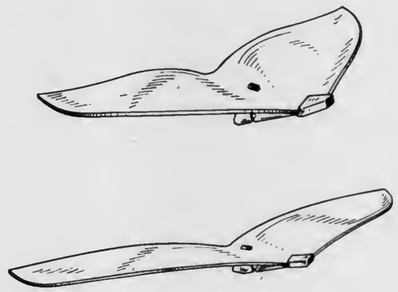
281,336
ROTATABLE DISPLAY ELEMENT FOR CHANGEABLE MESSAGE SIGN
Stig B. Ahlgren, Kopparberbsgatan 23, Malmo, Sweden (20120)
Filed Jul. 19, 1983, Ser. No. 515,160
Claims priority, application Sweden, Jan. 27, 1983, 83-0223
Term of patent 14 years
U.S. Cl. D20—21



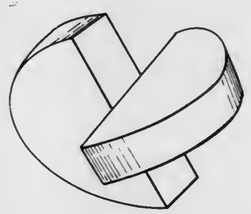
281,337
GAME BOARD
Terry B. Cutler, 5020 Woodman Ave., Sherman Oaks, Calif. 91423
Filed Apr. 8, 1983, Ser. No. 483,426
Term of patent 14 years
U.S. Cl. D21—34



281,338
TOY GLIDER
Geoffrey P. Gorick, Killarney Heights, and Robert W. Day, Mosman, both of Australia, assignors to Acme-Gorick Pty. Ltd., New South Wales, Australia
Filed Mar. 3, 1983, Ser. No. 471,749
Term of patent 14 years
U.S. Cl. D21—89



281,339
PUZZLE TOY
John Hinnen, 307 W. Melbourne Ave., Peoria, Ill. 61604
Filed Jun. 13, 1983, Ser. No. 503,697
Term of patent 14 years
U.S. Cl. D21—104



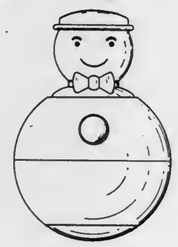
281,340
TOY PLAYHOUSE
Richard P. Nadeau, Frankfort, N.Y., assignor to Zorcom Enterprise, Inc., Utica, N.Y.
Filed Sep. 6, 1983, Ser. No. 529,648
Term of patent 14 years
U.S. Cl. D21—114



281,341
TOY VEHICLE
Kam H. Lau, Chaiwan, Hong Kong, assignor to Far East Toys & Novelties Manufacturing Limited, Hong Kong, Hong Kong
Filed Aug. 23, 1983, Ser. No. 525,667
Claims priority, application United Kingdom, Apr. 27, 1983, 1012725
Term of patent 14 years
U.S. Cl. D21—136



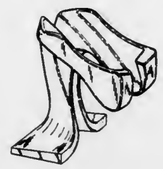
281,342
POP-UP TOY
Simon Gompes, Cannenburg 31, Amsterdam, Netherlands
Filed Jul. 25, 1983, Ser. No. 516,945
Claims priority, application United Kingdom, Jan. 26, 1983, 1011060
Term of patent 14 years
U.S. Cl. D21—151



281,343
LEG EXERCISER OR SIMILAR ARTICLE
Irwin M. Krive, 31 Slocum Ave., Port Washington, N.Y. 11050
Filed Jul. 21, 1983, Ser. No. 516,302
Term of patent 14 years
U.S. Cl. D21—192

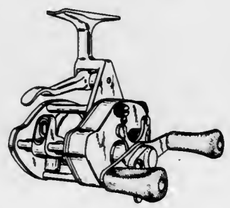


281,344
BOW HOLDER
J. Douglas Duke, 7010 Ficken Rd., Cedar Hill, Mo. 63016
Filed Jan. 26, 1983, Ser. No. 461,008
Term of patent 14 years
U.S. Cl. D22—13

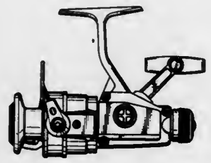




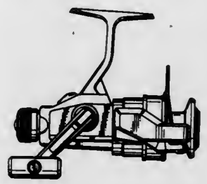
281,345
FISHING REEL
Takashi Atobe, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 486,173
Claims priority, application Japan, Oct. 18, 1982, 57-47297
Term of patent 14 years
U.S. Cl. D22—25



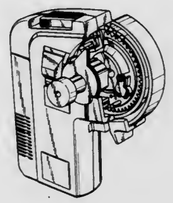
281,346
FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Tokyo, Japan, assignors to Daiwa Seiko Inc., Tokyo, Japan
Filed Apr. 20, 1983, Ser. No. 486,770
Claims priority, application Japan, Dec. 29, 1982, 57-58575
Term of patent 14 years
U.S. Cl. D22—25



281,347
FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 20, 1983, Ser. No. 486,769
Claims priority, application Japan, Dec. 28, 1982, 57-58118
Term of patent 14 years
U.S. Cl. D22—25



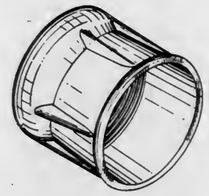
281,348
ELECTRICALLY OPERATED FISHLINE TIER
Tsuguyoshi Sadashima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 20, 1983, Ser. No. 506,091
Claims priority, application Japan, Jan. 24, 1983, 58-2411
Term of patent 14 years
U.S. Cl. D22—31



281,349
AIR NOZZLE
Milton Goldish, Chicago, Ill., assignor to Milton Industries Inc., Chicago, Ill.
Filed Sep. 24, 1982, Ser. No. 422,894
Term of patent 14 years
U.S. Cl. D23—34



281,350
THREAD PROTECTOR FOR PIPES
Richard L. Heier, 64 Lucky Heights, Singapore, 1646, Singapore
Filed Sep. 17, 1982, Ser. No. 419,508
Term of patent 14 years
U.S. Cl. D23—41



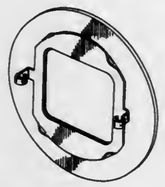
281,351
STOVE DAMPER HANDLE
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed Feb. 22, 1983, Ser. No. 468,090
Term of patent 14 years
U.S. Cl. D23—127



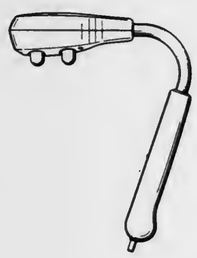
281,352
ELECTRIC FAN
Shu-Fen Chang, 50, Sung-Chiang St., Pan Chiao Taipei Hsien, Taiwan (220)
Filed Jan. 10, 1983, Ser. No. 456,840
Term of patent 14 years
U.S. Cl. D23—155



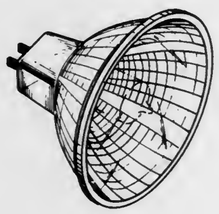
281,353
COLLIMATOR FOR DENTAL X-RAY INSTRUMENT AIMING RINGS
Nicholas J. Sico, Jr., Elgin, Ill., assignor to Rinn Corporation, Elgin, Ill.
Filed Feb. 7, 1983, Ser. No. 464,610
Term of patent 14 years
U.S. Cl. D24—2



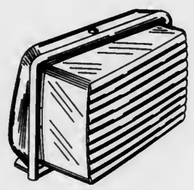
281,354
ELECTRIC MASSAGE INSTRUMENT
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, Tokyo; Kazuo Nagata, Tokyo, and Yukio Ishige, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 11, 1983, Ser. No. 522,296
Claims priority, application Japan, Mar. 25, 1983, 58-12250
Term of patent 14 years
U.S. Cl. D24—41



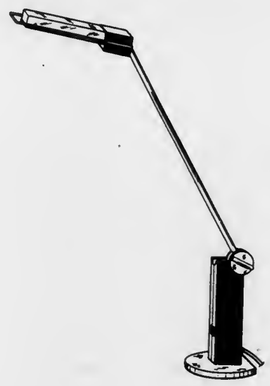
281,355
PROJECTION LAMP REFLECTOR
Lawrence R. Fraley, West Boxford, Mass., and Arnold E. Westlund, Jr., Winchester, Ky., assignors to GTE Products Corporation, Stamford, Conn.
Filed Oct. 3, 1983, Ser. No. 538,723
Term of patent 14 years
U.S. Cl. D26—2



281,356
MOTORCYCLE LIGHT
Michael G. Ofield, 1061 Harding St., Long Beach, Calif. 90810
Continuation-in-part of Ser. No. 400,862, Jul. 22, 1982, abandoned. This application Jul. 5, 1983, Ser. No. 510,651
Term of patent 14 years
U.S. Cl. D26—28



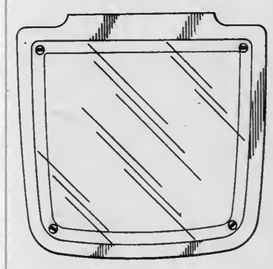
281,357
TABLE LAMP
Ernesto Gismondi, Piazzetta Brera, 24/4, Milan, Italy
Filed Feb. 28, 1983, Ser. No. 470,834
Claims priority, application Italy, Sep. 10, 1982, 22841B/82
Term of patent 14 years
U.S. Cl. D26—63



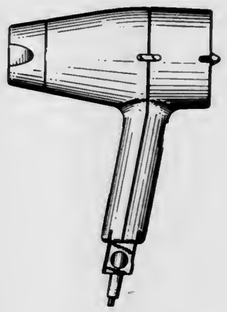
281,358
MUSHROOM SHAPED LANDSCAPE LIGHT
Claude E. Doner, Box 15C, R.D. #2, New Providence, Pa. 17560
Filed Mar. 18, 1983, Ser. No. 464,650
Term of patent 14 years
U.S. Cl. D26—69



281,359
HEADLIGHT COVER FOR MOTORCYCLE FAIRING
Michael G. Ofield, 1061 Harding St., Long Beach, Calif. 90810
Filed Jul. 5, 1983, Ser. No. 510,650
Term of patent 14 years
U.S. Cl. D26—139

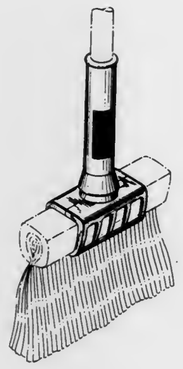


281,360
HAIR DRYER
John Wistrand, New Canaan, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Oct. 5, 1983, Ser. No. 539,200
Term of patent 14 years
U.S. Cl. D28—13





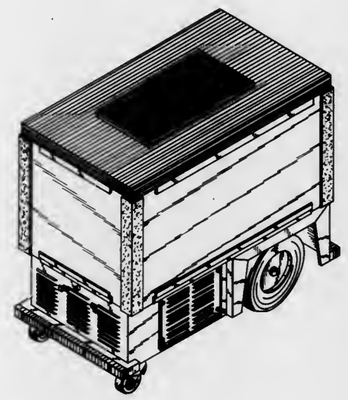
281,361
MOP HOLDER
Philip Jaros, Gloversville, and Paul O. Wright, Schenectady, both of N.Y., assignors to White Mop Wringer Company, Fultonville, N.Y.
Filed Jul. 5, 1983, Ser. No. 510,721
Term of patent 14 years
U.S. Cl. D32—50



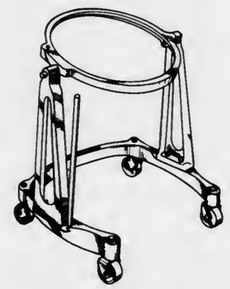
281,362
BOWLING LANE DUSTER
Donald E. Ingermann, Arvada; Ronald L. Smith, Boulder; Jimmie L. Knoll; Stephen F. Caffrey, both of Arvada; Endre Barsi, Denver, and Joseph C. Dechant, Aurora, all of Colo., assignors to Century International Corp., Golden, Colo.
Filed Sep. 6, 1983, Ser. No. 529,574
Term of patent 14 years
U.S. Cl. D32—50



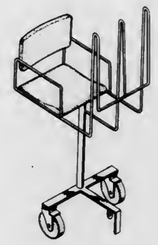
281,363
VENDING CART
Thomas Carvel, Chauncey, N.Y., assignor to Carvel Corporation, Yonkers, N.Y.
Filed Nov. 15, 1983, Ser. No. 552,210
Term of patent 14 years
U.S. Cl. D34—20



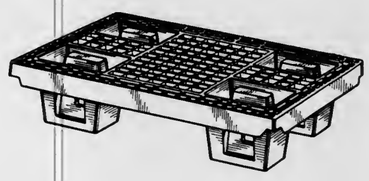
281,364
DOLLY FOR HOLDING AND TILTING A BUCKET
John DiFede, 24878 Tioga Rd., Hayward, Calif. 94544
Filed Jan. 13, 1983, Ser. No. 457,565
Term of patent 14 years
U.S. Cl. D34—23



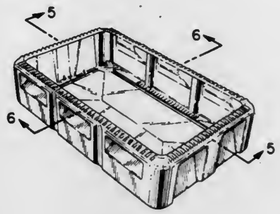
281,365
BABY SEAT ATTACHMENT FOR SHOPPING CARTS
Donald Gugler, 10208 Swinton Ave., Granada Hills, Calif. 91343
Filed Jun. 7, 1983, Ser. No. 501,849
Term of patent 14 years
U.S. Cl. D34—27



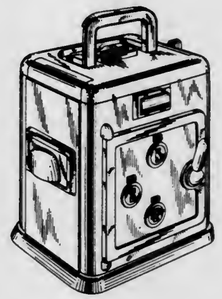
281,366
PALLET
Allan Hakanen, Turku, Finland, assignor to Treston Oy, Turku, Finland
Filed Apr. 18, 1983, Ser. No. 486,029
Claims priority, application Finland, Nov. 16, 1982, 998/82
Term of patent 14 years
U.S. Cl. D34—38



281,367
COMBINED PACKING AND STORING BOX FOR FISH
Per S. Stromberg, P.O. Box 65, N-2011 Strommen, Norway
Filed Sep. 15, 1982, Ser. No. 418,482
Claims priority, application Norway, Mar. 17, 1982, 62.754
Term of patent 14 years
U.S. Cl. D34—40



281,368
TOY SAFE
Pietro Catelli, Como, Italy, assignor to Artsana S.p.A., Italy
Filed Jul. 28, 1983, Ser. No. 518,150
Claims priority, application Italy,
Term of patent 14 years
U.S. Cl. D99—35



281,369
PAPER MONEY HOLDER
Joseph H. Harris, 1149 Gail La., Sleepy Hollow, Ill. 60118
Filed Dec. 27, 1982, Ser. No. 441,043
Term of patent 14 years
U.S. Cl. D99—34



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Laitinen, Sakari; and Nyman, Tapani, 4,552,619, Cl. 162-336.000.

A.B.F. Industrie S.A.: *See—*
Puyo, Philippe; and Bouvet, Lucien, 4,551,921, Cl. 33-366.000.

A. Nattermann & Cie GmbH: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Aab, Hans-Walter: *See—*
Lehmann, Wolfgang; and Aab, Hans-Walter, 4,552,416, Cl. 308-6.00C.

Aavid Engineering, Inc.: *See—*
Johnson, Philip A.; and McCarthy, Alfred F., 4,552,206, Cl. 165-80.300.

Abe, Hiroo: *See—*
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.

Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, to Nippon Soken, Inc. Piezoelectric actuator and a piezoelectric pump injector incorporating the same. 4,553,059, Cl. 310-328.000.

Abe, Yasuhiro: *See—*
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.

Abe, Yoshiaki; and Koyama, Masaaki. Multi-layer coating method based on differential spectral reflectance. 4,552,780, Cl. 427-8.000.

Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and by Lavery, Ormond F., personal representative, to Megabar Explosives Corporation. Soft composite explosives and process for making same. 4,552,597, Cl. 149-2.000.

Abendroth, Werner: *See—*
Urbye, Klaus; and Abendroth, Werner, 4,552,623, Cl. 202-248.000.

Abrams, Wayne A.: *See—*
Nall, Kent J.; Bartelides, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Acampora, Alfonse, to RCA Corporation. Circuitry for correcting motion induced errors in frame comb filtered video signals. 4,553,158, Cl. 358-31.000.

ACF Industries, Inc.: *See—*
Doerr, Richard D.; Muller, J. Joseph; and Green, William A., 4,553,076, Cl. 318-282.000.

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Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.

Adachi, Tokio: *See—*
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Adamek, Frank C.: *See—*
Stewart, Vernon G.; and Adamek, Frank C., 4,552,369, Cl. 277-226.000.

Adams, Gary E.; Casper, John M.; and Gritter, Roy J., to International Business Machines Corporation. LC/FTIR System with thermospray solvent separation. 4,552,723, Cl. 422-66.000.

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Bente, Alfred, 4,551,931, Cl. 36-117.000.

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Bader, James S., 4,552,265, Cl. 206-159.000.

Advanced Energy Concepts '81 Ltd.: *See—*
Distin, Robert G., Jr.; and Lang, Thomas J., 4,552,037, Cl. 74-805.000.

Advanced Medical Products, Inc.: *See—*
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Advanced Micro Devices, Inc.: *See—*
Yang, Tsen-Shau, 4,553,083, Cl. 323-313.000.

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Bauman, Bernard D., 4,552,847, Cl. 136-5.000.
Goar, B. Gene, 4,552,747, Cl. 423-574.00R.
Spector, Marshall L.; and Hong, Sun-Nan, 4,552,663, Cl. 210-605.000.

Airwick Industries, Inc.: *See—*
Dente, Stephen V.; and Ward, Kenneth J., 4,552,777, Cl. 427-393.100.

Aisin Seiki Kabushiki Kaisha: *See—*
Akagi, Motonobu, 4,552,249, Cl. 185-39.000.
Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, 4,552,413, Cl. 303-106.000.
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,209, Cl. 364-431.070.
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.
Iwasaki, Shinichiro, 4,553,058, Cl. 310-268.000.
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.

Aizawa, Michihiko: *See—*
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, 4,551,991, Cl. 62-476.000.

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Takei, Kenji; and Akabane, Yukihiro, 4,552,467, Cl. 384-615.000.

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Alan Shelton Limited: *See—*
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Alarm Accessory Ltd.: *See—*
Holt, William, 4,553,134, Cl. 340-545.000.

Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., to Dow Chemical Company, The. Polyamide-polyurea polymers by the RIM process. 4,552,945, Cl. 528-62.000.

Albert-Frankenthal AG: *See—*
Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, 4,552,068, Cl. 101-415.100.

Albertson, Clarence E., to Borg-Warner Corporation. Resin-reinforced, nodular plated wet friction materials. 4,552,259, Cl. 192-107.00M.

Aldwinckle, Michael J., to Ciba Geigy Corporation. Use of N-acyl sarcosinate and its salts as compatibility agents for pesticide/liquid fertilizer formulations. 4,552,580, Cl. 71-3.000.

Alexander, William H.; and Dare, Roy R., to Vapor Corporation. Ball valve. 4,552,335, Cl. 251-315.000.

Alfa-Laval AB: *See—*
Baeling, Peter; and Ehnstrom, Lars, 4,552,775, Cl. 426-624.000.

Alfenaar, Marinus: *See—*
van den Brink, Franciscus; and Alfenaar, Marinus, 4,552,636, Cl. 204-182.400.

Allcroft, Arthur N.: *See—*
Jensen, Ronald P.; and Allcroft, Arthur N., 4,552,146, Cl. 128-305.000.

Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, to Commissariat a l'Energie Atomique. Optical fibers with plastic core and polymer cladding. 4,552,431, Cl. 350-96.340.

Allen-Bradley Company: *See—*
Burns, James A.; and Nolan, Dennis C., 4,553,187, Cl. 361-96.000.
Cannon, Lee E.; Schmitt, Peter C.; and Cheever, Dan R., 4,553,080, Cl. 318-696.000.
Struger, Odo J.; and Sammons, Barry E., 4,553,224, Cl. 364-900.000.

Alley, Gary D.: *See—*
Clifton, Brian J.; and Alley, Gary D., 4,553,265, Cl. 455-325.000.

Allied Corporation: *See—*
Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., 4,553,136, Cl. 340-572.000.
Casey, Gary L., 4,552,311, Cl. 239-585.000.
Jenczewski, Theodore J.; and Skinner, William H., Jr., 4,552,635, Cl. 204-182.400.
Narayan, Surendra D.; and Thomas, Rudy V., 4,551,889, Cl. 24-196.000.

Allis-Chalmers Corporation: *See—*
Wooldridge, James E., 4,552,058, Cl. 98-1.500.

Allor, Richard L.: *See—*
Baker, Robert R.; and Allor, Richard L., 4,552,024, Cl. 73-821.000.

Almond, Stephen W.; and Himes, Ronald E., to Halliburton Company. Method of gravel packing a well. 4,552,215, Cl. 166-278.000.

Alsthom-Atlantique: *See—*
Thuries, Edmond, 4,553,004, Cl. 200-148.00A.

Alten, Kurt. Ramp bridging device. 4,551,877, Cl. 14-71.700.

Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., to Dragerwerk Aktiengesellschaft. Narcotics evaporator having a monitor equipped by-pass. 4,552,139, Cl. 128-200.140.

Aluminum Company of America: *See—*
Anderson, Albert R., 4,552,465, Cl. 374-179.000.
Voegel, Robert L.; and Wright, Kenton B., 4,552,638, Cl. 204-286.000.

Alyfuku, Kiyoshi: *See—*
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.

ALZA Corporation: *See—*
Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,552,561, Cl. 604-896.000.
Theeuwes, Felix, 4,552,555, Cl. 604-56.000.
Urquhart, John; and Theeuwes, Felix, 4,552,556, Cl. 604-80.000.

Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, to SGS-ATES Componenti Elettronici SpA. Monolithically integratable bistable multivibrator circuit having at least one output that can be placed in a preferential state. 4,553,046, Cl. 307-289.000.

Amax, Inc.: *See—*
Duyvesteyn, Willem P. C.; and Hogsett, Robert F., 4,552,629, Cl. 204-55.00R.
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.

Amboss, Kurt, to Hughes Aircraft Company. Dual-mode electron gun with improved shadow grid arrangement. 4,553,064, Cl. 313-448.000.

AMCA International Corporation: *See—*
Wallace, Gary L.; and Kasper, Frank S., 4,552,048, Cl. 83-23.000.

Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., to International Business Machines Corporation. Process for forming a high density metallurgy system on a substrate and structure thereof. 4,552,615, Cl. 158-659.100.

Amer, James E.: *See—*
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., 4,552,295, Cl. 226-195.000.

American Can Company: *See—*
Krueger, Duane A.; and Odorzynski, Thomas W., 4,552,714, Cl. 264-171.000.
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,552,801, Cl. 428-220.000.

American Colloid Company: *See—*
Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, 4,552,938, Cl. 526-240.000.

American Cyanamid Company: *See—*
Asato, Goro; and Ross, Lawrence J., 4,552,897, Cl. 514-554.000.
Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., 4,552,148, Cl. 128-334.00C.
Hill, John H.; and Lisboa, Luis S., 4,552,161, Cl. 132-88.500.
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

American Filtrona Corporation: *See—*
Berger, Richard M., 4,552,158, Cl. 131-94.000.

American Maise-Products Company: *See—*
DeBoer, Edward D.; and Yahl, Kenneth R., 4,552,564, Cl. 8-115.600.

American Robot Corporation: *See—*
Gorman, Robert H., 4,552,505, Cl. 414-735.000.

American Standard Inc.: *See—*
Balukin, Richard F.; and Reiss, John R., 4,552,412, Cl. 303-67.000.
Utter, Robert E., 4,552,518, Cl. 418-55.000.

American Sterilizer Company: *See—*
Baker, Richard E., Sr.; and Baker, Richard E., Jr., 4,552,720, Cl. 422-26.000.

AMF Incorporated: *See—*
Brutsman, James W., 4,552,061, Cl. 100-53.000.

Amhil Enterprises Ltd.: *See—*
Van Melle, Hugh, 4,552,522, Cl. 425-182.000.

Amick, David R., to Rohm and Haas Company. Microbiocidal article for aqueous systems. 4,552,752, Cl. 424-21.000.

AMP Incorporated: *See—*
Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., 4,552,422, Cl. 339-17.0CF.
Billman, Timothy B., 4,552,425, Cl. 339-47.00R.
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
English, James M.; Gurreri, Nicholas L.; and Kling, John P., 4,553,114, Cl. 333-182.000.
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.
Swengel, Robert C., Jr., 4,552,423, Cl. 339-19.000.
Teagno, Vladimiro; and Chiusa, Alessandro, 4,552,260, Cl. 198-345.000.
van Alst, Gerardus M., 4,552,429, Cl. 339-99.00R.

Ampex Corporation: *See—*
Poole, Burnet M., 4,553,185, Cl. 360-10.100.

AMSTED Industries Incorporated: *See—*
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.
Peting, Robert G., 4,552,385, Cl. 285-111.000.

Analgesic Associates: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,552,899, Cl. 514-568.000.

Anastasi, Kenneth J.: *See—*
Dombrowski, David M.; and Anastasi, Kenneth J., 4,552,046, Cl. 82-36.00A.

Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, to Koh-I-Noor Rapidograph, Inc. Device for covering an oblong opening in a housing. 4,552,483, Cl. 403-288.000.

Andersen, Einar; and Boe, Gunnar H., to Elkem a/s. Hydrometallurgical method of extraction of copper from sulphide-containing material. 4,552,632, Cl. 204-107.000.

Anderson, Albert R., to Aluminum Company of America. Two-point spring loaded thermocouple probe with replaceable tips. 4,552,465, Cl. 374-179.000.

Anderson, Alex L. Electrical discharge surface conditioning device. 4,553,012, Cl. 219-69.00R.

Anderson, Edwin A.; and Webb, Derrel D. Drill string shock absorber. 4,552,230, Cl. 175-321.000.

Anderson, Gene S.; and Watson, David B., to Cooper Industries, Inc. Hybrid cable. 4,552,432, Cl. 350-96.230.

Anderson, Lowell M.; and Volk, Rodney H., to Westinghouse Electric Corp. Transport refrigeration unit. 4,551,986, Cl. 62-239.000.

Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., to Allied Corporation. Amorphous antipilferage marker. 4,553,136, Cl. 340-572.000.

Anderson, William T., to AT&T Bell Laboratories. Optical fiber fabrication process comprising determining mode field radius and cut-off wavelength of single mode optical fibers. 4,552,578, Cl. 65-29.000.

Ando, Masamoto: *See—*
Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, 4,552,413, Cl. 303-106.000.

Ando, Osamu: *See—*
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, 4,552,199, Cl. 164-423.000.

Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Process for producing a molded skin product. 4,552,715, Cl. 264-309.000.

Andres, Rudolf: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, 4,552,402, Cl. 297-284.000.

Andrew Corporation: *See—*
Saad, Saad S.; and Knop, Charles M., 4,553,112, Cl. 333-21.00R.

Annas, Dulin L., to Anteg, Inc. Time delay switch. 4,552,999, Cl. 200-34.000.

ANT Nachrichtentechnik GmbH: *See—*
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Anteg, Inc.: *See—*
Annas, Dulin L., 4,552,999, Cl. 200-34.000.

Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, to Reanal Finomvegyszergyar. Gonadoliberin derivatives process for the preparation and pharmaceutical compositions thereof. 4,552,864, Cl. 514-15.000.

Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic camera. 4,553,170, Cl. 358-225.000.

Aoki, Kozo: *See—*
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.

Aoyagi, Shigeyuki; and Watanabe, Mamoru, to Victor Company of Japan, Limited. Apparatus for storing information storage mediums into casings. 4,551,966, Cl. 53-571.000.

Appleton, Arthur I., to Appleton Electric Company. Plug and receptacle with separable switch contactors. 4,553,000, Cl. 200-50.00B.

Appleton Electric Company: *See—*
Appleton, Arthur I., 4,553,000, Cl. 200-50.00B.

Appleton Papers Inc.: *See—*
Brown, Robert W.; and Bowman, Richard P., 4,552,811, Cl. 428-402.210.

Aquafine Corporation: *See—*
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.

Arai, Fuminao: *See—*
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.

Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, to Sumitomo Chemical Company, Limited. Chiral copper complex. 4,552,972, Cl. 556-35.000.

Ardal og Sunndal Verk a.s.: *See—*
Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, 4,552,530, Cl. 432-192.000.

Arikawa, Junichi: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Arlowe, H. Duane, to United States of America, Energy. Capacitive label reader. 4,553,026, Cl. 235-451.000.

Armas & Harshbarger Manufacturing Co.: *See—*
Armas, Joe, 4,552,193, Cl. 144-144.500.

Armas, Joe, to Armas & Harshbarger Manufacturing Co. Panelled door frame shaper template. 4,552,193, Cl. 144-144.500.

Armstrong World Industries, Inc.: *See—*
Colyer, Timothy D.; and Sensenig, Darryl L., 4,552,606, Cl. 156-280.000.

Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, to Hoechst Aktiengesellschaft. Solvated salts of dinitrophenylcyanamides, and a process for the preparation thereof. 4,552,970, Cl. 548-543.000.

Asada, Masahiro: *See—*
Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, 4,552,947, Cl. 528-126.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Fukuoka, Shinsuke; and Watanabe, Tomonari, 4,552,974, Cl. 560-25.000.
Murakami, Akira; and Yoshizaki, Hideo, 4,552,760, Cl. 424-94.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.
Wakamiya, Shunichiro, 4,553,229, Cl. 369-110.000.

Asai, Kiyotsugu: *See—*
Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, 4,552,944, Cl. 528-55.000.

Asai, Takamitsu: *See—*
Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, 4,552,808, Cl. 428-328.000.

Asano, Kohzoh: *See—*
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Asato, Goro; and Ross, Lawrence J., to American Cyanamid Company. Salts of l-(aminodihalophenyl)-2-aminoethanols and antilipogenic compositions prepared therefrom. 4,552,897, Cl. 514-554.000.

ASEA Aktiebolag: *See—*
Brantmark, Hakan; and Ennerfelt, Johan, 4,553,077, Cl. 318-568.000.
Persson, Bo G.; and Spicar, Erich, 4,552,990, Cl. 174-117.0FF.

Ashland Oil, Inc.: *See—*
Hettinger, William P., Jr., 4,552,642, Cl. 208-10.000.
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,552,647, Cl. 208-120.000.
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.

Astrolab Inc.: *See—*
Dery, Normand; and Boudreau, Jean-Louis, 4,552,611, Cl. 156-391.000.

AT&T Bell Laboratories: *See—*
Anderson, William T., 4,552,578, Cl. 65-29.000.
Chen, Chung Y.; and Cho, Alfred Y., 4,553,155, Cl. 357-30.000.

AT&T Technologies, Inc.: *See—*
Wong, Ching-Ping, 4,552,818, Cl. 428-447.000.

Atarashi, Kazuya, to Honda Giken Kogyo Kabushiki Kaisha. Glove box on vehicular instrument panel. 4,552,399, Cl. 296-37.120.

Atasi Corporation: *See—*
Brown, Stanley F.; and Plonczak, Garold W., 4,553,183, Cl. 360-98.000.

Atlantic Richfield Company: *See—*
Kolecki, Ronald E., 4,552,003, Cl. 72-38.000.
Wakefield, G. Felix; and Bender, David L., 4,552,289, Cl. 222-600.000.
Wilson, Robert, 4,552,216, Cl. 166-261.000.

Atochem: *See—*
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Atomic Energy of Canada Limited: *See—*
Chuang, Karl T.; and Thatcher, David R. P., 4,552,744, Cl. 423-522.000.

Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, to Hitachi, Ltd. Refrigeration apparatus. 4,551,983, Cl. 62-174.000.

Attia, Yosry A.; and Fuerstenau, Douglas W., to University of California, The Regents of the. Method for removing inorganic sulfides from non-sulfide minerals. 4,552,652, Cl. 209-5.000.

Aubrey, David R.; and Kearley, Stephen J., to Electricity Council, The. Sectionalizer. 4,553,188, Cl. 361-115.000.

Audeh, Costandi A., to Mobil Oil Corporation. Apparatus for co-processing of oil and coal. 4,552,725, Cl. 422-140.000.

Auer, Hugo, to Robert Bosch GmbH. Apparatus for producing pouch packages in pairs. 4,552,613, Cl. 156-515.000.

Auernhammer, Erich, to Siemens Aktiengesellschaft. Cooling arrangement for an enclosed electric machine. 4,553,055, Cl. 310-62.000.

Aufderhaar, Herbert, to C. Keller GmbH u. Co. KG Maschinenfabrik. Nozzle box for heat treatment of veneering. 4,551,926, Cl. 34-23.000.

Auphan, Michel J., to U.S. Philips Corporation. Apparatus for the scanning of objects by means of ultrasound echography. 4,552,020, Cl. 73-602.000.

Austria Metall Aktiengesellschaft: *See—*
Eder, Theodor; and Koser, Jaroslav, 4,552,085, Cl. 114-84.000.

Automotive Products plc: *See—*
Nix, Richard; and Leigh-Monstevens, Keith V., 4,551,976, Cl. 60-533.000.

Avon Products, Inc.: *See—*
Hussain, Zahera J.; and Zukoski, Ronald D., 4,552,693, Cl. 252-522.00A.

Axford, Theodore G.: *See—*
Sheldon, William W.; and Axford, Theodore G., 4,551,938, Cl. 43-4.500.

Axford, Wayne L. Guttering system. 4,551,956, Cl. 52-12.000.

Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, to Nihon Tokushu Noyaku Seizo K.K. Certain 2-pyridyloxyacetanilides and their use as herbicides. 4,552,586, Cl. 71-94.000.

B. F. Goodrich Company, The: *See—*
Landsness, Clifford A., 4,552,602, Cl. 156-157.000.
Schollenberger, Charles S., 4,552,932, Cl. 525-440.000.

B & H Manufacturing Company: *See—*
Hoffmann, Wolfgang; and West, Michael, 4,552,608, Cl. 156-351.000.

Babcock Textilmaschinen GmbH: *See—*
Gottschalk, Karl-Heinz, 4,551,928, Cl. 34-82.000.

Babcock & Wilcox Company, The: *See—*
Berneburg, Philip L.; and Krukonis, Val J., 4,552,786, Cl. 427-249.000.
Knudsen, James K.; and Keyes, Marion A., IV, 4,552,026, Cl. 73-861.240.

Babuder, Gerald A.; and Weigl, Jeffrey L., to Cajon Company. Fluid coupling. 4,552,389, Cl. 285-379.000.

Babuka, Robert; Piechota, John L.; and Poch, Leonard J., to International Business Machines Corporation. High density planar interconnected integrated circuit package. 4,553,192, Cl. 361-395.000.

Bach, Eric; and Schmidt, Dieter, to Siemens Aktiengesellschaft. X-Ray diagnostic system comprising at least one x-ray generator and x-ray apparatus. 4,553,254, Cl. 378-098.000.

Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Display panel for vending machines. 4,551,935, Cl. 40-584.000.

Bader, James S., to Adolph Coors Company. Can clip and multiple container package. 4,552,265, Cl. 206-159.000.

Baeling, Peter; and Ehnstrom, Lars, to Alfa-Laval AB; and Svenska Lantmannens Riksforbund, Forening u.p.a, by said Lars Ehnstrom. Process for the production of animal feed stuff from a liquid residue obtained by fermentation and distillation of grain raw material. 4,552,775, Cl. 426-624.000.

Bagalini, Dante, to Westinghouse Electric Corp. Molded case circuit breaker with resettable combined undervoltage and manual trip mechanism. 4,553,116, Cl. 335-20.000.

Baik, Sunggi: *See—*
Raj, Rishi; and Baik, Sunggi, 4,552,711, Cl. 264-65.000.

Bailey, Nathan M. Portable floating fishing light. 4,553,194, Cl. 362-267.000.

Bain, James L. W.: *See—*
Riley, Danny A.; and Bain, James L. W., 4,552,145, Cl. 128-630.000.

Baker Oil Tools, Inc.: *See—*
Ross, Richard J.; and Speller, David J., 4,552,218, Cl. 166-319.000.

Baker, Richard E., Jr.: *See—*
Baker, Richard E., Sr.; and Baker, Richard E., Jr., 4,552,720, Cl. 422-26.000.

Baker, Richard E., Sr.; and Baker, Richard E., Jr., to American Sterilizer Company. Debris compressing autoclave. 4,552,720, Cl. 422-26.000.

Baker, Robert G.: *See—*
Jameson, Calvin R.; and Baker, Robert G., 4,553,023, Cl. 219-301.000.

Baker, Robert R.; and Allor, Richard L., to Ford Motor Company. Device for directly analyzing strength of ceramic tool bits. 4,552,024, Cl. 73-821.000.

Bakhshi, Virendar S.: *See—*
Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., 4,552,683, Cl. 252-189.000.

Ball Corporation: *See—*
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.

Ballard, Nathan T.: *See—*
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.

Ballard, Philip M.: *See—*
Bates, Robert N.; and Ballard, Philip M., 4,553,266, Cl. 455-327.000.

Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, to Centre National de la Recherche Scientifique. Curved gas-filled detector with avalanche of electrons, and strip. 4,553,062, Cl. 313-93.000.

Baltare, Gunnar, to Eaton Corporation. Drum brake spider assembly with cantilever anchor pin. 4,552,254, Cl. 188-328.000.

Baltz, Gene F.; and Jourdan, Donovan K., to Outboard Marine Corporation. Manual starter with ignition spark retard. 4,552,103, Cl. 123-186.000.

Balukin, Richard F.; and Reiss, John R., to American Standard Inc. Brake pipe charging cut-off arrangement. 4,552,412, Cl. 303-67.000.

Band, Elliot I.; and Breen, Michael J., to Stauffer Chemical Company. Olefin polymerization catalyst and process. 4,552,859, Cl. 502-127.000.

Banerjee, Ratan, to BOC Group, Inc., The. Heat exchange methods and apparatus. 4,551,981, Cl. 62-70.000.

Bang, Hyo J. Oil filter wrench. 4,552,040, Cl. 81-65.000.

Bar-Nefy, Simcha; and Tiomkin, Michael V., to Israel Aircraft Industries, Ltd. Minefield clearing apparatus. 4,552,053, Cl. 89-1.130.

Baranyi, Guiseppa: *See—*
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., 4,552,822, Cl. 430-59.000.

Barbagli, Rino O., to Fiatallis Europe S.p.A. Device for controlling the travel of a vehicle. 4,552,031, Cl. 74-473.00R.

Barbee, Robert B.; and Wicker, Thomas H., Jr., to Eastman Kodak Company. Polyester resins capable of forming containers having improved gas barrier properties. 4,552,948, Cl. 528-194.000.

Bare, Thomas M., to ICI Americas Inc. Pyrazolo[3,4-b]pyridine carboxylic acid esters and their pharmaceutical use. 4,552,883, Cl. 514-303.000.

Barfield, Gilbert; and Hagopian, Gary J. Apparatus for forming golf ball molds. 4,552,004, Cl. 72-60.000.

Barker, Robert I.; King, David P.; and Pawlowski, Henry A., to Monsanto Company. Multifunction processability testing method and apparatus. 4,552,025, Cl. 73-846.000.

Baron, Raphael: *See—*
Borodulin, German; Shkolnik, Alexander; and Baron, Raphael, 4,552,125, Cl. 126-437.000.

Baron, Walter J.; and Cleaver, Laird C., to Water Services of America, Inc. Basket retainer for heat exchanger tube cleaning element. 4,552,207, Cl. 165-95.000.

Barozzi, Gian P.: *See—*
Horeschi, Giancarlo; and Barozzi, Gian P., 4,552,474, Cl. 400-310.000.

Barrow, Michael, to Burroughs Corporation. Printed circuit board maximizing areas for component utilization. 4,553,111, Cl. 333-1.000.

Barsteika, Paul V.: *See—*
Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., 4,551,989, Cl. 62-468.000.

Barteldes, W. Christopher: *See—*
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Barton, Russell L.: *See—*
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.
Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., 4,552,895, Cl. 514-470.000.

BASF Aktiengesellschaft: *See—*
Merger, Franz; Hettinger, Peter; and Lange, Arno, 4,552,985, Cl. 568-497.000.
Ostertag, Werner, 4,552,593, Cl. 106-291.000.

Bass, Eric. Swimming pool exercise device. 4,552,540, Cl. 441-129.000.

Bates, Robert N.; and Ballard, Philip M., to U.S. Philips Corporation. R.F. Circuit arrangement. 4,553,266, Cl. 455-327.000.

Battenfeld Maschinenfabriken GmbH: *See—*
Cyriax, Wilhelm, 4,552,384, Cl. 285-111.000.

Batterman, Eric P., to RCA Corporation. Signal transition enhancement circuit. 4,553,042, Cl. 307-263.000.

Bauld, Nathan L.; and Bellville, Dennis J., to Board of Regents, The University of Texas System. Di- and triphenylated cation radical polymers and their use as Diels-Alder catalysts. 4,552,928, Cl. 525-326.200.

Bauman, Bernard D., to Air Products and Chemicals, Inc. Visual quality control method for barrier treated containers. 4,552,847, Cl. 136-5.000.

Bauman, Therese M.; and Lee, Chi-Long, to Dow Corning Corporation. Nonslumping, foamable polyorganosiloxane compositions containing organosiloxane graft copolymers. 4,552,901, Cl. 521-122.000.

Baumann, Horst: *See—*
Schmid, Karl; and Baumann, Horst, 4,552,702, Cl. 260-428.000.

Baumeister, Hans-Peter, to Eastman Kodak Company. Method/apparatus for playback of color video still pictures from a magnetic disk. 4,553,175, Cl. 358-310.000.

Baumgartner, Kenneth A. Set of workpiece stops for workpiece clamping collet. 4,552,370, Cl. 279-1.00S.

Baxter Travenol Laboratories, Inc.: *See—*
Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., 4,552,721, Cl. 422-28.000.

Bayer Aktiengesellschaft: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.
Feldner, Kurt; and Grape, Wolfgang, 4,552,973, Cl. 556-469.000.
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., 4,552,954, Cl. 536-24.000.
Podszun, Wolfgang; Bley, Fritjof; and Walkowiak, Michael, 4,552,906, Cl. 523-115.000.
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.

Bayer, Bryce E., to Eastman Kodak Company. Transform processing method for reducing noise in an image. 4,553,165, Cl. 358-167.000.

Bayerische Motoren Werke AG: *See—*
Schausberger, Christoph, 4,552,108, Cl. 123-270.000.

Bayssat, Michel: *See—*
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

BBC Brown, Boveri & Company, Limited: *See—*
Hartmann, Peter, 4,553,251, Cl. 375-114.000.
Stemmler, Herbert, 4,553,197, Cl. 363-37.000.

Beacham, Harry H.; and Mucenieks, Paul R., to FMC Corporation. Electrically conductive plastics and production of same. 4,552,687, Cl. 252-500.000.

Beaupre, Jean. Synthesis color photographic map and method of making same. 4,552,444, Cl. 354-354.000.

Bechtel International Corporation: *See—*
Galstaun, Lionel S., 4,552,572, Cl. 55-36.000.
Wallace, Norman R., 4,552,460, Cl. 366-196.000.

Beck, Hubert W.: *See—*
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,552,647, Cl. 208-120.000.

Becker, Benedikt: *See—*
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.

Beckett, Donald E., to Beckett Packaging Limited. Demetallizing method and apparatus. 4,552,614, Cl. 156-640.000.

Beckett Packaging Limited: *See—*
Beckett, Donald E., 4,552,614, Cl. 156-640.000.

Beckman, John A.; and Sills, David E., to Dana Corporation. Drive line slip joint assembly. 4,552,544, Cl. 464-162.000.

Beebe International, Inc.: *See—*
Smith, Glenn S., 4,552,073, Cl. 105-154.000.

Beecher, William H., to Illinois Tool Works Inc. Bag shut-off clamp. 4,551,888, Cl. 24-30.50P.

Behn, Ernest E.; and Behn, Jerome L. Cultivator shield attachment. 4,552,225, Cl. 172-513.000.

Behn, Jerome L.: *See—*
Behn, Ernest E.; and Behn, Jerome L., 4,552,225, Cl. 172-513.000.

Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, to Olympia Werke AG. Optical printer for line-by-line image forming. 4,553,148, Cl. 346-107.00R.

Behrens, Thomas: *See—*
Ott, Karl-Erich; and Behrens, Thomas, 4,552,461, Cl. 366-279.000.

Beiersdorf Aktiengesellschaft: *See—*
Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, 4,552,138, Cl. 128-156.000.

Beitler, Uzi: *See—*
Margel, Shlomo; and Beitler, Uzi, 4,552,812, Cl. 428-407.000.

Belanger, Inc.: *See—*
Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., 4,552,297, Cl. 227-120.000.

Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., to Belanger, Inc. Rotatable reloading apparatus for a stapler. 4,552,297, Cl. 227-120.000.

Bell, Jackie D.: *See—*
Fabbri, Vittorio E.; and Bell, Jackie D., 4,552,159, Cl. 132-9.000.

Bell, William D.: *See—*
Patel, Shantilal G.; and Bell, William D., 4,551,892, Cl. 28-166.000.

Bellows, Kenneth O., to Air Preheater Company, Inc., The. Means for lifting heating element baskets. 4,552,204, Cl. 165-10.000.

Bellville, Dennis J.: *See—*
Bauld, Nathan L.; and Bellville, Dennis J., 4,552,928, Cl. 525-326.200.

Beloit Corporation: *See—*
Adams, Richard J., 4,552,620, Cl. 162-358.000.
Beucker, Albert W., 4,551,894, Cl. 29-130.000.

Belorussky Politekhnichesky Institut: *See—*
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.

Belt, Ronald A.; and Joseph, James D., to Honeywell Inc. Means and method of processing optical image edge data. 4,553,260, Cl. 382-22.000.

Bencuya, Izak: *See—*
Cogan, Adrian I.; and Bencuya, Izak, 4,551,909, Cl. 29-571.000.

Benda, Steven J.; Kivisto, George M.; and Kivisto, Paul M. Clamp mechanism. 4,552,345, Cl. 269-43.000.

Bender, David L.: *See—*
Wakefield, G. Felix; and Bender, David L., 4,552,289, Cl. 222-600.000.

Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., to GTE Communications Products Corporation. Laser beam energy profile synthesizer. 4,553,244, Cl. 372-95.000.

Benford, Harry: *See—*
Hoffman, Allan; and Benford, Harry, 4,552,142, Cl. 128-207.160.

Benjamin, James A.: *See—*
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,553,151, Cl. 357-23.400.

Benner, Philip E. Method and apparatus for removing ions from a liquid. 4,552,664, Cl. 210-695.000.

Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., to AMP Incorporated. Modular receptacle pin grid array. 4,552,422, Cl. 339-17.0CF.

Bente, Alfred, to Adi Dassler KG. Sole for a cross-country ski boot and associated binding base plate. 4,551,931, Cl. 36-117.000.

Berchtold, Nikolaus, to Maag Gear-Wheel & Machine Company Limited. Tooth flank profile measuring apparatus containing a feeler for determining the surface roughness of a tooth flank. 4,552,014, Cl. 73-105.000.

Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., to TRW Inc. Opposed gate-source transistor. 4,551,904, Cl. 29-571.000.

Berg, Gilbert G.: *See—*
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.

Berger, Richard M., to American Filtrona Corporation. Free air dilution smoke filter and method and apparatus for fabricating same. 4,552,158, Cl. 131-94.000.

Berglin, Carl T.; and Herrmann, Wolfgang, to EKA AB. Method in the production of hydrogen peroxide. 4,552,748, Cl. 423-588.000.

Berliner Elektronenspeicherring Gesellschaft: *See—*
Petersen, Helmuth, 4,553,253, Cl. 378-084.000.

Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, to Albert-Frankenthal AG. Gravure cylinder. 4,552,068, Cl. 101-415.100.

Berneburg, Philip L.; and Krukonis, Val J., to Babcock & Wilcox Company, The. Method for densification of ceramic materials. 4,552,786, Cl. 427-249.000.

Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, to Elesa S.p.A. Tipping handle for control handwheels. 4,552,034, Cl. 74-547.000.

Berti, Eugenio, to Memorex Corporation. Disk drive positioning system providing fault-free protection against endstop head crashes by use of a passive network in the actuator driving signal path. 4,553,181, Cl. 360-75.000.

Bertsch, Gotthilf; and Braun, Josef, to Maschinenfabrik Sulzer-Ruti AG. Weaving machine. 4,552,187, Cl. 139-434.000.

Bethlehem Steel Corporation: *See—*
Nace, Robert J., 4,551,951, Cl. 51-170.0EB.

Bettencourt, George S.; and Strickler, Robert E., to Westinghouse Electric Corp. Multiple connector hood for interconnections to printed circuit boards. 4,552,426, Cl. 339-75.00M.

Betzing, Hans: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Beucker, Albert W., to Beloit Corporation. Urethane covered paper machine roll with vented interface between roll and cover. 4,551,894, Cl. 29-130.000.

Bewley, Jesse R.: *See—*
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.

Beymer, Dale A. Tightening apparatus. 4,552,042, Cl. 81-476.000.

Biancalana, Carlo; Vescovi, Giuseppe; and Volpini, Maurizio, to Bitiess Microtecnica S.A. Cleaning device for dental instruments to be used during surgery and dental treatments. 4,552,163, Cl. 134-100.000.

Biehle, William C., to Metal Improvement Company, Inc. Apparatus for measuring flow-rate of electromagnetic granular media. 4,552,017, Cl. 73-198.000.

Bilco Tools, Inc.: *See—*
Coyle, William E., Sr., 4,552,041, Cl. 81-470.000.

Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, to McCorquodale Machine Systems Limited. Printing in register on sheets. 4,552,065, Cl. 101-93.330.

Billman, Timothy B., to AMP Incorporated. High current connector. 4,552,425, Cl. 339-47.00R.

Binard, Luc Andre M. G., to Studiecentrum voor Kernenergie, S.C.K. Equipment for determining the position of a metal body in a medium with low electric conductivity. 4,552,134, Cl. 128-1.500.

Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., to Thermo Electron Corporation. Gas-fired steam cooker. 4,552,123, Cl. 126-369.000.

Bisiach, Luciano. Automatic tool changing mechanism for industrial robots. 4,551,903, Cl. 29-568.000.

Bisonaya, Rudy Y.: *See—*
Farrell, Gerald J.; and Bisonaya, Rudy Y., 4,552,171, Cl. 137-359.000.

Bissot, Thomas C.; and Li, Stephen, to Du Pont de Nemours, E. I., and Company. Reinforced membrane, electrochemical cell and electrolysis process. 4,552,631, Cl. 204-98.000.

Bitiess Microtecnica S.A.: *See—*
Biancalana, Carlo; Vescovi, Giuseppe; and Volpini, Maurizio, 4,552,163, Cl. 134-100.000.

Bittner, Harry J., to National Semiconductor Corporation. Integrated circuit output driver stage. 4,553,044, Cl. 307-270.000.

Black & Decker Inc.: *See—*
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,552,477, Cl. 401-188.00R.
Saeed, Abdul, 4,553,057, Cl. 310-242.000.

Black, Donald J.; and Tang, Robert H., to PPG Industries, Inc. Peroxide composition containing phenolic antioxidant. 4,552,682, Cl. 252-186.260.

Blackmore, Phillip W.: *See—*
Cameron, Neil M.; and Blackmore, Phillip W., 4,552,793, Cl. 428-53.000.

Blagg, Bobby W.; and Gulliver, Richard F., to Gulf States Paper Corporation. Container blank having relieved edge construction. 4,552,293, Cl. 229-1.50B.

Blanchard, Pierre, to Thomson CSF. Compact differential coupler for monopulse radar. 4,553,113, Cl. 333-122.000.

Blank, Heinz U.: *See—*
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.

Blasch, Earl; and Smith-Johannsen, Robert, to Blasch Precision Ceramics, Inc. Composite inorganic structures. 4,552,800, Cl. 428-212.000.

Blasch Precision Ceramics, Inc.: *See—*
Blasch, Earl; and Smith-Johannsen, Robert, 4,552,800, Cl. 428-212.000.

Bley, Fritjof: *See—*
Podszun, Wolfgang; Bley, Fritjof; and Walkowiak, Michael, 4,552,906, Cl. 523-115.000.

Bloch, Peter; and Wydler, Robert, to Maag Gear-Wheel & Machine Company Limited. Method for controlling a grinding stroke in a gear tooth flank grinding machine. 4,551,954, Cl. 51-287.000.

Bluegrass Electronics Inc.: *See—*
DuRand, Elden E., III, 4,552,022, Cl. 73-647.000.

Bluett, Thomas J. Environmental impervious swivel. 4,552,481, Cl. 403-165.000.

Blume, Friedrich; and Voigtmann, Lutz, to Braun Aktiengesellschaft. Shear foil having protrusions on its skin-contacting surface thereof. 4,552,832, Cl. 430-320.000.

Blumenfeld, John F.; and Bubon, Frank, to Emhart Industries, Inc. Glass forehearth. 4,552,579, Cl. 65-346.000.

Board of Regents, The University of Texas System: *See—*
Bauld, Nathan L.; and Bellville, Dennis J., 4,552,928, Cl. 525-326.200.

Bobst SA: *See—*
Luska, Zdenek, 4,552,165, Cl. 137-3.000.

BOC Group, Inc., The: *See—*
Banerjee, Ratan, 4,551,981, Cl. 62-70.000.

Boccadoro, Yves; and Chastagner, Paul, to Regie Nationale des Usines Renault. Process for stabilizing the idle speed of an internal combustion engine with controlled ignition. 4,552,109, Cl. 123-339.000.

Boe, Gunnar H.: *See—*
Andersen, Einar; and Boe, Gunnar H., 4,552,632, Cl. 204-107.000.

Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, to Geophysical Company of Norway A/S. Float arrangement. 4,552,086, Cl. 114-242.000.

Boeing Company, The: *See—*
Purves, Robert B., 4,553,092, Cl. 324-106.000.
Smithberg, Dudley G., 4,551,918, Cl. 30-347.000.
Stevens, Glenn G.; and Kennedy, Roger C., 4,553,216, Cl. 364-558.000.

Bohlin, Leif R. Rheometer for analyzing the elastic and/or viscous characteristics of gels and liquid systems. 4,552,012, Cl. 73-59.000.

Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., to James River-Norwalk, Inc. Packaging container for microwave popcorn popping and method for using. 4,553,010, Cl. 219-10.55E.

Bokalot, Jean, to Societe Nationale Industrielle et Aerospatiale. Safety device for opening an outwardly opening aircraft door in the event of excess pressure inside this aircraft and door equipped therewith. 4,552,326, Cl. 244-129.500.

Bolli, Peter. Toy building block with electrical contacting portions. 4,552,541, Cl. 446-91.000.

Bolomey, Jean-Charles; and Michel, Yves, to Centre National de la Recherche Scientifique; and Societe d'Etude du Radant. Process and means for rapid point by point survey of body scanning radiation field. 4,552,151, Cl. 128-653.000.

Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., to AMP Incorporated. Component insertion apparatus. 4,551,901, Cl. 29-564.600.

Booher, Richard N.; and Kornfeld, Edmund C., to Eli Lilly and Company. Partially hydrogenated pyrazolo, pyrimido and thiazolo[1,4-]benzoxazines. 4,552,956, Cl. 544-101.000.

Boots Company PLC, The: *See—*
Sim, Malcolm F.; and Yates, David B., 4,552,884, Cl. 514-312.000.

Borders, Donald B.: *See—*
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

Borg-Warner Corporation: *See—*
Albertson, Clarence E., 4,552,259, Cl. 192-107.00M.

Borgnat, Daniel: *See—*
Chrysostome, Gerard; and Borgnat, Daniel, 4,552,203, Cl. 165-1.000.

Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., to Combustion Engineering, Inc. Integrated coal cleaning process. 4,552,077, Cl. 110-347.000.

Borio, Richard W.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.

Borken, Richard J.: *See—*
Lo, Saukwan; and Borken, Richard J., 4,553,032, Cl. 250-339.000.

Borodulin, German; Shkolnik, Alexander; and Baron, Raphael. Portable solar water heater. 4,552,125, Cl. 126-437.000.

Borst, Gaylord M.; and Walsworth, Frank J., to Outboard Marine Corporation. Fluid pressure actuated motor with pneumatically-coupled pistons. 4,552,101, Cl. 123-73.0AD.

Bosch, Erhard: *See—*
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,552,942, Cl. 528-34.000.

Boudreau, Jean-Louis: *See—*
Dery, Normand; and Boudreau, Jean-Louis, 4,552,611, Cl. 156-391.000.

Bouhelier, Francis; and Vialatte, Claude, to Thomson CSF. Static disturbance signal recording system having detachable programming terminal & programmable fixed part with selectively powered buffer memory. 4,553,223, Cl. 364-900.000.

Bouvet, Lucien: *See—*
Puyo, Philippe; and Bouvet, Lucien, 4,551,921, Cl. 33-366.000.

Bowman, Richard P.: *See—*
Brown, Robert W.; and Bowman, Richard P., 4,552,811, Cl. 428-402.210.

Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., to Transamerica Delaval Inc. Transducer systems with overload protection. 4,552,023, Cl. 73-715.000.

Bowsky, Benjamin: *See—*
Vogel, Richard E.; and Bowsky, Benjamin, 4,551,984, Cl. 62-193.000.

Boyd, Gerald D., to Energies Technologies Corp. Electronic ballast for fluorescent lamp. 4,553,071, Cl. 315-244.000.

Boyd, Jerry K.; and Chang, Yu C., to FIP, Inc. Wellhead apparatus. 4,552,213, Cl. 166-88.000.

Boyd, John O. Radiation concentrator. 4,552,126, Cl. 126-451.000.

Bradley Corporation: *See—*
Smart, William A., Jr., 4,552,331, Cl. 251-95.000.

Bradner, William T.: *See—*
Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., 4,552,842, Cl. 435-75.000.

Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., to Black & Decker Inc. Apparatus for feeding a liquid to an applicator. 4,552,477, Cl. 401-188.00R.

Brakelmann, Wolfgang, to Holstein & Kappert GmbH. Method of and device for cleaning hollow spaces in double seat valves. 4,552,167, Cl. 137-15.000.

Brandes, Wilhelm: *See—*
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.

Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., to U.S. Philips Corporation. Method and system of transmitting digital information in a transmission ring. 4,553,234, Cl. 370-86.000.

Brandstater, Manfred; and Konnemann, Alfred, to Grote & Hartmann GmbH & Co. KG. Resistance heating element. 4,553,126, Cl. 338-319.000.

Brandt, Howard E., to United States of America, Army. High power millimeter-wave source. 4,553,068, Cl. 315-4.000.

Brandt, Joachim: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.

Branham Industries, Inc.: *See—*
Dysarz, Edward D., 4,552,498, Cl. 414-22.000.

Brannstrom, Roine; and Soderberg, Nils-Erik, to Stal-Laval Turbin AB. Device for pressure measurement in a pressurized container. 4,552,529, Cl. 432-58.000.

Brantmark, Hakan; and Ennerfelt, Johan, to ASEA Aktiebolag. Industrial robot. 4,553,077, Cl. 318-568.000.

Bratschi, Konrad: *See—*
Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, 4,552,195, Cl. 160-168.00R.

Braun Aktiengesellschaft: *See—*
Blume, Friedrich; and Voigtmann, Lutz, 4,552,832, Cl. 430-320.000.

Braun, Josef: *See—*
Bertsch, Gotthilf; and Braun, Josef, 4,552,187, Cl. 139-434.000.

Breen, Michael J.: *See—*
Band, Elliot I.; and Breen, Michael J., 4,552,859, Cl. 502-127.000.

Breitmoser, Georg; and Vogel, Wilhelm, to MTU-Motoren-und Turbinen-Union Muenchen GmbH. Arrangement of discrete structural parts, especially heat exchanger. 4,552,209, Cl. 165-133.000.

Bremner, John M., to Iowa State University Research Foundation, Inc. Method of inhibiting nitrification of ammonium nitrogen. 4,552,581, Cl. 71-61.000.

Brennensholtz, Matthew S.; and Donofrio, Robert L., to North American Philips Consumer Electronics Corp. Surface reflectivity device and method. 4,552,459, Cl. 356-448.000.

Breslow, Jeffrey D.: *See—*
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.

Bricot, Claude: *See—*
Gerard, Jean L.; and Bricot, Claude, 4,553,228, Cl. 369-46.000.

Brier, Gordon L., to Eli Lilly and Company. Synergistic antibacterial compositions and method of treatment of infections caused by multiple antibiotic-resistant organisms. 4,552,763, Cl. 424-114.000.

Briggs, Stephen L.: *See—*
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.
Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., 4,552,895, Cl. 514-470.000.

Brink, Edward C., Jr.: *See—*
Morris-Sherwood, Betty J.; and Brink, Edward C., Jr., 4,552,686, Cl. 252-392.000.

Bristol, L. Rodney, to Tektronix, Inc. Automatic vertical calibration method and system for an oscilloscope. 4,553,091, Cl. 324-74.000.

Bristol-Myers Company: *See—*
Kim, Choung U.; and Misco, Peter F., Jr., 4,552,696, Cl. 260-245.20T.
Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., 4,552,842, Cl. 435-75.000.
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.

British Nuclear Fuels Limited: *See—*
Clarkson, Andrew S., 4,552,624, Cl. 204-1.00T.

British Telecommunications: *See—*
Partington, Sally; and Carter, Steven F., 4,552,850, Cl. 501-37.000.
Rollett, John M., 4,553,103, Cl. 330-107.000.

Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., to Monsanto Company. Permeable asphaltic concrete. 4,552,809, Cl. 428-331.000.

Broadhead, James H., to Syntex (U.S.A.) Inc. Hydraulic power source and valve therefor. 4,551,973, Cl. 60-477.000.

Broida, Joel G. Camera system. 4,552,443, Cl. 354-132.000.

Bromley, Eric; and Schenck, Robert A., to Coleco Industries, Inc. Video game with control of movement and rate of movement of a plurality of game objects. 4,552,360, Cl. 273-85.00G.

Bronicki, Lucien Y., to Ormat Turbines, Ltd. Hybrid system for generating power. 4,551,980, Cl. 60-698.000.

Bronson, James C. Line coder self-inking system with disposable ink supply reservoir. 4,552,063, Cl. 101-35.000.

Brooker, Reginald D.: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Brossi, Arnold, to United States of America, Health and Human Services. Antitussive 6-keto morphinans of the (+)-series. 4,552,962, Cl. 546-74.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Ueno, Hideo, 4,553,219, Cl. 364-705.000.

Brousseau, Francis J. Exercise device. 4,552,356, Cl. 272-137.000.

Brown, Fred A.; and Grouse, Alan F., to Rotron Incorporated. Simple brushless DC fan motor with reversing field. 4,553,075, Cl. 318-254.000.

Brown, James E., to Rinker, Debra Kay. Sprout growing system. 4,551,942, Cl. 47-14.000.

Brown, Richard A.; and Norris, Robert D., to FMC Corporation. Oxidation of sulfides in polymer-thickened aqueous solution. 4,552,668, Cl. 210-759.000.

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Brown, Richard K.: *See—*
Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., 4,553,010, Cl. 219-10.55E.

Brown, Richard P.; and Correll, Harold E., to Goodyear Aerospace Corporation. Locking configuration for a wheel rim flange retaining ring. 4,552,194, Cl. 152-410.000.

Brown, Robert W.; and Bowman, Richard P., to Appleton Papers Inc. Capsule manufacture. 4,552,811, Cl. 428-402.210.

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Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, to Digital Equipment Corporation. Analog signal verification circuit. 4,552,992, Cl. 178-69.00G.

Bruekers, Alphons A. M. L.: *See—*
Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., 4,553,234, Cl. 370-86.000.

Bruensicke, Wilhelm A., to Lockheed Corporation. Emergency smoke disposal system for pressurized aircraft. 4,552,325, Cl. 244-118.500.

Brunnschweiler, David, to Haigh Chadwick Limited. Cyclically weighing bulk solid material. 4,552,235, Cl. 177-1.000.

Brunswick, Robert: *See—*
Donaldson, John H.; Brunswick, Robert; and Foulkes, Andrew J., 4,552,559, Cl. 604-198.000.

Brustle, Klaus: *See—*
Rock, Erich; and Brustle, Klaus, 4,551,883, Cl. 16-370.000.

Brutsman, James W., to AMF Incorporated. Trash compactor system. 4,552,061, Cl. 100-53.000.

Bruttel, Beat: *See—*
Preiswerk, Werner; and Bruttel, Beat, 4,552,562, Cl. 8-101.000.

Bryant, Marga M.: *See—*
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

Bryant, Stewart F., to U.S. Philips Corporation. Signal transmission system. 4,553,250, Cl. 375-34.000.

Bubon, Frank: *See—*
Blumenfeld, John F.; and Bubon, Frank, 4,552,579, Cl. 65-346.000.

Buch, Wolfgang. Drinking vessel having a holder. 4,552,276, Cl. 215-100.00A.

Budden, Renke: *See—*
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Bugg, John W. J.; and Houlden, Stephen, to White Sea & Baltic Company Limited, The. Alkali metal silicate solutions and method of forming foundry products using the solutions. 4,552,202, Cl. 164-528.000.

Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, to Cassella Aktiengesellschaft. Water-insoluble monoazo dyestuffs, their preparation and their use. 4,552,953, Cl. 534-886.000.

Bunker, Nathan S., to Stauffer Chemical Co. Insect repellent: 1-(3-phenoxy)-propyl-2,3-dibromopropionate. 4,552,896, Cl. 514-550.000.

Bunnenberg, Claus: *See—*
Kuhn, Wilhelm; and Bunnenberg, Claus, 4,553,087, Cl. 324-65.00P.

Burchette, Herbert L., to United Technologies Corporation. Joints between cylinders of different materials. 4,552,386, Cl. 285-187.000.

Burckhardt, Christof W.; Stauber, Philipp; and Piller, Gerard. Device for measuring force. 4,552,028, Cl. 73-862.040.

Burgdorf, Jochen; and Stoka, Roberto, to ITT Industries, Inc. Floating-caliper disc brake. 4,552,253, Cl. 188-73.380.

Burke, Timothy M.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.

Burks, Harold D.: *See—*
St. Clair, Terry L.; and Burks, Harold D., 4,552,931, Cl. 525-432.000.

Burns, James A.; and Nolan, Dennis C., to Allen-Bradley Company. Overcurrent detection device. 4,553,187, Cl. 361-96.000.

Burns, Simon P.; Walton, John M.; and McEntire, Edward E., to Texaco Inc. Method of separating primary amines from tertiary amines using non-polar hydrocarbon solvent and water. 4,552,958, Cl. 544-177.000.

Burrington, James D.: *See—*
Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., 4,552,705, Cl. 260-465.50R.

Burroughs Corporation: *See—*
Barrow, Michael, 4,553,111, Cl. 333-1.000.

Burt, Richard A.: *See—*
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., 4,552,822, Cl. 430-59.000.

Buschmann, Gerd: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,552,877, Cl. 514-239.000.

Bush, Ervin E.: *See—*
Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., 4,552,662, Cl. 210-232.000.

Bush, James A.: *See—*
Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., 4,552,842, Cl. 435-75.000.

Busse, Wolf-Dieter: *See—*
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.

Butler, Jesse L., to Sanders Associates, Inc. Reduced side lobe antenna system. 4,553,146, Cl. 343-379.000.

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Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.

Byers, William A.; and Peterson, Steven H., to Westinghouse Electric Corp. Ion exchange resin intrusion monitor. 4,553,034, Cl. 250-458.100.

Bynum, Byron G.; and Cave, David L., to Motorola, Inc. Monolithically integrated thermal shut-down circuit including a well regulated current source. 4,553,048, Cl. 307-350.000.

Bytesnik, Milan: *See—*
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.

C. Keller GmbH u. Co. KG Maschinenfabrik: *See—*
Aufderhaar, Herbert, 4,551,926, Cl. 34-23.000.

C.M.T. San Crato S.r.l.: *See—*
Nicolo, Pierfrancesco, 4,551,963, Cl. 53-148.000.

C. Reichert Optische Werke, AG.: *See—*
Sitte, Hellmuth; and Kleber, Heinrich, 4,551,992, Cl. 62-514.00R.

Cajon Company: *See—*
Babuder, Gerald A.; and Weigl, Jeffrey L., 4,552,389, Cl. 285-379.000.

Calgon Corporation: *See—*
Ralston, Paul H.; and Whitney, Sandra L., 4,552,665, Cl. 210-697.000.

California and Hawaiian Sugar Company: *See—*
Riffer, Richard, 4,552,840, Cl. 435-14.000.

Calmettes, Lionel, to Etablissements Caillau. Clamp fitting for pipes. 4,552,390, Cl. 285-420.000.

Calvet, Jean: *See—*
Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, 4,552,431, Cl. 350-96.340.

Calvin, Douglas J.: *See—*
Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., 4,552,297, Cl. 227-120.000.

Cambridge Engineering, Inc.: *See—*
Potter, Gary J., 4,552,059, Cl. 98-115.100.

Cameron, Neil M.; and Blackmore, Phillip W., to Fiberglas Canada Inc. Reoriented glass fiber board product. 4,552,793, Cl. 428-53.000.

Campisi, Carl, to Zenith Electronics Corporation. Component delivery system. 4,551,913, Cl. 29-740.000.

Candor, James T. Electrostatic method for treating material. 4,551,924, Cl. 34-1.000.

Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., to Westinghouse Electric Corp. Method utilizing ultrasonically induced cavitation to impregnate porous sheet passing through a resin bath. 4,552,781, Cl. 427-57.000.

Cannon, Lee E.; Schmitt, Peter C.; and Cheever, Dan R., to Allen-Bradley Company. Position transducer. 4,553,080, Cl. 318-696.000.

Canon Kabushiki Kaisha: *See—*
Hiraj, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.
Kawamura, Naoto; and Matsumoto, Kazuya, 4,553,036, Cl. 250-578.000.
Kawamura, Naoto, 4,553,173, Cl. 358-283.000.
Kinoshita, Takao, 4,553,167, Cl. 358-213.000.
Sagara, Seiji; and Hasegawa, Yuuji, 4,552,447, Cl. 355-3.00R.
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.

Canzano, Domenic A. Coaxial cable tester device. 4,553,085, Cl. 324-51.000.

Cargill Incorporated: *See—*
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.

Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst. Corrosion inhibitors for aqueous liquids for the working of metals, and a process for their preparation. 4,552,678, Cl. 252-49.300.

Carl, Louis C.; and Nevadunsky, Charles J., to ITT Corporation. Spring-loaded check valve. 4,552,174, Cl. 137-527.200.

Carl Still GmbH & Co., Kg., Firma: *See—*
Urbye, Klaus; and Abendroth, Werner, 4,552,623, Cl. 202-248.000.

Carnewal Jose A. C. L; and Van Overschelde, Daniel M., to Sperry Corporation. Straw chopper drive. 4,552,547, Cl. 474-101.000.

Carron & Company: *See—*
Malicki, Raymond W., 4,553,124, Cl. 338-5.000.

Carter, Steven F.: *See—*
Partington, Sally; and Carter, Steven F., 4,552,850, Cl. 501-37.000.

Carter, William R., to Western Gear Corporation. Hydraulic ejector. 4,552,327, Cl. 244-137.00R.

Casey, Gary L., to Allied Corporation. Low cost unitized fuel injection system. 4,552,311, Cl. 239-585.000.

Casper, John M.: *See—*
Adams, Gary E.; Casper, John M.; and Gritter, Roy J., 4,552,723, Cl. 422-66.000.

Caspersen, Leif: *See—*
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.

Caspersen, Leif D.: *See—*
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.

Cassella Aktiengesellschaft: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Castillo, Richard A., to Modulite Corporation. Apparatus for threading chain onto a lamp cord. 4,551,899, Cl. 29-241.000.

Castonguay, Roger N.; and Jencks, Charles L., to General Electric Company. Electric circuit breaker having reduced arc energy. 4,553,119, Cl. 335-147.000.

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Morello, Michael E., 4,552,392, Cl. 292-181.000.

Cattell, Alan F.; Kirton, John; and Lloyd, Peter, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Electroluminescent device. 4,552,782, Cl. 427-66.000.

Cavan, Jean-Claude: *See—*
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Cave, David L.: *See—*
Bynum, Byron G.; and Cave, David L., 4,553,048, Cl. 307-350.000.

Cavicchioli, A. G., to Jamak, Inc. Method of forming an improved handgrip having non-slip features. 4,552,713, Cl. 264-162.000.

Cavitt, Michael B.; and Wassberg, Neal L., to Dow Chemical Company, The. Advanced epoxy resins having improved impact resistance when cured. 4,552,814, Cl. 428-414.000.

Celanese Corporation: *See—*
Conrad, Peter, 4,552,397, Cl. 294-86.400.

Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, to Pfizer Inc. Process for producing an acidic polycyclic ether antibiotic by cultivation of a novel strain of *Streptomyces endus* subspecies *aureus*. 4,552,843, Cl. 435-76.000.

Centala, John P., to Rockwell International Corporation. Complemented roll attitude flight control system. 4,553,210, Cl. 364-434.000.

Central Research Institute of Electric Power Industry: *See—*
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.

Centre National de la Recherche Scientifique: *See—*
Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, 4,553,062, Cl. 313-93.000.
Bolomey, Jean-Charles; and Michel, Yves, 4,552,151, Cl. 128-653.000.

Cesa, Mark C.: *See—*
Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., 4,552,705, Cl. 260-465.50R.

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Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.

Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., to International Business Machines Corporation. Oscillation prevention during testing of integrated circuit logic chips. 4,553,049, Cl. 307-443.000.

Chadbourne, Daniel I., Jr.: *See—*
Chadbourne, Daniel I., Sr.; and Chadbourne, Daniel I., Jr., 4,552,166, Cl. 137-15.000.

Chadbourne, Daniel I., Sr.; and Chadbourne, Daniel I., Jr., to DC Technologies, Inc. Secondary containment system and method. 4,552,166, Cl. 137-15.000.

Chaffee, Edwin G., to Laser Corporation. Laser tube structure. 4,553,241, Cl. 372-62.000.

Chainer, Timothy J.; and Worthington, Thomas K., to International Business Machines Corporation. Segmentation algorithm for signature vertification. 4,553,258, Cl. 382-3.000.

Chainer, Timothy J.; Gundersen, Steven C.; and Worthington, Thomas K., to International Business Machines Corporation. Semi-independent shifting technique for signature verification. 4,553,259, Cl. 382-3.000.

Champion International Corporation: *See—*
Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., 4,552,792, Cl. 428-40.000.

Champion Spark Plug Company: *See—*
Manning, William R., 4,552,852, Cl. 501-105.000.

Chan, Edward Y.; Henderson, Ross; and Vaudo, Anthony J., to Powercube Corporation. Power converter symmetry correction circuit. 4,553,198, Cl. 363-56.000.

Chang, Jun H., to FMC Corporation. Herbicidal 2-(aminophenyl)-methyl derivatives of 3-isoxazolidinones or 3-oxazinones. 4,552,585, Cl. 71-88.000.

Chang, Long F.; and Patek, Frank, Jr., to Owens-Illinois, Inc. Pressurized fluid package. 4,552,275, Cl. 215-12.00R.

Chang, Sung-Chol. Resealable sealing device. 4,552,269, Cl. 206-632.000.

Chang, Yu C.: *See—*
Boyd, Jerry K.; and Chang, Yu C., 4,552,213, Cl. 166-88.000.

Chanock, Robert M.: *See—*
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,757, Cl. 424-89.000.
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,758, Cl. 424-89.000.

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Chappoux, Claude: *See—*
Ricouard, Jacques; and Chappoux, Claude, 4,551,998, Cl. 70-69.000.

Charlton, Steven C.: *See—*
Yip, Kin F.; and Charlton, Steven C., 4,552,697, Cl. 260-396.00N.

Charpak, Georges: *See—*
Lewiner, Jacques; and Charpak, Georges, 4,553,089, Cl. 324-71.100.

Chastagner, Paul: *See—*
Boccadoro, Yves; and Chastagner, Paul, 4,552,109, Cl. 123-339.000.

Chatterjea, Probir K., to J. I. Case Company. Stabilizer for priority flow divider valve. 4,552,168, Cl. 137-101.000.

Chatterley, Charles: *See—*
Sonderegger, Henry R.; and Chatterley, Charles, 4,552,332, Cl. 251-148.000.

Chaumette, Patrick: *See—*
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

Chaussy, Christian: *See—*
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Chautemps, Jacques; and Descure, Pierrick, to Thomson-CSF. Method and apparatus for adjusting the operating conditions of a photosensitive charge transfer device. 4,553,168, Cl. 358-213.000.

Chauvet, Pierre, to Societe d'Exploitation Cooperative de la Manufacture d'Armes et Cycles de St. Etienne (S.C.O.P.D. Manufrance), a part interest. Improved trigger mechanism for shotguns having superposed barrels. 4,551,936, Cl. 42-42.00R.

Chavdarian, Charles G.: *See—*
Haag, William G.; and Chavdarian, Charles G., 4,552,870, Cl. 514-89.000.

Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., to International Business Machines Corporation. Deposition of a metal from an electroless plating composition. 4,552,787, Cl. 427-304.000.

Cheever, Dan R.: *See—*
Cannon, Lee E.; Schmitt, Peter C.; and Cheever, Dan R., 4,553,080, Cl. 318-696.000.

Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., to Eastman Kodak Company. Phosphorous diketonate electron accepting ring compounds as sensitizers for electron donating photoconductive compositions. 4,552,825, Cl. 430-83.000.

Chen, Chin L. Rotary internal combustion engine. 4,552,107, Cl. 123-240.000.

Chen, Chung Y.; and Cho, Alfred Y., to AT&T Bell Laboratories. High speed bias-free photodetector. 4,553,155, Cl. 357-30.000.

Cherry, Sidney J., to Westinghouse Electric Corp. Cup type vacuum interrupter contact. 4,553,003, Cl. 200-144.00B.

Chiang, Hou Sheng: *See—*
Sung, Sam C. Y., 4,551,923, Cl. 33-476.000.

Chiba, Hiroshi: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Chick, Douglas K., to Readyseal Limited. Repairing leaks in pipelines carrying fluent medium. 4,552,183, Cl. 138-99.000.

Chikasue, Hideo, to Yazaki Sogyo Kabushiki Kaisha. Tachometer. 4,553,093, Cl. 324-169.000.

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Yoshida, Kei; and Saotome, Yoichiro, 4,551,946, Cl. 49-340.000.

Chiusa, Alessandro: *See—*
Teagno, Vladimiro; and Chiusa, Alessandro, 4,552,260, Cl. 198-345.000.

Cho, Alfred Y.: *See—*
Chen, Chung Y.; and Cho, Alfred Y., 4,553,155, Cl. 357-30.000.

Cholin, Jeffrey G.: *See—*
Cholin, John M.; Voorhis, Ray; and Cholin, Jeffrey G., 4,553,031, Cl. 250-339.000.

Cholin, John M.; Voorhis, Ray; and Cholin, Jeffrey G., to Firetek Corporation. Optical fire or explosion detection system and method. 4,553,031, Cl. 250-339.000.

Christie, C. T. Construction method and apparatus for installing a hanger-supported heating element in an electrical resistance furnace. 4,553,246, Cl. 373-130.000.

Chrysostome, Gerard; and Borgnat, Daniel, to Creusot-Loire. Method and device for controlling the temperature of a reaction carried out in a fluidized bed. 4,552,203, Cl. 165-1.000.

Chrysostome, Gerard: *See—*
Morin, Jean-Xavier; and Chrysostome, Gerard, 4,552,078, Cl. 110-347.000.

Chu, Huai-Pu; and Staugaitis, Charles L., to United States of America, National Aeronautics and Space Administration. Method of coating a substrate with a rapidly solidified metal. 4,552,784, Cl. 427-192.000.

Chuang, Karl T.; and Thatcher, David R. P., to Atomic Energy of Canada Limited. Process for the production of sulfuric acid using coated catalysts. 4,552,744, Cl. 423-522.000.

Chuchem, David: *See—*
Rosenwaks, Salman; and Chuchem, David, 4,553,243, Cl. 372-89.000.

Ciannella, Michael A.: *See—*
Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., 4,552,554, Cl. 604-51.000.

Ciba Geigy AG: *See—*
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.
Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., 4,552,452, Cl. 355-27.000.

Ciba Geigy Corporation: *See—*
Aldwinckle, Michael J., 4,552,580, Cl. 71-3.000.
Dreher, Bernd; and Schneider, Wolfgang, 4,552,815, Cl. 428-415.000.
Gabriele, Peter D.; and Rademan, Jerry E., 4,552,885, Cl. 514-316.000.
Green, George E., 4,552,604, Cl. 156-246.000.
Grob, Jurgen; and Kalvoda, Jaroslav, 4,552,871, Cl. 514-172.000.
Haug, Theobald; and Stockinger, Friedrich, 4,552,935, Cl. 525-488.000.
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Spivack, John D.; and Pastor, Stephen D., 4,552,926, Cl. 524-219.000.

Citta, Richard W., to Zenith Electronics Corporation. Upstream data packet time slot synchronization with downstream VBI for two-way CATV system. 4,553,161, Cl. 358-86.000.

CKD Corporation: *See—*
Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, 4,552,179, Cl. 137-625.650.

Claremon, David A., to Merck & Co., Inc. Substituted and bridged pyridines useful as calcium channel blocker. 4,552,881, Cl. 514-295.000.

Clark, Brian, to Schlumberger Technology Corporation. Well logging apparatus and method using transverse magnetic mode. 4,553,097, Cl. 324-338.000.

Clark, Raymond W.; and Limpert, Rudolf. Big bale handling system. 4,552,501, Cl. 414-486.000.

Clarkson, Andrew S., to British Nuclear Fuels Limited. Electrochemical apparatus for monitoring and/or measuring a component of a gas and a method of using said apparatus. 4,552,624, Cl. 204-1.00T.

Cleaver, Laird C.: *See—*
Baron, Walter J.; and Cleaver, Laird C., 4,552,207, Cl. 165-95.000.

Clifton, Brian J.; and Alley, Gary D. Monolithic single and double sideband mixer apparatus. 4,553,265, Cl. 455-325.000.

Cline, Richard L.: *See—*
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.

COBE ASDT, Inc.: *See—*
Swersey, Burt L.; and Fried, Peter I., 4,551,882, Cl. 16-226.000.

Coburn, Michael D.: *See—*
Lee, Kien-yin; and Coburn, Michael D., 4,552,598, Cl. 149-47.000.

Coca-Cola Company, The: *See—*
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,551,935, Cl. 40-584.000.

Cochrane, Joe Collis: *See—*
West, James C., 4,551,952, Cl. 51-241.00S.

Codex Corporation: *See—*
Parker, Lanny L., 4,553,043, Cl. 307-270.000.

Coe, Richard H., to Motorola, Inc. Communications system enabling radio link access for non-trunked radio units to a multifrequency trunked two-way communications systems. 4,553,262, Cl. 455-15.000.

Cofer, Archie. Trailer hitch lamp guide. 4,552,376, Cl. 280-477.000.

Cofino, Jose B.: *See—*
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., 4,553,035, Cl. 250-566.000.

Cogan, Adrian I.; and Bencuya, Izak, to GTE Laboratories Incorporated. Method of fabricating junction field effect transistors. 4,551,909, Cl. 29-571.000.

Cohen, Lewis, to Double-W Stationery Corporation. Ring mechanism. 4,552,478, Cl. 402-39.000.

Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, to Bayer Aktiengesellschaft. Polycarbonate molding compositions having improved flame retardance. 4,552,911, Cl. 524-94.000.

Cole-Parmer Instrument Company: *See—*
Stanley, Deryl B., 4,552,516, Cl. 417-477.000.

Coleco Industries, Inc.: *See—*
Bromley, Eric; and Schenck, Robert A., 4,552,360, Cl. 273-85.00G.

Coleman, Clarence B., to Fabricated Metals, Inc. Bulk material container with a rigid follower. 4,552,090, Cl. 116-204.000.

Colman, William H., to Lenco, Inc. Gas seal for MIG gun systems. 4,553,013, Cl. 219-74.000.

Colombo, Paul, to Perkin-Elmer Corporation, The. Effusion cell assembly. 4,553,022, Cl. 219-275.000.

Colyer, Timothy D.; and Sensenig, Darryl L., to Armstrong World Industries, Inc. Flotation method for orienting chips in the manufacture of surface covering. 4,552,606, Cl. 156-280.000.

Combustion Engineering, Inc.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.
McCartney, Michael S., 4,552,076, Cl. 110-347.000.

Commissariat a l'Energie Atomique: *See—*
Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, 4,552,431, Cl. 350-96.340.
Vayra, Jean, 4,552,173, Cl. 137-490.000.

Compagnie d'Informatique Militaire, Spatiale et Aeronautique: *See—*
Val, Christian, 4,553,020, Cl. 219-209.000.

Compagnie Industrielle des Telecommunications: *See—*
de Bergh, Guy, 4,552,996, Cl. 179-175.20C.

Company PAX: *See—*
Lindgren, Per, 4,552,338, Cl. 254-134.3FT.

Comparat, Vincent: *See—*
Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, 4,553,062, Cl. 313-93.000.

Congleton, Jerome J. Neutral body posture chair. 4,552,404, Cl. 297-330.000.

Connors, John D.: *See—*
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., 4,552,153, Cl. 128-677.000.

Conoco Inc.: *See—*
Reust, Dennis K., 4,553,028, Cl. 250-201.000.
Sandbrook, Thomas D.; and Scandrol, Roy O., 4,552,651, Cl. 209-1.000.

Conrad, Peter, to Celanese Corporation. Apparatus for gripping an article. 4,552,397, Cl. 294-86.400.

Conroy, David: *See—*
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.

Consiglio Nazionale Delle Ricerche: *See—*
Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, 4,552,726, Cl. 422-184.000.

Consortium fur Elektrochemische Industrie GmbH: *See—*
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,552,942, Cl. 528-34.000.

Conti, Gianfranco. Pincer-gun for electrically heating metal hinges of thermoplastic eyeglass frames. 4,553,021, Cl. 219-234.000.

Cooke, Larry: *See—*
Zasio, John J.; and Cooke, Larry, 4,553,236, Cl. 371-15.000.

Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., to Procter & Gamble Company, The. Penetrating topical pharmaceutical compositions containing corticosteroids. 4,552,872, Cl. 514-175.000.

Cooper Industries, Inc.: *See—*
Anderson, Gene S.; and Watson, David B., 4,552,432, Cl. 350-96.230.
Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., 4,553,008, Cl. 200-148.00R.

Cordis Europa N.V.: *See—*
Van Der Velden, Paulus M., 4,552,625, Cl. 204-1.00T.

Cornell Research Foundation, Inc.: *See—*
Chao, Pane-Chane; and Ku, Walter H., 4,551,905, Cl. 29-571.000.
Raj, Rishi; and Baik, Sunggi, 4,552,711, Cl. 264-65.000.

Corona, Antonio; and Corona, Franco O. Multiple bit screwdriver with improved chuck arrangement. 4,552,043, Cl. 81-490.000.

Corona, Antonio; and Corona, Franco O. Multibit screwdriver with improved bit insertion. 4,552,044, Cl. 81-490.000.

Corona, Franco O.: *See—*
Corona, Antonio; and Corona, Franco O., 4,552,043, Cl. 81-490.000.
Corona, Antonio; and Corona, Franco O., 4,552,044, Cl. 81-490.000.

Correll, Harold E.: *See—*
Brown, Richard P.; and Correll, Harold E., 4,552,194, Cl. 152-410.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,552,612, Cl. 156-494.000.
Hahn, Granville J., 4,552,791, Cl. 428-35.000.
Murley, Jackie D.; and Johnson, Marion, 4,552,717, Cl. 264-549.000.

Couche, Leon; Lacourt, Daniel; and Ventavoli, Roger. Oyster-opening tool. 4,551,886, Cl. 17-75.000.

Courtney, Thomas F., Jr.: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,552,770, Cl. 426-535.000.

Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, to Institut Francais du Petrole. Process for manufacturing catalysts containing copper, zinc, aluminum and at least one metal from the group formed of rare earths and zirconium and the resultant catalysts for reactions involving a synthesis gas. 4,552,861, Cl. 502-302.000.

Covington, Roger G.; and Miller, Stephen H., to Eastman Kodak Company. Clamping device for optical disk assemblies. 4,553,232, Cl. 369-287.000.

Cowden, Mollie G. W. Bookholder with magnified viewing window. 4,552,382, Cl. 281-45.000.

Cowley, John J.; and Hussey, Selby D., to Erie Manufacturing Co. Emergency escape device. 4,552,140, Cl. 128-201.250.

Coyle, William E., Sr., to Bilco Tools, Inc. Power tongs control system. 4,552,041, Cl. 81-470.000.

CPC Engineering Corporation: *See—*
Reid, Robert A., 4,552,508, Cl. 415-72.000.

CPC International Inc.: *See—*
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.

Crane & Co.: *See—*
Crane, Timothy T., 4,552,617, Cl. 162-103.000.

Crane, Timothy T., to Crane & Co. Security features in paper. 4,552,617, Cl. 162-103.000.

Creusot-Loire: *See—*
Chrysostome, Gerard; and Borgnat, Daniel, 4,552,203, Cl. 165-1.000.
Morin, Jean-Xavier; and Chrysostome, Gerard, 4,552,078, Cl. 110-347.000.

Crimmins, James W. Infrared telephone extension modulation system. 4,553,267, Cl. 455-606.000.

Cross, Danny R.: *See—*
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,552,499, Cl. 414-125.000.

Crown Controls Corporation: *See—*
Luebrecht, Donald, 4,552,250, Cl. 187-9.00E.

Cudworth, Richard W.: *See—*
Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., 4,551,949, Cl. 51-164.100.

Culbreth, Thomas F., to Westinghouse Electric Corp. Self-sealing electrode guide. 4,553,014, Cl. 219-75.000.

Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.

Cummins Engine Company, Inc.: *See—*
Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., 4,552,662, Cl. 210-232.000.

Cummins, Michael A.; and Powell, Thomas M., to GMFanuc Robotics Corporation. Opener mechanism and system utilizing same. 4,552,506, Cl. 414-735.000.

Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., to General Electric Company. Heat exchanger. 4,552,292, Cl. 228-183.000.

Cushing, R. J., Jr.: *See—*
Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., 4,552,018, Cl. 73-431.000.

Cutlip, Larry D., to Sol-Chem, Inc. Solar assisted heat pump heating and cooling system. 4,551,987, Cl. 62-324.500.

Cyclonaire Corporation: *See—*
Jacobson, Wayne M.; and Quaintance, Roger L., 4,552,489, Cl. 406-39.000.

Cyriax, Wilhelm, to Battenfeld Maschinenfabriken GmbH. Molded-joint assembly. 4,552,384, Cl. 285-111.000.

Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., to Genesco Inc. Thixotropic compositions comprising leather fibers and method for rendering polymeric compositions thixotropic. 4,552,909, Cl. 524-11.000.

Dage, Richard C.; and Schnettler, Richard A., to Merrell Dow Pharmaceuticals Inc. Aroylimidazolones. 4,552,880, Cl. 514-277.000.

Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co. KG: *See—*
Kuckens, Alexander; and Kohl, Horst, 4,552,286, Cl. 222-145.000.

Daikin Industries Ltd.: *See—*
Ishikawa, Nobuo; and Takaoka, Akio, 4,552,694, Cl. 260-239.0BD.

Daikin Kogyo Co., Ltd.: *See—*
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Daimler-Benz Aktiengesellschaft: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Quillmalz, Wolfram, 4,552,402, Cl. 297-284.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,553,172, Cl. 358-280.000.

d'Alayer de Costemore d'Arc, Stephane A. M., to Staar S. A. Motion damping suspension system for record playback machines. 4,553,231, Cl. 369-263.000.

Dale, Howard C.: *See—*
Lentz, Scott B.; and Dale, Howard C., 4,552,270, Cl. 211-17.000.

Dalman, G. Conrad: *See—*
Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., 4,551,904, Cl. 29-571.000.

Dam, Robert, to Zenith Electronics Corporation. Self-centering deflection yoke assembly. 4,553,120, Cl. 335-210.000.

Dana Corporation: *See—*
Beckman, John A.; and Sills, David E., 4,552,544, Cl. 464-162.000.

Daniels, William R.; and Young, John S., to GTE Automatic Electric Incorporated. Arrangement for loop analysis testing for a digital switching system. 4,552,997, Cl. 179-175.30R.

Danmar Products, Inc.: *See—*
Marchello, John L., 4,551,861, Cl. 2-425.000.

Dare, Roy R.: *See—*
Alexander, William H.; and Dare, Roy R., 4,552,335, Cl. 251-315.000.

Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., to Ball Corporation. Glassware gauging system. 4,553,217, Cl. 364-560.000.

Davidson, James R., to Xerox Corporation. Sheet transport system. 4,552,448, Cl. 355-3.0SH.

Davies, Alan F., to Davies Office Equipment, Ltd. Visible file pocket support panel. 4,551,934, Cl. 40-535.000.

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Davies, Alan F., 4,551,934, Cl. 40-535.000.

Davis, Charles L.: *See—*
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,551,935, Cl. 40-584.000.

Davis, Paul J.; and Reynolds, James F., to International Octrooi Maatschappij "Octropa" B.V. Composition for the control of coccidiosis in poultry. 4,552,759, Cl. 424-93.000.

Dayco Corporation: *See—*
Howerton, Anderson W., 4,552,550, Cl. 474-242.000.

DC Technologies, Inc.: *See—*
Chadbourne, Daniel I., Sr.; and Chadbourne, Daniel I., Jr., 4,552,166, Cl. 137-15.000.

De La Rue Giori S.A.: *See—*
Giori, Gualtiero; and Germann, Albrecht J., 4,552,066, Cl. 101-152.000.

De La Rue Systems Limited: *See—*
Glasson, Peter; and Wood, John, 4,552,075, Cl. 109-52.000.

de Bergh, Guy, to Compagnie Industrielle des Telecommunications. Method and apparatus for evaluating noise level on a telephone channel. 4,552,996, Cl. 179-175.20C.

Deblitz, Gerhard: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.

DeBoer, Edward D.; and Yahl, Kenneth R., to American Maise-Products Company. Use of improved starch-polyvinyl alcohol composition as a textile size. 4,552,564, Cl. 8-115.600.

Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., to International Standard Electric Corporation. Multiple-ring communication system. 4,553,233, Cl. 370-16.000.

Dechene, Fernand J., to VBM Corporation. Oxygen generator with two compressor stages. 4,552,571, Cl. 55-21.000.

Degussa Aktiengesellschaft: *See—*
Panster, Peter; and Grethe, Horst, 4,552,700, Cl. 556-9.000.

Del Monte Corporation: *See—*
Ross, Edward E., 4,552,189, Cl. 141-80.000.

Delaney, Norma G.; and Gordon, Eric M., to E. R. Squibb & Sons, Inc. Use of diamino alcohols as analgesic agents. 4,552,866, Cl. 514-16.000.

DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 23,23-Difluoro-1α,25-dihydroxy-vitamin D_3. 4,552,698, Cl. 260-397.200.

Denka Consultant & Engineering Company Limited: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Denley, Ronald S.: *See—*
Van Zeeland, Anthony J.; and Denley, Ronald S., 4,553,009, Cl. 200-340.000.

Denman, Sandra L.: *See—*
Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., 4,552,705, Cl. 260-465.50R.

Dente, Stephen V.; and Ward, Kenneth J., to Airwick Industries, Inc. Carpet treating compositions containing a polysiloxane to reduce caking. 4,552,777, Cl. 427-393.100.

Depin, Jean-Claude: *See—*
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

Derivaz, Jean-Pierre: *See—*
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Dery, Normand; and Boudreau, Jean-Louis, to Astrolab Inc. Conductor applying apparatus for rear window defrosters. 4,552,611, Cl. 156-391.000.

Desbois, Michel, to Rhone-Poulenc Specialites Chimiques. Process for preparation of α,α-difluoroalkoxy or α,α-difluoroalkylthiophenyl sulfones. 4,552,984, Cl. 568-29.000.

Descure, Pierrick: *See—*
Chautemps, Jacques; and Descure, Pierrick, 4,553,168, Cl. 358-213.000.

Dettmer, Jay R., to Sperry Corporation. Angle based stroke generator. 4,553,214, Cl. 364-521.000.

Deubzer, Bernward; and Wilhelm, Hermann, to Wacker-Chemie GmbH. Aqueous compositions containing an organosilicon compound. 4,552,910, Cl. 524-43.000.

Deutsche Babcock Werke Aktiengesellschaft: *See—*
Jarmuzewski, Hans-Georg, 4,552,097, Cl. 122-4.00D.

Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V.: *See—*
Fritscher, Klaus; and Gedanitz, Horst, 4,552,722, Cl. 422-53.000.

Deutsche Kommunal-Anlagen Miete GmbH: *See—*
Hillekamp, Klaus, 4,552,732, Cl. 423-210.000.

Deutsches Krebsforschungszentrum Stiftung Des Offentichen Rechts: *See—*
Kartenbeck, Jurgen, 4,552,640, Cl. 204-301.000.

Devaux, Albert F. L. G.; and Moniotte, Philippe G., to Monsanto Europe, S.A. Sulphur-containing polymers useful as stabilizing agents for rubber vulcanizates. 4,552,929, Cl. 525-332.600.

Dewey, Anthony G., to International Business Machines Corporation. Color display from a single light valve. 4,552,441, Cl. 353-31.000.

Diamond Shamrock Chemicals Company: *See—*
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,552,670, Cl. 252-8.50C.

Diazzi, Claudio: *See—*
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, 4,553,046, Cl. 307-289.000.

Di Egidio, Leo C. Sports geography jackstraw game. 4,552,357, Cl. 273-1.0GG.

Dietz, Martin: *See—*
Munk, Edmund; and Dietz, Martin, 4,552,797, Cl. 428-167.000.

Digital Equipment Corporation: *See—*
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.

Digonnet, Michel J. F.: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., 4,553,238, Cl. 372-6.000.

Dillinger, Thomas E.; and Kueper, Terrance W., to International Business Machines Corporation. Regulator for substrate voltage generator. 4,553,047, Cl. 307-297.000.

Dingwall, Andrew G. F.; and Zazzu, Victor, to RCA Corporation. Apparatus for matching FET switches as for a video digital-to-analog converter. 4,553,132, Cl. 340-347.0DA.

Dischert, Robert A.: *See—*
Hurst, Robert N., Jr.; and Dischert, Robert A., 4,553,157, Cl. 358-27.000.

Distelrath, Peter: *See—*
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Distin, Robert G., Jr.; and Lang, Thomas J., to Advanced Energy Concepts '81 Ltd. Retainer for epicyclic transmission. 4,552,037, Cl. 74-805.000.

Djordjevic, Ilija, to Stanadyne, Inc. Fuel injection pump with spill control mechanism. 4,552,117, Cl. 123-506.000.

Doboy Verpackungsmaschinen GmbH: *See—*
Prottengeier, Manfred, 4,551,965, Cl. 53-463.000.

Dobson, John E.: *See—*
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., 4,552,497, Cl. 412-6.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,552,622, Cl. 202-241.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
Trenkler, Werner, 4,552,401, Cl. 296-219.000.

Dr. Karl F. Nagele Feinmaschinenbau GmbH & Co: *See—*
Hansen, Henning; and Schneider, Helmut, 4,551,900, Cl. 29-408.000.

Doerr, Richard D.; Muller, J. Joseph; and Green, William A., to ACF Industries, Inc. Idle speed controller improvement. 4,553,076, Cl. 318-282.000.

Doi, Makoto: *See—*
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Dombrowski, David M.; and Anastasi, Kenneth J., to General Electric Company. Cutting tool. 4,552,046, Cl. 82-36.00A.

Dominguez, Edward J. Collapsible wedge for sliding doors and windows. 4,552,395, Cl. 292-342.000.

Domino, William J.; Havens, Donald P.; and Johnson, Robert A., to Rockwell International Corporation. Electromechanical resonator apparatus. 4,553,060, Cl. 310-333.000.

Donaldson, George W., to Westinghouse Electric Corp. Door control apparatus. 4,551,944, Cl. 49-31.000.

Donaldson, John H.; Brunswick, Robert; and Foulkes, Andrew J., to Wellcome New Zealand Limited. Applicators. 4,552,559, Cl. 604-198.000.

Donofrio, Robert L.: *See—*
Brennensholtz, Matthew S.; and Donofrio, Robert L., 4,552,459, Cl. 356-448.000.

Dornier System GmbH: *See—*
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Dorow, Joachim: *See—*
Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, 4,552,068, Cl. 101-415.100.

Dorr-Oliver, Incorporated: *See—*
Freeman, Mark P., deceased, 4,552,019, Cl. 73-584.000.

Double-W Stationery Corporation: *See—*
Cohen, Lewis, 4,552,478, Cl. 402-39.000.

Douziech, Patrick; and Imbert, Michel, to Thomson-CSF. Circuit and process for chrominance decoding with analog or digital delay line in a television system of a pal or secam type. 4,553,156, Cl. 358-24.000.

Dow Chemical Company, The: *See—*
Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., 4,552,945, Cl. 528-62.000.
Cavitt, Michael B.; and Wassberg, Neal L., 4,552,814, Cl. 428-414.000.
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,552,904, Cl. 521-145.000.
Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., 4,552,685, Cl. 252-355.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,902, Cl. 521-129.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,903, Cl. 521-137.000.

Dow Corning Corporation: *See—*
Bauman, Therese M.; and Lee, Chi-Long, 4,552,901, Cl. 521-122.000.

Dowty Mining Equipment Limited: *See—*
Elliott-Moore, Peter, 4,552,488, Cl. 405-299.000.

Doyle, Terrence W.: *See—*
Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., 4,552,842, Cl. 435-75.000.
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.

Dragerwerk Aktiengesellschaft: *See—*
Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., 4,552,139, Cl. 128-200.140.
Pasternack, Adalbert, 4,551,858, Cl. 2-7.000.
Torri, G., 4,552,141, Cl. 128-205.120.

Drapkin, William B., to Pass & Seymour, Inc. Electric outlet having novel screw anchor and ground connection. 4,552,421, Cl. 339-14.00R.

Dreckmann, Karl, to M. Lehmacher & Sohn GmbH Maschinenfabrik. Double- and bottom-seam bag-making method and apparatus. 4,552,551, Cl. 493-194.000.

Dreher, Bernd; and Schneider, Wolfgang, to Ciba Geigy Corporation. Prestressing elements coated with plastic material and process for making them. 4,552,815, Cl. 428-415.000.

Drenth, Berend W.: *See—*
Werners, Theo F. H.; and Drenth, Berend W., 4,552,339, Cl. 254-277.000.

Dropczynski, Hartmut; and Trilling, Peter, to Jagenberg AG. Method and apparatus for winding webs of cellulose. 4,552,316, Cl. 242-56.00R.

Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, to Atochem. Composition for the alkaline bleaching of textiles containing peroxyamine. 4,552,563, Cl. 8-107.000.

Ducharme, Marcel, to Inno-Tech Developments Ltd. Method of drying and salting fish. 4,552,766, Cl. 426-294.000.

Ducote, Marjorie E., to United States of America, Army. Liner-propellant bond tests. 4,552,706, Cl. 264-3.00R.

Dumas, Herve : *See—*
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

Dunlop Limited: *See—*
Skipper, John B., 4,552,035, Cl. 74-581.000.

Dupin, Thierry: *See—*
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,552,650, Cl. 208-216.0PP.

Duplo Seizo Kabushiki Kaisha: *See—*
Tanaka, Kazunori; and Yoshikawa, Mitsuru, 4,552,353, Cl. 271-124.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bissot, Thomas C.; and Li, Stephen, 4,552,631, Cl. 204-98.000.
Eigenbrode, George T., deceased, 4,552,420, Cl. 339-14.00R.
Fish, Floyd H., Jr.; and Lauterbach, Herbert G., 4,552,805, Cl. 428-297.000.
Romanauskas, William A., 4,552,278, Cl. 215-277.000.

Duracell Inc.: *See—*
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Durand, Daniel: *See—*
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

DuRand, Elden E., III, to Bluegrass Electronics Inc. Sound discriminator tester. 4,552,022, Cl. 73-647.000.

Durham, B. Elwood. Fish strike indicator. 4,552,318, Cl. 242-84.10K.

Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, to K. Bratschi, Silent Gliss. Strip curtain. 4,552,195, Cl. 160-168.00R.

Duruz, Jean-Jacques R.: *See—*
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Dutt, Herbert V.; and Santostasi, Paul A., to Sun Coast Plastics, Inc. Mold for making tamper-proof closure. 4,552,328, Cl. 249-67.000.

Duyvesteyn, Willem P. C.; and Hogsett, Robert F., to Amax, Inc. Electrogalvanizing utilizing primary and secondary zinc sources. 4,552,629, Cl. 204-55.00R.

Dwyer, Francis G.: *See—*
Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., 4,552,648, Cl. 208-120.000.

Dynachem Corporation: *See—*
Reardon, Edward J.; and Lipson, Melvin A., 4,552,830, Cl. 430-281.000.

Dysarz, Edward D., to Branham Industries, Inc. Pickup and lay-down apparatus. 4,552,498, Cl. 414-22.000.

Dziggel, Klaus-Peter: *See—*
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, 4,552,072, Cl. 104-88.000.

Dziki, Michael M., to Minnesota Mining and Manufacturing Company. Thermoplastic dispensing device. 4,552,287, Cl. 222-146.500.

E. R. Squibb & Sons, Inc.: *See—*
Delaney, Norma G.; and Gordon, Eric M., 4,552,866, Cl. 514-16.000.

East, David S., to Knight Manufacturing Company, Inc. Fishing lure. 4,551,940, Cl. 43-42.110.

East, Gary P.: *See—*
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

East, John; and Maxwell, Ian, to Metal Box Public Limited Company. Continuous extrusion of metals. 4,552,520, Cl. 425-79.000.

Easter, James R.: *See—*
Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James R., 4,552,718, Cl. 376-216.000.

Eastman Kodak Company: *See—*
Barbee, Robert B.; and Wicker, Thomas H., Jr., 4,552,948, Cl. 528-194.000.
Baumeister, Hans-Peter, 4,553,175, Cl. 358-310.000.
Bayer, Bryce E., 4,553,165, Cl. 358-167.000.
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.
Covington, Roger G.; and Miller, Stephen H., 4,553,232, Cl. 369-287.000.
Gabrielsen, Rolf S., 4,552,980, Cl. 564-79.000.
Gourley, Robert N., 4,552,951, Cl. 534-770.000.
Gourley, Robert N., 4,552,952, Cl. 534-782.000.
Lau, Philip T. S.; and Einhaus, Gary M., 4,552,834, Cl. 430-393.000.
Lowne, Alan J., 4,552,458, Cl. 356-446.000.
McColgin, William C.; and Pace, Laurel J., 4,553,153, Cl. 357-30.000.
Silkman, Ronald W., 4,553,027, Cl. 235-474.000.
Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., 4,552,838, Cl. 430-569.000.
Yudelson, Joseph S.; and Johnson, Thomas M., 4,552,848, Cl. 436-86.000.

Eaton Corporation: *See—*
Baltare, Gunnar, 4,552,254, Cl. 188-328.000.
Glenn, Robert L., 4,553,005, Cl. 200-153.0LA.
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,553,151, Cl. 357-23.400.

Eaves, Thomas P. Cutting tool mechanism. 4,552,192, Cl. 144-136.00C.

Eberhard Hoesch & Sohne GmbH & Co.: *See—*
Schotten, Alfons, 4,552,660, Cl. 210-225.000.

Ebihara, Hideyuki: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., to ALZA Corporation. Body mounted pump housing and pump assembly employing the same. 4,552,561, Cl. 604-896.000.

Ecomard, Andre , to Institut Francais du Petrole. Device for regulating the pressure of a fluid supplied to a feeding circuit from a fluid source. 4,552,169, Cl. 137-115.000.

Economopoulos, Peter C.: *See—*
Ong, Richard H.; and Economopoulos, Peter C., 4,553,053, Cl. 307-530.000.

Eder, Theodor; and Koser, Jaroslav, to Eder, Theodor; and Austria Metall Aktiengesellschaft. Planking assembly and method of making same. 4,552,085, Cl. 114-84.000.

Egendorf, Harris H. Counting computer software cartridge. 4,553,252, Cl. 377-15.000.

Egle, Edward J. System for improving the starting of diesel engines in cold weather. 4,552,102, Cl. 123-179.00H.

Ehnstrom, Lars: *See—*
Baeling, Peter; and Ehnstrom, Lars, 4,552,775, Cl. 426-624.000.

Eickmann, Karl. Radial piston machine, employing a medial rotor bearing. 4,552,054, Cl. 91-492.000.

Eigenbrode, George T., deceased (by Eigenbrode, Judy E., executrix), to Du Pont de Nemours, E. I., and Company. Electrical connector using a flexible circuit having an impedance control arrangement thereon. 4,552,420, Cl. 339-14.00R.

Eigenbrode, Judy E., executrix: *See—*
Eigenbrode, George T., deceased, 4,552,420, Cl. 339-14.00R.

Einhaus, Gary M.: *See—*
Lau, Philip T. S.; and Einhaus, Gary M., 4,552,834, Cl. 430-393.000.

EKA AB: *See—*
Berglin, Carl T.; and Herrmann, Wolfgang, 4,552,748, Cl. 423-588.000.

Eklund, Nils; and Huang, Jen-chi, to Polychrome Corp. Planographic printing plate having cationic compound in interlayer. 4,552,827, Cl. 430-160.000.

Electricity Council, The: *See—*
Aubrey, David R.; and Kearley, Stephen J., 4,553,188, Cl. 361-115.000.

Electronic Processors, Inc.: *See—*
Lynch, Donald F., 4,553,178, Cl. 360-45.000.

Elesa S.p.A.: *See—*
Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, 4,552,034, Cl. 74-547.000.

Eli Lilly and Company: *See—*
Booher, Richard N.; and Kornfeld, Edmund C., 4,552,956, Cl. 544-101.000.
Brier, Gordon L., 4,552,763, Cl. 424-114.000.
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.
Ho, Peter P. K.; and Soper, Quentin F., 4,552,891, Cl. 514-443.000.
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.
Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., 4,552,895, Cl. 514-470.000.
Krumkalns, Eriks V.; and Smiley, David L., 4,552,886, Cl. 514-342.000.
Krumkalns, Eriks V.; and Smiley, David L., 4,552,960, Cl. 544-336.000.
Lacefield, William B.; and Pfeifer, William, 4,552,982, Cl. 564-164.000.
Nagarajan, Ramakrishnan; and Schabel, Amelia A., 4,552,701, Cl. 260-112.50R.
Scott, William L., 4,552,889, Cl. 514-424.000.

Elkay Manufacturing Company: *See—*
Farrell, Gerald J.; and Bisonaya, Rudy Y., 4,552,171, Cl. 137-359.000.

Elkem a/s: *See—*
Andersen, Einar; and Boe, Gunnar H., 4,552,632, Cl. 204-107.000.

Ellington, Rex T., to Occidental Oil Shale, Inc. In situ oil shale retort with controlled permeability for uniform flow. 4,552,409, Cl. 299-2.000.

Elliott, Guy R. B. Magnesium reduction of uranium fluoride in molten salts. 4,552,588, Cl. 75-84.400.

Elliott-Moore, Peter, to Dowty Mining Equipment Limited. Mine roof support system. 4,552,488, Cl. 405-299.000.

Ellison, Richard: *See—*
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.

Elm, Chance R.; and Lowrey, Erlend R., to Procter & Gamble Company, The. Process for making roll-on antiperspirant compositions. 4,552,753, Cl. 424-66.000.

ELTECH Systems Corporation: *See—*
Katz, Michael; Hinden, Jean; and Gauger, Jurgen, 4,552,857, Cl. 502-101.000.
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Emeraud, Jackie: *See—*
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Emerson Electric Co.: *See—*
Vogel, Richard E.; and Bowsky, Benjamin, 4,551,984, Cl. 62-193.000.

Emhart Industries, Inc.: *See—*
Blumenfeld, John F.; and Bubon, Frank, 4,552,579, Cl. 65-346.000.

Emi, Shingo: *See—*
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,552,810, Cl. 428-398.000.

Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., to General Motors Corporation. Fuel consumption measuring system. 4,552,015, Cl. 73-113.000.

Endo, Hiroshi, to Nissan Motor Company, Limited. Optical pulse radar for an automotive vehicle. 4,552,456, Cl. 356-5.000.

Endo, Hiroyuki: *See—*
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.

Endo, Tsuyoshi. Handy tube pump. 4,552,515, Cl. 417-472.000.

Endoh, Naoki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for encoding a binary data stream into a binary code stream. 4,553,131, Cl. 340-347.0DD.

Energies Technologies Corp.: *See—*
Boyd, Gerald D., 4,553,071, Cl. 315-244.000.

Engel, John F.: *See—*
Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., 4,552,892, Cl. 514-531.000.

Engelhard Corporation: *See—*
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.
Wilcox, Jeannine; and Karustis, George A., 4,552,628, Cl. 204-47.000.

Engelhardt, Fritz: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

English, James M.; Gurreri, Nicholas L.; and Kling, John P., to AMP Incorporated. Encapsulated printed circuit board filter. 4,553,114, Cl. 333-182.000.

Ennerfelt, Johan: *See—*
Brantmark, Hakan; and Ennerfelt, Johan, 4,553,077, Cl. 318-568.000.

Erchegyi, Judit: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Drier. 4,551,925, Cl. 34-4.000.

Erie Manufacturing Co.: *See—*
Cowley, John J.; and Hussey, Selby D., 4,552,140, Cl. 128-201.250.

Ernst, Volker: *See—*
Opower, Hans; and Ernst, Volker, 4,553,242, Cl. 372-87.000.

ESA, Inc.: *See—*
Matson, Wayne R., 4,552,013, Cl. 73-61.10C.

Escher Wyss GmbH: *See—*
Schnell, Hans, 4,552,462, Cl. 366-280.000.

Essery, John M.: *See—*
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.

Ester, Clayton L.: *See—*
Etherington, Roger F.; and Ester, Clayton L., 4,552,155, Cl. 128-766.000.

Estes, William E., to Stauffer Chemical Company. Method to improve yields of sodium hypophosphite. 4,552,737, Cl. 423-307.000.

Esteve-Soler, Jose, to Provesan, SA. 7-(1-Pyrrolyl) derivatives of 1-ethyl-1,4-dihydro-4-oxoquinoline-3-carboxylic acids and 1-ethyl-1,4-dihydro-4-oxo-1,8-naphthyridine-3-carboxylic acids and their use as antimicrobial agents. 4,552,882, Cl. 514-300.000.

Etablissements Caillau: *See—*
Calmettes, Lionel, 4,552,390, Cl. 285-420.000.

Etablissements Nativelle S.A.: *See—*
Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, 4,552,868, Cl. 514-26.000.

Etherington, Roger F.; and Ester, Clayton L., to Transmed Corporation. Diagnostic specimen collector. 4,552,155, Cl. 128-766.000.

Ethicon Inc.: *See—*
How, Thien V., 4,552,707, Cl. 264-24.000.

Ethyl Corporation: *See—*
Ramachandran, Venkataraman, 4,552,963, Cl. 546-156.000.
Ramachandran, Venkataraman, 4,552,964, Cl. 546-156.000.
Ranken, Paul F.; and Walter, Thomas J., 4,552,966, Cl. 546-290.000.

Eumuco Aktiengesellschaft fur Maschinenbau: *See—*
Stehr, Franz, 4,552,525, Cl. 425-422.000.

Eurofloor S.A.: *See—*
Haag, Laurent, 4,552,796, Cl. 428-140.000.

Evans, Edwin C., to Gamma One Conversions, Inc. Scanning light system. 4,553,193, Cl. 362-8.000.

Evans, Gary E., to Westinghouse Electric Corp. Method of forming the far-field beam pattern of an antenna. 4,553,145, Cl. 343-360.000.

Evans, Robert F.; and Stafford, Charles W., to Varel Mfg. Co. Low pressure differential compensator. 4,552,228, Cl. 175-228.000.

Everett, Nicholas P., to Stauffer Chemical Company. Plant growth medium. 4,552,844, Cl. 435-240.000.

Ex-Cell-O Corporation: *See—*
Johnson, D. Dale, 4,552,344, Cl. 267-64.110.

Exxon Research and Engineering Co.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., 4,552,916, Cl. 524-399.000.
Patterson, Ann D.; and Kachel, Wayne M., 4,552,649, Cl. 208-127.000.
Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., 4,552,856, Cl. 502-74.000.
Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., 4,552,939, Cl. 526-287.000.
Vaughan, David E., 4,552,731, Cl. 423-118.000.

Fabbri, Vittorio E.; and Bell, Jackie D. Apparatus for treating hair. 4,552,159, Cl. 132-9.000.

Fabricated Metals, Inc.: *See—*
Coleman, Clarence B., 4,552,090, Cl. 116-204.000.

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Patel, Kirit, 4,551,970, Cl. 57-339.000.

Falb, H. Wolfgang: *See—*
Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., 4,552,139, Cl. 128-200.140.

Falk Corporation, The: *See—*
Witt, Ronald A., 4,552,257, Cl. 192-56.00F.

Fantini, Amedeo A.: *See—*
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

Farrell, Gerald J.; and Bisonaya, Rudy Y., to Elkay Manufacturing Company. Supply conduit mounting assembly for single lever faucet. 4,552,171, Cl. 137-359.000.

Farrington, Theodore E., Jr.: *See—*
Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, 4,552,709, Cl. 264-504.000.

Faust, Eberhard: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Quilmalz, Wolfram, 4,552,402, Cl. 297-284.000.

Fawzi, Mahdi B.: *See—*
Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., 4,552,872, Cl. 514-175.000.

Feder, Darryl. Apparatus for metalizing metal bodies. 4,552,091, Cl. 118-620.000.

Federal Paper Board Co., Inc.: *See—*
Lee, John F., 4,552,268, Cl. 206-455.000.

Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., to Garlock, Inc. Hub seal and axle assembly and method for its assembly. 4,552,367, Cl. 277-1.000.

Feeser, Hermann: *See—*
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.

Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, to International Business Machines Corporation. Transmission line terminator-decoupling capacitor chip for off-chip driver. 4,553,050, Cl. 307-443.000.

Feldner, Kurt; and Grape, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of dimethyldichlorosilane. 4,552,973, Cl. 556-469.000.

Felix, Raymond A., to Stauffer Chemical Company. O,O-Di-(substituted)-1-phosphonomethyl-3-(substituted)-1,3-imidazol-4-one intermediates. 4,552,968, Cl. 548-112.000.

Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., to Baxter Travenol Laboratories, Inc. Method for disinfecting, for reuse, separation devices for blood and associated fluid lines. 4,552,721, Cl. 422-28.000.

Ferguson, Frank Warren: *See—*
Steffel, Steve, 4,552,535, Cl. 434-315.000.

Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, to Lipha, Lyonnaise Industrielle Pharmaceutique. Benzo- and thieno-triazine-1,2,3 ones-4. 4,552,878, Cl. 514-243.000.

Fey, Rainer, to Fichtel & Sachs AG. Central locking installation. 4,553,038, Cl. 307-10.0AT.

Fiatallis Europe S.p.A.: *See—*
Barbagli, Rino O., 4,552,031, Cl. 74-473.00R.

Fiatallis North America, Inc.: *See—*
Joyce, Hardin, Jr., 4,552,238, Cl. 180-139.000.

Fiberglas Canada Inc.: *See—*
Cameron, Neil M.; and Blackmore, Phillip W., 4,552,793, Cl. 428-53.000.

Fichtel & Sachs AG: *See—*
Fey, Rainer, 4,553,038, Cl. 307-10.0AT.

Field, Frank P. Display bin. 4,552,272, Cl. 211-88.000.

Fields, Larry R.; and Kendrick, George B., to GTE Products Corporation. Multiple filament lamp having wire grid to provide filament redundancy. 4,553,066, Cl. 313-580.000.

Filterwerk Mann & Hummel GmbH: *See—*
Poldner, Erich, 4,552,283, Cl. 220-304.000.

Findlay, Gordon R., to Lufran, Inc. Gas-purged flexible cable-type immersion heater and method for heating highly corrosive liquids. 4,553,024, Cl. 219-335.000.

Finger, John F., to Sioux Steam Cleaner Corporation. Electric combination cleaner. 4,552,162, Cl. 134-57.00R.

Fingerle, Hermann: *See—*
Grimm, Hans; and Fingerle, Hermann, 4,551,947, Cl. 51-34.00H.

FIP, Inc.: *See—*
Boyd, Jerry K.; and Chang, Yu C., 4,552,213, Cl. 166-88.000.

Firetek Corporation: *See—*
Cholin, John M.; Voorhis, Ray; and Cholin, Jeffrey G., 4,553,031, Cl. 250-339.000.

Fisch, Richard S., to Minnesota Mining and Manufacturing Company. Method of forming composite image as in add-on non-silver microfiche. 4,552,826, Cl. 430-142.000.

Fish, Floyd H., Jr.; and Lauterbach, Herbert G., to Du Pont de Nemours, E. I., and Company. Composites reinforced with high strength aramid fibers having fibrillated ends. 4,552,805, Cl. 428-297.000.

Fish, Richard H., to United States of America, Energy. Removal of arsenic compounds from spent catecholated polymer. 4,552,854, Cl. 502-26.000.

Fisher, Gary H.; and Padgett, H. Pat, to Industrial Sheet Metal & Mechanical Corp. Air-conditioning system. 4,552,303, Cl. 236-44.00C.

Fisher, George W. Nut and washer holding adjustable wrench. 4,552,039, Cl. 81-64.000.

Flasza, Michael D.; and Nienaber, David K., to Zenith Electronics Corporation. Picture control for RGB monitor. 4,553,141, Cl. 340-703.000.

Fleishman, Gregg R. Space frame structural system. 4,551,960, Cl. 52-648.000.

Flexibox Limited: *See—*
Wallace, Neil M., 4,552,368, Cl. 277-27.000.

Flider, Frank S., to Justrite Manufacturing Company. Automatic venting sealing cap. 4,552,288, Cl. 222-482.000.

Fluid Devices Ltd.: *See—*
Larner, Donald A., 4,552,027, Cl. 73-861.530.

FMC Corporation: *See—*
Beacham, Harry H.; and Mucenieks, Paul R., 4,552,687, Cl. 252-500.000.
Brown, Richard A.; and Norris, Robert D., 4,552,668, Cl. 210-759.000.
Brown, Richard A.; and Norris, Robert D., 4,552,674, Cl. 252-8.55R.
Brown, Richard A.; and Norris, Robert D., 4,552,675, Cl. 252-8.55R.
Chang, Jun H., 4,552,585, Cl. 71-88.000.
Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., 4,552,892, Cl. 514-531.000.

Fogle, Ozzie: *See—*
Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., 4,552,792, Cl. 428-40.000.

Folkerts, Cornie. Hitch pin securing device. 4,552,377, Cl. 280-515.000.

Ford Motor Company: *See—*
Baker, Robert R.; and Allor, Richard L., 4,552,024, Cl. 73-821.000.
Veneziano, Marcello, 4,553,207, Cl. 364-431.010.

Forestiere, Alain: *See—*
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

Forgac, John M.; and Hoekstra, George R., to Standard Oil Company (Indiana); and Gulf Oil Corporation. Pulsed in situ retorting in an array of oil shale retorts. 4,552,214, Cl. 166-259.000.

Forrest, William J. Sorting gate assembly. 4,552,096, Cl. 119-155.000.

Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, to Dornier System GmbH. Couch for patients. 4,552,348, Cl. 269-324.000.

Forsyth, John L.: *See—*
Sanders, Royden C., Jr.; and Forsyth, John L., 4,552,064, Cl. 101-93.050.

Fortuna, Vincent E.; and MacLaughlin, Donald N., to Cosden Technology, Inc. Inertial spin welding of thermoplastic and thermoplastic coated container parts. 4,552,612, Cl. 156-494.000.

Foster, Frederick S.: *See—*
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,552,349, Cl. 270-54.000.

Foster, Kenneth D. Compression link adaptor assembly. 4,552,379, Cl. 280-661.000.

Foster Wheeler Energy Corporation: *See—*
Neale, Thomas J., 4,552,490, Cl. 406-56.000.

Foulkes, Andrew J.: *See—*
Donaldson, John H.; Brunswick, Robert; and Foulkes, Andrew J., 4,552,559, Cl. 604-198.000.

Fouser, William: *See—*
Getz, Stephen; and Fouser, William, 4,551,875, Cl. 7-138.000.

Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., to Olin Corporation. Slip sheet retainers. 4,552,499, Cl. 414-125.000.

Fox, Kenneth R., to GTE Automatic Electric Incorporated. Wiring pair reversal detector. 4,553,088, Cl. 324-66.000.

Foxwell, W. John, to Prince Manufacturing Company. Power cylinder with internally mounted position indicator. 4,552,055, Cl. 92-5.00R.

Francis, Geoffrey V. Structural spacer glazing with connecting spacer device. 4,552,790, Cl. 428-34.000.

Franey, Terence E., to International Business Machines Corporation. Radiation hardened lift-off correction medium and process of manufacture. 4,552,634, Cl. 204-159.230.

Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., to Xerox Corporation. Static eliminator. 4,553,191, Cl. 361-212.000.

Frear, Lawrence, to Spiral Drilling Systems, Inc. Drill-bit with full offset cutter bodies. 4,552,232, Cl. 175-337.000.

Freeman, Helen M., executrix: *See—*
Freeman, Mark P., deceased, 4,552,019, Cl. 73-584.000.

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Frei, Theo: *See—*
Haenni, Eduard; and Frei, Theo, 4,552,002, Cl. 72-19.000.

Fresenius AG: *See—*
Polaschegg, Hans-Dietrich; and Mathieu, Bernd, 4,552,552, Cl. 604-4.000.

Frey, Gregg W., to Advanced Technology Laboratories, Inc. Method of making electrically conductive thin epoxy bond. 4,552,607, Cl. 156-330.000.

Fried, Peter I.: *See—*
Swersey, Burt L.; and Fried, Peter I., 4,551,882, Cl. 16-226.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Herring, William P.; and Kostorz, Jan R., 4,552,176, Cl. 137-625.400.

Fritscher, Klaus; and Gedanitz, Horst, to Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V. Apparatus for the hot gas corrosion of samples of material. 4,552,722, Cl. 422-53.000.

Froessl, Horst. Document and data handling and retrieval system. 4,553,261, Cl. 382-57.000.

Fruzzetti, Richard E.: *See—*
Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., 4,552,913, Cl. 524-240.000.

Fuerstenau, Douglas W.: *See—*
Attia, Yosry A.; and Fuerstenau, Douglas W., 4,552,652, Cl. 209-5.000.

Fuji Electric Co., Ltd.: *See—*
Guiler, Richard S., 4,551,999, Cl. 70-159.000.
Kawasaki, Kikuo; and Sano, Tomomi, 4,553,211, Cl. 364-479.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Takano, Toshio; and Kobayashi, Toshio, 4,552,036, Cl. 74-705.000.

Fuji Photo Film Co., Ltd.: *See—*
Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, 4,552,808, Cl. 428-328.000.
Nakamura, Taku; and Kasama, Yasuo, 4,552,835, Cl. 430-523.000.
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.
Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, 4,552,828, Cl. 430-217.000.
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Fujio; and Kurata, Masami, 4,553,174, Cl. 358-285.000.
Yamamoto, Tadashi; and Kurata, Masami, 4,553,160, Cl. 358-75.000.

Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic circuit for an anti-locking braking system. 4,552,414, Cl. 303-115.000.

Fujii, Shuzo: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, to Aisin Seiki Kabushiki Kaisha. Anti-skid brake control system for automobiles. 4,552,413, Cl. 303-106.000.

Fujimori, Eiichi, to Japan Steel Works, Ltd., The. The process for the production of activated carbon using wood as a carbon source. 4,552,863, Cl. 502-418.000.

Fujimoto, Misao: *See—*
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.

Fujita, Masahito: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.

Fujita, Toshio; and Watanabe, Kazuhiro, to Nippon Kouatsu Electric Co. Low-temperature sintered porcelain composition suitable for forming. 4,552,915, Cl. 524-322.000.

Fujitsu Limited: *See—*
Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, 4,553,090, Cl. 324-73.0AT.
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.
Mukai, Ryoichi, 4,551,907, Cl. 29-571.000.
Ohe, Yoshikazu, 4,553,225, Cl. 365-201.000.
Sasaki, Susumu, 4,553,105, Cl. 330-145.000.

Fujiwara, Katsuyoshi: *See—*
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Fujiwara, Tetsuo: *See—*
Yamamoto, Masao; and Fujiwara, Tetsuo, 4,551,975, Cl. 60-528.000.

Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, to Fuji Photo Film Co., Ltd. Magnetic recording material using plate-shaped ferromagnetic particles. 4,552,808, Cl. 428-328.000.

Fujiyama, Masaaki: *See—*
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.

Fukatsu, Yasumasa: *See—*
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, 4,553,257, Cl. 381-57.000.

Fukaya, Hirokazu, to NEC Corporation. Control circuit for controlling output pulse width using negative feedback signal. 4,552,118, Cl. 123-609.000.

Fukaya, Hiroyasu: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Fukaya, Kuniaki: *See—*
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Fukuda, Tadaji: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.

Fukukita, Hiroshi: *See—*
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Fukumoto, Akira: *See—*
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Fukunaga, Takahiro: *See—*
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Fukuoka, Shinsuke; and Watanabe, Tomonari, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing diphenylmethane dicarbamates. 4,552,974, Cl. 560-25.000.

Fukushima, Yoshiaki: *See—*
Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, 4,552,806, Cl. 428-312.600.

Fukuta, Masaru: *See—*
Kase, Kiyoshi; and Fukuta, Masaru, 4,553,054, Cl. 307-597.000.

Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, to Hoechst Aktiengesellschaft. Acesulfam-containing composition tablets on the basis thereof and process for the manufacture of these tablets. 4,552,771, Cl. 426-548.000.

Fulterer Gesellschaft m.b.H.: *See—*
Fulterer, Manfred, 4,552,415, Cl. 308-3.800.

Fulterer, Manfred, to Fulterer Gesellschaft m.b.H. Adjustable drawer mounting assembly. 4,552,415, Cl. 308-3.800.

Funada, Fumiaki: *See—*
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, 4,552,436, Cl. 350-337.000.

Furnier-U.Sperrholzwerk: *See—*
Munk, Edmund; and Dietz, Martin, 4,552,797, Cl. 428-167.000.

Furuhashi, Hiroyuki: *See—*
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Furukawa Electric Co., Ltd., The: *See—*
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.
Noguchi, Masahisa; and Kaneda, Kazuji, 4,552,314, Cl. 242-25.00R.

Furukawa, Heisaburo: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.

Furuya, Yoshiyuki: *See—*
Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, 4,552,690, Cl. 252-512.000.

G. Rau GmbH & Co.: *See—*
Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, 4,553,063, Cl. 313-325.000.

GAA Engineered Systems, Inc.: *See—*
Goar, B. Gene, 4,552,747, Cl. 423-574.00R.

Gabriele, Peter D.; and Rademan, Jerry E., to Ciba Geigy Corporation. Stabilized fungicide compositions. 4,552,885, Cl. 514-316.000.

Gabrielsen, Rolf S., to Eastman Kodak Company. Dye precursors and their use in photographic materials and processes. 4,552,980, Cl. 564-79.000.

Gaiffier, Albert, to Societe Anonyme: Construction Electriques R.V. Current generator for the supply and detection of operation of a gas burner and control device applying same. 4,552,528, Cl. 431-25.000.

Gallup, William; and Schmidt, Detleff W. P., to Permutare Corporation. Standby water-powered basement sump pump. 4,552,512, Cl. 417-3.000.

Galluzzo, Angela: *See—*
Galluzzo, Vincent; Galluzzo, Angela; and Galluzzo, Victor T., 4,552,538, Cl. 440-99.000.

Galluzzo, Victor T.: *See—*
Galluzzo, Vincent; Galluzzo, Angela; and Galluzzo, Victor T., 4,552,538, Cl. 440-99.000.

Galluzzo, Vincent; Galluzzo, Angela; and Galluzzo, Victor T. Multidirectional amphibious safety vehicle. 4,552,538, Cl. 440-99.000.

Galstaun, Lionel S., to Bechtel International Corporation. Process for desulfurization of fuel gas. 4,552,572, Cl. 55-36.000.

Galvin, Aaron A. Hot weather hat. 4,551,857, Cl. 2-7.000.

Gamma One Conversions, Inc.: *See—*
Evans, Edwin C., 4,553,193, Cl. 362-8.000.

Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, to Robert Bosch GmbH. Internal masking layer to prevent parallax in an electro-optical display or indicator unit. 4,552,437, Cl. 350-339.00R.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,552,383, Cl. 283-83.000.

Gardner, Michael S. Applicator for livestock tag. 4,552,147, Cl. 128-330.000.

Garivaltis, Dimitris: *See—*
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.

Garlock, Inc.: *See—*
Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., 4,552,367, Cl. 277-1.000.

Garrett, Charles B., to Varian Associates, Inc. Magnetron sputter etching system. 4,552,639, Cl. 204-298.000.

Garrett Corporation, The: *See—*
Lewis, Leon D., 4,551,972, Cl. 60-39.281.

Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., to Stone & Webster Engineering Corporation. Process for cracking heavy hydrocarbon to produce olefins and liquid hydrocarbon fuels. 4,552,645, Cl. 208-80.000.

Gaskell, David J., to Lucas Industries public limited company. Fuel injection nozzles. 4,552,310, Cl. 239-533.500.

Gathje, John C.: *See—*
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., 4,552,589, Cl. 75-105.000.

Gauckler, Ludwig: *See—*
Vire , Sylvestre; and Gauckler, Ludwig, 4,552,637, Cl. 204-243.00R.

Gauger, Jurgen: *See—*
Katz, Michael; Hinden, Jean; and Gauger, Jurgen, 4,552,857, Cl. 502-101.000.

Gavagan, James A.; and Motyka, Jerry, to Irvin Industries Inc. Combination VSI and ALR retractor. 4,552,319, Cl. 242-107.40A.

Gebr. Marzhauser Wetzlar oHG: *See—*
Marzhauser, Heinz, 4,552,033, Cl. 74-479.000.

Gedanitz, Horst: *See—*
Fritscher, Klaus; and Gedanitz, Horst, 4,552,722, Cl. 422-53.000.

Gehrke, Robert E., to K. J. Law Engineers, Inc. Method and apparatus for measuring conductivity using eddy currents with temperature compensation feature. 4,553,094, Cl. 324-225.000.

Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, to G. Rau GmbH & Co. Electrical discharge electrode and method of production thereof. 4,553,063, Cl. 313-325.000.

GenCorp Inc.: *See—*
Linnstaedter, Don J., 4,552,521, Cl. 425-131.100.

General Dynamis Electronics Division: *See—*
Mathis, Ronald F., 4,553,101, Cl. 329-50.000.

General Electric Company: *See—*
Castonguay, Roger N.; and Jencks, Charles L., 4,553,119, Cl. 335-147.000.
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.
Dombrowski, David M.; and Anastasi, Kenneth J., 4,552,046, Cl. 82-36.00A.
Germano, Carmen P., 4,553,061, Cl. 310-332.000.
Komanduri, Ranga; and Reed, William R., Jr., 4,552,492, Cl. 407-114.000.
Mark, Victor, 4,552,704, Cl. 260-463.000.
Mark, Victor, 4,552,949, Cl. 528-201.000.
McCready, Russell J., 4,552,950, Cl. 528-292.000.
Moore, James E., 4,552,936, Cl. 525-519.000.
Rosenquist, Niles R.; and Tyrell, John A., 4,552,924, Cl. 525-146.000.
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., 4,552,783, Cl. 427-91.000.

General Foods Corporation: *See—*
Saleeb, Fouad Z.; and Zeller, Bary L., 4,552,767, Cl. 426-395.000.

General Instrument Corp.: *See—*
Nickels, Richard C., Jr.; and Stevens, Gerald S., Jr., 4,552,352, Cl. 271-10.000.

General Ionex Corporation: *See—*
Purser, Kenneth H., 4,553,069, Cl. 315-111.810.

General Loose Leaf Bindery Co., Inc.: *See—*
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., 4,552,479, Cl. 402-74.000.

General Mills Products Corp.: *See—*
Quarrell, Richard; and Ranson, Paul A., 4,552,264, Cl. 206-45.140.

General Motors Corporation: *See—*
Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., 4,552,015, Cl. 73-113.000.
Koivunen, Erkki A., 4,552,545, Cl. 474-16.000.
Kornylo, Walter P., 4,551,891, Cl. 24-669.000.

General Signal Corporation: *See—*
Sibley, Henry C., 4,553,200, Cl. 364-200.000.

Genesco Inc.: *See—*
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.

Genrich, Thad J., to Motorola, Inc. Synchronous carry frequency divider and method of using therefor. 4,553,218, Cl. 364-703.000.

Geophysical Company of Norway A/S: *See—*
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Gerard, Jean L.; and Bricot, Claude, to Thomson-CSF. Mobile preetched data carrier and an optical tracking device using such a carrier. 4,553,228, Cl. 369-46.000.

Gerhardt, Gilbert C. Cap. 4,551,859, Cl. 2-172.000.

Germann, Albrecht J.: *See—*
Giori, Gualtiero; and Germann, Albrecht J., 4,552,066, Cl. 101-152.000.

Germano, Carmen P., to General Electric Company. Piezoelectric bimorph driven direct current latching relay. 4,553,061, Cl. 310-332.000.

Gerry, Martin E. Magnetic pulse timer. 4,552,119, Cl. 123-617.000.

Gerth, Hans-Heinrich: *See—*
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Gesellschaft fur Strahlen- und Umweltforschung mbH, Munchen: *See—*
Kuhn, Wilhelm; and Bunnenberg, Claus, 4,553,087, Cl. 324-65.00P.

Getty Oil Company: *See—*
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., 4,552,589, Cl. 75-105.000.

Getz, Stephen; and Fouser, William, to International Telephone and Telegraph Corporation. Combination tool. 4,551,875, Cl. 7-138.000.

Geus, John W.: *See—*
van der Wal, Willem J. J.; and Geus, John W., 4,552,750, Cl. 423-656.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Weirich, Walter, 4,552,487, Cl. 405-295.000.

Ghibaudo, Eduardo J.: *See—*
Ghibaudo, Jose A.; and Ghibaudo, Eduardo J., 4,552,500, Cl. 414-408.000.

Ghibaudo, Jose A.; and Ghibaudo, Eduardo J. Refuse hauling and storage apparatus. 4,552,500, Cl. 414-408.000.

Giallorenzi, Thomas G.; Sheem, Sang K.; and Taylor, Henry F. Fiber optic interferometer using two wavelengths or variable wavelength. 4,552,457, Cl. 356-345.000.

Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., to Duracell Inc. Sealed nickel-zinc battery. 4,552,821, Cl. 429-57.000.

Gilbert, Eli: *See—*
Kurland, Lawrence G.; and Gilbert, Eli, 4,553,222, Cl. 364-900.000.

Gillespie, Thomas W. Concentrated composition for cleaning rugs and carpets. 4,552,692, Cl. 252-528.000.

Gillette Company, The: *See—*
Jacobson, Chester F., 4,551,916, Cl. 30-50.000.

Gilvin, Allie F.: *See—*
Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,552,600, Cl. 156-73.100.

Giori, Gualtiero; and Germann, Albrecht J., to De La Rue Giori S.A. Combined sheet fed rotary printing machine for securities, in particular bank-notes. 4,552,066, Cl. 101-152.000.

Glaeser, Christopher D.: *See—*
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,553,203, Cl. 364-200.000.

Glaser, Michael S.; and Rochester, James R., to Hughes Aircraft Company. System and method for detecting a plurality of targets. 4,552,454, Cl. 356-5.000.

Glasson, Peter; and Wood, John, to De La Rue Systems Limited. Secure container, for example for banknotes. 4,552,075, Cl. 109-52.000.

Glauberman, Gisela: *See—*
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,552,942, Cl. 528-34.000.

Gleason, George W.: *See—*
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.

Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., to SmithKline Beckman Corporation. Leukotriene antagonists. 4,552,893, Cl. 514-560.000.

Glenn, Robert L., to Eaton Corporation. Trigger operated electric switch. 4,553,005, Cl. 200-153.0LA.

GMFanuc Robotics Corporation: *See—*
Cummins, Michael A.; and Powell, Thomas M., 4,552,506, Cl. 414-735.000.

Goans, Kip B.; and Gober, Ruel R., Jr. Fusible-elements holder bracket device. 4,552,222, Cl. 169-57.000.

Goar, B. Gene, to GAA Engineered Systems, Inc.; and Air Products and Chemicals, Inc. Temperature moderation of an oxygen enriched Claus sulfur plant. 4,552,747, Cl. 423-574.00R.

Gobel, Primin: *See—*
Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, 4,552,068, Cl. 101-415.100.

Gober, Ruel R., Jr.: *See—*
Goans, Kip B.; and Gober, Ruel R., Jr., 4,552,222, Cl. 169-57.000.

Goerne, Jan; and Toussaint, Hans-Norbert, to Siemens Aktiengesellschaft. Method and circuit arrangement for converting a binary signal, alternating between two levels, to a pulse code signal which comprises data pulses and renewal pulses. 4,553,249, Cl. 375-25.000.

Goi, Koichi: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Goliber, Thomas E.: *See—*
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.

Golker, Christian: *See—*
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., 4,552,954, Cl. 536-24.000.

Gollinger, Franz X., to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine with offset bearing and drive for an exchange cylinder. 4,552,067, Cl. 101-216.000.

Goodman, Irving; and Hiatt, Robert B., to Research Corporation. Peptides for control of intestinal motility. 4,552,764, Cl. 514-2.000.

Goodyear Aerospace Corporation: *See—*
Brown, Richard P.; and Correll, Harold E., 4,552,194, Cl. 152-410.000.

Goodyear Tire & Rubber Company, The: *See—*
Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., 4,552,913, Cl. 524-240.000.

Gordon, Eric M.: *See—*
Delaney, Norma G.; and Gordon, Eric M., 4,552,866, Cl. 514-16.000.

Gorman, Robert H., to American Robot Corporation. Industrial robot having direct coaxial motor drive. 4,552,505, Cl. 414-735.000.

Goss, Raymond W., to Hercules Incorporated. Composition for tufted carpets containing azidosulfonyl silane crosslinker. 4,552,794, Cl. 428-95.000.

Goto, Jugo; and Kubota, Tsutomu, to Takeda Chemical Industries, Ltd. Solid resin composition. 4,552,920, Cl. 525-58.000.

Gottschalk, Karl-Heinz, to Babcock Textilmaschinen GmbH. Fiber removing sieve for textile dryers. 4,551,928, Cl. 34-82.000.

Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., to Medi-Tech Incorporated. Introducing catheter. 4,552,554, Cl. 604-51.000.

Gould, Dennis R.; and Zuk, Robert F., to Syntex (U.S.A.) Inc. Determination of analytes in particle-containing medium. 4,552,839, Cl. 435-7.000.

Gould Inc.: *See—*
Harris, Robert W., 4,553,247, Cl. 375-4.000.

Gourley, Robert N., to Eastman Kodak Company. Disperse and acid azo dyes having one or two cinnamoyl substituents on a phenyl diazonium moiety and containing an aniline, tetrahydroquinoline or benzomorpholine coupler. 4,552,951, Cl. 534-770.000.

Gourley, Robert N., to Eastman Kodak Company. Disperse and acid azo dyes having one or two cinnamoyl substituents on a benzothiazole or benzoisothiazole diazonium moiety and having an aniline, tetrahydroquinoline or benzomorpholine type coupler. 4,552,952, Cl. 534-782.000.

Graf, Martin, to Grob & Co. Aktiengesellschaft. Heald frame. 4,552,185, Cl. 139-91.000.

Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, to New Balance Athletic Shoe, Inc. Sole construction for footwear. 4,551,930, Cl. 36-30.00R.

Graham, Stephen H., to Varian Associates, Inc. Hydraulic pulse dampener employing two stiff diaphragms and nesting members. 4,552,182, Cl. 138-30.000.

Grams, Ralph R. Method of inhibiting the growth of marine life on surfaces in contact with seawater. 4,552,813, Cl. 428-411.100.

Granger, Maurice. Rolled web dispenser. 4,552,315, Cl. 242-55.300.

Granot, Moshe. Self-cleaning filter apparatus. 4,552,655, Cl. 210-108.000.

Granzow, Robert H.: *See—*
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Grape, Wolfgang: *See—*
Feldner, Kurt; and Grape, Wolfgang, 4,552,973, Cl. 556-469.000.

Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, to Consiglio Nazionale Delle Ricerche. Plant consisting of modular elements for degrading organic wastes by means of earth worms. 4,552,726, Cl. 422-184.000.

Gravatt, Barton A., to Pall Corporation. Adsorbent fractionator with automatic cycle control and process. 4,552,570, Cl. 55-20.000.

Gray Tool Company: *See—*
Stewart, Vernon G.; and Adamek, Frank C., 4,552,369, Cl. 277-226.000.

Green, George E., to Ciba Geigy Corporation. Bonding method employing film adhesives. 4,552,604, Cl. 156-246.000.

Green, George F.: *See—*
Spahic, Bojana K.; and Green, George F., 4,552,816, Cl. 428-420.000.

Green, Sheryll C.: *See—*
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.

Green, William A.: *See—*
Doerr, Richard D.; Muller, J. Joseph; and Green, William A., 4,553,076, Cl. 318-282.000.

Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., to Eli Lilly and Company. Process for the synthesis of intermediates in the preparation of diaminopyridines. 4,552,967, Cl. 546-307.000.

Grefe, Peter, to Shur-Lok Corporation. Die, platen and joining means for attaching said die to said platen. 4,552,050, Cl. 83-685.000.

Gregory, Graham W.: *See—*
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.

Greiner, Ulrich: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Gretag Aktiengesellschaft: *See—*
Luscher, Rene , 4,552,029, Cl. 74-96.000.
Luscher, Rene , 4,552,285, Cl. 221-13.000.

Grethe, Horst: *See—*
Panster, Peter; and Grethe, Horst, 4,552,700, Cl. 556-9.000.

Gretsch-Unitas GmbH Baubeschlage: *See—*
von Resch, Julius M., 4,551,945, Cl. 49-221.000.

Grewer, Theodor: *See—*
Hahnle, Reinhard; and Grewer, Theodor, 4,552,699, Cl. 260-404.500.

Grey, Vincent G. Offshore incinteration of hazardous waste materials. 4,552,082, Cl. 114-26.000.

Griggs, Gloria D., to Tip-N-Wrap, Inc. Attaching an artificial nail. 4,552,160, Cl. 132-73.000.

Grimm, Hans; and Fingerle, Hermann, to Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Device for honing workpieces. 4,551,947, Cl. 51-34.00H.

Gritter, Roy J.: *See—*
Adams, Gary E.; Casper, John M.; and Gritter, Roy J., 4,552,723, Cl. 422-66.000.

Grob & Co. Aktiengesellschaft: *See—*
Graf, Martin, 4,552,185, Cl. 139-91.000.

Grob, Jurgen; and Kalvoda, Jaroslav, to Ciba Geigy Corporation. Steroids of the 20-spiroxane series, processes for the manufacture thereof, pharmaceutical preparations containing such compounds and the use of the latter. 4,552,871, Cl. 514-172.000.

Grohman, Larry F.: *See—*
Wong, Fred S.; and Grohman, Larry F., 4,552,219, Cl. 166-321.000.

Grolitzer, Marilyn A., to Olin Corporation. Blend of alkyl phenol ethoxylates and alkyl phenol glycoxylates and their use as surfactants. 4,552,673, Cl. 252-8.55D.

Gronfor, Dennis I., to Land O'Lakes, Inc. Cheese-like product. 4,552,774, Cl. 426-582.000.

Gross, Jack R.: *See—*
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Grote & Hartmann GmbH & Co. KG: *See—*
Brandstater, Manfred; and Konnemann, Alfred, 4,553,126, Cl. 338-319.000.

Grotloh, Karl H., to Sulzer Brothers Limited. Pressure medium actuated valve. 4,552,330, Cl. 251-30.010.

Grouse, Alan F.: *See—*
Brown, Fred A.; and Grouse, Alan F., 4,553,075, Cl. 318-254.000.

Grunert, Kurt A.; and Huffman, Walter K., to Westinghouse Electric Corp. Molded case circuit breaker with single solenoid operator for rectilinear handle movement. 4,553,115, Cl. 335-14.000.

Grutzner, Hans: *See—*
Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, 4,552,195, Cl. 160-168.00R.

Grynberg, Ami; and Ronen, Ya'Acov, to Israel Aircraft Industries Ltd. Electromagnetic field perimeter detection apparatus. 4,553,135, Cl. 340-564.000.

GTE Automatic Electric Incorporated: *See—*
Daniels, William R.; and Young, John S., 4,552,997, Cl. 179-175.30R.
Fox, Kenneth R., 4,553,088, Cl. 324-66.000.

GTE Communication Systems Corporation: *See—*
McNesby, John B.; and Walker, Erik K., 4,553,129, Cl. 340-347.0DD.

GTE Communications Products Corporation: *See—*
Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., 4,553,244, Cl. 372-95.000.

GTE Laboratories Incorporated: *See—*
Cogan, Adrian I.; and Bencuya, Izak, 4,551,909, Cl. 29-571.000.

GTE Lenkurt Incorporated Communication Systems: *See—*
Skidanenko, Constantine V.; and McGibbon, Gregor D., 4,552,994, Cl. 179-16.0AA.

GTE Products Corporation: *See—*
Fields, Larry R.; and Kendrick, George B., 4,553,066, Cl. 313-580.000.
Hsieh, Martin Y., 4,552,851, Cl. 501-98.000.
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., 4,552,729, Cl. 423-55.000.
Mizuhara, Howard, 4,552,057, Cl. 92-176.000.
Roche, William J.; and Parks, Ralph P., Jr., 4,553,067, Cl. 313-546.000.

GTE Valeron Corporation: *See—*
Kroetsch, Charles F., 4,553,001, Cl. 200-61.410.

GTI Corporation: *See—*
Swanson, William E., 4,553,220, Cl. 364-715.000.

Gugel, Bernd; and Niebel, Harald, to Mannesmann AG. Print head with permanent magnetic bias. 4,552,471, Cl. 400-124.000.

Guiler, Richard S., to Fuji Electric Co., Ltd. Lock assembly for enclosure cover. 4,551,999, Cl. 70-159.000.

Gulf Oil Corporation: *See—*
Forgac, John M.; and Hoekstra, George R., 4,552,214, Cl. 166-259.000.

Gulf States Paper Corporation: *See—*
Blagg, Bobby W.; and Gulliver, Richard F., 4,552,293, Cl. 229-1.50B.

Gulf & Western Manufacturing Company: *See—*
Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., 4,551,989, Cl. 62-468.000.

Gulliver, Richard F.: *See—*
Blagg, Bobby W.; and Gulliver, Richard F., 4,552,293, Cl. 229-1.50B.

Gundersen, Steven C.: *See—*
Chainer, Timothy J.; Gundersen, Steven C.; and Worthington, Thomas K., 4,553,259, Cl. 382-3.000.

Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, to Ardal og Sunndal Verk a.s. Ring section baking furnace and procedure for operating same. 4,552,530, Cl. 432-192.000.

Gurevich, Alex: *See—*
Gurevich, Joseph; and Gurevich, Alex, 4,551,867, Cl. 4-420.400.

Gurevich, Joseph; and Gurevich, Alex. Toilet bowl which washes. 4,551,867, Cl. 4-420.400.

Gurreri, Nicholas L.: *See—*
English, James M.; Gurreri, Nicholas L.; and Kling, John P., 4,553,114, Cl. 333-182.000.

Guyton, David L. Apparatus for determination of potential visual acuity utilizing a slit lamp microscope. 4,552,440, Cl. 351-214.000.

Haag, Laurent, to Eurofloor S.A. Composite product having a low-porosity support layer. 4,552,796, Cl. 428-140.000.

Haag, William G.; and Chavdarian, Charles G., to Stauffer Chemical Co. S-Dithiocarbamoylmethyl trithiophosphonate insecticides, compositions and use. 4,552,870, Cl. 514-89.000.

Haber, Terry M. Prosthetic sphincter. 4,551,862, Cl. 623-14.000.

Haber, Terry M. Elastomechanical sphincter. 4,552,128, Cl. 128-1.00R.

Habich, Adolph B., to International Business Machines Corporation. Method for manufacturing a wire matrix print wire guiding device. 4,552,716, Cl. 264-328.100.

Haderer, Norman G., to Westinghouse Electric Corp. Strippable insulated wire and method of making same. 4,552,988, Cl. 174-74.00R.

Haenni, Eduard; and Frei, Theo, to Hammerle, AG. Plate bending apparatus. 4,552,002, Cl. 72-19.000.

Hafele, Robert X., to Hoover Universal, Inc. Blow molding machine with mold shuttle structure. 4,552,526, Cl. 425-522.000.

Haga, Tsutomu: *See—*
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,552,243, Cl. 181-169.000.

Hagen, Glenn E., to Williams, Inc. Wave driven work extracting device. 4,552,514, Cl. 417-332.000.

Haghiri-Tehrani, Yahya: *See—*
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,552,383, Cl. 283-83.000.

Hagopian, Gary J.: *See—*
Barfield, Gilbert; and Hagopian, Gary J., 4,552,004, Cl. 72-60.000.

Hahn, Granville J., to Cosden Technology, Inc. Plastic container with decreased gas permeability. 4,552,791, Cl. 428-35.000.

Hahnle, Reinhard; and Grewer, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of 3-acylaminoanilines. 4,552,699, Cl. 260-404.500.

Haigh Chadwick Limited: *See—*
Brunnschweiler, David, 4,552,235, Cl. 177-1.000.

Hal Johnston Pty. Limited: *See—*
Taylor, William R., 4,552,728, Cl. 422-300.000.

Hale, Gilbert L.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.

Hale, Peter G.: *See—*
Titchmarsh, James G.; and Hale, Peter G., 4,552,433, Cl. 350-96.230.

Hales, Paul D. Telephone activation apparatus. 4,552,993, Cl. 179-2.00A.

Hall, Charles P., to Monterey Manufacturing Co. Waterbed mattress with a baffle. 4,551,873, Cl. 5-450.000.

Hall, Ralph F.: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,552,893, Cl. 514-560.000.

Hall Systems, Inc.: *See—*
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,552,349, Cl. 270-54.000.

Halliburton Company: *See—*
Almond, Stephen W.; and Himes, Ronald E., 4,552,215, Cl. 166-278.000.
Knox, Lloyd C.; and Moore, Clayton A., 4,552,486, Cl. 405-227.000.
Revett, Lowell W., 4,552,234, Cl. 175-4.600.
Walker, Michael L., 4,552,672, Cl. 252-8.55C.

Halter, Hartmut, to Reifenhauser GmbH & Co. Maschinenfabrik. Apparatus for coiling a synthetic resin foil web. 4,552,317, Cl. 242-65.000.

Hamada, Itsuo: *See—*
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,552,904, Cl. 521-145.000.

Hamilton Industries: *See—*
Yindra, Leonard J., 4,552,403, Cl. 297-330.000.

Hamlin, James M.: *See—*
Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., 4,552,838, Cl. 430-569.000.

Hammer, Heiner I., to Schlegel Lining Technology GmbH. Process and prepressing pipe for laying a pipeline in the earth. 4,552,485, Cl. 405-184.000.

Hammerle, AG: *See—*
Haenni, Eduard; and Frei, Theo, 4,552,002, Cl. 72-19.000.

Hansen, Henning; and Schneider, Helmut, to Dr. Karl F. Nagele Feinmaschinenbau GmbH & Co. Method of and apparatus for mounting separable slide fastener connectors. 4,551,900, Cl. 29-408.000.

Hansen, Jan: *See—*
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.

Hansen, Jan M.: *See—*
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.

Hansen, Paul E.; and Marquardt, Susan K., to Minnesota Mining and Manufacturing Co. Inelastic, heat-elasticizable sheet material. 4,552,795, Cl. 428-110.000.

Hanssler, Gerd: *See—*
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.

Hara, Kenjiro; and Shirose, Haruya, to Nissan Motor Co., Ltd. Crankshaft of V-6 internal combustion engine. 4,552,104, Cl. 123-192.00R.

Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, to Furukawa Electric Co., Ltd., The; and Nippon Telephone & Telegraph Public Corp. Method of fabricating optical glass base material and apparatus for fabricating the same. 4,552,576, Cl. 65-2.000.

Hara, Shoji: *See—*
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.

Harada, Koosuke; and Murata, Katsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. High frequency power supply device. 4,553,199, Cl. 363-75.000.

Harada, Masatoshi: *See—*
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.

Harasaki, Hayathugu; and Matsuura, Osamu, to Mazda Motor Company. Two-door type automobile body structure. 4,552,400, Cl. 296-185.000.

Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., to American Cyanamid Company, a part interest. Anastomotic device. 4,552,148, Cl. 128-334.00C.

Hardy, Thomas R.: *See—*
Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,552,600, Cl. 156-73.100.

Harjar, Martin J., to Nordson Corporation. Apparatus for locking the wrist links of a work robot in the same respective relative positions to facilitate calibration of the wrist link position transducers thereof. 4,552,502, Cl. 414-680.000.

Harmon, Elred R.: *See—*
Seaquist, James J.; and Harmon, Elred R., 4,552,424, Cl. 339-32.00R.

Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., to Akzona Incorporated. Method for making bicomponent fibers. 4,552,603, Cl. 156-167.000.

Harris, Robert W., to Gould Inc. Telemetry system with signal booster for digital data transmission through a transmission line. 4,553,247, Cl. 375-4.000.

Hartlaub, Jerome T., to Medtronic, Inc. Waveform morphology discriminator and method. 4,552,154, Cl. 128-702.000.

Hartman, John W.: *See—*
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.

Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., to Procter & Gamble Company, The. Hypochlorite bleach containing surfactant and organic antifoamant. 4,552,680, Cl. 252-102.000.

Hartmann, Peter, to BBC Brown, Boveri & Company, Limited. Method and system for synchronizing the coding and decoding during the transmission of digital coded data. 4,553,251, Cl. 375-114.000.

Hasegawa, Akio: *See—*
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.

Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Double superheterodyne tuner. 4,553,264, Cl. 455-189.000.

Hasegawa, Morimichi: *See—*
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.

Hasegawa, Ryusuke: *See—*
Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., 4,553,136, Cl. 340-572.000.

Hasegawa, Tsunao, to Pioneer Electronic Corporation. Recording start position setting device for use in a tape recorder. 4,553,180, Cl. 360-74.400.

Hasegawa, Yuuji: *See—*
Sagara, Seiji; and Hasegawa, Yuuji, 4,552,447, Cl. 355-3.00R.

Hashimoto, Masayuki: *See—*
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,552,904, Cl. 521-145.000.

Hashimoto, Takashi, to Pioneer Electronic Corp. Central processing unit restoring mechanism for a system having a plurality of central processing units. 4,553,204, Cl. 364-200.000.

Hashimoto, Toshihiko: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Hasse, Peter: *See—*
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, to Fujitsu Limited. Method and apparatus for testing a logic circuit using parallel to serial and serial to parallel conversion. 4,553,090, Cl. 324-73.0AT.

Hattori, Noriaki: *See—*
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.

Hattori, Satoru: *See—*
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.

Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. V-Belt transmission apparatus. 4,552,548, Cl. 474-201.000.

Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. V-Belt transmission device. 4,552,549, Cl. 474-202.000.

Hattori, Yoshiaki; and Ishihara, Makoto, to Noritake Co., Limited. Carbon fiber-reinforced gypsum models and forming molds. 4,552,329, Cl. 249-134.000.

Haug, Theobald; and Stockinger, Friedrich, to Ciba-Geigy Corporation. Heat-curable epoxy resin mixtures containing imide compounds and condensation products of phenols, amines and aldehydes or ketones. 4,552,935, Cl. 525-488.000.

Haugland, Tor-Arvid: *See—*
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Hauni-Werke Korber & Co. KG.: *See—*
Lewandowski, Willi, 4,551,953, Cl. 51-268.000.

Havens, Donald P.: *See—*
Domino, William J.; Havens, Donald P.; and Johnson, Robert A., 4,553,060, Cl. 310-333.000.

Hawkins, Bruce. High speed dump valve for fire fighting apparatus. 4,552,181, Cl. 137-875.000.

Hayasaka, Tadao: *See—*
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.

Hayashi, Chikahisa; and Kanayama, Masakatsu, to Toyoda Gosei Co., Ltd. Leakage inspection device for brake hoses. 4,553,212, Cl. 364-507.000.

Hayashi, Hajime: *See—*
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Hayashi, Hideo: *See—*
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.

Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Cellular glass coated with a heat insulator. 4,552,806, Cl. 428-312.600.

Haynes, Hendrick W. Marine propulsion device with engine heat recovery system and streamlining hull closures. 4,552,537, Cl. 440-47.000.

Hazelett Strip-Casting Corp.: *See—*
Wood, John F. B., 4,552,201, Cl. 164-481.000.

Heidelberger Druckmaschinen AG: *See—*
Jahn, Hans-Georg, 4,552,069, Cl. 101-420.000.

Heidemann, Helmut: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Heiermann, Siegfried; and Lachner, Hans, to Klockner-Becorit GmbH. Remote controlled bolt removing apparatus for bolts securing the head of a reactor pressure vessel. 4,552,038, Cl. 81-57.380.

Hein, James R., to Olympic Fastening Systems. Pulling head for blind fasteners. 4,552,010, Cl. 72-391.000.

Hein, Karl; Hubig, Markus; and Seroka, Helmut, to Klockner CRA Technologie GmbH. Method and apparatus for preheating and charging scrap in steelmaking. 4,552,342, Cl. 266-175.000.

Heindl, Alfons: *See—*
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

Helms, Roseann S.: *See—*
Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., 4,552,792, Cl. 428-40.000.

Helmy, Nash N.: *See—*
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.

Henderson, Ross: *See—*
Chan, Edward Y.; Henderson, Ross; and Vaudo, Anthony J., 4,553,198, Cl. 363-56.000.

Henkel KGaA: *See—*
Maak, Norbert; and Lieske, Edgar, 4,552,565, Cl. 8-409.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, 4,552,681, Cl. 252-140.000.
Schmid, Karl; and Baumann, Horst, 4,552,702, Cl. 260-428.000.

Hennebel, Christiaan G. M. M.: *See—*
Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., 4,553,233, Cl. 370-16.000.

Henocq, Emile: *See—*
Relyveld, Edgar H.; and Henocq, Emile, 4,552,756, Cl. 424-88.000.

Hepworth, Malcolm T.: *See—*
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.

Heraty, Michael: *See—*
Heraty, Patrick T.; and Heraty, Michael, 4,552,476, Cl. 401-136.000.

Heraty, Patrick T.; and Heraty, Michael. Combination high pressure wand and brush for vehicle washing. 4,552,476, Cl. 401-136.000.

Herbrechtsmeier, Peter: *See—*
Koch, Manfred; and Herbrechtsmeier, Peter, 4,552,977, Cl. 562-435.000.
Hercules Incorporated: *See—*
Goss, Raymond W., 4,552,794, Cl. 428-95.000.
Herdle, William B., to Union Carbide Corporation. Preparation of polyalkylene polyamines using phosphorus amide catalyst. 4,552,961, Cl. 544-402.000.
Hermann Hemscheidt Maschinenfabrik GmbH & Co.: *See—*
Krieger, Karl; and Reinelt, Werner, 4,552,172, Cl. 137-484.600.
Hermanson, William C.: *See—*
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.
Hermle, Klaus: *See—*
Truper, Dirk; and Hermle, Klaus, 4,553,040, Cl. 307-116.000.
Herring, William P.; and Kostorz, Jan R., to Friedrich Grohe Armaturenfabrik GmbH & Co. Valve slide plate. 4,552,176, Cl. 137-625.400.
Herrmann, Wolfgang: *See—*
Berglin, Carl T.; and Herrmann, Wolfgang, 4,552,748, Cl. 423-588.000.
Hessen, Thomas A.: *See—*
Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,552,600, Cl. 156-73.100.
Hettinger, Peter: *See—*
Merger, Franz; Hettinger, Peter; and Lange, Arno, 4,552,985, Cl. 568-497.000.
Hettinger, William P., Jr., to Ashland Oil, Inc. Method for converting coal to upgraded liquid product. 4,552,642, Cl. 208-10.000.
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., to Ashland Oil, Inc. Process for cracking high-boiling hydrocarbons using continuous addition of acidity enhancing additives. 4,552,647, Cl. 208-120.000.
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Sugawara, Yoshitaka, 4,553,125, Cl. 338-283.000.
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Yoh, Kanji; and Yamashiro, Osamu, 4,553,098, Cl. 324-433.000.
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Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, 4,552,970, Cl. 548-543.000.
Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, 4,552,771, Cl. 426-548.000.
Hahnle, Reinhard; and Grewer, Theodor, 4,552,699, Cl. 260-404.500.
Koch, Manfred; and Herbrechtsmeier, Peter, 4,552,977, Cl. 562-435.000.
Ott, Karl-Erich; and Behrens, Thomas, 4,552,461, Cl. 366-279.000.
Rudolphy, Albert; and Werner, Gerhard, 4,552,592, Cl. 106-30.000.
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.
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Forgac, John M.; and Hoekstra, George R., 4,552,214, Cl. 166-259.000.
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Holladay, Thomas M.; and Holt, L. Bayles, to Xerox Corporation. Tile encoding in image printing. 4,553,171, Cl. 358-263.000.
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Brakelmann, Wolfgang, 4,552,167, Cl. 137-15.000.

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Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, 4,552,715, Cl. 264-309.000.
Atarashi, Kazuya, 4,552,399, Cl. 296-37.120.
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Hattori, Torao, 4,552,548, Cl. 474-201.000.
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Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, 4,552,373, Cl. 280-276.000.
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Lo, Saukwan; and Borken, Richard J., 4,553,032, Cl. 250-339.000.
Olsen, Arthur M., 4,553,104, Cl. 330-129.000.
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Ong, Richard H.; and Economopoulos, Peter C., 4,553,053, Cl. 307-530.000.
Pollack, Frank S., Jr., 4,553,201, Cl. 364-200.000.
Hong, Sun-Nan: *See—*
Spector, Marshall L.; and Hong, Sun-Nan, 4,552,663, Cl. 210-605.000.
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Hopkins, Thomas R., to Lubrizol Corporation, The. Copper salts of succinic anhydride derivatives. 4,552,677, Cl. 252-33.600.
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Hopper, Willard C., Jr. Bicycle sealed bearing kit. 4,552,468, Cl. 384-458.000.
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Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,551,896, Cl. 29-156.40R.
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Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, 4,552,138, Cl. 128-156.000.
Horodysky, Andrew G., to Mobil Oil Corporation. N-Hydrocarbylhydrocarbylenediamine carboxylate and lubricants containing same. 4,552,569, Cl. 44-71.000.
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Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.
Horvath, Aniko : *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
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Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.
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Houston, Reagan. Furnace. 4,552,305, Cl. 237-69.000.
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Howerton, Anderson W., to Dayco Corporation. Belt construction, transverse belt element therefor and method of making the same. 4,552,550, Cl. 474-242.000.
Howmedica, Inc.: *See—*
Kenna, Robert V., 4,552,136, Cl. 128-92.00E.
Hrusch, Louis C., to Pneumo Corporation. Landing gear mechanism for use on rough runways. 4,552,324, Cl. 244-104.0FP.
Hsiao, Cheng-kuo: *See—*
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Huang, Chung-I. Laminated padlock. 4,551,997, Cl. 70-38.00A.
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Eklund, Nils; and Huang, Jen-chi, 4,552,827, Cl. 430-160.000.
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Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, to Daimler-Benz Aktiengesellschaft. Installation for the supply of several similar elements with a medium under atmospheric excess pressure. 4,552,402, Cl. 297-284.000.
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Hein, Karl; Hubig, Markus; and Seroka, Helmut, 4,552,342, Cl. 266-175.000.
Hubner, Klemens: *See—*
Sarnezki, Herbert; and Hubner, Klemens, 4,552,418, Cl. 312-242.000.
Huffman, Walter K.: *See—*
Grunert, Kurt A.; and Huffman, Walter K., 4,553,115, Cl. 335-14.000.
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McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.
Huggitt Packaging Company: *See—*
Winchell, Jack W., 4,552,789, Cl. 428-132.000.
Hughes Aircraft Company: *See—*
Amboss, Kurt, 4,553,064, Cl. 313-448.000.
Glaser, Michael S.; and Rochester, James R., 4,552,454, Cl. 356-5.000.
Nesler, John J., 4,553,082, Cl. 323-288.000.
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Ozin, Geoffrey A.; Nazar, Linda F.; and Hugues, Francois, 4,552,855, Cl. 502-74.000.
Hulls, Leonard R., to Numonics Corporation. Absolute position coordinate determining device employing a single phase difference measurement to determine cursor position. 4,552,991, Cl. 178-19.000.
Hunter, Burnis L., to Sewell Plastics, Inc. Nozzle assembly. 4,552,527, Cl. 425-535.000.
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Vecchiarelli, Francis, 4,552,196, Cl. 160-174.000.
Huntley, James B., to 2JT, Inc. Portable cordless phone holder. 4,552,995, Cl. 179-147.000.
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Hurst, Robert N., Jr.; and Dischert, Robert A., to RCA Corporation. Apparatus for correcting errors in color signal transitions. 4,553,157, Cl. 358-27.000.
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Hyatt, Gilbert P. Communication system. 4,553,213, Cl. 364-514.000.
Hyatt, Gilbert P. Digital filtering system. 4,553,221, Cl. 364-724.000.
Hyatt, James R., to Nicolet Instrument Corporation. Digital data acquisition apparatus. 4,553,109, Cl. 331-25.000.
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Werners, Theo F. H.; and Drenth, Berend W., 4,552,339, Cl. 254-277.000.
Hydril Company: *See—*
Wong, Fred S.; and Grohman, Larry F., 4,552,219, Cl. 166-321.000.
Hyland, Craig R.: *See—*
Radford, Steven R.; and Hyland, Craig R., 4,552,229, Cl. 175-240.000.
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Automobile speed control system. 4,553,209, Cl. 364-431.070.
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, to Aquafine Corporation. Fluidization process for removing total reduced sulfur compounds from industrial gases. 4,552,734, Cl. 423-230.000.
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Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, to Nippon Steel Corporation. Grain-oriented electromagnetic steel sheet with improved watt loss. 4,552,596, Cl. 148-31.500.
ICI Americas Inc.: *See—*
Bare, Thomas M., 4,552,883, Cl. 514-303.000.
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Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, to Toppan Printing Co., Ltd. Method for returning a movable part to the original point. 4,553,079, Cl. 318-626.000.
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Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

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Kawaharazuka, Yukio; and Iida, Giichi, 4,552,100, Cl. 123-2.000.

Iida, Shinobu: *See*—
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.

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Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

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Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, 4,553,019, Cl. 219-146.220.

Ikeda, Kazushige: *See*—
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

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Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.

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DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

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Beecher, William H., 4,551,888, Cl. 24-30.50P.

Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for polymerization of olefins. 4,552,858, Cl. 502-112.000.

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Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.

Imanishi, Kiyokazu: *See*—
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.

Imbert, Michel: *See*—
Douziech, Patrick; and Imbert, Michel, 4,553,156, Cl. 358-24.000.

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Addleman, Robert L., 4,553,017, Cl. 219-121.0LA.

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Kay, Ian T.; and Noon, Robert A., 4,552,887, Cl. 514-381.000.
Nicks, Peter F.; and Young, Gillian A., 4,552,908, Cl. 523-504.000.
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Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James R., to Westinghouse Electric Corp. Method and apparatus for on-line monitoring of the operation of a complex non-linear process control system. 4,552,718, Cl. 376-216.000.

Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, to Ono Pharmaceutical Co., Ltd. Long-lasting multi-layered film preparation. 4,552,751, Cl. 424-19.000.

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Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

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Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,553,099, Cl. 324-458.000.

Inagaki, Nobuo: *See*—
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.

Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, to Victor Company of Japan Ltd. Automatic recording bias current setting apparatus. 4,553,179, Cl. 360-66.000.

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Fisher, Gary H.; and Padgett, H. Pat, 4,552,303, Cl. 236-44.00C.

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Ducharme, Marcel, 4,552,766, Cl. 426-294.000.

Inoue, Ayumu: *See*—
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, 4,552,703, Cl. 260-466.000.

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Matsumoto, Tadao; and Inoue, Kazuo, 4,552,724, Cl. 422-138.000.

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Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

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Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.
Ecomard, Andre , 4,552,169, Cl. 137-115.000.

Institut Pasteur: *See*—
Relyveld, Edgar H.; and Henocq, Emile, 4,552,756, Cl. 424-88.000.

Insul Company, Inc.: *See*—
Labate, Michael D.; and Perri, Joseph A., 4,552,343, Cl. 266-200.000.

Intel Corporation: *See*—
Patterson, Elizabeth L., 4,551,910, Cl. 29-576.00W.

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Adams, Gary E.; Casper, John M.; and Gritter, Roy J., 4,552,723, Cl. 422-66.000.
Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., 4,552,615, Cl. 158-659.100.
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., 4,553,192, Cl. 361-395.000.
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.
Chainer, Timothy J.; and Worthington, Thomas K., 4,553,258, Cl. 382-3.000.
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Dewey, Anthony G., 4,552,441, Cl. 353-31.000.
Dillinger, Thomas E.; and Kueper, Terrance W., 4,553,047, Cl. 307-297.000.
Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, 4,553,050, Cl. 307-443.000.
Franey, Terence E., 4,552,634, Cl. 204-159.230.
Habich, Adolph B., 4,552,716, Cl. 264-328.100.
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.
Liu, Cheng-Yih, 4,552,831, Cl. 430-296.000.
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.00S.
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.
Pilost, Daniel, 4,553,128, Cl. 340-347.0AD.
Reed, Todd R., 4,553,248, Cl. 375-14.000.
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., 4,552,710, Cl. 264-64.000.
Trufyn, Nicholas, 4,553,202, Cl. 364-200.000.
Tsukamoto, Katsura, 4,552,351, Cl. 271-3.100.

International Flavors & Fragrances Inc.: *See*—
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,552,770, Cl. 426-535.000.

International Harvester Company: *See*—
Risley, John R., 4,552,398, Cl. 303-7.000.

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Davis, Paul J.; and Reynolds, James F., 4,552,759, Cl. 424-93.000.

International Playtex, Inc.: *See*—
Patel, Shantilal G.; and Bell, William D., 4,551,892, Cl. 28-166.000.

International Standard Electric Corporation: *See*—
Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., 4,553,233, Cl. 370-16.000.

International Telephone and Telegraph Corporation: *See*—
Getz, Stephen; and Fouser, William, 4,551,875, Cl. 7-138.000.
Landgreen, Eleanor A., 4,552,427, Cl. 339-89.00M.

Inuzuka, Tsuneki: *See*—
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.

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Walmsley, Dennis A., 4,552,533, Cl. 434-12.000.

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Akhavi, David S., 4,551,864, Cl. 623-6.000.
Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., 4,551,949, Cl. 51-164.100.

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Bremner, John M., 4,552,581, Cl. 71-61.000.

Irvin Industries Inc.: *See*—
Gavagan, James A.; and Motyka, Jerry, 4,552,319, Cl. 242-107.40A.

Ise Kagaku Kogyo Kabushiki Kaisha: *See*—
Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, 4,552,566, Cl. 23-313.00R.

Ishibashi, Kazuhisa: *See*—
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, 4,552,605, Cl. 156-273.300.

Ishihara, Koji: *See*—
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, 4,553,019, Cl. 219-146.220.

Ishihara, Makoto: *See*—
Hattori, Yoshiaki; and Ishihara, Makoto, 4,552,329, Cl. 249-134.000.

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Ishii, Tutomu: *See*—
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Ishii, Yutaka: *See*—
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, 4,552,436, Cl. 350-337.000.

Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Benzoheterocyclic compounds and pharmaceutical composition thereof. 4,552,879, Cl. 514-253.000.

Ishikawa, Nobuo; and Takaoka, Akio, to Daikin Industries Ltd. Fluorinated benzodiazepins. 4,552,694, Cl. 260-239.0BD.

Ishikawa, Noritoki, to Ryobi Ltd. Device for controlling the tension of a transmission chain in an externally mounted speed changer for a bicycle. 4,552,546, Cl. 474-82.000.

Ishikawa, Yoshimi: *See*—
Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, 4,552,373, Cl. 280-276.000.

Iso, Tadashi: *See*—
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,969, Cl. 548-179.000.
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Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for preparation of ethanol. 4,552,986, Cl. 568-902.000.

Israel Aircraft Industries, Ltd.: *See*—
Bar-Nefy, Simcha; and Tiomkin, Michael V., 4,552,053, Cl. 89-1.130.
Grynberg, Ami; and Ronen, Ya'Acov, 4,553,135, Cl. 340-564.000.

Issa, Darrell E. Battery lock anti-theft system. 4,553,127, Cl. 340-64.000.

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Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., to International Business Machines Corporation. Radiation sensitive and oxygen plasma developable resist. 4,552,833, Cl. 430-325.000.

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Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, to Toyo Seikan Kaisha Limited. Utilizing particulate adhesive for laminating plastic film to the surface of metal. 4,552,605, Cl. 156-273.300.

Itoh, Shinji; and Moroji, Takashi, to Shionogi & Co., Ltd. Psychotropic drugs. 4,552,865, Cl. 514-15.000.

Itoh, Takashi: *See*—
Yamazaki, Yoshio; and Itoh, Takashi, 4,552,451, Cl. 355-15.000.

ITT Corporation: *See*—
Carl, Louis C.; and Nevadunsky, Charles J., 4,552,174, Cl. 137-527.200.
Sonderegger, Henry R.; and Chatterley, Charles, 4,552,332, Cl. 251-148.000.

ITT Industries, Inc.: *See*—
Burgdorf, Jochen; and Stoka, Roberto, 4,552,253, Cl. 188-73.380.
Sauer, Wolfgang, 4,553,163, Cl. 358-158.000.

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Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.

Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Heat-resisting aromatic polyester and process for preparing the same. 4,552,947, Cl. 528-126.000.

Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, to Sharp Kabushiki Kaisha. Lens positioning mechanism for a copying machine. 4,552,453, Cl. 355-57.000.

Iwamoto, Yoshio: *See*—
Murakami, Katsuhiko; and Iwamoto, Yoshio, 4,552,262, Cl. 198-447.000.

Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, to Santen Pharmaceutical Co., Ltd. 3-Alkanoyl benzothiazoline compounds useful for treating cardiovascular disease. 4,552,969, Cl. 548-179.000.

Iwao, Jun-ichi: *See*—
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.

Iwasaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. Low profile direct current motor. 4,553,058, Cl. 310-268.000.

J. F. Werz, Jr. KG, Werzalit-Pressholzwerk: *See*—
Munk, Edmund; and Dietz, Martin, 4,552,797, Cl. 428-167.000.

J. I. Case Company: *See*—
Chatterjea, Probir K., 4,552,168, Cl. 137-101.000.

J. T. Baker Chemical Co.: *See*—
Kruger, Paul J., 4,552,582, Cl. 71-73.000.

Jaber, Khalil N.: *See*—
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,552,809, Cl. 428-331.000.

Jackson, Frank W., to Jackson, Frank W. Exercise S-T segment evaluator. 4,552,156, Cl. 128-703.000.

Jackson, Mark F.: *See*—
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,551,916, Cl. 30-50.000.

Jacobson, Wayne M.; and Quaintance, Roger L., to Cyclonaire Corporation. Vehicular mobile high capacity pneumatic conveyor. 4,552,489, Cl. 406-39.000.

Jacquemet, Georges, to MARTELEC Societe Civile Particuliere. Method of and apparatus for the autosynchronization of an electromagnetic hammer. 4,553,074, Cl. 318-130.000.

Jacquin, Yves: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,552,650, Cl. 208-216.0PP.

Jagenberg AG: *See*—
Dropczynski, Hartmut; and Trilling, Peter, 4,552,316, Cl. 242-56.00R.

Jahn, Hans-Georg, to Heidelberger Druckmaschinen AG. Smear-free transfer cylinder for sheet-fed rotary printing machines. 4,552,069, Cl. 101-420.000.

Jamak, Inc.: *See*—
Cavicchioli, A. G., 4,552,713, Cl. 264-162.000.

James Chemical Engineering Inc.: *See*—
Stokes, Keith J., 4,552,979, Cl. 564-69.000.

James Hamilton & Sons (Engineering) Ltd.: *See*—
Wilson, Robert H.; and Wilson, Andrew J., 4,552,190, Cl. 141-82.000.

James River-Norwalk, Inc.: *See*—
Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., 4,553,010, Cl. 219-10.55E.

Jameson, Calvin R.; and Baker, Robert G., to Nordson Corporation. Thermally insulated electrically heated hose for transmitting hot liquids. 4,553,023, Cl. 219-301.000.

Japan Atomic Energy Research Institute: *See*—
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.

Japan Immunoresearch Laboratories Co., Ltd.: *See*—
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.

Japan Steel Works, Ltd., The: *See*—
Fujimori, Eiichi, 4,552,863, Cl. 502-418.000.

Jarmuzewski, Hans-Georg, to Deutsche Babcock Werke Aktiengesellschaft. Steam generator with a stationary fluidized-bed hearth. 4,552,097, Cl. 122-4.00D.

Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, to Etablissements Nativelle S.A. 14-Amino steroid derivatives, a process for the preparation thereof and method of use thereof. 4,552,868, Cl. 514-26.000.

Jencks, Charles L.: *See*—
Castonguay, Roger N.; and Jencks, Charles L., 4,553,119, Cl. 335-147.000.

Jenczewski, Theodore J.; and Skinner, William H., Jr., to Allied Corporation. Electrodialytic methods for removal of sulfur oxides from waste gases. 4,552,635, Cl. 204-182.400.

Jensen, Ronald P.; and Allcroft, Arthur N., to Myocur, Inc. Disposable ophthalmic instrument for performing radial keratotomy on the cornea. 4,552,146, Cl. 128-305.000.

Jeol Ltd.: *See*—
Matsuda, Hisashi, 4,553,029, Cl. 250-296.000.
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.

Jessop, Harvey A., deceased: *See*—
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.

Jidosha Kiki Co., Ltd.: *See*—
Takeshima, Sadao; and Ohe, Takeshi, 4,552,240, Cl. 180-142.000.

Johannesson, Lennart. Divided milling cutters. 4,552,496, Cl. 409-209.000.

Johansson, Karl H.; and Severinsson, Anders S., to Telefonaktiebolaget LM Ericsson. Method and apparatus for functionally testing a laser rangefinder. 4,552,455, Cl. 356-5.000.

Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Duocracking process for the production of olefins from both heavy and light hydrocarbons. 4,552,644, Cl. 208-78.000.

Johnson, Axel R.: *See*—
Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., 4,552,645, Cl. 208-80.000.

Johnson, D. Dale, to Ex-Cell-O Corporation. Barrier fluid sealed piston for road wheel suspension. 4,552,344, Cl. 267-64.110.

Johnson, Earl H.: *See*—
Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., 4,552,685, Cl. 252-355.000.

Johnson, Gerald E., to Lamb Technicon Corp. Vertical workpiece cleanser and dryer. 4,551,880, Cl. 15-302.000.

Johnson & Johnson: *See*—
Weissenburger, Edward, 4,552,266, Cl. 206-220.000.

Johnson, Larry, to Lawrence Brothers, Inc. Horse stall construction. 4,552,094, Cl. 119-27.000.

Johnson, Lloyd D., to Standard-Knapp, Inc. Packing case tab slitter. 4,551,964, Cl. 53-374.000.

Johnson, Marion: *See*—
Murley, Jackie D.; and Johnson, Marion, 4,552,717, Cl. 264-549.000.

Johnson, Philip A.; and McCarthy, Alfred F., to Aavid Engineering, Inc. Heat sinks for integrated circuit modules. 4,552,206, Cl. 165-80.300.

Johnson, Robert A.: *See—*
Domino, William J.; Havens, Donald P.; and Johnson, Robert A., 4,553,060, Cl. 310-333.000.

Johnson, Thomas M.: *See—*
Yudelson, Joseph S.; and Johnson, Thomas M., 4,552,848, Cl. 436-86.000.

Jolidon, Synese: *See—*
Tenud, Leander; and Jolidon, Synese, 4,552,983, Cl. 564-200.000.

Jones, Brian D. Oil well evacuation system. 4,552,220, Cl. 166-369.000.

Jones, Daniel T. Scooterboard. 4,552,372, Cl. 280-87.04R.

Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., to USV Pharmaceutical Corp. Bisbenzoxazines and pharmaceutical use. 4,552,876, Cl. 514-234.000.

Jones, Robert W.: *See—*
Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., 4,553,244, Cl. 372-95.000.

Jones, Thomas J.: *See—*
Szuminski, Gary F.; and Jones, Thomas J., 4,552,309, Cl. 239-265.190.

Joseph, James D.: *See—*
Belt, Ronald A.; and Joseph, James D., 4,553,260, Cl. 382-22.000.

Jourdan, Donovan K.: *See—*
Baltz, Gene F.; and Jourdan, Donovan K., 4,552,103, Cl. 123-186.000.

Joyce, Hardin, Jr., to Fiatallis North America, Inc. Tractor scraper hitch steering and suspension system. 4,552,238, Cl. 180-139.000.

Juhasz, Andras: *See—*
Owen, William R.; and Juhasz, Andras, 4,552,280, Cl. 220-1.00T.

Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., to Champion International Corporation. Decorative laminated wall panel and process for making same. 4,552,792, Cl. 428-40.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brustle, Klaus, 4,551,883, Cl. 16-370.000.

Jung, Hans-Ulrich: *See—*
Schnelle, Eberhard; Jung, Hans-Ulrich; and Hetzel, Werner, 4,552,346, Cl. 269-322.000.

Junker, Warren R.: *See—*
Schenk, Harold L., Jr.; and Junker, Warren R., 4,553,095, Cl. 324-230.000.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 4,552,288, Cl. 222-482.000.

K. Bratschi, Silent Gliss: *See—*
Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, 4,552,195, Cl. 160-168.00R.

K. J. Law Engineers, Inc.: *See—*
Gehrke, Robert E., 4,553,094, Cl. 324-225.000.

Kabushiki Kaisha Dunlop Home Products: *See—*
Tatsuki, Tokuji, 4,552,149, Cl. 128-402.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Mikami, Yoshiharu, 4,552,236, Cl. 177-25.000.
Murakami, Katsuhiko; and Iwamoto, Yoshio, 4,552,262, Cl. 198-447.000.
Saskiki, Takashi; and Sakaeda, Keiko, 4,552,237, Cl. 177-25.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, 4,552,009, Cl. 72-316.000.

Kabushiki Kaisha Meidensha: *See—*
Tanigaki, Shuzo; and Sakaki, Masayuki, 4,553,139, Cl. 340-626.000.

Kabushiki Kaisha Nagahori: *See—*
Nagahori, Morihiro, 4,551,993, Cl. 63-31.000.

Kabushiki Kaisha Sato: *See—*
Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, 4,552,610, Cl. 156-384.000.

Kabushiki Kaisha Toshiba: *See—*
Yamamoto, Masao; and Fujiwara, Tetsuo, 4,551,975, Cl. 60-528.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, 4,552,806, Cl. 428-312.600.
Sato, Shigeyuki; and Matsushita, Mitsumasa, 4,552,907, Cl. 523-455.000.

Kachel, Wayne M.: *See—*
Patterson, Ann D.; and Kachel, Wayne M., 4,552,649, Cl. 208-127.000.

Kadooka, Katsuyuki: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.

Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, to Dow Chemical Company, The. Rigid thermoplastic resin foam and process for preparation thereof. 4,552,904, Cl. 521-145.000.

Kaetsu, Isao: *See—*
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.

Kagabu, Shinzo: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Kaganov, A. L.: *See—*
Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., 4,552,148, Cl. 128-334.00C.

Kahn, Marvin L.; and Lynch, Robert J., to Rich Products Corporation. Freezer stable whipped ice cream and milk shake food products. 4,552,773, Cl. 426-564.000.

Kaito, Haruyuki: *See—*
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,551,996, Cl. 68-20.000.

Kajino, Isao: *See—*
Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, 4,553,169, Cl. 358-221.000.

Kali-Chemie Pharma GmbH: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,552,877, Cl. 514-239.000.

Kallay, Maria: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.

Kalvoda, Jaroslav: *See—*
Grob, Jurgen; and Kalvoda, Jaroslav, 4,552,871, Cl. 514-172.000.

Kameyama, Shuichi: *See—*
Sasaki, Gen; and Kameyama, Shuichi, 4,551,911, Cl. 29-576.00W.

Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, to Mitsui-Nisso Corporation. Process for preparing thermally stable super-soft polyurethane elastomer. 4,552,944, Cl. 528-55.000.

Kamochi, Atsumi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Kanai, Takao, to Toyota Jidosha Kabushiki Kaisha. Shift lever device. 4,552,032, Cl. 74-473.00R.

Kanaoka, Matao: *See—*
Nishizawa, Yoshito, deceased; and Kanaoka, Matao, 4,552,975, Cl. 560-163.000.

Kanayama, Masakatsu: *See—*
Hayashi, Chikahisa; and Kanayama, Masakatsu, 4,553,212, Cl. 364-507.000.

Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, to Mazda Motor Corporation. Four-wheel steering device for vehicle. 4,552,239, Cl. 180-140.000.

Kandori, Toshio: *See—*
Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, 4,552,806, Cl. 428-312.600.

Kaneda, Kazuji: *See—*
Noguchi, Masahisa; and Kaneda, Kazuji, 4,552,314, Cl. 242-25.00R.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, 4,552,947, Cl. 528-126.000.

Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, to Kabushiki Kaisha Kobe Seiko Sho. Upsetter. 4,552,009, Cl. 72-316.000.

Kaneko, Takushi: *See—*
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.

Kanerva, Heikki, to Philips Medical Systems. Regulating and stabilizing circuit for X-ray source. 4,553,255, Cl. 378-110.000.

Kanno, Tetuo: *See—*
Suzaki, Masayuki; and Kanno, Tetuo, 4,552,475, Cl. 400-144.200.

Kano, Masanobu: *See—*
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.

Karasaki, Toshihiko: *See—*
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, 4,552,445, Cl. 354-406.000.

Karbowniczek, Stanley: *See—*
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.

Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, to Siemens Aktiengesellschaft. Installation for destination adjustment of destination identification marks for receptacles. 4,552,072, Cl. 104-88.000.

Kariyama, Kenji: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Karl Meinig KG: *See—*
Meinig, Manfred, 4,552,388, Cl. 285-363.000.

Karmann, Werner: *See—*
Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, 4,552,138, Cl. 128-156.000.

Kartenbeck, Jurgen, to Deutsches Krebsforschungszentrum Stiftung Des Offentichen Rechts. Electrophoretic apparatus for the quantitative elution of proteins or polypeptides from a gel. 4,552,640, Cl. 204-301.000.

Karustis, George A.: *See—*
Wilcox, Jeannine; and Karustis, George A., 4,552,628, Cl. 204-47.000.

Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Electrostatic voltage sensor. 4,553,099, Cl. 324-458.000.

Kasama, Yasuo: *See—*
Nakamura, Taku; and Kasama, Yasuo, 4,552,835, Cl. 430-523.000.

Kaschak, Ronald A.: *See—*
Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., 4,552,787, Cl. 427-304.000.

Kase, Kiyoshi; and Fukuta, Masaru, to Motorola, Inc. Power on reset circuit for microprocessor. 4,553,054, Cl. 307-597.000.

Kashiwaba, Tadao: *See—*
Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, 4,552,610, Cl. 156-384.000.

Kashiwabara, Akihiko, to Soshin Onkyo Works, Ltd. Coaxial type composite loudspeaker. 4,552,242, Cl. 181-144.000.

Kasper, Frank S.: *See—*
Wallace, Gary L.; and Kasper, Frank S., 4,552,048, Cl. 83-23.000.

Katada, Hirosi: *See—*
Yoshida, Tatsuya; and Katada, Hirosi, 4,552,110, Cl. 123-416.000.

Katahira, Shunsuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Driving circuit for an electrostatic recording head. 4,553,150, Cl. 346-154.000.

Kato, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable-length encoding-decoding system. 4,553,130, Cl. 340-347.0DD.

Katsuda, Morihiko: *See—*
Masuda, Shigeo; and Katsuda, Morihiko, 4,552,599, Cl. 156-50.000.

Katz, Michael; Hinden, Jean; and Gauger, Jurgen, to ELTECH Systems Corporation. Cathode coating with hydrogen-evolution catalyst and semi-conducting polymer. 4,552,857, Cl. 502-101.000.

Kaufhold, Horst T.: *See—*
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.

Kauppi, Peter K., to New Fibers International Inc. Pulping process pretreatment using a lower alkanolamine in the presence of ammonium hydroxide. 4,552,616, Cl. 162-19.000.

Kawabata, Kenji; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition. 4,552,853, Cl. 501-134.000.

Kawabe, Kenji: *See—*
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Kawachi, Shoji: *See—*
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Kawada, Shoiti: *See—*
Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, 4,552,179, Cl. 137-625.650.

Kawaei Co., Ltd.: *See—*
Kawaguchi, Mamoru, 4,552,133, Cl. 128-44.000.

Kawaguchi, Mamoru, to Kawaei Co., Ltd. Rapid exhaust valve for use in blood circulation stimulator. 4,552,133, Cl. 128-44.000.

Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, to Honda Giken Kogyo Kabushiki Kaisha. Front wheel suspension system for motorcycle or the like. 4,552,373, Cl. 280-276.000.

Kawahara, Kazuto, to Teraoka Seiko Co., Ltd. Weighing and packing apparatus. 4,551,962, Cl. 53-131.000.

Kawaharazuka, Yukio; and Iida, Giichi, to Kioritz Corporation. Throttle lever device of power-driven backpack type machine. 4,552,100, Cl. 123-2.000.

Kawai, Hiroki: *See—*
Hirano, Yutaka; and Kawai, Hiroki, 4,552,601, Cl. 156-79.000.

Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, to Aisin Seiki Kabushiki Kaisha. Washing device for parts of body. 4,551,868, Cl. 4-443.000.

Kawakami, Hiroshi; and Torii, Shigeyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape drive member and manufacturing method for the same. 4,553,186, Cl. 360-130.210.

Kawamata, Yoshio: *See—*
Wakamatsu, Kazuhiro; and Kawamata, Yoshio, 4,552,449, Cl. 355-3.00R.

Kawamura, Kunio: *See—*
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, 4,552,445, Cl. 354-406.000.

Kawamura, Naoto; and Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Information detecting apparatus. 4,553,036, Cl. 250-578.000.

Kawamura, Naoto, to Canon Kabushiki Kaisha. Image processing apparatus. 4,553,173, Cl. 358-283.000.

Kawamura, Takahide: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Kawano, Tadaaki: *See—*
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nishida, Hiroshi, 4,552,282, Cl. 220-20.000.

Kawasaki, Kikuo; and Sano, Tomomi, to Fuji Electric Co., Ltd. Vending machine with doors. 4,553,211, Cl. 364-479.000.

Kawasaki Steel Corporation: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Kawata, Shoji: *See—*
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,209, Cl. 364-431.070.

Kay, Andrew F.; and Kay, David A. Programmed learning textbook. 4,552,536, Cl. 434-327.000.

Kay, David A.: *See—*
Kay, Andrew F.; and Kay, David A., 4,552,536, Cl. 434-327.000.

Kay, Ian T.; and Noon, Robert A., to Imperial Chemical Industries PLC. Biologically active amides. 4,552,887, Cl. 514-381.000.

Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., to Xerox Corporation. Photoconductive devices with hydroxy containing squaraine compositions. 4,552,822, Cl. 430-59.000.

Kearley, Stephen J.: *See—*
Aubrey, David R.; and Kearley, Stephen J., 4,553,188, Cl. 361-115.000.

Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, to Kali-Chemie Pharma GmbH. N_b-Quaternary derivatives of sandwicine and isosandwicine methods and intermediate products in the manufacture of their derivatives and methods of using same and pharmaceutical compositions thereof. 4,552,877, Cl. 514-239.000.

Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, to Cassella Aktiengesellschaft. Copolymer, a process for its preparation and its use as a sorbent. 4,552,905, Cl. 521-149.000.

Keith, Carl D.: *See—*
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.

Keller, Reinhold: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Kelly, John M. Portable apparatus for shaping glass by abrasion. 4,552,122, Cl. 125-14.000.

Kendrick, George B.: *See—*
Fields, Larry R.; and Kendrick, George B., 4,553,066, Cl. 313-580.000.

Kenley, Rodney S.: *See—*
Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., 4,552,721, Cl. 422-28.000.

Kenna, Robert V., to Howmedica, Inc. Femoral rasp. 4,552,136, Cl. 128-92.00E.

Kennedy, Roger C.: *See—*
Stevens, Glenn G.; and Kennedy, Roger C., 4,553,216, Cl. 364-558.000.

Kent-Moore Corporation: *See—*
Provost, Lawrence A., 4,551,898, Cl. 29-235.000.

Keogh, Michael J., to Union Carbide Corporation. Polysiloxanes from acyloxysilanes using organo metallic catalyst. 4,552,941, Cl. 528-16.000.

Keri, Gyorgi: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., to Dow Chemical Company, The. Thickened amphoteric surfactant solutions. 4,552,685, Cl. 252-355.000.

Kerr, Robert L., to Wean United, Inc. Roof assembly for an electric arc furnace. 4,553,245, Cl. 373-74.000.

Kesselman, David A. Tamper indicator. 4,552,394, Cl. 292-307.00B.

Kessels, Jozef L. W.: *See—*
Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., 4,553,234, Cl. 370-86.000.

Kettner, Roland; Liermann, Norbert; and Lubcke, Torsten. Process for the reduction of the sulfur content in a gaseous stream. 4,552,746, Cl. 423-573.00G.

Keyes, Marion A., IV: *See—*
Knudsen, James K.; and Keyes, Marion A., IV, 4,552,026, Cl. 73-861.240.

Khimanych, Anatoly P.: *See—*
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.

Kidde Consumer Durables Corp.: *See—*
Rummelsburg, Al S., 4,552,284, Cl. 220-453.000.

Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical pickup. 4,553,227, Cl. 369-44.000.

Kiesling, David A.: *See—*
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.

Kikkoman Corporation: *See—*
Nakajima, Motoo, 4,552,849, Cl. 436-130.000.

Kikutsugi, Masaharu: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.

Kim, Choung U.; and Misco, Peter F., Jr., to Bristol-Myers Company. Carbapenem antibiotics. 4,552,696, Cl. 260-245.20T.

Kimball, Michael E.: *See—*
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.
Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., 4,552,913, Cl. 524-240.000.

Kimura, Shizuko, legal representative: *See—*
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.

Kimura, Takao; and Nagaoka, Yoshinobu, to Mitsubishi Petrochemical Co., Ltd. Method for producing crosslinked foam. 4,552,708, Cl. 264-53.000.

Kimura, Tsutomu, deceased: *See—*
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.

Kindig, Cleon V., deceased: *See—*
Kindig, Morris L.; Kindig, Cleon V., deceased; and Kindig, Eunice L., executrix, 4,551,948, Cl. 51-98.00R.

Kindig, Eunice L., executrix: *See—*
Kindig, Morris L.; Kindig, Cleon V., deceased; and Kindig, Eunice L., executrix, 4,551,948, Cl. 51-98.00R.

Kindig, Morris L.; Kindig, Cleon V., deceased; and by Kindig, Eunice L., executrix. Glass shaping machine. 4,551,948, Cl. 51-98.00R.

King, Charles L.: *See—*
Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., 4,552,603, Cl. 156-167.000.

King, David P.: *See—*
Barker, Robert I.; King, David P.; and Pawlowski, Henry A., 4,552,025, Cl. 73-846.000.

King, Derrick O.: *See—*
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,552,477, Cl. 401-188.00R.

Kington, Alan D.: *See—*
Mills, David; and Kington, Alan D., 4,552,198, Cl. 164-122.200.

Kinoshita, Kunio, to Olympus Optical Co., Ltd. Air and liquid supplying device for endoscopes. 4,552,130, Cl. 128-4.000.

Kinoshita, Takao, to Canon Kabushiki Kaisha. Image signal processing device. 4,553,167, Cl. 358-213.000.

Kinugasa, Toshiyuki: *See—*
Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, 4,552,715, Cl. 264-309.000.

Kinze Manufacturing, Inc.: *See—*
Kinzenbaw, Jon E., 4,552,375, Cl. 280-415.00R.

Kinzenbaw, Jon E., to Kinze Manufacturing, Inc. Convertible implement frame pulled lengthwise in the transport position. 4,552,375, Cl. 280-415.00R.

Kioritz Corporation: *See—*
Hotta, Nobuyuki, 4,552,574, Cl. 55-501.000.
Kawaharazuka, Yukio; and Iida, Giichi, 4,552,100, Cl. 123-2.000.
Nagashima, Akira, 4,552,105, Cl. 123-198.00R.

Kirby, Jane P.: *See—*
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

Kircher, Klaus: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.

Kirisawa, Tadashi: *See—*
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.

Kirkland, Kenneth C.: *See—*
Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., 4,552,367, Cl. 277-1.000.

Kirton, John: *See—*
Cattell, Alan F.; Kirton, John; and Lloyd, Peter, 4,552,782, Cl. 427-66.000.

Kiselewski, Donald L. Method of constructing a modular unit. 4,551,961, Cl. 52-743.000.

Kishi, Katsutoshi: *See—*
Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, 4,551,969, Cl. 57-264.000.

Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, to Voest-Alpine Aktiengesellschaft. Drive arrangement for the loading arms of a loading ramp for heading machines or longwall shearing machines. 4,552,263, Cl. 198-514.000.

Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, to Ise Kagaku Kogyo Kabushiki Kaisha. Globulous products of subliming substance, its manufacturing process and manufacturing apparatus. 4,552,566, Cl. 23-313.00R.

Kitchens, Doyle W. Bass fishing organizer. 4,551,939, Cl. 43-21.200.

Kivisto, George M.: *See—*
Benda, Steven J.; Kivisto, George M.; and Kivisto, Paul M., 4,552,345, Cl. 269-43.000.

Kivisto, Paul M.: *See—*
Benda, Steven J.; Kivisto, George M.; and Kivisto, Paul M., 4,552,345, Cl. 269-43.000.

Klauke, Erich: *See—*
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.

Kleber, Heinrich: *See—*
Sitte, Hellmuth; and Kleber, Heinrich, 4,551,992, Cl. 62-514.00R.

Klein, Wilfried. Dry-head or deluge-type valve for fire-extinguishing systems. 4,552,221, Cl. 169-22.000.

Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. JFET Reflection oscillator. 4,553,110, Cl. 331-116.0FE.

Kleiner, Walter, to Staeubli Ltd. Method and apparatus for controlling a rotation dobby. 4,552,184, Cl. 139-66.00R.

Kleiven, Atle: *See—*
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Klima, Frank J., to Sturm, Warren A. Rotary drill bit seal. 4,552,233, Cl. 175-371.000.

Kling, John P.: *See—*
English, James M.; Gurreri, Nicholas L.; and Kling, John P., 4,553,114, Cl. 333-182.000.

Klockner-Becorit GmbH: *See—*
Heiermann, Siegfried; and Lachner, Hans, 4,552,038, Cl. 81-57.380.

Klockner CRA Technologie GmbH: *See—*
Hein, Karl; Hubig, Markus; and Seroka, Helmut, 4,552,342, Cl. 266-175.000.

Klute, Ferdinand. Power transmission plant having pressure surfaces. 4,552,507, Cl. 415-5.000.

KMS Fusion, Inc.: *See—*
Mayer, Frederick J., 4,552,742, Cl. 423-446.000.

Kniffin, John R.: *See—*
Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., 4,551,949, Cl. 51-164.100.

Knifton, John F.: *See—*
Lin, Jiang-Jen; and Knifton, John F., 4,552,976, Cl. 560-204.000.

Knight Manufacturing Company, Inc.: *See—*
East, David S., 4,551,940, Cl. 43-42.110.

Knoll, Peter: *See—*
Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, 4,552,437, Cl. 350-339.00R.

Knop, Charles M.: *See—*
Saad, Saad S.; and Knop, Charles M., 4,553,112, Cl. 333-21.00R.

Knorr-Bremse GmbH: *See—*
Hintner, Josef, 4,552,411, Cl. 303-37.000.

Knott, Jack E., II: *See—*
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,552,801, Cl. 428-220.000.

Knox, Lloyd C.; and Moore, Clayton A., to Halliburton Company. Grouting method - chemical method. 4,552,486, Cl. 405-227.000.

Knudsen, James K.; and Keyes, Marion A., IV, to Babcock & Wilcox Company, The. Sensor for a vortex shedding flowmeter. 4,552,026, Cl. 73-861.240.

Kobayashi, Toshio: *See—*
Takano, Toshio; and Kobayashi, Toshio, 4,552,036, Cl. 74-705.000.

Kobayashi, Yoshiro: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

Kobs, Rolf U. D.: *See—*
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.

Koch, Karl H.: *See—*
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, 4,552,575, Cl. 62-544.000.

Koch, Manfred; and Herbrechtsmeier, Peter, to Hoechst Aktiengesellschaft. Process for the preparation of (phenoxy- or benzyl-)-phenoxypropionic acids and their alkali metal salts. 4,552,977, Cl. 562-435.000.

Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Granular, free-flowing detergent component and method for its production. 4,552,681, Cl. 252-140.000.

Kocher, Erich J.; and Kopp, John K., to Vilter Manufacturing Corporation. Ice-thickness sensing device in refrigeration system. 4,551,982, Cl. 62-130.000.

Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., to Mead Corporation, The. Apparatus and method for preparing multipage, taped, side-stitched documents. 4,552,497, Cl. 412-6.000.

Kocur, Joseph S.: *See—*
Horais, Brian J.; and Kocur, Joseph S., 4,552,071, Cl. 102-527.000.

Koenck, Steven E., to Norand Corporation. Portable battery powered system. 4,553,081, Cl. 320-43.000.

Koenig, Jean-Jacques: *See—*
Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, 4,552,868, Cl. 514-26.000.

Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, to Procter & Gamble Company, The. Process for high-speed production of webs of debossed and perforated thermoplastic film. 4,552,709, Cl. 264-504.000.

Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, to Howa Kogyo Kabushiki Kaisha. Apparatus for controlling the winding speed of roving in roving frame. 4,551,969, Cl. 57-264.000.

Koh-I-Noor Rapidograph, Inc.: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.

Kohl, Horst: *See—*
Kuckens, Alexander; and Kohl, Horst, 4,552,286, Cl. 222-145.000.

Koide, Tatsushi: *See—*
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.

Koivunen, Erkki A., to General Motors Corporation. Centrifugal pressure compensator for a variable drive pulley. 4,552,545, Cl. 474-16.000.

Kojima, Shuichi, to Nissan Motor Co., Ltd. Warp let-off mechanism of weaving machine. 4,552,186, Cl. 139-100.000.

Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, to Laurel Bank Machine Co., Ltd. Device for opening and closing push cover of note container box for use in automatic money depositing and disbursing machine. 4,552,354, Cl. 271-163.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.
Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, 4,553,086, Cl. 324-57.00N.

Kolecki, Ronald E., to Atlantic Richfield Company. Lubricant removal system for a cold rolling mill. 4,552,003, Cl. 72-38.000.

Komanduri, Ranga; and Reed, William R., Jr., to General Electric Company. Cutting insert with means for simultaneously removing a plurality of chips. 4,552,492, Cl. 407-114.000.

Komatsu, Toshiyuki: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.

Komatsu, Yoshimi: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.

Komuro, Katsumi: *See—*
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.

Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, to Mitsubishi Denki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Short circuiting transfer arc welding machine. 4,553,018, Cl. 219-130.510.

Kondo, Tsuneo: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.

Konig, Raimund: *See—*
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Yamazaki, Yoshio; and Itoh, Takashi, 4,552,451, Cl. 355-15.000.

Konnai, Makoto: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.

Konnemann, Alfred: *See—*
Brandstater, Manfred; and Konnemann, Alfred, 4,553,126, Cl. 338-319.000.

Kopolow, Stephen L., to Personal Products Company. Stabilized absorbent boards. 4,552,618, Cl. 162-157.100.

Kopp, John K.: *See—*
Kocher, Erich J.; and Kopp, John K., 4,551,982, Cl. 62-130.000.

Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., to Eli Lilly and Company. Ascorbic acid ethers in angiogene. 4,552,888, Cl. 514-474.000.

Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., to Eli Lilly and Company. Furo[3,2-b]furan-2-(3H)-ones. 4,552,895, Cl. 514-470.000.

Kornfeld, Edmund C.: *See—*
Booher, Richard N.; and Kornfeld, Edmund C., 4,552,956, Cl. 544-101.000.

Kornylo, Walter P., to General Motors Corporation. Composite trim foundation panel and clip. 4,551,891, Cl. 24-669.000.

Koser, Jaroslav: *See—*
Eder, Theodor; and Koser, Jaroslav, 4,552,085, Cl. 114-84.000.

Kostorz, Jan R.: *See—*
Herring, William P.; and Kostorz, Jan R., 4,552,176, Cl. 137-625.400.

Kosubek, Uwe: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.

Kovach, Bruce F. Rink covering structure. 4,551,985, Cl. 62-235.000.

Kovach, Stephen M.: *See—*
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,552,647, Cl. 208-120.000.

Kovalerchik, Vulf P.: *See—*
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.

Kowa Co., Ltd.: *See—*
Murakami, Akira; and Yoshizaki, Hideo, 4,552,760, Cl. 424-94.000.

Kowles, John W.: *See—*
Marxer, John E.; and Kowles, John W., 4,553,137, Cl. 340-582.000.

Koyama, Masaaki: *See—*
Abe, Yoshiaki; and Koyama, Masaaki, 4,552,780, Cl. 427-8.000.

Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, to Sharp Kabushiki Kaisha. Liquid crystal display having uniform transmittance. 4,552,436, Cl. 350-337.000.

Kranz, Kermit W. Collapsible container construction. 4,552,271, Cl. 211-41.000.

Krempel, Ralf. Visual communication system devices. 4,552,534, Cl. 434-170.000.

Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, to Consortium fur Elektrochemische Industrie GmbH. Silanes and compositions prepared therefrom. 4,552,942, Cl. 528-34.000.

Krieger, Karl; and Reinelt, Werner, to Hermann Hemscheidt Maschinenfabrik GmbH & Co. Pressure-limiting hydraulic valve. 4,552,172, Cl. 137-484.600.

Krishnan, Sivaram: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.

Kroetsch, Charles F., to GTE Valeron Corporation. Touch probe having nonconductive contact carriers. 4,553,001, Cl. 200-61.410.

Krueger, Duane A.; and Odorzynski, Thomas W., to American Can Company. Process for producing coextruded film of polypropylene, polypropylene blend, and nylon. 4,552,714, Cl. 264-171.000.

Kruger, Paul J., to J. T. Baker Chemical Co. Cotton defoliant compositions. 4,552,582, Cl. 71-73.000.

Krukonis, Val J.: *See—*
Berneburg, Philip L.; and Krukonis, Val J., 4,552,786, Cl. 427-249.000.

Krumkalns, Eriks V.; and Smiley, David L., to Eli Lilly and Company. Fungicidal pyridylmethyl-amines. 4,552,886, Cl. 514-342.000.

Krumkalns, Eriks V.; and Smiley, David L., to Eli Lilly and Company. Fungicidal amines. 4,552,960, Cl. 544-336.000.

Ku, Thomas W.: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,552,893, Cl. 514-560.000.

Ku, Walter H.: *See—*
Chao, Pane-Chane; and Ku, Walter H., 4,551,905, Cl. 29-571.000.

Kuba, Jan: *See—*
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.

Kubota, Ltd.: *See—*
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

Kubota, Tsutomu: *See—*
Goto, Jugo; and Kubota, Tsutomu, 4,552,920, Cl. 525-58.000.

Kuckens, Alexander; and Kohl, Horst, to Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co. KG. Method and an apparatus for the production and dispensing in portions of noncarbonated mixed drinks. 4,552,286, Cl. 222-145.000.

Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri, to ZVS Vyzkumnevyvojovy ustav koncernova ucelova organizace. Weft inserting device. 4,552,188, Cl. 139-435.000.

Kuehl, Ulrich: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,552,877, Cl. 514-239.000.

Kuekes, Philip J.: *See—*
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,553,203, Cl. 364-200.000.

Kueper, Terrance W.: *See—*
Dillinger, Thomas E.; and Kueper, Terrance W., 4,553,047, Cl. 307-297.000.

Kugler, Andrew J.: *See—*
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., 4,552,153, Cl. 128-677.000.

Kuhl, Gunter H., to Mobil Oil Corporation. Method of preparing crystalline zeolite ZSM-12 and product. 4,552,739, Cl. 423-328.000.

Kuhlein, Klaus: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Kuhn S.A.: *See—*
Werner, Anton, 4,552,079, Cl. 111-85.000.

Kuhn, Wilhelm; and Bunnenberg, Claus, to Gesellschaft fur Strahlen- und Umweltforschung mbH, Munchen. Method and apparatus for determining the penetration and leaching process of conductive phases. 4,553,087, Cl. 324-65.00P.

Kumagai, Shuno: *See—*
Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, 4,552,715, Cl. 264-309.000.

Kumagami, Naoki: *See—*
Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, 4,553,079, Cl. 318-626.000.

Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, to Japan Atomic Energy Research Institute; and Japan Immunoresearch Laboratories Co., Ltd. Fine particulate for use in clinical testing and a process for producing thereof. 4,552,633, Cl. 204-159.210.

Kumokawa, Takashi: *See—*
Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, 4,553,123, Cl. 336-83.000.

Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, to UBE Industries, Ltd. Elongated non-metallic sheet having a metal embedded therein or attached thereon. 4,553,016, Cl. 219-121.0LG.

Kupcikevicius, Vytautas; and Raudys, Vytas, to Union Carbide Corporation. Method and apparatus for use in automatically and continuously making sausages with flat ends. 4,551,884, Cl. 17-49.000.

Kurata, Masami: *See—*
Moriguchi, Fujio; and Kurata, Masami, 4,553,174, Cl. 358-285.000.
Yamamoto, Tadashi; and Kurata, Masami, 4,553,160, Cl. 358-75.000.

Kurata, Shuhei: *See—*
Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, 4,551,930, Cl. 36-30.00R.

Kurland, Lawrence G.; and Gilbert, Eli. Integrated interactive restaurant communication system for food and entertainment processing. 4,553,222, Cl. 364-900.000.

Kuroha, Toshiaki: *See—*
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.

Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, to Hitachi, Ltd. Engine control apparatus. 4,552,116, Cl. 123-489.000.

Kuroki, Katsuro: *See—*
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.

Kurtis, Soma: *See—*
Wilensky, Joseph, 4,551,979, Cl. 60-648.000.

Kuusilinna, Olavi. Tree harvesting device. 4,552,191, Cl. 144-3.00D.

Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, to Dr. C. Otto & Comp. G.m.b.H. Cleaning apparatus for the sealing surfaces of leveling doors and leveling door frames of battery-type coke ovens. 4,552,622, Cl. 202-241.000.

L.A. Ricouard S.A.: *See—*
Ricouard, Jacques; and Chappoux, Claude, 4,551,998, Cl. 70-69.000.

Labate, Michael D.; and Perri, Joseph A., to Insul Company, Inc. Combination electric furnace and slag retaining pouring spout. 4,552,343, Cl. 266-200.000.

Labb, Georges, to Thomson-CSF. Spatial correction device for an image analyzer. 4,553,164, Cl. 358-163.000.

Lacefield, William B.; and Pfeifer, William, to Eli Lilly and Company. Synthesis of 9-carbamoyl-9-(3-aminopropyl)fluorenes. 4,552,982, Cl. 564-164.000.

Lachner, Hans: *See—*
Heiermann, Siegfried; and Lachner, Hans, 4,552,038, Cl. 81-57.380.

Lacina, Tomislav: *See—*
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.

Lacourt, Daniel: *See—*
Couche, Leon; Lacourt, Daniel; and Ventavoli, Roger, 4,551,886, Cl. 17-75.000.

Lacy, Robert A.: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., 4,553,238, Cl. 372-6.000.

Lade, Robert W.: *See—*
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,553,151, Cl. 357-23.400.

Laferty, John M.: *See—*
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.

LaFleur, Robert H. Jig-saw puzzle work board. 4,552,361, Cl. 273-157.00R.

Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., to W. R. Grace & Co., Cryovac Div. Method and apparatus for manufacturing a purge trap tray. 4,552,600, Cl. 156-73.100.

Laitera , Jukka, tò Oy Wartsila Ab. Suction dredger. 4,552,084, Cl. 114-74.00R.

Laitinen, Herbert A.; and Waggoner, James R. Process for preparing a platinum surface on tin oxide substrate. 4,552,641, Cl. 204-32.100.

Laitinen, Sakari; and Nyman, Tapani, to A. Ahlstrom Osakeyhtio. Thermal stabilizing system for a headbox of a papermachine. 4,552,619, Cl. 162-336.000.

Laitram Corporation, Inc.: *See—*
Lapeyre, James M., 4,552,177, Cl. 137-625.280.

Lamb Technicon Corp.: *See—*
Johnson, Gerald E., 4,551,880, Cl. 15-302.000.

Land O'Lakes, Inc.: *See—*
Gronfor, Dennis I., 4,552,774, Cl. 426-582.000.

Landgreen, Eleanor A., to International Telephone & Telegraph Corp. Self-locking connector. 4,552,427, Cl. 339-89.00M.

Landney, Michael, Jr.: *See—*
Stevenson, Richard M., 4,552,626, Cl. 204-20.000.

Landrau, Felix A.: *See—*
Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,552,561, Cl. 604-896.000.

Landsness, Clifford A., to B. F. Goodrich Company, The. High—speed splicing system for preparing ply stock. 4,552,602, Cl. 156-157.000.

Lang, Thomas J.: *See—*
Distin, Robert G., Jr.; and Lang, Thomas J., 4,552,037, Cl. 74-805.000.

Lange, Arno: *See—*
Merger, Franz; Hettinger, Peter; and Lange, Arno, 4,552,985, Cl. 568-497.000.

Lange, Peter M.: *See—*
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., 4,552,954, Cl. 536-24.000.

Langer, Heinz G., to Messerschmitt-Bolkow-Blohm GmbH. Insulating layer for solid fuel rocket engines. 4,552,070, Cl. 102-290.000.

Lapeyre, James M., to Laitram Corporation, Inc. Hermetically sealed valve. 4,552,177, Cl. 137-625.280.

Larkin, John M., to Texaco Inc. Stabilized hydrogenation catalyst and method of forming the catalyst. 4,552,862, Cl. 502-306.000.

Larner, Donald A., to Fluid Devices Ltd. Fluid-flow transducer. 4,552,027, Cl. 73-861.530.

Larsen, Howard M., to Homac Mfg. Company. Method and apparatus for friction welding. 4,552,609, Cl. 156-358.000.

Larsen, Walter L. Twin hooked clamp fastening device. 4,551,890, Cl. 24-565.000.

Larsson, Peter L., to Raychem Corporation. Method for terminating a high voltage cable. 4,551,915, Cl. 29-858.000.

Laser Corporation: *See—*
Chaffee, Edwin G., 4,553,241, Cl. 372-62.000.

LASERstore, Ltd.: *See—*
Waugh, John B. S., 4,552,322, Cl. 242-198.000.

Laska, Eugene M.: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,552,899, Cl. 514-568.000.

Lau, Philip T. S.; and Einhaus, Gary M., to Eastman Kodak Company. Enhanced bleaching of photographic elements containing silver halide and adsorbed dye. 4,552,834, Cl. 430-393.000.

Laurel Bank Machine Co., Ltd.: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, to A. Nattermann & Cie GmbH. O-Alkyl-O-carbamoylglycerophosphocholines and the use for treating hypertension. 4,552,869, Cl. 514-77.000.

Lauter, Robert: *See—*
Adcock, Carson D.; and Lauter, Robert, 4,552,658, Cl. 210-169.000.

Lauterbach, Herbert G.: *See—*
Fish, Floyd H., Jr.; and Lauterbach, Herbert G., 4,552,805, Cl. 428-297.000.

Lavagnino, Edward R.: *See—*
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.

Lavery, Ormond F., personal representative: *See—*
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.

Lawrence Brothers, Inc.: *See—*
Johnson, Larry, 4,552,094, Cl. 119-27.000.

Layher, Francis W., to National Semiconductor Corporation. Ceramic semiconductor package chip prevention structure and method. 4,552,267, Cl. 206-334.000.

Leanhart, Thomas B.: *See—*
Richardson, Robert D.; and Leanhart, Thomas B., 4,552,277, Cl. 215-249.000.

Lee, Charles A.: *See—*
Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., 4,551,904, Cl. 29-571.000.

Lee, Chi-Long: *See—*
Bauman, Therese M.; and Lee, Chi-Long, 4,552,901, Cl. 521-122.000.

Lee, Chung-Yang. Modulation rule. 4,552,052, Cl. 84-473.000.

Lee, John F., to Federal Paper Board Co., Inc. Light-tight carton for X-ray and other light sensitive film. 4,552,268, Cl. 206-455.000.

Lee, John T.: *See—*
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.

Lee, Kien-yin; and Coburn, Michael D., to United States of America, Energy. Ethylenediamine salt of 5-nitrotetrazole and preparation. 4,552,598, Cl. 149-47.000.

Lee, Lester H.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.

Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., to Square D Company. Interchangeable scale meter case. 4,552,018, Cl. 73-431.000.

Legrand, Jean. Motor, clutch and gearing control. 4,552,256, Cl. 192-0.052.

Lehmann, Herbert: *See—*
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, 4,552,072, Cl. 104-88.000.

Lehmann, Wolfgang; and Aab, Hans-Walter, to Neff Gewindespindeln GmbH. Rearing arrangement for guiding a carriage in a straight line along a guide rail. 4,552,416, Cl. 308-6.00C.

Leigh-Monstevens, Keith V.: *See—*
Nix, Richard; and Leigh-Monstevens, Keith V., 4,551,976, Cl. 60-533.000.

Leitner S.p.A.: *See—*
Platter, Helmuth, 4,552,226, Cl. 172-815.000.

Leland Stanford University, The Board of Trustees of the: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., 4,553,238, Cl. 372-6.000.

Lenco, Inc.: *See—*
Colman, William H., 4,553,013, Cl. 219-74.000.

Lentz, Scott B.; and Dale, Howard C. Storage system for athletic equipment or the like. 4,552,270, Cl. 211-17.000.

Lenz, Herman N.: *See—*
Rogo, Casimir; and Lenz, Herman N., 4,552,308, Cl. 239-457.000.

Le Parquier, Guy: *See—*
Houdard, Charles; and Le Parquier, Guy, 4,553,144, Cl. 343-7.700.

Leschek, Walter C.: *See—*
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.

Leslie, Dale R. Shoe patch device and method of preserving and repairing shoes. 4,551,876, Cl. 12-142.00Q.

Letsch, Karl H.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Lewandowski, Willi, to Hauni-Werke Korber & Co. KG. Machine tool with detachable tool shielding means. 4,551,953, Cl. 51-268.000.

Lewiner, Jacques; and Charpak, Georges. Devices designed to measure locally the electric charges carried by dielectrics. 4,553,089, Cl. 324-71.100.

Lewis, Leon D., to Garrett Corporation, The. Engine management system. 4,551,972, Cl. 60-39.281.

Lewis, Royce C., Jr.: *See—*
Racz, Gabor B.; and Lewis, Royce C., Jr., 4,552,135, Cl. 128-78.000.

Li, Stephen: *See—*
Bissot, Thomas C.; and Li, Stephen, 4,552,631, Cl. 204-98.000.

Li, Tsung-Tee; and Marx, Michael, to Syntex (U.S.A.) Inc. [3.2.0]Bicycloheptanone oxime ethers with valuable therapeutic properties. 4,552,898, Cl. 514-561.000.

Lickei, Donald L.: *See—*
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,917, Cl. 524-590.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,943, Cl. 528-50.000.

Lid, Olav: *See—*
Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, 4,552,530, Cl. 432-192.000.

Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., to U.S. Philips Corporation. Method of bonding ceramic components together or to metallic components. 4,552,301, Cl. 228-263.120.

Liermann, Norbert: *See—*
Kettner, Roland; Liermann, Norbert; and Lubcke, Torsten, 4,552,746, Cl. 423-573.00G.

Lieske, Edgar: *See—*
Maak, Norbert; and Lieske, Edgar, 4,552,565, Cl. 8-409.000.

Limpert, Rudolf: *See—*
Clark, Raymond W.; and Limpert, Rudolf, 4,552,501, Cl. 414-486.000.

Lin Data Corporation: *See—*
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.

Lin, Jiang-Jen; and Knifton, John F., to Texaco Inc. Process for oxidative dicarbonylation of butadiene. 4,552,976, Cl. 560-204.000.

Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., to Lin Data Corporation. Disc media. 4,552,820, Cl. 428-611.000.

Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., to Gulf & Western Manufacturing Company. Oil equalization system for refrigeration compressors. 4,551,989, Cl. 62-468.000.

Lindberg, Albert W., Jr. Swimming pool ladder securement device. 4,552,245, Cl. 182-97.000.

Lindgren, Per, to Company PAX. Device for pushing or pulling elongate wire- or rod-shaped elements through conduits. 4,552,338, Cl. 254-134.3FT.

Linnstaedter, Don J., to GenCorp Inc. Apparatus for co-extruding a rubber strip of one material with a stripe of a second material. 4,552,521, Cl. 425-131.100.

Linse, Vonne D.: *See—*
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.

Lion Corporation: *See—*
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.

Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

Lipowski, Stanley A.; and Miskel, John J., Jr., to Diamond Shamrock Chemicals Company. Amphoteric water-in-oil self-inverting polymer emulsion. 4,552,670, Cl. 252-8.50C.

Lipschutz, Paul, to Neiman S.A. Steering shaft anti-theft device for motor vehicle. 4,552,000, Cl. 70-185.000.

Lipson, Melvin A.: *See—*
Reardon, Edward J.; and Lipson, Melvin A., 4,552,830, Cl. 430-281.000.

Lisboa, Luis S.: *See—*
Hill, John H.; and Lisboa, Luis S., 4,552,161, Cl. 132-88.500.

Lissoni, Davide: *See—*
Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, 4,552,034, Cl. 74-547.000.

Litovitz, Theodore A.: *See—*
Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., 4,552,577, Cl. 65-22.000.

Little, Philip V., to Lucas Industries. Key operated security switch to prevent unauthorized use of equipment. 4,553,006, Cl. 200-43.050.

Littleford, Philip O. Open curve, atrial "J" electrode. 4,552,157, Cl. 128-786.000.

Litwak, Alfred A.; and O'Donnell, Laurene H. Drinking fountain device and combination sink and drinking fountain device. 4,552,306, Cl. 239-29.000.

Liu, Cheng-Yih, to International Business Machines Corporation. Fabrication method for controlled via hole process. 4,552,831, Cl. 430-296.000.

Liu, Ling H. Electrical plug. 4,552,428, Cl. 339-97.00P.

Liukkonen, Mika: *See—*
Liukkonen, Vesa; and Liukkonen, Mika, 4,552,366, Cl. 277-1.000.

Liukkonen, Vesa; and Liukkonen, Mika. Method for producing a seal strip for a crack between two components moving in relation to one another. 4,552,366, Cl. 277-1.000.

Lloyd, Peter: *See—*
Cattell, Alan F.; Kirton, John; and Lloyd, Peter, 4,552,782, Cl. 427-66.000.

LMT-Radio Professionnelle: *See—*
Houdard, Charles; and Le Parquier, Guy, 4,553,144, Cl. 343-7.700.

Lo, Saukwan; and Borken, Richard J., to Honeywell Inc. Infrared energy gage. 4,553,032, Cl. 250-339.000.

Lockheed Corporation: *See—*
Bruensicke, Wilhelm A., 4,552,325, Cl. 244-118.500.

Lockheed Missiles & Space Co., Inc.: *See—*
Schmidt, Terrence W., 4,552,083, Cl. 114-61.000.

Loeffler, Herbert H.: *See—*
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., 4,552,153, Cl. 128-677.000.

Logie, Frank M., to Lucas Industries public limited company. Core structure for electromagnetic devices. 4,553,121, Cl. 335-261.000.

Longenecker, Bruce C.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Lonza Ltd.: *See—*
Tenud, Leander; and Jolidon, Synese, 4,552,983, Cl. 564-200.000.

Loomans, Maurice E.: *See—*
Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., 4,552,872, Cl. 514-175.000.

Loomis, Phillip E.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., to Hall Systems, Inc. Programmable packaging grid for loop gripper product conveyor system. 4,552,349, Cl. 270-54.000.

Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, to CPC International Inc. Flame resistant starch-sulfamate products. 4,552,918, Cl. 524-734.000.

Lorke, Horst: *See—*
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,552,678, Cl. 252-49.300.

Lottick, Edward A. Removable switch electrocautery instruments. 4,552,143, Cl. 128-303.140.

Louison, Guy, to V. Louison et Cie. Regulating device for the warp and thermo-fixing yarns of ribbons with self-gripping loops, capable of being adapted to a knitting machine. 4,551,995, Cl. 66-203.000.

Lowenfeld, Rudolf: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.

Lowne, Alan J., to Eastman Kodak Company. Compact reflectometer. 4,552,458, Cl. 356-446.000.

Lowrey, Erlend R.: *See—*
Elm, Chance R.; and Lowrey, Erlend R., 4,552,753, Cl. 424-66.000.

Lubcke, Torsten: *See—*
Kettner, Roland; Liermann, Norbert; and Lubcke, Torsten, 4,552,746, Cl. 423-573.00G.

Lubrizol Corporation, The: *See—*
Hopkins, Thomas R., 4,552,677, Cl. 252-33.600.

Lucas Industries: *See—*
Little, Philip V., 4,553,006, Cl. 200-43.050.

Lucas Industries Limited: *See—*
Williams, Malcolm, 4,552,113, Cl. 123-436.000.

Lucas Industries public limited company: *See—*
Gaskell, David J., 4,552,310, Cl. 239-533.500.
Logie, Frank M., 4,553,121, Cl. 335-261.000.

Luebrecht, Donald, to Crown Controls Corporation. Lift truck. 4,552,250, Cl. 187-9.00E.

Lufran, Inc.: *See—*
Findlay, Gordon R., 4,553,024, Cl. 219-335.000.

Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., to Exxon Research and Engineering Co. Polymer compositions based on sulfonated ionomers and amine containing polymers. 4,552,916, Cl. 524-399.000.

Lundberg, Robert D.: *See—*
Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., 4,552,939, Cl. 526-287.000.

Lunder, Tito L.; and Nielsen, Corine M., to Nestec S.A. Cold soluble tea. 4,552,769, Cl. 426-435.000.

Lundin, Lawrence R. Tricycle and a toy crane assembly removably mounted thereon. 4,552,274, Cl. 212-232.000.

Luscher, Rene , to Gretag Aktiengesellschaft. Pivoting device. 4,552,029, Cl. 74-96.000.

Luscher, Rene , to Gretag Aktiengesellschaft. Unloading device. 4,552,285, Cl. 221-13.000.

Luscombe, Terry. Hitch assembly for a tandem disc implement. 4,552,224, Cl. 172-324.000.

Luska, Zdenek, to Bobst SA. Method and device for maintaining density of a printed color constant. 4,552,165, Cl. 137-3.000.

Lustig, Claude D., to Sperry Corporation. Low cost panel display addressing structure. 4,553,143, Cl. 340-719.000.

Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., to Belorussky Politekhnichesky Institut. Apparatus for thermal decomposition of polymeric materials. 4,552,621, Cl. 202-84.000.

Lynch, Donald F., to Electronic Processors, Inc. Magnetic recording system with peak shift compensation. 4,553,178, Cl. 360-45.000.

Lynch, Robert J.: *See—*
Kahn, Marvin L.; and Lynch, Robert J., 4,552,773, Cl. 426-564.000.

Lynk, Charles N., Jr.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Melchior, Eckhard, 4,552,741, Cl. 423-359.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Gollinger, Franz X., 4,552,067, Cl. 101-216.000.

M. Lehmacher & Sohn GmbH Maschinenfabrik: *See—*
Dreckmann, Karl, 4,552,551, Cl. 493-194.000.

Ma Ma Macaroni Co., Ltd.: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.

Maag Gear-Wheel & Machine Company Limited: *See—*
Berchtold, Nikolaus, 4,552,014, Cl. 73-105.000.
Bloch, Peter; and Wydler, Robert, 4,551,954, Cl. 51-287.000.
Sigg, Hans; and Staedeli, Otto, 4,552,258, Cl. 192-67.00A.

Maak, Norbert; and Lieske, Edgar, to Henkel KGaA. Hair dyes: diresorcyl sulphide, sulphoxide or sulphone coupling agents. 4,552,565, Cl. 8-409.000.

MacDonald, Scott A.: *See—*
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.

Macedo, Pedro B.: *See—*
Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., 4,552,577, Cl. 65-22.000.

Maciejczak, Robert A. Safety support and rescue clamp. 4,552,244, Cl. 182-82.000.

MacLaughlin, Donald N.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,552,612, Cl. 156-494.000.

MacLaury, Michael R.: *See—*
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., 4,552,783, Cl. 427-91.000.
Madray, Herbert R. Building construction. 4,551,957, Cl. 52-90.000.
Maeda, Hiroshi: *See—*
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Gouging wire electrode. 4,553,019, Cl. 219-146.220.
Maeshima, Katsuyoshi: *See—*
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.
Magnien, Ernest: *See—*
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.
Mahoney, Thomas P. Road warning emergency system and method of utilizing same. 4,552,089, Cl. 116-63.00P.
Mahotra, Satish K., to Steyr-Daimler-Puch Aktiengesellschaft. Rear sight for firearms. 4,551,920, Cl. 33-257.000.
Maida, Osamu, to Nippon Kogaku K. K. Power supply control circuit. 4,553,140, Cl. 340-636.000.
Makino, Ayumu: *See—*
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.
Malaval, Claude, to Novatome. Device for producing steam by heat exchange between a heat-transfer liquid metal and feed water. 4,552,210, Cl. 165-134.100.
Malicki, Raymond W., to Carron & Company. Strain gauge transducer assembly. 4,553,124, Cl. 338-5.000.
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., to Mylex Corporation. Data acquisition control method and system for a hand held reader. 4,553,035, Cl. 250-566.000.
Malzkorn, Matthias, to Scharmann GmbH & Co. Horizontal drilling and milling machine. 4,552,495, Cl. 409-136.000.
Mannesmann AG: *See—*
Gugel, Bernd; and Niebel, Harald, 4,552,471, Cl. 400-124.000.
Mannesmann, Gerda: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.
Manning, William R., to Champion Spark Plug Company. Alumina ceramic comprising a siliceous binder and at least one of zirconia and hafnia. 4,552,852, Cl. 501-105.000.
Mannion, William A.: *See—*
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.
Mansker, William L. Sample concentrating cable jig. 4,552,654, Cl. 209-425.000.
Mantovan, Gianfranco, to Pomini Farrel S.p.A. Device for replacing the rolls of rolling stands. 4,552,007, Cl. 72-239.000.
Marchello, John L., to Danmar Products, Inc. Wrestling helmet ear pads. 4,551,861, Cl. 2-425.000.
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, to Bayer Aktiengesellschaft. Pyrazolooxazines, pyrazolothiazines, and pryazoloquinolines and their use as medicaments. 4,552,874, Cl. 514-222.000.
Margel, Shlomo; and Beitler, Uzi, to Yeda Research and Development Company. Process for the production of polyacrolein microspheres and grafted microspheres. 4,552,812, Cl. 428-407.000.
Margrave, David L. Line Insertable valve. 4,552,170, Cl. 137-318.000.
Mariani, Piercarlo: *See—*
Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, 4,552,034, Cl. 74-547.000.
Mark, Victor, to General Electric Company. Process for the production of aromatic carbonates. 4,552,704, Cl. 260-463.000.
Mark, Victor, to General Electric Company. Polycarbonate of spiro dihydric phenol. 4,552,949, Cl. 528-201.000.
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., to International Business Machines Corporation. Highly integrated universal tape bonding. 4,551,912, Cl. 29-576.00S.
Marquardt, Susan K.: *See—*
Hansen, Paul E.; and Marquardt, Susan K., 4,552,795, Cl. 428-110.000.
Marr, Robert: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,552,098, Cl. 122-379.000.
Marrett, Rolf: *See—*
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, 4,552,575, Cl. 62-544.000.
MARTELEC Societe Civile Particuliere: *See—*
Jacquemet, Georges, 4,553,074, Cl. 318-130.000.
Martens, Alan; Hobbs, Milton M.; and Snow, Bennie E., to Westinghouse Electric Corp. Anticipatory boiler feedpump suction head controller system. 4,552,099, Cl. 122-451.100.
Martens, Rolf: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.
Marti, Franz: *See—*
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.
Martin, Dale A.: *See—*
Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., 4,552,730, Cl. 423-82.000.
Martin, Donald R.: *See—*
Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., 4,553,008, Cl. 200-148.00R.
Martin, Howard. Gauged root canal condenser spreader. 4,552,531, Cl. 433-147.000.
Martin, James P.: *See—*
Hubble, Fred F., III; and Martin, James P., 4,553,033, Cl. 250-353.000.
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., to American Cyanamid Company. Antibiotic LL-BO1208α and LL-BO1208β, process of preparation, pharmaceutical composition and method of use. 4,552,867, Cl. 514-18.000.
Marvin Glass & Associates: *See—*
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.
Marx, Michael: *See—*
Li, Tsung-Tee; and Marx, Michael, 4,552,898, Cl. 514-561.000.
Marx, Rainer: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.
Marxer, John E.; and Kowles, John W., to Rosemount Inc. Non-intrusive ice detector. 4,553,137, Cl. 340-582.000.
Marzhauser, Heinz, to Gebr. Marzhauser Wetzlar oHG. Drive system for a microscope stage or the like. 4,552,033, Cl. 74-479.000.
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Plant phytopathogenic fungicidal agents based on maleimide. 4,552,890, Cl. 514-425.000.
Masaki, Jun. Transfer sheet with color pattern having metallic luster, and method of manufacturing said sheet. 4,552,829, Cl. 430-258.000.
Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft: *See—*
Grimm, Hans; and Fingerle, Hermann, 4,551,947, Cl. 51-34.00H.
Maschinenfabrik Schrarer AG: *See—*
Wust, Olivier, 4,552,320, Cl. 242-128.000.
Maschinenfabrik Sulzer-Ruti AG: *See—*
Bertsch, Gotthilf; and Braun, Josef, 4,552,187, Cl. 139-434.000.
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., to Getty Oil Company. Process for the recovery of gold from refractory ores by pressure oxidation. 4,552,589, Cl. 75-105.000.
Masuda, Shigeo; and Katsuda, Morihiko, to Sumitomo Electric Industries, Ltd. Process for producing insulated rectangular wire. 4,552,599, Cl. 156-50.000.
Masuda, Shunji: *See—*
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.
Masuda, Toshiro; and Tanaka, Yoichi, to Toppan Printing Co., Ltd. Gravure screen and method of making the same. 4,553,215, Cl. 364-525.000.
Mathieu, Bernd: *See—*
Polaschegg, Hans-Dietrich; and Mathieu, Bernd, 4,552,552, Cl. 604-4.000.
Mathis, Ronald F., to General Dynamis Electronics Division. Fast frequency hopping demodulation system with serial accumulation of signal. 4,553,101, Cl. 329-50.000.
Matson, Wayne R., to ESA, Inc. Electrochemical system. 4,552,013, Cl. 73-61.10C.
Matsubara, Nobuyuki: *See—*
Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, 4,552,743, Cl. 423-447.700.
Matsuda, Hisashi, to Jeol Ltd. Mass spectrometer. 4,553,029, Cl. 250-296.000.
Matsumoto, Kazuya: *See—*
Kawamura, Naoto; and Matsumoto, Kazuya, 4,553,036, Cl. 250-578.000.
Matsumoto, Satosi: *See—*
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, 4,552,009, Cl. 72-316.000.
Matsumoto, Tadao; and Inoue, Kazuo, to Shinko-Pfaudler Company, Ltd. Reaction and heat exchanger apparatus. 4,552,724, Cl. 422-138.000.
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Pneumatic massage mat. 4,551,874, Cl. 5-453.000.
Matsumura, Motohiro, to Nissan Motor Co., Ltd. Turbocharged internal combustion engine. 4,551,977, Cl. 60-611.000.
Matsushima, Yuichi: *See—*
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, 4,553,264, Cl. 455-189.000.
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.
Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,553,099, Cl. 324-458.000.
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, 4,553,019, Cl. 219-146.220.
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Matsushita, Mitsumasa: *See—*
Sato, Shigeyuki; and Matsushita, Mitsumasa, 4,552,907, Cl. 523-455.000.
Matsushita, Takashi, to Sanden Corporation. Method of making a clutch rotor for an electromagnetic clutch. 4,552,005, Cl. 72-68.000.
Matsuura, Osamu: *See—*
Harasaki, Hayathugu; and Matsuura, Osamu, 4,552,400, Cl. 296-185.000.
Matzinger, Martin J.; and Orloff, Daniel L., to Oscar Mayer Foods Corporation. Automatic feeding of elongated products. 4,552,049, Cl. 83-27.000.
Maurer, Fritz: *See—*
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.
Max-Planck Gesellschaft zur Forderung der/Wissenschaften: *See—*
Wissler, Josef H., 4,552,761, Cl. 424-101.000.
Maxwell, Ian: *See—*
East, John; and Maxwell, Ian, 4,552,520, Cl. 425-79.000.
Mayer, Frederick J., to KMS Fusion, Inc. Materials processing using chemically driven spherically symmetric implosions. 4,552,742, Cl. 423-446.000.
Mayer, James R. Pilot operated control valve for hydraulically actuated reciprocating pump. 4,552,180, Cl. 137-625.660.
Mazda Motor Company: *See—*
Harasaki, Hayathugu; and Matsuura, Osamu, 4,552,400, Cl. 296-185.000.
Mazda Motor Corporation: *See—*
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, 4,552,239, Cl. 180-140.000.
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.
Okino, Yoshinori, 4,552,115, Cl. 123-489.000.
Tahara, Yoshitaka, 4,552,111, Cl. 123-425.000.
McCall, Thomas J.: *See—*
Miller, Leslie A.; and McCall, Thomas J., 4,552,513, Cl. 417-18.000.
McCarthy, Alfred F.: *See—*
Johnson, Philip A.; and McCarthy, Alfred F., 4,552,206, Cl. 165-80.300.
McCartney, Michael S., to Combustion Engineering, Inc. Coal fired furnace light-off and stabilization using microfine pulverized coal. 4,552,076, Cl. 110-347.000.
McClure, Scott G., to Roberts, Douglass B., a part interest. Process for preparing a cast metal surface structure for bonding to a tooth structure and material used therewith. 4,552,779, Cl. 427-2.000.
McColgin, William C.; and Pace, Laurel J., to Eastman Kodak Company. Planarizing layer for semiconductor substrates such as solid state imagers. 4,553,153, Cl. 357-30.000.
McCorquodale Machine Systems Limited: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.
McCready, Russell J., to General Electric Company. Polyetherimide esters. 4,552,950, Cl. 528-292.000.
McDaniel, Max P., to Phillips Petroleum Company. Polymerization catalyst system. 4,552,937, Cl. 526-125.000.
McDonald, Jerry D. Fixed hand span device for bowler. 4,552,359, Cl. 273-54.00B.
McEntire, Edward E., to Texaco Inc. Method of separating primary amines from tertiary amines using non-polar hydrocarbon solvent with or without polyhydroxylic compound. 4,552,957, Cl. 544-177.000.
McEntire, Edward E.: *See—*
Burns, Simon P.; Walton, John M.; and McEntire, Edward E., 4,552,958, Cl. 544-177.000.
McFrisby, Samuel J., to Ulicne, Joseph A., a part interest. Screwless collapsible sled, and methods of constructing and utilizing same. 4,552,371, Cl. 280-20.000.
McGibbon, Gregor D.: *See—*
Skidanenko, Constantine V.; and McGibbon, Gregor D., 4,552,994, Cl. 179-16.0AA.
McGlew, John J. Golf ball ejector for golf green hole liner. 4,552,358, Cl. 273-34.00A.
McGraw, Jim F.: *See—*
Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., 4,552,367, Cl. 277-1.000.
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., to AMAX Inc. Process for the production of molybdenum dioxide. 4,552,749, Cl. 423-606.000.
McIntyre, Allan E., to Sprague Devices, Inc. Ball joint structure. 4,552,480, Cl. 403-76.000.
McKay, Albert A., to WABCO Ltd. Manual release and automatic reset arrangement for spring-applied/air-released brake. 4,552,056, Cl. 92-29.000.
McKay, Richard J.: *See—*
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., 4,553,035, Cl. 250-566.000.
McNesby, John B.; and Walker, Erik K., to GTE Communication Systems Corporation. Data transmission by subrate grouping. 4,553,129, Cl. 340-347.0DD.
Mead Corporation, The: *See—*
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., 4,552,497, Cl. 412-6.000.
Mechin, Jean-Claude. Self-adhesive product, process for its manufacture and application as a dressing, packing sheet or fixing tape. 4,552,802, Cl. 428-255.000.
Medeco Security Locks, Inc.: *See—*
Roop, Stevie C., 4,552,001, Cl. 70-208.000.
Medi-Tech Incorporated: *See—*
Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., 4,552,554, Cl. 604-51.000.
Medical College of Wisconsin, The: *See—*
Riley, Danny A.; and Bain, James L. W., 4,552,145, Cl. 128-630.000.
Medical Research Associates, Ltd. #2: *See—*
Sterling, Robert E., 4,552,914, Cl. 524-269.000.
Medtronic, Inc.: *See—*
Hartlaub, Jerome T., 4,552,154, Cl. 128-702.000.
Meehan, Robert F.: *See—*
Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., 4,552,422, Cl. 339-17.0CF.
Megabar Explosives Corporation: *See—*
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.
Mehta, Arun K.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.
Meier, Joseph F.: *See—*
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.
Meiji Seika Kaisha Ltd.: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.
Meinig, Manfred, to Karl Meinig KG. Corner angle assembly. 4,552,388, Cl. 285-363.000.
Melchior, Eckhard, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method and apparatus for manufacturing synthesis gas. 4,552,741, Cl. 423-359.000.
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, to Pioneer Industrial Components, Inc. Diaphragm material for acoustical transducer. 4,552,243, Cl. 181-169.000.
Memorex Corporation: *See—*
Berti, Eugenio, 4,553,181, Cl. 360-75.000.
Menard, Claude J.: *See—*
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.
Mendrala, James A. Video recording and film printing system quality-compatible with widescreen cinema. 4,553,176, Cl. 358-334.000.
Mennicken, Gerhard: *See—*
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.
Mercier, Robert: *See—*
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.
Merck & Co., Inc.: *See—*
Claremon, David A., 4,552,881, Cl. 514-295.000.
Merger, Franz; Hettinger, Peter; and Lange, Arno, to BASF Aktiengesellschaft. Preparation of aldols. 4,552,985, Cl. 568-497.000.
Merrell Dow Pharmaceuticals Inc.: *See—*
Dage, Richard C.; and Schnettler, Richard A., 4,552,880, Cl. 514-277.000.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Langer, Heinz G., 4,552,070, Cl. 102-290.000.
Metal Box Public Limited Company: *See—*
East, John; and Maxwell, Ian, 4,552,520, Cl. 425-79.000.
Metal Improvement Company, Inc.: *See—*
Biehle, William C., 4,552,017, Cl. 73-198.000.
Metalworking Lasers International Ltd.: *See—*
Hoag, Ethan D.; and Ravid, Amotz, 4,552,439, Cl. 350-610.000.
Mezo , Imre: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
Michel, Yves: *See—*
Bolomey, Jean-Charles; and Michel, Yves, 4,552,151, Cl. 128-653.000.
Midorikawa, Ichiro: *See—*
Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, 4,553,090, Cl. 324-73.0AT.
Miek, Wolfgang: *See—*
Stebegg, Josef; and Miek, Wolfgang, 4,552,987, Cl. 174-52.00R.
Mihara, Yuji: *See—*
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.
Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, 4,552,828, Cl. 430-217.000.
Mikami, Ryuzo; and Saruyama, Toshio, to Toray Silicone Company, Ltd. Room temperature-curable polyorganosiloxane composition whose cured products resist soiling. 4,552,919, Cl. 524-860.000.
Mikami, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Distribution table for controlling feed rate of articles supplied in automatic weighing apparatus. 4,552,236, Cl. 177-25.000.
Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, to American Colloid Company. Process for preparing dry solid water absorbing polyacrylate resin. 4,552,938, Cl. 526-240.000.

Mikiya, Toshio: *See—*
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, 4,551,874, Cl. 5-453.000.
Mikoda, Tamio: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Miles Laboratories, Inc.: *See—*
Yip, Kin F.; and Charlton, Steven C., 4,552,697, Cl. 260-396.00N.
Millar, Scott W., to Petrolite Corporation. Oil field biocide composition. 4,552,591, Cl. 106-18.330.
Miller, Leslie A.; and McCall, Thomas J., to Spectra-Physics, Inc. Multiple piston pump control. 4,552,513, Cl. 417-18.000.
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., to GTE Products Corporation. Method for removing tin from sodium tungstate solution. 4,552,729, Cl. 423-55.000.
Miller, Richard H.: *See—*
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.
Miller, Robert D.: *See—*
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.
Miller, Stephen H.: *See—*
Covington, Roger G.; and Miller, Stephen H., 4,553,232, Cl. 369-287.000.
Mills, David, to Rolls-Royce Ltd. Mould assembly for casting metal articles and a method of manufacture thereof. 4,552,197, Cl. 164-34.000.
Mills, David; and Kington, Alan D., to Rolls-Royce Ltd. Removing refractory material from components. 4,552,198, Cl. 164-122.200.
Minakata, Tsuyoshi: *See—*
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, 4,552,199, Cl. 164-423.000.
Minnesota Mining and Manufacturing Company: *See—*
Dziki, Michael M., 4,552,287, Cl. 222-146.500.
Fisch, Richard S., 4,552,826, Cl. 430-142.000.
Hansen, Paul E.; and Marquardt, Susan K., 4,552,795, Cl. 428-110.000.
Mueller, Gerald E., 4,553,190, Cl. 361-212.000.
Randen, Neil A., 4,552,755, Cl. 424-81.000.
Minolta Camera Kabushiki Kaisha: *See—*
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, 4,552,445, Cl. 354-406.000.
Minow, Martin: *See—*
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.
Misco, Peter F., Jr.: *See—*
Kim, Choung U.; and Misco, Peter F., Jr., 4,552,696, Cl. 260-245.20T.
Mishra, Indu B., to Olin Corporation. Potassium fluoride stabilized ammonium nitrate. 4,552,736, Cl. 423-266.000.
Miskel, John J., Jr.: *See—*
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,552,670, Cl. 252-8.50C.
Misumi, Teruo: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, to Santen Pharmaceutical Co., Ltd. Aletheine derivatives. 4,552,765, Cl. 514-513.000.
Mita, Junichi: *See—*
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.
Miyazaki, Hiroshi, 4,552,080, Cl. 112-68.000.
Nishitani, Kazuo, 4,553,152, Cl. 357-24.000.
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, 4,552,690, Cl. 252-512.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Kimura, Takao; and Nagaoka, Yoshinobu, 4,552,708, Cl. 264-53.000.
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.
Mitsuda, Satoshi: *See—*
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, 4,552,703, Cl. 260-466.000.
Mitsuhashi, Shigeo: *See—*
Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, 4,552,566, Cl. 23-313.00R.
Mitsui-Nisso Corporation: *See—*
Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, 4,552,944, Cl. 528-55.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Mitutoyo Mfg. Co., Ltd.: *See—*
Sakata, Hideo; and Yoda, Yukiji, 4,551,919, Cl. 33-1.00M.
Miura, Toshihiko: *See—*
Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, 4,552,808, Cl. 428-328.000.
Miwa, Hideo: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, to Fujitsu Limited. Electro-sound transducer eliminating acoustic multi-reflection, and ultrasonic diagnostic apparatus applying it. 4,552,021, Cl. 73-644.000.
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, to Sankyo Company Limited. Carbapenem compounds, and compositions containing them. 4,552,873, Cl. 514-210.000.
Miyahara, Tooru: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Miyamoto, Osamu: *See—*
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.
Miyazaki, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Cloth cutting device in button-hole sewing machine. 4,552,080, Cl. 112-68.000.
Miyazaki, Kenji: *See—*
Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, 4,552,788, Cl. 427-374.500.
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, to Hitachi, Ltd. Multi-effect absorption refrigerating machine. 4,551,991, Cl. 62-476.000.
Miyoshi, Takahito: *See—*
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.
Mizuhara, Howard, to GTE Products Corporation. Thermally insulated piston. 4,552,057, Cl. 92-176.000.
Mizuno, Takaji: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.
Mizuno, Toshio: *See—*
Watanabe, Tatsue; Ohkawa, Michihisa; and Mizuno, Toshio, 4,553,086, Cl. 324-57.00N.
Mobay Chemical Corporation: *See—*
Thiem, Karl W.; and Vanderpool, Daniel P., 4,552,981, Cl. 564-146.000.
Mobil Oil Corporation: *See—*
Audeh, Costandi A., 4,552,725, Cl. 422-140.000.
Horodysky, Andrew G., 4,552,569, Cl. 44-71.000.
Kuhl, Gunter H., 4,552,739, Cl. 423-328.000.
Peterson, Robert D.; and Penner, Wayne A., 4,553,133, Cl. 340-347.0DD.
Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., 4,552,648, Cl. 208-120.000.
Rubin, Mae K., 4,552,738, Cl. 423-328.000.
Mobley, Larry W.: *See—*
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,902, Cl. 521-129.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,903, Cl. 521-137.000.
Modulite Corporation: *See—*
Castillo, Richard A., 4,551,899, Cl. 29-241.000.
Moechnig, Bruce W.: *See—*
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., to Bayer Aktiengesellschaft. Concentrating nikkomicin mixtures. 4,552,954, Cl. 536-24.000.
Mogaki, Tadahisa: *See—*
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, 4,551,874, Cl. 5-453.000.
Mohr, Robert K.: *See—*
Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., 4,552,577, Cl. 65-22.000.
Moller, Hermann: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andrés, Rudolf; and Qullmalz, Wolfram, 4,552,402, Cl. 297-284.000.
Moller, Jens C. T.: *See—*
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.
Molnar, Robert, to Simnar, Inc. Fish decapitator and eviscerator. 4,551,885, Cl. 17-59.000.
Moniotte, Philippe G.: *See—*
Devaux, Albert F. L. G.; and Moniotte, Philippe G., 4,552,929, Cl. 525-332.600.

Monsanto Company: *See—*
Barker, Robert I.; King, David P.; and Pawlowski, Henry A., 4,552,025, Cl. 73-846.000.
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,552,809, Cl. 428-331.000.
Van Eenam, Donald N., 4,552,940, Cl. 527-312.000.
Monsanto Europe, S.A.: *See—*
Devaux, Albert F. L. G.; and Moniotte, Philippe G., 4,552,929, Cl. 525-332.600.
Monterey Manufacturing Co.: *See—*
Hall, Charles P., 4,551,873, Cl. 5-450.000.
Mooney, John J.: *See—*
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.
Moore, Clayton A.: *See—*
Knox, Lloyd C.; and Moore, Clayton A., 4,552,486, Cl. 405-227.000.
Moore, James E., to General Electric Company. Weatherable abrasion resistant etherified aminoplast derived coating for plastic substrates. 4,552,936, Cl. 525-519.000.
Moore, Larry V., to Rockwell International Corporation. Portable enclosure with combined latch and support system. 4,552,391, Cl. 292-5.000.
Moore, Michael H.: *See—*
Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., 4,552,452, Cl. 355-27.000.
Moos, Petr: *See—*
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.
Moraillon, Jean-Yves, to Thomson-Brandt. Color television camera comprising a trichrome matrix filter. 4,553,159, Cl. 358-44.000.
Morell, Joseph; Paris, Jean; and Petrini, Roland, to Salomon S.A. Ski boot. 4,551,933, Cl. 36-120.000.
Morello, Michael E., to Caterpillar Tractor Co. Hold open device. 4,552,392, Cl. 292-181.000.
Morgan, Annis R., Jr.: *See—*
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,551,935, Cl. 40-584.000.
Morgan, Howard W. Liquid filter having self-retaining filter bags. 4,552,661, Cl. 210-232.000.
Morgan, Peter E. D.; and Pugar, Eloise A., to Rockwell International Corporation. Process for producing amorphous and crystalline silicon nitride. 4,552,740, Cl. 423-344.000.
Morgan, Robert K.: *See—*
Yaeger, John R.; and Morgan, Robert K., 4,551,974, Cl. 60-527.000.
Mori, Sachio: *See—*
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, to Pioneer Electronic Corp. Automatic sound volume control device. 4,553,257, Cl. 381-57.000.
Mori, Tomohiro: *See—*
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.
Mori, Toshiro: *See—*
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,551,996, Cl. 68-20.000.
Moriguchi, Fujio; and Kurata, Masami, to Fuji Xerox Co., Ltd. Drive device in a plane reading device. 4,553,174, Cl. 358-285.000.
Moriguchi, Sakumi: *See—*
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.
Morimoto, Mitsutaka: *See—*
Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, 4,551,908, Cl. 29-571.000.
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, to N.D.C. Co., Ltd. Method of sintering stainless steel powder. 4,552,719, Cl. 419-2.000.
Morin, Jean-Xavier; and Chrysostome, Gerard, to Creusot-Loire. Process and installation for recycling solid unburnt materials in a fluidized bed. 4,552,078, Cl. 110-347.000.
Moringa Milk Industry, Co., Ltd.: *See—*
Nishizawa, Yoshito, deceased; and Kanaoka, Matao, 4,552,975, Cl. 560-163.000.
Morisawa, Tahei: *See—*
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.
Morishita, Hitoshi: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.
Moroji, Takashi: *See—*
Itoh, Shinji; and Moroji, Takashi, 4,552,865, Cl. 514-15.000.
Morris-Sherwood, Betty J.; and Brink, Edward C., Jr., to Texaco Inc. Corrosion inhibiting composition and method. 4,552,686, Cl. 252-392.000.
Morrison, Thomas R. Vehicle gearshift indicator. 4,552,088, Cl. 116-28.100.
Morton Thiokol, Inc.: *See—*
Stevens, George L., 4,552,380, Cl. 280-728.000.
Moses, Kenneth G. Apparatus and method for plasma generation of x-ray bursts. 4,553,256, Cl. 378-137.000.
Motoren-und Turbinen-Union Munchen GmbH: *See—*
Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, 4,552,509, Cl. 415-135.000.
Motorola, Inc.: *See—*
Bynum, Byron G.; and Cave, David L., 4,553,048, Cl. 307-350.000.
Coe, Richard H., 4,553,262, Cl. 455-15.000.
Genrich, Thad J., 4,553,218, Cl. 364-703.000.
Kase, Kiyoshi; and Fukuta, Masaru, 4,553,054, Cl. 307-597.000.
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.
Vyne, Robert L., 4,553,106, Cl. 330-272.000.
Wrathall, Robert S., 4,553,084, Cl. 323-316.000.
Yim, Hyung J., 4,553,041, Cl. 307-252.00A.
Mott Metallurgical Corporation: *See—*
Sekellick, Ron S., 4,552,669, Cl. 210-798.000.
Motyka, Jerry: *See—*
Gavagan, James A.; and Motyka, Jerry, 4,552,319, Cl. 242-107.40A.
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, to Kubota, Ltd. Excavating vehicle. 4,552,503, Cl. 414-687.000.
Moussaian, Gregoire G.: *See—*
Vartoukian, Artin G.; and Moussaian, Gregoire G., 4,552,081, Cl. 112-258.000.
Mozsary, Peter G. Osteocorrective dentoalveolar implant system. 4,552,532, Cl. 433-173.000.
MTU-Motoren-und Turbinen-Union Muenchen GmbH: *See—*
Breitmoser, Georg; and Vogel, Wilhelm, 4,552,209, Cl. 165-133.000.
Mucenieks, Paul R.: *See—*
Beacham, Harry H.; and Mucenieks, Paul R., 4,552,687, Cl. 252-500.000.
Mueller, Bruce M.; and Swierczek, Zbignew, to Owens-Illinois, Inc. Container closure. 4,552,279, Cl. 215-318.000.
Mueller, Gerald E., to Minnesota Mining and Manufacturing Co. Transparent container for electrostatic sensitive electronic components. 4,553,190, Cl. 361-212.000.
Muelling, Duane D.: *See—*
Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., 4,552,015, Cl. 73-113.000.
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, to Minolta Camera Kabushiki Kaisha. Focus condition detecting device for cameras. 4,552,445, Cl. 354-406.000.
Mukai, Ryoichi, to Fujitsu Limited. Process for fabricating a semiconductor device. 4,551,907, Cl. 29-571.000.
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., to AMSTED Industries Incorporated. Primary suspension for railroad car truck. 4,552,074, Cl. 105-224.100.
Muller, Dietrich. Process for the treatment of sewage sludge. 4,552,666, Cl. 210-710.000.
Muller, J. Joseph: *See—*
Doerr, Richard D.; Muller, J. Joseph; and Green, William A., 4,553,076, Cl. 318-282.000.
Muller, Peter R.: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.
Mumallah, Naim A.: *See—*
Wu, Yulin; and Mumallah, Naim A., 4,552,217, Cl. 166-270.000.
Munk, Edmund; and Dietz, Martin, to Furnier-U.Sperrholzwerk; and J. F. Werz, Jr. KG, Werzalit-Pressholzwerk. Plate-shaped covering profile and method for manufacturing the same. 4,552,797, Cl. 428-167.000.
Murakami, Akira; and Yoshizaki, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha; and Kowa Co., Ltd. Method for stabilizing tissue plasminogen activator and a stable aqueous solution or powder containing the same. 4,552,760, Cl. 424-94.000.
Murakami, Katsuhiko; and Iwamoto, Yoshio, to Kabushiki Kaisha Ishida Koki Seisakusho. Article feeding apparatus. 4,552,262, Cl. 198-447.000.
Murakami, Kazuhito; and Takahashi, Kenichi, to Sumitomo Electric Industries, Ltd. Crystalline infrared optical fiber with a small gap and a process for the production of same. 4,552,434, Cl. 350-96.300.
Muralidhara, Ranya: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,552,770, Cl. 426-535.000.
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, to Lion Corporation. Hair cosmetic composition. 4,552,754, Cl. 424-70.000.
Murata, Katsuaki: *See—*
Harada, Koosuke; and Murata, Katsuaki, 4,553,199, Cl. 363-75.000.
Murata Kikai Kabushiki Kaisha: *See—*
Uematsu, Ikuzo, 4,551,887, Cl. 19-244.000.
Murata Manufacturing Co., Ltd.: *See—*
Kawabata, Kenji; and Sakabe, Yukio, 4,552,853, Cl. 501-134.000.
Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, 4,553,123, Cl. 336-83.000.
Murcko, Joseph S. Combination lawnmower and edger. 4,551,967, Cl. 56-13.700.
Murib, Jawad H., to National Distillers and Chemical Corporation. Catalyst for the preparation of unsaturated aldehydes and carboxylic acids. 4,552,860, Cl. 502-242.000.
Murley, Jackie D.; and Johnson, Marion, to Cosden Technology, Inc. Process for making a thin walled container from a plastic resin. 4,552,717, Cl. 264-549.000.
Murotani, Tatsunori, to Nippon Electric Co., Ltd. Logic circuit with improved hysteresis characteristics. 4,553,045, Cl. 307-279.000.
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., to St. Jude Children's Research Hospital. Use in an animal host and precursors for vaccines utilizing avian-human reassortants to combat influenza A virus. 4,552,757, Cl. 424-89.000.

Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., to St. Jude Children's Research Hospital. Human use of avian-human reassortants as vaccines for influenza A virus. 4,552,758, Cl. 424-89.000.

Murphy, Lawrence M., to United States of America, Energy. Cable tensioned membrane solar collector module with variable tension control. 4,552,438, Cl. 350-608.000.

Murray, Joseph A.: *See—*
Vailati, Tony; and Murray, Joseph A., 4,551,994, Cl. 66-193.000.

Murray, Richard C., Jr.: *See—*
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Murray, William M. Femoral component and method. 4,551,863, Cl. 623-23.000.

Musser, John H.: *See—*
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.

Muto, Rudolph. Pressure warning, indicating and applying monitor for cuff type indwelling devices. 4,552,558, Cl. 604-100.000.

Myers Electric Products, Inc.: *See—*
Myers, Stephanie A., 4,552,430, Cl. 339-242.000.

Myers, Stephanie A., to Myers Electric Products, Inc. Connector head for electric terminal box. 4,552,430, Cl. 339-242.000.

Mylex Corporation: *See—*
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., 4,553,035, Cl. 250-566.000.

Myocur, Inc.: *See—*
Jensen, Ronald P.; and Allcroft, Arthur N., 4,552,146, Cl. 128-305.000.

N.D.C. Co., Ltd.: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.

Nace, Robert J., to Bethlehem Steel Corporation. Detachable portable continuous-belt driving head. 4,551,951, Cl. 51-170.0EB.

Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., to Dow Chemical Company, The. Process for preparing stable solutions of trimerized isocyanates in monomeric polyisocyanates. 4,552,902, Cl. 521-129.000.

Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., to Dow Chemical Company, The. Flexible polyurethane foams prepared from cotrimers of alkylene-bridged polyphenylene polyisocyanates. 4,552,903, Cl. 521-137.000.

Nagahori, Morihiro, to Kabushiki Kaisha Nagahori. Necklace with slidably mounted decorative element. 4,551,993, Cl. 63-31.000.

Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, to Mazda Motor Corporation. Valve timing control for internal combustion engines. 4,552,112, Cl. 123-432.000.

Nagaoka, Satoshi: *See—*
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.

Nagaoka, Yoshinobu: *See—*
Kimura, Takao; and Nagaoka, Yoshinobu, 4,552,708, Cl. 264-53.000.

Nagarajan, Ramakrishnan; and Schabel, Amelia A., to Eli Lilly and Company. Glycopeptide antibiotics and process of preparation. 4,552,701, Cl. 260-112.50R.

Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, to Nippon Electric Co., Ltd. Process of forming electrodes and interconnections on silicon semiconductor devices. 4,551,908, Cl. 29-571.000.

Nagashima, Akira, to Kioritz Corporation. Fuel pipe joint. 4,552,105, Cl. 123-198.00R.

Nagato, Hitoshi: *See—*
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., to NCR Corporation. Transport for diverted and purged sheets in a sheet dispenser. 4,552,350, Cl. 271-3.000.

Naito, Shotaro: *See—*
Tokuyama, Keiichi; Naito, Shotaro; and Watanabe, Shizuhisa, 4,553,196, Cl. 363-21.000.

Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, to Matsushita Electric Industrial Co., Ltd. Industrial robot. 4,552,504, Cl. 414-735.000.

Nakade, Toshiaki: *See—*
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,553,172, Cl. 358-280.000.

Nakagawa, Katsumi: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.

Nakagawa, Kazuyuki: *See—*
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.

Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, to Daikin Kogyo Co., Ltd. Tetrafluoroethylene/hexafluoropropylene copolymer having improved extrudability. 4,552,925, Cl. 525-200.000.

Nakajima Dokosho Co. Ltd.: *See—*
Nakajima, Masahiko, 4,552,124, Cl. 126-413.000.

Nakajima, Masahiko, to Nakajima Dokosho Co. Ltd. Heat processing apparatus. 4,552,124, Cl. 126-413.000.

Nakajima, Motoo, to Kikkoman Corporation. Method for determination of formaldehyde. 4,552,849, Cl. 436-130.000.

Nakaju, Isamu: *See—*
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.

Nakamura, Katsuhiro, to NEC Corporation. Error-correction system for two-dimensional multilevel signals. 4,553,237, Cl. 371-37.000.

Nakamura, Takashi; and Yamaji, Kazunori, to Sony Corporation. Deflection control circuit with level conversion. 4,553,073, Cl. 315-370.000.

Nakamura, Taku; and Kasama, Yasuo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive element having a light insensitive upper layer. 4,552,835, Cl. 430-523.000.

Nakanishi, Hiroshi: *See—*
Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi, 4,553,138, Cl. 340-584.000.

Nakanishi, Takashi: *See—*
Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi, 4,553,138, Cl. 340-584.000.

Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi. Fire alarm system. 4,553,138, Cl. 340-584.000.

Nakao, Narutaka: *See—*
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, to Nippon Kokan Kabushiki Kaisha. Method of operating ladle refining furnace. 4,552,587, Cl. 75-12.000.

Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, to Sanyo Electric Co., Ltd. Temperature control for microwave oven. 4,553,011, Cl. 219-10.55B.

Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, to Hitachi Powdered Metals Co. Ltd. Ferro-sintered alloys. 4,552,590, Cl. 75-246.000.

Nakatani, Kiyoshi: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Nakayama, Shigeki: *See—*
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.

Nalco Chemical Company: *See—*
Payne, Charles C., 4,552,804, Cl. 428-283.000.

Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., to Nall, Kent J. Batting instruction system. 4,552,120, Cl. 124-1.000.

Namba, Keisuke: *See—*
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.

Namiki, Fumihiro: *See—*
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Nanya, Tamio: *See—*
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.

Narayan, Surendra D.; and Thomas, Rudy V., to Allied Corporation. Low friction self-locking adjust tongue. 4,551,889, Cl. 24-196.000.

Narayanan, Swami: *See—*
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,552,644, Cl. 208-78.000.

Narita, Shuichi, to Victor Company of Japan, Ltd. Device for detecting abnormalities in tape travel. 4,553,182, Cl. 360-96.100.

Naterstad, Tormod: *See—*
Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, 4,552,530, Cl. 432-192.000.

National Distillers and Chemical Corporation: *See—*
Murib, Jawad H., 4,552,860, Cl. 502-242.000.

National Electric Control Company: *See—*
Sass, Richard G., 4,552,989, Cl. 174-103.000.

National Semiconductor Corporation: *See—*
Bittner, Harry J., 4,553,044, Cl. 307-270.000.
Layher, Francis W., 4,552,267, Cl. 206-334.000.

Natoli, Giuseppe: *See—*
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,552,678, Cl. 252-49.300.

Nature's Window, Inc.: *See—*
Puckett, Paul B., 4,552,093, Cl. 119-17.000.

Nazar, Linda F.: *See—*
Ozin, Geoffrey A.; Nazar, Linda F.; and Hugues, Francois, 4,552,855, Cl. 502-74.000.

NCR Corporation: *See—*
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Neale, Thomas J., to Foster Wheeler Energy Corporation. Solids feed control valve assembly. 4,552,490, Cl. 406-56.000.

NEC Corporation: *See—*
Fukaya, Hirokazu, 4,552,118, Cl. 123-609.000.
Nakamura, Katsuhiro, 4,553,237, Cl. 371-37.000.
Takahashi, Kazukiyo, 4,553,052, Cl. 307-494.000.
Yoshida, Yasuharu, 4,553,102, Cl. 329-133.000.

Neff Gewindespindeln GmbH: *See—*
Lehmann, Wolfgang; and Aab, Hans-Walter, 4,552,416, Cl. 308-6.00C.

Neiman S.A.: *See—*
Lipschutz, Paul, 4,552,000, Cl. 70-185.000.

Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, to Ceske vysoke uceni technicke v Praze. Circuit connected in series with a discharge valve source. 4,553,072, Cl. 315-244.000.

Nepon, Juanita. Methods of preparing an arthritis composition. 4,552,762, Cl. 424-106.000.

Nesler, John J., to Hughes Aircraft Company. Transformerless drive circuit for field-effect transistors. 4,553,082, Cl. 323-288.000.

Nestec S.A.: *See—*
Lunder, Tito L.; and Nielsen, Corine M., 4,552,769, Cl. 426-435.000.

Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., to Bristol-Myers Company. Process for producing rebeccamycin. 4,552,842, Cl. 435-75.000.

Neuray, Dieter: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.

Neuss, Hans W.: *See—*
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.

Nevadunsky, Charles J.: *See—*
Carl, Louis C.; and Nevadunsky, Charles J., 4,552,174, Cl. 137-527.200.

New Balance Athletic Shoe, Inc.: *See—*
Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, 4,551,930, Cl. 36-30.00R.

New Fibers International Inc.: *See—*
Kauppi, Peter K., 4,552,616, Cl. 162-19.000.

Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., to Welch Allyn Inc. Pressure gauge. 4,552,153, Cl. 128-677.000.

NGK Insulators, Ltd.: *See—*
Takeyuki, Mizuno, 4,552,510, Cl. 416-241.00B.

Nguyen, Hung T.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Nickels, Richard C., Jr.; and Stevens, Gerald S., Jr., to General Instrument Corp. Top loading sheet feed apparatus for printer or the like. 4,552,352, Cl. 271-10.000.

Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., to General Loose Leaf Bindery Co., Inc. Easel type binder. 4,552,479, Cl. 402-74.000.

Nickow, Martin A.: *See—*
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., 4,552,479, Cl. 402-74.000.

Nicks, Peter F.; and Young, Gillian A., to Imperial Chemical Industries PLC. Water-dilutable aqueous coating compositions. 4,552,908, Cl. 523-504.000.

Nicolet Instrument Corporation: *See—*
Hyatt, James R., 4,553,109, Cl. 331-25.000.

Nicolo, Pierfrancesco, to C.M.T. San Crato S.r.l. Automatic separator device for filling boxes with tubes. 4,551,963, Cl. 53-148.000.

Niebel, Harald: *See—*
Gugel, Bernd; and Niebel, Harald, 4,552,471, Cl. 400-124.000.

Nielsen, Alfred T. Pressure roller apparatus for briquetting cut material of biological origin such as green crops, wood flakes or peat. 4,552,567, Cl. 44-13.000.

Nielsen, Corine M.: *See—*
Lunder, Tito L.; and Nielsen, Corine M., 4,552,769, Cl. 426-435.000.

Niemi, Pertti K., to Oy Pajakanta AB. Bayonet catch for a line of pressurized medium. 4,552,333, Cl. 251-149.900.

Nienaber, David K.: *See—*
Flasza, Michael D.; and Nienaber, David K., 4,553,141, Cl. 340-703.000.

Nieuweboer, Bob: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Nihon Tokushu Noyaku Seizo K.K.: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Nikken Sekkei Ltd.: *See—*
Hirano, Yutaka; and Kawai, Hiroki, 4,552,601, Cl. 156-79.000.

Nikolics, Karoly: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Nippon Electric Co., Ltd.: *See—*
Murotani, Tatsunori, 4,553,045, Cl. 307-279.000.
Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, 4,551,908, Cl. 29-571.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Takeuchi, Chifumi, 4,552,051, Cl. 84-1.240.

Nippon Kogaku K. K.: *See—*
Maida, Osamu, 4,553,140, Cl. 340-636.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.

Nippon Kouatsu Electric Co.: *See—*
Fujita, Toshio; and Watanabe, Kazuhiro, 4,552,915, Cl. 524-322.000.

Nippon Oil Company, Ltd.: *See—*
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.

Nippon Oil and Fats Co., Ltd.: *See—*
Igarashi, Taizo; Higuchi, Hisao; and Yamazaki, Shingo, 4,552,568, Cl. 44-51.000.

Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,551,896, Cl. 29-156.40R.

Nippon Seiko Kabushiki Kaisha: *See—*
Takei, Kenji; and Akabane, Yukihiro, 4,552,467, Cl. 384-615.000.

Nippon Soken, Inc.: *See—*
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Nippon Steel Corporation: *See—*
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.

Nippon Telephone & Telegraph Public Corp.: *See—*
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.

Nippon Yakin Kogyo Co., Ltd.: *See—*
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, 4,552,199, Cl. 164-423.000.

Nippondenso Co., Ltd.: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Nishida, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Structure for retaining tank cap. 4,552,282, Cl. 220-20.000.

Nishikawa, Toshio: *See—*
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.

Nishimura, Takumi: *See—*
Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, 4,552,413, Cl. 303-106.000.

Nishitani, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Monolithic infrared ray charge transfer element. 4,553,152, Cl. 357-24.000.

Nishiura, Junji, to Takeda Riken Co., Ltd. Counter-address memory for multi-channel timing signals. 4,553,100, Cl. 328-63.000.

Nishizawa, Hisako, heir: *See—*
Nishizawa, Yoshito, deceased; and Kanaoka, Matao, 4,552,975, Cl. 560-163.000.

Nishizawa, Tsutomu: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.

Nishizawa, Yoshito, deceased (by Nishizawa, Hisako, heir); and Kanaoka, Matao, to Moringa Milk Industry, Co., Ltd. Manufacturing process for N-carbobenzyloxy-L-glutamic acid-α-cholinester salt. 4,552,975, Cl. 560-163.000.

Nissan Motor Company, Limited: *See—*
Endo, Hiroshi, 4,552,456, Cl. 356-5.000.
Hara, Kenjiro; and Shirose, Haruya, 4,552,104, Cl. 123-192.00R.
Kojima, Shuichi, 4,552,186, Cl. 139-100.000.
Matsumura, Motohiro, 4,551,977, Cl. 60-611.000.
Suzuki, Kunihiko, 4,552,241, Cl. 180-249.000.

Nisshin Steel Co., Ltd.: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.

Nitto Kohki Co., Ltd.: *See—*
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, 4,551,874, Cl. 5-453.000.

Nix, Richard; and Leigh-Monstevens, Keith V., to Automotive Products plc. Shipping and installation strap for linear actuator. 4,551,976, Cl. 60-533.000.

Nixdorf Computer AG: *See—*
Scholich, Peter, 4,553,177, Cl. 360-43.000.

Noda, Takeshi: *See—*
Takaku, Hiroshi; and Noda, Takeshi, 4,552,955, Cl. 536-24.000.

Noguchi, Masahisa; and Kaneda, Kazuji, to Furukawa Electric Co., Ltd., The. Method and apparatus for fixing an end of a coiled wire on a take up spool. 4,552,314, Cl. 242-25.00R.

Nolan, Dennis C.: *See—*
Burns, James A.; and Nolan, Dennis C., 4,553,187, Cl. 361-96.000.

Nolting, Wolfgang: *See—*
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.

Noon, Robert A.: *See—*
Kay, Ian T.; and Noon, Robert A., 4,552,887, Cl. 514-381.000.

Noonan, Daniel T.: *See—*
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., 4,552,497, Cl. 412-6.000.

Norand Corporation: *See—*
Koenck, Steven E., 4,553,081, Cl. 320-43.000.

Nordson Corporation: *See—*
Harjar, Martin J., 4,552,502, Cl. 414-680.000.
Jameson, Calvin R.; and Baker, Robert G., 4,553,023, Cl. 219-301.000.

Noritake Co., Limited: *See—*
Hattori, Yoshiaki; and Ishihara, Makoto, 4,552,329, Cl. 249-134.000.

Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, to Teijin Limited. Pneumatic cellular aromatic polyamide articles and process for the preparation thereof. 4,552,810, Cl. 428-398.000.

Norris, Henry F. Composition and method for lubricating insulated electrical conductors. 4,552,676, Cl. 252-20.000.

Norris, Robert D.: *See—*
Brown, Richard A.; and Norris, Robert D., 4,552,668, Cl. 210-759.000.

Brown, Richard A.; and Norris, Robert D., 4,552,674, Cl. 252-8.55R.
Brown, Richard A.; and Norris, Robert D., 4,552,675, Cl. 252-8.55R.

North American Philips Consumer Electronics Corp.: *See—*
Brennensholtz, Matthew S.; and Donofrio, Robert L., 4,552,459, Cl. 356-448.000.

Norton Christensen, Inc.: *See—*
Pay, Clifford R.; and Thornton, F. James, 4,552,231, Cl. 175-330.000.
Radford, Steven R.; and Hyland, Craig R., 4,552,229, Cl. 175-240.000.

Norton, Edward J.: *See—*
Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, 4,551,930, Cl. 36-30.00R.

Noto, Akira: *See—*
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.

Novacor Medical Corporation: *See—*
Spahic, Bojana K.; and Green, George F., 4,552,816, Cl. 428-420.000.

Novatome: *See—*
Malaval, Claude, 4,552,210, Cl. 165-134.100.

NSK-Warner K.K.: *See—*
Ono, Katsuyasu, 4,552,408, Cl. 297-483.000.

Numonics Corporation: *See—*
Hulls, Leonard R., 4,552,991, Cl. 178-19.000.

Nunes, Maurice: *See—*
Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., 4,552,123, Cl. 126-369.000.

Nuttle, David A. Structure heating and cooling system. 4,552,212, Cl. 165-48.200.

Nuttle, David A. Composting container for field use. 4,552,484, Cl. 405-128.000.

Nyman, Tapani: *See—*
Laitinen, Sakari; and Nyman, Tapani, 4,552,619, Cl. 162-336.000.

Oak Industries Inc.: *See—*
Van Zeeland, Anthony J.; and Denley, Ronald S., 4,553,009, Cl. 200-340.000.

Oake, Hugh F. Game table with multiple playing surfaces. 4,552,362, Cl. 273-237.000.

Obradovic, Peter: *See—*
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.

O'Brien, David A.: *See—*
Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., 4,552,680, Cl. 252-102.000.

Occidental Oil Shale, Inc.: *See—*
Ellington, Rex T., 4,552,409, Cl. 299-2.000.

Ochiai, Kenji: *See—*
Shoji, Takashi; and Ochiai, Kenji, 4,552,691, Cl. 252-514.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,552,917, Cl. 524-590.000.

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Oda, Goro: *See—*
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, 4,552,417, Cl. 308-10.000.

Oda, Kengo: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Oda, Yukio: *See—*
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, 4,551,950, Cl. 51-165.870.

Odajima, Akeshi: *See—*
Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, 4,552,610, Cl. 156-384.000.

O'Donnell, Laurene H.: *See—*
Litwak, Alfred A.; and O'Donnell, Laurene H., 4,552,306, Cl. 239-29.000.

Odorzynski, Thomas W.; and Knott, Jack E., II, to American Can Company. Plasticized EVOH and process and products utilizing same. 4,552,801, Cl. 428-220.000.

Odorzynski, Thomas W.: *See—*
Krueger, Duane A.; and Odorzynski, Thomas W., 4,552,714, Cl. 264-171.000.

Officine Vezzani S.p.A.: *See—*
Vezzani, Luciano, 4,552,062, Cl. 100-95.000.

Ogawa, Akira: *See—*
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.

Ogawa, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current mirror circuit having stabilized output current. 4,553,107, Cl. 330-288.000.

Ogawa, Kimiaki: *See—*
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.

Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, to Shionogi & Co., Ltd. N-Acetyl-β-D-glucosaminides for determining N-acetyl-β-D-glucosaminidase activity. 4,552,841, Cl. 435-18.000.

Ogawa, Yonekichi, to Suisaku Kabushiki Kaisha. Filter. 4,552,657, Cl. 210-169.000.

Ogishima, Kiichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic head slider. 4,553,184, Cl. 360-103.000.

Ogiso, Haruhiko: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, to Takemoto Yushi Kabushiki Kaisha. Spin finish compositions for polyester and polyamide yarns. 4,552,671, Cl. 252-8.900.

Oguni, Kensaku: *See—*
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.

Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., to International Business Machines Corporation. Method for making self-aligned lateral bipolar transistors. 4,551,906, Cl. 29-571.000.

O'Hare, Louis R. Bimetallic solar engine. 4,551,978, Cl. 60-641.130.

Ohe, Takeshi: *See—*
Takeshima, Sadao; and Ohe, Takeshi, 4,552,240, Cl. 180-142.000.

Ohe, Yoshikazu, to Fujitsu Limited. Method of testing IC memories. 4,553,225, Cl. 365-201.000.

Ohio Medical Research, Inc.: *See—*
Hoffman, Allan; and Benford, Harry, 4,552,142, Cl. 128-207.160.

Ohkawa, Masaki: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.

Ohkawa, Michihisa: *See—*
Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, 4,553,086, Cl. 324-57.00N.

Ohkawa, Toshio: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.

Ohl, Herbert, to Wilkhahn Wikening & Hahne GmbH & Co. Chair. 4,552,406, Cl. 297-445.000.

Ohl, John P.: *See—*
Spence, Lewis C., 4,552,106, Cl. 123-198.00A.

Ohnishi, Hiroshi: *See—*
Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, 4,553,264, Cl. 455-189.000.

Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, to Tohoku Mikuni Kogyo Kabushiki Kaisha. Fuel injection valve. 4,552,312, Cl. 239-585.000.

Ohsaki, Tsuyoshi: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.

Ohtsuki, Zenju: *See—*
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.

Okabayashi, Hidekazu: *See—*
Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, 4,551,908, Cl. 29-571.000.

Okada, Shigeo: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Okamura, Michiya: *See—*
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.

Okano, Kiichiro: *See—*
Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, 4,553,079, Cl. 318-626.000.

Okawa, Takashi: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.

Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,552,837, Cl. 430-550.000.

Oki Electric Industry Co., Ltd.: *See—*
Hoga, Hiroshi, 4,552,595, Cl. 148-1.500.

Okino, Yoshinori, to Mazda Motor Corporation. Air-fuel ratio control means for internal combustion engines. 4,552,115, Cl. 123-489.000.

Okutsu, Toshimitsu: *See—*
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.

Olander, John W., to Westland Foods Corporation. Bacon bit finishing method. 4,552,768, Cl. 426-480.000.

Olin Corporation: *See—*
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,552,499, Cl. 414-125.000.
Grolitzer, Marilyn A., 4,552,673, Cl. 252-8.55D.
Mishra, Indu B., 4,552,736, Cl. 423-266.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,917, Cl. 524-590.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,943, Cl. 528-50.000.
Parthasarathi, Arvind, 4,552,627, Cl. 204-27.000.

Olsen, Arthur A.: *See—*
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.

Olsen, Arthur M., to Honeywell Inc. Method of compensating an amplifier system having a variable gain amplifier to achieve a constant overall system signal gain and an apparatus utilizing the same. 4,553,104, Cl. 330-129.000.

Olsson, Aron, to Scanpump AB. Variable fluid flow restricting throttle. 4,552,178, Cl. 137-625.460.

Olympia Werke AG: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Olympic Fastening Systems: *See—*
Hein, James R., 4,552,010, Cl. 72-391.000.

Olympic Narrow Fabrics Company, Inc.: *See—*
Vailati, Tony; and Murray, Joseph A., 4,551,994, Cl. 66-193.000.

Olympus Optical Co., Ltd.: *See—*
Kinoshita, Kunio, 4,552,130, Cl. 128-4.000.
Omagari, Yasuhiko, 4,552,131, Cl. 128-6.000.
Utsugi, Mikio; and Yamaguchi, Tathuya, 4,552,129, Cl. 128-4.000.

Omagari, Yasuhiko, to Olympus Optical Co., Ltd. Co-viewing device for endoscope. 4,552,131, Cl. 128-6.000.

Omron Tateisi Electronics Co.: *See—*
Agatahama, Shunichi, 4,553,118, Cl. 335-79.000.

Ong, Richard H.; and Economopoulos, Peter C., to Honeywell Information Systems Inc. Sense amplifier. 4,553,053, Cl. 307-530.000.

Ono, Katsuyasu, to NSK-Warner K.K. Adjustable anchor mounting device. 4,552,408, Cl. 297-483.000.

Ono Pharmaceutical Co., Ltd.: *See—*
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.

Ono, Shoji: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.

Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, to Nippon Yakin Kogyo Co., Ltd. Apparatus for producing flake particles. 4,552,199, Cl. 164-423.000.

Oonishi, Taizo: *See—*
Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, 4,552,373, Cl. 280-276.000.

Opower, Hans; and Ernst, Volker, to W.C. Heraeus GmbH. Gas laser. 4,553,242, Cl. 372-87.000.

Orloff, Daniel L.: *See—*
Matzinger, Martin J.; and Orloff, Daniel L., 4,552,049, Cl. 83-27.000.

Orlowski, Reiner U.: *See—*
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.

Ormat Turbines, Ltd.: *See—*
Bronicki, Lucien Y., 4,551,980, Cl. 60-698.000.

Orofino, Thomas A.: *See—*
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,552,809, Cl. 428-331.000.

Osaka, Tadashi: *See—*
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.

Osaki, Yasunari: *See—*
Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, 4,552,690, Cl. 252-512.000.

Oscar Mayer Foods Corporation: *See—*
Matzinger, Martin J.; and Orloff, Daniel L., 4,552,049, Cl. 83-27.000.

Oshima, Akio: *See—*
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.

Osterloh, David. Pulling hitch assembly. 4,552,374, Cl. 280-411.00R.

Ostertag, Werner, to BASF Aktiengesellschaft. Preparation of effect pigments coated with metal oxides. 4,552,593, Cl. 106-291.000.

Oswalt, Stephen M.: *See—*
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.

Otis, John F. Cable dispensing apparatus. 4,552,323, Cl. 242-865.00R.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.

Ott, Karl-Erich; and Behrens, Thomas, to Hoechst Aktiengesellschaft. Stirrer for stirring near a vessel wall. 4,552,461, Cl. 366-279.000.

Outboard Marine Corporation: *See—*
Baltz, Gene F.; and Jourdan, Donovan K., 4,552,103, Cl. 123-186.000.
Borst, Gaylord M.; and Walsworth, Frank J., 4,552,101, Cl. 123-73.0AD.

Ovaert, Francis: *See—*
Reneault, Patrick; and Ovaert, Francis, 4,551,958, Cl. 52-309.400.

Owen, William R.; and Juhasz, Andras. Containers for waste products. 4,552,280, Cl. 220-1.00T.

Owens-Corning Fiberglas Corporation: *See—*
Schneider, William A., 4,552,281, Cl. 220-5.00A.

Owens-Illinois, Inc.: *See—*
Chang, Long F.; and Patek, Frank, Jr., 4,552,275, Cl. 215-12.00R.
Mueller, Bruce M.; and Swierczek, Zbignew, 4,552,279, Cl. 215-318.000.

OXIMETRIX, Inc.: *See—*
Pastrone, Giovanni, 4,552,336, Cl. 251-331.000.

Oy Helvar: *See—*
Sairanen, Martti; and Virta, Matti, 4,553,070, Cl. 315-209.00R.

Oy Pajakanta AB: *See—*
Niemi, Pertti K., 4,552,333, Cl. 251-149.900.

Oy Wartsila Ab: *See—*
Laitera., Jukka, 4,552,084, Cl. 114-74.00R.

Oya, Masayuki: *See—*
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,969, Cl. 548-179.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.

Oyama, Yoshishige: *See—*
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.

Ozin, Geoffrey A.; Nazar, Linda F.; and Hugues, Francois. Metal zeolite catalyst preparation. 4,552,855, Cl. 502-74.000.

Pace, Incorporated: *See—*
Zovko, Carl B.; and Vogel, Alan D., 4,552,300, Cl. 228-20.000.

Pace, Laurel J.: *See—*
McColgin, William C.; and Pace, Laurel J., 4,553,153, Cl. 357-30.000.

Pace, W. G.: *See—*
Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., 4,552,148, Cl. 128-334.00C.

Padgett, H. Pat: *See—*
Fisher, Gary H.; and Padgett, H. Pat, 4,552,303, Cl. 236-44.00C.

Page, Edmund J.: *See—*
Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., 4,552,410, Cl. 303-23.00R.

Pall Corporation: *See—*
Gravatt, Barton A., 4,552,570, Cl. 55-20.000.

Palma, Grazio: *See—*
Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, 4,552,726, Cl. 422-184.000.

Panster, Peter; and Grethe, Horst, to Degussa Aktiengesellschaft. Organopolysiloxanes containing sulphonate groups, method for the production and use thereof. 4,552,700, Cl. 556-9.000.

Papazian, Arthur S. Electronic gas valve pulsator. 4,552,304, Cl. 236-46.00F.

Papenfuhs, Theodor: *See—*
Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, 4,552,970, Cl. 548-543.000.

Paris, Jean: *See—*
Morell, Joseph; Paris, Jean; and Petrini, Roland, 4,551,933, Cl. 36-120.000.

Paris, John. Unit-soled shoe. 4,551,929, Cl. 36-11.000.

Parker, Frederick D., to United Technologies Corporation. Cutting tool having cylindrical ceramic insert. 4,552,491, Cl. 407-107.000.

Parker, James P.: *See—*
Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., 4,552,603, Cl. 156-167.000.

Parker, Lanny L., to Codex Corporation. High speed drive circuit. 4,553,043, Cl. 307-270.000.

Parks, Ralph P., Jr.: *See—*
Roche, William J.; and Parks, Ralph P., Jr., 4,553,067, Cl. 313-546.000.

Parsons, Stanley M., to University of California. 2α, 3β, 4aβ, 8aα-Decahydro-3-(4-phenyl-1-piperidinyl)-2-naphthalenol. 4,552,965, Cl. 546-206.000.

Parthasarathi, Arvind, to Olin Corporation. Preparation for improving the adhesion properties of metal foils. 4,552,627, Cl. 204-27.000.

Partington, Sally; and Carter, Steven F., to British Telecommunications. Glasses and methods for making them. 4,552,850, Cl. 501-37.000.

Parton, Joseph W.: *See—*
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.

Pas, Rene J. T. M. Flower merchandising display. 4,551,943, Cl. 47-41.00R.

Paschen, Rolf: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.

Pass & Seymour, Inc.: *See—*
Drapkin, William B., 4,552,421, Cl. 339-14.00R.

Pass, Shimeon: *See—*
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, 4,552,922, Cl. 525-54.110.

Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Protective helmet having a cooling harness. 4,551,858, Cl. 2-7.000.

Pastor, Stephen D.: *See—*
Spivack, John D.; and Pastor, Stephen D., 4,552,926, Cl. 524-219.000.

Pastrone, Giovanni, to OXIMETRIX, Inc. Liquid flow regulator. 4,552,336, Cl. 251-331.000.

Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, to Yeda Research & Development Co. Ltd. Method for multipolymer synthesis of organic compounds. 4,552,922, Cl. 525-54.110.

Patek, Frank, Jr.: *See—*
Chang, Long F.; and Patek, Frank, Jr., 4,552,275, Cl. 215-12.00R.

Patel, Kirit, to FAG Kugelfischer Georg Schafer (KGaA). Apparatus for the false twisting of threads using friction disks. 4,551,970, Cl. 57-339.000.

Patel, Shantilal G.; and Bell, William D., to International Playtex, Inc. Methods for preparing warp knitted fabrics. 4,551,892, Cl. 28-166.000.

Patterson, Ann D.; and Kachel, Wayne M., to Exxon Research and Engineering Co. Fluid coking with quench elutriation using industrial sludge. 4,552,649, Cl. 208-127.000.

Patterson, Elizabeth L., to Intel Corporation. MOS Isolation processing. 4,551,910, Cl. 29-576.00W.

Paukovits, Edward J., Jr.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.;

Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Paulson, Rollie W. Vibration free turntable apparatus. 4,553,230, Cl. 369-263.000.

Pawlak, Stephen M., to SCM Corporation. Ribbon feed mechanism. 4,552,473, Cl. 400-208.000.

Pawlowski, Henry A.: *See—*
Barker, Robert I.; King, David P.; and Pawlowski, Henry A., 4,552,025, Cl. 73-846.000.

Pawlowski, Thomas D.: *See—*
Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., 4,553,010, Cl. 219-10.55E.

Pay, Clifford R.; and Thornton, F. James, to Norton Christensen, Inc. Rotating pilot core bit for use in highly fractured formations. 4,552,231, Cl. 175-330.000.

Payne, Charles C., to Nalco Chemical Company. Prevention of silica migration in thermal insulation with water-soluble salts of inorganic oxygen-containing acids or acidic gases. 4,552,804, Cl. 428-283.000.

Payne, David W.: *See—*
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Payne, Jehugh A. Portable climbing device. 4,552,248, Cl. 182-142.000.

Peacock, Frank A.: *See—*
Sinha, Uday K.; and Peacock, Frank A., 4,552,200, Cl. 164-454.000.

Pearson, Glenn A. Fire retardant powders and methods. 4,552,803, Cl. 428-262.000.

Pech, Georg: *See—*
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.

Pedain, Josef: *See—*
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.

Pedersen, Sven: *See—*
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.

Peel, Geoffrey C., to U.S. Philips Corporation. Television transmitter. 4,553,162, Cl. 358-144.000.

Peery, John R.: *See—*
Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,552,561, Cl. 604-896.000.

Peeters, Hugo J. P.: *See—*
Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., 4,553,233, Cl. 370-16.000.

Peiffer, Dennis G.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., 4,552,916, Cl. 524-399.000.

Penner, Wayne A.: *See—*
Peterson, Robert D.; and Penner, Wayne A., 4,553,133, Cl. 340-347.0DD.

Perkin-Elmer Corporation, The: *See—*
Colombo, Paul, 4,553,022, Cl. 219-275.000.

Perlstein, Jerome H.: *See—*
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.

Permutare Corporation: *See—*
Gallup, William; and Schmidt, Detleff W. P., 4,552,512, Cl. 417-3.000.

Perri, Joseph A.: *See—*
Labate, Michael D.; and Perri, Joseph A., 4,552,343, Cl. 266-200.000.

Personal Products Company: *See—*
Kopolow, Stephen L., 4,552,618, Cl. 162-157.100.
Tritsch, Ludwig, 4,552,560, Cl. 604-390.000.

Persson, Bo G.; and Spicar, Erich, to Asea Aktiebolag. Insulated conductor for transformer windings and other inductive apparatus. 4,552,990, Cl. 174-117.0FF.

Petersen, Allan E.: *See—*
Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., 4,552,730, Cl. 423-82.000.

Petersen, Helmuth, to Berliner Elektronenspeicherring Gesellschaft. Plane-grating monochromator. 4,553,253, Cl. 378-084.000.

Peterson, John A.: *See—*
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.

Peterson, Robert D.; and Penner, Wayne A., to Mobil Oil Corporation. Serial floating point formatter. 4,553,133, Cl. 340-347.0DD.

Peterson, Steven H.: *See—*
Byers, William A.; and Peterson, Steven H., 4,553,034, Cl. 250-458.100.

Peting, Robert G., to AMSTED Industries Incorporated. Boltless restrained pipe joint. 4,552,385, Cl. 285-111.000.

Petrantoni, Joseph. Chambered cooler. 4,551,988, Cl. 62-457.000.

Petrini, Roland: *See—*
Morell, Joseph; Paris, Jean; and Petrini, Roland, 4,551,933, Cl. 36-120.000.

Petrolite Corporation: *See—*
Millar, Scott W., 4,552,591, Cl. 106-18.330.

Pfeifer, William: *See—*
Lacefield, William B.; and Pfeifer, William, 4,552,982, Cl. 564-164.000.

Pfister, Jean-Francois, to Societe Industrielle de Sonceboz S.A. Configuration and bearing for a motor-driven linear actuator. 4,553,056, Cl. 310-80.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.

Phelps, Douglas W., Jr.: *See—*
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.00S.

Philips Medical Systems: *See—*
Kanerva, Heikki, 4,553,255, Cl. 378-110.000.

Phillips Petroleum Company: *See—*
McDaniel, Max P., 4,552,937, Cl. 526-125.000.
Porter, Randall A.; and Reed, Larry E., 4,552,643, Cl. 208-48.0AA.
Stapp, Paul R., 4,552,646, Cl. 208-90.000.
Wiley, Bruce F., 4,552,011, Cl. 73-4.00R.
Wu, Yulin; and Mumallah, Naim A., 4,552,217, Cl. 166-270.000.

Phillips, Richard B.: *See—*
Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., 4,552,892, Cl. 514-531.000.

Phillips, Robert R.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., 4,552,916, Cl. 524-399.000.

Picker International Limited: *See—*
Randell, Christopher P., 4,553,096, Cl. 324-309.000.
Young, Ian R., 4,553,122, Cl. 335-296.000.

Piduch, Hans-Gunter: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,552,622, Cl. 202-241.000.

Piechota, John L.: *See—*
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., 4,553,192, Cl. 361-395.000.

Pike, Andrew J.: *See—*
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.

Piller, Gerard: *See—*
Burckhardt, Christof W.; Stauber, Philipp; and Piller, Gerard, 4,552,028, Cl. 73-862.040.

Pilost, Daniel, to International Business Machines Corp. Analog-to-digital converter. 4,553,128, Cl. 340-347.0AD.

Pioneer Electronic Corporation: *See—*
Hasegawa, Tsunao, 4,553,180, Cl. 360-74.400.
Hashimoto, Takashi, 4,553,204, Cl. 364-200.000.
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, 4,553,257, Cl. 381-57.000.

Pioneer Industrial Components, Inc.: *See—*
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,552,243, Cl. 181-169.000.

Pirota, Franco, to Saes Getters S.p.A. Getter assembly with improved support. 4,553,065, Cl. 313-481.000.

Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Flavoring with 4(hydrocarbylthio)acetoacetic esters. 4,552,770, Cl. 426-535.000.

Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, to ANT Nachrichtentechnik GmbH. Surge protection device. 4,553,189, Cl. 361-119.000.

Placke, Dale L.: *See—*
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Plastic Profiles, Inc.: *See—*
Hoffman, Michael K., 4,551,881, Cl. 16-199.000.

Platter, Helmuth, to Leitner S.p.A. Hydraulically controlled bulldozer-blade. 4,552,226, Cl. 172-815.000.

Pletsch, Hubert: *See—*
Wolf, Franz J.; and Pletsch, Hubert, 4,552,543, Cl. 464-83.000.

Plonczak, Garold W.: *See—*
Brown, Stanley F.; and Plonczak, Garold W., 4,553,183, Cl. 360-98.000.

Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., to FMC Corporation. Acaricidal difluoroethenylcyclopropanecarboxylates. 4,552,892, Cl. 514-531.000.

Pneumo Corporation: *See—*
Hrusch, Louis C., 4,552,324, Cl. 244-104.0FP.

Poch, Leonard J.: *See—*
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., 4,553,192, Cl. 361-395.000.

Podszun, Wolfgang; Bley, Fritjof; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Polymerizable dental compositions and molded dental articles produced therefrom. 4,552,906, Cl. 523-115.000.

Polaschegg, Hans-Dietrich; and Mathieu, Bernd, to Fresenius AG. Pump system for use with dialysis and like apparatus. 4,552,552, Cl. 604-4.000.

Poldner, Erich, to Filterwerk Mann & Hummel GmbH. Safety device for clamping screws on pressurized fluid receptacles. 4,552,283, Cl. 220-304.000.

Pollack, Frank S., Jr., to Honeywell Information Systems Inc. Decoupling apparatus for verification of a processor independent from an associated data processing system. 4,553,201, Cl. 364-200.000.

Polychrome Corp.: *See—*
Eklund, Nils; and Huang, Jen-chi, 4,552,827, Cl. 430-160.000.

Pomini Farrel S.p.A.: *See—*
Mantovan, Gianfranco, 4,552,007, Cl. 72-239.000.

Poole, Burnet M., to Ampex Corporation. Method and apparatus for recording and reproducing television or other broad band signals with an altered time base effect. 4,553,185, Cl. 360-10.100.

Poole, William L. Mini-desk. 4,552,419, Cl. 312-281.000.

Porchia, Salvatore. Flexible macro expansion process. 4,553,205, Cl. 364-300.000.

Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Antifoulants for thermal cracking processes. 4,552,643, Cl. 208-48.0AA.

Potter, Gary J., to Cambridge Engineering, Inc. Flow measurement for exhaust-type canopy and ventilating hood. 4,552,059, Cl. 98-115.100.

Pouxe, Joseph: *See—*
Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, 4,553,062, Cl. 313-93.000.

Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., to United States Gypsum Company. Gas desulfurization reactant. 4,552,683, Cl. 252-189.000.

Powell, Harry: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Powell, Thomas M.: *See—*
Cummins, Michael A.; and Powell, Thomas M., 4,552,506, Cl. 414-735.000.

Powercube Corporation: *See—*
Chan, Edward Y.; Henderson, Ross; and Vaudo, Anthony J., 4,553,198, Cl. 363-56.000.

PPG Industries, Inc.: *See—*
Black, Donald J.; and Tang, Robert H., 4,552,682, Cl. 252-186.260.

Prater, Cordell E., to Texas Instruments Incorporated. PMOS Input buffer compatible with logic inputs from an NMOS microprocessor. 4,553,051, Cl. 307-475.000.

Preiswerk, Werner; and Bruttel, Beat, to Ciba Geigy Corporation. Process for preventing the gelation of concentrated aqueous photoactivator solutions. 4,552,562, Cl. 8-101.000.

Prester, Lorrain W. Lamp. 4,553,195, Cl. 362-310.000.

Presti, Francis A., Jr. Shower stall threshold. 4,551,870, Cl. 4-613.000.

Prince Manufacturing Company: *See—*
Foxwell, W. John, 4,552,055, Cl. 92-5.00R.

Procter & Gamble Company, The: *See—*
Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., 4,552,872, Cl. 514-175.000.
Elm, Chance R.; and Lowrey, Erlend R., 4,552,753, Cl. 424-66.000.
Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., 4,552,680, Cl. 252-102.000.
Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, 4,552,709, Cl. 264-504.000.
Tse, Hing-Cheung, 4,552,776, Cl. 426-597.000.

Professional Medical Products, Inc.: *See—*
Reed, Albert D., 4,551,872, Cl. 5-445.000.

Prohl, Melvin A.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.

Prop, Gerrit: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Protector Agentur AB: *See—*
Uustalu, Jaan M., 4,552,817, Cl. 428-423.700.

Prottengeier, Manfred, to Doboy Verpackungsmaschinen GmbH. Welding and separating apparatus for plastic films. 4,551,965, Cl. 53-463.000.

Provesan, SA: *See—*
Esteve-Soler, Jose, 4,552,882, Cl. 514-300.000.

Provost, Lawrence A., to Kent-Moore Corporation. Crankshaft seal installing tool. 4,551,898, Cl. 29-235.000.

Puckett, Paul B., to Nature's Window, Inc. Animal enclosure. 4,552,093, Cl. 119-17.000.

Pudenz-Schulte Medical Research Corp.: *See—*
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

Pugar, Eloise A.: *See—*
Morgan, Peter E. D.; and Pugar, Eloise A., 4,552,740, Cl. 423-344.000.

Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, to Ciba Geigy AG. Process for producing a suspension of cyanuric chloride in water. 4,552,959, Cl. 544-190.000.

Purdy, Ricky A. Deer stand. 4,552,247, Cl. 182-116.000.

Purser, Kenneth H., to General Ionex Corporation. Wafer holding apparatus for ion implantation. 4,553,069, Cl. 315-111.810.

Purves, Robert B., to Boeing Company, The. Apparatus and method for temperature estimation of overhead conductors. 4,553,092, Cl. 324-106.000.

Putt, Ronald A.: *See—*
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Puyo, Philippe; and Bouvet, Lucien, to A.B.F. Industrie S.A. Apparatus for measuring the gradient or inclination of a surface or of a line. 4,551,921, Cl. 33-366.000.

Quaintance, Roger L.: *See—*
Jacobson, Wayne M.; and Quaintance, Roger L., 4,552,489, Cl. 406-39.000.

Quarrell, Richard; and Ranson, Paul A., to General Mills Products Corp. Jewelry container. 4,552,264, Cl. 206-45.140.

Quigley, Vincent P.: *See—*
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,552,921, Cl. 525-96.000.

Qullmalz, Wolfram: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, 4,552,402, Cl. 297-284.000.

R. J. Reynolds Tobacco Company: *See—*
Holt, Dewey L., 4,551,897, Cl. 29-235.000.

R W M-Raster-Werkzeugmaschinen GmbH: *See—*
Rotzler, Frank, 4,552,294, Cl. 226-142.000.

Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., to Ashland Oil, Inc. Sag resistant at essentially 1:1 ratio two component adhesive. 4,552,934, Cl. 525-458.000.

Racz, Gabor B.; and Lewis, Royce C., Jr. Lumbar belt. 4,552,135, Cl. 128-78.000.

Raddatz, Siegfried: *See—*
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.

Rademan, Jerry E.: *See—*
Gabriele, Peter D.; and Rademan, Jerry E., 4,552,885, Cl. 514-316.000.

Radford, Steven R.; and Hyland, Craig R., to Norton Christensen, Inc. Externally powered core catcher. 4,552,229, Cl. 175-240.000.

Raduechel, Bernd: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Raeckelboom, Marc A. Strand guide. 4,552,321, Cl. 242-130.000.

Rafalowski, Stanley A., Jr.: *See—*
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.

Rais, John M. Bottle handle for plastic prong bottle. 4,552,396, Cl. 294-27.100.

Raj, Rishi; and Baik, Sunggi, to Cornell Research Foundation, Inc. Use of free silicon in liquid phase sintering of silicon nitrides and sialons. 4,552,711, Cl. 264-65.000.

Ralston, Paul H.; and Whitney, Sandra L., to Calgon Corporation. Stabilization of soluble manganese and its reaction products. 4,552,665, Cl. 210-697.000.

Ramachandran, Venkataraman, to Ethyl Corporation. Preparation of 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid. 4,552,963, Cl. 546-156.000.

Ramachandran, Venkataraman, to Ethyl Corporation. 4-(1-Chlorocyclohex-3-enyl)pyridines and preparation of 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid. 4,552,964, Cl. 546-156.000.

Ramamurthy, Arakalgud V., to Union Carbide Corporation. Process for reducing surface melt fracture during extrusion of ethylene polymers. 4,552,712, Cl. 264-85.000.

Randall, John M.: *See—*
Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., 4,553,191, Cl. 361-212.000.

Randell, Christopher P., to Picker International Limited. Nuclear magnetic resonance method and apparatus. 4,553,096, Cl. 324-309.000.

Randen, Neil A., to Minnesota Mining and Manufacturing Company. Substantive moisturizing compositions. 4,552,755, Cl. 424-81.000.

Randleman, Marvin T.: *See—*
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.

Randolph, Donald A.: *See—*
Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., 4,552,683, Cl. 252-189.000.

Rangaswamy, Avvari. Inflatable uterine hemostat. 4,552,557, Cl. 604-96.000.

Ranken, Paul F.; and Walter, Thomas J., to Ethyl Corporation. 2-Nitro-4-(4-pyridinyl) benzoic acids and derivatives. 4,552,966, Cl. 546-290.000.

Ranson, Paul A.: *See—*
Quarrell, Richard; and Ranson, Paul A., 4,552,264, Cl. 206-45.140.

Rapps, Peter: *See—*
Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, 4,552,437, Cl. 350-339.00R.

Raskov, Herman E. Insulated electric heating element. 4,553,025, Cl. 219-461.000.

Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., to TRW Inc. Easily schedulable horizontal computer. 4,553,203, Cl. 364-200.000.

Raudat, John L.; and Thompson, Timothy H., to Standard-Knapp, Inc. Article grouper for case packer. 4,552,261, Cl. 198-425.000.

Raudys, Vytas: *See—*
Kupcikevicius, Vytautas; and Raudys, Vytas, 4,551,884, Cl. 17-49.000.

Ravid, Amotz: *See—*
Hoag, Ethan D.; and Ravid, Amotz, 4,552,439, Cl. 350-610.000.

Ray, Isaac. Entrance dust arrester. 4,551,879, Cl. 15-301.000.

Ray, Thomas E.: *See—*
Hoenstine, James M.; and Ray, Thomas E., 4,552,539, Cl. 441-66.000.

Raychem Corporation: *See—*
Larsson, Peter L., 4,551,915, Cl. 29-858.000.
Yaeger, John R.; and Morgan, Robert K., 4,551,974, Cl. 60-527.000.

RCA Corporation: *See—*
Acampora, Alfonse, 4,553,158, Cl. 358-31.000.
Batterman, Eric P., 4,553,042, Cl. 307-263.000.
Dingwall, Andrew G. F.; and Zazzu, Victor, 4,553,132, Cl. 340-347.0DA.
Hurst, Robert N., Jr.; and Dischert, Robert A., 4,553,157, Cl. 358-27.000.

Readyseal Limited: *See—*
Chick, Douglas K., 4,552,183, Cl. 138-99.000.

Reanal Finomvegyszergyar: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Reardon, Edward J.; and Lipson, Melvin A., to Dynachem Corporation. Carbonylic halides as activators for phototropic compositions. 4,552,830, Cl. 430-281.000.

Redl, Simon; and Wolfseder, Alfons. Apparatus for the continuous boiling of wort. 4,552,060, Cl. 99-278.000.

Reed, Albert D., to Professional Medical Products, Inc. Orthopedic traction frame. 4,551,872, Cl. 5-445.000.

Reed, Edward D., Jr.: *See—*
Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., 4,553,244, Cl. 372-95.000.

Reed, Larry E.: *See—*
Porter, Randall A.; and Reed, Larry E., 4,552,643, Cl. 208-48.0AA.

Reed, Todd R., to International Business Machines Corporation. Analog adaptive magnitude equalizer. 4,553,248, Cl. 375-14.000.

Reed, William R., Jr.: *See—*
Komanduri, Ranga; and Reed, William R., Jr., 4,552,492, Cl. 407-114.000.

Regelman, Dale F.: *See—*
Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., 4,552,945, Cl. 528-62.000.

Regie Nationale des Usines Renault: *See—*
Boccadoro, Yves; and Chastagner, Paul, 4,552,109, Cl. 123-339.000.

Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game having stackable tiles and moveable playing pieces. 4,552,363, Cl. 273-241.000.

Reid, Lorne S. Method for separating lysozyme from egg-white. 4,552,845, Cl. 435-206.000.

Reid, Robert A., to CPC Engineering Corporation. Wear ring mount for lift pumps. 4,552,508, Cl. 415-72.000.

Reifenhauser GmbH & Co. Maschinenfabrik: *See—*
Halter, Hartmut, 4,552,317, Cl. 242-65.000.

Reinecke, Paul: *See—*
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.

Reinelt, Werner: *See—*
Krieger, Karl; and Reinelt, Werner, 4,552,172, Cl. 137-484.600.

Reiss, John R.: *See—*
Balukin, Richard F.; and Reiss, John R., 4,552,412, Cl. 303-67.000.

Relyveld, Edgar H.; and Henocq, Emile, to Institut Pasteur. Allergenic compositions. 4,552,756, Cl. 424-88.000.

Reneault, Patrick; and Ovaert, Francis, to SMAC Acieroid. Exterior insulating element and cladding employing such elements. 4,551,958, Cl. 52-309.400.

Research Corporation: *See—*
Goodman, Irving; and Hiatt, Robert B., 4,552,764, Cl. 514-2.000.

Reust, Dennis K., to Conoco Inc. Apparatus and method for compensating roll of a scanner platform. 4,553,028, Cl. 250-201.000.

Reuter, Herbert: *See—*
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, 4,552,681, Cl. 252-140.000.

Revett, Lowell W., to Halliburton Company. Spiral gun apparatus. 4,552,234, Cl. 175-4.600.

Reynolds, George A.: *See—*
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.

Reynolds, James F.: *See—*
Davis, Paul J.; and Reynolds, James F., 4,552,759, Cl. 424-93.000.

Reysman, Marjan. Spinning disc toy. 4,552,542, Cl. 446-254.000.

Rhodes, Edward: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,552,098, Cl. 122-379.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Desbois, Michel, 4,552,984, Cl. 568-29.000.

Riberi, Bernd: *See—*
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.

Rich Products Corporation: *See—*
Kahn, Marvin L.; and Lynch, Robert J., 4,552,773, Cl. 426-564.000.

Rich, Robert A.: *See—*
Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., 4,552,023, Cl. 73-715.000.

Richardson, Robert D.; and Leanhart, Thomas B. Protective shield device for use with medicine vial and the like. 4,552,277, Cl. 215-249.000.

Ricoh Co., Ltd.: *See—*
Suzaki, Masayuki; and Kanno, Tetuo, 4,552,475, Cl. 400-144.200.
Yano, Takashi, 4,553,149, Cl. 346-153.100.

Ricouard, Jacques; and Chappoux, Claude, to L.A. Ricouard S.A.; and Ronis S.A. Baggage closure. 4,551,998, Cl. 70-69.000.

Riffer, Richard, to California and Hawaiian Sugar Company. Enzyme electrode and method for dextran analysis. 4,552,840, Cl. 435-14.000.

Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., to International Business Machines Corporation. Process of hot isostatic pressing of ferrite material. 4,552,710, Cl. 264-64.000.

Riley, Danny A.; and Bain, James L. W., to Medical College of Wisconsin, The. Nerve identification method. 4,552,145, Cl. 128-630.000.

Riley, George R.: *See—*
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.

Rinker, Debra Kay: *See—*
Brown, James E., 4,551,942, Cl. 47-14.000.

Riseman, Jacob: *See—*
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.

Risley, John R., to International Harvester Company. Tractor-trailor brake acceleration system. 4,552,398, Cl. 303-7.000.

Robert Bosch GmbH: *See—*
Auer, Hugo, 4,552,613, Cl. 156-515.000.
Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, 4,552,437, Cl. 350-339.00R.

Roberts, Douglass B.: *See—*
McClure, Scott G., 4,552,779, Cl. 427-2.000.

Roche, William J.; and Parks, Ralph P., Jr., to GTE Products Corporation. Method of dispensing mercury into a fluorescent lamp and lamp to operate with method. 4,553,067, Cl. 313-546.000.

Rochester, James R.: *See—*
Glaser, Michael S.; and Rochester, James R., 4,552,454, Cl. 356-5.000.

Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Furniture hinge including axle members mounting hinge links to hinge casing. 4,551,883, Cl. 16-370.000.

Rockwell International Corporation: *See—*
Centala, John P., 4,553,210, Cl. 364-434.000.
Domino, William J.; Havens, Donald P.; and Johnson, Robert A., 4,553,060, Cl. 310-333.000.
Moore, Larry V., 4,552,391, Cl. 292-5.000.
Morgan, Peter E. D.; and Pugar, Eloise A., 4,552,740, Cl. 423-344.000.
von Bieren, Karlheinz, 4,552,435, Cl. 350-169.000.
Warren, Leslie F., 4,552,927, Cl. 525-279.000.
Wiers, John W., 4,552,405, Cl. 297-375.000.
Young, James P., 4,553,108, Cl. 330-300.000.

Rogers, Scott A. Analogue dial calculator/wrist watch. 4,552,464, Cl. 368-10.000.

Rogo, Casimir; and Lenz, Herman N., to Teledyne Industries, Inc. Turbine engine variable geometry device. 4,552,308, Cl. 239-457.000.

Rohm and Haas Company: *See—*
Amick, David R., 4,552,752, Cl. 424-21.000.

Rollett, John M., to British Telecommunications. RC-Active filters. 4,553,103, Cl. 330-107.000.

Rolls-Royce Inc.: *See—*
Szuminski, Gary F.; and Jones, Thomas J., 4,552,309, Cl. 239-265.190.

Rolls-Royce Ltd.: *See—*
Mills, David, 4,552,197, Cl. 164-34.000.
Mills, David; and Kington, Alan D., 4,552,198, Cl. 164-122.200.
Szuminski, Gary F.; and Jones, Thomas J., 4,552,309, Cl. 239-265.190.

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Crimpable capping assembly for a centrifuge tube. 4,552,278, Cl. 215-277.000.

Rome, Charles P.: *See—*
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Ronen, Ya'Acov: *See—*
Grynberg, Ami; and Ronen, Ya'Acov, 4,553,135, Cl. 340-564.000.

Ronis S.A.: *See—*
Ricouard, Jacques; and Chappoux, Claude, 4,551,998, Cl. 70-69.000.

Roop, Stevie C., to Medeco Security Locks, Inc. High security T-handle assembly. 4,552,001, Cl. 70-208.000.

Root, Lois J.: *See—*
Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., 4,552,787, Cl. 427-304.000.

Rosemount Inc.: *See—*
Marxer, John E.; and Kowles, John W., 4,553,137, Cl. 340-582.000.

Rosenquist, Niles R.; and Tyrell, John A., to General Electric Company. Compatibilization of polycarbonate blends. 4,552,924, Cl. 525-146.000.

Rosenwaks, Salman; and Chuchem, David. Chemical laser. 4,553,243, Cl. 372-89.000.

Rosenwinkel, Donald A.: *See—*
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.

Rosin, Michael L.: *See—*
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,917, Cl. 524-590.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,943, Cl. 528-50.000.

Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., to Mobil Oil Corporation. Fluidized catalytic cracking process. 4,552,648, Cl. 208-120.000.

Ross, Edward E., to Del Monte Corporation. Machine and method for cleaning can flanges. 4,552,189, Cl. 141-80.000.

Ross, Joseph L.: *See—*
Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., 4,552,645, Cl. 208-80.000.

Ross, Lawrence J.: *See—*
Asato, Goro; and Ross, Lawrence J., 4,552,897, Cl. 514-554.000.

Ross, Richard J.; and Speller, David J., to Baker Oil Tools, Inc. Unloading injection control valve. 4,552,218, Cl. 166-319.000.

Rotron Incorporated: *See—*
Brown, Fred A.; and Grouse, Alan F., 4,553,075, Cl. 318-254.000.

Rotzler, Frank, to R W M-Raster-Werkzeugmaschinen GmbH. Gripping feeder for strip or wire stock. 4,552,294, Cl. 226-142.000.

Rovedo, Nivo: *See—*
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.

Rowlett, Harold G.: *See—*
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., 4,552,479, Cl. 402-74.000.

Rubin, Mae K., to Mobil Oil Corporation. Synthesis of crystalline silicate ZSM-12. 4,552,738, Cl. 423-328.000.

Rudolphy, Albert; and Werner, Gerhard, to Hoechst Aktiengesellschaft. Process for preparing printing ink binders, and their use in printing inks. 4,552,592, Cl. 106-30.000.

Ruetgerswerke Aktiengesellschaft: *See—*
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, 4,552,575, Cl. 62-544.000.

Rumancik, Joseph A.: *See—*
Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James P., 4,552,718, Cl. 376-216.000.

Rummelsburg, Al S., to Kidde Consumer Durables Corp. Cookware bottom wall structure. 4,552,284, Cl. 220-453.000.

Rung, Chester E. Mailbox with indicator flags. 4,552,302, Cl. 232-35.000.

Ruscigno, Harry G., to Advanced Medical Products, Inc. Pulsating hydrotherapy system. 4,552,132, Cl. 128-38.000.

Rutter, Larry J.: *See—*
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., 4,552,295, Cl. 226-195.000.

Ryobi Ltd.: *See—*
Ishikawa, Noritoki, 4,552,546, Cl. 474-82.000.

Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,552,798, Cl. 428-194.000.

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Saad, Saad S.; and Knop, Charles M., to Andrew Corporation. Overmoded tapered waveguide transition having phase shifted higher order mode cancellation. 4,553,112, Cl. 333-21.00R.

Saeed, Abdul, to Black & Decker Inc. Carbon brush with pin for limiting movement. 4,553,057, Cl. 310-242.000.

Saes Getters S.p.A.: *See—*
Pirota, Franco, 4,553,065, Cl. 313-481.000.

Sagara, Seiji; and Hasegawa, Yuuji, to Canon Kabushiki Kaisha. Variable magnification copying apparatus with margin erase. 4,552,447, Cl. 355-3.00R.

St. Clair, Terry L.; and Burks, Harold D., to United States of America, National Aeronautics and Space Administration. Process of end-capping a polyimide system. 4,552,931, Cl. 525-432.000.

St. Jude Children's Research Hospital: *See—*
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,757, Cl. 424-89.000.
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,758, Cl. 424-89.000.

Sairanen, Martti; and Virta, Matti, to Oy Helvar. Electronic ballast for a discharge lamp. 4,553,070, Cl. 315-209.00R.

Saito, Junichi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Saito, Takashi: *See—*
Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, 4,552,944, Cl. 528-55.000.

Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, to Ma Ma Macaroni Co., Ltd. Process for preparing boiled noodles. 4,552,772, Cl. 426-557.000.

Sakabe, Yukio: *See—*
Kawabata, Kenji; and Sakabe, Yukio, 4,552,853, Cl. 501-134.000.

Sakaeda, Keiko: *See—*
Saskiki, Takashi; and Sakaeda, Keiko, 4,552,237, Cl. 177-25.000.

Sakaguchi, Fumio: *See—*
Hirota, Kiwami; Tamano, Hideki; and Sakaguchi, Fumio, 4,552,930, Cl. 525-333.800.

Sakai, Kazuo: *See—*
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.

Sakaki, Masayuki: *See—*
Tanigaki, Shuzo; and Sakaki, Masayuki, 4,553,139, Cl. 340-626.000.

Sakakibara, Naoji: *See—*
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,209, Cl. 364-431.070.

Sakakibara, Takashi: *See—*
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, 4,553,257, Cl. 381-57.000.

Sakakibara, Yasuyuki: *See—*
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, to Nippon Piston Ring Co., Ltd. Method of manufacturing a rotor for a rotary fluid pump. 4,551,896, Cl. 29-156.40R.

Sakamaki, Hisashi: *See—*
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.

Sakamoto, Ryuji; and Yamazaki, Taro, to Toshiba Silicone Co., Ltd. Electroconductive silicone elastomer compositions. 4,552,688, Cl. 252-511.000.

Sakata, Hideo; and Yoda, Yukiji, to Mitutoyo Mfg. Co., Ltd. Measuring instrument. 4,551,919, Cl. 33-1.00M.

Sakata, Shinsuke: *See—*
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Saleeb, Fouad Z.; and Zeller, Bary L., to General Foods Corporation. Method of packaging coffee with carbon dioxide sorbent. 4,552,767, Cl. 426-395.000.

Salomon S.A.: *See—*
Morell, Joseph; Paris, Jean; and Petrini, Roland, 4,551,933, Cl. 36-120.000.

Sammons, Barry E.: *See—*
Struger, Odo J.; and Sammons, Barry E., 4,553,224, Cl. 364-900.000.

Samuelsen, Sigvart J.: *See—*
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.00S.

Samuelsson, Bengt A. Method and apparatus for killing field weeds. 4,551,968, Cl. 56-16.400.

Sandbrook, Thomas D.; and Scandrol, Roy O., to Conoco Inc. Control of froth cell performance through the use of differential bubbler tubes. 4,552,651, Cl. 209-1.000.

Sanden Corporation: *See—*
Matsushita, Takashi, 4,552,005, Cl. 72-68.000.
Shimizu, Shigemi, 4,552,517, Cl. 418-55.000.

Sanders Associates, Inc.: *See—*
Butler, Jesse L., 4,553,146, Cl. 343-379.000.

Sanders, Royden C., Jr.; and Forsyth, John L. Dot matrix printers and print heads therefor. 4,552,064, Cl. 101-93.050.

Sane, Ajit Y.: *See—*
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Sankyo Chemical Company, Limited: *See—*
Takaku, Hiroshi; and Noda, Takeshi, 4,552,955, Cl. 536-24.000.

Sankyo Company Limited: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Sano, Tomomi: *See—*
Kawasaki, Kikuo; and Sano, Tomomi, 4,553,211, Cl. 364-479.000.

Sano, Yukinori; Hoshi, Yoshikazu; and Takahashi, Ikuo, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Apparatus for controlling the number of operative cylinders of a diesel engine. 4,552,114, Cl. 123-481.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Sumigawa, Yukio, 4,552,511, Cl. 416-242.000.

Santen Pharmaceutical Co., Ltd.: *See—*
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,969, Cl. 548-179.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.

Santostasi, Paul A.: *See—*
Dutt, Herbert V.; and Santostasi, Paul A., 4,552,328, Cl. 249-67.000.

Sanyo Electric Co., Ltd.: *See—*
Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, 4,553,011, Cl. 219-10.55B.

Saotome, Yoichiro: *See—*
Yoshida, Kei; and Saotome, Yoichiro, 4,551,946, Cl. 49-340.000.

Sarnezki, Herbert; and Hubner, Klemens, to Siemens Aktiengesellschaft. Mounting for data display equipment. 4,552,418, Cl. 312-242.000.

Saruyama, Toshio: *See—*
Mikami, Ryuzo; and Saruyama, Toshio, 4,552,919, Cl. 524-860.000.

Sasaki, Gen; and Kameyama, Shuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device. 4,551,911, Cl. 29-576.00W.

Sasaki, Makoto: *See—*
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.

Sasaki, Susumu, to Fujitsu Limited. Multistage linear amplifier for a wide range of input signal levels. 4,553,105, Cl. 330-145.000.

Sasaki, Yasusuke, to Teijin Limited. Method and apparatus for switching yarn in turret-type winder. 4,552,313, Cl. 242-18.00A.

Sasatani, Seiei: *See—*
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.

Sashida, Iwao: *See—*
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,552,243, Cl. 181-169.000.

Saskiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus. 4,552,237, Cl. 177-25.000.

Sass, Richard G., to National Electric Control Company. Miniature coaxial conductor pair and multi-conductor cable incorporating same. 4,552,989, Cl. 174-103.000.

Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, to Sumitomo Electric Industries, Ltd. Hot dipping method for forming a metal or alloy coating around an elongated body. 4,552,788, Cl. 427-374.500.

Sato, Shigeyuki; and Matsushita, Mitsumasa, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Epoxy resin composition. 4,552,907, Cl. 523-455.000.

Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, to Kabushiki Kaisha Sato. Automatic label winding and charging device for printers. 4,552,610, Cl. 156-384.000.

Satoh, Makoto: *See—*
Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, 4,552,414, Cl. 303-115.000.

Sauer, Wolfgang, to ITT Industries, Inc. Integrated circuit for color television receivers. 4,553,163, Cl. 358-158.000.

Saunders, Norman B. Dual storage heating and cooling system. 4,552,205, Cl. 165-18.000.

Sawicki, Gary: *See—*
Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., 4,552,554, Cl. 604-51.000.

Scandrol, Roy O.: *See—*
Sandbrook, Thomas D.; and Scandrol, Roy O., 4,552,651, Cl. 209-1.000.

Scanpump AB: *See—*
Olsson, Aron, 4,552,178, Cl. 137-625.460.

Scarpero, William J., Jr.: *See—*
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.

Schabel, Amelia A.: *See—*
Nagarajan, Ramakrishnan; and Schabel, Amelia A., 4,552,701, Cl. 260-112.50R.

Scharmann GmbH & Co.: *See—*
Malzkorn, Matthias, 4,552,495, Cl. 409-136.000.

Schausberger, Christoph, to Bayerische Motoren Werke AG. Cylinder head of light metal for air-compressing, auto-igniting internal combustion engines. 4,552,108, Cl. 123-270.000.

Scheidecker, Ralph W.: *See—*
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., 4,552,710, Cl. 264-64.000.

Scheithauer, Richard A.: *See—*
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., 4,552,729, Cl. 423-55.000.

Schenck, Robert A.: *See—*
Bromley, Eric; and Schenck, Robert A., 4,552,360, Cl. 273-85.00G.

Schenk, Harold L., Jr.; and Junker, Warren R., to Westinghouse Electric Corp. Eddy current thickness gauge with constant magnetic bias. 4,553,095, Cl. 324-230.000.

Scherbatskoy, Serge A. Systems, apparatus and methods for measuring while drilling. 4,553,226, Cl. 367-83.000.

Schering Aktiengesellschaft: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Schiemann, Wolfram. Arrangement of fuel tanks for vehicles. 4,552,175, Cl. 137-571.000.

Schiff, Peter. Percutaneous intra-aortic balloon having an EKG electrode and a twisting stylet for coupling the EKG electrode to monitoring and/or pacing instrumentation external to the body. 4,552,127, Cl. 128-1.00D.

Schipper, Gerhard: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Schirmann, Jean-Pierre: *See—*
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Schlanger, Samuel L. Passenger restraint safety system. 4,552,381, Cl. 280-752.000.

Schlatter, Beat; and Schnyder, Eugen, to Sulzer-Escher Wyss Ltd. Rolling mill for sheet material. 4,552,008, Cl. 72-243.000.

Schlegel Lining Technology GmbH: *See—*
Hammer, Heiner I., 4,552,485, Cl. 405-184.000.

Schlingmann, Merten: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Schlumberger Technology Corporation: *See—*
Clark, Brian, 4,553,097, Cl. 324-338.000.

Schmeckenbecher, Arnold F.: *See—*
Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., 4,552,615, Cl. 158-659.100.

Schmid, Donald T. Building block. 4,551,959, Cl. 52-309.120.

Schmid, Karl; and Baumann, Horst, to Henkel Kommanditgesellschaft auf Aktien. Process for the preparation of fatty acid alkyl esters having improved processing properties. 4,552,702, Cl. 260-428.000.

Schmid, Rudolf, to Siemens Aktiengesellschaft. Gas laser with a spring-supported capillary. 4,553,240, Cl. 372-61.000.

Schmidt, Detleff W. P.: *See—*
Gallup, William; and Schmidt, Detleff W. P., 4,552,512, Cl. 417-3.000.

Schmidt, Dieter: *See—*
Bach, Eric; and Schmidt, Dieter, 4,553,254, Cl. 378-098.000.

Schmidt, Gerhard S. E. Coupling for pressure hose. 4,552,387, Cl. 285-238.000.

Schmidt, Terrence W., to Lockheed Missiles & Space Co., Inc. High-speed semisubmerged ship maneuvering system. 4,552,083, Cl. 114-61.000.

Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, to Hoesch Aktiengesselschaft. Hydraulic press. 4,552,524, Cl. 425-406.000.

Schmitt, Jurgen: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Schmitt, Peter C.: *See—*
Cannon, Lee E.; Schmitt, Peter C.; and Cheever, Dan R., 4,553,080, Cl. 318-696.000.

Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., to Bristol-Myers Company. 3α,15-Bis(chloroacetoxy)-4β-hydroxy-12,13-epoxytrichothec-9-ene useful as an antitumor agent. 4,552,971, Cl. 549-332.000.

Schneider, Helmut: *See—*
Hansen, Henning; and Schneider, Helmut, 4,551,900, Cl. 29-408.000.

Schneider, William A., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced resin tank with particular joint structure. 4,552,281, Cl. 220-5.00A.

Schneider, Wolfgang: *See—*
Dreher, Bernd; and Schneider, Wolfgang, 4,552,815, Cl. 428-415.000.

Schneidmiller, Rodney G. Insect trap selective for wasps. 4,551,941, Cl. 43-107.000.

Schnell, Hans, to Escher Wyss GmbH. Stirrer apparatus for paper stock. 4,552,462, Cl. 366-280.000.

Schnell, William J.: *See—*
Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., 4,552,721, Cl. 422-28.000.

Schnelle, Eberhard; Jung, Hans-Ulrich; and Hetzel, Werner, to Stierlen-Maquet AG. Operating table. 4,552,346, Cl. 269-322.000.

Schnettler, Richard A.: *See—*
Dage, Richard C.; and Schnettler, Richard A., 4,552,880, Cl. 514-277.000.

Schnyder, Eugen: *See—*
Schlatter, Beat; and Schnyder, Eugen, 4,552,008, Cl. 72-243.000.

Schobel, Alexander M.; and Schumacher, Robert W., to Warner-Lambert Company. Method for deodorizing hypochlorite denture cleansing solutions and product containing a delayed release hypochlorite deactivator. 4,552,679, Cl. 252-90.000.

Schoch, Robert, to Weinmann GmbH & Co. KG. Ski boot construction. 4,551,932, Cl. 36-117.000.

Schoch, Robert, to Weinmann AG. Cycle wheel rim brake construction. 4,552,251, Cl. 188-24.210.

Schoffmann, Franz: *See—*
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.

Scholich, Peter, to Nixdorf Computer AG. Method and apparatus for recording data. 4,553,177, Cl. 360-43.000.

Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates containing isocyanurate groups, the compounds which may be obtained according to this process, and the use thereof for the production of polyurethanes. 4,552,946, Cl. 528-67.000.

Schollenberger, Charles S., to B. F. Goodrich Company, The. Radiation curable polyurethanes. 4,552,932, Cl. 525-440.000.

Scholz, Harald: *See—*
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.

Schorman, Eric: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.

Schott, Jeffery L. Apparatus for breaking railroad rails. 4,552,291, Cl. 225-96.500.

Schotten, Alfons, to Eberhard Hoesch & Sohne GmbH & Co. Plate filter having a movable filter cloth. 4,552,660, Cl. 210-225.000.

Schubring, Allin W., to Square D Company. Pneumatic timing attachment for an electromagnetic device. 4,553,117, Cl. 335-61.000.

Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, to Hoechst Aktiengesellschaft. Cooling device. 4,552,727, Cl. 422-241.000.

Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, to Pudenz-Schulte Medical Research Corp. Flow control valve. 4,552,553, Cl. 604-9.000.

Schultshick, Robert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for automatically displacing the radial position of a cross-feed slide in a cross-feed head of a cutting machine. 4,552,493, Cl. 408-3.000.

Schumacher, Robert W.: *See—*
Schobel, Alexander M.; and Schumacher, Robert W., 4,552,679, Cl. 252-90.000.

Schuppert, Leo V., Jr.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., to Eaton Corporation. Bidirectional power FET with field shaping. 4,553,151, Cl. 357-23.400.

Schwab, Adolf: *See—*
Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, 4,553,063, Cl. 313-325.000.

Schwarting, Fritz: *See—*
Zucker, Stanley; and Schwarting, Fritz, 4,552,341, Cl. 256-1.000.

Schwartz, Albert B.: *See—*
Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., 4,552,648, Cl. 208-120.000.

Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, to Motoren- und Turbinen-Union Munchen GmbH. Arrangement for joining two relatively rotatable turbomachine components. 4,552,509, Cl. 415-135.000.

SCM Corporation: *See—*
Pawlak, Stephen M., 4,552,473, Cl. 400-208.000.

Scott, William L., to Eli Lilly and Company. 3-Mercaptomethyl-2-oxo-1-pyrrolidine acetic acids and use for hypertension. 4,552,889, Cl. 514-424.000.

Seaquist, James J.; and Harmon, Elred R., to Square D Company. High voltage terminal. 4,552,424, Cl. 339-32.00R.

Seehase, Jack C. Recoil pad utilizing struts disposed at a compound angle and having adjustable energy-absorbing characteristics. 4,551,937, Cl. 42-74.000.

Segalla, Ruggero, to Sky S.p.A. Feeding trough for flying animals, particularly turkeys, capable of regulating the level of the feed. 4,552,095, Cl. 119-53.000.

Segawa, Hirohisa: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.

Segawa, Yasuhiko: *See—*
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,552,810, Cl. 428-398.000.

Seino, Tadashi: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Seiter, Wolfgang: *See—*
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, 4,552,681, Cl. 252-140.000.

Sekellick, Ron S., to Mott Metallurgical Corporation. Pneumatic hydro-pulse filter system and method of operation. 4,552,669, Cl. 210-798.000.

Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco Inc. Extended amine curing agents and epoxy resins cured therewith. 4,552,933, Cl. 525-454.000.

Selvaer, Ole-Kristian: *See—*
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Selvaggi, Victor E. Brassiere. 4,552,144, Cl. 128-510.000.

Sendzimir, Michael G.: *See—*
Turley, John W.; and Sendzimir, Michael G., 4,551,878, Cl. 15-102.000.

Sendzimir, Tadeusz. Intermediate accumulating system in processing strip material. 4,552,299, Cl. 228-5.700.

Sensenig, Darryl L.: *See—*
Colyer, Timothy D.; and Sensenig, Darryl L., 4,552,606, Cl. 156-280.000.

Senshu, Takao: *See—*
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.

Sente, Hirohisa: *See—*
Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, 4,553,016, Cl. 219-121.0LG.

Senzai, Ryosuke: *See—*
Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, 4,552,179, Cl. 137-625.650.

Seprodi, Janos: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Seroka, Helmut: *See—*
Hein, Karl; Hubig, Markus; and Seroka, Helmut, 4,552,342, Cl. 266-175.000.

Setzer, Helmut: *See—*
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Severinsson, Anders S.: *See—*
Johansson, Karl H.; and Severinsson, Anders S., 4,552,455, Cl. 356-5.000.

Sewell Plastics, Inc.: *See—*
Hunter, Burnis L., 4,552,527, Cl. 425-535.000.

SGS-ATES Componenti Elettronici SpA: *See—*
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, 4,553,046, Cl. 307-289.000.

Shaffer, Jeffery J. Method of playing strategy game. 4,552,364, Cl. 273-260.000.

Shai, Yechiel: *See—*
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, 4,552,922, Cl. 525-54.110.

Shaikh, Mujahid L.: *See—*
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.

Sharp Kabushiki Kaisha: *See—*
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, 4,552,436, Cl. 350-337.000.
Tsujii, Katsumi, 4,553,154, Cl. 357-71.000.

Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., to Leland Stanford University, The Board of Trustees of the. Fiber optic amplifier. 4,553,238, Cl. 372-6.000.

Shaw, Wilfrid G., to Standard Oil Company, The. Oxidation of unsaturated aldehydes. 4,552,978, Cl. 562-535.000.

Sheem, Sang K.: *See—*
Giallorenzi, Thomas G.; Sheem, Sang K.; and Taylor, Henry F., 4,552,457, Cl. 356-345.000.

Sheldon, William W.; and Axford, Theodore G., to Sheldon, William W. Retrieval of lobsters and other objects. 4,551,938, Cl. 43-4.500.

Shelton, William E. A., to Alan Shelton Limited. Handling of textile yarn. 4,551,927, Cl. 34-82.000.

Sheng, Wang. Stapling gun. 4,552,296, Cl. 227-109.000.

Shepard, Joseph F.: *See—*
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.

Sheppard, Joseph R., to True Dimension Inc. Portable winch. 4,552,340, Cl. 254-358.000.

Shibata, Tomoyuki: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Shibuya, Kunihiro: *See—*
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Shimamoto, Ichiji: *See—*
Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, 4,553,123, Cl. 336-83.000.

Shimizu, Shigemi, to Sanden Corporation. Scroll type fluid displacement apparatus and method of assembly. 4,552,517, Cl. 418-55.000.

Shimura, Takaki: *See—*
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Shingu, Shitta: *See—*
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.

Shinkawa, Takao: *See—*
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.

Shinki, Kiyoshi: *See—*
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Shinko-Pfaudler Company, Ltd.: *See—*
Matsumoto, Tadao; and Inoue, Kazuo, 4,552,724, Cl. 422-138.000.

Shinoda, Kazuo: *See—*
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Shionogi & Co., Ltd.: *See—*
Igarashi, Kikuo; and Honma, Tsunetoshi, 4,552,695, Cl. 260-239.30B.
Itoh, Shinji; and Moroji, Takashi, 4,552,865, Cl. 514-15.000.
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.

Shiraishi, Shiro: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Shirose, Haruya: *See—*
Hara, Kenjiro; and Shirose, Haruya, 4,552,104, Cl. 123-192.00R.

Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., to United States of America, Interior. Recovery of titanium from perovskite using sulfuric acid leaching. 4,552,730, Cl. 423-82.000.

Shkolnik, Alexander: *See—*
Borodulin, German; Shkolnik, Alexander; and Baron, Raphael, 4,552,125, Cl. 126-437.000.

Shoji, Takashi; and Ochiai, Kenji, to Showa Denko Kabushiki Kaisha. Electrically conductive pastes. 4,552,691, Cl. 252-514.000.

Showa Denko Kabushiki Kaisha: *See—*
Hirota, Kiwami; Tamano, Hideki; and Sakaguchi, Fumio, 4,552,930, Cl. 525-333.800.
Shoji, Takashi; and Ochiai, Kenji, 4,552,691, Cl. 252-514.000.

Shultz, Clifford G. Destruction of organic hazardous wastes. 4,552,667, Cl. 210-757.000.

Shur-Lok Corporation: *See—*
Grefe, Peter, 4,552,050, Cl. 83-685.000.

Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., to Standard Oil Company, The. Method of forming a nonaqueous stable emulsion of rubber in polymerizable monomer, and the polymerization process and thermoplastic copolymer produced thereby. 4,552,921, Cl. 525-96.000.

Sibley, Henry C., to General Signal Corporation. Modular output driver for vital processor systems. 4,553,200, Cl. 364-200.000.

Sickmuller, Alfred: *See—*
Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, 4,552,771, Cl. 426-548.000.

Siegel, Carole E.: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,552,899, Cl. 514-568.000.

Siemens Aktiengesellschaft: *See—*
Auernhammer, Erich, 4,553,055, Cl. 310-62.000.
Bach, Eric; and Schmidt, Dieter, 4,553,254, Cl. 378-098.000.
Goerne, Jan; and Toussaint, Hans-Norbert, 4,553,249, Cl. 375-25.000.
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, 4,552,072, Cl. 104-88.000.
Sarnezki, Herbert; and Hubner, Klemens, 4,552,418, Cl. 312-242.000.
Schmid, Rudolf, 4,553,240, Cl. 372-61.000.
Slettenmark, Bruno, 4,553,147, Cl. 346-75.000.
Stebegg, Josef; and Miek, Wolfgang, 4,552,987, Cl. 174-52.00R.
Tilly, Bodo, 4,553,268, Cl. 455-607.000.

Sigg, Hans; and Staedeli, Otto, to Maag Gear Wheel & Machine Company Limited. Clutch arrangement for power transmission, especially a reduction gear drive unit for marine vessels. 4,552,258, Cl. 192-67.00A.

Silkman, Ronald W., to Eastman Kodak Company. Apparatus for reading encoded information on a carrier subject to non-uniform motion. 4,553,027, Cl. 235-474.000.

Sills, David E.: *See—*
Beckman, John A.; and Sills, David E., 4,552,544, Cl. 464-162.000.

Sim, Malcolm F.; and Yates, David B., to Boots Company PLC, The. Method of treating heart disease. 4,552,884, Cl. 514-312.000.

Simnar, Inc.: *See—*
Molnar, Robert, 4,551,885, Cl. 17-59.000.
Singer Company, The: *See—*
Vartoukian, Artin G.; and Moussaian, Gregoire G., 4,552,081, Cl. 112-258.000.
Sinha, Uday K.; and Peacock, Frank A., to Southwire Company. Control in continuous casting to enhance feeding. 4,552,200, Cl. 164-454.000.
Sioux Steam Cleaner Corporation: *See—*
Finger, John F., 4,552,162, Cl. 134-57.00R.
Sippel, Friedrich: *See—*
Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, 4,552,509, Cl. 415-135.000.
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 3-(Pyrimidin-5-yl-oxyphenyl)-1-benzoyl-(thio)-urea compounds useful as pesticides. 4,552,900, Cl. 514-269.000.
Sitte, Hellmuth; and Kleber, Heinrich, to C. Reichert Optische Werke, AG. Apparatus for cooling a biological or medical specimen. 4,551,992, Cl. 62-514.00R.
Skidanenko, Constantine V.; and McGibbon, Gregor D., to GTE Lenkurt Incorporated Communication Systems. Apparatus for isolating the voice frequency path from the floating battery feed during signalling. 4,552,994, Cl. 179-16.0AA.
Skinner, David R.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.
Skinner, William H., Jr.: *See—*
Jenczewski, Theodore J.; and Skinner, William H., Jr., 4,552,635, Cl. 204-182.400.
Skipper, John B., to Dunlop Limited. Reinforced connecting link means. 4,552,035, Cl. 74-581.000.
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., to Schering Aktiengesellschaft. Novel carbacyclinamides, their preparation and use as medicinal agents. 4,552,875, Cl. 514-234.000.
Sky S.p.A.: *See—*
Segalla, Ruggero, 4,552,095, Cl. 119-53.000.
Slade, Paul G., to Westinghouse Electric Corp. Axial magnetic field vacuum-type circuit interrupter. 4,553,002, Cl. 200-144.00B.
Slettenmark, Bruno, to Siemens Aktiengesellschaft. Method and a liquid jet printer for generating at least two separately disposed points on a recording medium. 4,553,147, Cl. 346-75.000.
Sloan, Jack C.: *See—*
Wilensky, Joseph, 4,551,979, Cl. 60-648.000.
SMAC Acieroid: *See—*
Reneault, Patrick; and Ovaert, Francis, 4,551,958, Cl. 52-309.400.
Smart, William A., Jr., to Bradley Corporation. Remotely controllable reset mechanism for a vacuum-actuated system. 4,552,331, Cl. 251-95.000.
Smiley, David L.: *See—*
Krumkalns, Eriks V.; and Smiley, David L., 4,552,886, Cl. 514-342.000.
Krumkalns, Eriks V.; and Smiley, David L., 4,552,960, Cl. 544-336.000.
Smit, Helen E.; and Smit, Julie A. Metal mesh head covering. 4,551,860, Cl. 2-175.000.
Smit, Julie A.: *See—*
Smit, Helen E.; and Smit, Julie A., 4,551,860, Cl. 2-175.000.
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., to Smith R.P.M. Corporation. Anti-wrinkle device. 4,552,295, Cl. 226-195.000.
Smith, Glenn S., to Beebe International, Inc. Suspended load transport apparatus. 4,552,073, Cl. 105-154.000.
Smith-Johannsen, Robert: *See—*
Blasch, Earl; and Smith-Johannsen, Robert, 4,552,800, Cl. 428-212.000.
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., to Motorola, Inc. Queued community repeater mobile. 4,553,263, Cl. 455-54.000.
Smith R.P.M. Corporation: *See—*
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., 4,552,295, Cl. 226-195.000.
Smith, Wayne G. Elastic tubular looped projectile. 4,552,365, Cl. 273-425.000.
Smithberg, Dudley G., to Boeing Company, The. Honeycomb core cutting tool and method of using. 4,551,918, Cl. 30-347.000.
SmithKline Beckman Corporation: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,552,893, Cl. 514-560.000.
Smutek, John M.; Wenig, Robert I.; Webb, Nancy J.; and Waisman, Amnon, to Wang Laboratories, Inc. Image storage and retrieval. 4,553,206, Cl. 364-300.000.
Snow, Bennie E.: *See—*
Martens, Alan; Hobbs, Milton M.; and Snow, Bennie E., 4,552,099, Cl. 122-451.100.
Snyder, Mark A.: *See—*
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,902, Cl. 521-129.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,903, Cl. 521-137.000.
Sobajima, Yoshihiro: *See—*
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.
Sobon, Joseph T.: *See—*
Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., 4,552,615, Cl. 158-659.100.
Societe Anonyme: Construction Electriques R.V.: *See—*
Gaiffier, Albert, 4,552,528, Cl. 431-25.000.
Societe d'Etude du Radant: *See—*
Bolomey, Jean-Charles; and Michel, Yves, 4,552,151, Cl. 128-653.000.
Societe d'Exploitation Cooperative de la Manufacture d'Armes et Cycles de St. Etienne (S.C.O.P.D. Manufrance): *See—*
Chauvet, Pierre, 4,551,936, Cl. 42-42.00R.
Societe Francaise des Produits pour Catalyse Pro-Catalyse: *See—*
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,552,650, Cl. 208-216.0PP.
Societe Industrielle de Sonceboz S.A.: *See—*
Pfister, Jean-Francois, 4,553,056, Cl. 310-80.000.
Societe Nationale Industrielle et Aerospatiale: *See—*
Bokalot, Jean, 4,552,326, Cl. 244-129.500.
Soderberg, Nils-Erik: *See—*
Brannstrom, Roine; and Soderberg, Nils-Erik, 4,552,529, Cl. 432-58.000.
Sol-Chem, Inc.: *See—*
Cutlip, Larry D., 4,551,987, Cl. 62-324.500.
Solomon, Donald F., to Wetco, Inc. Purified water storage system. 4,552,656, Cl. 210-137.000.
Someya, Yoshihiro. Line marking device. 4,551,922, Cl. 33-414.000.
Sommer Company: *See—*
Sommer, Gordon M., 4,552,255, Cl. 192-18.00A.
Sommer, Gordon M., to Sommer Company. Multiple speed drive. 4,552,255, Cl. 192-18.00A.
Sonderegger, Henry R.; and Chatterley, Charles, to ITT Corporation. Butterfly valve, especially for dead-end service. 4,552,332, Cl. 251-148.000.
Sony Corporation: *See—*
Nakamura, Takashi; and Yamaji, Kazunori, 4,553,073, Cl. 315-370.000.
Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, 4,553,169, Cl. 358-221.000.
Soper, Quentin F.: *See—*
Ho, Peter P. K.; and Soper, Quentin F., 4,552,891, Cl. 514-443.000.
Sorensen, Wilfred. Heat actuated system for circulating heat transfer fluids. 4,552,208, Cl. 165-104.220.
Soshin Onkyo Works, Ltd.: *See—*
Kashiwabara, Akihiko, 4,552,242, Cl. 181-144.000.
Southwire Company: *See—*
Sinha, Uday K.; and Peacock, Frank A., 4,552,200, Cl. 164-454.000.
Spahic, Bojana K.; and Green, George F., to Novacor Medical Corporation. Process for producing rubber laminates. 4,552,816, Cl. 428-420.000.
Spector, Marshall L.; and Hong, Sun-Nan, to Air Products and Chemicals, Inc. Process for the removal of ammoniacal nitrogen in the BOD sorption zone of a wastewater treatment plant. 4,552,663, Cl. 210-605.000.
Spectra-Physics, Inc.: *See—*
Miller, Leslie A.; and McCall, Thomas J., 4,552,513, Cl. 417-18.000.
Speller, David J.: *See—*
Ross, Richard J.; and Speller, David J., 4,552,218, Cl. 166-319.000.
Spence, Lewis C., to Ohl, John P. Internal combustion engine. 4,552,106, Cl. 123-198.00A.
Sperry Corporation: *See—*
Carnewal Jose A. C. L; and Van Overschelde, Daniel M., 4,552,547, Cl. 474-101.000.
Dettmer, Jay R., 4,553,214, Cl. 364-521.000.
Lustig, Claude D., 4,553,143, Cl. 340-719.000.
Spicar, Erich: *See—*
Persson, Bo G.; and Spicar, Erich, 4,552,990, Cl. 174-117.0FF.
Spiral Drilling Systems, Inc.: *See—*
Frear, Lawrence, 4,552,232, Cl. 175-337.000.
Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Substituted 4-hydroxyphenylthio benzoate stabilizers. 4,552,926, Cl. 524-219.000.
Spong, Richard V.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
Sprague Devices, Inc.: *See—*
McIntyre, Allan E., 4,552,480, Cl. 403-76.000.
Square D Company: *See—*
Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., 4,552,018, Cl. 73-431.000.
Schubring, Allin W., 4,553,117, Cl. 335-61.000.
Seaquist, James J.; and Harmon, Elred R., 4,552,424, Cl. 339-32.00R.
Staar S. A.: *See—*
d'Alayer de Costemore d'Arc, Stephane A. M., 4,553,231, Cl. 369-263.000.
Staedeli, Otto: *See—*
Sigg, Hans; and Staedeli, Otto, 4,552,258, Cl. 192-67.00A.
Staeubli Ltd.: *See—*
Kleiner, Walter, 4,552,184, Cl. 139-66.00R.
Stafford, Charles W.: *See—*
Evans, Robert F.; and Stafford, Charles W., 4,552,228, Cl. 175-228.000.
Stahl, Kurt. Carrier body for a disc brake pad. 4,552,252, Cl. 188-73.100.

Stal-Laval Turbin AB: *See—*
Brannstrom, Roine; and Soderberg, Nils-Erik, 4,552,529, Cl. 432-58.000.
Stamicarbon B.V.: *See—*
van den Brink, Franciscus; and Alfenaar, Marinus, 4,552,636, Cl. 204-182.400.
Stammberger, Willi: *See—*
Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, 4,552,771, Cl. 426-548.000.
Stanadyne, Inc.: *See—*
Djordjevic, Ilija, 4,552,117, Cl. 123-506.000.
Standard-Knapp, Inc.: *See—*
Johnson, Lloyd D., 4,551,964, Cl. 53-374.000.
Raudat, John L.; and Thompson, Timothy H., 4,552,261, Cl. 198-425.000.
Standard Oil Company, The: *See—*
Shaw, Wilfrid G., 4,552,978, Cl. 562-535.000.
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,552,921, Cl. 525-96.000.
Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., 4,552,705, Cl. 260-465.50R.
Standard Oil Company (Indiana): *See—*
Forgac, John M.; and Hoekstra, George R., 4,552,214, Cl. 166-259.000.
Standard Telephones and Cables, plc: *See—*
Titchmarsh, James G.; and Hale, Peter G., 4,552,433, Cl. 350-96.230.
Stanley, Deryl B., to Cole-Parmer Instrument Company. Peristaltic pump. 4,552,516, Cl. 417-477.000.
Stanley Works, The: *See—*
Wohlwend, Maurice, 4,552,227, Cl. 173-15.000.
Stapp, Paul R., to Phillips Petroleum Company. Dearsenating of shale oil with metal chlorates. 4,552,646, Cl. 208-90.000.
Stauber, Philipp: *See—*
Burckhardt, Christof W.; Stauber, Philipp; and Piller, Gerard, 4,552,028, Cl. 73-862.040.
Stauffer Chemical Company: *See—*
Band, Elliot I.; and Breen, Michael J., 4,552,859, Cl. 502-127.000.
Bunker, Nathan S., 4,552,896, Cl. 514-550.000.
Estes, William E., 4,552,737, Cl. 423-307.000.
Everett, Nicholas P., 4,552,844, Cl. 435-240.000.
Felix, Raymond A., 4,552,968, Cl. 548-112.000.
Haag, William G.; and Chavdarian, Charles G., 4,552,870, Cl. 514-89.000.
Staugaitis, Charles L.: *See—*
Chu, Huai-Pu; and Staugaitis, Charles L., 4,552,784, Cl. 427-192.000.
Stebegg, Josef; and Miek, Wolfgang, to Siemens Aktiengesellschaft. Initiator for a contactless switch. 4,552,987, Cl. 174-52.00R.
Stedham, Yolanda. Pet repellent device. 4,552,307, Cl. 239-57.000.
Stefani, Fabrizio: *See—*
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, 4,553,046, Cl. 307-289.000.
Steffel, Steve, to Ferguson, Frank Warren. Mechanical assembly for audio-visual teaching machines. 4,552,535, Cl. 434-315.000.
Steger, John J.: *See—*
Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., 4,552,856, Cl. 502-74.000.
Stehr, Franz, to Eumuco Aktiengesellschaft fur Maschinenbau. Die ejector assembly for multi-stage forming machines. 4,552,525, Cl. 425-422.000.
Steinbrucker, Gerhard: *See—*
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.
Stemmler, Herbert, to BBC Brown, Boveri & Company, Limited. Converter with fast-acting overvoltage protection. 4,553,197, Cl. 363-37.000.
Stendel, Wilhelm: *See—*
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.
Sterling, Robert E., to Medical Research Associates, Ltd. #2. Hydrocarbon block copolymer with dispersed polysiloxane. 4,552,914, Cl. 524-269.000.
Stevens, George L., to Morton Thiokol, Inc. Self-contained crash bag and initiator. 4,552,380, Cl. 280-728.000.
Stevens, Gerald S., Jr.: *See—*
Nickels, Richard C., Jr.; and Stevens, Gerald S., Jr., 4,552,352, Cl. 271-10.000.
Stevens, Glenn G.; and Kennedy, Roger C., to Boeing Company, The. Liquid storage gauging method and apparatus. 4,553,216, Cl. 364-558.000.
Stevenson, Richard M., to Landney, Michael, Jr. Metal plating of polyamide thermoplastics. 4,552,626, Cl. 204-20.000.
Stewart, Vernon G.; and Adamek, Frank C., to Gray Tool Company. Stem sealing for high pressure valve. 4,552,369, Cl. 277-226.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Mahotra, Satish K., 4,551,920, Cl. 33-257.000.
Stierlen-Maquet AG: *See—*
Schnelle, Eberhard; Jung, Hans-Ulrich; and Hetzel, Werner, 4,552,346, Cl. 269-322.000.
Stifter, Francis J. Uninterruptible power supply. 4,553,039, Cl. 307-66.000.
Stiggelbout, William A., to Hewlett-Packard Company. Method of making flexible circuit connections. 4,551,914, Cl. 29-837.000.
Stockel, Dieter: *See—*
Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, 4,553,063, Cl. 313-325.000.
Stockinger, Friedrich: *See—*
Haug, Theobald; and Stockinger, Friedrich, 4,552,935, Cl. 525-488.000.
Stoka, Roberto: *See—*
Burgdorf, Jochen; and Stoka, Roberto, 4,552,253, Cl. 188-73.380.
Stokes, Keith J., to James Chemical Engineering Inc. Process for treatment of urea plant process condensate. 4,552,979, Cl. 564-69.000.
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., to General Electric Company. Enhancing the selectivity of tungsten deposition on conductor and semiconductor surfaces. 4,552,783, Cl. 427-91.000.
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, to Ruetgerswerke Aktiengesellschaft. Method for the mass separation of a liquid mixture through fractional crystallization. 4,552,575, Cl. 62-544.000.
Stone & Webster Engineering Corporation: *See—*
Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., 4,552,645, Cl. 208-80.000.
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,552,644, Cl. 208-78.000.
Storage Technology Partners: *See—*
Zasio, John J.; and Cooke, Larry, 4,553,236, Cl. 371-15.000.
Strauss, Paul, to Zenith Electronics Corporation. Apparatus for mounting a touch control panel assembly to a CRT. 4,553,142, Cl. 340-712.000.
Strauss, Richard H. Earplugs. 4,552,137, Cl. 128-152.000.
Street, Graham S. B. Method and apparatus for use in producing autostereoscopic images. 4,552,442, Cl. 354-112.000.
Strickler, Robert E.: *See—*
Bettencourt, George S.; and Strickler, Robert E., 4,552,426, Cl. 339-75.00M.
Stroup, Steven L. Apparatus for cutting tubing into predetermined lengths. 4,552,047, Cl. 82-102.000.
Struger, Odo J.; and Sammons, Barry E., to Allen-Bradley Company. Multiplexed data handler for programmable controller. 4,553,224, Cl. 364-900.000.
Studiecentrum voor Kernenergie, S.C.K.: *See—*
Binard, Luc Andre M. G., 4,552,134, Cl. 128-1.500.
Sturm, Warren A.: *See—*
Klima, Frank J., 4,552,233, Cl. 175-371.000.
Suchomel, Robert R.: *See—*
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., 4,552,710, Cl. 264-64.000.
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Light measurement compensation device for camera. 4,552,446, Cl. 354-429.000.
Sudo, Fumio: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.
Sugawara, Shigeru, to Tenyo Company, Ltd. Penetration-through-wall magic set. 4,552,355, Cl. 272-8.00R.
Sugawara, Shinichi: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.
Sugawara, Yoshitaka, to Hitachi, Ltd. High voltage resistance element. 4,553,125, Cl. 338-283.000.
Sugimoto, Shigeo: *See—*
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, 4,551,991, Cl. 62-476.000.
Sugimura, Yukio: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.
Sugishita, Susumu: *See—*
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,551,896, Cl. 29-156.40R.
Suisaku Kabushiki Kaisha: *See—*
Ogawa, Yonekichi, 4,552,657, Cl. 210-169.000.
Sulzer Brothers Limited: *See—*
Grotloh, Karl H., 4,552,330, Cl. 251-30.010.
Weber, Max, 4,552,211, Cl. 165-160.000.
Sulzer-Escher Wyss Ltd.: *See—*
Schlatter, Beat; and Schnyder, Eugen, 4,552,008, Cl. 72-243.000.
Sumida, Atsushi: *See—*
Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, 4,552,743, Cl. 423-447.700.
Sumigawa, Yukio, to Sanshin Kogyo Kabushiki Kaisha. Propeller for marine propulsion device. 4,552,511, Cl. 416-242.000.
Sumino, Shin. Rear dump truck with sieving device. 4,552,653, Cl. 209-421.000.
Sumitomo Chemical Company, Limited: *See—*
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, 4,552,972, Cl. 556-35.000.
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, 4,552,703, Cl. 260-466.000.
Sumitomo Corporation: *See—*
Hirano, Yutaka; and Kawai, Hiroki, 4,552,601, Cl. 156-79.000.
Sumitomo Electric Industries, Ltd.: *See—*
Hibino, Yutaka, 4,552,819, Cl. 428-516.000.
Masuda, Shigeo; and Katsuda, Morihiko, 4,552,599, Cl. 156-50.000.
Murakami, Kazuhito; and Takahashi, Kenichi, 4,552,434, Cl. 350-96.300.

Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, 4,552,788, Cl. 427-374.500.

Sun Coast Plastics, Inc.: *See—*
Dutt, Herbert V.; and Santostasi, Paul A., 4,552,328, Cl. 249-67.000.

Sundermann, Rudolf: *See—*
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.

Sung, Sam C. Y., to Chiang, Hou Sheng. Drawing triangle. 4,551,923, Cl. 33-476.000.

Sunouchi, Akio: *See—*
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.

Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Analgesic Associates. Cough/cold mixtures comprising non-steroidal anti-inflammatory drugs. 4,552,899, Cl. 514-568.000.

Susukamo, Gohfu: *See—*
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, 4,552,972, Cl. 556-35.000.

Sutton, Leroy A., to Zenith Electronics Corporation. Video system with automatic power up. 4,553,166, Cl. 358-190.000.

Suyama, Satoshi, to Tsurumi-Seiko Co., Ltd., The. Sensor for currentmeter. 4,552,016, Cl. 73-170.00A.

Suzaki, Masayuki; and Kanno, Tetuo, to Ricoh Co., Ltd. Printer carriage and hammer assembly. 4,552,475, Cl. 400-144.200.

Suzansky, Vasily G.: *See—*
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.

Suzuki, Akira: *See—*
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, 4,552,671, Cl. 252-8.900.

Suzuki, Kisaku. Food shaping apparatus. 4,552,523, Cl. 425-225.000.

Suzuki, Koichi: *See—*
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.

Suzuki, Koji: *See—*
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.

Suzuki, Kunihiko, to Nissan Motor Company, Ltd. Four-wheel drive system with center differential lock control responsive to rpm difference. 4,552,241, Cl. 180-249.000.

Suzuki, Mieko: *See—*
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.

Suzuki, Nobuyuki: *See—*
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.

Suzuki, Satoru. Boosting apparatus for turbo-jet engine. 4,551,971, Cl. 60-39.530.

Svecia Silkscreen Maskiner AB: *See—*
Ericsson, Sylve J. D., 4,551,925, Cl. 34-4.000.

Svenska Lantmannens Riksforbund, Forening u.p.a: *See—*
Baeling, Peter; and Ehnstrom, Lars (said Lars Ehnstrom assors. to), 4,552,775, Cl. 426-624.000.

Svensson, Lars T. E., to Telefonaktiebolaget LM Ericsson. Apparatus for connecting digital terminals to a digital exchange. 4,553,235, Cl. 370-94.000.

Svoboda, Josef, to TMC Corporation. Safety ski binding. 4,552,378, Cl. 280-632.000.

Swanson, William E., to GTI Corporation. Matrix multiplier with normalized output. 4,553,220, Cl. 364-715.000.

Sweetland, Roger D.: *See—*
Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., 4,552,662, Cl. 210-232.000.

Swengel, Robert C., Jr., to AMP Incorporated. Shunted electrical connectors. 4,552,423, Cl. 339-19.000.

Swersey, Burt L.; and Fried, Peter I., to COBE ASDT, Inc. Scale of flat construction. 4,551,882, Cl. 16-226.000.

Swierczek, Zbignew: *See—*
Mueller, Bruce M.; and Swierczek, Zbignew, 4,552,279, Cl. 215-318.000.

Swift, Joseph A.: *See—*
Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., 4,553,191, Cl. 361-212.000.

Swiss Aluminium Ltd.: *See—*
Vire , Sylvestre; and Gauckler, Ludwig, 4,552,637, Cl. 204-243.00R.

Syntex (U.S.A.) Inc.: *See—*
Broadhead, James H., 4,551,973, Cl. 60-477.000.
Gould, Dennis R.; and Zuk, Robert F., 4,552,839, Cl. 435-7.000.
Li, Tsung-Tee; and Marx, Michael, 4,552,898, Cl. 514-561.000.

Szecsei, Joseph. Gear drive. 4,552,030, Cl. 74-462.000.

Szell, Andras: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Szoke, Balazs: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Szostak, Tadeusz, to Thomas & Betts Corporation. Method and apparatus for cleaving optical fibers. 4,552,290, Cl. 225-2.000.

Szuminski, Gary F.; and Jones, Thomas J., to Rolls-Royce Inc.; and Rolls-Royce Limited. Variable geometry nozzles for turbomachines. 4,552,309, Cl. 239-265.190.

Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for elimination of biofouling. 4,552,659, Cl. 210-177.000.

Tabata, Youichiro: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.

Tabuchi, Yoshinobu: *See—*
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

Tachibana, Kunitaka: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.

Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, to Matsushita Electric Industrial Company, Ltd. Ultrasonic diagnostic apparatus using Doppler effect. 4,552,152, Cl. 128-663.000.

Tack, Paul G.: *See—*
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.

Tada, Haruo: *See—*
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Tadokoro, Eiichi: *See—*
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.

Taguchi, Toshio: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.

Tahara, Yoshitaka, to Mazda Motor Corporation. Engine knocking detecting means. 4,552,111, Cl. 123-425.000.

Taino, Kazuo: *See—*
Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, 4,553,011, Cl. 219-10.55B.

Tajima, Masaru: *See—*
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.

Takada, Juichiro. Seatbelt clamp. 4,552,407, Cl. 297-476.000.

Takahashi, Atsushi: *See—*
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.

Takahashi, Ikuo: *See—*
Sano, Yukinori; Hoshi, Yoshikazu; and Takahashi, Ikuo, 4,552,114, Cl. 123-481.000.

Takahashi, Kazukiyo, to NEC Corporation. High speed comparator circuit with input-offset compensation function. 4,553,052, Cl. 307-494.000.

Takahashi, Kenichi: *See—*
Murakami, Kazuhito; and Takahashi, Kenichi, 4,552,434, Cl. 350-96.300.

Takahashi, Kimio: *See—*
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,551,996, Cl. 68-20.000.

Takahashi, Kouichi: *See—*
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.

Takaku, Hiroshi; and Noda, Takeshi, to Sankyo Chemical Company, Limited. Process for the synthesis of 4',5'-unsaturated nucleosides. 4,552,955, Cl. 536-24.000.

Takano, Satoshi: *See—*
Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, 4,552,788, Cl. 427-374.500.

Takano, Toshio; and Kobayashi, Toshio, to Fuji Jukogyo Kabushiki Kaisha. Automatic transmission for automotive vehicles. 4,552,036, Cl. 74-705.000.

Takaoka, Akio: *See—*
Ishikawa, Nobuo; and Takaoka, Akio, 4,552,694, Cl. 260-239.0BD.

Takata, Naoto: *See—*
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, 4,552,239, Cl. 180-140.000.

Takatani, Teruhiko: *See—*
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, 4,552,239, Cl. 180-140.000.

Takeda Chemical Industries, Ltd.: *See—*
Goto, Jugo; and Kubota, Tsutomu, 4,552,920, Cl. 525-58.000.

Takeda, Hisanobu: *See—*
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.

Takeda Riken Co., Ltd.: *See—*
Nishiura, Junji, 4,553,100, Cl. 328-63.000.

Takei, Haruo: *See—*
Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, 4,552,828, Cl. 430-217.000.

Takei, Kenji; and Akabane, Yukihiro, to Nippon Seiko Kabushiki Kaisha. Rolling bearings for strut-type suspensions. 4,552,467, Cl. 384-615.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha Ltd. Herbicidal compositions. 4,552,583, Cl. 71-86.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal composition and herbicidal processes. 4,552,584, Cl. 71-86.000.

Takemoto Yushi Kabushiki Kaisha: *See—*
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, 4,552,671, Cl. 252-8.900.

Takeshima, Sadao; and Ohe, Takeshi, to Jidosha Kiki Co., Ltd. Power steering apparatus. 4,552,240, Cl. 180-142.000.

Takeuchi, Chifumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with key touch detector and operator member. 4,552,051, Cl. 84-1.240.

Takeyuki, Mizuno, to NGK Insulators, Ltd. Radial type ceramic turbine rotor and method of producing the same. 4,552,510, Cl. 416-241.00B.

Takezawa, Kuninori: *See—*
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, to Murata Manufacturing Co., Ltd. Miniature inductor. 4,553,123, Cl. 336-83.000.

Tamano, Hideki: *See—*
Hirota, Kiwami; Tamano, Hideki; and Sakaguchi, Fumio, 4,552,930, Cl. 525-333.800.

Tanabashi, Toshifumi: *See—*
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, 4,552,605, Cl. 156-273.300.

Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,552,836, Cl. 430-549.000.

Tanabe, Osami: *See—*
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.

Tanaka, Kazunori; and Yoshikawa, Mitsuru, to Duplo Seizo Kabushiki Kaisha. Double-feed prevention device in paper feeding apparatus. 4,552,353, Cl. 271-124.000.

Tanaka, Teruo: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Tanaka, Yoichi: *See—*
Masuda, Toshiro; and Tanaka, Yoichi, 4,553,215, Cl. 364-525.000.

Tanaka, Yoko: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

Tanaka, Yoshiaki: *See—*
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.

Tang, Robert H.: *See—*
Black, Donald J.; and Tang, Robert H., 4,552,682, Cl. 252-186.260.

Tanigaki, Shuzo; and Sakaki, Masayuki, to Kabushiki Kaisha Meidensha. Vacuum monitor for vacuum interrupter. 4,553,139, Cl. 340-626.000.

Tanioku, Shozo: *See—*
Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, 4,552,938, Cl. 526-240.000.

Tappe, Horst: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.

Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, to CKD Corporation. Miniature solenoid valve. 4,552,179, Cl. 137-625.650.

Tatin, Gerard: *See—*
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Tatsuki, Tokuji, to Kabushiki Kaisha Dunlop Home Products. Head cooling implement. 4,552,149, Cl. 128-402.000.

Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., to Exxon Research and Engineering Co. Zeolite catalyst and preparation thereof. 4,552,856, Cl. 502-74.000.

Taylor, Edward C.: *See—*
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.

Taylor, Henry F.: *See—*
Giallorenzi, Thomas G.; Sheem, Sang K.; and Taylor, Henry F., 4,552,457, Cl. 356-345.000.

Taylor, Thomas F.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.

Taylor, Thomas H.: *See—*
Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., 4,552,680, Cl. 252-102.000.

Taylor, William R., to Hal Johnston Pty. Limited. Decontamination apparatus. 4,552,728, Cl. 422-300.000.

Teagno, Vladimiro; and Chiusa, Alessandro, to AMP Incorporated. Workpiece feeding apparatus. 4,552,260, Cl. 198-345.000.

Teijin Limited: *See—*
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,552,810, Cl. 428-398.000.
Sasaki, Yasusuke, 4,552,313, Cl. 242-18.00A.

Tektronix, Inc.: *See—*
Bristol, L. Rodney, 4,553,091, Cl. 324-74.000.

Teledyne Industries, Inc.: *See—*
Rogo, Casimir; and Lenz, Herman N., 4,552,308, Cl. 239-457.000.

Telefonaktiebolaget LM Ericsson: *See—*
Johansson, Karl H.; and Severinsson, Anders S., 4,552,455, Cl. 356-5.000.
Svensson, Lars T. E., 4,553,235, Cl. 370-94.000.

Teng, Edward F.: *See—*
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.

Tenud, Leander; and Jolidon, Synese, to Lonza Ltd. Process for the production of 4-(trialkylammonium)-acetoacetarylides. 4,552,983, Cl. 564-200.000.

Tenyo Company, Ltd.: *See—*
Sugawara, Shigeru, 4,552,355, Cl. 272-8.00R.

Teplan, Istvan: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Terada, Hirokiyo: *See—*
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.

Teramachi, Hiroshi. Method of making a linear slide ball bearing. 4,551,895, Cl. 29-148.40R.

Teraoka Seiko Co., Ltd.: *See—*
Kawahara, Kazuto, 4,551,962, Cl. 53-131.000.

Testa, Raymond T.: *See—*
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

Texaco Inc.: *See—*
Burns, Simon P.; Walton, John M.; and McEntire, Edward E., 4,552,958, Cl. 544-177.000.
Larkin, John M., 4,552,862, Cl. 502-306.000.
Lin, Jiang-Jen; and Knifton, John F., 4,552,976, Cl. 560-204.000.
McEntire, Edward E., 4,552,957, Cl. 544-177.000.
Morris-Sherwood, Betty J.; and Brink, Edward C., Jr., 4,552,686, Cl. 252-392.000.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,552,933, Cl. 525-454.000.

Texas Instruments Incorporated: *See—*
Prater, Cordell E., 4,553,051, Cl. 307-475.000.

Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., to Exxon Research and Engineering Co. Preparation of sulfonated copolymers by suspension copolymerization. 4,552,939, Cl. 526-287.000.

Thatcher, David R. P.: *See—*
Chuang, Karl T.; and Thatcher, David R. P., 4,552,744, Cl. 423-522.000.

Theeuwes, Felix, to ALZA Corporation. System for intravenous delivery of a beneficial agent. 4,552,555, Cl. 604-56.000.

Theeuwes, Felix: *See—*
Urquhart, John; and Theeuwes, Felix, 4,552,556, Cl. 604-80.000.

Thermo Electron Corporation: *See—*
Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., 4,552,123, Cl. 126-369.000.

Therolf, Dieter: *See—*
Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,552,524, Cl. 425-406.000.

Thevenin, Jean-Claude: *See—*
Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, 4,552,431, Cl. 350-96.340.

Thibaut, Bernard, to Thibaut S.A. Device for mounting and removal of polishing wheels in machines for polishing stones or like materials. 4,551,902, Cl. 29-568.000.

Thibaut S.A.: *See—*
Thibaut, Bernard, 4,551,902, Cl. 29-568.000.

Thiem, Karl W.; and Vanderpool, Daniel P., to Mobay Chemical Corporation. Process for the production of 5-nitro-acet-2,4-xylidine. 4,552,981, Cl. 564-146.000.

Thomas, A. Lynn, to Thomas Tree Stand Co., Inc. Portable hunter tree stand. 4,552,246, Cl. 182-116.000.

Thomas & Betts Corporation: *See—*
Szostak, Tadeusz, 4,552,290, Cl. 225-2.000.

Thomas, Rudy V.: *See—*
Narayan, Surendra D.; and Thomas, Rudy V., 4,551,889, Cl. 24-196.000.

Thomas Tree Stand Co., Inc.: *See—*
Thomas, A. Lynn, 4,552,246, Cl. 182-116.000.

Thompson, Brian K.: *See—*
Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., 4,552,297, Cl. 227-120.000.

Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., to Engelhard Corporation. Polyfunctional catalysts and method of use. 4,552,733, Cl. 423-213.500.

Thompson, Timothy H.: *See—*
Raudat, John L.; and Thompson, Timothy H., 4,552,261, Cl. 198-425.000.

Thomson-Brandt: *See—*
Moraillon, Jean-Yves, 4,553,159, Cl. 358-44.000.

Thomson CSF: *See—*
Blanchard, Pierre, 4,553,113, Cl. 333-122.000.
Bouhelier, Francis; and Vialatte, Claude, 4,553,223, Cl. 364-900.000.
Chautemps, Jacques; and Descure, Pierrick, 4,553,168, Cl. 358-213.000.
Douziech, Patrick; and Imbert, Michel, 4,553,156, Cl. 358-24.000.
Gerard, Jean L.; and Bricot, Claude, 4,553,228, Cl. 369-46.000.
Labb, Georges, 4,553,164, Cl. 358-163.000.

Thornton, F. James: *See—*
Pay, Clifford R.; and Thornton, F. James, 4,552,231, Cl. 175-330.000.

Thuries, Edmond, to Alsthom-Atlantique. Puffer-type gas-blast circuit-breaker. 4,553,004, Cl. 200-148.00A.

Tilly, Bodo, to Siemens Aktiengesellschaft. Circuit arrangement with a laser diode for transmission of communication signals through a light waveguide. 4,553,268, Cl. 455-607.000.

Tiomkin, Michael V.: *See—*
Bar-Nefy, Simcha; and Tiomkin, Michael V., 4,552,053, Cl. 89-1.130.

Tip-N-Wrap, Inc.: *See—*
Griggs, Gloria D., 4,552,160, Cl. 132-73.000.

Titchmarsh, James G.; and Hale, Peter G., to Standard Telephones and Cables, plc. Optical fibre cable manufacture. 4,552,433, Cl. 350-96.230.

TMC Corporation: *See—*
Svoboda, Josef, 4,552,378, Cl. 280-632.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Tobler, Paul: *See—*
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.

Tohoku Mikuni Kogyo Kabushiki Kaisha: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, to Jeol Ltd.; and Central Research Institute of Electric Power Industry Method for automatic analysis of electron beam diffraction pattern. 4,553,030, Cl. 250-307.000.

Tokuyama, Keiichi; Naito, Shotaro; and Watanabe, Shizuhisa, to Hitachi, Ltd. Power source system for vehicular electronic device. 4,553,196, Cl. 363-21.000.

Tokyo Electric Co., Ltd.: *See—*
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.

Tokyo Juki Industrial Co., Ltd.: *See—*
Horeschi, Giancarlo; and Barozzi, Gian P., 4,552,474, Cl. 400-310.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Endoh, Naoki, 4,553,131, Cl. 340-347.0DD.
Harada, Koosuke; and Murata, Katsuaki, 4,553,199, Cl. 363-75.000.
Katahira, Shunsuke, 4,553,150, Cl. 346-154.000.
Kato, Masaaki, 4,553,130, Cl. 340-347.0DD.
Kawakami, Hiroshi; and Torii, Shigeyoshi, 4,553,186, Cl. 360-130.210.
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.
Ogawa, Atsushi, 4,553,107, Cl. 330-288.000.
Ogishima, Kiichiro, 4,553,184, Cl. 360-103.000.
Sasaki, Gen; and Kameyama, Shuichi, 4,551,911, Cl. 29-576.00W.
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, 4,552,417, Cl. 308-10.000.
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Tomati, Umberto: *See—*
Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, 4,552,726, Cl. 422-184.000.

Tomimori, Kiyoshi: *See—*
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, 4,552,417, Cl. 308-10.000.

Tomita, Masahiro: *See—*
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, to Kawasaki Steel Corporation; and Denka Consultant & Engineering Company Limited. Flow change-over valve for the blowing of fluids into molten metal vessel. 4,552,334, Cl. 251-240.000.

Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Variable magnification apparatus with lens position control. 4,552,450, Cl. 355-14.00R.

Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.

Toppan Printing Co., Ltd.: *See—*
Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, 4,553,079, Cl. 318-626.000.
Masuda, Toshiro; and Tanaka, Yoichi, 4,553,215, Cl. 364-525.000.

Toray Industries, Inc.: *See—*
Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, 4,552,743, Cl. 423-447.700.

Toray Silicone Company, Ltd.: *See—*
Mikami, Ryuzo; and Saruyama, Toshio, 4,552,919, Cl. 524-860.000.

Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, to Toray Industries, Inc. Process for producing carbon fiber. 4,552,743, Cl. 423-447.700.

Torii, Shigeyoshi: *See—*
Kawakami, Hiroshi; and Torii, Shigeyoshi, 4,553,186, Cl. 360-130.210.

Torisawa, Yoshihiro: *See—*
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.

Torisawa, Yoshiro: *See—*
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.

Torri, G., to Dragerwerk Aktiengesellschaft. Anesthetic respiratory system. 4,552,141, Cl. 128-205.120.

Toshiba Silicone Co., Ltd.: *See—*
Sakamoto, Ryuji; and Yamazaki, Taro, 4,552,688, Cl. 252-511.000.

Touda, Takayasu: *See—*
Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, 4,552,938, Cl. 526-240.000.

Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, to Societe Francaise des Produits pour Catalyse Pro-Catalyse. Process for hydrotreating metal containing oil fractions using a supported catalyst of increased resistance to poisons. 4,552,650, Cl. 208-216.0PP.

Toussaint, Hans-Norbert: *See—*
Goerne, Jan; and Toussaint, Hans-Norbert, 4,553,249, Cl. 375-25.000.

Town, Michael H.: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Direct positive silver halide photographic emulsion. 4,552,828, Cl. 430-217.000.

Toyo Seikan Kaisha Limited: *See—*
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, 4,552,605, Cl. 156-273.300.

Toyoda Gosei Co., Ltd.: *See—*
Hayashi, Chikahisa; and Kanayama, Masakatsu, 4,553,212, Cl. 364-507.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, 4,551,950, Cl. 51-165.870.

Toyoda, Mitsuo: *See—*
Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, 4,552,414, Cl. 303-115.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Kanai, Takao, 4,552,032, Cl. 74-473.00R.
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Transamerica Delaval Inc.: *See—*
Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., 4,552,023, Cl. 73-715.000.

Transmed Corporation: *See—*
Etherington, Roger F.; and Ester, Clayton L., 4,552,155, Cl. 128-766.000.

Travers, Christine: *See—*
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

Trayco Inc.: *See—*
Whitney, Thomas H., 4,551,869, Cl. 4-592.000.

Treaster, Mahlon L. Archery sights. 4,552,121, Cl. 124-87.000.

Trenkler, Werner, to Dr. Ing. h.c.F. Porsche AG. Folding roof for vehicles, especially passenger motor vehicles. 4,552,401, Cl. 296-219.000.

Trilling, Peter: *See—*
Dropczynski, Hartmut; and Trilling, Peter, 4,552,316, Cl. 242-56.00R.

Tritsch, Ludwig, to Personal Products Company. Resealable adhesive tab fastener. 4,552,560, Cl. 604-390.000.

Tronich, Wolfgang: *See—*
Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, 4,552,970, Cl. 548-543.000.

True Dimension Inc.: *See—*
Sheppard, Joseph R., 4,552,340, Cl. 254-358.000.

Trufyn, Nicholas, to International Business Machines Corporation. User controlled dialog resource switching in a multi-tasking word processor. 4,553,202, Cl. 364-200.000.

Truper, Dirk; and Hermle, Klaus. Inductive proximity switch. 4,553,040, Cl. 307-116.000.

TRW Inc.: *See—*
Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., 4,551,904, Cl. 29-571.000.
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,553,203, Cl. 364-200.000.

Tse, Hing-Cheung, to Procter & Gamble Company, The. Process for preparation of tea color concentrate and product. 4,552,776, Cl. 426-597.000.

Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., to Standard Oil Company, The. Method of making tri-(β-cyanoethyl)amine. 4,552,705, Cl. 260-465.50R.

Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, to Nippon Oil Company, Ltd. Offset printing ink composition. 4,552,923, Cl. 525-68.000.

Tsuda, Akira: *See—*
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

Tsuda, Yoshihisa, to UOP Inc. Aspartase from a *Bacillus subtilis*. 4,552,846, Cl. 435-232.000.

Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased (by Kimura, Shizuko, legal representative), to Tokyo Electric Co., Ltd. Ink dot printer. 4,552,469, Cl. 400-119.000.

Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased (by Kimura, Shizuko, legal representative), to Tokyo Electric Co., Ltd. Ink dot printer. 4,552,472, Cl. 400-124.000.

Tsujii, Katsumi, to Sharp Kabushiki Kaisha. Light emitting diode electrode. 4,553,154, Cl. 357-71.000.

Tsujiuchi, Toshio: *See—*
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, 4,551,950, Cl. 51-165.870.

Tsukamoto, Katsura, to International Business Machines Corporation. Bill storing mechanism for automatic teller machines. 4,552,351, Cl. 271-3.100.

Tsukamoto, Mamoru: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.

Tsurumi-Seiko Co., Ltd., The: *See—*
Suyama, Satoshi, 4,552,016, Cl. 73-170.00A.

Tsuruoka, Takashi: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.

Tsutsumi, Masahiro: *See—*
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

Turley, John W.; and Sendzimir, Michael G. Strip wiping system. 4,551,878, Cl. 15-102.000.

Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., to Ciba-Geigy AG. Daylight enlarger. 4,552,452, Cl. 355-27.000.

Turner, S. Richard: *See—*
Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., 4,552,939, Cl. 526-287.000.

Tweet, David E.: *See—*
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.

Twigger, Ernest J.: *See—*
Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., 4,552,452, Cl. 355-27.000.

Tyler, Arnold L.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.

Tyrell, John A.: *See—*
Rosenquist, Niles R.; and Tyrell, John A., 4,552,924, Cl. 525-146.000.

UBE Industries, Ltd.: *See—*
Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, 4,553,016, Cl. 219-121.0LG.

Uchiyama, Hiroaki: *See—*
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Udagawa, Takatoshi: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Ueguri, Shigeo: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.

Uematsu, Ikuzo, to Murata Kikai Kabushiki Kaisha. Draft apparatus for a spinning machine. 4,551,887, Cl. 19-244.000.

Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Typewriter having calculating capability. 4,553,219, Cl. 364-705.000.

Ueno, Hiroshi: *See—*
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Ueno, Shyoji: *See—*
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Ueno, Yukio: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Ukai, Toshinao: *See—*
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.

Ulicne, Joseph A.: *See—*
McFrisby, Samuel J., 4,552,371, Cl. 280-20.000.

Umemoto, Makoto: *See—*
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.

Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, to Sumitomo Chemical Company, Limited. Production of optically active cyclopentenolones. 4,552,703, Cl. 260-466.000.

Union Carbide Corporation: *See—*
Herdle, William B., 4,552,961, Cl. 544-402.000.
Keogh, Michael J., 4,552,941, Cl. 528-16.000.
Kupcikevicius, Vytautas; and Raudys, Vytas, 4,551,884, Cl. 17-49.000.
Ramamurthy, Arakalgud V., 4,552,712, Cl. 264-85.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Cattell, Alan F.; Kirton, John; and Lloyd, Peter, 4,552,782, Cl. 427-66.000.

United States Gypsum Company: *See—*
Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., 4,552,683, Cl. 252-189.000.

United States of America
Army: *See—*
Brandt, Howard E., 4,553,068, Cl. 315-4.000.
Ducote, Marjorie E., 4,552,706, Cl. 264-3.00R.
Energy: *See—*
Arlowe, H. Duane, 4,553,026, Cl. 235-451.000.
Fish, Richard H., 4,552,854, Cl. 502-26.000.
Lee, Kien-yin; and Coburn, Michael D., 4,552,598, Cl. 149-47.000.
Murphy, Lawrence M., 4,552,438, Cl. 350-608.000.
Wise, William L., 4,553,078, Cl. 318-592.000.
Health and Human Services: *See—*
Brossi, Arnold, 4,552,962, Cl. 546-74.000.
Interior: *See—*
Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., 4,552,730, Cl. 423-82.000.
National Aeronautics and Space Administration: *See—*
Chu, Huai-Pu; and Staugaitis, Charles L., 4,552,784, Cl. 427-192.000.
Kleinberg, Leonard L., 4,553,110, Cl. 331-116.0FE.
St. Clair, Terry L.; and Burks, Harold D., 4,552,931, Cl. 525-432.000.
Warren, Edward L., 4,552,466, Cl. 384-103.000.
Navy: *See—*
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.

U.S. Philips Corporation: *See—*
Auphan, Michel J., 4,552,020, Cl. 73-602.000.
Bates, Robert N.; and Ballard, Philip M., 4,553,266, Cl. 455-327.000.
Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., 4,553,234, Cl. 370-86.000.
Bryant, Stewart F., 4,553,250, Cl. 375-34.000.
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.
Peel, Geoffrey C., 4,553,162, Cl. 358-144.000.
Wallis, Manfred, 4,552,347, Cl. 269-322.000.

United Technologies Corporation: *See—*
Burchette, Herbert L., 4,552,386, Cl. 285-187.000.
Horais, Brian J.; and Kocur, Joseph S., 4,552,071, Cl. 102-527.000.
Parker, Frederick D., 4,552,491, Cl. 407-107.000.

University of California, The Regents of the: *See—*
Attia, Yosry A.; and Fuerstenau, Douglas W., 4,552,652, Cl. 209-5.000.
Parsons, Stanley M., 4,552,965, Cl. 546-206.000.

University of Liverpool, The: *See—*
How, Thien V., 4,552,707, Cl. 264-24.000.

University of Waterloo: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,552,098, Cl. 122-379.000.

Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, to Toyoda Koki Kabushiki Kaisha. Truing apparatus for a grinding wheel with rounded corners. 4,551,950, Cl. 51-165.870.

Uno, Testuyuki: *See—*
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.

UOP Inc.: *See—*
Tsuda, Yoshihisa, 4,552,846, Cl. 435-232.000.

Urbye, Klaus; and Abendroth, Werner, to Carl Still GmbH & Co., Kg., Firma. Coke oven door closure construction. 4,552,623, Cl. 202-248.000.

Urella, Tony. Detection method and apparatus. 4,552,164, Cl. 137-2.000.

Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Parenteral controlled therapy. 4,552,556, Cl. 604-80.000.

USV Pharmaceutical Corp.: *See—*
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.

Utaka, Katsuyuki: *See—*
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.

Utsugi, Mikio; and Yamaguchi, Tathuya, to Olympus Optical Co., Ltd. Endoscope. 4,552,129, Cl. 128-4.000.

Utsugi, Shinji: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Utter, Robert E., to American Standard Inc. Scroll machine with discharge passage through orbiting scroll plate and associated lubrication system. 4,552,518, Cl. 418-55.000.

Uustalu, Jaan M., to Protector Agentur AB. Inactivated polyurethane and a method for preparing it. 4,552,817, Cl. 428-423.700.

V. Louison et Cie: *See—*
Louison, Guy, 4,551,995, Cl. 66-203.000.

Vailati, Tony; and Murray, Joseph A., to Olympic Narrow Fabrics Company, Inc. Waistband fabric. 4,551,994, Cl. 66-193.000.

Val, Christian, to Compagnie d'Informatique Militaire, Spatiale et Aeronautique. Electronic component package comprising a moisture-retention element. 4,553,020, Cl. 219-209.000.

Valentine, Theodore W.: *See—*
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

van Alst, Gerardus M., to AMP Incorporated. Modular electrical connector for connecting wires in cable ends. 4,552,429, Cl. 339-99.00R.

van den Brink, Franciscus; and Alfenaar, Marinus, to Stamicarbon B.V. Process for removing ammonium-ions in an oxime preparation from a hydroxyl-ammonium salt. 4,552,636, Cl. 204-182.400.

van der Lely, Cornelis. Soil cultivating implements. 4,552,223, Cl. 172-49.500.

Vanderpool, Daniel P.: *See—*
Thiem, Karl W.; and Vanderpool, Daniel P., 4,552,981, Cl. 564-146.000.

Van Der Velden, Paulus M., to Cordis Europa N.V. Reference electrode assembly. 4,552,625, Cl. 204-1.00T.

van der Wal, Willem J. J.; and Geus, John W., to VEG-Gasinstituut N.V. Process for the reaction of carbon monoxide with steam, with formation of carbon dioxide and hydrogen and use of a catalyst for this purpose. 4,552,750, Cl. 423-656.000.

Van Eenam, Donald N., to Monsanto Company. Styrene viscosity modifier of grafted starch polymer solutions. 4,552,940, Cl. 527-312.000.

Van Melle, Hugh, to Amhil Enterprises Ltd. Segmented spacer ring. 4,552,522, Cl. 425-182.000.

Van Oene, Dale G. Anchor lifting device. 4,552,087, Cl. 114-297.000.

Van Overschelde, Daniel M.: *See—*
Carnewal Jose A. C. L; and Van Overschelde, Daniel M., 4,552,547, Cl. 474-101.000.

van Voskuilen, Dirk F.; and van Voskuilen, Frans. Method for removing pipe coatings. 4,552,594, Cl. 134-34.000.

van Voskuilen, Frans: *See—*
van Voskuilen, Dirk F.; and van Voskuilen, Frans, 4,552,594, Cl. 134-34.000.

Van Zeeland, Anthony J.; and Denley, Ronald S., to Oak Industries Inc. Keyboard switch with pivotal actuator lever. 4,553,009, Cl. 200-340.000.

Vapor Corporation: *See—*
Alexander, William H.; and Dare, Roy R., 4,552,335, Cl. 251-315.000.

Varel Mfg. Co.: *See—*
Evans, Robert F.; and Stafford, Charles W., 4,552,228, Cl. 175-228.000.

Varian Associates, Inc.: *See—*
Garrett, Charles B., 4,552,639, Cl. 204-298.000.
Graham, Stephen H., 4,552,182, Cl. 138-30.000.

Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., to Macedo, Pedro B.; and Litovitz, Theodore A. Method of producing shaped foamed-glass articles. 4,552,577, Cl. 65-22.000.

Vartoukian, Artin G.; and Moussaian, Gregoire G., to Singer Company, The. Skeletal frame sewing machine. 4,552,081, Cl. 112-258.000.

Vasicek, Vladimir: *See—*
Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri , 4,552,188, Cl. 139-435.000.

Vaudo, Anthony J.: *See—*
Chan, Edward Y.; Henderson, Ross; and Vaudo, Anthony J., 4,553,198, Cl. 363-56.000.

Vaughan, David E., to Exxon Research and Engineering Co. Process for preparing crystalline zeolite composition ERC-2. 4,552,731, Cl. 423-118.000.

Vaughan, David E. W.: *See—*
Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., 4,552,856, Cl. 502-74.000.

Vaughn, Bertha R.: *See—*
Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., 4,552,685, Cl. 252-355.000.

Vayra, Jean, to Commissariat a l'Energie Atomique. Integrated control safety valve. 4,552,173, Cl. 137-490.000.

VBM Corporation: *See—*
Dechene, Fernand J., 4,552,571, Cl. 55-21.000.

Veazey, Sidney E. Solar breeze power package and saucer ship. 4,553,037, Cl. 290-55.000.

Vecchiarelli, Francis, to Hunter Douglas International N.V. Venetian blind assembly including tension means for imparting tension into slat supporting means. 4,552,196, Cl. 160-174.000.

VEG-Gasinstituut N.V.: *See—*
van der Wal, Willem J. J.; and Geus, John W., 4,552,750, Cl. 423-656.000.

Veneziano, Marcello, to Ford Motor Company. Method and apparatus for deriving fuel consumption data from a hydraulically driven fuel injector. 4,553,207, Cl. 364-431.010.

Ventavoli, Roger: *See—*
Couche, Leon; Lacourt, Daniel; and Ventavoli, Roger, 4,551,886, Cl. 17-75.000.

Vescovi, Giuseppe: *See—*
Biancalana, Carlo; Vescovi, Giuseppe; and Volpini, Maurizio, 4,552,163, Cl. 134-100.000.

Vespoli, Nancy P.: *See—*
Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., 4,552,945, Cl. 528-62.000.

Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., to Cooper Industries, Inc. Load interrupter. 4,553,008, Cl. 200-148.00R.

Vezzani, Luciano, to Officine Vezzani S.p.A. Scrap metal press for producing compacted scrap blocks. 4,552,062, Cl. 100-95.000.

Vialatte, Claude: *See—*
Bouhelier, Francis; and Vialatte, Claude, 4,553,223, Cl. 364-900.000.

Victor Company of Japan, Limited: *See—*
Aoyagi, Shigeyuki; and Watanabe, Mamoru, 4,551,966, Cl. 53-571.000.
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.
Narita, Shuichi, 4,553,182, Cl. 360-96.100.

Vikroff, Alexis. Junction for connection and assembly of truncated conical-pyramidal geometric shape for multi-directional elements of three-dimensional structures. 4,552,482, Cl. 403-172.000.

Vilter Manufacturing Corporation: *See—*
Kocher, Erich J.; and Kopp, John K., 4,551,982, Cl. 62-130.000.

Vinson, Wayne W.: *See—*
West, Jerry D.; and Vinson, Wayne W., 4,551,871, Cl. 4-661.000.

Vire , Sylvestre; and Gauckler, Ludwig, to Swiss Aluminium Ltd. Cell for the refining of aluminium. 4,552,637, Cl. 204-243.00R.

Virta, Matti: *See—*
Sairanen, Martti; and Virta, Matti, 4,553,070, Cl. 315-209.00R.

Voegel, Robert L.; and Wright, Kenton B., to Aluminum Company of America. Electrode assembly having improved current distribution for use in an electrolytic reduction cell. 4,552,638, Cl. 204-286.000.

Voest-Alpine Aktiengesellschaft: *See—*
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.

Vogel, Alan D.: *See—*
Zovko, Carl B.; and Vogel, Alan D., 4,552,300, Cl. 228-20.000.

Vogel, Richard E.; and Bowsky, Benjamin, to Emerson Electric Co. Degradation sensing and shut-down means for refrigeration motor-compressor units. 4,551,984, Cl. 62-193.000.

Vogel, Wilhelm: *See—*
Breitmoser, Georg; and Vogel, Wilhelm, 4,552,209, Cl. 165-133.000.

Vogt, Martin C.: *See—*
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., 4,552,729, Cl. 423-55.000.

Voigtmann, Lutz: *See—*
Blume, Friedrich; and Voigtmann, Lutz, 4,552,832, Cl. 430-320.000.

Volk, Rodney H.: *See—*
Anderson, Lowell M.; and Volk, Rodney H., 4,551,986, Cl. 62-239.000.

Volpini, Maurizio: *See—*
Biancalana, Carlo; Vescovi, Giuseppe; and Volpini, Maurizio, 4,552,163, Cl. 134-100.000.

von Bieren, Karlheinz, to Rockwell International Corporation. Phase grating pulse stacker. 4,552,435, Cl. 350-169.000.

VonHoene, Robert M.: *See—*
Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., 4,553,136, Cl. 340-572.000.

von Resch, Julius M., to Gretsch-Unitas GmbH Baubeschlage. Hardware for moving a sash into laterally displaced parallel positions. 4,551,945, Cl. 49-221.000.

Voorhis, Ray: *See—*
Cholin, John M.; Voorhis, Ray; and Cholin, Jeffrey G., 4,553,031, Cl. 250-339.000.

Vorbrueggen, Helmut: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Vykydal, Frantisek: *See—*
Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri , 4,552,188, Cl. 139-435.000.

Vyne, Robert L., to Motorola, Inc. Output stage for an operational amplifier. 4,553,106, Cl. 330-272.000.

Vystrcil, Jiri : *See—*
Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri , 4,552,188, Cl. 139-435.000.

W.C. Heraeus GmbH: *See—*
Opower, Hans; and Ernst, Volker, 4,553,242, Cl. 372-87.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,552,600, Cl. 156-73.100.

W. W. Adcock, Inc.: *See—*
Adcock, Carson D.; and Lauter, Robert, 4,552,658, Cl. 210-169.000.

WABCO Ltd.: *See—*
McKay, Albert A., 4,552,056, Cl. 92-29.000.

Wacker-Chemie GmbH: *See—*
Deubzer, Bernward; and Wilhelm, Hermann, 4,552,910, Cl. 524-43.000.

Wada, Kiyoshi: *See—*
Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, 4,553,090, Cl. 324-73.0AT.

Wada, Tetsuyoshi: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.

Waddill, Harold G.: *See—*
Sellstrom, Kathy B.; and Waddill, Harold G., 4,552,933, Cl. 525-454.000.

Waggoner, James R.: *See—*
Laitinen, Herbert A.; and Waggoner, James R., 4,552,641, Cl. 204-32.100.

Waisman, Amnon: *See—*
Smutek, John M.; Wenig, Robert I.; Webb, Nancy J.; and Waisman, Amnon, 4,553,206, Cl. 364-300.000.

Wakamatsu, Kazuhiro; and Kawamata, Yoshio, to Hitachi, Ltd. Compound image recording apparatus. 4,552,449, Cl. 355-3.00R.

Wakamiya, Shunichiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for reading information. 4,553,229, Cl. 369-110.000.

Wake, Kanji: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.

Wakefield, G. Felix; and Bender, David L., to Atlantic Richfield Company. Tundish for ribbon casting of semiconductor ribbon. 4,552,289, Cl. 222-600.000.

Wakefield, James R.: *See—*
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,552,349, Cl. 270-54.000.

Wakui, Nastuko: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.

Walker, Erik K.: *See—*
McNesby, John B.; and Walker, Erik K., 4,553,129, Cl. 340-347.0DD.

Walker, Michael L. Knife with locking folding blade. 4,551,917, Cl. 30-161.000.

Walker, Michael L., to Halliburton Company. Method and composition for acidizing subterranean formations. 4,552,672, Cl. 252-8.55C.

Walker, Roger: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Walkowiak, Michael: *See—*
Podszun, Wolfgang; Bley, Fritjof; and Walkowiak, Michael, 4,552,906, Cl. 523-115.000.

Wallace, Gary L.; and Kasper, Frank S., to AMCA International Corporation. Automatic trimming feature for a slicing machine. 4,552,048, Cl. 83-23.000.

Wallace, Neil M., to Flexibox Limited. Backup seal with bush in form of radially floating washer. 4,552,368, Cl. 277-27.000.

Wallace, Norman R., to Bechtel International Corporation. Bucket-lift slurry storage apparatus and method. 4,552,460, Cl. 366-196.000.

Wallis, Manfred, to U.S. Philips Corporation. X-Ray apparatus comprising a table-top which is displaceable in the longitudinal direction. 4,552,347, Cl. 269-322.000.

Wallroth, Carl F.: *See—*
Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., 4,552,139, Cl. 128-200.140.

Walmsley, Dennis A., to Invertron Simulated Systems Limited. Guided missile fire control simulators. 4,552,533, Cl. 434-12.000.

Walsworth, Frank J.: *See—*
Borst, Gaylord M.; and Walsworth, Frank J., 4,552,101, Cl. 123-73.0AD.

Walter, Thomas J.: *See—*
Ranken, Paul F.; and Walter, Thomas J., 4,552,966, Cl. 546-290.000.

Walton, John M.: *See—*
Burns, Simon P.; Walton, John M.; and McEntire, Edward E., 4,552,958, Cl. 544-177.000.

Wang Laboratories, Inc.: *See—*
Smutek, John M.; Wenig, Robert I.; Webb, Nancy J.; and Waisman, Amnon, 4,553,206, Cl. 364-300.000.

Ward, Kenneth J.: *See—*
Dente, Stephen V.; and Ward, Kenneth J., 4,552,777, Cl. 427-393.100.

Ward, William C.: *See—*
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.00S.

Warner-Lambert Company: *See—*
Schobel, Alexander M.; and Schumacher, Robert W., 4,552,679, Cl. 252-90.000.

Warren, Edward L., to United States of America, National Aeronautics and Space Administration. Compliant hydrodynamic fluid journal bearing. 4,552,466, Cl. 384-103.000.

Warren, Leslie F., to Rockwell International Corporation. Conducting organic polymer based on polypyrrole. 4,552,927, Cl. 525-279.000.

Wartenberg, Erwin W. Process for the production of patterned lustre coatings on surfaces of bodies. 4,552,785, Cl. 427-229.000.

Wartian, George, to Wartian Lock Co. Door latch mechanism. 4,552,393, Cl. 292-221.000.

Wartian Lock Co.: *See—*
Wartian, George, 4,552,393, Cl. 292-221.000.

Wasa, Kiyotaka: *See—*
Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,553,099, Cl. 324-458.000.

Wassberg, Neal L.: *See—*
Cavitt, Michael B.; and Wassberg, Neal L., 4,552,814, Cl. 428-414.000.

Watanabe, Kazuhiro: *See—*
Fujita, Toshio; and Watanabe, Kazuhiro, 4,552,915, Cl. 524-322.000.

Watanabe, Mamoru: *See—*
Aoyagi, Shigeyuki; and Watanabe, Mamoru, 4,551,966, Cl. 53-571.000.

Watanabe, Shizuhisa: *See—*
Tokuyama, Keiichi; Naito, Shotaro; and Watanabe, Shizuhisa, 4,553,196, Cl. 363-21.000.

Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, to Kokusai Denshin Denwa Kabushiki Kaisha. Carrier power to noise power ratio measuring system for TDMA signals. 4,553,086, Cl. 324-57.00N.

Watanabe, Tetsuro: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.

Watanabe, Tomonari: *See—*
Fukuoka, Shinsuke; and Watanabe, Tomonari, 4,552,974, Cl. 560-25.000.

Watanabe, Toshiyasu: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.

Watari, Yuuzi: *See—*
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.

Water Services of America, Inc.: *See—*
Baron, Walter J.; and Cleaver, Laird C., 4,552,207, Cl. 165-95.000.

Waters, Dudley G. Ventilator for a lavatory pan. 4,551,865, Cl. 4-213.000.

Watson, David B.: *See—*
Anderson, Gene S.; and Watson, David B., 4,552,432, Cl. 350-96.230.

Waugh, John B. S., to LASERstore, Ltd. Cassette apparatus for storing light sensitive, heat developable film. 4,552,322, Cl. 242-198.000.

Wayland, Paul O., to Westinghouse Electric Corp. Arc resistant vapor condensing shield for vacuum-type circuit interrupter. 4,553,007, Cl. 200-144.00B.

Wean United, Inc.: *See—*
Kerr, Robert L., 4,553,245, Cl. 373-74.000.

Weaver, Stuart: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Webb, Derrel D.: *See—*
Anderson, Edwin A.; and Webb, Derrel D., 4,552,230, Cl. 175-321.000.

Webb, Nancy J.: *See—*
Smutek, John M.; Wenig, Robert I.; Webb, Nancy J.; and Waisman, Amnon, 4,553,206, Cl. 364-300.000.

Weber, Max, to Sulzer Brothers Limited. Heat exchanger with convection suppressing longitudinal baffles. 4,552,211, Cl. 165-160.000.

Weber, Ulrich: *See—*
Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,552,524, Cl. 425-406.000.

Webster, Robert G.: *See—*
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,757, Cl. 424-89.000.
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,758, Cl. 424-89.000.

Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., to Cummins Engine Company, Inc. Integral fuel filter head and adapter for multiple fuel filter canisters. 4,552,662, Cl. 210-232.000.

Wegener, Joachim: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,552,877, Cl. 514-239.000.

Weigl, Jeffrey L.: *See—*
Babuder, Gerald A.; and Weigl, Jeffrey L., 4,552,389, Cl. 285-379.000.

Weinmann AG: *See—*
Schoch, Robert, 4,552,251, Cl. 188-24.210.

Weinmann GmbH & Co. KG: *See—*
Schoch, Robert, 4,551,932, Cl. 36-117.000.

Weinshenker, Eugene: *See—*
Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, 4,552,709, Cl. 264-504.000.

Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Mine roof support unit having dust suppression means. 4,552,487, Cl. 405-295.000.

Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., to Cargill Incorporated. Dust suppressor apparatus. 4,552,573, Cl. 55-312.000.

Weiss, Horst: *See—*
Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, 4,552,509, Cl. 415-135.000.

Weissenburger, Edward, to Johnson & Johnson. Disposable dental capsule. 4,552,266, Cl. 206-220.000.

Welch Allyn Inc.: *See—*
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., 4,552,153, Cl. 128-677.000.

Wellcome New Zealand Limited: *See—*
Donaldson, John H.; Brunswick, Robert; and Foulkes, Andrew J., 4,552,559, Cl. 604-198.000.

Wenig, Robert I.: *See—*
Smutek, John M.; Wenig, Robert I.; Webb, Nancy J.; and Waisman, Amnon, 4,553,206, Cl. 364-300.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Schultshick, Robert, 4,552,493, Cl. 408-3.000.

Werner, Anton, to Kuhn S.A. Machine for planting seeds. 4,552,079, Cl. 111-85.000.

Werner, Daniel P.: *See—*
Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., 4,551,989, Cl. 62-468.000.

Werner, Gerhard: *See—*
Rudolphy, Albert; and Werner, Gerhard, 4,552,592, Cl. 106-30.000.

Werners, Theo F. H.; and Drenth, Berend W., to Hydraudyne B.V. Hoisting device with compensated tackle. 4,552,339, Cl. 254-277.000.

West, James C., to Cochrane, Joe Collis, a part interest. Tire side wall cleaner. 4,551,952, Cl. 51-241.00S.

West, Jerry D.; and Vinson, Wayne W. Infant protecting commode insert. 4,551,871, Cl. 4-661.000.

West, Michael: *See—*
Hoffmann, Wolfgang; and West, Michael, 4,552,608, Cl. 156-351.000.

Western Gear Corporation: *See—*
Carter, William R., 4,552,327, Cl. 244-137.00R.

Westinghouse Brake & Signal Co.: *See—*
Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., 4,552,410, Cl. 303-23.00R.

Westinghouse Electric Corp.: *See—*
Anderson, Lowell M.; and Volk, Rodney H., 4,551,986, Cl. 62-239.000.
Bagalini, Dante, 4,553,116, Cl. 335-20.000.
Bettencourt, George S.; and Strickler, Robert E., 4,552,426, Cl. 339-75.00M.
Byers, William A.; and Peterson, Steven H., 4,553,034, Cl. 250-458.100.
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.
Cherry, Sidney J., 4,553,003, Cl. 200-144.00B.
Culbreth, Thomas F., 4,553,014, Cl. 219-75.000.
Donaldson, George W., 4,551,944, Cl. 49-31.000.
Evans, Gary E., 4,553,145, Cl. 343-360.000.
Grunert, Kurt A.; and Huffman, Walter K., 4,553,115, Cl. 335-14.000.
Haderer, Norman G., 4,552,988, Cl. 174-74.00R.
Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James R., 4,552,718, Cl. 376-216.000.
Martens, Alan; Hobbs, Milton M.; and Snow, Bennie E., 4,552,099, Cl. 122-451.100.
Schenk, Harold L., Jr.; and Junker, Warren R., 4,553,095, Cl. 324-230.000.
Slade, Paul G., 4,553,002, Cl. 200-144.00B.
Wayland, Paul O., 4,553,007, Cl. 200-144.00B.
Wolters, Richard H., 4,552,273, Cl. 211-187.000.

Westland Foods Corporation: *See—*
Olander, John W., 4,552,768, Cl. 426-480.000.

Wetco, Inc.: *See—*
Solomon, Donald F., 4,552,656, Cl. 210-137.000.

Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., to Eastman Kodak Company. Processes for the preparation of silver halide emulsions of controlled grain size distribution, emulsions produced thereby, and photographic elements. 4,552,838, Cl. 430-569.000.

Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre; to ELTECH Systems Corporation. Ceramic oxide electrodes for molten salt electrolysis. 4,552,630, Cl. 204-67.000.

White, Hollis N., Jr. Hydrostatic steering unit with cylindrical slide member within cylindrical valve sleeve. 4,552,519, Cl. 418-61.00B.

White Sea & Baltic Company Limited, The: *See—*
Bugg, John W. J.; and Houlden, Stephen, 4,552,202, Cl. 164-528.000.

Whiteley, Thomas E.: *See—*
Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., 4,552,838, Cl. 430-569.000.

Whitney, Sandra L.: *See—*
Ralston, Paul H.; and Whitney, Sandra L., 4,552,665, Cl. 210-697.000.

Whitney, Thomas H., to Trayco Inc. Floor support for a bathtub. 4,551,869, Cl. 4-592.000.

Wicker, Thomas H., Jr.: *See—*
Barbee, Robert B.; and Wicker, Thomas H., Jr., 4,552,948, Cl. 528-194.000.

Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., to Westinghouse Brake & Signal Co. Braking systems for railway. 4,552,410, Cl. 303-23.00R.

Wicks, Frank D.: *See—*
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., 4,552,589, Cl. 75-105.000.

Wiers, John W., to Rockwell International Corporation. Support for seat adjusting device. 4,552,405, Cl. 297-375.000.

Wilcox, Jeannine; and Karustis, George A., to Engelhard Corporation. Palladium electroplating and bath thereof. 4,552,628, Cl. 204-47.000.

Wilensky, Joseph, to Kurtis, Soma; and Sloan, Jack C. Method and apparatus for a thermodynamic cycle by use of distillation. 4,551,979, Cl. 60-648.000.

Wiley, Bruce F., to Phillips Petroleum Company. Establishing a differential pressure across a core sample or calibrating a differential pressure transducer. 4,552,011, Cl. 73-4.00R.

Wilhelm, Hermann: *See—*
Deubzer, Bernward; and Wilhelm, Hermann, 4,552,910, Cl. 524-43.000.

Wilkhahn Wikening & Hahne GmbH & Co.: *See—*
Ohl, Herbert, 4,552,406, Cl. 297-445.000.

Wilkins, David R. G.: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Wilkins, Raymond A. S.: *See—*
Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., 4,552,410, Cl. 303-23.00R.

Wille, Allen R. Carpenter jack. 4,552,337, Cl. 254-106.000.

Willett, Ronald J.: *See—*
Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., 4,552,015, Cl. 73-113.000.

Williams, Ian G., to Imperial Chemical Industries PLC. Flame retardent polyamide compositions. 4,552,912, Cl. 524-100.000.

Williams, Inc.: *See—*
Hagen, Glenn E., 4,552,514, Cl. 417-332.000.

Williams, Malcolm, to Lucas Industries Limited. Fuel control system for an internal combustion engine. 4,552,113, Cl. 123-436.000.

Williams, Sidney J.: *See—*
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,552,477, Cl. 401-188.00R.

Willimczik, Bernd: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.

Willson, Carlton G.: *See—*
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.

Wilson, Andrew J.: *See—*
Wilson, Robert H.; and Wilson, Andrew J., 4,552,190, Cl. 141-82.000.

Wilson, Robert, to Atlantic Richfield Company. Method of producing a stratified viscous oil reservoir. 4,552,216, Cl. 166-261.000.

Wilson, Robert H.; and Wilson, Andrew J., to James Hamilton & Sons (Engineering) Ltd. Filling machines. 4,552,190, Cl. 141-82.000.

Wilson, Ronald H.: *See—*
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., 4,552,783, Cl. 427-91.000.

Winchell, Jack W., to Huggitt Packaging Company. Backing board insert for food packages. 4,552,789, Cl. 428-132.000.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

Wise, William L., to United States of America, Energy. Servo control booster system for minimizing following error. 4,553,078, Cl. 318-592.000.

Wissler, Josef H., to Max-Planck Gesellschaft zur Forderung der/Wissenschaften. Method for influencing the immune systems of mammals using leukorecruitin. 4,552,761, Cl. 424-101.000.

Witt, Ronald A., to Falk Corporation, The. Overload protection mechanism for clutches. 4,552,257, Cl. 192-56.00F.

Wix, Douglas R. Safety shield for drill press. 4,552,494, Cl. 408-67.000.

WOCO Franz-Josef Wolf & Co.: *See—*
Wolf, Franz J.; and Pletsch, Hubert, 4,552,543, Cl. 464-83.000.

Woebcke, Herman N.: *See—*
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,552,644, Cl. 208-78.000.

Wohlwend, Maurice, to Stanley Works, The. Reciprocating linear fluid motor. 4,552,227, Cl. 173-15.000.

Wolf, Franz J.; and Pletsch, Hubert, to WOCQ Franz-Josef Wolf & Co. Torsionally elastic coupling with an improved characteristic curve. 4,552,543, Cl. 464-83.000.

Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., to Goodyear Tire & Rubber Company, The. One component polyurethane SMC surface coat. 4,552,913, Cl. 524-240.000.

Wolfseder, Alfons: *See—*
Redl, Simon; and Wolfseder, Alfons, 4,552,060, Cl. 99-278.000.

Wolters, Richard H., to Westinghouse Electric Corp. Paper management support rack. 4,552,273, Cl. 211-187.000.

Wong, Ching-Ping, to AT&T Technologies, Inc. Silicone encapsulant containing porphyrin. 4,552,818, Cl. 428-447.000.

Wong, Fred S.; and Grohman, Larry F., to Hydril Company. Subsurface safety valve. 4,552,219, Cl. 166-321.000.

Wood, John: *See—*
Glasson, Peter; and Wood, John, 4,552,075, Cl. 109-52.000.

Wood, John F. B., to Hazelett Strip-Casting Corp. Methods for shaping the casting region in a twin-belt continuous casting machine for improving heat transfer and product uniformity and enhanced machine performance. 4,552,201, Cl. 164-481.000.

Woodhead, David A.: *See—*
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,552,921, Cl. 525-96.000.

Wooldridge, James E., to Allis-Chalmers Corporation. Air flow control system having minimum variation in volume. 4,552,058, Cl. 98-1.500.

Woolner, H. R.: *See—*
Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., 4,552,018, Cl. 73-431.000.

Worthington, Thomas K.: *See—*
Chainer, Timothy J.; and Worthington, Thomas K., 4,553,258, Cl. 382-3.000.
Chainer, Timothy J.; Gundersen, Steven C.; and Worthington, Thomas K., 4,553,259, Cl. 382-3.000.

Wozniak, Eugene. Separator plate for lead-acid battery. 4,552,823, Cl. 429-81.000.

Wrathall, Robert S., to Motorola, Inc. Current sensing circuit. 4,553,084, Cl. 323-316.000.

Wright, Kenton B.: *See—*
Voegel, Robert L.; and Wright, Kenton B., 4,552,638, Cl. 204-286.000.

Wu, Leon L.: *See—*
Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, 4,553,050, Cl. 307-443.000.

Wu, Yulin; and Mumallah, Naim A., to Phillips Petroleum Company. Microbiocidal anionic sequesterants with polyvalent metal cations for permeability correction process. 4,552,217, Cl. 166-270.000.

Wust, Olivier, to Maschinenfabrik Schrarer AG. Method and apparatus for forming snarl-free thread reserves. 4,552,320, Cl. 242-128.000.

Wydler, Robert: *See—*
Bloch, Peter; and Wydler, Robert, 4,551,954, Cl. 51-287.000.

Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, to University of Waterloo. Convection section ash monitoring. 4,552,098, Cl. 122-379.000.

Xerox Corporation: *See—*
Davidson, James R., 4,552,448, Cl. 355-3.0SH.
Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., 4,553,191, Cl. 361-212.000.
Holladay, Thomas M.; and Holt, L. Bayles, 4,553,171, Cl. 358-263.000.
Hubble, Fred F., III; and Martin, James P., 4,553,033, Cl. 250-353.000.
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., 4,552,822, Cl. 430-59.000.

Yaeger, John R.; and Morgan, Robert K., to Raychem Corporation. Shape memory effect actuator and methods of assembling and operating therefor. 4,551,974, Cl. 60-527.000.

Yahl, Kenneth R.: *See—*
DeBoer, Edward D.; and Yahl, Kenneth R., 4,552,564, Cl. 8-115.600.

Yamada, Akira: *See—*
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.

Yamada, Kiyoshi: *See—*
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Yamada, Mitsuhiko; and Nakade, Toshiaki, to Dainippon Screen Mfg. Co., Ltd. Picture scanning and recording method. 4,553,172, Cl. 358-280.000.

Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, to Mitsui Toatsu Chemicals, Inc. Dichroic dye and liquid crystalline composition for color display. 4,552,684, Cl. 252-299.100.

Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,552,807, Cl. 428-323.000.

Yamada, Yoshikado: *See—*
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Yamaguchi, Naoko: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Yamaguchi, Shigehiro: *See—*
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.

Yamaguchi, Tathuya: *See—*
Utsugi, Mikio; and Yamaguchi, Tathuya, 4,552,129, Cl. 128-4.000.

Yamaguchi, Yuji: *See—*
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.

Yamaji, Kazunori: *See—*
Nakamura, Takashi; and Yamaji, Kazunori, 4,553,073, Cl. 315-370.000.

Yamamoto, Hisao: *See—*
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, 4,552,671, Cl. 252-8.900.

Yamamoto, Masao; and Fujiwara, Tetsuo, to Kabushiki Kaisha Toshiba. Actuator. 4,551,975, Cl. 60-528.000.

Yamamoto, Tadashi; and Kurata, Masami, to Fuji Xerox Co., Ltd. Picture data reading device. 4,553,160, Cl. 358-75.000.

Yamamoto, Tadashi: *See—*
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Yamamura, Takashige: *See—*
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, 4,552,009, Cl. 72-316.000.

Yamanaka, Seisuke: *See—*
Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, 4,553,169, Cl. 358-221.000.

Yamanashi, Masaaki: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Yamashiro, Osamu: *See—*
Yoh, Kanji; and Yamashiro, Osamu, 4,553,098, Cl. 324-433.000.

Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polygonal type optical deflector. 4,552,417, Cl. 308-10.000.

Yamashita, Sadahiko: *See—*
Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, 4,553,264, Cl. 455-189.000.

Yamauchi, Shiro: *See—*
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.

Yamauchi, Teruo: *See—*
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.

Yamazaki, Shingo: *See—*
Igarashi, Taizo; Higuchi, Hisao; and Yamazaki, Shingo, 4,552,568, Cl. 44-51.000.

Yamazaki, Taro: *See—*
Sakamoto, Ryuji; and Yamazaki, Taro, 4,552,688, Cl. 252-511.000.

Yamazaki, Yoshio; and Itoh, Takashi, to Konishiroku Photo Industry Co., Ltd. Cleaning device. 4,552,451, Cl. 355-15.000.

Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal transfer color printer for printing on sheets of paper. 4,552,470, Cl. 400-120.000.

Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, to Mitsubishi Jukogyo Kabushiki Kaisha; and Nisshin Steel Co., Ltd. Vacuum vapor deposition system. 4,552,092, Cl. 118-718.000.

Yang, Tsen-Shau, to Advanced Micro Devices, Inc. Bandgap reference voltage generator with V_{CC} compensation. 4,553,083, Cl. 323-313.000.

Yano, Takashi, to Ricoh Company, Ltd. Electrostatic image recording method and apparatus. 4,553,149, Cl. 346-153.100.

Yano, Tsutomu: *See—*
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Yasui, Kazuomi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Yates, David B.: *See—*
Sim, Malcolm F.; and Yates, David B., 4,552,884, Cl. 514-312.000.

Yazaki Sogyo Kabushiki Kaisha: *See—*
Chikasue, Hideo, 4,553,093, Cl. 324-169.000.

Yeda Research and Development Company: *See—*
Margel, Shlomo; and Beitler, Uzi, 4,552,812, Cl. 428-407.000.

Yeda Research & Development Co. Ltd.: *See—*
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, 4,552,922, Cl. 525-54.110.

Yim, Hyung J., to Motorola, Inc. Monolithic zero crossing triac driver. 4,553,041, Cl. 307-252.00A.

Yindra, Leonard J., to Hamilton Industries. Power-operated medical examination table. 4,552,403, Cl. 297-330.000.

Yip, Kin F.; and Charlton, Steven C., to Miles Laboratories, Inc. Compound useful in detecting ions and method of preparing it. 4,552,697, Cl. 260-396.00N.

Yoda, Yukiji: *See—*
Sakata, Hideo; and Yoda, Yukiji, 4,551,919, Cl. 33-1.00M.

Yogo, Teruaki. Bending apparatus. 4,552,006, Cl. 72-149.000.

Yoh, Kanji; and Yamashiro, Osamu, to Hitachi, Ltd. Battery checker. 4,553,098, Cl. 324-433.000.

Yokoyama, Hachirou: *See—*
Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, 4,551,969, Cl. 57-264.000.

Yonezawa, Kazuya: *See—*
Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, 4,552,947, Cl. 528-126.000.

Yoshida, Kei; and Saotome, Yoichiro, to Chikura Kogyo Kabushiki Kaisha. Door swinging device for automatically swinging doors. 4,551,946, Cl. 49-340.000.

Yoshida, Tatsuya; and Katada, Hirosi, to Hitachi, Ltd. Electronic ignition control system. 4,552,110, Cl. 123-416.000.

Yoshida, Yasuharu, to NEC Corp. Multilevel amplitude modulation demodulator with DC drift compensation. 4,553,102, Cl. 329-133.000.

Yoshihara, Hiroshi: *See—*
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, 4,552,972, Cl. 556-35.000.

Yoshikawa, Mitsuru: *See—*
Tanaka, Kazunori; and Yoshikawa, Mitsuru, 4,552,353, Cl. 271-124.000.

Yoshioka, Kazuo: *See—*
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.

Yoshioka, Mitsuru: *See—*
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.

Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, to Sony Corporation. Clamp circuit for use in video camera having image pick-up device. 4,553,169, Cl. 358-221.000.

Yoshizaki, Hideo: *See—*
Murakami, Akira; and Yoshizaki, Hideo, 4,552,760, Cl. 424-94.000.

Young, Gillian A.: *See—*
Nicks, Peter F.; and Young, Gillian A., 4,552,908, Cl. 523-504.000.

Young, Ian R., to Picker International Limited. Cored magnet with lightweight large area pole pieces. 4,553,122, Cl. 335-296.000.

Young, James P., to Rockwell International Corporation. Low noise feedback amplifier. 4,553,108, Cl. 330-300.000.

Young, John S.: *See—*
Daniels, William R.; and Young, John S., 4,552,997, Cl. 179-175.30R.

Ysidro, Leonard M., Sr.: *See—*
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,552,499, Cl. 414-125.000.

Yuan, Leo: *See—*
Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, 4,553,050, Cl. 307-443.000.

Yudelson, Joseph S.; and Johnson, Thomas M., to Eastman Kodak Company. Macromolecule determination by physical development. 4,552,848, Cl. 436-86.000.

Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, to Mitsubishi Petrochemical Co., Ltd. Electrically conductive inorganic filler containing propylene polymer compositions. 4,552,689, Cl. 252-511.000.

Zacouto, Fred. Method and apparatus to assist cardiac muscle functioning. 4,552,150, Cl. 128-419.0PG.

Zaruba, John V.: *See*—
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.

Zasio, John J.; and Cooke, Larry, to Storage Technology Partners. System for detecting and correcting errors in a CMOS computer system. 4,553,236, Cl. 371-15.000.

Zazzu, Victor: *See*—
Dingwall, Andrew G. F.; and Zazzu, Victor, 4,553,132, Cl. 340-347.0DA.

Zech, Hendrik: *See*—
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Zeidler, Manfred: *See*—
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Zell, Dale R.: *See*—
Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., 4,552,422, Cl. 339-17.0CF.

Zeller, Bary L.: *See*—
Saleeb, Fouad Z.; and Zeller, Bary L., 4,552,767, Cl. 426-395.000.

Zenith Electronics Corporation: *See*—
Campisi, Carl, 4,551,913, Cl. 29-740.000.
Citta, Richard W., 4,553,161, Cl. 358-86.000.
Dam, Robert, 4,553,120, Cl. 335-210.000.
Flasza, Michael D.; and Nienaber, David K., 4,553,141, Cl. 340-703.000.
Strauss, Paul, 4,553,142, Cl. 340-712.000.
Sutton, Leroy A., 4,553,166, Cl. 358-190.000.

Ziegler, Hans J. Apparatus for alternatively and selectively connecting telephone cable shield ground straps to a ground rod and including a ground bracket. 4,552,998, Cl. 200-11.00R.

Zierenberg, Ottfried: *See*—
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Zimmer, Johannes. Method of and apparatus for applying a viscous medium to a substrate. 4,552,778, Cl. 427-445.000.

Zimmerman, Michael T.: *See*—
Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., 4,552,023, Cl. 73-715.000.

Zion, Henry E., Jr. Sand blasting apparatus. 4,551,955, Cl. 51-439.000.

Zitz, Alfred: *See*—
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.

Zovko, Carl B.; and Vogel, Alan D., to Pace, Incorporated. Method and apparatus for soldering and desoldering leadless semiconductor modules for printed wiring boards. 4,552,300, Cl. 228-20.000.

Zucker, Stanley; and Schwarting, Fritz. Method of protecting a roadway maintenance and construction site. 4,552,341, Cl. 256-1.000.

Zuk, Robert F.: *See*—
Gould, Dennis R.; and Zuk, Robert F., 4,552,839, Cl. 435-7.000.

Zukoski, Ronald D.: *See*—
Hussain, Zahera J.; and Zukoski, Ronald D., 4,552,693, Cl. 252-522.00A.

ZVS Vyzkumnevyvojovy ustav koncernova ucelova organizace: *See*—
Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri , 4,552,188, Cl. 139-435.000.

2JT, Inc.: *See*—
Huntley, James B., 4,552,995, Cl. 179-147.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1985

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ametek, Inc.: *See*—
Hyatt, Robert L.; and Niessner, Norbert H., Re. 32,027, Cl. 417-368.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Yamashita, Iwao; and Shimizu, Miyuki, Re. 32,026, Cl. 126-263.000.

Bletso, Nelson C.: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., Re. 32,029, Cl. 525-438.000.

Del Monte Corporation: *See*—
Ross, Edward E., Re. 32,025, Cl. 53-435.000.

Fischer, William K., to Uniroyal, Inc. Dynamically partially cured thermoplastic blend of monoolefin copolymer rubber and polyolefin plastic. Re. 32,028, Cl. 525-194.000.

Frerking, Harlan W., Jr.: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., Re. 32,029, Cl. 525-438.000.

Goodyear Tire & Rubber Company, The: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., Re. 32,029, Cl. 525-438.000.

Hyatt, Robert L.; and Niessner, Norbert H., to Ametek, Inc. Wet pick-up vacuum unit motor bearing air seal. Re. 32,027, Cl. 417-368.000.

Niessner, Norbert H.: *See*—
Hyatt, Robert L.; and Niessner, Norbert H., Re. 32,027, Cl. 417-368.000.

Nissan Motor Company, Limited: *See*—
Yano, Tsuneomi; and Yuzawa, Haruo, Re. 32,030, Cl. 364-431.040.

Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., to Goodyear Tire & Rubber Company, The. Process to control the curing reaction between a copolyester resin and an epoxide compound, and a composition formed for that process. Re. 32,029, Cl. 525-438.000.

Ross, Edward E., to Del Monte Corporation. Cocktail filling machine and method. Re. 32,025, Cl. 53-435.000.

Shimizu, Miyuki: *See*—
Yamashita, Iwao; and Shimizu, Miyuki, Re. 32,026, Cl. 126-263.000.

Uniroyal, Inc.: *See*—
Fischer, William K., Re. 32,028, Cl. 525-194.000.

Yamashita, Iwao; and Shimizu, Miyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Structure of warmer. Re. 32,026, Cl. 126-263.000.

Yano, Tsuneomi; and Yuzawa, Haruo, to Nissan Motor Company, Limited. Closed loop controlled auxiliary air delivery system for internal combustion engine. Re. 32,030, Cl. 364-431.040.

Yuzawa, Haruo: *See*—
Yano, Tsuneomi; and Yuzawa, Haruo, Re. 32,030, Cl. 364-431.040.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

A.G. fur industrielle Elektronik AGIE: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Anderson, Donald R.: *See*—
Spoerle, F. Steven; Palmer, Elmer W.; Anderson, Donald R.; and Frisque, Alvin J., B1 3,790,476, Cl. 210-734.000.

Fenner, Hans-Ueli: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, to New York University. Anticonvulsive compositions and method of treating convulsive disorders. B1 4,372,974, 11-12-85, Cl. 514-561.000.

Frisque, Alvin J.: *See*—
Spoerle, F. Steven; Palmer, Elmer W.; Anderson, Donald R.; and Frisque, Alvin J., B1 3,790,476, Cl. 210-734.000.

Kessler, Donald L., to Tecumseh Products Company. Hermetic compressor. B1 4,406,590, 11-12-85, Cl. 417-360.000.

Mattei, Silvano: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Nalco Chemical Company: *See*—
Spoerle, F. Steven; Palmer, Elmer W.; Anderson, Donald R.; and Frisque, Alvin J., B1 3,790,476, Cl. 210-734.000.

New York University: *See*—
Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, B1 4,372,974, Cl. 514-561.000.

Palmer, Elmer W.: *See*—
Spoerle, F. Steven; Palmer, Elmer W.; Anderson, Donald R.; and Frisque, Alvin J., B1 3,790,476, Cl. 210-734.000.

Ruh, Herbert: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Samuels, Stanley: *See*—
Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, B1 4,372,974, Cl. 514-561.000.

Schumacher, Bernd: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Schwartz, Stephen A.: *See*—
Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, B1 4,372,974, Cl. 514-561.000.

Sieg, Arno: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Spoerle, F. Steven; Palmer, Elmer W.; Anderson, Donald R.; and Frisque, Alvin J., to Nalco Chemical Company. Latices for industrial waste coagulation. B1 3,790,476, 11-12-85, Cl. 210-734.000.

Tecumseh Products Company: *See*—
Kessler, Donald L., B1 4,406,590, Cl. 417-360.000.

Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, to A.G. fur industrielle Elektronik AGIE. Automatic set-up electroerosion machining method. B1 3,891,819, 11-12-85, Cl. 219-69.00M.

Wettstein, Gottlieb: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

LIST OF DESIGN PATENTEES

Acme-Gorick Pty. Ltd.: *See—*
Gorick, Geoffrey P.; and Day, Robert W., 281,338, Cl. D21-89.000.
Adams, Peter G., to Hestair Kiddicraft Limited. Child's clock figure toy. 281,334, 11-12-85, Cl. D19-64.000.
Ahlgren, Stig B. Rotatable display element for changeable message sign. 281,336, 11-12-85, Cl. D20-21.000.
American Footwear Corporation: *See—*
Mangini, Victor P.; and McAlear, Anthony M., Jr., 281,286, Cl. D2-320.000.
Andrich, Marlene: *See—*
Gayeski, Frank; and Andrich, Marlene, 281,298, Cl. D6-486.000.
Artsana S.p.A.: *See—*
Catelli, Pietro, 281,368, Cl. D99-35.000.
Astro Nautics Plastic Mfg. Corporation: *See—*
Bepristis, Brian R.; and Bepristis, Richard A., 281,313, Cl. D12-158.000.
Atobe, Takashi, to Daiwa Seiko, Inc. Fishing reel. 281,345, 11-12-85, Cl. D22-25.000.
August Froscher GmbH & Co., K.G.: *See—*
Engel, Hartmut; and Elzenbeck, Manfred, 281,292, Cl. D6-380.000.
Badgley, Douglas C. Combined fuel pump display and hose retractor assembly. 281,324, 11-12-85, Cl. D15-9.200.
Barsi, Endre: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 281,362, Cl. D32-50.000.
Bates, Bobby L., to Bates - Johnson & Co., Inc. Junction housing for battery jumper cables. 281,314, 11-12-85, Cl. D13-10.000.
Bates - Johnson & Co., Inc.: *See—*
Bates, Bobby L., 281,314, Cl. D13-10.000.
BBC International Ltd.: *See—*
Campbell, Robert B.; and Landau, Junichi P., 281,285, Cl. D2-309.000.
Beigel, Bonny. Racket bag. 281,290, 11-12-85, Cl. D3-36.000.
Bepristis, Brian R.; and Bepristis, Richard A., to Astro Nautics Plastic Mfg. Corporation. Bicycle carrier bags. 281,313, 11-12-85, Cl. D12-158.000.
Bepristis, Richard A.: *See—*
Bepristis, Brian R.; and Bepristis, Richard A., 281,313, Cl. D12-158.000.
Broadaker Co., Ltd.: *See—*
Whitaker, Richard J., 281,317, Cl. D14-38.000.
Bussey, Harry, Jr. Loose fill packing element. 281,308, 11-12-85, Cl. D9-456.000.
Caffrey, Stephen F.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 281,362, Cl. D32-50.000.
Campbell, Robert B.; and Landau, Junichi P., to BBC International Ltd. Sport shoe. 281,285, 11-12-85, Cl. D2-309.000.
Canon Kabushiki Kaisha: *See—*
Kando, Masahiro, 281,330, Cl. D18-12.000.
Nibley, Richard; and Nagashima, Masasumi, 281,331, Cl. D18-12.000.
Nibley, Richard; and Nagashima, Masasumi, 281,332, Cl. D18-12.000.
Nibley, Richard; and Miyagawa, Akira, 281,333, Cl. D18-22.000.
Carvel Corporation: *See—*
Carvel, Thomas, 281,363, Cl. D34-20.000.
Carvel, Thomas, to Carvel Corporation. Vending cart. 281,363, 11-12-85, Cl. D34-20.000.
Cassai, Gino H.: *See—*
Cassai, Henry J.; and Cassai, Gino H., 281,307, Cl. D9-443.000.
Cassai, Henry J.; and Cassai, Gino H. Bottle cap. 281,307, 11-12-85, Cl. D9-443.000.
Catelli, Pietro, to Artsana S.p.A. Toy safe. 281,368, 11-12-85, Cl. D99-35.000.
Century International Corp.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 281,362, Cl. D32-50.000.
Chang, Shu-Fen. Electric fan. 281,352, 11-12-85, Cl. D23-155.000.
Clairol Incorporated: *See—*
Wistrand, John, 281,360, Cl. D28-13.000.
Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Nagata, Kazuo; and Ishige, Yukio, 281,354, Cl. D24-41.000.
Cosden Technology, Inc.: *See—*
Fortuna, Vincent E., 281,303, Cl. D9-398.000.
Fortuna, Vincent E., 281,304, Cl. D9-398.000.
Fortuna, Vincent E., 281,305, Cl. D9-398.000.
Cutler, Terry B. Game board. 281,337, 11-12-85, Cl. D21-34.000.
Daiwa Seiko, Inc.: *See—*
Atobe, Takashi, 281,345, Cl. D22-25.000.
Iinuma, Kanji; and Kameda, Yasuhisa, 281,346, Cl. D22-25.000.
Iinuma, Kanji; and Kameda, Yasuhisa, 281,347, Cl. D22-25.000.
Danfoss A/S: *See—*
Kjeld, Lehmann, 281,315, Cl. D14-40.000.
Davidson, Grant, to U.S. Philips Corporation. TV Band radio receiver. 281,318, 11-12-85, Cl. D14-68.000.
Day, Robert W.: *See—*
Gorick, Geoffrey P.; and Day, Robert W., 281,338, Cl. D21-89.000.
Dechant, Joseph C.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 281,362, Cl. D32-50.000.
DiFede, John. Dolly for holding and tilting a bucket. 281,364, 11-12-85, Cl. D34-23.000.
Doner, Claude E. Mushroom shaped landscape light. 281,358, 11-12-85, Cl. D26-69.000.
Duke, J. Douglas. Bow holder. 281,344, 11-12-85, Cl. D22-13.000.
Duncan Electronics: *See—*
Overcash, Donald A.; Hall, Lloyd E.; and Mueller, Guenter W., 281,323, Cl. D15-5.000.
Ekuan, Kenji, to Epson Corporation. Electronic printer. 281,322, 11-12-85, Cl. D14-111.000.
Ellesse International S.p.A.: *See—*
Gluck, Harry, 281,300, Cl. D6-495.000.
Elzenbeck, Manfred: *See—*
Engel, Hartmut; and Elzenbeck, Manfred, 281,292, Cl. D6-380.000.
EMI Limited: *See—*
Knott, John, 281,320, Cl. D14-108.000.
Engel, Hartmut; and Elzenbeck, Manfred, to August Froscher GmbH & Co., K.G. Chair. 281,292, 11-12-85, Cl. D6-380.000.
Epson Corporation: *See—*
Ekuan, Kenji, 281,322, Cl. D14-111.000.
Esslinger, Hartmut H., to Konig & Neurath Kommanditgesellschaft. Worktable or similar article. 281,297, 11-12-85, Cl. D6-484.000.
Esslinger, Hartmut H., to Konig & Neurath Kommanditgesellschaft. Appliance holder for attachment to a work table. 281,299, 11-12-85, Cl. D6-491.000.
Far East Toys & Novelties Manufacturing Limited: *See—*
Lau, Kam H., 281,341, Cl. D21-136.000.
Folkerth, Harold E.: *See—*
Irelan, Edward A.; Folkerth, Harold E.; Legler, John G.; and Woods, Garry W., 281,328, Cl. D15-133.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 281,303, 11-12-85, Cl. D9-398.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 281,304, 11-12-85, Cl. D9-398.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 281,305, 11-12-85, Cl. D9-398.000.
Fraley, Lawrence R.; and Westlund, Arnold E., Jr., to GTE Products Corporation. Projection lamp reflector. 281,355, 11-12-85, Cl. D26-2.000.
Gary, Phillip A. Omni-directional speaker enclosure. 281,316, 11-12-85, Cl. D14-33.000.
Gayeski, Frank; and Andrich, Marlene, to Gayeski Furniture Coordinates, Inc. Table. 281,298, 11-12-85, Cl. D6-486.000.
Gayeski Furniture Coordinates, Inc.: *See—*
Gayeski, Frank; and Andrich, Marlene, 281,298, Cl. D6-486.000.
Gismondi, Ernesto. Table lamp. 281,357, 11-12-85, Cl. D26-63.000.
Gluck, Harry, to Ellesse International S.p.A. Base for supporting an exhibition stall upright post. 281,300, 11-12-85, Cl. D6-495.000.
Goldish, Milton, to Milton Industries Inc. Air nozzle. 281,349, 11-12-85, Cl. D23-34.000.
Gompes, Simon. Pop-up toy. 281,342, 11-12-85, Cl. D21-151.000.
Gorick, Geoffrey P.; and Day, Robert W., to Acme-Gorick Pty. Ltd. Toy glider. 281,338, 11-12-85, Cl. D21-89.000.
Graham, Neal E. Drum case. 281,289, 11-12-85, Cl. D3-30.100.
GTE Products Corporation: *See—*
Fraley, Lawrence R.; and Westlund, Arnold E., Jr., 281,355, Cl. D26-2.000.
Gugler, Donald. Baby seat attachment for shopping carts. 281,365, 11-12-85, Cl. D34-27.000.
Gunyon, Maurice H. Combined printer and paper stand. 281,295, 11-12-85, Cl. D6-474.000.
Hakanen, Allan, to Treston Oy. Pallet. 281,366, 11-12-85, Cl. D34-38.000.
Hall, Lloyd E.: *See—*
Overcash, Donald A.; Hall, Lloyd E.; and Mueller, Guenter W., 281,323, Cl. D15-5.000.
Harrell, Benjamin T. Transparent novelty glasses with photographic insert. 281,329, 11-12-85, Cl. D16-104.000.
Harris, Joseph H. Paper money holder. 281,369, 11-12-85, Cl. D99-34.000.
Hartung, Philip F. Bottle. 281,302, 11-12-85, Cl. D9-370.000.
Hattori, Yasuo; Kame, Masaharu; and Sakurada, Masahiko, to Olympus Optical Company Ltd. Automatic chemical analyzer. 281,310, 11-12-85, Cl. D10-81.000.
Heier, Richard L. Thread protector for pipes. 281,350, 11-12-85, Cl. D23-41.000.
Hestair Kiddicraft Limited: *See—*
Adams, Peter G., 281,334, Cl. D19-64.000.
Highstreet, Rebecca A.; Shield, Raymond G.; and Jensen, Nancy A., to Signet Scientific Co. Digital depth meter. 281,309, 11-12-85, Cl. D10-70.000.
Hinnen, John. Puzzle toy. 281,339, 11-12-85, Cl. D21-104.000.
Hirose, Toshikatsu; Ishikawa, Teruo; Satoh, Takahiro; and Shigeta, Yoshitaka, to Sanyo Electric Co., Ltd. Television receiver. 281,319, 11-12-85, Cl. D14-80.000.
Hoppe, Rolf. Desk. 281,294, 11-12-85, Cl. D6-422.000.
Iinuma, Kanji; and Kameda, Yasuhisa, to Daiwa Seiko Inc. Fishing reel. 281,346, 11-12-85, Cl. D22-25.000.

Iinuma, Kanji; and Kameda, Yasuhisa, to Daiwa Seiko, Inc. Fishing reel. 281,347, 11-12-85, Cl. D22-25.000.
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., to Century International Corp. Bowling lane duster. 281,362, 11-12-85, Cl. D32-50.000.
Irelan, Edward A.; Folkerth, Harold E.; Legler, John G.; and Woods, Garry W., to Shopsmith, Inc. Saw table. 281,328, 11-12-85, Cl. D15-133.000.
Ishige, Yukio: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Nagata, Kazuo; and Ishige, Yukio, 281,354, Cl. D24-41.000.
Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Nagata, Kazuo; and Ishige, Yukio, 281,354, Cl. D24-41.000.
Ishikawa, Teruo: *See—*
Hirose, Toshikatsu; Ishikawa, Teruo; Satoh, Takahiro; and Shigeta, Yoshitaka, 281,319, Cl. D14-80.000.
J. H. Schuler Company, The: *See—*
Schuler, John H., II, 281,291, Cl. D4-137.000.
Jaros, Philip; and Wright, Paul O., to White Mop Wringer Company. Mop holder. 281,361, 11-12-85, Cl. D32-50.000.
Jensen, Nancy A.: *See—*
Highstreet, Rebecca A.; Shield, Raymond G.; and Jensen, Nancy A., 281,309, Cl. D10-70.000.
Johnston, Joan O. Computer work station. 281,293, 11-12-85, Cl. D6-420.000.
Kame, Masaharu: *See—*
Hattori, Yasuo; Kame, Masaharu; and Sakurada, Masahiko, 281,310, Cl. D10-81.000.
Kameda, Yasuhisa: *See—*
Iinuma, Kanji; and Kameda, Yasuhisa, 281,346, Cl. D22-25.000.
Iinuma, Kanji; and Kameda, Yasuhisa, 281,347, Cl. D22-25.000.
Kando, Masahiro, to Canon Kabushiki Kaisha. Ink ribbon cartridge for electronic typewriter. 281,330, 11-12-85, Cl. D18-12.000.
Kjeld, Lehmann, to Danfoss A/S. Casing for electrical equipment. 281,315, 11-12-85, Cl. D14-40.000.
Knoll, Jimmie L.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 281,362, Cl. D32-50.000.
Knott, John, to EMI Limited. Magnetic tape transport. 281,320, 11-12-85, Cl. D14-108.000.
Konig & Neurath Kommanditgesellschaft: *See—*
Esslinger, Hartmut H., 281,297, Cl. D6-484.000.
Esslinger, Hartmut H., 281,299, Cl. D6-491.000.
Krive, Irwin M. Leg exerciser or similar article. 281,343, 11-12-85, Cl. D21-192.000.
Kverneland A/S: *See—*
Nja, Olav, 281,326, Cl. D15-29.000.
Nordland, Johan, 281,325, Cl. D15-11.000.
LaFrance Corporation: *See—*
Peroni, Peter A., 281,351, Cl. D23-127.000.
Landau, Junichi P.: *See—*
Campbell, Robert B.; and Landau, Junichi P., 281,285, Cl. D2-309.000.
Lau, Kam H., to Far East Toys & Novelties Manufacturing Limited. Toy vehicle. 281,341, 11-12-85, Cl. D21-136.000.
Legler, John G.: *See—*
Irelan, Edward A.; Folkerth, Harold E.; Legler, John G.; and Woods, Garry W., 281,328, Cl. D15-133.000.
Mangini, Victor P.; and McAlear, Anthony M., Jr., to American Footwear Corporation. Footwear outer sole. 281,286, 11-12-85, Cl. D2-320.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Sadashima, Tsuguyoshi, 281,348, Cl. D22-31.000.
Maxtor Corporation: *See—*
Wright, Harold T., 281,321, Cl. D14-109.000.
McAlear, Anthony M., Jr.: *See—*
Mangini, Victor P.; and McAlear, Anthony M., Jr., 281,286, Cl. D2-320.000.
Milton Industries Inc.: *See—*
Goldish, Milton, 281,349, Cl. D23-34.000.
Miyagawa, Akira: *See—*
Nibley, Richard; and Miyagawa, Akira, 281,333, Cl. D18-22.000.
Mueller, Guenter W.: *See—*
Overcash, Donald A.; Hall, Lloyd E.; and Mueller, Guenter W., 281,323, Cl. D15-5.000.
Nadeau, Richard P., to Zorcom Enterprise, Inc. Toy playhouse. 281,340, 11-12-85, Cl. D21-114.000.
Nagashima, Masasumi: *See—*
Nibley, Richard; and Nagashima, Masasumi, 281,331, Cl. D18-12.000.
Nibley, Richard; and Nagashima, Masasumi, 281,332, Cl. D18-12.000.
Nagata, Kazuo: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Nagata, Kazuo; and Ishige, Yukio, 281,354, Cl. D24-41.000.
Nakao, Shinroku; Ishii, Yoshiyasu; Nagata, Kazuo; and Ishige, Yukio, to Combi Co., Ltd. Electric massage instrument. 281,354, 11-12-85, Cl. D24-41.000.
Nibley, Richard; and Nagashima, Masasumi, to Canon Kabushiki Kaisha. Ink ribbon cassette for typewriter. 281,331, 11-12-85, Cl. D18-12.000.
Nibley, Richard; and Nagashima, Masasumi, to Canon Kabushiki Kaisha. Ink ribbon cassette for word processor. 281,332, 11-12-85, Cl. D18-12.000.
Nibley, Richard; and Miyagawa, Akira, to Canon Kabushiki Kaisha. Ink cartridge for printer. 281,333, 11-12-85, Cl. D18-22.000.
Nja, Olav, to Kverneland A/S. Tooth for buckets on digging and loading machines. 281,326, 11-12-85, Cl. D15-29.000.
Nordland, Johan, to Kverneland A/S. Plow-bottom. 281,325, 11-12-85, Cl. D15-11.000.
Ofield, Michael G. Motorcycle light. 281,356, 11-12-85, Cl. D26-28.000.
Ofield, Michael G. Headlight cover for motorcycle fairing. 281,359, 11-12-85, Cl. D26-139.000.
Olympus Optical Company Ltd.: *See—*
Hattori, Yasuo; Kame, Masaharu; and Sakurada, Masahiko, 281,310, Cl. D10-81.000.
Overcash, Donald A.; Hall, Lloyd E.; and Mueller, Guenter W., to Duncan Electronics. Throttle position sensor. 281,323, 11-12-85, Cl. D15-5.000.
Peroni, Peter A., to LaFrance Corporation. Stove damper handle. 281,351, 11-12-85, Cl. D23-127.000.
Pota, Joseph. Front panel for refrigerator or similar article. 281,327, 11-12-85, Cl. D15-81.000.
Reichenstein, Kenneth, to Webcor Electronics, Inc. Packaging container for a telephone. 281,306, 11-12-85, Cl. D9-415.000.
Richardson, Dorothy L.: *See—*
Richardson, Jack G.; and Richardson, Dorothy L., 281,288, Cl. D2-400.000.
Richardson, Jack G.; and Richardson, Dorothy L. Combined umbrella and dog repellent holder. 281,288, 11-12-85, Cl. D2-400.000.
Rinn Corporation: *See—*
Sico, Nicholas J., Jr., 281,353, Cl. D24-2.000.
Russell, Gerald B. Single-rail motorcycle trailer. 281,312, 11-12-85, Cl. D12-101.000.
Sadashima, Tsuguyoshi, to Matsushita Electric Industrial Co., Ltd. Electrically operated fishline tier. 281,348, 11-12-85, Cl. D22-31.000.
Sakurada, Masahiko: *See—*
Hattori, Yasuo; Kame, Masaharu; and Sakurada, Masahiko, 281,310, Cl. D10-81.000.
Sanyo Electric Co., Ltd.: *See—*
Hirose, Toshikatsu; Ishikawa, Teruo; Satoh, Takahiro; and Shigeta, Yoshitaka, 281,319, Cl. D14-80.000.
Satoh, Takahiro: *See—*
Hirose, Toshikatsu; Ishikawa, Teruo; Satoh, Takahiro; and Shigeta, Yoshitaka, 281,319, Cl. D14-80.000.
Schuler, John H., II, to J. H. Schuler Company, The. Lint brush or similar article. 281,291, 11-12-85, Cl. D4-137.000.
Shield, Raymond G.: *See—*
Highstreet, Rebecca A.; Shield, Raymond G.; and Jensen, Nancy A., 281,309, Cl. D10-70.000.
Shigeta, Yoshitaka: *See—*
Hirose, Toshikatsu; Ishikawa, Teruo; Satoh, Takahiro; and Shigeta, Yoshitaka, 281,319, Cl. D14-80.000.
Shopsmith, Inc.: *See—*
Irelan, Edward A.; Folkerth, Harold E.; Legler, John G.; and Woods, Garry W., 281,328, Cl. D15-133.000.
Sico, Nicholas J., Jr., to Rinn Corporation. Collimator for dental x-ray instrument aiming rings. 281,353, 11-12-85, Cl. D24-2.000.
Signet Scientific Co.: *See—*
Highstreet, Rebecca A.; Shield, Raymond G.; and Jensen, Nancy A., 281,309, Cl. D10-70.000.
Smith, Ronald L.: *See—*
Ingermann, Donald E.; Smith, Ronald L.; Knoll, Jimmie L.; Caffrey, Stephen F.; Barsi, Endre; and Dechant, Joseph C., 281,362, Cl. D32-50.000.
Spate, William C. Speedometer ratio checker. 281,311, 11-12-85, Cl. D10-98.000.
Spolar, Dicksie. Spaghetti measuring gauge. 281,301, 11-12-85, Cl. D7-50.000.
Stromberg, Per S. Combined packing and storing box for fish. 281,367, 11-12-85, Cl. D34-40.000.
Treston Oy: *See—*
Hakanen, Allan, 281,366, Cl. D34-38.000.
Umanoff, Martin. Candy dish display. 281,296, 11-12-85, Cl. D6-474.000.
U.S. Philips Corporation: *See—*
Davidson, Grant, 281,318, Cl. D14-68.000.
Vitrac, Jean F. Shoe sole. 281,287, 11-12-85, Cl. D2-321.000.
Webcor Electronics, Inc.: *See—*
Reichenstein, Kenneth, 281,306, Cl. D9-415.000.
Welch, Stephen R. Storage rack. 281,335, 11-12-85, Cl. D19-86.000.
Westlund, Arnold E., Jr.: *See—*
Fraley, Lawrence R.; and Westlund, Arnold E., Jr., 281,355, Cl. D26-2.000.
Whitaker, Richard J., to Broadaker Co., Ltd. Wall mounted support for loudspeaker or the like. 281,317, 11-12-85, Cl. D14-38.000.
White Mop Wringer Company: *See—*
Jaros, Philip; and Wright, Paul O., 281,361, Cl. D32-50.000.
Wistrand, John, to Clairol Incorporated. Hair dryer. 281,360, 11-12-85, Cl. D28-13.000.
Woods, Garry W.: *See—*
Irelan, Edward A.; Folkerth, Harold E.; Legler, John G.; and Woods, Garry W., 281,328, Cl. D15-133.000.
Wright, Harold T., to Maxtor Corporation. Winchester disc drive. 281,321, 11-12-85, Cl. D14-109.000.
Wright, Paul O.: *See—*
Jaros, Philip; and Wright, Paul O., 281,361, Cl. D32-50.000.
Zorcom Enterprise, Inc.: *See—*
Nadeau, Richard P., 281,340, Cl. D21-114.000.

LIST OF PLANT PATENTEES

Pampaian, James H. Peach tree, Pampaian's Late Babcock. 5,581, 11-12-85, Cl. 42.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 12, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

7 4,551,857
4,551,858
172 4,551,859
175 4,551,860
425 4,551,861

CLASS 4

213 4,551,865
251 4,551,866
420.4 4,551,867
443 4,551,868
592 4,551,869
613 4,551,870
661 4,551,871

CLASS 5

445 4,551,872
450 4,551,873
453 4,551,874

CLASS 7

138 4,551,875

CLASS 8

101 4,552,562
107 4,552,563
115.6 4,552,564
409 4,552,565

CLASS 12

142 Q 4,551,876

CLASS 14

71.7 4,551,877

CLASS 15

102 4,551,878
301 4,551,879
302 4,551,880

CLASS 16

199 4,551,881
226 4,551,882
370 4,551,883

CLASS 17

49 4,551,884
59 4,551,885
75 4,551,886

CLASS 19

244 4,551,887

CLASS 23

313 R 4,552,566

CLASS 24

30.5 P 4,551,888
196 4,551,889
565 4,551,890
669 4,551,891

CLASS 28

166 4,551,892

CLASS 29

33 M 4,551,893
130 4,551,894
148.4 R 4,551,895
156.4 R 4,551,896
235 4,551,897
4,551,898
241 4,551,899
408 4,551,900
564.6 4,551,901
568 4,551,902
4,551,903
571 4,551,904
4,551,905
4,551,906
4,551,907
4,551,908
4,551,909
576 S 4,551,912
576 W 4,551,910
4,551,911
740 4,551,913
837 4,551,914
858 4,551,915

CLASS 30

50 4,551,916
161 4,551,917
347 4,551,918

CLASS 33

1 M 4,551,919
257 4,551,920
366 4,551,921
414 4,551,922
476 4,551,923

CLASS 34

1 4,551,924
4 4,551,925
23 4,551,926
82 4,551,927
4,551,928

CLASS 36

11 4,551,929
30 R 4,551,930
117 4,551,931
4,551,932
120 4,551,933

CLASS 40

535 4,551,934
584 4,551,935

CLASS 42

42 R 4,551,936
74 4,551,937

CLASS 43

4.5 4,551,938
21.2 4,551,939
42.11 4,551,940
107 4,551,941

CLASS 44

13 4,552,567
51 4,552,568
71 4,552,569

CLASS 47

14 4,551,942
41 R 4,551,943

CLASS 49

31 4,551,944
221 4,551,945
340 4,551,946

CLASS 51

34 H 4,551,947
98 R 4,551,948
164.1 4,551,949
165.87 4,551,950
170 EB 4,551,951
241 S 4,551,952
268 4,551,953
287 4,551,954
439 4,551,955

CLASS 52

12 4,551,956
90 4,551,957
309.12 4,551,959
309.4 4,551,958
648 4,551,960
743 4,551,961

CLASS 53

131 4,551,962
148 4,551,963
374 4,551,964
435 Re.32,025
463 4,551,965
571 4,551,966

CLASS 55

20 4,552,570
21 4,552,571
36 4,552,572
312 4,552,573
501 4,552,574

CLASS 56

13.7 4,551,967
16.4 4,551,968

CLASS 57

264 4,551,969
339 4,551,970

CLASS 60

39.281 4,551,972
39.53 4,551,971
477 4,551,973
527 4,551,974
528 4,551,975
533 4,551,976
611 4,551,977
641.13 4,551,978
648 4,551,979
698 4,551,980

CLASS 62

70 4,551,981
130 4,551,982
174 4,551,983
193 4,551,984
235 4,551,985
239 4,551,986
324.5 4,551,987
457 4,551,988
468 4,551,989
4,551,990
476 4,551,991
514 R 4,551,992
544 4,552,575

CLASS 63

31 4,551,993

CLASS 65

2 4,552,576
22 4,552,577
29 4,552,578
346 4,552,579

CLASS 66

193 4,551,994
203 4,551,995

CLASS 68

20 4,551,996

CLASS 70

38 A 4,551,997
69 4,551,998
159 4,551,999
185 4,552,000
208 4,552,001

CLASS 71

3 4,552,580
61 4,552,581
73 4,552,582
86 4,552,583
4,552,584
88 4,552,585
94 4,552,586

CLASS 72

19 4,552,002
38 4,552,003
60 4,552,004
68 4,552,005
149 4,552,006
239 4,552,007
243 4,552,008
316 4,552,009
391 4,552,010

CLASS 73

4 R 4,552,011
59 4,552,012
61.1 C 4,552,013
105 4,552,014
113 4,552,015
170 A 4,552,016
198 4,552,017
431 4,552,018
584 4,552,019
602 4,552,020
644 4,552,021
647 4,552,022
715 4,552,023
821 4,552,024
846 4,552,025
861.24 4,552,026
861.53 4,552,027
862.04 4,552,028

CLASS 74

96 4,552,029
462 4,552,030
473 R 4,552,031
4,552,032
479 4,552,033
547 4,552,034
581 4,552,035
705 4,552,036
805 4,552,037

CLASS 75

12 4,552,587
84.4 4,552,588
105 4,552,589
246 4,552,590

CLASS 81

57.38 4,552,038
64 4,552,039
65 4,552,040
470 4,552,041
476 4,552,042
490 4,552,043
4,552,044

CLASS 82

21 R 4,552,045
36 A 4,552,046
102 4,552,047

CLASS 83

23 4,552,048
27 4,552,049
685 4,552,050

CLASS 84

1.24 4,552,051
473 4,552,052

CLASS 89

1.13 4,552,053

CLASS 91

492 4,552,054

CLASS 92

5 R 4,552,055
29 4,552,056
176 4,552,057

CLASS 98

1.5 4,552,058
115.1 4,552,059

CLASS 99

278 4,552,060

CLASS 100

53 4,552,061
95 4,552,062

CLASS 101

35 4,552,063
93.05 4,552,064
93.33 4,552,065
152 4,552,066
216 4,552,067
415.1 4,552,068
420 4,552,069

CLASS 102

290 4,552,070
527 4,552,071

CLASS 104

88 4,552,072

CLASS 105

154 4,552,073
224.1 4,552,074

CLASS 106

18.33 4,552,591
30 4,552,592
291 4,552,593

CLASS 109

52 4,552,075

CLASS 110

347 4,552,076
4,552,077
4,552,078

CLASS 111

85 4,552,079

CLASS 112

68 4,552,080
258 4,552,081

CLASS 114

26 4,552,082
61 4,552,083
74 R 4,552,084
84 4,552,085
242 4,552,086
297 4,552,087

CLASS 116

28.1 4,552,088
63 P 4,552,089
204 4,552,090

CLASS 118

620 4,552,091
718 4,552,092

CLASS 119

17 4,552,093
27 4,552,094
53 4,552,095
155 4,552,096

CLASS 122

4 D 4,552,097
379 4,552,098
451.1 4,552,099

CLASS 123

2 4,552,100
73 AD 4,552,101
179 H 4,552,102
186 4,552,103
192 R 4,552,104
198 A 4,552,106
198 R 4,552,105
240 4,552,107
270 4,552,108
339 4,552,109
416 4,552,110
425 4,552,111
432 4,552,112
436 4,552,113
481 4,552,114
489 4,552,115
4,552,116
506 4,552,117
609 4,552,118
617 4,552,119

CLASS 124

1 4,552,120
87 4,552,121

CLASS 125

14 4,552,122

CLASS 126

263 Re.32,026
369 4,552,123
413 4,552,124
437 4,552,125
451 4,552,126

CLASS 128

1 D 4,552,127
1 R 4,552,128
1.5 4,552,134
4 4,552,129
4,552,130
6 4,552,131
38 4,552,132
44 4,552,133
78 4,552,135
92 E 4,552,136
152 4,552,137
156 4,552,138
200.14 4,552,139
201.25 4,552,140
205.12 4,552,141
207.16 4,552,142
303.14 4,552,143
305 4,552,146
330 4,552,147
334 C 4,552,148
402 4,552,149
419 PG 4,552,150
510 4,552,144
630 4,552,145
653 4,552,151
663 4,552,152
677 4,552,153
702 4,552,154
703 4,552,156
766 4,552,155
786 4,552,157

CLASS 131

94 4,552,158

CLASS 132

9 4,552,159
73 4,552,160
88.5 4,552,161

CLASS 134

34 4,552,594
57 R 4,552,162
100 4,552,163

CLASS 136

5 4,552,847

CLASS 137

2 4,552,164
3 4,552,165
15 4,552,166
4,552,167
101 4,552,168
115 4,552,169
318 4,552,170
359 4,552,171
484.6 4,552,172
490 4,552,173
527.2 4,552,174
571 4,552,175
625.28 4,552,177
625.4 4,552,176
625.46 4,552,178
625.65 4,552,179
625.66 4,552,180
875 4,552,181

CLASS 138

30 4,552,182
99 4,552,183

CLASS 139

66 R 4,552,184
91 4,552,185
100 4,552,186
434 4,552,187
435 4,552,188

CLASS 141

80 4,552,189
82 4,552,190

CLASS 144

3 D 4,552,191
136 C 4,552,192
144.5 4,552,193

CLASS 148

1.5 4,552,595
31.5 4,552,596

CLASS 149

2 4,552,597
47 4,552,598

CLASS 152

410 4,552,194

CLASS 156

50 4,552,599
73.1 4,552,600
79 4,552,601
157 4,552,602
167 4,552,603
246 4,552,604
273.3 4,552,605
280 4,552,606
330 4,552,607
351 4,552,608
358 4,552,609
384 4,552,610
391 4,552,611
494 4,552,612
515 4,552,613
640 4,552,614

CLASS 158

659.1 4,552,615

CLASS 160

168 R 4,552,195
174 4,552,196

CLASS 162

19 4,552,616
103 4,552,617
157.1 4,552,618
336 4,552,619
358 4,552,620

CLASS 164

34 4,552,197
122.2 4,552,198
423 4,552,199
454 4,552,200
481 4,552,201
528 4,552,202

CLASS 165

1 4,552,203
10 4,552,204
18 4,552,205
48.2 4,552,212
80.3 4,552,206
95 4,552,207
104.22 4,552,208
133 4,552,209
134.1 4,552,210
160 4,552,211

CLASS 166

88 4,552,213
259 4,552,214
261 4,552,216
270 4,552,217
278 4,552,215
319 4,552,218
321 4,552,219
369 4,552,220

CLASS 169

22 4,552,221
57 4,552,222

CLASS 172

49.5 4,552,223
324 4,552,224
513 4,552,225
815 4,552,226

CLASS 173

15 4,552,227

CLASS 174

52 R 4,552,987
74 R 4,552,988
103 4,552,989
117 FF 4,552,990

CLASS 175

4.6 4,552,234
228 4,552,228
240 4,552,229
321 4,552,230
330 4,552,231
337 4,552,232
371 4,552,233

CLASS 177

1 4,552,235
25 4,552,236
4,552,237

CLASS 178

19 4,552,991
69 G 4,552,992

CLASS 179

2 A 4,552,993
16 AA 4,552,994
147 4,552,995
175.2 C 4,552,996
175.3 R 4,552,997

CLASS 180

139 4,552,238
140 4,552,239
142 4,552,240
249 4,552,241

CLASS 181

144 4,552,242
169 4,552,243

CLASS 182

82 4,552,244
97 4,552,245
116 4,552,246
4,552,247
142 4,552,248

CLASS 185

39 4,552,249

CLASS 187

9 E 4,552,250

CLASS 188

24.21 4,552,251
73.1 4,552,252
73.38 4,552,253
328 4,552,254

CLASS 192

0.052 4,552,256
18 A 4,552,255
56 F 4,552,257
67 A 4,552,258
107 M 4,552,259

CLASS 198

345 4,552,260
425 4,552,261
447 4,552,262
514 4,552,263

CLASS 200

11 R 4,552,998
34 4,552,999
43.05 4,553,006
50 B 4,553,000
61.41 4,553,001
144 B 4,553,002
4,553,003
4,553,007
148 A 4,553,004
148 R 4,553,008
153 LA 4,553,005
340 4,553,009

CLASS 202

84 4,552,621
241 4,552,622
248 4,552,623

CLASS 204

1 T 4,552,624
4,552,625
20 4,552,626
27 4,552,627
32.1 4,552,641
47 4,552,628
55 R 4,552,629
67 4,552,630
98 4,552,631
107 4,552,632
159.21 4,552,633
159.23 4,552,634
182.4 4,552,635
4,552,636
243 R 4,552,637
286 4,552,638
298 4,552,639
301 4,552,640

CLASS 206

45.14 4,552,264
159 4,552,265
220 4,552,266
334 4,552,267
455 4,552,268
632 4,552,269

CLASS 208

10 4,552,642
48 AA 4,552,643
78 4,552,644
80 4,552,645
90 4,552,646
120 4,552,647
4,552,648
127 4,552,649
216 PP 4,552,650

CLASS 209

1 4,552,651
5 4,552,652
421 4,552,653
425 4,552,654

CLASS 210

108 4,552,655
137 4,552,656
169 4,552,657
4,552,658
177 4,552,659
225 4,552,660
232 4,552,661
4,552,662
605 4,552,663
695 4,552,664
697 4,552,665
710 4,552,666
734 B1 3,790,476
757 4,552,667
759 4,552,668
798 4,552,669

CLASS 211

17 4,552,270
41 4,552,271
88 4,552,272
187 4,552,273

CLASS 212

232 4,552,274

CLASS 215

12 R 4,552,275
100 A 4,552,276
249 4,552,277
277 4,552,278
318 4,552,279

CLASS 219

10.55 B 4,553,011
10.55 E 4,553,010
69 M B1 3,891,819
69 R 4,553,012
74 4,553,013
75 4,553,014
121 ED 4,553,015
121 LA 4,553,017
121 LG 4,553,016
130.51 4,553,018
146.22 4,553,019
209 4,553,020
234 4,553,021
275 4,553,022
301 4,553,023
335 4,553,024
461 4,553,025

CLASS 220

1 T 4,552,280
5 A 4,552,281
20 4,552,282
304 4,552,283
453 4,552,284

CLASS 221

13 4,552,285

CLASS 222

145 4,552,286
146.5 4,552,287
482 4,552,288
600 4,552,289

CLASS 225

2 4,552,290
96.5 4,552,291

CLASS 226

142 4,552,294
195 4,552,295

CLASS 227

109 4,552,296
120 4,552,297

CLASS 228

2.5 4,552,298
5.7 4,552,299
20 4,552,300
183 4,552,292
263.12 4,552,301

CLASS 229

1.5 B 4,552,293

CLASS 232

35 4,552,302

CLASS 235

451 4,553,026
474 4,553,027

CLASS 236

44 C 4,552,303
46 F 4,552,304

CLASS 237

69 4,552,305

CLASS 239

29 4,552,306
57 4,552,307
265.19 4,552,309
457 4,552,308
533.5 4,552,310
585 4,552,311
4,552,312

CLASS 242

18 A 4,552,313
25 R 4,552,314
55.3 4,552,315
56 R 4,552,316
65 4,552,317
84.1 K 4,552,318
107.4 A 4,552,319
128 4,552,320
130 4,552,321
198 4,552,322
865 R 4,552,323

CLASS 244

104 FP 4,552,324
118.5 4,552,325
129.5 4,552,326
137 R 4,552,327

CLASS 249

67 4,552,328
134 4,552,329

CLASS 250

201 4,553,028
296 4,553,029
307 4,553,030
339 4,553,031
4,553,032
353 4,553,033
458.1 4,553,034
566 4,553,035
578 4,553,036

CLASS 251

30.01 4,552,330
95 4,552,331
148 4,552,332
149.9 4,552,333
240 4,552,334
315 4,552,335
331 4,552,336

CLASS 252

8.5 C 4,552,670
8.55 C 4,552,672
8.55 D 4,552,673
8.55 R 4,552,674
4,552,675
8.9 4,552,671
20 4,552,676
33.6 4,552,677
49.3 4,552,678
90 4,552,679
102 4,552,680
140 4,552,681
186.26 4,552,682
189 4,552,683
299.1 4,552,684
355 4,552,685
392 4,552,686
500 4,552,687
511 4,552,688
4,552,689
512 4,552,690
514 4,552,691
522 A 4,552,693
528 4,552,692

CLASS 254

106 4,552,337
134.3 FT 4,552,338
277 4,552,339
358 4,552,340

CLASS 256

1 4,552,341

CLASS 260

112.5 R 4,552,701
239 BD 4,552,694
239.3 B 4,552,695
245.2 T 4,552,696
396 N 4,552,697
397.2 4,552,698
404.5 4,552,699
428 4,552,702
463 4,552,704
465.5 R 4,552,705
466 4,552,703

CLASS 264

3 R 4,552,706
24 4,552,707
53 4,552,708
64 4,552,710
65 4,552,711
85 4,552,712
162 4,552,713
171 4,552,714
309 4,552,715
328.1 4,552,716
504 4,552,709
549 4,552,717

CLASS 266

175 4,552,342
200 4,552,343

CLASS 267

64.11 4,552,344

CLASS 269

43 4,552,345
322 4,552,346
4,552,347
324 4,552,348

CLASS 270

54 4,552,349

CLASS 271

3 4,552,350
3.1 4,552,351
10 4,552,352
124 4,552,353
163 4,552,354

CLASS 272

8 R 4,552,355
137 4,552,356

CLASS 273

1 GG 4,552,357
34 A 4,552,358
54 B 4,552,359
85 G 4,552,360
157 R 4,552,361
237 4,552,362
241 4,552,363
260 4,552,364
425 4,552,365

CLASS 277

1 4,552,366
4,552,367
27 4,552,368
226 4,552,369

CLASS 279

1 S 4,552,370

CLASS 280

20 4,552,371
87.04 R 4,552,372
276 4,552,373
411 R 4,552,374
415 R 4,552,375
477 4,552,376
515 4,552,377
632 4,552,378
661 4,552,379
728 4,552,380
752 4,552,381

CLASS 281

45 4,552,382

CLASS 283

83 4,552,383

CLASS 285

111 4,552,384
4,552,385
187 4,552,386
238 4,552,387
363 4,552,388
379 4,552,389
420 4,552,390

CLASS 290

55 4,553,037

CLASS 292

5 4,552,391
181 4,552,392
221 4,552,393
307 B 4,552,394
342 4,552,395

CLASS 294

27.1 4,552,396
86.4 4,552,397

CLASS 296

37.12 4,552,399
185 4,552,400
219 4,552,401

CLASS 297

284 4,552,402
330 4,552,403
4,552,404
375 4,552,405
445 4,552,406
476 4,552,407
483 4,552,408

CLASS 299

2 4,552,409

CLASS 303

7 4,552,398
23 R 4,552,410
37 4,552,411
67 4,552,412
106 4,552,413
115 4,552,414

CLASS 307

10 AT 4,553,038
66 4,553,039
116 4,553,040
252 A 4,553,041
263 4,553,042
270 4,553,043
4,553,044
279 4,553,045
289 4,553,046
297 4,553,047
350 4,553,048
443 4,553,049
4,553,050
475 4,553,051
494 4,553,052
530 4,553,053
597 4,553,054

CLASS 308

3.8 4,552,415
6 C 4,552,416
10 4,552,417

CLASS 310

62 4,553,055
80 4,553,056
242 4,553,057
268 4,553,058
328 4,553,059
332 4,553,061
333 4,553,060

CLASS 312

242 4,552,418
281 4,552,419

CLASS 313

93 4,553,062
325 4,553,063
448 4,553,064
481 4,553,065
546 4,553,067
580 4,553,066

CLASS 315

4 4,553,068
111.81 4,553,069
209 R 4,553,070
244 4,553,071
4,553,072
370 4,553,073

CLASS 318

130 4,553,074
254 4,553,075
282 4,553,076
568 4,553,077
592 4,553,078
626 4,553,079
696 4,553,080

CLASS 320

43 4,553,081

CLASS 323

288 4,553,082
313 4,553,083
316 4,553,084

CLASS 324

51 4,553,085
57 N 4,553,086
65 P 4,553,087
66 4,553,088
71.1 4,553,089
73 AT 4,553,090
74 4,553,091
106 4,553,092
169 4,553,093
225 4,553,094
230 4,553,095
309 4,553,096
338 4,553,097
433 4,553,098
458 4,553,099

CLASS 328

63 4,553,100

CLASS 329

50 4,553,101
133 4,553,102

CLASS 330

107 4,553,103
129 4,553,104
145 4,553,105
272 4,553,106
288 4,553,107
300 4,553,108

CLASS 331

25 4,553,109
116 FE 4,553,110

CLASS 333

1 4,553,111
21 R 4,553,112
122 4,553,113
182 4,553,114

CLASS 335

14 4,553,115
20 4,553,116
61 4,553,117
79 4,553,118
147 4,553,119
210 4,553,120
261 4,553,121
296 4,553,122

CLASS 336

83 4,553,123

CLASS 338

5 4,553,124
283 4,553,125
319 4,553,126

CLASS 339

14 R 4,552,420
4,552,421
17 CF 4,552,422
19 4,552,423
32 R 4,552,424
47 R 4,552,425
75 M 4,552,426
89 M 4,552,427
97 P 4,552,428
99 R 4,552,429
242 4,552,430

CLASS 340

64 4,553,127
347 AD 4,553,128
347 DA 4,553,132
347 DD 4,553,129
4,553,130
4,553,131
4,553,133
545 4,553,134
564 4,553,135
572 4,553,136
582 4,553,137
584 4,553,138
626 4,553,139
636 4,553,140
703 4,553,141
712 4,553,142
719 4,553,143

CLASS 343

7.7 4,553,144
360 4,553,145
379 4,553,146

CLASS 346

75 4,553,147
107 R 4,553,148
153.1 4,553,149
154 4,553,150

CLASS 350

96.23 4,552,432
4,552,433
96.30 4,552,434
96.34 4,552,431
169 4,552,435
337 4,552,436
339 R 4,552,437
608 4,552,438
610 4,552,439

CLASS 351

214 4,552,440

CLASS 353

31 4,552,441

CLASS 354

112 4,552,442
132 4,552,443
354 4,552,444
406 4,552,445
429 4,552,446

CLASS 355

3 R 4,552,447
4,552,449
3 SH 4,552,448
14 R 4,552,450
15 4,552,451
27 4,552,452
57 4,552,453

CLASS 356

5 4,552,454
4,552,455
4,552,456
345 4,552,457
446 4,552,458
448 4,552,459

CLASS 357

23.4 4,553,151
24 4,553,152
30 4,553,153
4,553,155
71 4,553,154

CLASS 358

24 4,553,156
27 4,553,157
31 4,553,158
44 4,553,159
75 4,553,160
86 4,553,161
144 4,553,162
158 4,553,163
163 4,553,164
167 4,553,165
190 4,553,166
213 4,553,167
4,553,168
221 4,553,169
225 4,553,170
263 4,553,171
280 4,553,172
283 4,553,173
285 4,553,174
310 4,553,175
334 4,553,176

CLASS 360

10.1 4,553,185
43 4,553,177
45 4,553,178
66 4,553,179
74.4 4,553,180
75 4,553,181
96.1 4,553,182
98 4,553,183
103 4,553,184
130.21 4,553,186

CLASS 361

96 4,553,187
115 4,553,188
119 4,553,189
212 4,553,190
4,553,191
395 4,553,192

CLASS 362

8 4,553,193
267 4,553,194
310 4,553,195

CLASS 363

21 4,553,196
37 4,553,197
56 4,553,198
75 4,553,199

CLASS 364

200 4,553,200
4,553,201
4,553,202
4,553,203
4,553,204
300 4,553,205
4,553,206
431.01 4,553,207
431.04 Re.32,030
431.05 4,553,208
431.07 4,553,209
434 4,553,210
479 4,553,211
507 4,553,212
514 4,553,213
521 4,553,214
525 4,553,215
558 4,553,216
560 4,553,217
703 4,553,218
705 4,553,219
715 4,553,220
724 4,553,221
900 4,553,222
4,553,223
4,553,224

CLASS 365

201 4,553,225

CLASS 366

196 4,552,460
279 4,552,461
280 4,552,462
295 4,552,463

CLASS 367

83 4,553,226

CLASS 368

10 4,552,464

CLASS 369

44 4,553,227
46 4,553,228
110 4,553,229
263 4,553,230
4,553,231
287 4,553,232

CLASS 370

16 4,553,233
86 4,553,234
94 4,553,235

CLASS 371

15 4,553,236
37 4,553,237

CLASS 372

6 4,553,238
50 4,553,239
61 4,553,240
62 4,553,241
87 4,553,242
89 4,553,243
95 4,553,244

CLASS 373

74 4,553,245
130 4,553,246

CLASS 374

179 4,552,465

CLASS 375

4 4,553,247
14 4,553,248
25 4,553,249
34 4,553,250
114 4,553,251

CLASS 376

216 4,552,718

CLASS 377

15 4,553,252

CLASS 378

084 4,553,253
098 4,553,254
110 4,553,255
137 4,553,256

CLASS 381

57 4,553,257

CLASS 382

3 4,553,258
4,553,259
22 4,553,260
57 4,553,261

CLASS 384

103 4,552,466
458 4,552,468
615 4,552,467

CLASS 400

119 4,552,469
120 4,552,470
124 4,552,471
4,552,472
144.2 4,552,475
208 4,552,473
310 4,552,474

CLASS 401

136 4,552,476
188 R 4,552,477

CLASS 402

39 4,552,478
74 4,552,479

CLASS 403

76 4,552,480
165 4,552,481
172 4,552,482
288 4,552,483

CLASS 405

128 4,552,484
184 4,552,485
227 4,552,486
295 4,552,487
299 4,552,488

CLASS 406

39 4,552,489
56 4,552,490

CLASS 407

107 4,552,491
114 4,552,492

CLASS 408

3 4,552,493
67 4,552,494

CLASS 409

136 4,552,495
209 4,552,496

CLASS 412

6 4,552,497

CLASS 414

22 4,552,498
125 4,552,499
408 4,552,500
486 4,552,501
680 4,552,502
687 4,552,503
735 4,552,504
4,552,505
4,552,506

CLASS 415

5 4,552,507
72 4,552,508
135 4,552,509

CLASS 416

241 B 4,552,510
242 4,552,511

CLASS 417

3 4,552,512
18 4,552,513
332 4,552,514
360 B1 4,406,590
368 Re.32,027
472 4,552,515
477 4,552,516

CLASS 418

55 4,552,517
4,552,518
61 B 4,552,519

CLASS 419

2 4,552,719

CLASS 422

26 4,552,720
28 4,552,721
53 4,552,722
66 4,552,723
138 4,552,724
140 4,552,725
184 4,552,726
241 4,552,727
300 4,552,728

CLASS 423

55 4,552,729
82 4,552,730
118 4,552,731
210 4,552,732
213.5 4,552,733
224 4,552,735
230 4,552,734
266 4,552,736
307 4,552,737
328 4,552,738
4,552,739
344 4,552,740
359 4,552,741
446 4,552,742
447.7 4,552,743
522 4,552,744
573 G 4,552,746
574 R 4,552,747
588 4,552,748
606 4,552,749
656 4,552,750

CLASS 424

19 4,552,751
21 4,552,752
66 4,552,753
70 4,552,754
81 4,552,755
88 4,552,756
89 4,552,757
4,552,758
93 4,552,759
94 4,552,760
101 4,552,761
106 4,552,762
114 4,552,763
4,552,764
4,552,765
4,552,766
4,552,767
435 4,552,769
480 4,552,768
535 4,552,770
548 4,552,771
557 4,552,772
564 4,552,773
582 4,552,774
597 4,552,776
624 4,552,775

CLASS 427

2 4,552,779
8 4,552,780
57 4,552,781
66 4,552,782
91 4,552,783
192 4,552,784
229 4,552,785
249 4,552,786
304 4,552,787
374.5 4,552,788
393.1 4,552,777
445 4,552,778

CLASS 428

34 4,552,790
35 4,552,791
40 4,552,792
53 4,552,793
95 4,552,794
110 4,552,795
132 4,552,789
140 4,552,796
167 4,552,797
194 4,552,798
4,552,799
212 4,552,800
220 4,552,801
255 4,552,802
262 4,552,803
283 4,552,804
297 4,552,805
312.6 4,552,806
323 4,552,807
328 4,552,808
331 4,552,809
398 4,552,810
402.21 4,552,811
407 4,552,812
411.1 4,552,813
414 4,552,814
415 4,552,815
420 4,552,816
423.7 4,552,817
447 4,552,818
516 4,552,819
611 4,552,820

CLASS 429

57 4,552,821
81 4,552,823

CLASS 430

59 4,552,822
64 4,552,824
83 4,552,825
142 4,552,826
160 4,552,827
217 4,552,828
258 4,552,829
281 4,552,830
296 4,552,831
320 4,552,832
325 4,552,833
393 4,552,834
523 4,552,835
549 4,552,836
550 4,552,837
569 4,552,838

CLASS 431

25 4,552,528

CLASS 432

58 4,552,529
192 4,552,530

CLASS 433

147 4,552,531
173 4,552,532

CLASS 434

12 4,552,533
170 4,552,534
315 4,552,535
327 4,552,536

CLASS 435

7 4,552,839
14 4,552,840
18 4,552,841
75 4,552,842
76 4,552,843
206 4,552,845
232 4,552,846
240 4,552,844

CLASS 436

86 4,552,848
130 4,552,849

CLASS 440

47 4,552,537
99 4,552,538

CLASS 441

66 4,552,539
129 4,552,540

CLASS 446

91 4,552,541
254 4,552,542

CLASS 455

15 4,553,262
54 4,553,263
189 4,553,264
325 4,553,265
327 4,553,266
606 4,553,267
607 4,553,268

CLASS 464

83 4,552,543
162 4,552,544

CLASS 474

16 4,552,545
82 4,552,546
101 4,552,547
201 4,552,548
202 4,552,549
242 4,552,550

CLASS 493

194 4,552,551

CLASS 501

37 4,552,850
98 4,552,851
105 4,552,852
134 4,552,853

CLASS 502

26 4,552,854
74 4,552,855
4,552,856
101 4,552,857
112 4,552,858
127 4,552,859
242 4,552,860
302 4,552,861
306 4,552,862
418 4,552,863

CLASS 514

2 4,552,764
15 4,552,864
4,552,865
16 4,552,866
18 4,552,867
26 4,552,868
77 4,552,869
89 4,552,870
172 4,552,871
175 4,552,872
210 4,552,873
222 4,552,874
234 4,552,875
4,552,876
239 4,552,877
243 4,552,878
253 4,552,879
269 4,552,900
277 4,552,880
295 4,552,881
300 4,552,882
303 4,552,883
312 4,552,884
316 4,552,885
342 4,552,886
381 4,552,887
424 4,552,889
425 4,552,890
443 4,552,891
464 4,552,894
470 4,552,895
474 4,552,888
513 4,552,765
531 4,552,892
550 4,552,896
554 4,552,897
560 4,552,893
561 4,552,898
B1 4,372,974
568 4,552,899

CLASS 521

122 4,552,901
129 4,552,902
137 4,552,903
145 4,552,904
149 4,552,905

CLASS 523

115 4,552,906
455 4,552,907
504 4,552,908

CLASS 524

11 4,552,909
43 4,552,910
94 4,552,911
100 4,552,912
219 4,552,926
240 4,552,913
269 4,552,914
322 4,552,915
399 4,552,916
590 4,552,917
734 4,552,918
860 4,552,919

CLASS 525

54.11 4,552,922
58 4,552,920
68 4,552,923
96 4,552,921
146 4,552,924
194 Re.32,028
200 4,552,925
279 4,552,927
326.2 4,552,928
332.6 4,552,929
333.8 4,552,930
432 4,552,931

CLASSIFICATION OF PATENTS

438	Re.32,029	50	4,552,943		4,552,955	307	4,552,967	204	4,552,976	902	4,552,986
440	4,552,932	55	4,552,944		CLASS 544		CLASS 548		CLASS 562		CLASS 604
454	4,552,933	62	4,552,945	101	4,552,956	112	4,552,968	435	4,552,977	4	4,552,552
458	4,552,934	67	4,552,946	177	4,552,957	179	4,552,969	535	4,552,978	9	4,552,553
488	4,552,935	126	4,552,947		4,552,958	543	4,552,970		CLASS 564	51	4,552,554
519	4,552,936	194	4,552,948	190	4,552,959		CLASS 549	69	4,552,979	56	4,552,555
	CLASS 526	201	4,552,949	336	4,552,960	332	4,552,971	79	4,552,980	80	4,552,556
125	4,552,937	292	4,552,950	402	4,552,961		CLASS 556	146	4,552,981	96	4,552,557
240	4,552,938		CLASS 534		CLASS 546	9	4,552,700	164	4,552,982	100	4,552,558
287	4,552,939	770	4,552,951	74	4,552,962	35	4,552,972	200	4,552,983	198	4,552,559
	CLASS 527	782	4,552,952	156	4,552,963	469	4,552,973		CLASS 568	390	4,552,560
312	4,552,940	886	4,552,953		4,552,964		CLASS 560	29	4,552,984	896	4,552,561
	CLASS 528		CLASS 536	206	4,552,965	25	4,552,974	497	4,552,985		CLASS 623
16	4,552,941	24	4,552,954	290	4,552,966	163	4,552,975			6	4,551,864
34	4,552,942									14	4,551,862
										23	4,551,863

CLASSIFICATION OF DESIGNS

D2—	309	281,285		495	281,300	D13—	10	281,314		133	281,328		151	281,342		28	281,356
	320	281,286	D7—	50	281,301	D14—	33	281,316	D16—	104	281,329		192	281,343		63	281,357
	321	281,287	D9—	370	281,302		38	281,317	D18—	12	281,330	D22—	13	281,344		69	281,358
	400	281,288		398	281,303		40	281,315			281,331		25	281,345		139	281,359
D3—	30.1	281,289			281,304		68	281,318			281,332			281,346	D28—	13	281,360
	36	281,290			281,305		80	281,319		22	281,333			281,347	D32—	50	281,361
D4—	137	281,291		415	281,306		108	281,320	D19—	64	281,334		31	281,348			281,362
D6—	380	281,292		443	281,307		109	281,321		86	281,335	D23—	34	281,349	D34—	20	281,363
	420	281,293		456	281,308		111	281,322	D20—	21	281,336		41	281,350		23	281,364
	422	281,294	D10—	70	281,309	D15—	5	281,323	D21—	34	281,337		127	281,351		27	281,365
	474	281,295		81	281,310		9.2	281,324		89	281,338		155	281,352		38	281,366
		281,296		98	281,311		11	281,325		104	281,339	D24—	2	281,353		40	281,367
	484	281,297	D12—	101	281,312		29	281,326		114	281,340		41	281,354	D99—	34	281,369
	486	281,298		158	281,313		81	281,327		136	281,341	D26—	2	281,355		35	281,368
	491	281,299															

CLASSIFICATION OF PLANTS

P.—	42	5,581									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,551,973	4,552,193	4,552,965	4,552,885	4,551,913	4,552,638
	4,552,424	4,552,215	4,552,968	4,552,917	4,551,989	4,552,661
	4,552,706	4,552,220	4,552,994	4,552,943	4,552,091	4,552,662
	4,553,005	4,552,267	4,553,044	4,552,945	4,552,094	4,552,667
02 :	4,552,181	4,552,272	4,553,060	4,552,979	4,552,101	4,552,697
	4,552,337	4,552,289	4,553,064	4,553,097	4,552,102	4,552,701
04 :	4,551,870	4,552,307	4,553,078	4,553,119	4,552,103	4,552,704
	4,552,710	4,552,325	4,553,082	4,553,267	4,552,159	4,552,763
	4,553,041	4,552,336	4,553,083	10 : 4,552,631	4,552,168	4,552,886
	4,553,043	4,552,370	4,553,101	4,552,794	4,552,171	4,552,888
	4,553,048	4,552,394	4,553,111	4,552,805	4,552,192	4,552,889
	4,553,053	4,552,395	4,553,176	4,553,134	4,552,214	4,552,891
	4,553,084	4,552,427	4,553,181	11 : 4,552,577	4,552,238	4,552,895
	4,553,106	4,552,430	4,553,183	4,552,995	4,552,243	4,552,924
	4,553,129	4,552,435	4,553,185	12 : 4,551,937	4,552,244	4,552,936
	4,553,201	4,552,441	4,553,202	4,551,957	4,552,259	4,552,949
	4,553,218	4,552,443	4,553,203	4,551,961	4,552,288	4,552,950
05 :	4,552,246	4,552,454	4,553,213	4,551,988	4,552,363	4,552,956
	4,552,247	4,552,460	4,553,220	4,552,018	4,552,385	4,552,960
06 :	Re.32,025	4,552,468	4,553,221	4,552,063	4,552,392	4,552,967
	4,551,862	4,552,500	4,553,236	4,552,106	4,552,432	4,552,982
	4,551,864	4,552,513	4,553,238	4,552,144	4,552,476	19 : 4,552,224
	4,551,873	4,552,532	4,553,244	4,552,157	4,552,479	4,552,225
	4,551,876	4,552,534	4,553,256	4,552,255	4,552,512	4,552,375
	4,551,899	4,552,536	08 : 4,551,978	4,552,300	4,552,516	4,552,377
	4,551,904	4,552,553	4,551,979	4,552,328	4,552,560	4,552,581
	4,551,915	4,552,555	4,552,037	4,552,359	4,552,564	4,553,081
	4,551,942	4,552,556	4,552,180	4,552,386	4,552,620	4,553,108
	4,551,948	4,552,561	4,552,265	4,552,463	4,552,683	4,553,210
	4,551,949	4,552,608	4,552,438	4,552,539	4,552,721	20 : 4,552,120
	4,551,960	4,552,612	4,553,178	4,552,609	4,552,736	4,552,295
	4,551,967	4,552,639	4,553,217	4,552,641	4,552,804	4,552,365
	4,551,972	4,552,649	4,553,248	4,552,813	4,552,821	21 : 4,552,022
	4,551,974	4,552,656	09 : 4,551,878	4,552,914	4,552,823	4,552,048
	4,552,010	4,552,692	4,551,964	4,553,000	4,552,846	4,552,058
	4,552,023	4,552,720	4,552,019	4,553,035	4,552,997	4,552,277
	4,552,040	4,552,740	4,552,071	4,553,230	4,553,009	4,552,519
	4,552,042	4,552,768	4,552,076	13 : 4,551,935	4,553,012	4,552,634
	4,552,050	4,552,779	4,552,077	4,552,004	4,553,088	4,552,642
	4,552,057	4,552,816	4,552,117	4,552,093	4,553,112	4,552,647
	4,552,083	4,552,820	4,552,261	4,552,200	4,553,120	4,553,066
	4,552,089	4,552,830	4,552,278	4,552,248	4,553,141	22 : 4,552,041
	4,552,090	4,552,831	4,552,299	4,552,309	4,553,142	4,552,177
	4,552,119	4,552,833	4,552,360	4,552,527	4,553,161	4,552,222
	4,552,125	4,552,839	4,552,396	4,552,578	4,553,166	4,552,234
	4,552,128	4,552,840	4,552,571	4,552,734	4,553,262	4,552,514
	4,552,132	4,552,844	4,552,579	4,552,735	3,790,476	4,552,526
	4,552,146	4,552,851	4,552,627	4,552,809	18 : 4,551,875	4,552,963
	4,552,155	4,552,854	4,552,669	4,553,023	4,552,003	4,552,964
	4,552,166	4,552,870	4,552,673	16 : 4,552,501	4,552,047	4,552,966
	4,552,170	4,552,896	4,552,723	17 : 4,551,860	4,552,074	23 : 4,551,938
	4,552,182	4,552,898	4,552,749	4,551,884	4,552,398	24 : 4,551,951
	4,552,189	4,552,927	4,552,843	4,551,888	4,552,480	4,551,990

	4,552,039		4,553,094		4,553,136		4,553,222		4,552,989		4,552,404
	4,552,304		4,553,124		4,553,155		4,553,232		4,553,071		4,552,419
	4,552,352		4,553,207		4,553,157		4,553,258		4,553,091		4,552,497
	4,552,440		4,406,590		4,372,974		4,553,259		4,553,246		4,552,498
	4,552,531	27 :	4,551,881	35 :	4,551,917	37 :	4,551,897	42 :	4,551,863		4,552,521
	4,552,538		4,551,986		4,552,588		4,551,994		4,551,894		4,552,572
	4,552,676		4,552,154		4,552,598		4,552,212		4,551,901		4,552,686
	4,552,757		4,552,233		4,552,654		4,552,303		4,551,944		4,552,713
	4,552,758		4,552,287		4,553,026		4,552,318		4,552,099		4,552,716
	4,552,784		4,552,291	36 :	4,551,867		4,552,397		4,552,122		4,552,717
	4,552,962		4,552,755		4,551,879		4,552,484		4,552,143		4,552,747
	4,553,068		4,552,774		4,551,882		4,552,603		4,552,156		4,552,791
	4,553,110		4,552,795		4,551,905		4,552,993		4,552,164		4,552,814
	4,553,145		4,552,826		4,551,906		4,552,999		4,552,343		4,552,862
	4,553,214		4,553,022		4,551,959		4,553,194		4,552,412		4,552,902
	4,553,247		4,553,032		4,552,088	38 :	4,552,327		4,552,420		4,552,903
25 :	4,551,857		4,553,137		4,552,121	39 :	Re.32,027		4,552,422		4,552,928
	4,551,909		4,553,190		4,552,153		Re.32,029		4,552,423		4,552,933
	4,551,916		4,553,260		4,552,174		4,551,924		4,552,425		4,552,957
	4,551,929	29 :	4,552,059		4,552,194		4,551,984		4,552,426		4,552,958
	4,551,930		4,552,550		4,552,204		4,552,017		4,552,465		4,552,976
	4,551,955		4,552,591		4,552,264		4,552,025		4,552,505		4,553,028
	4,552,013		4,552,940		4,552,269		4,552,026		4,552,540		4,553,133
	4,552,046		4,553,013		4,552,284		4,552,137		4,552,600		4,553,226
	4,552,123		4,553,076		4,552,341		4,552,142		4,552,606		4,553,263
	4,552,205	30 :	4,553,080		4,552,356		4,552,148		4,552,651	49 :	4,552,229
	4,552,292	31 :	4,552,302		4,552,358		4,552,250		4,552,658		4,552,231
	4,552,323		4,552,489		4,552,372		4,552,275		4,552,663		4,552,232
	4,552,439		4,553,195		4,552,421		4,552,279		4,552,665		4,552,380
	4,552,491	33 :	4,552,064		4,552,448		4,552,298		4,552,687		4,552,597
	4,552,508		4,552,206		4,552,458		4,552,305		4,552,718		4,552,730
	4,552,554		4,553,146		4,552,459		4,552,324		4,552,729		4,553,241
	4,552,558	34 :	4,551,859		4,552,473		4,552,349		4,552,738	50 :	4,551,912
	4,552,617		4,551,892		4,552,481		4,552,350		4,552,752		4,552,201
	4,552,645		4,551,981		4,552,492		4,552,357		4,552,847	51 :	4,552,001
	4,552,991		4,551,999		4,552,542		4,552,374		4,552,881		4,552,158
	4,552,992		4,552,081		4,552,570		4,552,389		4,552,883		4,552,270
	4,553,039		4,552,082		4,552,615		4,552,466		4,552,892		4,552,457
	4,553,067		4,552,136		4,552,635		4,552,502		4,553,002		4,552,464
	4,553,069		4,552,161		4,552,644		4,552,544		4,553,034		4,552,786
	4,553,085		4,552,196		4,552,664		4,552,602		4,553,095		4,552,803
	4,553,143		4,552,245		4,552,696		4,552,630		4,553,104		4,552,931
	4,553,198		4,552,266		4,552,711		4,552,652		4,553,114		4,552,988
	4,553,206		4,552,268		4,552,737		4,552,677		4,553,115		4,553,037
	4,553,265		4,552,290		4,552,764		4,552,680		4,553,116		4,551,890
26 :	4,551,861		4,552,306		4,552,767		4,552,682		4,553,252	53 :	4,551,914
	4,551,869		4,552,322		4,552,773		4,552,705	44 :	4,552,332		4,551,918
	4,551,880		4,552,381		4,552,783		4,552,709	45 :	4,551,872		4,551,941
	4,551,889		4,552,490		4,552,787		4,552,753		4,552,321		4,552,073
	4,551,891		4,552,535		4,552,800		4,552,776		4,552,781		4,552,227
	4,551,898		4,552,569		4,552,825		4,552,789		4,552,792		4,552,362
	4,551,976		4,552,582		4,552,827		4,552,860		4,552,981		4,552,537
	4,551,985		4,552,585		4,552,834		4,552,872		4,553,014		4,552,607
	4,552,015		4,552,618		4,552,838		4,552,880	46 :	4,552,162		4,553,025
	4,552,024		4,552,628		4,552,842		4,552,913	47 :	4,552,127		4,553,092
	4,552,055		4,552,648		4,552,848		4,552,921		4,552,494		4,553,216
	4,552,254		4,552,668		4,552,859		4,552,932		4,552,499		4,551,987
	4,552,271		4,552,670		4,552,867		4,552,934		4,552,909	54 :	4,552,557
	4,552,273		4,552,674		4,552,876		4,552,978		4,552,948		4,551,982
	4,552,274		4,552,675		4,552,899		4,553,024		4,553,051	55 :	4,552,049
	4,552,297		4,552,679		4,552,926		4,553,061	48 :	4,551,866		4,552,145
	4,552,308		4,552,693		4,552,961		4,553,127		4,551,939		4,552,207
	4,552,311		4,552,712		4,552,971		4,553,205		4,551,940		4,552,257
	4,552,319		4,552,725		4,552,980		4,553,224		4,551,952		4,552,331
	4,552,344		4,552,731		4,553,003		4,553,245		4,552,126		4,552,403
	4,552,345		4,552,733		4,553,007	40 :	4,551,871		4,552,135		4,552,518
	4,552,361		4,552,739		4,553,027		4,552,011		4,552,160		4,552,698
	4,552,371		4,552,770		4,553,033		4,552,096		4,552,213		4,552,714
	4,552,393		4,552,777		4,553,049		4,552,217		4,552,216		4,552,801
	4,552,405		4,552,818		4,553,050		4,552,376		4,552,218		4,552,811
	4,552,506		4,552,856		4,553,075		4,552,379		4,552,219		4,552,998
	4,552,545		4,552,866		4,553,153		4,552,409		4,552,228		4,553,008
	4,552,626		4,552,893		4,553,158		4,552,486		4,552,230		4,553,010
	4,552,685		4,552,897		4,553,165		4,552,643		4,552,281		4,553,047
	4,552,742		4,552,916		4,553,171		4,552,646		4,552,293		4,553,109
	4,552,762		4,552,939		4,553,175		4,552,672		4,552,335		4,553,117
	4,552,852		4,552,941		4,553,191		4,552,937		4,552,367		4,553,151
	4,552,901		4,553,031		4,553,192	41 :	4,551,910		4,552,369		4,553,187
	4,553,001		4,553,042		4,553,193		4,552,340		4,552,382		4,552,061
	4,553,058		4,553,132		4,553,200		4,552,364		4,552,391	56 :	

DESIGN PATENTS

06 :	281,288		281,323	17 :	281,335		281,287		281,290	39 :	281,316
	281,301		281,337		281,339		281,355		281,296		281,324
	281,303		281,356		281,349	26 :	281,311		281,306	42 :	281,291
	281,304		281,359		281,353	29 :	281,328		281,307		281,351
	281,305		281,364		281,369		281,344		281,340		281,358
	281,309		281,365	18 :	281,289	34 :	281,294		281,343	44 :	281,302
	281,313	08 :	281,293		281,295		281,298		281,361	47 :	281,329
	281,314		281,362	24 :	281,327		281,308		281,363	48 :	281,312
	281,321	09 :	281,360	25 :	281,286	36 :	281,285				

PLANT PATENTS

06 :	5,581					

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PATENTS

November 19, 1985

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PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 19, 1985 Volume 1060 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1060 OG 18
Notice of Maintenance Fees Payable	1060 OG 18
Reissue Applications Filed	1060 OG 18
Requests for Reexaminations Filed	1060 OG 19
Adverse Decisions in Interference	1060 OG 19
Patent Certificates of Correction	1060 OG 20
Disclaimers	1060 OG 20
Dedication	1060 OG 20
Disclaimer and Dedication	1060 OG 20
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1060 OG 21
Condition of Patent Applications	1060 OG 22
Reexaminations	993
Reissue Patents Granted (32,031)	997
Patents Granted	
General and Mechanical (4,553,269)	999
Chemical (4,553,974)	1245
Electrical (4,554,399)	1363
Design Patents Granted (281,370)	1461
Index of Patentees	PI 1
Indices of Reissue, Reexamination and Design Patentees	PI 52
Classification of	
Patents (Including Reissues and Reexaminations)	PI 55
Designs	PI 58
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 59
Designs	PI 60
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Oct. 21, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 16, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,358,859 through 4,359,782
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,331,594, Re. S.N. 780,734, Filed Sept. 26, 1985, Cl. 260/112.5R, A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION, Robert L. Hamill, et al., Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,395,675, Re. S.N. 759,404, Filed July 26, 1985, Cl. 323/271, TRANSFORMERLESS NONINVERTING BUCK BOOST SWITCHING REGULATOR, Rouben Toumani, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, Ex. Gp.: 212

4,406,037, Re. S.N. 780,737, Filed Sept. 26, 1985, Cl. 17/11, DEVICE FOR CUTTING SLAUGHTERED POULTRY IN SEPARATE PIECES, Jacobus E. Hazenbroek, et al., Attorney or Agent: Linco Holland Engineering B. V., Broekhuizerweg, The Netherlands, Ex. Gp.: 327

4,506,355, Re. S.N. 773,770, Filed Sept. 9, 1985, Cl. 369/32, METHOD AND APPARATUS FOR INFORMATION RETRIEVAL FROM AN OPTICALLY READABLE STORAGE MEDIUM, Ludwig Ceshkovsky, et al., Owner of Record: *MCA Discovision, Inc., Costa Mesa, Calif.,* Attorney or Agent: Ronald J. Clark, Ex. Gp.: 235

4,522,870, Re. S.N. 782,981, Filed Sept. 19, 1985, Cl. 428/252, LINERLESS DOUBLE-COATED PRESSURE-SENSITIVE ADHESIVE TAPE, Donald L. Esmay, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Donald M. Sell, et al., Ex. Gp.: 154

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,348,683, Reexam. No. 90/000,864, Requested: Sept. 17, 1985, Cl. 310/787, METHOD OF SEPARATING PARTICLES IN LIQUID SUSPENSION IN A HYDROCYCLONE FOR SEPARATING ARTICLES IN LIQUID SUSPENSION, Nils Anders Lennart Wikdahl, Owner of Record: *Inventor,* Attorney or Agent: Leydig, Voit, et al., Ex. Gp.: 212, Requester: Hydrocyclone Technology, Inc., Atlanta, Ga.

3,682,234, Reexam. No. 90/000,874, Requested: Oct. 4, 1985, Cl. 164/433, STRUCTURE FOR THE CONTINUOUS CASTING OF METAL BARS, Ralph A. Vogel, Owner of Record: *Essex International, Inc., Ft. Wayne, Ind.,* Attorney or Agent: Molinare, Allegretti, et al., Ex. Gp.: 325, Requester: Southwire Co., Arlington, Va.

4,055,494, Reexam. No. 90/000,872, Requested: Oct. 4, 1985, Cl. 210/715, THICKENING DEVICE AND METHOD, Robert C. Emmett, Jr., Owner of Record: *Envirotech Corp., Salt Lake City, Utah,* Attorney or Agent: Senniger, Powers, et al., Ex. Gp.: 136, Requester: Eimco Process Equipment Co., St. Louis, Mo.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,803,105, Paolo Galli and Giovanni Di Drusco, POLYMERIZATION CATALYSTS, Interference No. 100,152, decided Mar. 1, 1985, claims 1–7.

Patent No. 3,836,392, Benno Lux, Roland Funk, Herbert Schachner and Christian Triquet, PROCESS FOR INCREASING THE RESISTANCE TO WEAR OF THE SURFACE OF HARD METAL CEMENTED CARBIDE PARTS SUBJECT TO WEAR, Interference No. 99,433, decided June 29, 1984, claims 10–12.

Patent No. 4,149,079, Dan Ben-Zeev and Dan Inbar, METHOD OF AND MEANS FOR SCANNING A BODY TO ENABLE A CROSS-SECTION THEREOF TO BE RECONSTRUCTED, Interference No. 100,881, decided Aug. 28, 1984, claims 6, 7, 9, 14 & 21.

Patent No. 4,175,984, Bengt A. Johansson, METHOD AND A DEVICE FOR INITIATING AN OXYGEN DESEAMING PROCESS, Interference No. 101,241, decided July 2, 1985, claim 1.

Patent No. 4,329,302, Donald J. Hanahan and R. Neal Pinckard, SYNTHETIC PHOSPHOGLYCERIDES POSSESSING PLATELET ACTIVATING PROPERTIES, Interference No. 101,094, decided Mar. 5, 1985, claims 1–4.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 19, 1985

Re. 31,849	4,498,904	4,521,843	4,532,267
D. 279,438	4,499,907	4,521,903	4,532,356
D. 279,740	4,500,439	4,522,334	4,532,631
D. 279,842	4,500,626	4,522,867	4,532,750
D. 280,044	4,501,616	4,523,221	4,533,624
D. 280,100	4,502,275	4,523,431	4,533,640
4,109,088	4,502,861	4,523,586	4,533,713
4,300,673	4,502,865	4,523,627	4,533,747
4,322,352	4,503,044	4,523,994	4,534,466
4,351,037	4,503,169	4,524,546	4,534,765
4,353,874	4,503,513	4,524,990	4,535,013
4,380,719	4,504,482	4,525,318	4,535,619
4,383,442	4,504,743	4,525,450	4,536,366
4,403,920	4,504,948	4,525,838	4,536,446
4,426,006	4,504,963	4,525,895	4,536,755
4,432,879	4,509,104	4,526,144	4,536,797
4,432,971	4,509,876	4,526,560	4,536,858
4,436,637	4,509,948	4,526,579	4,536,957
4,445,213	4,510,265	4,526,996	4,537,120
4,456,547	4,510,577	4,527,188	4,537,425
4,460,315	4,511,497	4,527,269	4,537,614
4,464,068	4,512,012	4,527,273	4,537,667
4,470,113	4,512,642	4,527,282	4,537,849
4,472,656	4,513,744	4,527,645	4,538,016
4,473,365	4,514,807	4,527,703	4,538,076
4,480,234	4,514,812	4,527,882	4,538,147
4,480,641	4,515,844	4,528,309	4,538,167
4,482,570	4,516,384	4,528,774	4,538,669
4,483,352	4,517,735	4,529,528	4,538,893
4,484,520	4,518,097	4,529,735	4,539,316
4,485,486	4,519,513	4,529,794	4,539,796
4,486,791	4,519,900	4,530,021	4,540,307
4,488,141	4,519,942	4,530,062	4,540,675
4,491,342	4,520,053	4,531,213	4,540,717
4,494,017	4,521,368	4,531,610	4,541,105
4,496,726	4,521,443	4,531,883	4,542,309

Disclaimers

4,017,003.—*Richard N. Heino,* Ashby, Mass. ARTICLE DISPENSING MACHINE. Patent dated Apr. 12, 1977. Disclaimer filed Aug. 23, 1985, by the assignee, *Package Machinery Co., Inc.*

Hereby enters this disclaimer to claims 1–3 of said patent.

4,345,348.—*Charles P. Hall,* Muir Beach, Calif. WATERBED MATTRESS WITH A BAFFLE. Patent dated Aug. 24, 1982. Disclaimer filed Oct. 12, 1984, by the assignee, *Monterey Manufacturing Co.*

Hereby enters this disclaimer to claims 1–7, and 9 of said patent.

4,448,962.—*Tsutomu Irikura,* Tokyo; *Seigo Suzue,* Saitama; *Akira Ito,* Saitama; *Hiroshi Koga,* Saitama, all of Japan. SUBSTITUTED QUINOLINE CARBOXYLIC ACID DERIVATIVES. Patent dated May 15, 1984. Disclaimer filed Sept. 23, 1985, by the assignee, *Kyorin Seiyaku Kabushiki Kaisha.*

Hereby enters this disclaimer to all claims of said patent.

4,483,754.—*Hiroyuki Shiroki,* Nobeoka, Japan. ELECTROLYSIS OF SODIUM CHLORIDE WITH THE USE OF ION EXCHANGE MEMBRANES. Patent dated Nov. 20, 1984. Disclaimer filed Sept. 11, 1985, by the assignee, *Asahi Kasei Kogyo Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1 to 7 of said patent.

Dedication

3,789,972.—*Joseph K. Kraft,* Gettysburg, Pa. TRANSPORTATION DEVICE. Patent dated Feb. 5, 1974. Dedication filed Aug. 20, 1985, by the assignee, *Westinghouse Electric Corp.*

Hereby dedicates to the public the entire term of said patent.

Disclaimer and Dedication

4,243,563.—*Richard L. Ferm,* Lafayette, Calif. CALCIUM POLYSULFIDE SOIL STABILIZATION METHOD AND COMPOSITIONS. Patent dated Jan. 6, 1981. Disclaimer and dedication filed Sept. 23, 1985, by the assignee, *Chevron Research Co.*

Hereby disclaims and dedicates to the public the remaining term of said patent.

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	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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	Detroit Public Library	(313) 833-1450
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 12, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-07-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-30-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-14-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-27-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,403,406 to 3,408,656, inclusive
Plant Patents ..... Numbers 2,835 to 2,843 inclusive

REEXAMINATIONS

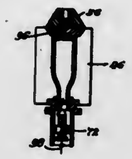
NOVEMBER 19, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,171,729 (420th)

METHOD OF MAKING A PARISON

Walter Andersen, Streator, Ill., assignor to Virginia Kremm
Reexamination Request No. 90/000,038, Jul. 29, 1981.
Reexamination Certificate for Patent No. 3,171,729, issued Mar. 2, 1965, Ser. No. 127,203, Jul. 27, 1961.
Continuation-in-part of Ser. No. 30,818, May 23, 1960, Pat. No. 3,178,728.
Int. Cl.[4] C03B *7/00*
U.S. Cl. 65—76



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

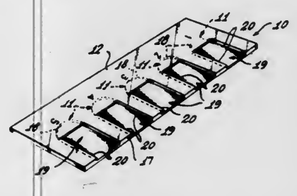
Claims 1–4 are cancelled.

[1. The method of making a bottle parison which comprises the steps of opening the neck orifice of a parison mold, sucking air through the other end of said mold by a vacuum drawn through the opened neck orifice of the mold, introducing a charge of glass through the other end of the mold, seating a closure member in the neck orifice of the mold as the glass charge reaches the neck orifice, closing the other end of said mold, and immediately after the glass fills the portion of said mold adjacent said neck orifice, withdrawing the closure member from the neck orifice and counter-blowing the parison therethrough.]

B1 3,777,283 (421st)

TRANSPARENT SLIDE FOR THE EXAMINATION OF LIQUID SPECIMENS

Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif. 90601
Reexamination Request No. 90/000,679, Dec. 3, 1984.
Reexamination Certificate for Patent No. 3,777,283, issued Dec. 4, 1973, Ser. No. 246,203, Apr. 21, 1972.
Int. Cl.[4] G02B *21/34*
U.S. Cl. 356—246



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–8 are cancelled.

New claim 9 is added and determined to be patentable.

9. A slide for use in the examination of liquid specimens, said slide comprising:

a thin flat plate having flat side surfaces;

at least one examination chamber defined in said plate as a thin, flat pocket having an open side spaced a substantial distance from, and facing toward one edge of said plate, said chamber being defined between two generally parallel and uniformly spaced sidewalls formed by said plate, and an edge wall extending between said sidewalls, at least one of said sidewalls being transparent and wherein said sidewalls diverge slightly at a preselected angle toward said open side;

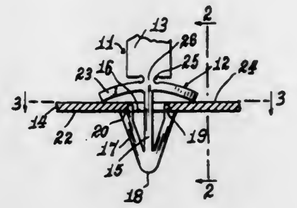
one of said sidewalls having a free edge overlying said open side, and the other of said sidewalls extending beyond said open side to said one edge and forming a supporting surface for receiving a quantity of specimen liquid to be examined;

and the space between said sidewalls being with the range of 0.004 to 0.020 of an inch and sufficiently narrow to cause the liquid to be drawn into and held in the chamber by capillary action.

B1 3,909,883 (422nd)

LOCKING BASE FOR PLASTIC COMPONENTS

James F. Fegen, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.
Reexamination Request No. 90/000,091, Oct. 20, 1981.
Reexamination Certificate for Patent No. 3,909,883, issued Oct. 7, 1975, Ser. No. 420,704, Nov. 30, 1973.
Division of Ser. No. 229,800, Feb. 28, 1972, Pat. No. 3,777,052.
Int. Cl.[4] A44B *21/00*
U.S. Cl. 174—138 D



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **4** is cancelled.

Claims **1** and **6** are determined to be patentable as amended.

Claims **2**, **3**, **5** and **7**, dependent on an amended claim, are determined to be patentable.

1. In a support integral with a component and a panel having *upper and lower surfaces and* a circular aperture therein for mounting the component on one *surface* [face] of the panel, said support comprising:

(a) a resilient substantially elongated base [connected to the component and having opposed free ends arched in the direction of the panel,] *having a length greater than its width and connected to the component, a stem, and a pair of yieldable wings,*

(b) said [a] stem extending centrally from *said* [the] base

and having an upper end and a lower end [and through the aperture],

(c) said elongated base integral with the upper end of said stem and having free ends extending an equal distance from either side of said stem and having a combined length substantially exceeding said circular aperture diameter,

(d) said free ends of said base being arched in the direction of said panel and terminoting in tips,

(e) said stem having a width substantially equal to said circular aperture diameter to substantially span said aperture when inserted therein,

(f) said stem having a longitudinal axis, being flat and providing substantial clearance on either side thereof with the walls of said aperture,

(g) the upper end of said stem having a uniform width and the lower end of said stem being tapered and said uniform width upper end being of sufficient length to extend beyond said panel lower surface when said support is positioned in said panel,

(h) said stem being solid and uninterrupted in cross-section throughout its length and having an apex,

(i) the lower end of said stem having said [a] pair of yieldable wings [integral with and extending from the free end of said stem toward said panel,] *integrally connected to said apex and projecting angularly upwardly from said apex free of said stem toward and in alignment with said free end of said base on either side of said stem,*

(j) said wings having diverging free ends [one aligned with each of said base ends and normally spread beyond the perimeter of said circular aperture,] and tips thereon and being of a width substantially less than the diameter of said aperture and substantially equal to the width of said stem at said apex,

(k) said wings having an inside surface and an outside surface,

(l) the distance between said inside surfaces of said wings at their free ends being less than the diameter of said aperture and the distance between the outside surfaces of said wings at their free ends being greater than the diameter of said aperture,

(m) said wings at their free ends each including a shoulder engageable with the lower surface of said panel at said aperture and an extension [on the free end of each wing] adapted to enter the aperture when the support is mounted, [said extensions and said wing ends being contoured to bear against the perimeter of said aperture and said panel to prevent spreading of said wings and to center said support in the aperture when the support is mounted on the panel]

(n) said constant width end of said stem extending a substantial distance below said shoulders,

(o) said stem being of sufficient length so that a portion of said stem projects out of said aperture and beyond said upper surface of said panel when said support is positioned in said aperture and said shoulders of said wings free ends engage said lower surface of said panel,

(p) and said base being arched and spaced from said panel when said support is in final position in said aperture to provide tip contact only with said upper surface of said panel to thereby provide yielding action to said support when mounted in said panel in a direction substantially parallel to the axis of said stem.

B1 4,072,252 (423rd)

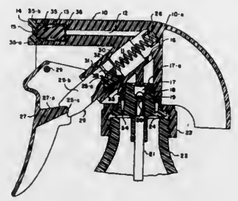
HAND OPERATED SPRAYER WITH AUTOMATIC CONTAINER VENT

Emile B. Steyns, Helmond, Netherlands, and Jerry H. Miller, Miami Lakes, Fla., assignors to The AFA Corporation, Miami Lakes, Fla.

Reexamination Request No. 90/000,590, Jul. 12, 1984,
Reexamination Certificate for Patent No. 4,072,252, issued Feb. 7, 1978, Ser. No. 693,383, Jun. 7, 1976.
Continuation-in-part of Ser. No. 656,547, Feb. 9, 1976, abandoned.

Int. Cl.[4] **B67D** *5/40*

U.S. Cl. 222—341



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **19–22** is confirmed.

Claims **1** and **13** are determined to be patentable as amended.

Claims **2–12** and **14–18**, dependent on an amended claim, are determined to be patentable.

New claims **23–30** are added and determined to be patentable.

1. A manually operated liquid dispenser adapted to be attached to a container holding a liquid to be dispensed comprising

a. component retaining body means, the bulk of which is located outside of [said] *the* container when attached thereto,

b. *said component retaining body means having* an outwardly opening bore defined within the interior of the component retaining body means,

c. a piston shiftable within the bore and bounding a variable compartment with said bore,

d. *said component retaining body means having* inlet and outlet means [disposed within the component retaining body means] *therein* and *communicating with said bore* for delivering liquid into and out of the compartment bounded by the piston and bore *and comprising a housing having said bore therein and an intake body fixed to said housing and adapted to be coupled to the container,*

e. operating means *associated with said housing*[,] *and* including a trigger *pivotally mounted to said housing and* normally actuated by application of substantially horizontal force by [the] fingers [thereto] *engaging said trigger,* for shifting the piston within the bore between a normal, non-pumping position and a pumping position,

f. venting means extending through [the body means] *said housing and said intake body* and opening, at one end, into the bore *and, at another end, into the container,* and

g. a single unit *incorporated into said piston for* providing seal means for the *opening of said* venting means [and the compartment] *into said bore,* the seal means in normal non-pumping position preventing communication to the ambient air from the venting means and the compartment, thereby forming a positive closure for the container, *and* the seal means in pumping position permitting free communication between the venting means and the ambient air.

B1 4,213,317 (424th)

BLANK FILLER PLATE FOR LOCK EDGE CUT-OUT

Robert O. Ruff, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.

Reexamination Request No. 90/000,503, Feb. 14, 1984.
Reexamination Certificate for Patent No. 4,213,317, issued Jul. 22, 1980, Ser. No. 13,348, Feb. 21, 1979.
Int. Cl.[4] **E05B** *9/08, 63/00*

U.S. Cl. 70—450



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–8** are cancelled.

New claims **9–16** are added and determined to be patentable.

(9) A blank filler plate which is releasably mountable in a lock edge cut-out of a steel door without fastening means visible from the exterior thereof and without the use of hand tools, comprising

a generally elongated rectangular member having a forward face exposed to view when the blank filler plate is operatively mounted in the lock edge cut-out of a door, a rearward face, and a pair of opposed parallel flanges formed along the opposed vertical edges of the filler plate adapted to releasably couple with the respective edges of the lock edge cut-out, and

resilient compressible means mounted on the rearward face of the plate, the uncompressed depth of said compressible means measured perpendicular to said rearward face being substantially less than the long dimension of said plate, said means (a) permitting the plate and compressible means to be simultaneously manually positioned through the cut-out at an angle to the plane thereof from the exterior of the door and pressed inwardly and slid sideways in the cut-out to release or engage the flanges of the filler plate relative to the respective edges of the cut-out such that the filler plate may be selectively removed or inserted from the cut-out from outside of the door without the use of hand tools, and (b) urging the filler plate outwardly of the cut-out when the plate is operatively located in the cut-out with its forward face parallel to the plane of the cut-out such that the flanges are biased against the respective rear marginal portions of the door edge surrounding the respective vertical edges of the cut-out to hold the filler plate in place in the cut-out without externally visible fastening means,

said flanges being offset rearwardly from said forward face a distance substantially equal to the gauge of the sheet metal used to form the door edge such that when operatively located in place in the cut-out the forward face of the filler plate is substantially flush with the outer surface of the door edge and the flanges are hidden from view.

B1 4,289,791 (425th)

ICE CREAM CONE WITH JACKET ATTACHED AND METHOD FOR PRODUCING SAME

David Weinstein, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Reexamination Request No. 90/000,328, Feb. 16, 1983.
Reexamination Certificate for Patent No. 4,289,791, issued Sep. 15, 1981, Ser. No. 36,227, May 4, 1979.
Continuation-in-part of Ser. No. 885,278, Mar. 10, 1978, and Ser. No. 910,886, May 30, 1978.
Int. Cl.[4] **B65G** *59/00;* **A21D** *13/00*

U.S. Cl. 426—139

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **6–8, 10, 12, 13** and **15** is confirmed.

Claims **1–5** and **14** are cancelled.

Claims **9** and **11** are determined to be patentable as amended.

New claims **16–25** are added and determined to be patentable.

12. A method of adhering sanitary jackets onto each of a succession of cones of a conformal shape with said jackets comprising:

conveying a plurality of cones, apex first, along a conveyor at regularly spaced intervals;

storing a vertical stack of said paper jackets above said conveyor and the conveyed path of said cones;

dispensing said jackets one at a time from said stack to a work holding means and injecting a vaporized mixture of about 85% propylene glycol and about 15% water into the interior thereof;

dispensing said vapor injected jackets onto said conveyor intermediate said cones and at substantially equal spaced intervals with said cones; and

inserting a trailing cone into and in position with a leading jacket while the latter is still moist from the vapor injection.

REISSUES

NOVEMBER 19, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,031
CAMBERING VEHICLE

Frank J. Winchell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original No. 4,325,565, dated Apr. 20, 1982, Ser. No. 126,877, Mar. 3, 1980. Application for reissue Jan. 13, 1983, Ser. No. 457,759

Int. Cl.⁴ B62K *5/02*

U.S. Cl. 280—282 **8 Claims**



4. In a cambering vehicle having an engine for vehicle propulsion, a cambering steering fork assembly at the front of the vehicle mounting a road wheel at the lower end thereof and manual steering means at the upper end thereof, a pair of laterally spaced rear road wheels supporting a non-cambering support platform for the feet of the vehicle operator, a cambering main frame having a forward portion operatively mounting the steering fork assembly and a cambering seat support at the rear of the vehicle for the vehicle operator connected to the main frame for cambering movement therewith about a camber axis to allow the operator to freely lean into turns while standing or seated and while cambering the vehicle with his feet on the support platform characterized in that the engine is mounted on the steering fork assembly and is drivingly connected to the front wheel of the steering fork assembly and that the support platform extends between the forward portion of the main frame and the seat support and is substantially unobstructed to facilitate operator entry and egress and operator stabilization of the vehicle during powered cambering maneuvers through foot impressed loads to the platform in the event an unbalanced condition occurs.

Re. 32,032
METHOD OF DENSIFYING OPEN-CELLED POLYURETHANE MATERIAL

Winslow L. Pettingell, Wooddale, Ill., assignor to Foam Cutting Engineers, Inc., Addison, Ill.

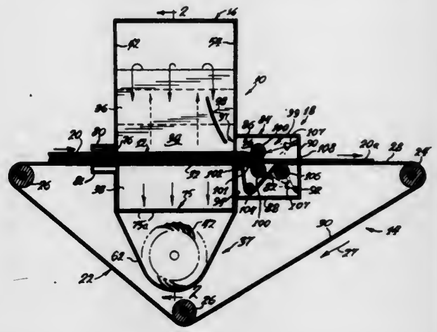
Original No. 4,228,076, dated Oct. 14, 1980, Ser. No. 44,042, May 31, 1979. Continuation-in-part of Ser. No. 876,736, Feb. 10, 1978, abandoned. Application for reissue Oct. 26, 1983, Ser. No. 545,481

Int. Cl.⁴ B29D *27/00*

U.S. Cl. 264—101 **10 Claims**

1. A method of densifying a mass of fully cured open-celled polyurethane foam, said method comprising the consecutive steps of:

[passing] *creating a suction to pass* heated gaseous material entirely through the mass, the temperature of said gaseous material being in the range of about 425° F. to 460° F. and the velocity of said gaseous material being insufficient to destroy the integrity of the cell walls of the mass, said gaseous material being inert with respect to the polyurethane, and the period of exposure of the mass to the gaseous material being insufficient to allow charring of the mass, yet sufficient to raise the entire mass substantially uniformly to a temperature between about 365° F. and 435° F.;



compressing the mass while its temperature is between about 365° F. and 435° F. to reduce its thickness and thus increase its density to a desired degree; and

permitting the mass to cool.

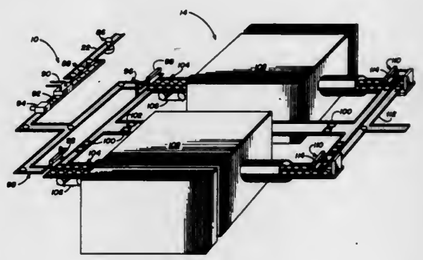
Re. 32,033
AUTOMATED SLICE PROCESSING

James R. Moreland, Plano, and Robert M. Montgomery, Sherman, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original No. 3,888,674, dated Jun. 10, 1975, Ser. No. 418,637, Nov. 23, 1973. Continuation of Ser. No. 352,690, Feb. 25, 1982, which is a division of Ser. No. 280,317, Aug. 14, 1972, Pat. No. 3,812,947, which is a division of Ser. No. 845,733, Jul. 29, 1969, Pat. No. 3,765,763. Application for reissue Jan. 30, 1984, Ser. No. 575,473

Int. Cl.⁴ B44D *1/18;* **B05B** *13/02;* **B23Q** *5/22*

U.S. Cl. 430—311 **2 Claims**



1. A method of spraying a fluid on a semiconductor slice comprising the steps of:

a. positioning a semiconductor slice on a spindle;

b. securing said semiconductor slice to said spindle;

c. lowering said spindle including said secured semiconductor slice into a chamber;

d. rotating said spindle including said secured semiconductor slice once said spindle has been lowered into said chamber; and

e. spraying said fluid onto said semiconductor slice while it is rotating within said chamber.

Re. 32,034

13-HALO AND 13-DEOXY DERIVATIVES OF C-076 COMPOUNDS

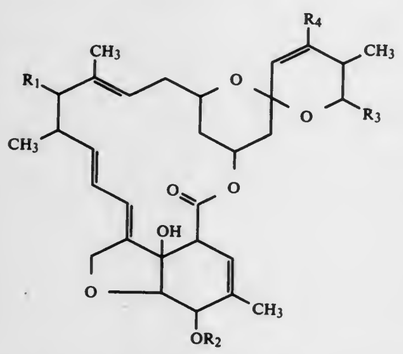
John C. Chabala, Westfield; Michael H. Fisher, Ringoes, and Helmut H. Mrozik, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Original No. 4,173,571, dated Nov. 6, 1979, Ser. No. 861,919, Dec. 19, 1977. Application for reissue Jul. 18, 1984, Ser. No. 632,152

Int. Cl.⁴ C07D *493/22*

U.S. Cl. 549—264 **18 Claims**

1. A compound having the formula:



wherein the broken line indicates a single or a double bond;

R_1 is hydrogen or halogen;

R_2 is hydrogen, methyl or loweralkanoyl;

R_3 is [n-propyl] *isopropyl* or sec-butyl; and

R_4 is present only when the broken line indicates a single bond and represents hydrogen, hydroxy, loweralkanoyloxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl or loweralkoxy;

provided that when R_2 is hydrogen or methyl the broken line can indicate only a single bond and R_4 is other than hydroxy.

Re. 32,035

ELECTROMECHANICAL TRANSDUCER CONTROLLING DEVICE

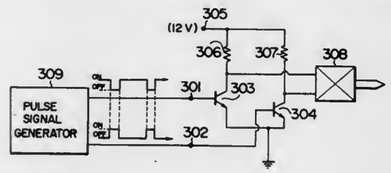
Hiroshi Kuroiwa, and Takao Sasayama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,366,524, dated Dec. 28, 1982, Ser. No. 152,666, May 23, 1980. Application for reissue Dec. 21, 1983, Ser. No. 563,790

Claims priority, application Japan, Mar. 31, 1977, 52-35253

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 361—154 **28 Claims**



13. A control device comprising:

electromagnetic means including an electromagnetic coil and a movable member to be displaced in proportional relation to electric current applied to said electromagnetic coil thereby driving a control means;

an electric source for energizing said electromagnetic coil;

at least one switching means for chopping current supplied from said source to said electromagnetic coil;

means for generating an electrical pulse signal composed of a plurality of pulses for actuating said switching means, each of said pulses having a constant period shorter than a minimum period of time required for said movable member to be moved by its predetermined full stroke and sufficient for said movable member to be moved; and

means for changing the duty cycle of each of said pulses applied to said switching means,

wherein said movable member is displaced in proportional relation to the duty cycle changed by said duty cycle changing means.

PATENTS

GRANTED NOV. 19, 1985

ERRATA

For CLASS	See PATENT NO.
623–014	4,553,271
623–001	4,553,272
623–018	4,553,273
110–223	4,553,285
164–453	4,553,604
29–158R	4,553,690
523–115	4,553,940
514–649	4,554,164

PATENTS

GRANTED NOVEMBER 19, 1985

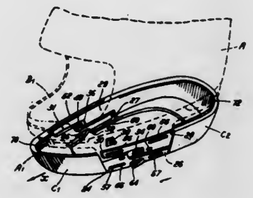
GENERAL AND MECHANICAL

4,553,269
POCKET STRUCTURE
Daniel Nowak, 720 Canal St., New Orleans, La. 70130
Filed Jul. 27, 1984, Ser. No. 635,083
Int. Cl.[4] A41D *27/20*
U.S. Cl. 2—254 **4 Claims**



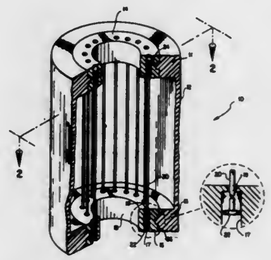
1. A pocket structure comprising:
a front panel having a bottom edge and a pocket opening;
a flap to close said pocket opening;
a rear panel;
a first intermediate panel having a bottom edge and a top edge which is above the pocket opening and behind the flap;
a support strip behind the flap and above the pocket opening; and
a second intermediate panel having a top edge secured to said support strip and having side edges distal from the side edges of the other panels and a bottom edge distal from the bottom edges of the other panels.

4,553,270
PROTECTIVE HELMET WITH SECURING COLLAR
Hanspeter Hoffmann, Postfach 259, F1- 9595 Triesen, Fürstentum, Liechtenstein
Filed Feb. 1, 1983, Ser. No. 462,894
Claims priority, application Switzerland, Apr. 26, 1982, 2542/82
Int. Cl.[4] A42B *3/02*
U.S. Cl. 2—421 **8 Claims**



1. A protective helmet arrangement for protection of the head of the wearer, comprising
an upper part;
a rear lower part being permanently attached to said upper part, said rear lower part having a first engaging member being positioned in such a manner that a substantial portion of the first engaging member is extended beyond said rear lower part, at least one surface of said first engaging member having an engaging area adapted for close engagement with engaging means of the arrangement;
a front lower part, having an inside area which is adapted to face a lower portion of the face of the wearer, said front lower portion having a second engaging member being positioned in a such manner that a substantial portion of the second engaging member is extended beyond said first lower part, at least one surface of said second engaging member having an engaging area adapted for close engagement with the engaging means;
said engaging means being rotatably positioned between said engaging areas of said first and second engaging members, an axis of rotation of said engaging means being permanently positioned within said protective helmet, an outside contour of said engaging means being shaped for close engagement with said engaging areas;
receiving means of said helmet arrangement being adapted to slidably receive said first and second engaging members in assembled condition thereof and to accommodate said axis of rotation of said engaging means; and
locking means being designed to lock said front lower part in a predetermined position thereof relative to said upper part and rear lower part of said helmet arrangement.

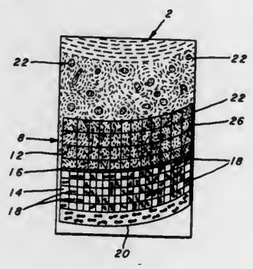
4,553,271
ARTIFICIAL SPHINCTER APPARATUS AND METHOD
Charles D. Baker, Lehi, Utah, assignor to University of Utah Research Institute, Salt Lake City, Utah
Continuation-in-part of Ser. No. 194,528, Oct. 6, 1980, abandoned. This application Apr. 12, 1982, Ser. No. 367,533
Int. Cl.[4] A61F *1/00*
U.S. Cl. 623—14 **15 Claims**



1. An artificial sphincter comprising:
a first ring member and a second ring member rotatably mounted parallel and coaxially with the first ring member and at a predetermined distance from the first ring member;
support means for supporting the first ring member relative to the second ring member;
a plurality of tie members extending between the first ring member and the second ring member so that relative rotation between the ring members causes the tie members to constrict inwardly toward the axis of the first ring member and the second ring member;
actuator means for rotating at least the first ring member relative to the second member; and
a flexible, fluid-impervious membrane means enclosing the artificial sphincter.
12. An artificial sphincter comprising:

a first split ring member;
a second split ring member;
support means for rotatably mounting the first split ring member coaxially with and parallel to the second split ring member at a fixed, predetermined distance;
a plurality of tie members extending between the first split ring member and the second ring member so that rotation of the first split ring member relative to the second split ring member causes a generally transverse movement of the tie members relative to the axis of the artificial sphincter;
actuator means for rotating the first split ring member; and
a fluid-impervious envelope for the artificial sphincter.

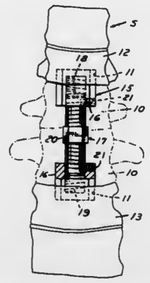
4,553,272
REGENERATION OF LIVING TISSUES BY GROWTH OF ISOLATED CELLS IN POROUS IMPLANT AND PRODUCT THEREOF
Dana C. Mears, Oakmont, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.
Filed Feb. 26, 1981, Ser. No. 238,374
Int. Cl.⁴ A61F *1/00*
U.S. Cl. 623—1 **2 Claims**



1. A method of repair of patient tissues by implant comprising
providing a starter cell sample,
providing an implant member having a porous structure,
providing said implant material with an open pore structure having a number of pores of an average pore size of about 25 to 75 microns,
introducing said cell sample into the pores of said implant member,
surgically effecting securement of said implant to said patient, whereby said cell sample will initiate growth within said pores and effect reconstruction of said tissues,
providing said implant member with at least two distinct pore sizes,
providing a first said pore size of about 100 to 400 microns and a second said pore size of about 25 to 75 microns,
culturing said starter cells in said second pores, and
providing a barrier separating said first pores from said second pores.

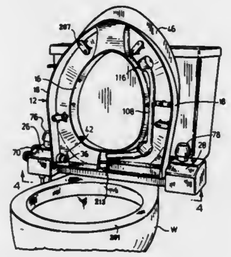
4,553,273
VERTEBRAL BODY PROSTHESIS AND SPINE STABILIZING METHOD
Kent K. Wu, Royal Oak, Mich., assignor to Henry Ford Hospital, Detroit, Mich.
Filed Nov. 23, 1983, Ser. No. 555,362
Int. Cl.⁴ A61F *1/24, 1/00, 5/04*
U.S. Cl. 623—18 **8 Claims**

1. The method for stabilizing the spine wherein vertebral bodies have been removed which comprises
forming non-circular recesses in the vertebral bodies which face one another and which have flat bases,
inserting a longitudinally extendable prosthetic device having spaced non-circular blocks having non-circular cross-section conforming to the configurations of the non-circular recesses and flat bases abutting said flat bases of said recesses and extendable means between said blocks between the opposed vertebral bodies with the blocks of the prosthetic device in position for engagement with said recesses,
extending the prosthetic device to the desired predetermined distance to engage each block in its respective recess and locking the prosthetic device in extended position.



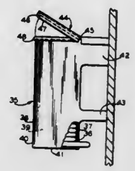
2. A prosthetic device for stabilizing the spine wherein vertebral bodies have been removed which comprises
a pair of non-circular blocks which are bounded by continuously flat bases for engaging non-circular recesses having flat bases in the remaining vertebral bodies which face one another, and
extendable means between said blocks for moving said blocks into engagement with the recesses in the vertebral bodies.

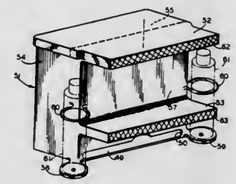
4,553,274
TOILET-BOWL BIDET APPARATUS
George M. Yui, 1543 Knareswood Dr., Mississauga, Canada (L5H 2L9)
Filed Oct. 16, 1984, Ser. No. 661,426
Claims priority, application Canada, Oct. 18, 1983, 439212
Int. Cl.⁴ E03D *9/08*
U.S. Cl. 4—420.4 **23 Claims**



1. Toilet-bowl bidet apparatus, comprising a seat which is able to pivot for raising and lowering, and a spray-arm (**108**) which is mounted on the seat;
where the arm is able to pivot relative to the seat from an in-use position to a not-in-use position;
characterized in that the seat is a plastic moulding (**12**) of channel-shaped cross-section;
in that the seat comprises a sitting-platform (**17**) and respective inner (**16**) and outer (**18**) side walls which extend downwards from the sitting-platform;
and in that the spray-arm (**108**) is substantially completely concealed inside the channel-shaped cross-section, and above the rim (**201**) of the toilet-bowl (W) when the spray-arm is in the not-in-use position;
and in that the apparatus includes arm-mounting-means for mounting the spray-arm for pivoting relative to the seat (**12**), where the arm-mounting means includes a bearing portion formed as part of one (**18**) of the side walls.

4,553,275
CLEANING CLOTHS AND DISPENSERS THEREFOR
Jerome C. Goldstein, 1400 S. Joyce St., Arlington, Va. 22202
Division of Ser. No. 322,477, Nov. 18, 1981, abandoned. This application May 3, 1984, Ser. No. 606,889
Int. Cl.⁴ A47K *3/22*
U.S. Cl. 4—605 **4 Claims**

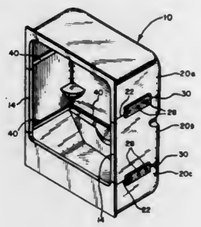


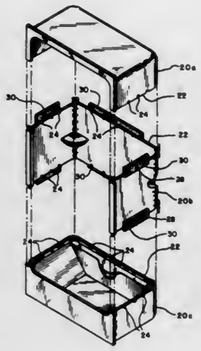


1. A showerbath room dispenser for dispensing bathing supplies comprising a molded plastic body having rigid front, back, side and bottom walls defining a washcloth chamber and a flexible integrally-formed top wall for washcloth loading access to the chamber, said back wall having a slot formed in its lower portion for dispensing washcloths individually, and means comprising a mounting rib projecting from the lower portion of the backwall and overhanging the dispenser slot for securing the dispenser to a showerbath room wall in spaced relation thereto and also for preventing water flow down the back wall to the dispesner slot.

4,553,276
SECTIONAL MODULAR SHOWER CABINETS AND METHOD AND APPARATUS FOR MAKING AND INSTALLING THEM
Robert C. Paradis, Orillia, Canada, assignor to Fiat Products Incorporated, Monroe, Ohio
Filed Mar. 9, 1983, Ser. No. 473,587
Int. Cl.⁴ A47K *3/22*
U.S. Cl. 4—612 **11 Claims**

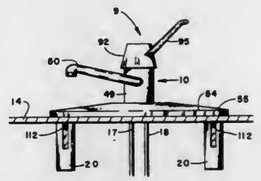
1. A sectional modular shower cabinet comprising:
a plurality of aligned cabinet sections, each having a rear surface and a waterproof front surface, said cabinet sections including a bottom section and at least one upper section, adjacent sections meeting along a junction;
a plurality of joining strips positioned across each said junction, said joining strips adhering to portions of the rear surfaces of each of the adjacent cabinet sections, so that the adjacent cabinet sections are rigidly held in alignment;
said joining strips being implemented from the front surface of said cabinet sections by partially removable clamping means; and





a waterproof sealant filling each said junction to make the entire front surface of the cabinet waterproof.

4,553,277
FAUCET AND CLAMPING MECHANISM
Ronnie J. Duncan, 12432 Shore St., Leavenworth, Wash. 98826
Filed Nov. 30, 1983, Ser. No. 556,373
Int. Cl.⁴ B25B *5/14*
U.S. Cl. 4—643 **15 Claims**



1. A faucet fixture assembly comprising a housing including a base having a seating side for mounting on the mounting side of a support wall with an opposite clamping side and an opening, control valve means mounted on said housing and having connecting means for connection to a source of fluid under pressure and valve means for controlling the delivery of fluid from said source, clamping means having support means mounted on said housing and projecting from said seating side of said base, clamp arm means mounted on said support means spaced from said base having a disengaged contracted position in which said clamping means passes through the opening when said housing is mounted with the seating side of the base on the mounting side of a support wall and fluid motor means connected to said source of fluid under pressure and operating in response to fluid under pressure to move said clamp arm means from normal disengaged contracted position to engaged

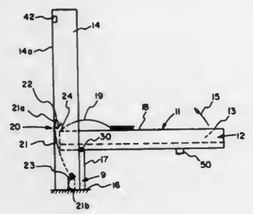
expanded position engaging the clamping side of the support wall to secure said faucet fixture assembly on a support wall.

4,553,278

TIP-UP BED AND POST TENSIONED BEDDING RETAINER

Gerrit K. Drexhage, 910 Centera Way, Mill Valley, Calif. 94941

Filed Apr. 24, 1984, Ser. No. 603,490
Int. Cl.⁴ A47C *17/38*
U.S. Cl. 5—136 **9 Claims**



1. In combination a tip-up bed pivotably movable on a first horizontal pivot axis from a horizontal use position to a vertical storage position and including a mattress, bedding and at least one pillow;

recessed storage means for storing said bed in the vertical position;

an open pillow and bedding cavity within said storage means, said cavity being bounded by an outwardly facing flexible concave panel positioned to abut an upper edge of the head of the mattress as the bed and mattress is moved from a horizontal to a vertical position and said upper head edge passes slidingly downwardly along said panel; and

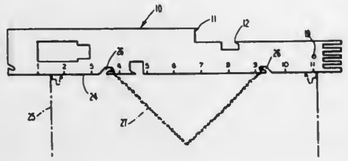
wherein said panel has a radius of curvature greater than the radius of pivot between said first pivot axis and said mattress upper edge and a locus of the center of curvature of said panel is displaced from said first pivot axis such that when said mattress upper edge passes downwardly, said mattress upper edge flexes said panel rearwardly toward a rear portion of said recessed storage means and said panel confining said bedding and pillow in the bedding cavity above said mattress upper edge to securely hold said pillow and bedding against said mattress in the vertical storage position.

4,553,279

MULTI-PURPOSE PAINT STICK

Garry L. Gassew, 1431 Linden La., West Chester, Pa. 19380, and Byron Samaras, 369 San Miguel Dr., Ste. 305, Newport Beach, Calif. 92660

Filed Oct. 17, 1983, Ser. No. 542,266
Int. Cl.⁴ B44D *3/06, 3/12;* **A46B** *17/06*
U.S. Cl. 7—105 **18 Claims**



1. A multi-purpose painting implement comprising:

a. an implement body of predetermined length, width and thickness, said body having spaced-apart hanging means at a predetermined location to hold a filter located on a body side;

b. at least one can-scraping means located on a side of said body for cleaning paint from the insides of various sized cans; and

c. at least one brush-scraping means located at an end of said body for combing particles out of a brush.

4,553,280

WATER HOSE FITTING TOOL

Ramon L. Stright, 8020 Rio Grande Blvd., NW., Albuquerque, N. Mex. 87114

Filed Apr. 20, 1984, Ser. No. 602,574
Int. Cl.⁴ B23G *5/20;* **B25F** *1/00*
U.S. Cl. 7—157 **1 Claim**



1. The combination of a water hose assembly and an implement for effecting repairs on the water hose assembly; wherein the water hose assembly comprises a length of flexible water hose having an exteriorly threaded male coupling disposed on one end, and an interiorly threaded female coupling disposed on the other end, wherein the frmale coupling is further provided with a riselient gasket disposed on an interior surface; and wherein said implement consists of:

a body unit comprising a hub element having a plurality of arm elements radially projecting therefrom, and having an enlarged central aperture formed therein which is dimensioned to receive an elongated torque applying means;

a tap unit comprising a tap member disposed on the end of one of said plurality of arm elements, and having an exterior threaded surface dimensioned to threadingly engage the interior threads of said female coupling;

a die unit disposed on the end of another of said plurality of arm elements, and comprising an enlarged hollow cylindrical die member having an interior threaded surface which is dimensioned to threadedly engage the exterior threads of said male coupling;

an insertion unit disposed on the end of still another of said plurality of arm elements, and comprising an elongated tapered cylindrical member, dimensioned to be received within the cylindrical interiors of the male and female couplings; and

a removal unit disposed on the end of yet another of said plurality of arm elements, wherein said removal unit comprises a generally flattened tapered tang member having an upturned beveled hook portion formed on its free end, whereby the upturned hook portion is dimensioned and configured to engage and effect the removal of said resilient gasket from within the interior of said female hose coupling.

4,553,281

SIDE AND HEEL LASTING MACHINE

Karl F. Vornberger, Amherst, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed May 21, 1984, Ser. No. 612,481
Int. Cl.⁴ A43D *21/00*
U.S. Cl. 12—8.1 **16 Claims**

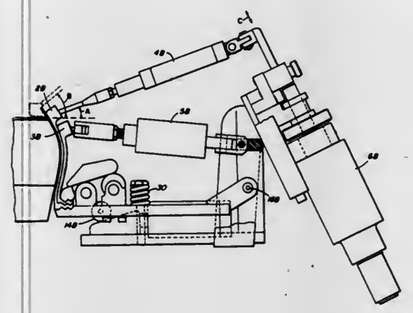
1. A machine, operable on a footwear assembly comprising a last having an insole located at its bottom and an upper mounted thereon with the toe portion of the upper margin wiped against and secured to the insole and unwiped portions of the upper extending heelwardly of the wiped margin portion, which unwiped margin portions extend upwardly at an

open angle to the insole, for applying adhesive in the region between said unwiped margin portions and the corresponding portions of the insole at said region, said machine comprising:

a footwear assembly support for supporting the footwear assembly with the insole directed upwards;

a pair of nozzles spaced upwardly from and facing said insole and mounted for motion toward and away from the insole as well as transverse and longitudinal movement with respect to the insole, said nozzles being operable to apply adhesive into said region;

a lasting tool operable to clamp the upper tightly against the last and to apply light backup pressure against the unwiped margin to support the same, but nevertheless maintaining the open angle between the unwiped margin portions and the insole to permit application of adhesive into said region, said lasting tool comprising two lasting instrumentalities each comprising an inner lasting pad, one inner lasting pad being disposed at each side of the footwear assembly, each lasting pad being made of an elastic, flexible and deformable material, one end of each inner lasting



pad being formed into a plurality of relatively rigid segments;

actuator means to press the rigid segments of the inner lasting pad at each side of the footwear assembly inwardly of the footwear assembly to press the upper tightly against the last and to apply said light backup pressure while maintaining said open angle, which actuator means presents the two inner lasting pads at one level when the adhesive is being applied and, subsequent to application of the adhesive, moves the two lasting instrumentalities to a second level upwardly of said insole while simultaneously moving the relatively rigid segments of the two inner lasting pads inwardly and over the insole in a wiping action to fold the margin onto the insole to press the adhesive between the margin and the insole to adhere the margin onto the insole, part of said actuator means being pivoted during wiping from an orientation at which forces upon the pads are directed at a small acute angle to the footwear assembly bottom to an orientation at which the forces are at a much larger acute angle to the footwear assembly bottom.

4,553,282

MOP HEAD

Douglas R. Batchelor, Chicago, Ill., assignor to Libman Broom Company, Arcola, Ill.

Filed Jan. 15, 1985, Ser. No. 691,744
Int. Cl.⁴ A47L *13/258*
U.S. Cl. 15—150 **4 Claims**

1. A mop head comprising:

a hood of polymeric material;

the hood having front and rear spaced apart substantially vertical walls, lateral end walls connected to the front and rear walls, and a top wall connected to the front, rear and end walls;

a handle end-receiving tubular member integral with the hood and extending downwardly below the top wall between the front and rear walls and extending above the top wall;

a mop retaining bar;

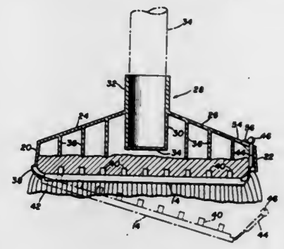
means connecting a first end of the bar to the hood at one end wall;

the second end of the mop retaining bar having a projecting finger, which is bendable, connected thereto;

the finger having an enlarged head at the end;

the hood top wall having a finger end receiving opening adjacent the hood end wall closest to the finger;

the opening in the top wall having first and second adjoining portions in communication with each other and with the first



portion being adjacent the end wall and the second portion inward therefrom;

the opening first portion having a width which permits the finger to move freely therein but which is less than the width of the finger enlarged head; and

the opening second portion having a size to permit passage therethrough of the finger enlarged head;

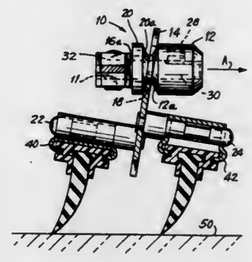
whereby a mop means can be installed between the bar and the hood bottom and the finger, the finger then locked in place by feeding the finger enlarged head through the opening second portion from beneath the top wall to slightly thereabove and then moving the finger to position it in the opening first portion with the enlarged head bearing on and supported by the top wall along the edge of the opening first portion.

4,553,283

WINDSHIELD WIPER ADAPTER

Peter J. Speth, 239-25 88th Ave., Bellerose, N.Y. 11426

Filed Feb. 26, 1985, Ser. No. 705,772
Int. Cl.⁴ B60S *1/28, 1/40*
U.S. Cl. 15—250.32 **4 Claims**



1. An adapter for supporting two wiper blades on a reciprocating windshield wiper drive arm comprising a cross plate having first and second posts extending essentially perpendicular therefrom for independently pivotally supporting said two wiper blades, respectively, said cross plate having an opening

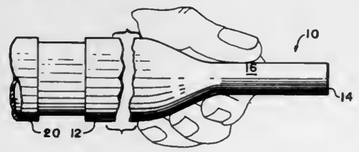
therein intermediate said first and second posts, and a plug member fitted in said opening for rotational and tilting movement for coupling said adapter to said drive arm, said plug member including a gap defined by opposing walls of said plug member, said opening in said cross piece being situated in said gap of said plug member, the configuration of said gap restricting the tilt of said cross plate to insure that the surfaces of said two wiper blades remain on said windshield during reciprocation of said drive arm.

4,553,284

VACUUM CLEANER UNIVERSAL NOZZLE

William P. Strumbos, 85 Middleville Rd., Northport, N.Y. 11768

Filed Mar. 12, 1984, Ser. No. 588,911
Int. Cl.[4] A47L *9/02*
U.S. Cl. 15—414 **13 Claims**



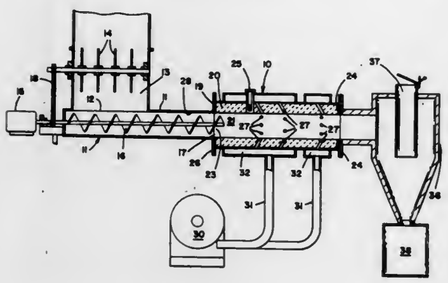
1. A resilient universal nozzle for vacuum cleaning apparatus, said nozzle comprising an elongated tubular element with a coupling end which fits on a tubular pipe means in fluid communication with a source of sub-atmospheric pressure and a body portion terminating in a nozzle inlet end distal from said coupling end, said tubular element having a smooth bore, at least said body portion and nozzle inlet end comprising material which is deformable under manual pressure by the operator and having sufficient resiliency in operation and under suction pressures such that it returns to its original undeformed configuration upon release of said manual pressure, said resiliency preventing the collapse of said nozzle when subjected to material entraining suction pressures in either the deformed or undeformed condition, whereby the size and shape of at least the nozzle inlet end can be altered controllably to suit the operating requirements.

4,553,285

PLUG FURNACE

Kerry M. Sachs, 49 S. Huntington Ave. 104, Boston, Mass. 02130, and David W. Roberts, 814 J St., Davis, Calif. 95616

Filed Jul. 18, 1984, Ser. No. 632,027
Int. Cl.[4] F23G *5/02*
U.S. Cl. 110—223 **5 Claims**



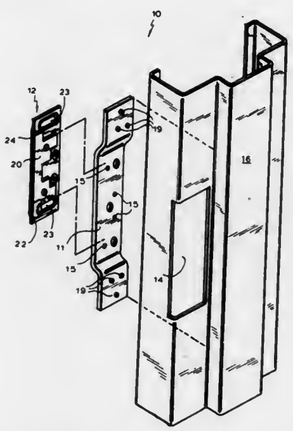
1. A plug flow furnace comprising:
tubular conveying means having an opening to receive particulate fuel and an urging means to force said particulate fuel through said tubular conveying means toward a conveying means outlet, a tubular furnace having a diameter not greater than about the diameter of said conveying means outlet and a lining of refractory material having a higher coefficient of friction with respect to said particulate fuel than said conveying means and forming a compacting means for forming said fuel into a plug, said furnace connected to said conveying means outlet to be coaxial with said conveying means to form a flow path from said conveying means inlet to an outlet from said furnace, and air jets located in the sides of said furnace, and said compacting means located in said flow path between said opening to said tubular conveying means and said air jets for forming said particulate fuel into a plug.

4,553,286

HINGE PREPARATION ASSEMBLY FOR A STEEL DOOR FRAME

Ernest D. Schwarz, II, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.

Filed Apr. 19, 1984, Ser. No. 602,029
Int. Cl.[4] E05D *5/00*
U.S. Cl. 16—382 **13 Claims**



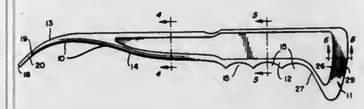
1. A hinge preparation assembly capable of mounting a leaf of a standard weight hinge set or a heavy weight hinge set thereto without requiring changing the depth of each cutout section of a steel member, said hinge preparation assembly comprising:
a hinge reinforcement member mounted to said each hinge cutout section of said steel member, said each cutout section having a depth equal to the thickness of a heavy weight hinge leaf, said hinge reinforcement member having a plurality of spaced apart openings, including spaced apart threaded openings corresponding to the openings of said hinge leaf;
a hinge conversion means, formed in the shape of a unitary member, is mounted to said hinge reinforcement member and has a thickness which is substantially equal to the difference between that of the standard weight hinge leaf and the heavy weight hinge leaf; and
said unitary member including frangible means so that upon its removal from said hinge reinforcement member, said hinge preparation assembly converts from a standard weight hinge leaf preparation to that of a heavy weight hinge leaf preparation.

4,553,287

DEVICE AND PROCESS FOR CLEANING SHRIMP AND THE LIKE

Marlette S. DeSordi; Pete DeSordi, III, both of 1100 N. Trenton, Ruston, La. 71270; Jan C. McCullin, and Sidney G. McCullin, both of Rte. 2, Dubach, La. 71235

Filed Jun. 23, 1983, Ser. No. 506,904
Int. Cl.[4] A22C *29/02*
U.S. Cl. 17—48 **4 Claims**



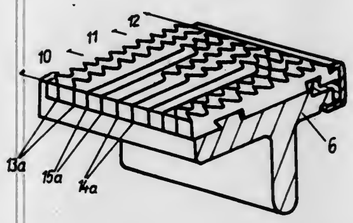
4. A process for cleaning crustanceans having slender, elongated bodies comprising the steps of
grasping a device that comprises an elongated body having a tapered portion at one end, a deheading portion at another end and a handle adjacent said deheading portion, wherein said tapered portion comprises an arcuate section and is adapted for lengthwise insertion into the body of said crustacean through the channel that contains the said vein of said crustacean to thus sever the body of the crustacean adjacent said channel and rupture the shell of said crustacean, and wherein said deheading portion comprises a cutting edge which is substantially perpendicular to the length of said body of the device,
deheading said crustacean with said deheading portion, and
inserting said tapered portion into the body of said crustacean through said channel to thus sever the body of the crustacean adjacent said channel, rupture the shell of said crustacean and removed said body of said crustacean from said shell.

4,553,288

CARD CLOTHING FOR CARDING SEGMENTS OF A CARDING MACHINE

Manfred Schneider, Karl-Marx-Stadt; Gerhard Barth, Dittersdorf; Johannes Barth, Niederwiesa, and Wolfgang Neubert, Karl-Marx-Stadt, all of German Democratic Rep., assignors to Veb Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Continuation-in-part of Ser. No. 566,818, Dec. 28, 1983,. This application May 25, 1984, Ser. No. 614,724
Claims priority, application German Democratic Rep., Dec. 30, 1982, 246803
Int. Cl.[4] D01G *15/88*
U.S. Cl. 19—113 **9 Claims**



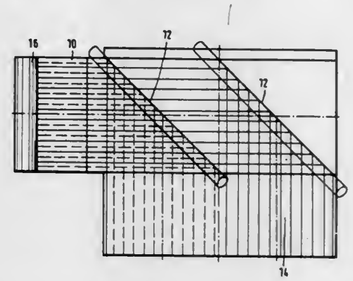
1. A card clothing for carding segments of a carding machine, particularly flat carding machine, in which carding segments are stationarily or movably arranged against a circumference of a respective rotary drum having a card clothing on its circumference, the card clothing for the carding segments comprising a plurality of non-uniformly arranged tips cooperating with the card clothing of the respective drum, said tips being arranged in groups, said groups being arranged in at least two rows lying one after another in a direction of carding and each extending transversally to the direction of carding, each group being comprised of two to six tips located one after another and having a predetermined width, the groups in a first row, as viewed in the direction of carding, being laterally spaced from each other a distance which corresponds to at least three widths of one group of the tips, said groups each having an extension in the direction of carding corresponding to at least two widths of the groups, and the groups of a following row, as viewed in the direction of carding, being laterally offset relative to the groups of a previous row at least a distance corresponding to the width of one group.

4,553,289

APPARATUS FOR PRODUCING A WIDE FIBROUS WEB

Otto Strobl, Birkenhof 23, D-2820 Bremen 70; Harry Blien, Pfortmüller Str. 58, D-6718 Grünstadt, and Wolfgang Uliczka, Landwehrstr. 36, D-2822 Schwanewede, all of Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,248
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242539
Int. Cl.[4] D04H *11/04*
U.S. Cl. 19—161.1 **7 Claims**



1. An apparatus for producing a web whose width exceeds a working width of a web portion being produced by a machine, particularly cards, carding machines and pneumatic web formers, said machine having a number of take-off units arranged in a stack and discharging the web portions in a first direction, said apparatus having a conveyor table for conveying the web in a second direction at a first angle from the first direction, each of the take-off units having a deflector extending at one-half of the first angle to both the first and second directions, said deflectors being positioned along the first direction at a spacing from each other equal to a width of the web portion so that the web portions are deflected into the second direction and placed side-by-side with edges contact on the conveyor table.

4,553,290

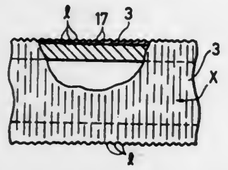
APRON FOR A DRAFT APPARATUS

Hisaaki Kato, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 8, 1984, Ser. No. 577,966
Claims priority, application Japan, Feb. 14, 1983, 58-22531
Int. Cl.[4] D01H *5/86*
U.S. Cl. 19—244 **6 Claims**

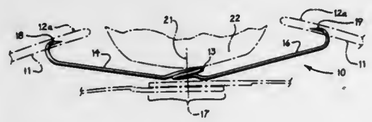
1. An apron for a draft apparatus comprising a front side rubber layer, a reverse side rubber layer adhered to said front

side rubber layer, and core cords interposed between said front and reverse side rubber layers, wherein the ratio of thickness of



said front side rubber layer to the thickness of said reverse side rubber layer is within a range from 3:7 to 1:9.

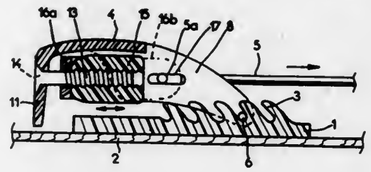
4,553,291
COLLAR FASTENER
Clarence W. Carey, 518 Cresta Vista La., Portola, Calif. 94025
Filed Aug. 27, 1984, Ser. No. 644,357
Int. Cl.⁴ A41D *25/12*
U.S. Cl. 24—55 **1 Claim**



1. A collar fastener for engaging and yieldingly drawing the tapered end portions of a shirt collar toward the shirt front to cause the end portions of the collar to be retained in such position, said fastener comprising a length of resilient wire formed to include a coiled spring intermediate the ends of said length of wire, said length of wire being divided into a pair of elongate arms formed and adapted to be sprung forwardly as viewed in plan from said spring disposed in the region of the collar button of the shirt to cause the free end of each arm to engage the back surface of an associated end portion of the shirt collar, means carried on the free end of each said arm for engaging the back of an associated tapered end portion of the collar to draw the tapered end portions of the collar back toward the shirt front, said means including sharpened points formed on the tips of said arms, the ends of said arms being curled forwardly sufficiently to dispose said tips in substantially confronting relation to each other to permit said tips to enter the back of the collar parallel to the front surface of the collar whereby the tips penetrate only through the back of the collar, said tips lying in a plane substantially parallel to the axis of said coiled spring portion.

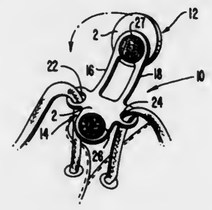
4,553,292
RAPID ATTACHMENT DEVICE FOR SKI BOOTS
Serge Pradier, Alby-sur-Cheran, and Jean-Louis de Marchi, Duingt, both of France, assignors to Etablissements Francois Salomon et Fils, Annecy, France
Filed Mar. 14, 1984, Ser. No. 589,361
Claims priority, application France, Mar. 30, 1983, 83 05212
Int. Cl.⁴ A43B *5/04*
U.S. Cl. 24—70 SK **6 Claims**

1. Rapid attachment device for a ski boot, of the toggle type, with adjustable tightening force, comprising a series of notches (3) constituting a rack (1) fixed to an element to be tightened, and a tightening lever (4) permanently connected by a traction element (5) to a second element to be tightened, said lever comprising a hooking finger (6) for engaging one of said series of notches, depending on the desired degree of tightness, and constituting an articulation axis of said lever, said lever having an element (15) thereon the position of which is longitudinally adjustable in a continuous manner while said hooking finger (6)



remains in engagement with a notch of said rack, and on which said traction element (5) is supported.

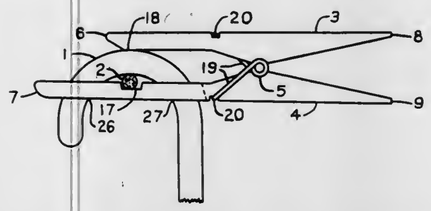
4,553,293
REUSABLE TYING DEVICE
Ronald D. Blum, Roanoke, Va., assignor to Tie-Tite Products, Incorporated, Roanoke, Va.
Filed Oct. 4, 1983, Ser. No. 538,949
Int. Cl.⁴ A43B *11/00*; F16G *11/00*
U.S. Cl. 24—119 **5 Claims**



1. A device for securing tied shoelaces comprising:
(a) a body portion;
(b) a securing member extending from said body portion, said member including means for securing said device to shoelaces;
(c) said body portion and said securing member being connected by spaced flexible connector members of sufficient dimensions to extend over a shoelace knot and impede the knot from untying;
(d) said connector members include two spaced elastic band members spaced to engage the knot from opposing sides while exposing the knot for view;
(e) said device including a rear face and a front face, said rear face of said securing member having first portion of a separable fastener, and said rear face of said body portion having a complementary second portion of a fastener for releasable engagement with said first portion to releasably fasten said body portion to said securing member; and
(f) said fastener being of the hook and loop type.

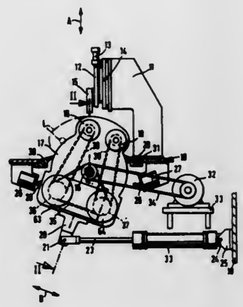
4,553,294
CLIP-TYPE HOOK FASTENING DEVICE
Walter L. Larsen, P.O. Box 18302, Seattle, Wash. 98118
Division of Ser. No. 28,850, Apr. 10, 1979,. This application Mar. 20, 1981, Ser. No. 246,067
Int. Cl.⁴ A41D *27/22*; A44B *13/02*
U.S. Cl. 24—489 **57 Claims**

1. A fastening device for fastening a hook to a generally linear member, to which the hook is hooked, comprising two primary members which are connected together to form a generally lever-type clip which permits generally hinged-type angular relative movement between the primary members; a pair of jaws, one jaw being so combined with each primary member that the two jaws are generally openable with respect to each other as a function of the generally angular relative movement between the primary members, one jaw having a generally slot shaped opening of sufficient width and extending a sufficient distance into the jaw to accomodate at least part of the hook when said fastening device is in its fastening position with respect to the hook and the linear member, the other jaw being without a primarily radially oriented generally slot shaped opening of sufficient size to accomodate the hook; means for biasing the jaws toward a generally closed position; and means, involving the shape of the jaws and their position



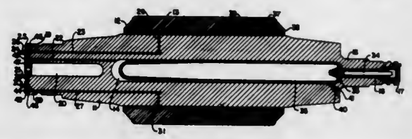
with respect to the primary members, for clasping the hook and the linear member in their hooked-together position with the linear member passing transversely through the jaw region of the fastening device; whereby the fastening device can be put into a fastening position with respect to the hook and the linear member such that said slotted jaw accomodates the hook within its slot shaped opening and the jaws conjointly clasp the hook and the linear member, thereby constraining them to their hooked-together position.

4,553,295
MECHANISM FOR LATHE-WORKING ARTICLES
Hermann Dietrich, Ludwigshafen, Fed. Rep. of Germany, assignor to Ingenieurburo, Hermann Dietrich, Ludwigshafen, Fed. Rep. of Germany
Filed Apr. 20, 1984, Ser. No. 602,433
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314758
Int. Cl.⁴ B21D *51/54*
U.S. Cl. 29—1.32 **14 Claims**



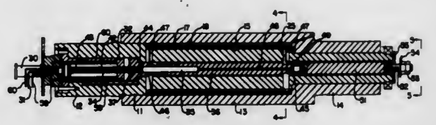
1. Apparatus for manufacture of articles comprising a housing rotatably mounted on a shaft for rotation about an axis, at least two rotatable spindles mounted on said housing for rotation about respective axes, each of said spindles being adapted to hold one of said articles, and actuating means for controlling the rotational position of said housing about said shaft to locate a first of said spindles in a working position for one rotational position of said housing and a second of said spindles in said working position for another rotational position of said housing, wherein said actuating means comprises a piston-cylinder arrangement having one end pivotally attached to said housing and which positions said housing in discrete steps around said shaft.

4,553,296
SELF-CONTAINED INFLATABLE CROWN ROLL
Werner W. Eibe, Pittsburgh, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jun. 9, 1983, Ser. No. 502,873
Int. Cl.⁴ B21B *31/00*
U.S. Cl. 29—113 R **8 Claims**



1. In an inflatable crown roll having a circumferential cavity beneath its working face for receiving a fluid under pressure so as to crown said working face, a fitting in an end of the roll for detachably connecting a high pressure fluid pump therewith, and conduit means within the roll extending between said cavity and said fitting and including a valve operable from the end of said roll, the improvement comprising a reservoir within said roll for containing hydraulic fluid under pressure connected with said cavity by said valve positioned therebetween, the pressure in the reservoir being higher than the pressure in the cavity whereby the pressure in the cavity may be selectively increased from the reservoir by opening of said valve without connection to an external pressure source.

4,553,297
HYDRO-MECHANICAL INFLATABLE CROWN ROLL
Werner W. Eibe, Pittsburgh, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Mar. 29, 1984, Ser. No. 594,798
Int. Cl.⁴ B21B *13/02*
U.S. Cl. 29—113 AD **11 Claims**



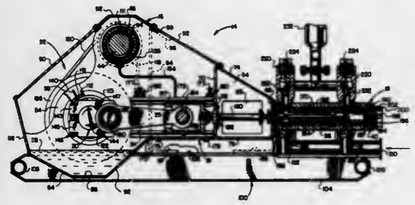
1. A hydro-mechanical inflatable crown rolling mill roll comprising an arbor, a cylindrical shell thereon, an annular cavity between said arbor and said shell, means carried by said arbor for introducing hydraulic fluid under pressure into said cavity to crown said shell, mechanical means positioned in said cavity and movable radially outwardly to increase and decrease the effective diameter of said mechanical means, and actuating means carried by said arbor effective to shift said mechanical means after inflation of the sleeve to an extent sufficient to provide clearance between the mechanical means and the shell, whereby the crown and the stiffness of the roll are varied by adjusting said hydraulic pressure and the radial position of said mechanical means.

4,553,298

METHOD FOR FABRICATING A RECIPROCATING PISTON PUMP

William A. Grable, Box O, Wayne, Okla. 73095

Division of Ser. No. 376,698, May 10, 1982, Pat. No. 4,477,237.
This application Jul. 25, 1984, Ser. No. 634,357
Int. Cl.⁴ B23P *15/00*
U.S. Cl. 29—156.4 R **6 Claims**



1. A method for fabricating a power end frame for a reciprocating piston pump wherein said frame is adapted to support spaced apart bearing means for at least a rotatable eccentric shaft, said method comprising:

providing a fixture including spaced apart support members for locating and supporting a plurality of metal plate members comprising bearing support means of said frame, said fixture further including means for supporting a shaft for locating at least two spaced apart tubular bearing support sleeves in alignment with each other and for being secured to said plate members;

cutting said plurality of plate members to a predetermined shape including openings for receiving said bearing sleeves;

machining said bearing sleeves to a predetermined bore diameter for receiving respective bearings assemblies;

placing said plate members in said fixture and aligning said plate members with respect to each other;

positioning said bearing sleeves in said openings in said plate members and supporting said bearing sleeves with said shaft; and

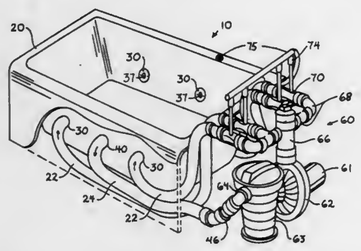
welding said plate members and said bearing sleeves to each other along contiguous surfaces to form said frame.

4,553,299

METHOD FOR INSTALLING A WHIRLPOOL BATH ON AN IN-PLACE BATHTUB

Thomas P. Ebert, 1611 Sheffield Ct., Elgin, Ill. 60120

Division of Ser. No. 291,818, Aug. 10, 1981, Pat. No. 4,419,775.
This application Aug. 12, 1983, Ser. No. 522,531
Int. Cl.⁴ B21D *53/00;* **B21K** *29/00;* **B23P** *15/26*
U.S. Cl. 29—157 R **2 Claims**



1. In a method for installing a whirlpool assembly in a previously installed porcelain tub wherein said tub has an inner wall and an outer wall, the improvement comprising:

(a) providing a pump assembly, at least one flexible inlet pipe, at least one flexible outlet pipe, at least one inlet means, and at least on outlet means;

(b) providing a mounting flange on said inlet means and said outlet means;

(c) securing said flexible inlet pipe to said inlet means, and said flexible outlet pipe to said outlet means;

(d) using said inlet means to mark at least one spot for forming an insert in said tub;

(e) cutting said spot to permit insertion of said inlet means, wherein said cutting is for a porcelain tub, and cutting said spot for said inlet means and said outlet means includes:

(1) drilling a centrally located aperture within said spot with a masonry drill bit having a diameter substantially smaller that the diameter of said spot;

(2) drilling a plurality of small recesses with said masonry drill bit in said tub around said centrally located aperture and substantially tangential to the edge of and interior to said spot;

(3) cutting said spot to permit insertion of said inlet means;

(4) tapping a screw hole on either side of said spot; and

(5) securing said inlet means in said tub by means of screws through said flange into said screw hole;

(f) passing said pipe between said inner wall and said outer wall to said pump assembly, and securing said inlet pipe to said pump assembly;

(g) installing said outlet means in a fashion similar to said inlet means; and

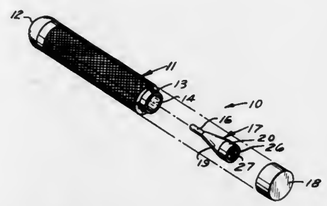
(h) securing an end of said outlet means in an operative fashion to said pump assembly.

4,553,300

POCKET "E"-RING INSTALLATION TOOL

Clayton S. Mancha, 1445 N. Burke, Visalia, Calif. 93291

Filed May 29, 1984, Ser. No. 614,808
Int. Cl.⁴ B23P *19/00*
U.S. Cl. 29—235 **1 Claim**



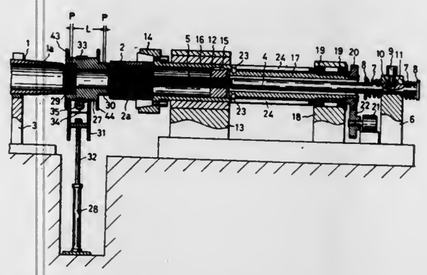
1. A pocket "E"-ring installation tool for injector pump rotor assemblies, comprising, in combination, a cylindrical main body having a rounded first end, a knurled side around said main body, a narrowed neck at an opposite second end, a central opening in said second end having a narrow counterbore within an inward end, a guide pin stored in said opening and in said counterbore, a removable cap fitted on said neck; said guide pin comprising a cylindrical main portion fitted within said opening, a shank portion fitted in said counterbore and a conically tapering portion flush therebetween, a recessed opening in an end of said guide pin main portion and a central projection within said recessed opening, an outward end of said projection being flush with an end face of said main portion.

4,553,301

THREADEDLY FIXING APPARATUS

Seiji Hattori, Nagoya, Japan, assignor to Daidotokushuko Kabushikikaisha, Japan

Filed May 4, 1984, Ser. No. 607,059
Claims priority, application Japan, May 4, 1983, 58-78755; Dec. 29, 1983, 58-248258
Int. Cl.⁴ B23P *19/00*
U.S. Cl. 29—237 **5 Claims**



1. A threaded fixing apparatus including:

(a) a retaining means for retaining a first member having a buttress tapered thread portion;

(b) a retaining means for retaining a second member having a tapered thread portion to be threadedly fitted into the tapered thread portion of said first member;

(c) a gauge having a detecting thread portion threadedly fitted into the tapered thread portion of said first member to detect a helical locus position thereof and a further detecting threaded portion threadedly fitted into the tapered thread portion of said second member to detect a helical locus position thereof; and

(d) a means for relatively turning said first and second members to threadedly mount the tapered thread portions of both the members together in the state wherein the helical locus positions of both the thread portions coincide on the basis of the helical locus positions of said both tapered thread portions detected by said gauge;

(e) said detecting thread portion to be threadedly fitted into the tapered thread portion of said first member being formed such that it may be threadedly fitted into the tapered thread portion of said first member more readily than the case where the tapered thread portion of said second member is threadedly fitted into the tapered thread portion of said first member;

(f) said detecting thread portion to be threadedly fitted onto the tapered thread portion of said second member being formed such that it may be threadedly fitted onto the tapered portion of said second member more readily than the case where the tapered thread portion of said first member is threadedly fitted onto the tapered thread portion of said second member.

4,553,302

INSTALLATION TOOL, TANGLESS HELICALLY COILED INSERT

Frank J. Cosenza, San Pedro, and Albert K. Yamamoto, Huntington Beach, both of Calif., assignors to Rexnord Inc., Brookfield, Wis.

Filed Feb. 21, 1984, Ser. No. 581,837
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—240.5 **4 Claims**

1. A tool for inserting a tangless helically coiled insert in a tapped hole, the helically coiled insert having at least one free end with a recess in the inner thread of the free end, said tool comprising:

a tubular body of substantially circular cross-section, said body including a portion at one end thereof having an aperture therein adapted to receive a tangless helically coiled insert;

a mandrel insertable into said tubular body and adapted to receive the tangless insert for installation in the tapped hole, said mandrel having a portion with a cavity therein and further including,

driving means at one end for applying a torque sufficient to install the insert in a tapped hole,

a threaded portion at an end opposite said driving means and adjacent said body aperture for threading the tangless helically coiled insert thereupon, and



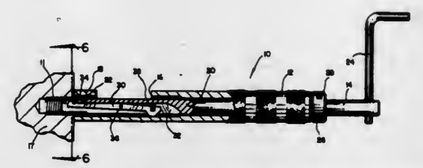
means for engaging said mandrel within the insert for simultaneous movement of said mandrel and the insert, said means including a pivotable pawl having a laterally projecting hook means biased in a first direction and extending longitudinally in said mandrel cavity adjacent said mandrel threaded portion, said pawl having a free end with laterally projecting means thereon for automatically locating said pawl within the insert at the insert recess as said mandrel is rotated in a clockwise direction, with said pawl locating means disengaging automatically form the insert when said mandrel is rotated in a counterclockwise direction, with said pawl free end moving in a direction opposite said first biased direction as a result thereof.

4,553,303

REMOVAL TOOL FOR TANGLESS, HELICALLY COILED INSERT

Albert K. Yamamoto, Huntington Beach, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Filed Feb. 21, 1984, Ser. No. 581,838
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—240.5 **3 Claims**



1. An extraction tool for removing an installed tangless, helically coiled insert having a recess in the inner thread of the first coil at each end, from a tapped hole, said tool comprising:

a tubular body of substantially circular cross-section having a longitudinal bore therethrough;

a mandrel insertable in said tubular body and constructed and arranged to move axially and rotatably in said bore, said mandrel having driving means at one end for moving said mandrel axially and rotatably, a threaded portion at an end opposite said driving means, and a longitudinal cutout at said opposite end; and

a pivotable pawl arranged in said longitudinal cut-out, said pivotable pawl having a laterally projecting hook means adjacent said opposite end of said mandrel for engaging a recess at the trailing end of the insert, said insert recess engaging means being located on the counterclockwise side of the longitudinal centerline of said pivotable pawl, and ramp means, adjacent said recess engaging means and on the clockwise side of the longitudinal centerline of said pivotable pawl, for pivoting the lead end of said pivotable

pawl inwardly upon contact with the trailing end of the insert,

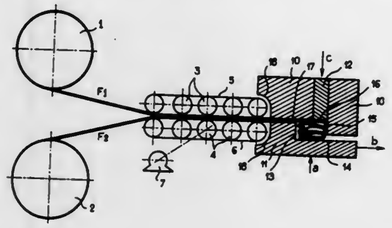
said mandrel further including means for biasing said pawl in a first upward direction, with said biasing means and said pawl being constructed and arranged such that said recess engaging means automatically engages the insert recess when said pawl is inserted into the insert by rotation of said mandrel.

4,553,304

METHOD FOR THE PRODUCTION OF A MULTILAYERED CAPACITOR BLOCK

Daniel Fleuret, Bagnolet, France, assignor to Thomson CSF, Paris, France

Filed May 31, 1983, Ser. No. 499,398
Claims priority, application France, Jun. 4, 1982, 82 09732
Int. Cl.⁴ H01G *4/26*
U.S. Cl. 29—25.42 **12 Claims**



1. A method for the production of a multilayer capacitor block comprising the steps of:

(a) unwinding the feeding, into a cavity, at least one metallized film which forms a succession of alternately insulating and conductive layers comprising laterally offset metallisations;

(b) at least partially filling the cavity with said film, under at least the action of gravity, in such a manner so as to form a stack comprising successive folds along a longitudinal direction and in contact with two sides of the cavity situated in a first lateral direction, the lateral edges of the said metalized film being situated in a second lateral direction;

(c) compressing the stacked successive folds along the longitudinal direction;

(d) compressing the stacked successive folds along the first lateral direction; and

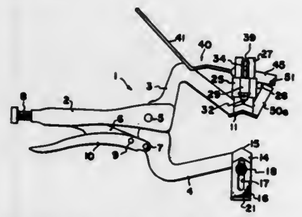
(e) equipping the block with electrical connections.

4,553,305

PIPEFITTER'S SCRIBING AND SPACING TOOL

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77588

Filed Nov. 23, 1983, Ser. No. 554,570
Int. Cl.⁴ B23Q *3/18*
U.S. Cl. 29—272 **27 Claims**



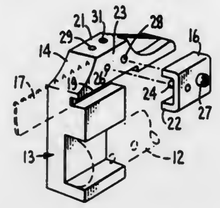
21. A pipefitter's tool adapted for use in joining a pipe and a fitting, said tool comprising clamp means having a pair of jaws movable toward and away from one another for clamping and unclamping a pipe; first scribe means; second scribe means; means mounting each of said scribe means in spaced apart relation for movements toward and away from a pipe clamped between said jaws; means coupling said scribe means to one another for conjoint movement and operationg means connected to said scribe means for effecting movement of the latter.

4,553,306

RECIPROCATING SAW OFFSET BLADE HOLDER

Paul S. Mineck, 2953 Harrison St., San Francisco, Calif. 94110

Filed Nov. 7, 1983, Ser. No. 548,942
Int. Cl.⁴ B23P *17/00*; B27B *11/06*
U.S. Cl. 29—401.1 **3 Claims**



1. In a hand held power drive saw unit having a reciprocating drive member and an adapter unit mountable on said drive member and having an offset portion extending laterally from the drive member and providing a U-shaped clip attachable to said offset portion by a machine screw and formed for securing the end of a saw blade to said offset portion with the saw blade substantially flat with the upper surface of the saw unit, the improvement comprising

forming a groove in a side of said offset portion extending longitudinally of the drive member and adapter to receive one leg of said clip with said clip holding said saw blade against said side of said offset portion and with the teeth of said saw blade aligned with and projecting upwardly past the upper surface of the hand held power drive saw unit whereby said saw blade may be used to make "flush to" cuts,

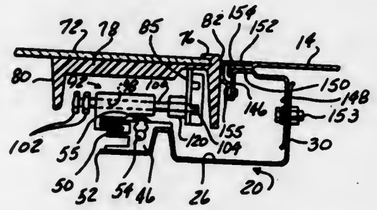
and drilling and tapping an opening in said side of said offset portion for threadably receiving said machine screw when said saw blade is in position for said "flush to" cuts.

4,553,307

METHOD FOR INSTALLING A SLIDING ROOF PANEL ASSEMBLY

Milton C. Kaltz, Allen Park; David C. Garascia, Novi, and Michael E. Kilpinen, Northville, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Jan. 17, 1984, Ser. No. 571,561
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—434 **2 Claims**



1. A method for installing a sliding roof panel movably mounted on a housing on the stationary sliding roof structure of a vehicle having an opening in the sliding roof thereof which is opened and closed by the sliding roof panel comprising the steps of:

fixedly attaching a reinforcement ring having a central aperture with a shape complimentary to the shape of the roof opening to a roof opening defining portion of the housing; and

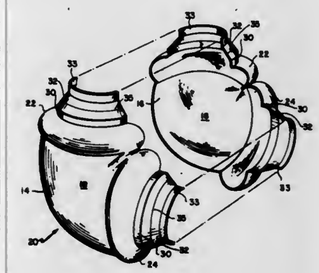
then assembling and fixedly attaching the reinforcement ring from inside the vehicle to the edges of the vehicle roof structure bounding the roof opening.

4,553,308

PIPE FITTING COVER AND METHOD FOR COVERING PIPE FITTINGS

Chris J. Botsolas, St. Petersburg, Fla., assignor to Carol Bostolas, St. Petersburg, Fla.

Filed Sep. 26, 1983, Ser. No. 535,911
Int. Cl.⁴ B23P *11/02*; F16L *9/00, 9/14*
U.S. Cl. 29—450 **20 Claims**



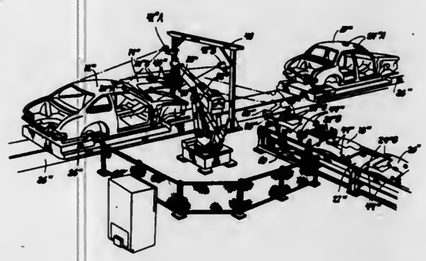
1. A pipe fitting cover for a flanged pipe fitting comprising a resilient body member having a body portion fored to generally conform to the shape of the pipe fitting to be covered and a toroidal protrusion portion unitary with the body portion and extending outwardly from the cover body portion at the location in alignment with each flange on the pipe fitting to be covered each said toroidal protrusion being discrete from any other toroidal protrusion on said pipe fitting cover whereby, each said toroidal protrusion portion can overlap a similarly configured toroidal protrusion portion on an adjacent pipe fitting cover.

4,553,309

ROBOTIC ASSEMBLY OF VEHICLE HEADLINERS

Edward C. Hess, Farmington Hills, and Edward Trevino, Harrison Twp., Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1984, Ser. No. 654,567
Int. Cl.⁴ B67B *7/24*
U.S. Cl. 29—450 **2 Claims**



1. A method of using a robot to install a headliner in a vehicle body on an assembly line wherein both the configuration of the vehicle body and the material and/or color as well as the configuration of the headliner vary and are combined at an assembly station comprising the steps of:

forming all the various vehicle bodies and headliners with common sunshade accommodating holes,

providing an arm of the robot with a fixture having locators corresponding to the sunshade accommodating holes in the vehicle bodies and headliners,

sequentially conveying the vehicle bodies relative to the robot,

coordinating and sequentially conveying the headliners relative to the robot so as to correspond in a prescribed matchup with the vehicles bodies approaching the robot,

having the robot arm pick up, support and hold a preselected headliner by the fixture locators engaging in the sunshade accommodating holes in the headliner,

having the robot arm with the headliner supported thereon enter a preselected headlinerless vehicle body through its windshield opening and extend beneath its ceiling,

having the robot arm with the headliner supported thereon locate and also engage the fixture locators in the sunshade accommodating holes in the vehicle body, and

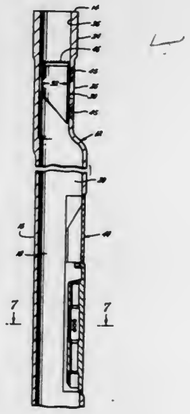
having the robot arm move the supported and located headliner thereon into position against the vehicle body ceiling for affixing thereto.

4,553,310

INTEGRALLY FORMED SIDEPOCKET MANDREL

Francis D. Logan, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Feb. 27, 1984, Ser. No. 584,048
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—517 **22 Claims**



1. The method of making an integral metal sidepocket mandrel having a one-piece body having a main bore and an offset bore and ends and a metal orienting sleeve without requiring the ends to be made separately and circumferentially welded comprising,

forming and shaping both ends of a one-piece tubular metal stock by reducing the ends while leaving a middle section unreduced whereby the middle section forms a main bore and an offset bore, said ends being formed into tubular shapes and being aligned with and forming part of the main bore, at least one of the ends having an internal diameter large enough to receive an orienting sleeve,

moving an orienting sleeve into the main bore through one

of the ends and securing said sleeve in the main bore spaced from one of the ends, and

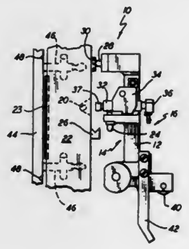
reforming said one end for reducing the internal diameter of said one end to a diameter less than the outside diameter of the sleeve for providing material to form a premium thread thereon.

4,553,311

CHUCK HANDLING DEVICE

Louis J. Medico, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 22, 1983, Ser. No. 564,266
Int. Cl.⁴ B23Q *7/00*; B25B *11/00*; B65G *15/64*
U.S. Cl. 29—559 **7 Claims**



1. In a microlithography system, a method of applying and holding a wafer chuck assembly against an X, Y, θ alignment plate comprising the steps of:

latching a wafer chuck assembly with a chuck handling device while inserting alignment pins carried by the device into corresponding V-like grooves in said chuck assembly to form a rigid unit;

mounting said unit on pins extending from an X, Y, θ alignment plate;

releasing said latching to allow said chuck assembly to fall downwardly a short distance until it rests on said X, Y, θ pins; and

extending two pistons from said chuck handling device to engage said wafer chuck assembly to urge it snugly against said X, Y, θ alignment plate until said chuck assembly and alignment plate are locked together by vacuum means.

4,553,312

DEVICE FOR REMOVING A BAND FROM A SHEET BUNDLE

Wilhelm Mitzel, Neu-Keferloh; Josef Geier, and Karl Leuthold, both of Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,714
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229765
Int. Cl.⁴ B23D *15/04*
U.S. Cl. 29—564.3 **16 Claims**

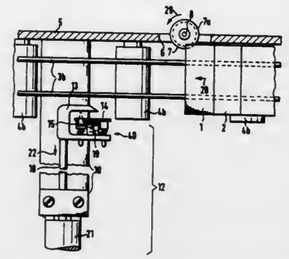
1. A device for removing a band from a bundle of stacked sheets having edges defining opposite side faces of the bundle, the device comprising:

a transport device operable to transport the bundle of sheets past a band-removing device;

a cutting device having a cutting element arranged in a plane parallel to said sheets, the cutting device intersecting one of the side faces and extending into the bundle between the sheets as the bundle is transported; and,

a pull-off device for removing the band when severed;

whereby the cutting element cuts throughout the entire length of the bundle, severing the band wherever disposed



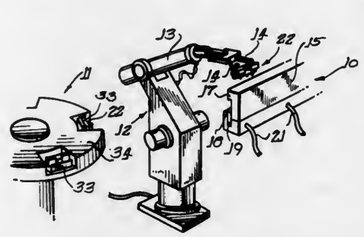
along the side face of the bundle, without damage to the sheets.

4,553,313

SYSTEM TO AUTOMATICALLY CHANGE TOOL BLOCKS USED ON TURNING MACHINES

Rudolph R. Winter, Bloomfield Hills, and Verle V. Propst, Rochester, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 23, 1982, Ser. No. 452,539
Int. Cl.⁴ B23Q *3/157*
U.S. Cl. 29—568 **7 Claims**



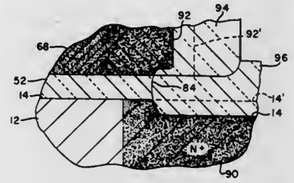
1. A quick change tool block system for use on various types of turning machines, comprising a tool block holder mounted on a turning machine and a generally rectangular tool block adapted to be shifted between said holder and a set-up fixture, means to shift said tool block between said fixture and holder, said holder including a body member having a pair of oppositely disposed parallel horizontal dovetail recesses and a vertical key extending from the upper dovetail, said lower dovetail being vertically reciprocable and said upper dovetail being integral with said body member, means to vertically reciprocate said lower dovetail, and said tool block includes a body member having a rearwardly projecting portion forming a pair of complementary parallel horizontal dovetails cooperating with said dovetail recesses and with a central vertical keyway complementary with said key, said tool block being insertable into said holder in a direction normal to the longitudinal axis of said dovetail recesses with the lower dovetail retracted, said lower dovetail being reciprocated upwardly to lock said tool holder against said upper dovetail recess and key, and a generally cylindrical gripping surface formed at each end of the tool block body member with an upper integral support ledge for each gripping surface, said gripping surfaces and ledges cooperating with a gripping member on said shifting means.

4,553,314

METHOD FOR MAKING A SEMICONDUCTOR DEVICE

Tsiu C. Chan, Carrollton; Chao Mai, and Myint Hswe, both of Dallas, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Division of Ser. No. 351,726, Feb. 24, 1982, abandoned, which is a continuation of Ser. No. 100,606, Dec. 5, 1979, abandoned, which is a division of Ser. No. 2,426, Jan. 10, 1979, abandoned, which is a continuation of Ser. No. 762,398, Jan. 26, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 431,527
Int. Cl.⁴ H01L *21/22*
U.S. Cl. 29—571 **5 Claims**



1. A method for making a portion of a semiconductor device comprising the steps of:

(a) forming an oxide insulating layer on a surface of a semiconductor substrate,

(b) forming a polysilicon layer on a selected portion of the oxide insulating layer,

(c) selectively etching away portions of the oxide insulating layer using the polysilicon layer as a mask, thereby exposing a surface portion of the substrate previously covered by the oxide insulating layer, and thereby incidentally partially undercutting the polysilicon layer by lateral etching of portions of the oxide insulating layer under a peripheral edge of the polysilicon layer such that the depth of the undercutting is equal to or greater than the thickness of the oxide insulating layer,

(d) diffusing dopants into the substrate through the exposed substrate portion, and

(e) exposing the substrate to an oxidizing ambient simultaneously to oxidize both the peripheral edge of the polysilicon layer and the exposed substrate surface portion adjoining the lateral undercut region, such that the lateral undercut region is filled by a substrate oxide component and a peripheral edge polysilicon layer oxide component as both oxide components expand and grow in response to the oxidizing ambient.

4,553,315

N CONTACT COMPENSATION TECHNIQUE

Chris McCarty, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

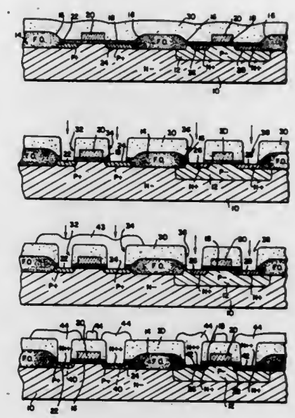
Filed Apr. 5, 1984, Ser. No. 597,060
Int. Cl.⁴ H01L *21/265, 21/28*
U.S. Cl. 29—571 **7 Claims**

1. A method of fabricating contacts to CMOS devices having N and P conductivity type source and drain regions in P and N conductivity type body regions respectively of a substrate, a gate oxide layer and gate layer, a field oxide layer on said substrate adjacent said source and drain regions comprising:

forming a dielectric layer covering said substrate;

removing portions of said dielectric layer to expose contact areas of said source and drain regions;

ion implanting N type impurities into said contact areas of said N type source and drain regions to form a contact region of a shallower depth than said source and drain regions; and



applying a layer of conductor material without intermediate etching and delineating to form contacts and interconnects.

4,553,316

SELF-ALIGNED GATE METHOD FOR MAKING MESFET SEMICONDUCTOR

Theodore W. Houston; Al F. Tasch, Jr., both of Richardson; Henry M. Darley, Plano, all of Tex., and Horng S. Fu, Sunnyvale, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 334,405, Dec. 24, 1981, Pat. No. 4,455,738. This application Mar. 12, 1984, Ser. No. 588,630
Int. Cl.⁴ H01L *21/302, 21/265*
U.S. Cl. 29—571 **2 Claims**

1. A method for fabrication of a MESFET device in which the gate is self-aligned in relation to the source/drain regions of said device, comprising the steps of:

growing a layer of silicon oxide on a silicon substrate of p type conductivity;

depositing a layer of heavily doped polysilicon over said layer of silicon oxide;

depositing a layer of insulating material over said polysilicon;

masking of the area to be the gate region of said device;

etching anisotropically to remove all material down to said silicon substrate;

oxidizing the structure in a low temperature steam environment to form an oxide layer on exposed areas of said silicon substrate except in said gate region and said polysilicon;

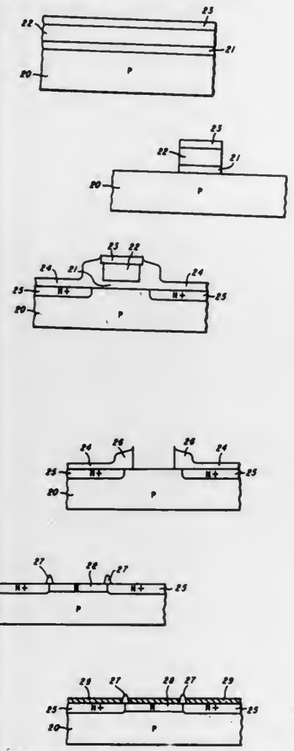
implanting N-type impurity through the oxide grown in the previous step and into the substrate to form N+ source and drain regions;

removing said insulating material over said polysilicon then removing said polysilicon;

etching the structure with an anisotropic plasma etch;

implanting an n type impurity in the gate area between the

remaining vertical sections of oxide to form an active channel for said MESFET device;



depositing a layer of metal over the surface of the structure, and heating to convert the metal to metal silicide where the metal is in contact with said silicon substrate;

etching away metal where not converted to metal silicide.

4,553,317

METHOD OF OBTAINING AN IMPACT IONIZATION COEFFICIENT RATE BY JUNCTION OF DIFFERENT KINDS OF SEMICONDUCTORS

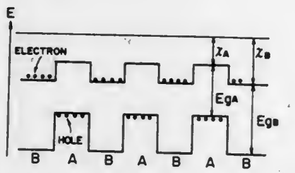
Hiroyuki Sakaki, 174-260, Ohba-cho, Midori-ku, Yokohama-shi, Kanagawa-ken; Tomonori Tanoue, Odawara, and Hidetoshi Nojiri, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Hiroyuki Sakaki, Kanagawa, both of, Japan

Filed Oct. 29, 1982, Ser. No. 437,627

Claims priority, application Japan, Nov. 9, 1981, 56-179438; Nov. 9, 1981, 56-179439

Int. Cl.⁴ H01L *21/20*

U.S. Cl. 29—572 **4 Claims**



1. A method of obtaining an impact ionization coefficient rate, comprising the steps of:

forming a layer of a semiconductor A and a semiconductor B so that the following conditions are satisfied:

$$X_A < X_B,\ X_A + E_{gA} < X_B + E_{gB}$$

wherein X_A is the electron affinity of the semiconductor A, E_{gA} is the forbidden band width of the semiconductor A, X_B is the electron affinity of the semiconductor B and E_{gB} is the forbidden band width of the semiconductor B;

irradiating said layer with light to generate holes and electrons;

separating said holes and electrons by diffusion into the layers of the semiconductors A and B, respectively; and

applying a direct-current electric field in a direction parallel to said layer to accelerate said holes and electrons in said layers of the semiconductors A and B, respectively, thereby causing avalanche multiplication due to impact ionization, said electric field being provided independently of said irradiating light.

4,553,318

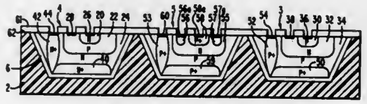
METHOD OF MAKING INTEGRATED PNP AND NPN BIPOLAR TRANSISTORS AND JUNCTION FIELD EFFECT TRANSISTOR

Hosekere S. Chandrasekhar, Whitehouse Station, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 2, 1983, Ser. No. 490,954

Int. Cl.⁴ H01L *21/225*

U.S. Cl. 29—577 C **7 Claims**



1. A method of forming a semiconductor device comprising the steps of:

(a) forming a plurality of spaced apart conductive wells in the surface of a substrate, each of said wells being dielectrically isolated from said substrate, a first of said wells being of first conductivity type material and a second and third of said wells being of a second conductivity type material, each of said wells having a deep diffusion region and a buried layer region in electrical communication therewith;

(b) forming a channel of said first conductivity type material in said second well;

(c) forming a base of said second conductivity type material in said first well;

(d) forming a base of said first conductivity type material in said third well;

(e) forming concurrently a top gate of said second conductivity type material and a bottom gate contact area in said second well, an emitter of said second conductivity type material in said third well, and a base contact area in said first well;

(f) forming an emitter of first conductivity type material in said first well, a source and a drain of first conductivity type material in said second well, and a base contact area in said third well;

(g) forming a layer of platinum: said deep diffusion region, said base contact area, and said emitter of said first well;

said deep diffusion region, said source, said top gate, and said drain in said second well; and

said deep diffusion region, said base contact, and said emitter in said third well;

(h) alloying said platinum layer of step (g) with the surface of said substrate to form platinum silicide; and

(i) forming a plurality of electrical contacts, one on each platinum silicide surface.

4,553,319

METHOD FOR CONNECTING THE ENDS OF STATOR WINDINGS TO THE STATOR SUPPLY TERMINALS

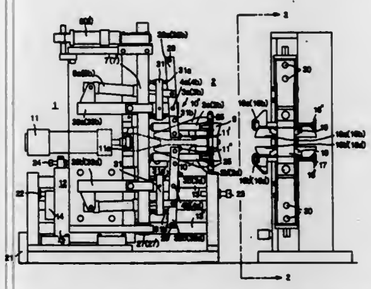
Bruno Fischer, Dietikon, and Angelo Andretta, Urdorf, both of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Division of Ser. No. 341,140, Jan. 20, 1982, Pat. No. 4,428,113. This application Nov. 14, 1983, Ser. No. 551,260

Claims priority, application Switzerland, Jan. 29, 1981, 571/81

Int. Cl.⁴ H02K *15/00*

U.S. Cl. 29—596 **4 Claims**



1. A method for connecting the first and second ends of at least one winding of a wound electrical stator to corresponding first and second stator supply terminals, comprising the steps of:

holding the first and second winding ends of a fully wound stator in respective holding elements of a stator holding means,

moving insertion and clamping means toward said stator holding means with each of a pair of tong gripping means in an initial receiving position and open to receive the respective winding ends,

when said tong gripping means have received the respective winding ends, closing said tong gripping means while the winding ends are maintained under tension by said holding elements,

swinging each closed tong gripping means back away from said stator holding means and laterally inwardly such that the closed ends move toward one another in pairs until each tong gripping means is aligned with the corresponding stator supply terminal and the corresponding winding ends have been inserted therein;

actuating tool means to crimp the stator supply terminals, thereby securing the corresponding winding ends thereto; and

opening and simultaneously swinging said tong gripping means to the receiving positions thereof while retracting said insertion and clamping means to the starting position thereof.

4,553,320

ROTOR FOR A DYNAMO-ELECTRIC MACHINE AND METHOD OF MAKING SAME

Keith C. Bryant-Jeffries; Hugh G. Dickie, and Eric V. Vaughan, all of Eastleigh, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,349

Claims priority, application European Pat. Off., Dec. 30, 1982, 82306986.9

Int. Cl.⁴ H02K *15/10*

U.S. Cl. 29—598 **8 Claims**

1. A method of making a rotor for a dynamo-electric machine, the rotor being of the kind having a plurality of loop coils of rectangular plan and arcuate profile arranged edgewise in a cylindrical cup structure, the method comprising the steps of:

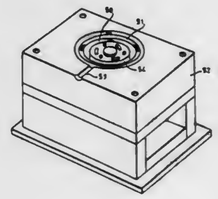
winding the loop coils so that their terminations occur on the same side of the coil;

bonding the turns of each coil together;

providing a mould having an outer cylindrical portion, an inner cylindrical core, a bottom and a removable top;

positioning the coils within and against the inner wall of the outer cylindrical mould portion, the outer cylindrical mould portion having insert portions extending into and coextensive with the central apertures of the coils so that the coils are supported in a cylindrical configuration with gaps between their adjacent edges;

feeding the coil terminations through slots in the outer rim of a discoidal end cap whose outer diameter is generally the same as the inner diameter of the cylindrical coil configuration such that the terminations are outside the end cap;



placing the end cap over the mould outer cylindrical portion and inner core and the cylindrical coil configuration;

placing the mould top over the end cap to close the mould and thereby define the mould cavity completely, the closing of the mould with the top also securing the coil terminations against movement during moulding; and

introducing molten plastics material under pressure into the mould cavity around one edge of the cylindrical coil configuration so that the plastics material penetrates between the coils and around their periphery to encapsulate them and into the slots in the end cap to key the end cap and coils together, thereby forming the rotor with the end cap as an integral part thereof.

4,553,321

METHOD AND APPARATUS FOR THE AUTOMATIC PRODUCTION OF ARMATURES FOR ELECTRIC MOTORS

Siegfried Zihlmann, Wurenlos, and Werner Streiff, Zurich, both of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Filed Jan. 4, 1984, Ser. No. 568,071

Claims priority, application Switzerland, Aug. 22, 1983, 4557/83

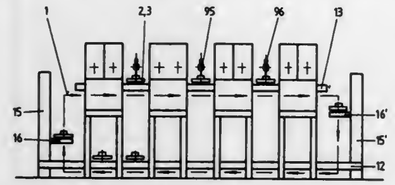
Int. Cl.⁴ H02K *15/09*

U.S. Cl. 29—598 **12 Claims**

1. An apparatus for the automatic production of armatures for electric motors in a cycling system for successively processing said armatures in individual stations independently of each other, the apparatus comprising:

a production line having a revolving conveyor means for transporting at least one workpiece holder along said production line in a direction of transport;

a plurality of processing stations successively located along said production line for successively processing said armature, said plurality of processing stations including an armature loading station for clamping an armature into said at least one workpiece holder, a collector press-on station located successively downstream of said armature loading station for attaching a collector to said armature, a winding station located successively downstream of said collector press-on station for winding wire about said armature, a welding station located successively downstream of said winding station for welding said wire on said armature, an electrical testing station located successively downstream of said welding station for electrically



testing said armature, and an armature discharge station located successively downstream of said electrical testing station for removing said armature from said at least one workpiece holder;

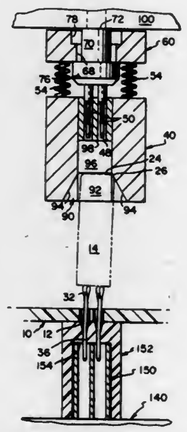
said workpiece holder being transported by the conveyor means to the individual stations, said workpiece holder being arrested and lifted with respect to the conveyor means at each of said plurality of stations, and being secured and connected to the individual station by a coupler device on the workpiece holder, and an actuating device in each of said processing stations which in conjunction with the coupler device causes manipulations of the workpiece holder.

4,553,322

FLOATING LOCATOR HEAD FOR APPLICATION TOOLING

David J. Cappos, Middletown, and Thomas M. Klunk, Dover, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 16, 1984, Ser. No. 610,946
Int. Cl.⁴ B23P *19/00*
U.S. Cl. 29—739 **8 Claims**



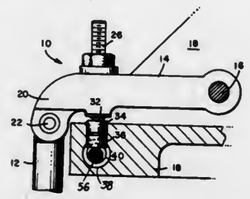
1. A connector insertion tool for mounting to a ram and mass inserting a plurality of posts depending from a connector into a printed circuit board, said tool comprising a body having a top surface and an opposed bottom surface, push-pins extending from said bottom surface, locator slidably mounted on fingers, and spring means effective to urge said locator means away from said body, a recess in the locator means which closely receives the connector therein, the tool further having floatable mounting means to permit lateral float of the tool relative to the ram during the downstroke thereof.

4,553,323

COMPONENT PLACEMENT HEAD CONTROL

William S. Clark, So. Hamilton, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 19, 1983, Ser. No. 563,260
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—741 **9 Claims**



1. An electrical component placement head control for varying the spacing between a component inserting mechanism on the head and the surface of a printed circuit board comprising:

a. an actuator for moving the inserting mechanism toward and away from the board;

b. means to limit the movement of said actuator and thus the movement of the inserting mechanism toward the board;

c. said means including a stop positionable toward and away from said actuator; and

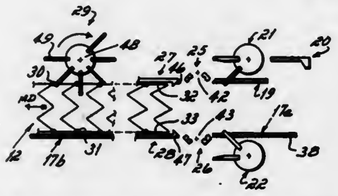
d. said means also including a rotary shaft having an eccentric cam surface that positions said stop upon rotation of said shaft to cause movement of said stop toward and away from said actuator.

4,553,324

COIL SPRING ASSEMBLY MACHINE

Henry Zapletal, Carthage, Mo.; Horst F. Wentzek, and George M. Chembakaffery, both of Kenosha, Wis., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Division of Ser. No. 300,995, Sep. 10, 1981, Pat. No. 4,492,298. This application May 17, 1984, Ser. No. 611,334
Int. Cl.⁴ B23P *19/00*; **B65G** *19/00*
U.S. Cl. 29—822 **4 Claims**



1. A machine for assembling successive coil springs into a coil spring assembly, successive rows of said coil springs being tied together by said machine into said coil spring assembly, said machine comprising

a support platen, said coil spring assembly being positioned on said support platen,

lacing means for tying together successive rows of coil springs,

indexing means for moving a partially assembled spring assembly forwardly one spring row after a newly inserted spring row is tied to the next adjacent row, and

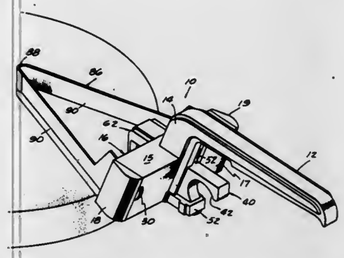
a feed-out wheel operable independently of said indexing means and adapted to move said coil spring assembly along said support platen, said feed-out wheel being operable only after a predetermined number of coil spring rows have been tied together one with the other to form a completed coil spring assembly.

4,553,325

CAKE CUTTER WITH AN ADJUSTABLE BLADE

Edward Allahverdian, 426 Wing St., Ste. 3, Glendale, Calif. 91705

Filed May 21, 1984, Ser. No. 612,575
Int. Cl.⁴ A21C *15/04*
U.S. Cl. 30—114 **3 Claims**



1. In a cake cutter of the type having a housing, a helical screw membr having one side with helixes diverging to the right of center and the other side with helixes diverging to the left of center, and journaled into the housing, a pinion mounted on said helical screw member, a cutting blade having longitudinal sides with ends riding on said helixes, a length limiting plate located in front of said housing, and rack means for moving said longitudinal sides together in conjunction with said pinion and helical screw, the improvement which comprises:

(a) handle means including an inner handle end mounted perpendicularly to the plane of said housing and extending upwardly therefrom, said inner handle end having a slot therein;

(b) trigger means operably connected with said rack means and slidably mounted in said slot; whereby only one hand of an operator is needed to cut and securely remove a piece of cake.

4,553,326

CHAIN SAW BRAKING SYSTEM

James F. West, Rancho Palos Verdes, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

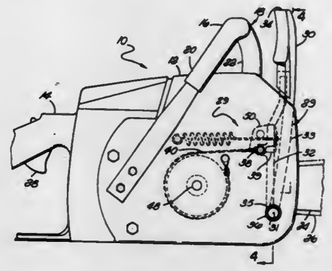
Continuation of Ser. No. 457,909, Jan. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 376,810, May 10, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 587,843
Int. Cl.⁴ B60T *13/04*; **B27B** *17/02*
U.S. Cl. 30—381 **30 Claims**

1. In a chain saw having housing means, manual gripping handle means mounted on said housing means, motor means carried by said housing means, a cutting chain, support bar means projecting forwardly from said housing means for supporting said cutting chain for endless movement, rotation transmitting means drivingly connected to said motor means for driving said cutting chain, and safety braking means for stopping said cutting chain, said safety braking means comprising

(a) sensing arm means, pivotally mounted on said housing means, for sensing the approach of an operator's limb to said cutting chain, said sensing arm means having a protrusion mounted thereon, a portion of said sensing arm means being located in front of said gripping handle means during operation of said chain saw and arranged to be moved from a first position to a second position;

(b) a flexible brake band having a first end and a second end, said first end connected to said housing means and said second end connected to said protrusion in a manner such that when said sensing arm means moves from said first position to said second position said flexible band brake is moved from a position free of said rotation transmitting means to a frictional braking relationship with said rotation transmitting means;

(c) a latch mounted on said housing means, said latch rotatable about an axis of rotation and receivingly engaging



said protrusion of said sensing arm means, said latch adapted to be moved from a first latch position to a second latch position when said sensing arm means moves from said first position to said second position; and

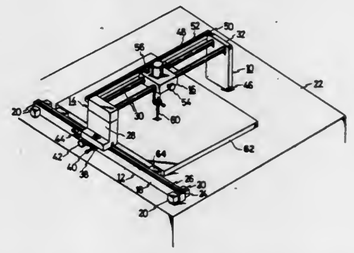
(d) biasing means having a first end and a second end, said first end connected to said housing means at a fixed point and said second end connected to said latch at a fixed point, for cooperation with said latch and said sensing arm means to yieldably urge aid sensing arm means to said first position when said sensing arm means is in said first position and to yieldably urge said sensing arm means to said second position when said sensing arm means is in said second position.

4,553,327

RULER DEVICE FOR USE IN MARKING-OFF

Yosio Watanabe, 389-4, Kuroda Fujinomiya-shi, Shizuoka-ken, Japan

Filed Apr. 2, 1982, Ser. No. 595,802
Claims priority, application Japan, Apr. 15, 1983, 58-65234
Int. Cl.⁴ B43L *13/02*
U.S. Cl. 33—32 B **3 Claims**



1. A ruler device for use in marking-off a workpiece comprising:

(a) a reference rail which is a straight iron bar having a rectangular cross section and a top surface relieved to form a concave groove;

(b) a coupling device mounted upon said reference rail,

comprising a body having a top portion, a middle portion and a base portion, said base portion bearing rollers located so as to contact the top surface and both side surfaces of said reference rail;

(c) support rails inserted into the top portion of said coupling device orthogonal to the reference rail, and parallel to each other;

(d) a scale bar, inserted into the top portion of said coupling device and parallel to said rails, being of rectangular cross section and bearing a concave groove upon its upper surface;

(e) a support member attached at or near one of its end to the ends of the support rails and scale bar opposite said coupling device, lying in the same plane as said coupling device, having at an end opposite to the attachment to said support rails one or more rollers and being of a length such that, when the reference rail rests upon a plane surface, the support rails will be held parallel to said plane surface;

(f) a shifting table slidably mounted upon said support rails, having a tool mount essentially in the center and bearing a device for moving said table in the plane of said support rails;

(g) magnetic tapes fitted into the grooves in the top portions of said reference rail and said scale bar, said magnetic tapes bearing identifiable markings at regular intervals across their lengths;

(h) identifying devices mounted upon the base portion of said coupling device and upon said shifting table, said identifying devices being suitable to determine the location of said coupling device and said shifting table relative to said magnetic tape portions; and

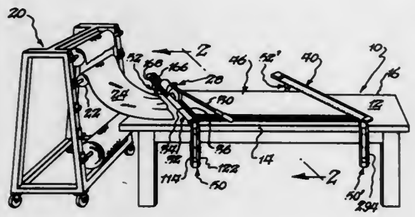
(i) magnets which attach to said reference rail and hold said reference rail firmly to a ferrous metal surface.

4,553,328

GUIDED LIFTING APPARATUS

John H. Buscher, East Amherst, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,634
Int. Cl.⁴ A41H *3/00*
U.S. Cl. 33—32 G **9 Claims**



1. Apparatus for lifting an elongated bar extending across a substantially planar supporting surface of a structure and extending between opposite sides of the structure, said apparatus holding the elongated bar in an initial position disposed substantially parallel to the supporting surface and operable to lift the elongated bar in a direction away from the supporting surface, said lifting apparatus comprising:

(a) first and second supporting frame means on said opposite sides of the structure and adapted for connection to the structure in fixed relation to the supporting surface;

(b) first and second elongated lifting members each associated with a corresponding one of said supporting frame means and connected at one end thereof to the elongated bar at a corresponding end of the bar and each lifting member being disposed for longitudinal reciprocal movement in a direction substantially perpendicular to the plane of the supporting surface;

(c) first and second guiding means carried by corresponding ones of said first and second supporting frame means and in operative guiding contact with corresponding ones of said lifting members for guiding said lifting elements during said longitudinal reciprocal movement thereof;

(d) said lifting members and said guiding means having co-operating structures allowing pivotal movement of said lifting members about the longitudinal axes thereof to allow adjustment of the angle at which the bar extends across the supporting surface;

(e) first and second weight balancing means operatively connected to corresponding ones of said first and second lifting members and carried by corresponding ones of said first and second supporting frame means for applying to each of said lifting members a force substantially equal and opposite to the weight associated with the elongated bar acting on said lifting members; and

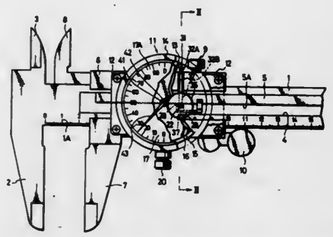
(f) force transmitting and equalizing means operatively connected to each of said supporting frame means and operatively associated with each of said lifting members and with the elongated bar whereby in response to application of lifting force to one of said lifting members, both of said lifting members act in unison to lift the elongated bar in a direction away from the supporting surface and in a manner maintaining the elongated bar in a plane substantially parallel to the plane of the supporting surface.

4,553,329

DIAL INDICATION TYPE MEASURING INSTRUMENT

Kenju Uchino, and Tomoo Sakai, both of Utsunomiya, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,781
Claims priority, application Japan, Feb. 9, 1983, 58-20420
Int. Cl.⁴ G01B *3/20, 5/02*
U.S. Cl. 33—147 T **16 Claims**



1. A dial indication type measuring instrument comprising:

a main body provided therein with a rack;

a slider having a dial indicating portion and movably supported on said main body;

biasing means for biasing a driving pinion for driving a needle in said dial indicating portion toward said rack to bring said driving pinion into meshing engagement with said rack; and

releasing means for releasing said driving pinion from said rack against the biasing force of said biasing means and having a control end being disposed outwardly of said slider.

4,553,330

MICROMETER

Mineo Yamauchi, and Yoshimitu Karahashi, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,767
Claims priority, application Japan, Dec. 20, 1982, 57-223582; Dec. 20, 1982, 57-192757[U]
Int. Cl.⁴ G01B *3/18*
U.S. Cl. 33—164 R **16 Claims**

1. A micrometer, comprising:

a main body;

a thimble rotatably supported on said main body;

a first spindle supported for rotation on said main body in response to the rotation of said thimble, said first spindle means being threadably coupled to said main body in a manner to be movable in the axial direction thereof upon rotation thereof;

a second spindle locked against rotation and axially movably



supported on said main body on the same axis as said first spindle; and

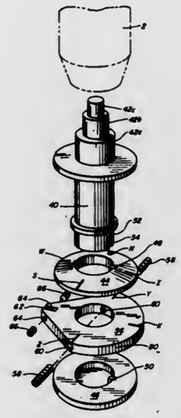
connecting means for connecting said first and second spindles integrally and inseparably to each other in a condition where no axial force is applied to the spindles in either direction, and when said first spindle is rotated and moved in the axial direction thereof, only the axial force of said first spindle is transmitted to said second spindle.

4,553,331

CENTERING APPARATUS AND METHOD

Ameen Salaam, 7558 S. Essex Ave., Chicago, Ill. 60649

Filed Apr. 14, 1983, Ser. No. 484,932
Int. Cl.⁴ G01B *5/25*
U.S. Cl. 33—172 D **13 Claims**



1. A centering device for use with a machine tool having a drive member with a center axis and having a work platform in opposed relation to said drive member for accommodating a work piece, said centering device being adapted for attachment to said drive member and comprising

a stationary member;

a moveable member positioned adjacent to said stationary member, said moveable member having indicator means for contacting a work piece and being moveable throughout a substantially 360 degree arc in a plane substantially perpendicular to the center axis of said drive member;

fixing means for alternatively permitting or preventing movement of said moveable member relative to said stationary member; and,

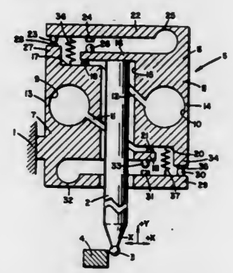
locating means on said moveable member and on said stationary member for indicating the relative position of said moveable member to said stationary member in each quadrant of said arc for permitting determination of the center point of the work piece.

4,553,332

PROBE FOR CHECKING LINEAR DIMENSIONS

Guido Golinelli, Bologna, and Carlo Dall'Aglio, Volta Reno Di Argelato, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Oct. 18, 1983, Ser. No. 543,011
Claims priority, application Italy, Oct. 18, 1982, 3563 A/82
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—561 **13 Claims**



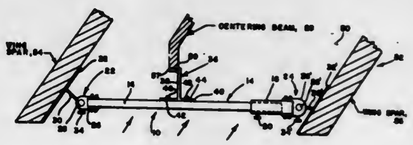
1. A probe for checking linear dimensions, like dimensions of mechanical pieces, comprising support means, an arm movable with respect to the support means and carrying at an end feeler means adapted for touching a piece to be checked, the movable arm defining a longitudinal geometrical axis, connection means for connecting the arm to the support means for allowing the displacement of the feeler means with respect to the support means along two opposite directions, and detection means associated with the arm and the connection means for detecting said displacement, wherein said connection means include an integral member with a first portion fixed to the movable arm, a second portion fixed to the support means and an intermediate portion with two sections of smaller thickness adapted for defining two parallel and distinct axes of mutual rotation of the first and second portion, the detection means including a first pair of elements with a first element coupled to the first portion and a second element coupled to the intermediate portion and a second pair of elements with a third element coupled to the second portion and a fourth element coupled to the intermediate portion.

4,553,333

SYSTEM FOR PRODUCING PRECISION MEASUREMENTS OF WING RIBS

Jeffrey L. Shurtliff, 1669 N. 2800 W., Clinton, Utah 84015

Filed Aug. 14, 1984, Ser. No. 640,637
Int. Cl.⁴ G01B *5/14*
U.S. Cl. 33—180 R **16 Claims**



1. An interior angle measuring device comprising:

an adjustable elongated support bar;

means adjustably connected to each end of said support bar for conforming to the interior angles of the sides of a cavity formed within an object in order to determine said angles;

means adjustably mounted on said support bar for determining the position of said support bar relative to said sides of said cavity, said position determining means including a T-shaped component having a base and an outstanding

element protruding therefrom for engaging a side of a preselected element situated intermediate said sides of said cavity, said base being adjustably mounted on said support bar; and

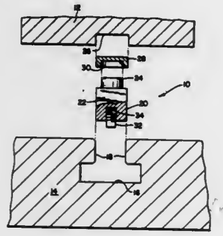
means operably associated with said adjustably support bar, said adjustably angle determining means and said adjustably position determining means for locking said support bar, said angle determining means and position determining means in place.

4,553,334

UNIVERSAL DOWEL PIN SYSTEM

Edwin H. Fell, Pensacola, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1984, Ser. No. 576,680
Int. Cl.⁴ G01B *3/00*
U.S. Cl. 33—181 R **20 Claims**



1. A universal dowel pin system for properly aligning, by means of any one of a plurality of different dowel pins, any one of a plurality of different workpiece fixtures with respect to any one of a plurality of different machine tool tables in connection with which it is desired to employ said any one of said plurality of different workpiece fixtures, comprising:

slot means defined within said any one of said plurality of different machine tool tables, the width dimension of said slot means defined within said any one of said plurality of different machine tool tables being singularly specific to said any one of said plurality of different machine tool tables and different from the width dimension of said slot means defined within other ones of said plurality of different machine tool tables;

first bore means defined within said any one of said plurality of different workpiece fixtures, the diametrical extent of said first bore means defined within said any one of said plurality of different workpiece fixtures being of the same standardized dimensional value within all of said different workpiece fixtures; and

each one of said plurality of different dowel pins having a first section, the width dimension of which substantially corresponds to said singularly specific width dimension of said any one of said plurality of different machine tool table slot means for permitting disposition of a particular corresponding one of said dowel pins within said corresponding slot means of said any one of said plurality of different machine tool tables, and a second section having a diametrical extent which has a dimensional value which is substantially the same as said standardized dimensional value of said first bore means defined within said any one of said plurality of different workpiece fixtures so as to be capable of operatively interfacing with all of said different workpiece fixtures,

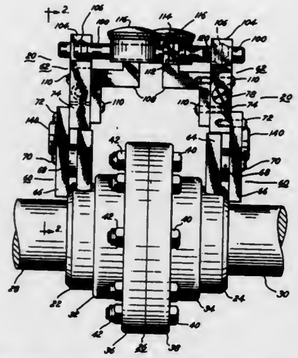
whereby once a particular one of said plurality of different dowel pins is disposed within said corresponding one of said plurality of different machine tool tables, any one of said plurality of different workpiece fixtures may be readily utilized in conjunction with said any one of said plurality of different machine tool tables in a properly aligned manner.

4,553,335

SHAFT ALIGNMENT DEVICE

Joseph T. Woyton, Mauldin, S.C., assignor to Reliance Electric Company, Greenville, S.C.

Filed Jul. 16, 1984, Ser. No. 630,982
Int. Cl.⁴ G01B *3/30*
U.S. Cl. 33—181 R **31 Claims**



1. An alignment device for use in axially aligning first and second rotatable elements, comprising:

a. a first magnetic base portion for mounting on the first rotatable element;

b. a second magnetic base portion for mounting on the second rotatable element;

c. first and second bracket members secured to said first and second base portions, respectively;

d. first and second pivotally mounted swivel blocks disposed in said respective bracket members;

e. a first extension means projecting from said first swivel block to said second bracket member for sensing the position of said second rotatable element;

f. a second extension means projecting from said second swivel block to said first bracket member for sensing the position of said first rotatable element; and

g. at least one measurement device selectively mounted on either of said bracket members for detecting the degree of deflection of each of said swivel blocks and hence the position of said rotatable elements relative to one another.

4,553,336

LATCH FACE TEMPLATE FOR A PORTABLE ROUTER

Felix C. Ponce, 978 S. Westmoreland Ave., Los Angeles, Calif. 90006

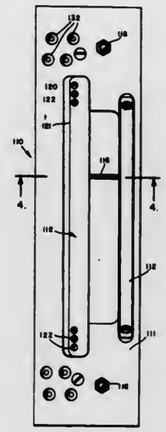
Filed May 16, 1983, Ser. No. 494,855
Int. Cl.⁴ B27F *5/12*
U.S. Cl. 33—197 **4 Claims**

1. A latch face template for use in combination with a hand-held router in order to guide the hand-held router in cutting an opening for a latch face in the side of a door, said latch face template comprising:

a. a rectangular base having a top surface and a bottom surface and also having a rectangular slot;

b. width varying means for varying the width of said rectangular slot, mechanically coupled to said rectangular base;

c. a guide stopping means for controlling the length of the opening for the latch face, said guide stopping means being mechanically coupled to said rectangular base; and



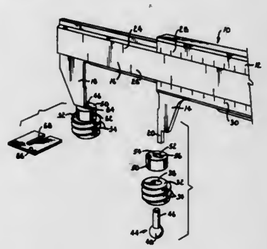
d. position varying means for varying the position of said latch face template on the side of the door, mechanically coupled to said rectangular base.

4,553,337

THREAD GAUGE FOR MEASURING THREAD PITCH DIAMETERS

Albert L. Brewster, R.R. 2, Box 190A, Pleasant Hill, Mo. 64080

Filed Jan. 6, 1984, Ser. No. 568,837
Int. Cl.⁴ G01B *3/40*
U.S. Cl. 33—199 R **17 Claims**



1. A thread gauge device attachable to a measuring instrument having a pair of blades for use in measuring the pitch diameter of a threaded part, said device comprising:

a pair of anvils each presenting external threads having substantially the same pitch as the threads on the threaded part;

a stem for each anvil;

a ball and socket connection between each stem and the corresponding anvil, said anvils being rotatable about said connections so that each anvil can become skewed on its stem to permit the external threads on the anvils to mate in direct mating contact with the threads on the threaded part when the anvils are applied to the part for measurement of the pitch diameter thereof;

means for connecting said stems to the blades of the measuring instrument to mount each anvil at a predetermined location relative to the corresponding blade for accurate measurement of the pitch diameter of the threaded part; and

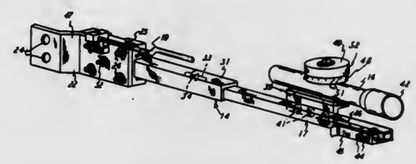
means for spacing each connecting means away from the corresponding anvil by a distance equal to one-half the pitch of the threaded part.

4,553,338

ARCHERY BOW ADJUSTABLE SCOPE MOUNT

Gary J. LeBeau, 2411 - 90th St., Sturtevant, Wis. 53177

Filed Sep. 10, 1984, Ser. No. 648,576
Int. Cl.⁴ F41G *1/00*
U.S. Cl. 33—265 **8 Claims**



1. In an archery bow adjustable scope mount having a bow and an archery string attached thereto and having an arm with one end supported from said bow and a scope mounted on the other end of said arm, the improvement comprising an adjustable member adjustably mounted on said bow for adjustable movement in the plane of said bow and there being fastening means for securing said adjustable member in adjusted positions on said bow, said arm being pivotally mounted on said adjustable member for swinging movement in the plane of said bow for selectively positioning said arm substantially parallel to said bow, for storage, and also transverse to said bow where said scope is available for sighting use adjacent the archer's eye when the archer has drawn said string in normal use, said arm and said adjustable member having a stop operative therebetween for locating the pivoted position of said arm on said adjustable member when said arm is pivoted to the transverse position, said adjustable member being adjustably mounted on said bow for selectively positioning said scope along said plane and thereby accommodate different size archers.

4,553,339

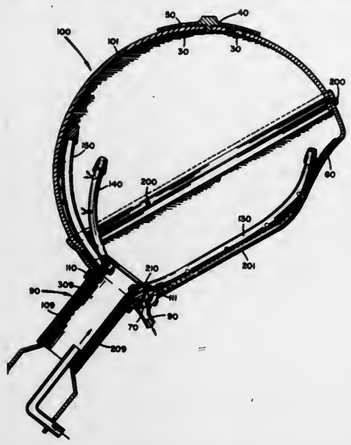
APPARATUS FOR GENERATING A CONTROLLABLE STEAM AND OZONE MIXTURE AND HAIR-DRYER FOR UNIFORMLY DISTRIBUTING SAID MIXTURE ON HAIR

Giuseppe Rigo, Corso Europa 675/7, 16148-Genova, Italy

Filed Aug. 9, 1983, Ser. No. 521,565
Claims priority, application Italy, Aug. 9, 1982, 12609 A/82; Oct. 21, 1982, 12641 A/82
Int. Cl.⁴ A45D *21/00*
U.S. Cl. 34—99 **1 Claim**

1. A bonnet type hair-dryer for the treatment of hair by mixture of steam, air and ozone at different percentages of the mixture components which hair-dryer comprises a hemispherical bowl and means for supplying said mixture to the inside of the bowl and for spreading it over the user's scalp which means consist of a connector through which the mixture is fed into the bowl at the user's nape and of a plurality of tubes disposed as rays which branch from said connector and extend along the bowl inner surface at a short distance therefrom, each tube being provided with a series of regularly spaced nozzles adapted for directing said mixture towards the bowl inner surface, said bowl at its top being provided with an aeration

means having an adjustable opening comprising a crown of holes through the bowl and a rotatable disk provided with a



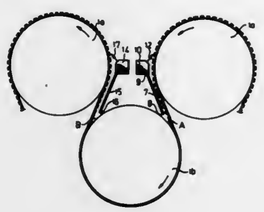
crown of holes concentric and identical to said crown of holes of the bowl.

4,553,340

SEALING DEVICE IN A CYLINDER DRIER

Rolf Petersson, Eneryda, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed May 17, 1984, Ser. No. 611,143
Claims priority, application Sweden, May 30, 1983, 8303025
Int. Cl.⁴ F26B *13/08*
U.S. Cl. 34—114 **14 Claims**



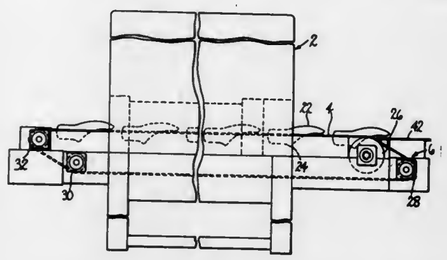
1. A sealing device in a cylinder drier for drying a paper web, intended for incorporation in a paper machine and including a plurality of cylinders having cylindrical surfaces arranged in two substantially parallel rows, the paper web being taken in a serpentine path during drying, while being carried in a transport direction by an endless porous Fourdrinier wire, the latter being adapted to press the paper web against the cylindrical surfaces in one row of cylinders and being situated between the paper web and the cylindrical surfaces in the other row, there being means provided to prevent the paper web from lifting from the wire due to pressure differences on either side of the web when it is taken between the cylinders, characterized in that said means comprises to shielding members which are located in a space restricted by the wire and an intermediate cylindrical surface on that cylinder which the wire and the web come onto and leave, said shielding members facing the wire and extending substantially in parallel with and close to the wire and substantially over the entire width of the web, and that each shielding member has a free end portion and extends into a nip area between the wire and the intermediate cylinder, the nip area between the wire and the intermediate cylinder where the wire comes into contact with the intermediate cylinder being an excess pressure nip and the nip area between the wire and the intermediate cylinder where the wire lifts off the intermediate cylinder being a sub-pressure nip, the opposite end portion of each shielding member being connected to a blowing box which is provided with openings for blowing air jets against the wire, the air jets being directed away from the shielding member, and in that the free end portion of one of said shielding members is situated within the nip area for the excess pressure nip where the wire and the web come onto the intermediate cylinder and the air jets from the corresponding blowing box are directed generally opposite the transport direction of the web, whereas the end portion of the other shielding member is situated within the nip area for the sub-pressure nip where the wire and the web leave the same cylinder, whereby the air jets from the corresponding blowing box are directed generally with the transport direction of the web.

4,553,341

APPARATUS FOR THE HEAT TREATMENT OF LASTED SHOE UPPERS

Raymond Hanson, Rearsby, and Malcolm Tillyard, Leicester, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Aug. 8, 1984, Ser. No. 638,961
Claims priority, application United Kingdom, Aug. 10, 1983, 8321496
Int. Cl.⁴ F26B *17/00*
U.S. Cl. 34—236 **17 Claims**



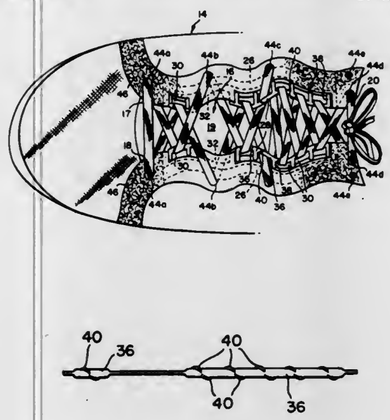
1. Apparatus for treating lasted shoe uppers, comprising a treatment station, a movable conveyor belt and drive means therefor, said belt being adapted to progressively present portions of lasted shoe uppers to the treatment station, and support means for the belt, wherein the conveyor belt contains a row of slots having a long dimension which extends in the direction of movement of said conveyor belt, each slot being so dimensioned that a lasted shoe upper can be supported bottom up by the conveyor belt with its last cone projecting into the slot, and further wherein the support means is such that the belt is supported adjacent the path of movement of the slots by physical engagement while remaining physically unsupported beneath said path of movement of the slots.

4,553,342

ARTICLE OF FOOTWEAR WITH AN ADJUSTABLE WIDTH, ADJUSTABLE TENSION CLOSURE SYSTEM

Thomas Derderian, Exeter, and Daniel J. Richard, Portsmouth, both of N.H., assignors to Nike, Inc., Beaverton, Oreg.

Filed Apr. 8, 1983, Ser. No. 483,254
Int. Cl.⁴ A43B *5/00*; A43C *5/00*
U.S. Cl. 36—97 **17 Claims**



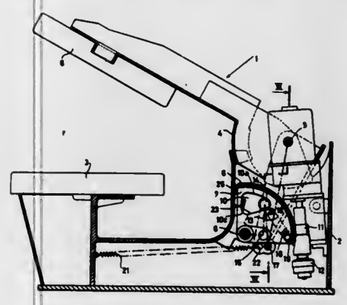
1. A closure element, for attachment along the tongue opening of an article of footwear to receive and guide shoelaces of a lacing system, comprising:
a plurality of shoelace encircling members adapted to be attached along the edges of the tongue opening, said shoelace encircling members being sized larger than the cross-section of the shoelace to permit the shoelace to pass freely therethrough; and
a spiral edge formed on an outer surface of each of said shoelace encircling members for guiding a shoelace threaded through said shoelace encircling member in a generally upwardly inclined direction of the tongue.

4,553,343

AUTOMATIC IRONING PRESS

Marco Primati, Cinisello Balsamo, and Leonardo Calderini, Monza, both of Italy, assignors to Stabilimento Industriale Srl, Monza, Italy

Filed Jul. 2, 1984, Ser. No. 626,717
Claims priority, application Italy, Jul. 13, 1983, 22046 A/83
Int. Cl.⁴ D06F *71/04*
U.S. Cl. 38—33 **8 Claims**



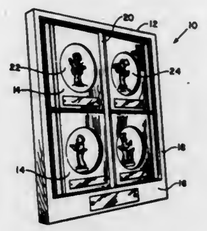
1. An automatic ironing press comprising:
a bedplate;
a first ironing plate fastened to said bedplate;
a pressing arm, having a first end and a second end, mounted onto said bedplate so as to rotate said first end between an opened or raised position with respect to said first ironing plate and a closed or thereupon superimposed position;
a second ironing plate pivotally fastened to the first end of the pressing arm;
means for the controlled heating of the material undergoing the ironing;
driving means for supplying a driving force to move said pressing arm between the two positions of said first end;
sensing means for the control of the operation of said driving means; and
force transmitting means for transmitting force from said driving means to said pressing arm to move said pressing arm between the two positions of said first end, said force transmitting means applying a predetermined closing force to said arm when said first end is in said closed position, said force transmitting means comprising first and second connecting rods pivoted to each other to form a toggle joint, said toggle joint including a moveable pin adapted to operate said sensing means, the free end of said first connecting rod being pivotally connected to a guide means for moving said free end of said first connecting rod along a predetermined pathway, said guide means being operably connected to said driving means, the free end of said second connecting rod being pivotally connected to the second end of said pressing arm, and spring means connected to said guide means for applying a force to said moveable pin.

4,553,344

MULTIFRAME APPARATUS

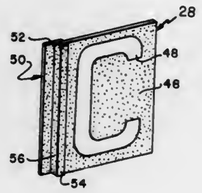
Gene L. Rubin, 216 Sanhican Dr., Trenton, N.J. 08618; Anthony H. Filipowicz, 838 Park Ave., Trenton, N.J. 08629, and Frank Valenza, 771 N. Clinton, Trenton, N.J. 08638

Filed Apr. 9, 1984, Ser. No. 598,049
Int. Cl.⁴ A47G *1/00*
U.S. Cl. 40—152 **10 Claims**



1. A frame apparatus comprising:
a plurality of subframes for displaying items;
a groove means on the periphery of said subframes;
a main frame for surrounding and supporting said subframes;
a hole in the back of said main frame;
a first rib means on the interior edge of said main frame for engaging said groove means in said subframes;
a locking means for holding said subframes in position in said main frame;
a second rib means on said locking means for engaging the groove means of said subframes;
an aperture means in said main frame for sliding said locking means into said main frame;
a keeper means for securing said locking means in said main frame after said locking means has been inserted into said aperture means,
wherein said keeper means comprises a screw means which is screwable into said locking means through said hole in the back of said main frame.

4,553,345
DISPLAY LETTER MOUNTING AND METHOD THEREFOR
John R. Bercier, Elmhurst; Thomas C. Cieslowski, Villa Park; Gary E. Delaquila, Glen Ellyn; James W. Leone, Elmhurst, and Paul H. Mauersberger, Melrose Park, all of Ill., assignors to Wagner Zip-Change Inc., Chicago, Ill.
Filed Jun. 8, 1983, Ser. No. 502,281
Int. Cl.⁴ G09F *13/04*
U.S. Cl. 40—576 **6 Claims**



1. In a sign having a plurality of alphanumeric characters of different lateral dimensions, said sign including a generally planar front portion and a plurality of vertically spaced, generally horizontally oriented, parallel support members mounted therein, wherein adjacent support members include respective facing recessed track portions extending the length thereof, a method for displaying said characters comprising:

fabricating a plurality of flat, unitary, generally rectangular panels of different widths having a translucent portion and an opaque portion of a first color surrounding said translucent portion so as to define an alphanumeric character integral with and in the plane of said panel, wherein the width of each panel is determined by the lateral dimension of the alphanumeric character defined thereon;

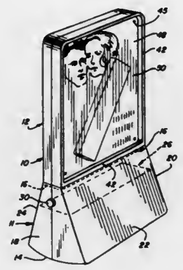
forming a plurality of h-shaped partitions of said first color, each of said partitions including generally parallel forward and aft members, with said forward member wider than said aft member, and an interconnecting member generally perpendicular to said forward and aft members and coupled to one end of said aft member and to an intermediate portion of said forward member and wherein that portion of said partition comprised of the immediately adjacent surfaces of said forward, aft and interconnecting members is adapted for secure positioning on a single lateral edge of a respective panel in spaced relation from an alphanumeric character thereon;

securely affixing one of said partitions to a lateral edge of a respective panel;

inserting the combination of said panel and partition affixed thereto into the facing recessed track portions of adjacent support members wherein each of said panels and attached partitions is securely maintained in position in a front portion of said sign in a generally planar, aligned array with a forward portion of each of said partitions engaging a panel immediately adjacent to the panel to which it is affixed in an overlapping manner; and

positioning a background screen of a second color in high contrast with said first color immediately aft of said panels wherein said background screen is visible from the front of said sign through the translucent portions of said panels so as to provide high definition of said alphanumeric characters but is not visible between immediately adjacent panels where said partitions are positioned.

4,553,346
DISPLAY DEVICE
Kenneth A. Glasener, Golf, Ill., assignor to Dynagraphic Merchandising Corp., Chicago, Ill.
Filed Jul. 5, 1983, Ser. No. 510,633
Int. Cl.⁴ G09F *7/00*
U.S. Cl. 40—602 **1 Claim**



1. In a self-righting display device, the combination of a self-righting hollow base, shaped to provide an elongated rocking body with a laterally elongated, convex, lowermost rocking wall, a laterally elongated, flat, rectangular upper wall spaced opposite the convex rocking wall, said upper wall having one pair of opposed end edges and a pair of opposed side edges, the end edges being transverse to the side edges; and four upright side walls, each side wall extending from one edge of the laterally elongated upper wall to an edge of the convex rocking wall, to provide a first pair of parallel, spaced, upright end walls of partially frustro-conical shape, as seen in elevation, and a second pair of side walls that are outwardly inclined from an elongated edge of the upper wall to an elongated edge of the convex rocking wall, and the lateral ends of each side wall being integral with an edge of an end wall to provide a hollow six-sided base for the self-righting display device, said six sides of said laterally elongated six-sided base bounding a hollow chamber that is adapted to receive and hold therein a flowable ballast material to provide a substantial weight within the base;

the base being formed of plastic to provide a lightweight body;

one upright wall of the base having a selectively openable and closeable aperture provided therein, through which a flowable ballast may be introduced into the hollow chamber of the base;

a rigid display panel means that is provided separable from said base, but is adapted to be easily assembled on the base, in the field, to be supported on the base, said display panel means providing a bottom edge of a size and shape to abut only the upper wall of the base;

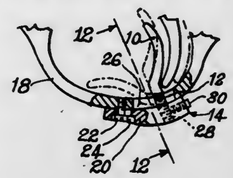
the upper wall of the base having an upstanding laterally elongated tongue thereon; and

the lower edge of said rigid display panel means having a single non-circular socket, generally congruent with said tongue, for receiving thereinto, in telescoping cooperation said upstanding laterally elongated tongue of the base, to provide a structurally sound interconnection between said base and said rigid display panel means.

4,553,347
GUN TRIGGER ACTUATOR
Francis J. Jackson, 2555 Sweetwater Springs Blvd., Spring Valley, Calif. 92077
Filed Jun. 25, 1984, Ser. No. 624,052
Int. Cl.⁴ F41C *19/00, 19/02*
U.S. Cl. 42—69 R **14 Claims**

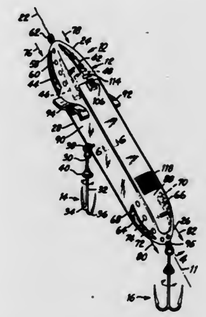
1. For a gun having a trigger having a firing mode, and a gun body including a trigger guard passing at least partially around said trigger, a trigger actuator for reducing the pulling force required to fire the gun comprising:

(a) a lever apparatus pivoted to said trigger guard at a pivot point adjacent the tip of said trigger and extending upward forwardly of said trigger but close enough to same that a trigger finger can be operatively inserted in front of said lever apparatus clear of said trigger guard;



(b) said lever apparatus being shaped, pivoted, and positioned with respect to said trigger such that said lever apparatus can be pivoted forwardly out of the way of said trigger in a passive mode, or alternatively flipped rearwardly into a fire-ready mode in which a lower portion of said lever apparatus rests against the tip of said trigger without actuating same, and then being pullable into a firing mode in which the lever apparatus is pulled further back to actuate said trigger and fire said gun.

4,553,348
FISHING LURE
Raymond M. Cooper, 53 Hamilton St., Allendale, N.J. 07401
Filed Mar. 2, 1984, Ser. No. 585,507
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.06 **9 Claims**



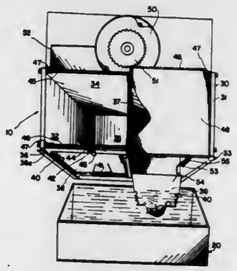
1. A fishing lure, for containing bait which can be seen and smelled by fish from the exterior thereof, comprising:

a container having a leading end portion for connection to a fishing line and for inflow of water and having a trailing end portion for outflow of the water and having a cavity for holding the bait and having a center portion with a sliding door for inserting the bait into the cavity;

said sliding door having a locking device, said locking device including a first end portion, said first end portion including a groove with an abutment, said center portion including a cooperating surface for coacting with said groove and abutment to retain said sliding door in a locked position, said first end portion including a flexible portion disposed adjacent said locking device, whereby a downward force on said flexible portion causes said abutment to move down and out from engagement with said cooperating surface for unlocking the door; and

at least one swivel hook having an upper portion for connection to the container and having a lower portion with at least one barbed extension for catching a fish and having a swivel connection connecting the lower portion to the upper portion.

4,553,349
MOUSETRAP
Jen-Fa Tsai, No. 41, Si-Wei St., San Chung City, Taipei Hsien, Taiwan
Filed Aug. 31, 1983, Ser. No. 528,180
Int. Cl.⁴ A01M *23/06*
U.S. Cl. 43—70 **10 Claims**



1. A mousetrap for trapping and drowning mice, said mousetrap comprising

an upwardly open tank for containing liquid,

a housing removably mounted on top of said liquid-containing tank, said housing including opposite side walls, a top wall, an openable rear wall, an interior partition wall, and a floor, said housing having a front end which is open, said interior partition wall extending from said floor to said top wall and from said rear wall to said open front end so as to divide said housing into two identical trap chambers, and said floor including two pivotable drop sections located near said open front end and a two upwardly open bait containers located near said rear wall, one of said drop sections and one of said bait containers being located at the bottom of a respective trap chamber,

two slide rods mounted between said opposite side walls of said housing at said open front end thereof, each slide rod having a coiled spring positioned therearound at its opposite ends,

a gate slidingly mounted on said slide rods to be horizontally movable for covering the portion of the open front end of said housing forming the opening into one or the other of said trap chambers, said gate including an upper edge with teeth therealong,

an electric motor mounted on the top of said housing, said electric motor including a cog wheel which engages the teeth of said gate for horizontally moving said gate, and

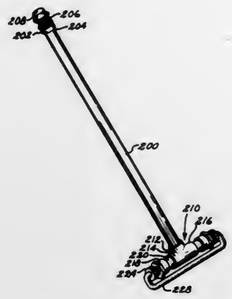
a microswitch with associated sensor located in each of said trap chambers, each microswitch being connected to said electric motor, such that when a mouse enters the trap chamber which is not covered by said gate to get to the bait in the bait container and contacts said sensor, the associated microswitch will send a signal to said electric motor to cause it to move said gate to cover the opening of the trap chamber in which the mouse is located, the drop section thereafter pivoting to cause the mouse to drop into said water tank to drown, the other trap chamber being concurrently opened for trapping and drowing another mouse.

4,553,350

METHOD AND APPARATUS FOR APPLYING CHEMICALS TO WEED AND PLANTS

James H. Hardy, P.O. Box 259, Rt. 2, and James E. Roberson, 220 Bates St., both of Batesville, Miss. 38606

Continuation-in-part of Ser. No. 945,875, Sep. 26, 1978, Pat. No. 4,187,638. This application Dec. 11, 1979, Ser. No. 102,532
The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.
Int. Cl.[4] A01N *5/00*
U.S. Cl. 47—1.5 **8 Claims**



1. Apparatus for applying a chemical to plants comprising
a reservoir comprising an elongated hollow body having an interior and an exterior, and means for closing each end of the body;
said reservoir having a first opening and a second opening spaced from said first opening, said openings being in opposite ends of said reservoir and generally axially aligned with each other;
wick means for applying the chemical to plants and comprising a rope wick having opposite ends thereof in fluid communication respectively with said reservoir, through said openings, and having an exposed portion between said ends extending along the outside of said body;
seal means for peripherally sealing said wick with respect to said reservoir at a first location between said exposed portion and one of said ends of the wick;
said means for peripherally sealing said wick with respect to said reservoir at a second location between said exposed portion and the other of said ends of the wick; and
additional means for containing the chemical and connected to reservoir for supplying the chemical to the reservoir.

4,553,351

METHOD OF TREATING A SOIL

R. Edgar Guay, Sillery, Canada, assignor to Ministere de l'Energie et des Ressources, Quebec, Canada

Filed Mar. 8, 1983, Ser. No. 473,253
Claims priority, application Canada, Jul. 21, 1982, 407735
Int. Cl.[4] A01B *79/00;* **A01G** *1/00*
U.S. Cl. 47—58 **6 Claims**

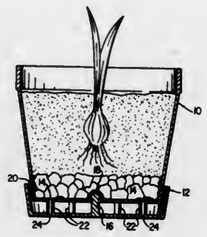
1. In a method of treating a soil by surface composting, particularly for maintaining or increasing the percentage of organic matter in the soil, said method being of the type wherein the soil to be treated is first plowed, then spread with a fresh organic matter and thereafter harrowed to incorporate the organic matter into the soil at a shallow depth, the improvements wherein:
a layer of shredded forest residual products selected from a class consisting of wood chips and shredded brushwood is uniformly spread over the surface of said plowed soil;
an effective amount of liquid manure is spred uniformly over the shredded forest residual products after they have been spread over the soil but before the soil is harrowed; and
the amount of liquid manure uniformly spread over the shredded forest residual products is sufficient to obtain a mixture having an homogeneous carbon to nitrogen ratio not exceeding 30:1 whereby harrowing said shredded forest residual products in admixture with said liquid manure into the soil to said shallow depth causes decomposition of the admixed forest residual products and manure concomitant to the growing of a crop.

4,553,352

PLANT CONTAINER FOR DRAINING MOISTURE FROM THE SOIL

Bert R. Powell, Jacksonville, and Albert L. Collins, Frankston, both of Tex., assignors to Texas Processed Plastics, Inc., Jacksonville, Tex.

Filed Feb. 10, 1984, Ser. No. 579,032
Int. Cl.[4] A01G *9/02*
U.S. Cl. 47—71 **10 Claims**



1. A plant container for containing soil and plants, comprising:
a main container for containing the soil and plants and having a plurality of drainage orifices disposed in the bottom thereof;
a reservoir tray disposed under said main container for receiving fluids passing through said orifices, said reservoir tray spaced a predetermined distance from said orifices;
means for selective fluid communication of said orifices to the exterior of said reservoir tray to facilitate flushing of sediments from the soil;
said fluid communication means comprises a plurality of conduit members connected to said reservoir tray, said reservoir tray moveable with respect to said main container with each of said conduit members mating with one of said orifices such that selective movement of said reservoir tray aligns each of said conduit members with a respective one of said orifices to allow the fluid to flow therethrough to the exterior of said reservoir tray.

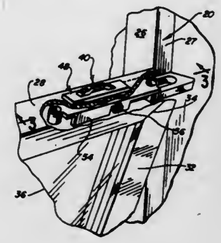
4,553,353

LATCH FOR PIVOTAL SASH WINDOW

Harold Simpson, Chicago, Ill., assignor to Ashland Products Company, Chicago, Ill.

Filed Apr. 20, 1984, Ser. No. 602,386
Int. Cl.[4] E05D *15/22*
U.S. Cl. 49—161 **7 Claims**

1. In a pivotal-type window sash adapted for installation in the master jamb frame of a double-hung window assembly having opposed, vertically extending guide rails to enable vertical reciprocal sliding movement of the sash in the master jamb frame while cooperatively engaged with the guide rails, the sash having a header, a base and a pair of stiles cooperatively connected together at adjacent extremities thereof to form a miter-jointed, rectangular sash frame; a latch mechanism adapted to be operatively installed internally of the sash frame to said header, albeit manually operable from externally of the sash frame for releasing the latch mechanism to permit pivotal movement of the window sash, said latch mechanism comprising:
A. a housing having a planar upper wall, a depending boss formation at opposite ends of said wall having a bore therein opening to the upper surface of said planar wall, and opposing said wall formations depending from said planar wall along opposite longitudinal edges of the planar wall, a pair of said side wall formations having flange formations at the extremities thereof;
B. a latching bolt slidably installed in said housing between said side wall formation supported on said flange formations below said planar wall, said bolt having an end segment protruding beyond an end of said housing for engaging in a guide rail for releasably locking the said frame against pivotal movement relative to the master jamb frame, the bolt being installed under spring tension normally urging said end segment into locking position relative to a guide rail;



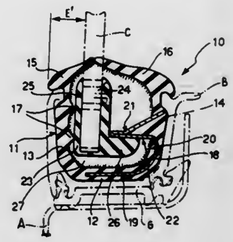
C. a control member having depending post means connected through said planar wall to said latch bolt for manually sliding the bolt against said spring tension for retracting said end segment from a guide rail;
D. said housing adapted to be secured to an interior surface of said header by fastener means extending through the header into said bores of the boss formations and said end segment of the latch bolt extending through a passageway in a stile into operative engagement with a guide rail;
E. said control member adapted to be connected to the latch bolt externally of the header by means of said post means extending through the header, the control member being slidable on the header for releasing the latch bolt.

4,553,354

GUIDE DEVICE FOR SLIDING WINDOWS OF MOTOR VEHICLES AND A METHOD FOR ITS MANUFACTURE

Mario Barbero, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed May 25, 1984, Ser. No. 614,100
Claims priority, application Italy, May 26, 1983, 67588 A/83
Int. Cl.[4] E05D *15/16;* **E06B** *7/16*
U.S. Cl. 49—431 **2 Claims**



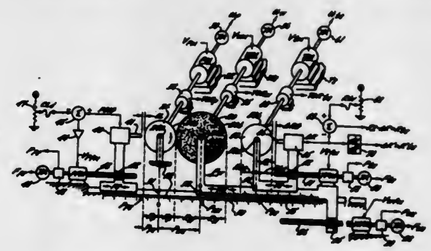
1. A guide device for sliding windows of motor vehicles, comprising a channel-shaped weather strip fixed to the motor vehicle body along one side of the window and having two side walls and a base wall, a rigid core, and a pair of converging lips which cooperate with opposite surfaces of the glass, and a runner fixed to an edge of the glass and cooperating slidingly with the rigid core of said weather strip,
wherein the improvement consists in:
said rigid core being at least partially embedded in the body of said weather strip and having first and second limbs which extend respectively in correspondence with the base wall of said weather strip and that side wall of the weather strip facing inwardly of the motor vehicle;
said second limb having an appendage which faces inwardly of the weather strip and as its free end aligned approximately with the longitudinal median plane of the weather strip;
said lips of the weather strip converging at zone which lies in a plane intermediate the said longitudinal median plane and that side wall of the weather strip facing outwardly of the motor vehicle, and
said runner being L-shaped and including a first arm connected to the glass and a second arm cooperating slidingly with the surface of said appendage facing said first limb of the core, whereby the first arm of said runner cooperates slidingly with the side wall of the weather strip facing outwardly of the vehicle.

4,553,355

GRINDING CONTROL METHODS AND APPARATUS

Roderick L. Smith, Rockford, Ill., assignor to Energy-Adaptive Grinding, Inc., Rockford, Ill.

Division of Ser. No. 249,192, Mar. 30, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,194
Int. Cl.[4] B24B *49/18*
U.S. Cl. 51—165.87 **78 Claims**



1. The method of grinding the work surface of a workpiece with a rotationally driven grinding wheel, said method comprising
(a) feeding the grinding wheel face relative to the work surface and with relative rubbing contact to create grinding action,
(b) simultaneously with procedure (a) feeding the operative surface of a conditioning element relative to the wheel face and with relative rubbing contact to create dressing/truing action which reduces the wheel radius at a rate greater than such reduction rate caused by the grinding action, and
(c) conjointly controlling and varying the relative feed rate and the relative surface velocity of said truing/dressing action to vary and maintain the condition of the wheel face.

4,553,356

RAINWATER GUTTER SEALING ARRANGEMENT

Kenneth V. Pepper, Elkhart Lake, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

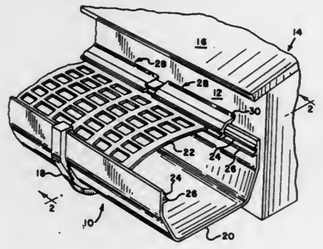
Filed Mar. 8, 1984, Ser. No. 587,705
Int. Cl.[4] E04D *13/06*
U.S. Cl. 52—11 **5 Claims**

1. A sealing arrangement for a rainwater gutter positioned

generally adjacent to an associated supporting surface of a structure, wherein the gutter includes at least one rib on the inwardly facing surface of an upper edge portion thereof, the sealing arrangement comprising:

elongated, unitary sealing means comprising a single extrusion adapted to span a gap between the gutter and the supporting surface,

said sealing means comprising means for joining said sealing means to the upper edge portion of the gutter including a generally downwardly opening groove for receiving the gutter edge portion, and means for retaining the gutter edge portion in said receiving groove comprising retaining rib means extending generally into said groove for



coacting with the gutter rib to urge said groove open and thereby effect a snap-fit of said sealing means to said upper edge portion,

said sealing means further comprising sealing lip means extending integrally from said joining means for sealingly engaging the supporting surface to substantially prevent water from passing between the gutter and the associated supporting surface,

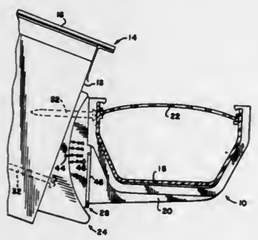
said sealing means further comprising means for holding an associated screen in a position which generally spans the gutter including a pair of screen ribs provided on said joining means which together define a screen groove opening generally inwardly of the gutter.

4,553,357

ADJUSTABLE RAINWATER GUTTER MOUNTING ARRANGEMENT

Kenneth V. Pepper, Elkhart Lake, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Mar. 8, 1984, Ser. No. 587,451
Int. Cl.⁴ E04D *13/00*
U.S. Cl. 52—12 **5 Claims**



1. A mounting arrangement for adjustably mounting a rainwater gutter on an associated supporting surface, comprising:

adjustable mounting means adapted for positioning generally between the gutter and the supporting surface, said mounting means being configured for maintaining the gutter in any one of a plurality of angular dispositions with respect to the supporting surface, whereby the gutter can be mounted in a generally horizontal disposition when the supporting surface is disposed at an angle to the vertical,

said mounting means comprising a base portion configured to abut the supporting surface, and a pad portion configured to mate with and abut said base portion in any one of a plurality of relative angular positions, said pad portion being separate from said gutter,

said base portion and said pad portion respectively defining generally arcuate, complemental mating surfaces configured for abutting engagement in said plurality of relative angular positions of said base and pad portions, said mating surface of said base portion being outwardly facing relative to said supporting surface, said mating surface of said pad portion being inwardly facing relative to said supporting surface, whereby said pad portion of said mounting means is movable in a direction toward said base portion and the supporting surface to bring said mating surfaces into abutting engagement,

said base and pad portions comprising interengaging means including tooth means provided on the mating surface of one of said base and pad portions engageable with the other of said base and pad portions,

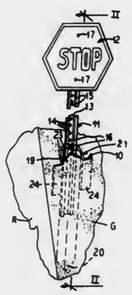
said mounting arrangement further comprising bracket means configured to abut said pad portion and to receive the gutter, and fastener means configured to extend through said bracket means, said pad portion, and said base portion into the associated supporting surface, said base portion defining an elongated opening for receiving said fastener therethrough in any one of said plurality of relative angular positions of said base and pad portions.

4,553,358

POST ANCHOR

Robert F. Deike, Cheyenne, Wyo., assignor to Construction Robotics, Inc., Chicago, Ill.

Filed Sep. 6, 1984, Ser. No. 648,039
Int. Cl.⁴ E02D *5/74*
U.S. Cl. 52—98 **14 Claims**



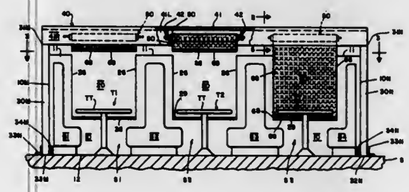
1. A ground anchor for channel highway sign posts of the type having a web and side legs which comprises an angle leg having sides and an apex corner with a leading end for driving into the ground and a trailing end, an upright fin forming shroud strip embracing the apex corner and sides at the trailing end of the leg secured to the ends of the sides forming a V-shaped socket for receiving a channel post with the ends of the legs of the channel post bottomed on the sides, and a compression member in the socket bottomed on the strip pressing the legs of the channel post against the sides causing the legs of the post to spread apart and be placed under tension as they are locked in the socket.

4,553,359

CONVERTIBLE RESTAURANT SEATING

Robert S. Potter, 661 N. 50th St., Omaha, Nebr. 68132

Filed Sep. 21, 1983, Ser. No. 534,482
Int. Cl.⁴ E04H *3/00*
U.S. Cl. 52—173 R **3 Claims**



1. In a restaurant environment including at least one row of plural seating stations extending uprightly from restaurant flooring and consecutively along a longitudinal-axis, said row being laterally delineated by leftward and rightward flooring aisles having a finite lateral-width therebetween, respective seating stations comprising three laterally extending components supported upon said flooring and including a pair of facing bench means and an intervening table with horizontal tabletop, the improvement wherein every one of said respective seating stations is individually convertible into selectable laterally extending widths of full and partial lateral-width whereby a seating station might be alternatively employed for a larger dining group utilizing full lateral-width and both aisles or two smaller dining groups utilizing closed-off subparts of the finite lateral-width and a single aisle, and said convertible restaurant seating comprising:

A. stationary partition means extending uprightly from the restaurant flooring and along a vertical-plane located substantially halfway between said flooring aisles whereby said partition means divides the benches means and tabletop components of every seating station into substantially equal leftward and righward laterally extending seating zones, said partition means having a longitudinally extending and fixed elevation upper-edge overlying the tabletops, and said partition means in lateral registry with every seating station at the tabletop component being provided with a cutout view-way extending downwardly from the partition upper-edge, each said partition view-way having a pair of parallel vertical-edges and a horizontal base-edge located below the tabletop;

B. a longitudinally extending and fixed elevation beam of inverted-U cross-sectional shape maintained in overlying relationship to all of said partition view-ways; and

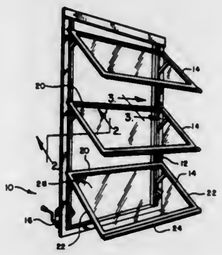
C. individually actuatable closure means for every one of the partition view-ways whereby individual seating stations are convertible by said closure means between full lateral-width for a larger dining group and two closed-off subparts of said lateral-width for two smaller dining groups, each said closure means comprising a longitudinally extending roller carried within said beam and overlying a partition view-way, said roller being convolutely wrapped with a flexible non-transparent sheeting material that may be temporarily downwardly withdrawn from the roller to close-off the partition view-way therebelow, and the sheeting in temporarily downwardly withdrawn condition comprising a pair of parallel vertical-borders lying contiguously along the view-way vertical-edges and further comprising a horizontal leadward-border lying contiguously along and including fastener means for removable attachment to the partition view-way base-edge.

4,553,360

AWNING TYPE WINDOW FRAME FOR INSTALLING EITHER RIGID GLAZING PANE OR FLEXIBLE GLAZING SHEET

Charles D. Colombo, 1238 Forsythe Dr., North Fort Myers, Fla. 33903

Filed Jul. 18, 1983, Ser. No. 514,527
Int. Cl.⁴ E04B *1/00;* **A47H** *13/00*
U.S. Cl. 52—202 **21 Claims**



1. An awning window frame adapted alternately to support a rigid glazing pane and to cooperate with at least one spline to support a flexible glazing sheet, said frame comprising:

a generally C-shaped upper frame member defining an upper support shelf and an upper sealing lip, spaced from and overlying the upper support shelf;

two generally Z-shaped side frame members, each defining a respective side support shelf and a respective side sealing lip;

a generally Z-shaped lower frame member defining a lower support shelf and a lower sealing lip;

said side frame members secured to the upper and lower frame members to surround a central opening, such that the side support shelves are aligned with the upper and lower support shelves to form a perimeter shelf adapted to contact and suport a perimeter portion of said rigid glazing pane, and the lower sealing lip is aligned with the side sealing lips to form a perimeter sealing lip, extending around outside portions of the side and lower frame members, adapted to seal the side and lower frame members to an adjacent structure;

each of said frame members further comprising means for defining a channel extending parallel to the respective glazing shelf such that said channels extend substantially around the perimeter shelf, each of said channels sized to receive and engage said at least one spline and a peripheral portion of the flexible glazing sheet to secure said flexible glazing sheet to the frame members, each of said channels defining a spline-retaining wall extending transversely to the respective glazing shelf to prevent movement of the spline toward the central opening.

4,553,361

TIERED DRAIN CHANNEL FOR EXTRUDED DOOR INSERT

James L. Ralph, Shoreview, Minn., assignor to Cole Sewell Corporation, St. Paul, Minn.

Filed Jul. 5, 1984, Ser. No. 627,825
Int. Cl.⁴ E06B *7/14, 3/46*
U.S. Cl. 52—209 **8 Claims**

1. An extruded channel frame member forming a core insert for a door structure, comprising

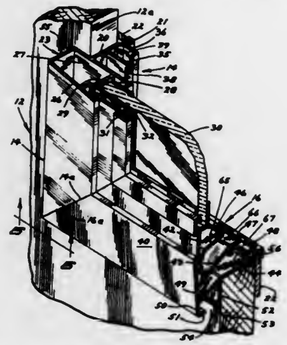
a substantially rectangular frame member having the facing portion thereof projecting outwardly of said door structure,

the bottom segment of said frame member having a plurality of vertically spaced tiers therein extending inwardly of said frame from the inner side of said facing portion,

said tiers having their inner edge portions and their end portions in stepped relation,

a sash receiving track formed between said facing portion and the inner edge of the uppermost of said tiers,

sash receiving tracks formed within the vertical spacing between adjacent stepped pairs of said edge portions,



vertical drain passages formed between said stepped end portions of said tiers and the respective adjacent vertical end walls of said frame member,

an open bottom channel depending from the lowermost of said tiers, and

drainage holes to the atmosphere through said channels formed between the ends of said last mentioned tier and said adjacent end walls.

4,553,362

PREFABRICATED BUILDING UNITS

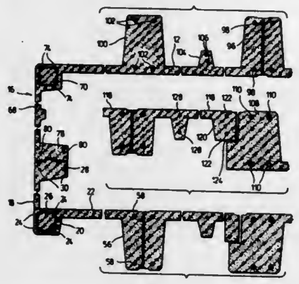
Victor Riley, Mississauga, Canada, assignor to Imperial Oil Limited, Toronto, Canada

Filed Jan. 17, 1983, Ser. No. 458,392

Claims priority, application Canada, Jan. 19, 1982, 394414

Int. Cl.⁴ E04H *1/00*; E04B *1/04*

U.S. Cl. 52—236.3 **11 Claims**



1. A prefabricated building unit comprising an integrally moulded body of fibre-reinforced concrete, said body having a wall portion, a beam portion extending along the top of the wall portion, and a roof portion extending from the beam portion perpendicularly to the wall portion at the top thereof, said beam portion being reinforced by reinforcing bars extending therealong and an elongated reinforcing member extending helically around the reinforcing bars to minimize the moment of the roof portion.

4,553,363

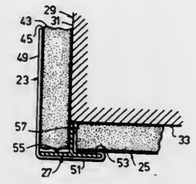
OUTSIDE WALLBOARD CORNER CONSTRUCTION AND EDGING MEMBER FOR SAID CORNERS

Roger N. Weinar, 19 Parkside Ave., Hamburg, N.Y. 14075

Filed Sep. 23, 1982, Ser. No. 421,826

Int. Cl.⁴ E04B *1/00*; E04C *3/30*

U.S. Cl. 52—288 **9 Claims**



1. An outside longitudinal corner construction of wallboard panels which comprises a longitudinally extending framing member having first and second surfaces at about a right angle to each other and extending in the direction of the corner, a pair of wallboard panels, each having core portions covered by cover fabrics or sheets, and an edging member which extends longitudinally in the direction of the framing member and is held to it, directly or indirectly, along its length, said edging member being essentially T-shaped in cross-section or having a part thereof which is essentially T-shaped in cross-section, with a post section and a cross-bar section, said post section or an extension of it being held directly or indirectly to the framing member, a first part of the cross-bar extending from the post in a direction a distance from the first surface of the framing member about the thickness of a wallboard and a second part of the cross-bar extending in an opposite direction from the post, with both cross-bar sections being at a distance from the second surface of the framing member or an extension of the plane thereof about equal to a wallboard thickness plus a wallboard cover thickness, the first wallboard panel being held to the first surface of the framing member and near or against the first part of the edging member cross-bar, with a cover fabric or sheet thereof, which extends beyond said wallboard and said cross-bar, as a flap, being wrapped about the cross-bar, and with the second wallboard panel having a side thereof positioned between the second cross-bar and the second framing member surface and adjacent the edging member post, and holding the cover fabric or sheet of the first wallboard panel in position between the second cross-bar part and the second wallboard panel.

4,553,364

WINDOW SASH AND FRAME MOLDED OF FIBROUS MATERIAL

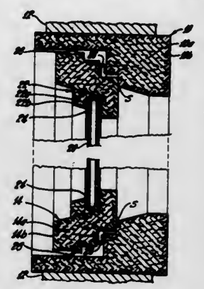
Wesley E. Legg, Bexley; Russell L. Ault, Newark; Richard A. Mott, Alexandria, and Alan R. Leewood, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 452,665, Dec. 23, 1982,. This application Nov. 19, 1984, Ser. No. 672,851

Int. Cl.⁴ E04C *1/00*

U.S. Cl. 52—309.13 **6 Claims**

1. A window comprising a generally rectangular frame and a generally rectangular sash therein, the frame and sash each having straight top, bottom, and opposite side members, each of said members being made of glass wool impregnated with a binder, the binder-impregnated glass wool having a density of less than twenty pounds per cubic foot, each of said members having resin in addition to the binder incorporated in outer surface portions thereof and completely around its cross-sectional periphery, and each of said members being visually solid in cross section.



4,553,365

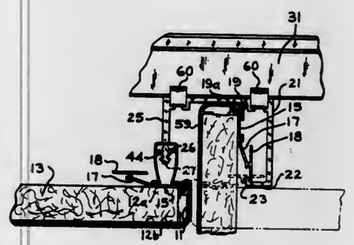
SUPPORT SYSTEM FOR CEILING AND WALL PANELS

Bradley L. Bechstein, Toledo, Ohio, assignor to Tibbet Incorporated, Toledo, Ohio

Filed Sep. 30, 1983, Ser. No. 537,523

Int. Cl.⁴ E04B *5/52*

U.S. Cl. 52—483 **7 Claims**



1. In combination in a panel support system framed panels each having a frame about the panel media, an inwardly projecting overlying support ledge portion for support of at least one side on each such panel, a bracket securable to an overlying support structure, such bracket having at least one leg shaped with a laterally projecting portion having an upwardly extending component at its end for engagement in underlying relation with the ledge portion of a frame of a panel for hanging support of said panel from above said panel whereby the panel can be supported at said one side of the panel by two or more brackets in any of a number of orientations of the panel from vertical to horizontal.

4,553,366

FIXATION DEVICE FOR AN ARTIFICIAL STONE PLATE FACING ON A WALL STRUCTURE

Gabriel Guerin, 49350 Gennes, France

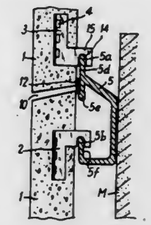
Filed Feb. 22, 1983, Ser. No. 468,632

Claims priority, application France, Feb. 25, 1982, 82 03362

Int. Cl.⁴ E04B *1/38*

U.S. Cl. 52—487 **2 Claims**

1. A fixation device of a facing made of artificial stone plates on a wall structure, comprising plates provided with two series of metallic hooking means extending along lines parallel to the top and bottom edges of said plates, said metallic hooking means comprising sections with a base embedded in the artificial stone plate when said plate is being cast, the hooks of said means having a hooking part facing downwardly and supporting elements to be fixed to the wall formed of sections disposed horizontally and extending over the whole width of the wall, said sections having two parallel horizontal hooking edges turned upwardly, the hooks of the metallic hooking means being so formed as to cooperate with said hooking edges and the section comprising, from its upper hooking edge, a wing



the height of which is greater than the spacing between the hooking part of the lower hooking means and the lower edge of the plate, so that said wing extends behind the top edge of the plate hooked on the lower hooking edge of the same section.

4,553,367

FRAME FOR A DOOR OR WINDOW WITH AT LEAST ONE BRACE MANUFACTURED FROM HOLLOW, PREFERABLY HEAT-INSULATED COMPOSITE SECTIONS

Jean-Paul Redien, Hiddenhausen, Fed. Rep. of Germany, assignor to Schuco Heinz Schurmann GmbH & Co, Bielefeld, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,018

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302162

Int. Cl.⁴ E04C *2/38*

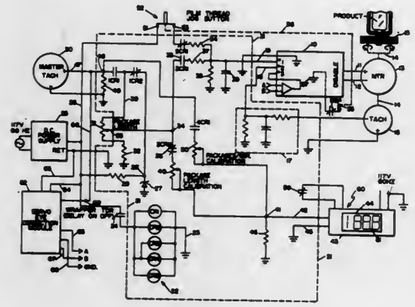
U.S. Cl. 52—656 **4 Claims**



1. In a frame for a door or window having frame sections, at least one brace, wherein the frame sections and brace comprise hollow sections with channels therein and a T connector connecting one end of the brace and an intermediate portion of a frame section together at a butt joint, the improvement wherein: each frame section has two parallel longitudinally extending channels and the brace has an inner space therein, with the T connector engaging one channel of the frame section and extending into the inner space of the brace without filling same; a filler member positioned at the butt joint and having a first portion that matches the contours of and is slidably received in the other channel in the frame section and a second portion slidably received in the inner space of the brace section, wherein the first portion of the filler member has a bore therein extending parallel to the other channel and receptive of a sealant when the frame section and brace are con-

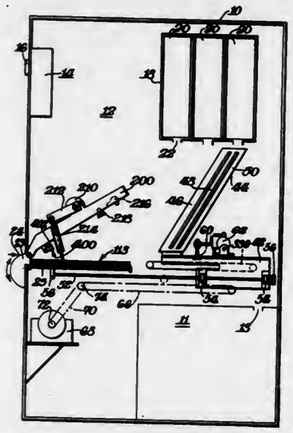
nected and the second portion includes a slot perpendicular to the bore and in communication therewith, whereby sealant forced into the bore flows into the slot and seals off the butt joint.

4,553,368
FINWHEEL SERVO DRIVE FOR PACKAGING MACHINE
Robert E. Ziller, New Richmond, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.
Filed Nov. 12, 1982, Ser. No. 440,853
Int. Cl.⁴ B65B *57/00*
U.S. Cl. 53—51 **4 Claims**



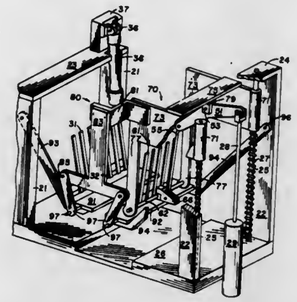
1. In an automatic article wrapping machine of the type including a supply roll of wrapping film, in-feed conveyer means adapted to be driven at predetermined adjustable rates by first electrical motor means for advancing the articles to be wrapped to a film forming station, means at said film forming station for forming said film into a tubular configuration about said articles, a pair of finwheels mounted for rotation about parallel vertical axes, the spacing between said axes being only slightly greater than twice the radii of said finwheels for gripping apposed longitudinal edge portions of the wrapping film and drawing said film from said supply roll and through said film forming station while creating a longitudinal seal between said apposed edges, and cyclically operable end-sealing and cut-off means disposed downstream of said pair of finwheels and transverse to the direction of flow of the entubed articles for sealing and severing said tube at predetermined spaced longitudinal locations, the improvement comprising:
(a) second electrical motor means separate from said first electrical motor means coupled in driving relation to said pair of finwheels;
(b) first tachometer means coupled to said first electrical motor means for producing a first electrical signal proportional to the rate at which said in-feed conveyer means is driven;
(c) second tachometer means operatively coupled to at least one of said pair of finwheels for producing a second electrical signal proportional to the angular velocity of said one of said pair of finwheels;
(d) servo amplifier means having input means and output means, said input means being coupled to receive said first electrical signal and said second electrical signal, said second electrical signal being in phase with said first electrical signal;
(e) means connecting said second electrical motor means to said servo amplifier output means to change the speed of said finwheels in response to the speed of said infeed conveyor;
(f) first photo-optic means for sensing the passage of fiducial marks on said film past a fixed reference point and producing a first pulse signal indicative thereof;
(g) second photo-optic means for sensing the disposition of said end-sealing and cut-off means and producing a second pulse signal during a predetermined portion of the operating cycle of said end-sealing and cut-off means;
(h) logic means coupled to said first and second photo-optic means for producing a third electrical signal when said first pulse signal occurs before said second pulse signal and a fourth electrical signal when said first pulse signal occurs after said second pulse signal; and
(i) means coupling said third and fourth electrical signals to said servo amplifier means to change the speed of said finwheels in response to the positions of said fiducial marks and said end-sealing and cut-off means.

4,553,369
AUTOMATIC CONTROL SYSTEM FOR X-RAY FILM CASSETTE LOADER AND UNLOADER APPARATUS
Michael H. Debes, Bear, and Paul C. Keenan, III, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 18, 1983, Ser. No. 553,468
Int. Cl.⁴ B65G *65/04*
U.S. Cl. 53—55 **4 Claims**



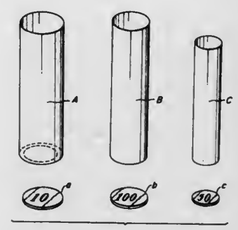
1. In an apparatus for automatically unloading exposed X-ray film from a cassette and reloading the cassette with unexposed film having a light-tight chamber having means for insertion and withdrawal of the cassettes; a film-holding magazine rack adapted to hold a plurality of film-holding magazines, each containing unexposed X-ray film sheets of a predetermined size, means to release on demand from one of the magazines a single sheet of predetermined size and/or type film; cassette-opening means to open the cassette, removing means to remove an exposed film from the open cassette, transfer means to transfer a sheet of film from one of the magazines to the open cassette, closing means to close the cassette, and control means responsive to a control signal to selectively actuate the release means, cassette opening means, film removing means, transfer means and closing means, the improvement comprising:
indicia on the cassette denoting operations to be performed, based on film size and/or type, and/or the film therein; and
means for sensing the indicia and providing the control signal in response thereto to the control means.

4,553,370
BAG FOLDER, TRANSPORTER AND CARTON LOADER HAVING IMPROVED LOADING AND STOMPER MECHANISM
Thomas L. Anderson, Webster, and F. John Herrington, Holcomb, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 10, 1983, Ser. No. 521,804
Int. Cl.⁴ B65H *45/00*
U.S. Cl. 53—117 **27 Claims**



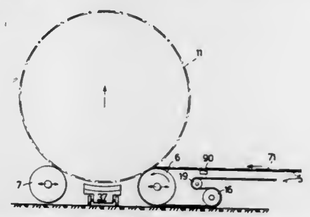
1. An apparatus for sequentially folding and loading a plurality of thin, limp, sheet-like articles in a carton therefor, comprising:
a folding station, comprising:
a pivotal platform biased to a first predetermined position, to which each said article is sequentially delivered; and
a folding means, which is in standby position and alongside said platform when said article is delivered onto said platform, for sequentially folding at least one portion of said article onto another portion thereof; and
a loading assembly for sequentially loading each said folded article into said carton, said carton having a bottom which is aligned with and transversely spaced from said folded article on said platform, said loading assembly comprising:
a propulsion means for pivotally moving said platform against said biasing to a second predetermined position, which permits movement of said folded article into said carton, and for propelling a folded article into said carton, and thereafter allowing said platform to return to said first position.

4,553,371
COIN CRIMPER
Yoshitsune Iitsuka, Yokohama, Japan, assignor to Nippon I.C.S. Co., Ltd., Osaka, Japan
Filed Feb. 14, 1984, Ser. No. 580,548
Int. Cl.⁴ B65B *7/02*
U.S. Cl. 53—285 **7 Claims**



1. A coin crimper for curling open end edges of packages with coins packed therein, said crimper including a package receiving opening, curling means for curling the open end edges of the packages inserted in said opening and driving means for rotatively driving said curling means, said coin crimper comprising package receiving opening diameter changing means for changing a diameter of said package receiving opening depending upon kinds of coins and hence packages of the coins, and curling position changing means for changing a curling position where the open end edges of the packages are curled depending upon the coins, thereby enabling packages of coins having different diameters to be curled by the single coin crimper, said package receiving opening diameter changing means comprising a plurality of pressure cores forming at their insides a substantially circular opening for receiving said open ends of the packages, each of said pressure cores being supported by a rockable arm and having a roller, said rockable arm being pivotally supported relative to the crimper and urged in one direction by spring means and a cam plate rotatable about said package receiving opening and fixed at predetermined positions and having inner peripheral cam surfaces each contacting said roller of said pressure core, thereby changing a diameter of said circular opening formed by said pressure cores when said cam plate is rotated to move said pressure cores into positions determined by said inner peripheral cam surfaces of the cam plate and said rollers of said pressure cores.

4,553,372
PLANT FOR WRAPPING THE ENVELOPE SURFACE OF A PREFERABLY CYLINDRICAL ARTICLE
Karl J. Back, Upplands Väsby, Sweden, assignor to Stretch Emballering AB, Upplands Väsby, Sweden
Filed Oct. 12, 1983, Ser. No. 541,234
Claims priority, application Sweden, Oct. 20, 1982, 8205968
Int. Cl.⁴ B65B *11/56, 53/00*
U.S. Cl. 53—411 **20 Claims**

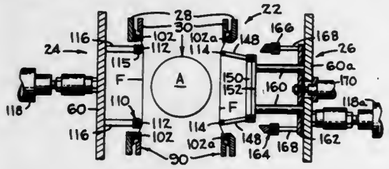


1. A plant for wrapping a preferably cylindrical article, including means for rotating the article relative to a supply of a web of wrapping material, means for winding the web about the article, means for applying an end of the material web to the article, means for keeping the web stretched during winding about the article, and means for parting the web at the end of a wrapping operation, comprising an endless belt arranged to run over two end pulleys and to lie in contact with a surface of the article, at a first end pulley with the other end pulley spaced from the article, the supply being arranged to carry the web-like material in the form of a coil, the supply including a roll movable away from and towards the belt for clamping the material web against the belt so that the web accompanies the belt, the web supporting portion of the belt extending substantially horizontally between the clamping roll and the article, said clamping roll normally being disposed spaced from the belt, the parting means including a slitting means disposed between the clamping roll and a zone of contact of the belt with the article and at a distance above a part of the belt facing towards the web.

4,553,373
METHOD AND APPARATUS FOR PACKAGING ARTICLES SUCH AS FRUIT

Veikko K. Viitanen, and William C. Kreamer, both of San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 14, 1982, Ser. No. 418,126
Int. Cl.⁴ B65B *11/50, 51/14*
U.S. Cl. 53—441 **25 Claims**

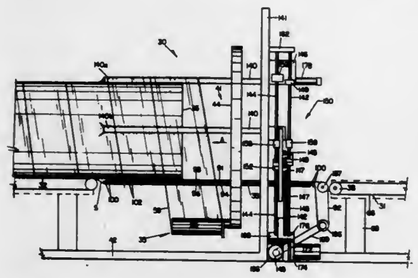


19. A method of packaging an article in a stretchable container formed from film portions comprising the steps of clamping each film portion when spaced from each other to define captured planar portions of film, placing the article between said captured planar film portions, moving the captured planar film portions toward each other for first engaging and then stretching the captured planar film portions over the article to conform the article contacting portions of the film closely to the peripheral shape of the article, clamping the two captured and conformed film portions together in a sealing plane for defining an annulus of contacting film which conforms closely to the peripheral shape of that portion of the article that lies in said plane and for defining an isolated annulus of each captured film portion outwardly of said annulus of said contacting film, and sealing and severing the film in said isolated annuluses adjacent said contacting annulus of film for providing a package which closely conforms to the shape of the article.

4,553,374
ROTATABLE FILM WRAPPING APPARATUS FOR CYLINDRICAL LOADS

William G. Lancaster, 5101 Upper River Rd., and Patrick R. Lancaster, III, 14801 Burleigh Ct., both of Louisville, Ky. 40223

Filed Jan. 3, 1983, Ser. No. 454,974
Int. Cl.⁴ B65B *13/12*
U.S. Cl. 53—465 **29 Claims**

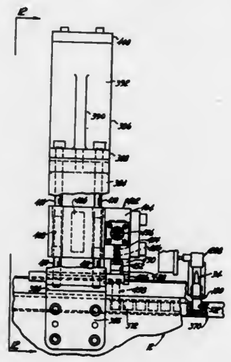


1. Apparatus for wrapping all surfaces of a cylindrical load comprising wrapping means, said wrapping means comprising a frame and a film dispensing means rotatably mounted on said frame, said film dispensing means when rotated defining a wrapping area, a wrapping conveyor assembly and tube forming support means located within said wrapping area, said wrapping conveyor assembly comprising at least one conveyor means adapted to transport said load and a film material dispensed by said film dispenser means, said film dispensing means being adapted to hold a roll of film material and wrap said film material around the load, said wrapping conveyor assembly and said tube forming support means; film stretching means mounted to said dispensing means engaging said film material to tension and stretch said film material being dispensed from said film dispensing means; take-off conveyor means spaced apart from said wrapping conveyor assembly; said wrapping conveyor means and said tube forming support means being adapted to transport said stretched film material wrapped around said conveyor and tube forming support means before, on and behind said load; said tube forming support means being adapted to support said stretched tensioned film web before and behind said load with a total surface area sufficient to cover planar leading and trailing ends of said load; and sealer means positioned downstream of said wrapping conveyor assembly adapted to seal said stretched film material before and behind said load so that said sealed stretched film material collapses against said planar leading and trailing ends of said load.

4,553,375
TRAY LOCATOR AND LOADER FOR CONVEYOR APPARATUS, AND METHOD

Raymond P. DeSantis, Troy, Mich., assignor to PTX-Pentronix, Inc., Lincoln Park, Mich.

Continuation-in-part of Ser. No. 465,166, Feb. 9, 1983,. This application Mar. 28, 1983, Ser. No. 479,142
Int. Cl.⁴ B65B *5/08, 5/10;* **B65G** *47/52*
U.S. Cl. 53—475 **22 Claims**

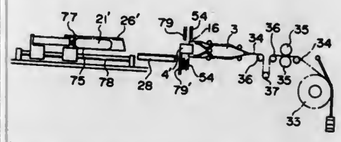


1. An apparatus for transferring parts, comprising a first conveyor for carrying a single row of parts and travelling along a first axis of travel, a second conveyor having a receptacle and travelling along a second axis of travel at an angle to said first axis of travel, an insert disposed in said receptacle, said insert being provided with part-holding cavities disposed in consecutive parallel rows, each of said rows having a predetermined number of said part-holding cavities, a part pick-up and loading means disposed at a location where said first axis of travel and said second axis of travel intersect, said part pick-up and loading means picking parts sequentially at the end of said first conveyor for placement in a predetermined part-holding cavity in each row of part-holding cavities in said insert in said receptacle on said second conveyor, and means for locating said insert in said receptacle and for indexing each row of part-holding cavities and each part-holding cavity in each row of said insert, said locating means comprising a reciprocable ram disposed above said second conveyor, a support member attached to said ram for reciprocation thereby, a plurality of probe members each corresponding to one of said part-holding cavities in said insert mounted in a row below said support member such as to correspond to a row of said part-holding cavities in said insert, and means reciprocating said ram from a first position retracting said probe members from said part-holding cavities to a second position introducing said probe members into said part-holding cavities.

4,553,376
AUTOMATIC CONTINUOUS VACUUM PACKAGING METHOD AND APPARATUS

Shingo Okada, Tokyo; Yuji Sawa, and Kuniomi Adachi, both of Fukushima, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 175,807, Aug. 6, 1980, Pat. No. 4,419,854. This application Aug. 9, 1983, Ser. No. 521,779
Claims priority, application Japan, Aug. 6, 1979, 54-99457
Int. Cl.⁴ B65B *31/02, 9/02*
U.S. Cl. 53—511 **7 Claims**



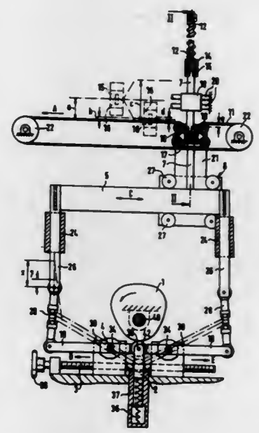
1. A vacuum packaging apparatus comprising:
receiving means for objects to be packaged;
means for supplying a flexible tubular film;
an opening core for opening said tubular film to a rectangular shape;
means for drawing an end of said tubular film over said opening core and over said object together with said receiving means;
electrode means for sealing said end portion of said film;
means for cutting said film into a segement of predetermined length;
suction means movable into a position above said receiver for applying suction to said film at upper end portions of both open and sealed ends thereof;
piston means cooperating with said receiver for moving said object into a position against said sealed end of said film;
first and second vacuum packaging means each having a vacuum chamber;
means for transferring said object with said film to one of said vacuum chambers;
means for tensioning both peripheries of said open end of said film to a rectangular shape so as to prevent the formation of creases during sealing in said vacuum chamber;
means for sealing said open end of said film in said vacuum chamber;
means for removing said object from said vacuum chamber;
means for horizontally moving said first and second packaging means.

4,553,377
PACKAGING MACHINE WITH SEALING MEANS

Wolfgang Klinkel, Sala Capriasca-Bigorio, Switzerland, assignor to Eurobreva Engineering Trust, Lugano, Switzerland

Filed May 29, 1984, Ser. No. 615,082
Claims priority, application Switzerland, May 31, 1983, 2969/83
Int. Cl.⁴ B65B *9/12, 51/30*
U.S. Cl. 53—548 **6 Claims**

3. An adjustable machine for sealing tubular plastic film around products of varying heights, having
means (**11**) for conveying said product during the sealing process at a feed rate of said plastic film;
means having first (**16**) and second (**15**) jaws for sealing said plastic film;
means (**6**) for conjointly reciprocating said sealing means (**15,16**) from an initial position, along with each product during the sealing process, and back to said initial position;
comprising, in accordance with the invention,
means (**13,44**) connected to said reciprocating means (**6**) for adjusting the initial position of said second jaw (**15**) of said sealing means;
a frame (**5**) supporting said reciprocating means (**6**) and reciprocable in a plane orthogonal to the motion of said reciprocating means (**6**);
means (**7,8,9**) mounted on said reciprocating means (**6**) for translating reciprocation of said frame (**5**) into opening and closing motions of said sealing means (**15,16**) for effecting an equal and oppositely directed, with respect to

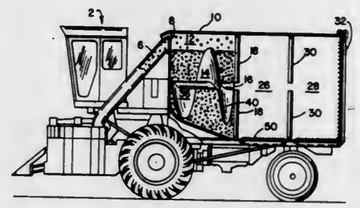


said products to be sealed, stroke of said first and second sealing jaws (**16, 15**);
and means (**38, 3, 30**) connected to said reciprocating means (**6**) for adjusting the length of the stroke of said sealing means (**15,16**) relative to each other as a function of the height of said product to locate the meeting zone of said first and second jaws (**15,16**) at a predetermined position with respect to the product and permit variation of said position as the height of the product changes.

4,553,378
ON BOARD COTTON MODULE SYSTEM FOR COTTON HARVESTING MACHINES

Robert M. Fachini, Naperville, and Jesse H. Orsborn, Clarendon Hills, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 17, 1984, Ser. No. 571,622
Int. Cl.⁴ A01D *46/08*
U.S. Cl. 56—16.6 **9 Claims**



1. A mobile cotton harvesting machine with on board cotton module system comprising:
a wheeled frame;
cotton harvesting means mounted on said frame adjacent the ground;
a receptacle mounted on said frame and having an inlet to receive cotton, said receptacle having a first section for receiving cotton and a second section for receiving the

cotton from said first section, said second section separated from said first section by a divider;

conveyor means to transport the cotton from said harvesting means to said receptacle; and

means for compression of cotton into a self-supporting cotton module, said means of compression being mounted within said receptacle.

4,553,379

METHOD AND APPARATUS FOR HARVESTING OF CORN OR OTHER GRANULAR FRUITS

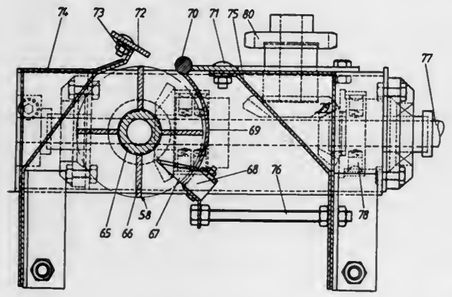
Klemens Kalverkamp, Warendorfer Str. 265, 4730 Ahlen/-Westf., Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,807

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213542

Int. Cl.⁴ A01D *45/02*

U.S. Cl. 56—60 **13 Claims**



1. A method of harvesting granular fruits which are connected by stems to plant stalks and which grow in spaced rows in a field, comprising the steps of:

moving through the field while contemporaneously guiding each row of plants in a vertical orientation towards a respective fixed picking aperture;

grasping each plant of each row on only one side thereof as it enters the respective picking aperture; and

drawing each plant downwardly and pinching the same against the edge of the respective picking aperture to pluck and separate the fruit from the stalk at the stem.

4,553,380

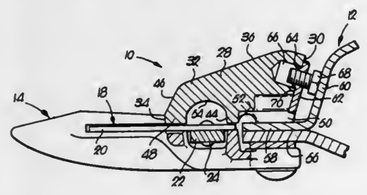
ADJUSTABLE HOLD DOWN FOR THE SICKLE OF A RECIPROCATING CUTTER ASSEMBLY

Michael L. O'Halloran, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Dec. 5, 1983, Ser. No. 557,878

Int. Cl.⁴ A01D *55/06*

U.S. Cl. 56—305 **14 Claims**



1. For use with a cutter bar having a plurality of spaced sickle guards secured thereto, extending forwardly therefrom and supporting a reciprocable sickle, a sickle hold down for overlying the sickle and including:

a body having means for attaching the same to the cutter bar;

a finger integral with the body and extending forwardly therefrom for overlying the sickle and terminating in a forward end; and

extensible means disposed for insertion between the cutter bar and the body behind the latter for biasing the finger downwardly toward the sickle,

said means for attaching the body to the cutter bar including a pair of wing extensions integral with the finger and projecting laterally outwardly from opposite sides thereof adjacent a rearward end of the finger,

said wing extensions each having a hole therethrough adapted to receive an elongated fastener for use in attaching the body to the cutter bar and for holding the wing extensions fixed against movement,

said finger having a thickness substantially exceeding that of the wing extensions whereby to permit the finger to rock slightly forwardly and downwardly relative to the wing extensions in an adjusting movement when the extensible means is extended without first loosing the fasteners.

4,553,381

CUCUMBER HARVESTER

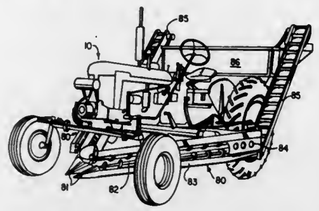
Bert Sonnenberg, R.R. #3, Waterford, Ontario, Canada (N0E 1Y0)

Filed Jul. 5, 1983, Ser. No. 511,031

Claims priority, application Canada, Oct. 22, 1982, 414012

Int. Cl.⁴ A01D *45/00*

U.S. Cl. 56—327 R **1 Claim**



1. A cucumber harvester adapted to be mounted on a tractor, comprising:

a pair of cooperatively shaped, spaced apart conical cucumber vine pick-up heads;

a pair of picker support and drive mechanisms;

a pair of pickers, the front end of each picker being secured to a respective pick-up head, said pickers diverging rearwardly from said pick-up heads to respective picker support and drive mechanisms, each said picker having a rotatable lower main auger and a rotatable top member cooperable with said main auger to pick cucumbers from vines without removing the vines from the earth, and having a trough extending along the bottom of said main auger to catch and retain cucumbers picked from vines, rotation of said main auger transporting cucumbers along said trough toward the rearward end of said picker;

means including said support and drive mechanisms for rotating said main augers and said cooperating members;

means for vertically adjusting said vine pick-up heads; and

cucumber conveying means for removing picked cucumbers from the rearward ends of said troughs.

4,553,382

DEVICE FOR PRODUCING TWIST-CRIMPED THREADS

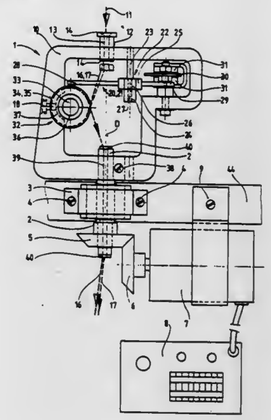
Gustav Brehm, Wettswil, Switzerland, assignor to Retech AG, Boniswil, Switzerland

Filed Sep. 16, 1983, Ser. No. 532,986

Claims priority, application Switzerland, Sep. 29, 1982, 5727/82

Int. Cl.⁴ D02G *1/02, 1/04*

U.S. Cl. 57—284 **18 Claims**



1. A thread separating head apparatus for producing separate twist-crimp threads from a twisting column where said threads are first heated, twisted in said twisting column, and subsequently cooled down, said head having a separation regulator comprising in combination:

a lever means which lies in a plane which is at a right angle to said twisting column for guiding said thread;

an undriven equalizing roller connected behind said lever when viewed in the running direction of said separate twist-crimped threads; and

means for damping the motion of said lever means.

4,553,383

METHOD OF AND APPARATUS FOR SPINNING YARN FROM STAPLE FIBERS IN AN AIR VORTEX

Stanislav Didek; Ludvik Fajt; Marketa Reymanova, and Marie Markova, all of Usti n.Orl., Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti n.Orl., Czechoslovakia

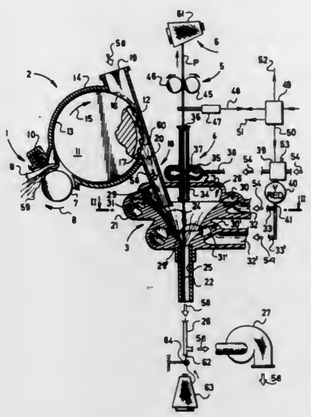
Filed Dec. 14, 1983, Ser. No. 561,546

Claims priority, application Czechoslovakia, Dec. 21, 1982, 9463-82

Int. Cl.⁴ D01H *1/13, 7/898*

U.S. Cl. 57—403 **9 Claims**

1. In a method of spinning yarn from staple fibers in an air vortex in a stationary spinning tube axially coupled to a stationary air chamber, by taking supplied individualized fibers onto an open yarn end engaging into the spinning tube which communicates with a sub-atmospheric pressure source, and from which the arising yarn is withdrawn by a take-off device in counter direction to the axial motion of an air vortex produced in the air chamber and directed toward its axis, the improvement wherein in the air chamber there is produced a funnel-shaped air vortex which is sucked off by the spinning tube and has an internal and an external air wall, and wherein individualized fibers are supplied in the air chamber onto one of said air walls of the air vortex which entrains, doubles and takes the fibers in the spinning tube onto the open end of yarn additionally twisted during the take-off in the region between the air chamber and the take-off device.



4,553,384

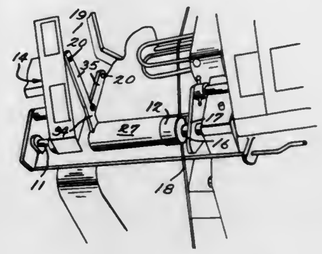
TAKE-UP SHAFT GUARD FOR OPEN-END YARN SPINNING MACHINE

Charles L. Crocker; Michael Wallace, both of Greensboro, and Lee Powell, Mooresville, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 18, 1984, Ser. No. 683,229

Int. Cl.⁴ D01H *1/12, 13/02*

U.S. Cl. 57—406 **22 Claims**



1. A guard adapted to be utilized with a take-up shaft and cot associated with an open-end yarn spinning machine, said guard comprising:

a tubular body member having first and second ends spaced from each other along a central axis of said tubular body member;

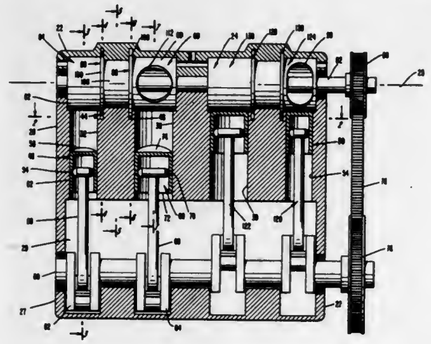
means defining a slot in said tubular body member, said slot extending axially the length of said tubular body member from said first to said second end thereof, and essentially parallel to said central axis;

means defining a cut-out in said tubular body member adjacent, but spaced from, said first end thereof, said cut-out elongated both circumferentially and axially and having circumferential and axial dimensions sufficient so that a cot of a yarn spinning machine may extend into contact with a shaft extending through the guard; and

a mounting bracket connected to said tubular body member adjacent said second end thereof, said mounting bracket extending in a plane generally transverse to said central axis.

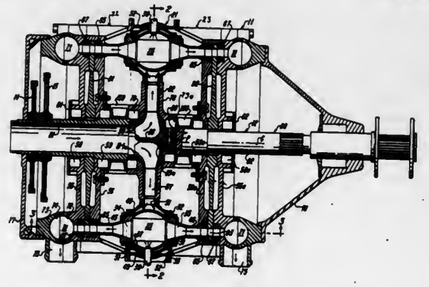
10. A combination comprising:
a take-up shaft of an open-end yarn spinning machine, rotatable about a first axis;
a cot rotatable about a second axis spaced from, but parallel to, said first axis, and in operative association with said shaft;
stationary guard means associated with said shaft and cot for preventing an operator from coming into contact with the rotating shaft, while allowing lint, trash, or the like from the shaft to be discharged from said guard means; and
said guard means comprising a tubular body having a central axis, and first and second ends spaced from each other along said central axis; means defining a slot in said body member extending generally parallel to said central axis; means defining a cut-out in said body member; and mounting means for mounting said body member so that it is stationary with respect to said shaft with said central axis concentric with said first axis, with said body member surrounding said shaft and with said cot in operative association with said shaft through said cut-out in said body member.

4,553,385
INTERNAL COMBUSTION ENGINE
John S. Lamont, 3-333 Broadway, Winnipeg, Man., Canada (R3C 0T1)
Filed Nov. 18, 1983, Ser. No. 553,083
Int. Cl.⁴ F02G *3/02*
U.S. Cl. 60—39.6 **15 Claims**



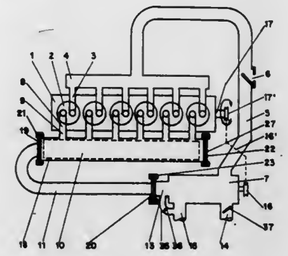
1. An internal combustion engine comprising:
an engine block having a compression cylinder, an expansion cylinder, a combustion chamber, and means providing fluid communication among the combustion chamber, the compression cylinder, and the expansion cylinder;
compression piston means for ingesting and compressing a gas, axially moveable in the compression cylinder;
expansion piston means for expanding and exhausting combustion products, axially moveable in the expansion cylinder;
rotary valve means for regulating gas ingestion, gas transfer to and from the combustion chamber, and gas exhaust, defining at least a partial closure for the compression cylinder and the expansion cylinder, and operable to selectively control the fluid communication means, wherein the rotary valve means includes
a rotationally symmetric inlet valve defining an end closure of the compression cylinder, and having an inlet port therein,
a first transfer valve including a first valve disc with a first transfer port operably positioned with respect to the fluid communication means to control flow from the compression cylinder to the combustion chamber,
a second transfer valve including a second valve disc with a second transfer port operably positioned with respect to the fluid communication means to control flow from the combustion chamber to the expansion cylinder, and
a rotationally symmetric exhaust valve defining an end closure of the expansion cylinder, and having an exhaust port therein;
means for supplying fuel to the gas compressed by compression piston means to create a combustible mixture;
means for igniting the combustible mixture; and
means for synchronizing movement of the compression piston means, the expansion piston means and the rotary valve means.

4,553,386
COMBUSTION CHAMBER FOR DUAL TURBINE WHEEL ENGINE
Martin Berg, 1544 Ames St., Lakewood, Colo. 80214
Continuation-in-part of Ser. No. 345,612, Feb. 4, 1982, abandoned. This application Apr. 17, 1984, Ser. No. 601,305
Int. Cl.⁴ F02C *6/00*
U.S. Cl. 60—39.15 **20 Claims**



1. In a turbine engine, the combination comprising:
a pair of spaced turbine wheels rotatable about the same axis on a common shaft;
a plurality of combustion chambers radially spaced about said axis between said turbine wheels, each said chamber having a hollow enclosed generally spherical body means having a center;
at least a pair of substantially straight exhaust outlet tube means extending radially outwardly from opposite side portions of the wall of said body means from said center for conducting the exhaust gas flow from the combustion chamber in opposite directions to said turbine wheels, the free end of the tube means having coupling means for attaching the tube means to a casing for the turbine wheels to provide a closed passageway for the exhaust gases, said exhasut outlet tube means lying generally in a single plane;
air inlet means connected to said body means, said inlet means being connected to a source of pressurized combustion air for said chamber,
said body means having at least one fuel nozzle mounted in the wall of said body means extending radially inwardly toward said center and connected to a source of pressurized fuel, a plurality of apertures formed through a generally semispherically shaped manifold section of the wall of said body means in a substantially uniformly arranged pattern surrounding said fuel nozzle, the outside surface of the body means encompassing the apertures to form an enclosed cavity which is connected to said air inlet means whereby combustion air flows continously through the apertures into the combustion chamber to mix with the fuel being continuously injected into the chamber by the fuel nozzle means: and
igniter means mounted through the wall of said body means and connected to a suitable source of energy for igniting the fuel-air mixture in the body means to provide a continuous flow of exhaust gases for driving the power turbine wheels simultaneously.

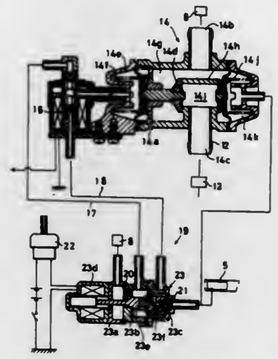
4,553,387
SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH EXHAUST PARTICULATES FILTER
Andreas Mayer, Niederrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Aug. 9, 1982, Ser. No. 406,510
Claims priority, application Switzerland, Nov. 8, 1981, 5155/81
Int. Cl.⁴ F01N *3/02*
U.S. Cl. 60—274 **18 Claims**



1. A device for limiting exhaust particulate emission when supercharging internal combustion engines, comprising:
a pressure wave machine;
an air suction line means for delivering air to said pressure wave machine;
a charge air line means for delivering charged air from said pressure wave machine to said internal combustion engine;
a plurality of exhaust gas conduits leading from a cylinder head of an internal combustion engine to an exhaust gas system, said exhaust gas system including a high pressure portion communicating said cylinder head with said pressure wave machine and a low pressure portion downstream of said pressure wave machine, the high pressure portion including an exhaust gas receiver;
a briefly closable recirculation valve in said air suction line; and
an exhaust particulate filter arranged in the high pressure portion of said exhaust gas system upstream of the pressure wave machine whereby the brief closing of the recirculation valve in said air suction line briefly raises the temperature of the exhaust gas entering said filter so as to ignite and burn particulates collected at said particulate filter.

4,553,388
EXHAUST GAS PURIFICATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE
Akira Okubo, Tokyo, and Seishi Miura, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1982, Ser. No. 445,514
Claims priority, application Japan, Nov. 30, 1981, 56-176614[U]; Dec. 8, 1981, 56-196236; Dec. 17, 1981, 56-202475; Dec. 17, 1981, 56-202480
Int. Cl.⁴ F01N *3/22*
U.S. Cl. 60—276 **15 Claims**

1. An exhaust gas purification apparatus in an internal combustion engine wherein an exhaust passage of an internal combustion engine is provided with a catalyzer for three components of an exhaust gas, an exhaust gas sensor, and a secondary air introducing opening so that the exhaust gas which is to be fed to the catalyst may be controlled to have a predetermined air-fuel ratio by introducing secondary air through the introducing opening in accordance with an output signal of the sensor; the apparatus further comprising an atompheric pressure passage, a negative pressure passage, and control means for biasing the air-fuel ratio of the exhaust gas away from the theoretical perfect air-fuel ratio in accordance with an operating condition of the engine; said control means including a control valve having a pressure chamber, said control valve being arranged to be controlled to open and close according to the output signal of the sensor and being interposed in the secondary air introducing passage connected to the introducing opening, an electromagnetic valve means having inlet means connected to said atomspheric pressure passage and said negative pressure passage and outlet means connected to said

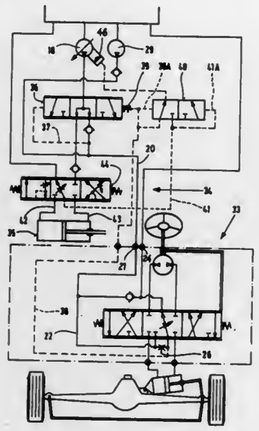


pressure chamber, said electromagnetic valve means being responsive to said output signal of said sensor, and means for causing a delay in movement of the control valve in accordance with the operating condition of the engine; and means for causing a delay including a first orifice in said negative pressure passage, a second orifice in said atmospheric pressure passage, and means for selecting between said first and second orifices responsive to the operating condition of the engine.

4,553,389
HYDROSTATIC AUXILIARY STEERING APPARATUS
Werner Tischer, Heubach-Lautern; Karl-Heinz Liebert, Schwäbisch Gmünd, and Rolf Fassbender, Mutlangen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany
Filed Aug. 3, 1982, Ser. No. 404,697
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132342
Int. Cl.⁴ B62D *5/08*; F15B *13/06, 13/09*; F16H *39/46*
U.S. Cl. 60—384 **10 Claims**

1. In a hydrostatic auxiliary power steering apparatus having a metering pump, a servomotor, a main pump, a reservoir from which fluid is drawn by the main pump and a fluid power steering circuit including a control valve displaceable from a neutral position in which flow through the metering pump is blocked; short-circuit passage means for recirculating the fluid from the main pump to the reservoir with increasing flow restriction in response to displacement of the control valve from the neutral position, a second constant volume pump, and a pressure passage to which the fluid pressurized by the main pump is conducted to the control valve, the improvement comprising a flow restrictor (26) disposed within the pressure passage (22) which has a fixed flow area less than that of the short-circuit passage means (23) in the neutral position of the control valve (16), branch passage means (27) connected to the pressure passage upstream of the flow restrictor for conducting the pressurized fluid to the servomotor (17) through the metering pump (7) in response to said displacement of the control valve from the neutral position, means responsive to a reduction in flow through the flow restrictor for unloading the main

pump and means (31) connecting the second pump (29) to the pressure passage in parallel with the main pump (18, 32) for



continuously conducting the pressurized fluid through the flow restrictor to the short-circuit passage means.

4,553,390

HYDROSTATIC STEERING ARRANGEMENT

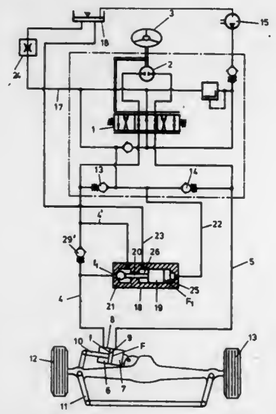
Karl-Heinz Liebert, Schwäbisch Gmünd; Werner Tischer, Heubach-Lautern, and Rolf Fassbender, Mutlangen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 391,606, Jun. 24, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,700

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126226

Int. Cl.⁴ F15B *9/10;* **B62D** *5/06*

U.S. Cl. 60—384 **17 Claims**



1. In a hydrostatic steering system having a differential surface piston servomotor subject to displacement by an uncontrollable pressure head in a neutral flow circulating position of a steering control valve through which pressurized fluid is supplied to one of two opposed pressure chambers of the servomotor for steering operation in response to displacement of the steering control valve from the neutral position, the improvement including compensation valve means responsive to said pressure head for maintaining a constant ratio of pressures in the opposed pressure chambers in the neutral position of the steering control valve, and means responsive to said steering operation for conducting the pressurized fluid to the servomotor in by-pass relation to the compensation valve means, the compensation valve means establishing the constant ratio of pressures at a value to balance forces acting on the piston servomotor by having differential pressure faces (f_1, F_1) on which valve opening and closing forces are respectively exerted by pressures in the opposed pressure chambers (6, 7) of the servomotor (8) and a reservoir pressure chamber (26) maintaining a pressure bias on the compensation valve means opposing the valve closing force exerted on one of the differential pressure faces.

4,553,391

CONTROL DEVICE FOR A HYDRAULIC CYLINDER FOR MAINTAINING THE PULLING FORCE THEREOF CONSTANT

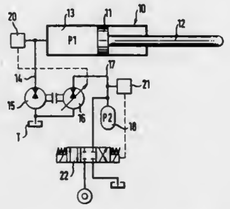
Peter Reinhardt, Lohr/Main, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 551,901

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244191

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60—413 **4 Claims**



1. A control device for providing a hydraulic cylinder with a constant pulling force, in particular for cables and ropes drawn by vessels, comprising a first hydrostatic machine operable as a pump or a motor having a constant displacement volume, an accumulator and a second hydrostatic machine operable as a pump or a motor having a variable displacement volume, the working chamber of said hydraulic cylinder in communication with a first port of said first machine, another port of said first machine being in communication with a liquid reservoir, said accumulator being connected to a liquid reservoir via said second machine, mechanical means for drivingly coupling said first and said second machine for driving said first machine from said second machine when said second machine operates as a motor under pressure from said accumulator to cause movement of said hydraulic cylinder in one direction and for driving said second machine as a pump to charge said accumulator from said first machine acting as a motor when said cylinder moves in the opposite direction, and means to adjust the displacement volume of said second machine to maintain a constant force being exerted by the piston of said cylinder.

4,553,392

SELF PRESSURIZING, CRANK-TYPE STIRLING ENGINE HAVING REDUCED LOADING OF DISPLACER DRIVE LINKAGES

Bruce J. Chagnot, Athens, and James G. Wood, Albany, both of Ohio, assignors to Stirling Technology, Inc., Athens, Ohio

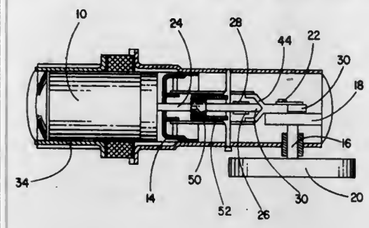
Filed Dec. 12, 1984, Ser. No. 680,753

Int. Cl.⁴ F02G *1/04*

U.S. Cl. 60—517 **12 Claims**

1. An improved Stirling engine of the type wherein a reciprocating displacer is drivingly linked to a reciprocating power piston mounted in a housing or to other displacer drive means, wherein the improvement comprises: a spring linked to a point

located between said displacer and the drive linkage to be protected and relaxed in substantially the mean position of said



displacer for applying a centering force upon said displacer to reduce the loading on the displacer drive linkage.

4,553,393

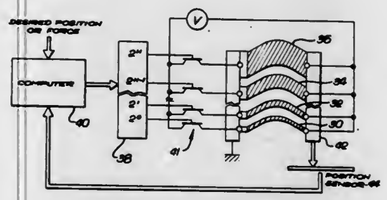
MEMORY METAL ACTUATOR

Carl F. Ruoff, LaCrescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 26, 1983, Ser. No. 527,613

Int. Cl.⁴ F03G *7/06*

U.S. Cl. 60—528 **22 Claims**



1. A mechanical actuator comprising:

a fixed position support element;

an output element which is movable with respect to the support element;

a plurality of actuator elements formed of memory metal material, each actuator element having a first end coupled to the support element and a second end coupled to the output element, wherein when an actuator element is heated above a critical temperature it will rapidly attempt to move to a predetermined hot-formed shape; and

control means for selectively heating the actuator elements to control the amount of force exerted against the output element with the forces exerted by the actuator elements being related to each other in a binary fashion.

4,553,394

SPINDLE DRIVE WITH EXPANSIBLE CHAMBER MOTORS

Friedrich Weinert, 219-19-131st. Ave, Jamaica, N.Y. 11413

Filed Apr. 15, 1983, Ser. No. 485,486

Int. Cl.⁴ F03G *7/06*

U.S. Cl. 60—530 **7 Claims**

1. A power system comprising: a shaft which contains at least one spiral groove on the outer surface thereof;

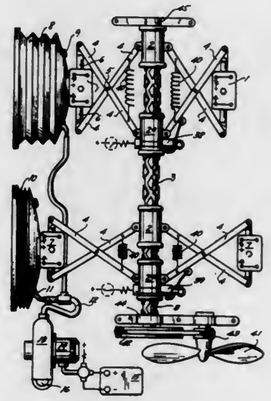
a sleeve concentrically mounted on said shaft,

a projection emanating from the inner surface of the sleeve and in operative engagement with said groove, such that reciprocation of said sleeve causes rotation of said shaft;

an expansible chamber motor consisting of a housing, a first fluid within said housing; and

an electrical resistance wire passing through said first fluid whereby upon energization of said wire the first fluid expands within said housing;

said motor further consisting of a second fluid housed within a deformable chamber within said housing, wherein said chamber is in fluid communication with said first fluid whereby upon energization of said wire the first fluid expands to displace said deformable chamber and the



second fluid contained therein; at least one output element of said motor which reciprocates as a result of the movement of said second fluid within the chamber;

a transmission means connecting the output element to said sleeve, whereby said sleeve is reciprocated as a result of the reciprocating movement of the output element and rotary movement of said shaft is obtained.

4,553,395

MASTER CYLINDER ASSEMBLY FOR A VEHICLE BRAKING SYSTEM

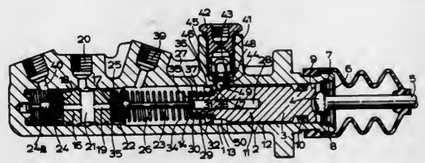
Anthony G. Price, Birmingham, and David Parry, West Midlands, both of England, assignors to Lucas Industries public limited company, England

Filed May 31, 1983, Ser. No. 499,201

Claims priority, application United Kingdom, Jun. 11, 1982, 8216982

Int. Cl.⁴ B60T *11/20*

U.S. Cl. 60—562 **5 Claims**



1. A master cylinder assembly for a vehicle hydraulic system comprising a housing having a cylindrical bore defined by a wall provided with a port and comprising an outer bore portion on the outer side of said port and an inner bore portion on said inner side of said port, a piston in said bore and having an outer end guide portion working in said outer bore portion, and intermediate portion projecting from said outer end portion and having an inner end, said piston being movable between a retracted position and an operating position, means defining a pressure space in said bore in advance of said outer end of said piston, a reservoir for fluid, a recuperation valve controlling communication between said reservoir and said pressure space, said recuperation valve being open when said

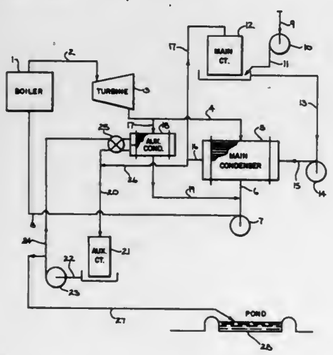
piston is in said retracted position but being adapted to close to isolate said pressure space from said reservoir in response to an initial movement of said piston away from said retracted position and towards said operating position, further movement of said piston in the same direction towards said operating position pressurising fluid in said pressure space to operate auxiliary equipment, an extension at said inner end of said intermediate portion, integral and rigid with said piston, and having a free end, a retainer carried by said extension, and a compression return spring acting on said piston through said retainer to urge said piston into said retracted position, wherein said retainer is mounted on said extension and forms an abutment for said return spring, said retainer including a radial flange having an inner end and an outer end, and a cylindrical, axially extending, guide part at said outer end of said flange slidably guided in said inner bore portion on the said inner side of said port, said piston being guided for sliding movement in said inner and outer bore portions of said bore by only said outer guide portion of said piston and said guide part, which are disposed on opposite sides of said portion irrespective of the axial position of said piston in said bore, said assembly further comprising a coupling means at said inner end of said flange at least partially encircling said extension and co-operating therewith to retain said retainer on said extension, substantially against relative axial movement with respect to said piston.

4,553,396

BRINE CONCENTRATOR

Ray T. Heizer, Concord, Calif., assignor to Water Services of America, Inc., Milwaukee, Wis.

Filed May 3, 1984, Ser. No. 606,529
Int. Cl.⁴ F01K *17/00*
U.S. Cl. 60—648 **23 Claims**



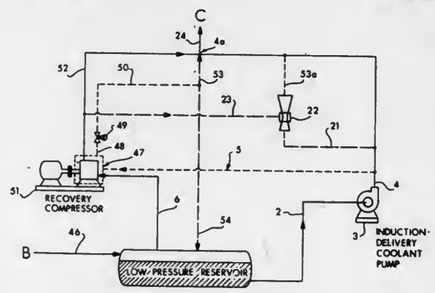
1. Apparatus for concentrating brine, comprising steam-generating means, steam turbine means receiving steam from said steam-generating means, a main steam condensing loop for the steam including a brine-cooled main heat exchanger means, a main steam feed line to pass steam exhaust from said turbine means to said main heat exchanger means, a main condensate return line to pass condensate from said main heat exchanger means back to said steam-generating means, a brine concentrating loop including auxiliary heat exhanger means having a first side and a second side, an auxiliary cooling tower, first means to pass steam from said main steam feed line to the first side of said auxiliary heat exchanger means, second means to pass condensate from the first side of said auxiliary heat exchanger means to said main condensate return line, third means to pass brine from the second side of said auxiliary heat exchanger means to said auxiliary cooling tower, fourth means to pass brine from said auxiliary cooling tower to the second side of said auxiliary heat exchanger means, fifth means to pass brine from said main steam condensing loop to the second side of said auxiliary heat exchanger means, and sixth means extending from said fourth means to withdraw concentrated brine from said brine concentrating loop.

4,553,397

METHOD AND APPARATUS FOR A THERMODYNAMIC CYCLE BY USE OF COMPRESSION

Joseph Wilensky, Denver, Colo., assignor to Soma Kurtis and Jack Sloan, both of Denver, Colo.

Continuation-in-part of Ser. No. 262,783, May 11, 1981, Pat. No. 4,442,675. This application Jun. 20, 1983, Ser. No. 506,708
Int. Cl.⁴ F01K *25/06*
U.S. Cl. 60—649 **66 Claims**



1. A process for approximating an isenthalpic compression of a working fluid from a state B (representing a pressure P_2 lower than a pressure P_1 of a state A and a temperature T_2 lower than a temperature T_1 of state A) to a state C (representing a pressure P_3 approximating P_1 and a temperature T_3 intermediate to temperatures T_1 and T_2 such that $T_2<T_3<T_1$) comprising:

energizing the working fluid in state B by

(a) pumping a large quantity of a motive liquid to a pressure at least as great as P_3 and sufficiently high to preserve its liquid state while receiving sensible heat from the working fluid;

(b) communicating the working fluid with the pressured motive liquid in an overall adiabatic environment so that there is a local transfer of thermal energy between the two fluids while maintaining their physical separation, wherein the motive liquid serves to limit the temperature rise and prevent superheating of the working fluid by preserving the two fluids at equal temperatures; and

(c) compressing the working fluid directly, while subject to these conditions, to a pressure P_3 and temperature R_3, during which compression there is at least partial condensation of the working fluid and concomitant release of the condensate latent heat of vaporization to the motive liquid, thus achieving state C for the working fluid.

4,553,398

LINEAR MOTOR COMPRESSOR WITH PRESSURE STABILIZATION PORTS FOR USE IN REFRIGERATION SYSTEMS

Niels O. Young, Free Union, Va., assignor to Helix Technology Corporation, Waltham, Mass.

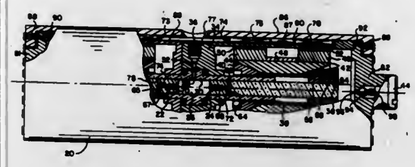
Filed Feb. 3, 1984, Ser. No. 576,865
Int. Cl.⁴ F25B *9/00*; F04B *7/04*
U.S. Cl. 62—6 **8 Claims**

1. A cryogenic refrigerator comprising:

a compressor comprising a piston in a sleeve for compressing and expanding refrigerant gas in a compressor work space which is a portion of a closed working volume;

a displacer in the closed working volume in fluid communication with said compressor work space; and

a fluid passage in the compressor which permits momentary fluid communication between a second closed volume of refrigerant gas and said compressor work space only at a predetermined portion of piston stroke during the expansion of gas in said work space as the piston is withdrawn to stabilize the pressure of the refrigerant gas in the work space during compressor operation.

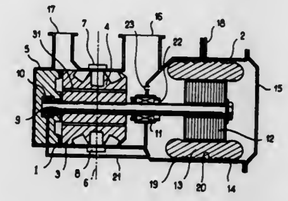


4,553,399

METHOD OF LUBRICATING BEARINGS OF A REFRIGERATION OR THE LIKE COMPRESSOR

Sadafumi Noda, Isahaya, Japan, and Bernard Zimmern, Vantage Point Condominium, 6 New St., East Norwalk, Conn. 06855, assignors to Bernard Zimmern, East Norwalk, Conn.

Filed Apr. 5, 1984, Ser. No. 597,120
Claims priority, application France, Apr. 14, 1983, 83 06079
Int. Cl.⁴ F25B *43/02*
U.S. Cl. 62—84 **11 Claims**



1. A method of lubricating bearings in a refrigeration or the like compressor driven by a hermetic electric motor, comprising the steps of:

dissolving a small percentage of oil in a liquid refrigerant used in the compressor;

supplying at least part of the obtained liquid mixture in a casing of the motor;

preparing in the motor casing a lubricating fluid from said mixture by vaporizing said mixture with heat provided by the motor as a result of its operation; and

supplying from said casing of the motor to an intake of the compressor through the bearings at least part of said lubricating fluid.

4,553,400

REFRIGERATION MONITOR AND ALARM SYSTEM

Michael A. Branz, Dunwoody, Ga., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed May 4, 1984, Ser. No. 607,283
Int. Cl.⁴ F25B *49/00*; G01F *23/10*
U.S. Cl. 62—127 **9 Claims**

1. A monitor and alarm system for a refrigeration system including at least one compressor, said system comprising:

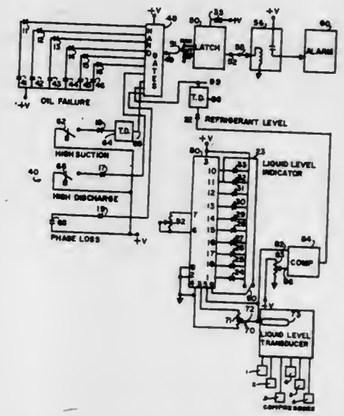
means for sensing the refrigerant level for said compressor and providing an electrical output signal representing the level of the refrigerant;

means coupled to said sensing means for displaying the refrigerant level at a location remote from the refrigerant supply;

means for providing an adjustable reference signal representing a selectable predetermined refrigerant level;

comparator means coupled to said sensing means and said providing means for comparing said electrical output signal and said adjustable reference signal to provide an alarm output signal when the refrigerant level reaches a preset level represented by said adjustable reference signal;

alarm means coupled to said comparator means and responsive of said alarm output signal to provide an alarm indicating a refrigerant level below a predetermined selected level; and



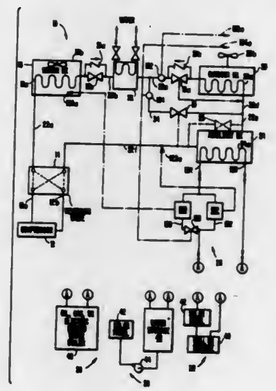
means for adjustable time delay activation of said alarm means, said adjustable time delay means being adjustable to select a time delay interval of a predetermined length after providing said alarm output signal before activating said alarm means.

4,553,401

REVERSIBLE CYCLE HEATING AND COOLING SYSTEM

Ralph H. Fisher, 120F Windsor Castle Dr., Newport News, Va. 23602

Continuation-in-part of Ser. No. 542,375, Oct. 17, 1983, Pat. No. 4,493,193, which is a continuation-in-part of Ser. No. 355,123, Mar. 5, 1982, Pat. No. 4,409,796. This application Jan. 14, 1985, Ser. No. 691,079
Int. Cl.⁴ F25B *13/00*
U.S. Cl. 62—160 **17 Claims**

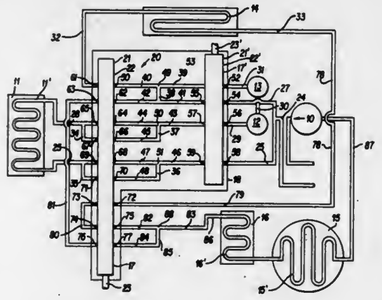


1. A reversible mode heating and cooling system for heating and cooling an interior space, comprising:

(a) compressor means for compressing vaporous refrigerant;

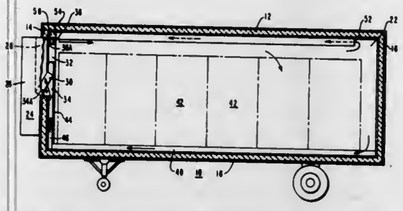
(b) indoor heat exchange means arranged in heat exchange relationship with air in said interior space for condensing refrigerant and heating said air during the heating mode and evaporating refrigerant and cooling said air during the cooling mode;
(c) refrigerant expansion means;
(d) outdoor heat exchange means arranged in heat exchange relationship with outdoor ambient air for evaporating refrigerant during the heating mode and condensing refrigerant during the cooling mode;
(e) refrigerant flow reversing means for providing mode means heating and cooling from the system by refrigerant flow direction selection;
(f) water cooled heat exchange means in series flow relationship with and between said outdoor and indoor heat exchangers for cooling liquid refrigerant, said water cooled heat exchange means disposed downstream of said outdoor heat exchanger during the cooling mode and downstream of said indoor heat exchanger during the heating mode;
(g) auxiliary heat exchange means for evaporating refrigerant during the heating mode, said auxiliary heat exchange means arranged in a series flow relationship with said outdoor heat exchange means and downstream thereof during the heating mode;
(h) refrigerant conduit means connecting said compressor means, indoor heat exchange means, water cooled heat exchange means, refrigerant expansion means, outdoor heat exchange means, auxiliary heat exchange means and refrigerant flow reversing means in a series flow relationship to form a reversible heating and cooling system for transferring heat via a fluid refrigerant between said indoor heat exchange means and said outdoor and auxiliary heat exchange means;
(i) bypass refrigerant conduit means connected in a parallel flow relationship with said outdoor heat exchange means and in a series flow relationship with said water cooled and said auxiliary heat exchange means for selectively bypassing said outdoor heat exchange means and directing at least a part of said refrigerant flow from said water cooled heat exchange means through said auxiliary heat exchange means during the heating mode in parallel flow relationship with refrigerant flow through said outdoor heat exchange means;
(j) storage means for storing a heat exchange fluid;
(k) connecting means connecting said storage means and said auxiliary heat exchange means and said storage means and said water cooled heat exchange means for circulating a heat exchange fluid and exchanging heat between said storage means and said auxiliary heat exchange means and said storage means and said water cooled heat exchange means;
(l) first control means for controlling the extent of heat exchange fluid flow from said storage means to said auxiliary heat exchange means, said first control means including a first sensor disposed for sensing a system parameter during the heating mode and first valve means in said connecting means, said first control means including means for adjustably operating said first valve means in said connecting means to allow heat exchange fluid flow therethrough in response to the parameter sensed by said first sensor;
(m) second control means for controlling heat exchange fluid flow from said storage means to said water cooled heat exchange means, said second control means including means for sensing the selected mode, a second sensor disposed for sensing a system parameter during the heating mode and second valve means in said connecting means, said second control means including means for adjustably operating said second valve means in said connecting means to allow heat exchange fluid flow therethrough during the cooling mode and in response to the parameter sensed by said second sensor during the heating mode; and
(n) third control means for selectively allowing the flow of refrigerant through said bypass refrigerant conduit means, said third control means including a third sensor disposed for sensing a parameter correlatable to the capacity of said outdoor heat exchanger to add heat to the refrigerant during the heating mode and third valve means in said bypass refrigerant conduit means, said third control means including means for operating said third valve means in said bypass refrigerant conduit means to allow refrigerant flow therethrough in response to the parameter sensed by said third sensor.

4,553,402
NON-REVERSIBLE MULTIPLE-REFRIGERATION-CYCLE SOLAR APPARATUS INCLUDING A VARIABLE DIRECTING VALVE MECHANISM
Carl V. Cramer, Sr., Frable Rd., Brodheadsville, Pa. 18322
Continuation of Ser. No. 329,256, Dec. 10, 1981, abandoned, which is a continuation of Ser. No. 79,786, Sep. 28, 1979, abandoned. This application Apr. 19, 1983, Ser. No. 486,783
Int. Cl.⁴ A63C *19/10*; F25B *13/00*
U.S. Cl. 62—235.1 **16 Claims**



1. A hermaphrodite modified refrigeration apparatus for enabling selective generation, storage, and use of heating or cooling, for heating or cooling a medium, and for enabling defrosting of the apparatus, integrated to generate heating or cooling for use as desired by the user, adapted to subject the medium to a refrigerant, for heating or cooling the medium or for defrosting, by transferring heat from or to the refrigerant, which refrigerant is conditioned in the apparatus in one of a plurality of true refrigeration cycles each generated by non-reversible flow of the refrigerant through selected elements of the apparatus, and further adapted to actively acquire, store, and use solar energy, for generating solar heating, comprising:
(a) means for conditioning the refrigerant, adapted to generate non-reversible flow of, exchange heat with, and transform the phase, temperature and pressure of, the refrigerant, to enable the medium to be subjected to the conditioned refrigerant for heating or cooling of the medium, including a plurality of elements, which include an element for absorbing, storing, and using heat derived from solar energy, adapted to heat the refrigerant, and further adapted to be positioned so as to receive the heat of solar energy;
(b) means for enabling selective directly, and varying of the sequence, of non-reversible flow of the refrigerant through selected elements, bypassing and isolating non-selected elements, of the means for conditioning the refrigerant, adapted to generate a selected one of the plurality of true refrigeration cycles to enable operation of the apparatus in the selected refrigeration cycle for conditioning the refrigerant, to selectively generate, store, and use heating or cooling of the medium or to defrost the apparatus; and
(c) means for interconnecting the means for enabling selective directing of non-reversible flow of the refrigerant, and the plurality of elements of the means for conditioning the refrigerant.

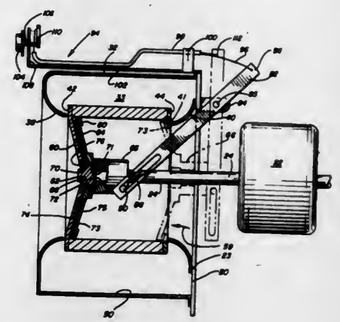
4,553,403
TRANSPORT REFRIGERATION AIR SYSTEM
David H. Taylor, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed May 21, 1984, Ser. No. 612,490
Int. Cl.⁴ F24F *7/06*
U.S. Cl. 62—239 **7 Claims**



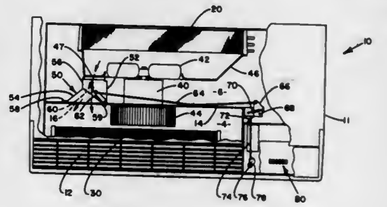
1. An air flow system for a perishable cargo container having a generally right parallelepiped interior shape to contain the cargo, and having a transport refrigeration unit including an evaporator and fan means for effecting air flow through a suction space downstream of said evaporator and through said evaporator, the unit being mounted at the front end wall of the container in generally horizontally-centered relation, and having a conditioned air outlet in its top portion for discharging air toward the rear end of the container and a return air inlet in its bottom portion in communication with said suction space and a normal air flow return space below the cargo space, comprising
duct means in at least one of the upper side corners of said container and extending rearwardly for at least the major portion of the length of said container and adapted to receive air in its rearward end;
means connecting the forward ends of said ducts with said suction space;
said duct means providing a secondary air flow return path operable to provide return flow therethrough from the rear of the container to a degree related to the overall resistance to air flow return of that return which is through said floor return space.

4,553,404
ROOM AIR CONDITIONER WITH HIGH CAPACITY FRESH AIR CIRCULATION MEANS
Gregory L. Malchow, and Edwin H. Frohbieter, both of Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jun. 20, 1984, Ser. No. 622,868
Int. Cl.⁴ F25D *23/12*
U.S. Cl. 62—262 **20 Claims**

1. In a room air conditioner having means defining an indoor section and an outdoor section, a blower housing disposed within said indoor section and having an indoor air inlet, an outdoor air inlet and an air outlet, improved means or selectively delivering desired proportions of indoor and outdoor air to said outlet comprising:
a centrifugal blower wheel rotatably mounted within said blower housing, said blower wheel defining an axis of rotation and having a first inlet communicating with said indoor air inlet and a second axially spaced inlet communicating with said outdoor air inlet;
a movable air baffle positioned within said blower wheel for movement along said blower wheel axis; and
mounting means for adjustable positioning said baffle at any of various locations along said axis to vary the ratio of the axial length of the blower acting on the indoor air to the axial length of the blower acting on the outdoor air to thereby accurately control the proportion of indoor air and outdoor air delivered to said outlet.



4,553,405
VENT ASSEMBLY FOR USE WITH AN AIR CONDITIONING UNIT
James E. Napolitano; Theodore S. Bolton, both of Liverpool, and John P. McHale, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 9, 1983, Ser. No. 559,677
Int. Cl.⁴ F25D *23/12*
U.S. Cl. 62—262 **11 Claims**



1. An air conditioning unit which is divided by a partition into an indoor section and an outdoor section, said indoor section having an indoor heat exchanger and fan means for circulating air between the space to be conditioned and the indoor section, and said outdoor section having an outdoor heat exchanger and fan means for circulating outdoor air through the outdoor section which comprises:
an outdoor circulating fan means shroud including surfaces for directing outdoor air within the outdoor section and further defining an opening therethrough;
said partition defining an opening;
a vent assembly including surfaces defining an air passageway extending from the opening in the outdoor circulating means shroud to the opening in the partition such that air may flow from the outdoor section to the indoor section, and said vent assembly further including door means positioned in the passageway for controlling the flow of air therethrough; and
said door means including a door frame located in said passageway between said door and said partition, such that when said door is in the closed position the air pressure in the outdoor section tends to force said door against said door frame to thereby provide a sealing effect therebetween.

4,553,406

DEVICE FOR STORING AND AUTOMATIC DRAWING OF SO-CALLED INTERMEDIATE ELEMENTS, FOR LOADING, FEEDING AND DISCHARGE OF CERTAIN PRODUCTS, FROM A FREEZER TO HORIZONTAL PLATES

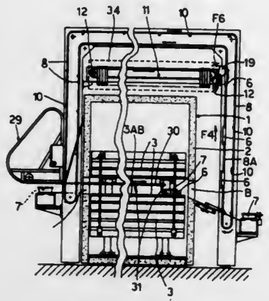
Angelo Richelli, Residenza Acquario, Milano 2 Segrate, and Guido Battistella, Via Volturno 80, Brugherio Milano, both of Italy

Continuation-in-part of Ser. No. 294,561, Aug. 19, 1981, Pat. No. 4,432,214, which is a continuation of Ser. No. 167,111, Jul. 6, 1980, abandoned. This application Aug. 4, 1983, Ser. No. 520,158

Claims priority, application Italy, Aug. 4, 1982, 22734 A/82

Int. Cl.⁴ F25C *5/14*

U.S. Cl. 62—341 **12 Claims**



1. A device for automatic storing and for recovering from storage, elements for loading, feeding and unloading products from a horizontal plate freezer, said freezer including a conveying system for said elements outside said freezer for conveying said elements from the freezer outlet to the freezer inlet, and, outside and adjacent thereto, means for receiving, supporting and storing said elements, including means for carrying elements exiting said freezer one by one onto said receiving, supporting and storing means.

4,553,407

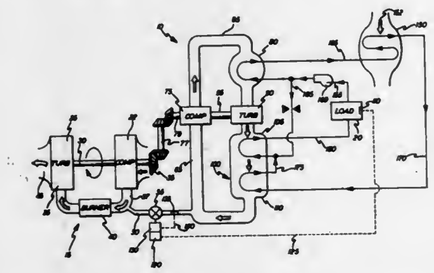
HIGH EFFICIENCY AIR CYCLE AIR CONDITIONING SYSTEM

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1983, Ser. No. 560,612

Int. Cl.⁴ F25D *9/00*

U.S. Cl. 62—402 **7 Claims**



1. An air cycle air conditioning system, said system including a compressor for compressing air supplied thereto, said compressor discharging to an expansion turbine which expands and chills said compressed air for the cooling of a load, said system further including a high pressure regenerative heat exchanger by which said chilled air precools said compressed air prior to the expansion thereof within said turbine, said air conditioning system being characterized by:

a low pressure heat exchanger, said expanded and chilled air being discharged through said low pressure heat exchanger from said expansion turbine; and

a closed-loop liquid circulatory system, portions thereof being in heat exchanger relationship with said compressed air in said regenerative heat exchanger and said chilled air in said low pressure heat exchanger;

liquid circulating within said closed-loop circulatory system cooling air conditioning system airflow by absorbing heat therefrom within said regenerative heat exchanger and rejecting said heat to said chilled air within said low pressure heat exchanger.

4,553,408

CENTRIFUGAL HEAT PUMP

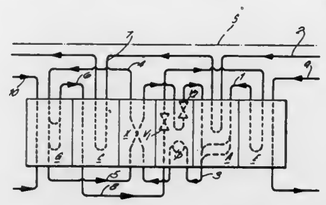
William T. Cross, and Colin Ramshaw, both of Cheshire, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 9, 1984, Ser. No. 588,105

Claims priority, application United Kingdom, Mar. 22, 1983, 8308135

Int. Cl.⁴ F25B *15/00*

U.S. Cl. 62—476 **4 Claims**



1. An absorption heat pump, comprising: a set of operatively interconnected components including an evaporator, an absorber, a vapor generator and a condenser; at least one of said components comprising at least one rotatable plate having two opposite faces separated by the thickness of such plate, and each such plate being constructed and arranged for accomplishing heat transfer across such thickness, wherein;

(a) said vapour generator is mounted upon a rotary shaft for rotation therewith and comprises at lest one said plate constructed and arranged such that across a first said face of which a first fluid source of heat may flow and across the second said face of which a solution of a vapourisable working fluid may flow;

(b) said condenser is mounted upon said rotary shaft for rotation therewith and comprises at least one plate constructed and arranged such that to a first face of which vapourised working fluid from said vapour generator may flow and across the second face of which a medium to be heated may flow;

(c) said absorption heat pump further comprises a rotary heat exchanger, mounted upon said rotary shaft for rotation therewith and comprising at least one plate constructed and arranged such that across a first face of which a depleted solution of working fluid from said vapour generator may flow and across the second face of which a stronger solution of working fluid for feeding to said vapour generator may flow;

(d) said absorption heat pump further comprises a pump, mounted about said rotary shaft and adapted to be driven thereby, said pump being constructed and arranged to deliver said stronger solution of working fluid under pressure to the vapour generator;

(e) said absorber is mounted upon said rotary shaft for rotation therewith and comprises at least one plate constructed and arranged such that across a first face of which said working fluid in vapour from and said depleted solution of working fluid form said rotary heat exchanger may together flow and across the second face of which said medium to be heated may flow;

(f) said evaporator is mounted upon said rotary shaft for rotation therewith and comprises at least one plate constructed and arranged such that across a first face of which an ambient fluid source of heat may flow and across the second face of which condensed working fluid from said condenser may flow;

(g) said absorption heat pump further comprises a plurality of flow restriction valves constructed and arranged to maintain the pressure in the vapour generator and in the condenser at an elevated level; and

(h) said absorption heat pump further comprises drive means constructed and arranged to rotate said rotary shaft.

4,553,409

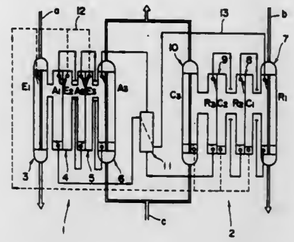
MULTIPLE REGENERATION MULTIPLE ABSORPTION TYPE HEAT PUMP

Tetsuro Furukawa, Suita, Japan, assignor to Hitachi Zosen Corporation, Osake, Japan

Filed Jul. 12, 1984, Ser. No. 630,208

Int. Cl.⁴ F25B *15/00*

U.S. Cl. 62—476 **9 Claims**



1. A multiple regeneration multiple absorption type heat pump comprising multiple absorption means and multiple regeneration means between which a vaporizable liquid refrigerant and a liquid absorbent are circulated, wherein

said multiple absorption means comprises

an evaporator for evaporating the refrigerant from said multiple regeneration means by the heat of an external low-temperature source,

one or more absorbing/evaporating units having an absorbing zone and an evaporating zone in heat conduction with said absorbing zone, said absorbing zone being adapted to allow the absorbent introduced thereinto to absorb the refrigerant vapor from said evaporator or the evaporating zone of a preceding absorbing/evaporating unit, said evaporating zone being adapted to evaporate the refrigerant from said multiple regeneration means by the heat of absorption produced in said absorbing zone, and

an absorber for allowing the absorbent introduced thereinto to absorb the refrigerant vapor from the evaporating zone of the or a preceding absorbing/evaporating unit, a heat receiving fluid being adapted to be at least partially passed through said absorber so as to be heated by the heat of absorption produced in said absorber, and

said multiple regeneration means comprises

a regenerator for concentrating the absorbent introduced thereinto by evaporating the absorbed refrigerant by the heat of an external high-temperature source,

one or more condensing/regenerating units having a condensing zone and a regenerating zone in heat conduction with said condensing zone, said condensing zone being adapted to condense the refrigerant vapor from said regenerator or the regenerating zone of a preceding condensing/regenerating unit, said regenerating zone being adapted to concentrate the absorbent introduced thereinto by evaporating the absorbed refrigerant by the heat of condensation produced in said condensing zone, and

a condensor for condensing the refrigerant vapor from the regenerating zone of the or a preceding condensing-/regenerating unit, said heat receiving fluid being adapted to be at least partially passed through said condenser so as to be heated by the heat of condensation produced in said condensor,

said multiple absorption means and said multiple regeneration means being so adapted that the temperature of said absorber is generally equal to the temperature of said condenser.

4,553,410

KNITTING NEEDLES WITH A FLEXIBLE CORD

Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan

Filed Aug. 29, 1983, Ser. No. 527,424

Claims priority, application Japan, Aug. 30, 1982, 57-131060[U]; Jan. 11, 1983, 58-2534[U]

Int. Cl.⁴ D04B *35/02*

U.S. Cl. 66—117 **9 Claims**

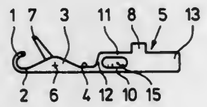


1. A knitting needle with a flexible cord, comprising at least one rigid needle body made of bamboo, said needle body having a tapered rear end section with an annular rear terminal end wall surrounding an opening mouth of an axial bore formed in said tapered rear end section, said axial bore extending forwardly from said terminal rear end wall into said needle body within a limited range slightly beyond an axial length of said tapered rear end section;

a rigid tubular member disposed within and fastened to said axial bore of said needle body; and

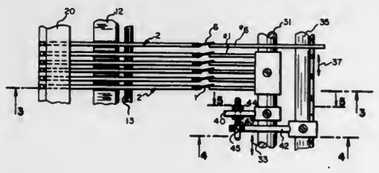
a flexible cord having an integral axial extension which axially extends forwardly from an enlarged forward end wall of a substantially conical enlargment formed integrally with the flexible cord, and is inserted into and fastened to a mounting bore of said rigid tubular member, wherein a rear end wall of said tubular member is in contact with said enlarged forward end wall of said enlargment and said annular rear terminal end wall of the needle body is in contact with said enlarged forward end wall of said enlargement to thereby form a smooth continuous joint between said tapered rear end section of said needle body and said substantially conical enlargment of said flexible cord.

4,553,411
STAMPED KNITTING TOOL FOR KNITTING MACHINES
Bernhard Schuler, Sonnenbühl, and Ernst Beck, Bitz, both of Fed. Rep. of Germany, assignors to Theodor Groz & Söhne and Ernst Beckert Nadelfabrik KG, both of Albstadt, Fed. Rep. of Germany
Continuation of Ser. No. 254,030, Apr. 14, 1981, abandoned.
This application Oct. 4, 1984, Ser. No. 658,060
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014751
Int. Cl.⁴ D04B *35/02*
U.S. Cl. 66—123 **1 Claim**



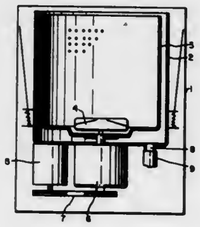
1. A stamped knitting needle for a knitting machine, said needle comprising:
a hooked needle;
at least one operating foot; and
a shank portion having first and second ends, at least a portion of said shank supporting said foot, said shank including a longitudinally extending upper flexible rib having a width not greater than 1.1 mm., a longitudinally extending lower flexible rib having a width not greater than the width of said upper rib, a first guide portion at said first end of said shank, a second guide portion at said second end of said shank, said first and second guide portions interconnecting said upper and lower ribs and said upper and lower ribs defining an opening therebetween, said opening being wider than either of said upper or lower flexible ribs, said opening being greater than two times as long as the combined width of said upper and lower flexible ribs, and said opening being offset from said foot and positioned entirely between said foot and said needle hook to absorb vibrations transmitted to said shank by said operating foot.

4,553,412
FLAT BED KNITTING MACHINE HAVING HIGH SPEED SECONDARY STITCH ATTACHMENT
Carl J. Odham, Asheboro, N.C., assignor to Stedman Corporation, Asheboro, N.C.
Filed Feb. 7, 1984, Ser. No. 577,816
Int. Cl.⁴ D04B *23/00*
U.S. Cl. 66—207 **4 Claims**



1. A flat bed knitting machine having a high speed secondary stitch attachment, said machine comprising a plurality of reciprocally movable knitting needles, a plurality of main guides for individually guiding each of a plurality of base yarns, a main guide bar mounting said main guides adapted for a shogging and swinging motion about its longitudinal axis to impart a lapping movement to said main guides to wrap individual base yarns about an individual needle, a secondary guide for guiding a secondary yarn, a secondary guide bar mounting said secondary guide adapted for shogging and swinging motion about its longitudinal axis which extends parallel to and is spaced from the longitudinal axis of the main guide bar for guiding said secondary yarn into engagement with at least one of said needles to which a base yarn is guided, and connecting means between said main guide bar and said secondary guide bar for connecting said guide bars together for unified swinging movement and for shogging movement independent of one another.

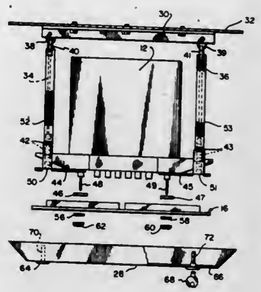
4,553,413
WASHING MACHINE
Nobuo Genji, Osaka; Wataru Takahashi, Amagasaki; Masatatsu Nakamura, Osaka, and Yoichi Kawai, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
PCT No. PCT/JP83/00140, § 371 Date Jan. 3, 1984, § 102(e) Date Jan. 3, 1984, PCT Pub. No. WO83/04058, PCT Pub. Date Nov. 24, 1983
PCT Filed May 10, 1983, Ser. No. 574,103
Claims priority, application Japan, May 10, 1982, 57-78936; May 10, 1982, 57-78952; Jan. 4, 1983, 58-330
Int. Cl.⁴ D06F *33/02*
U.S. Cl. 68—12 R **9 Claims**



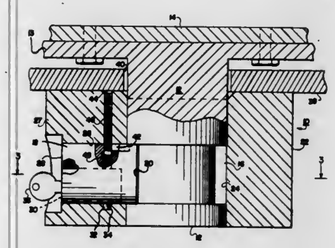
1. A washing machine comprising:
a washing load agitating body;
a washing load size detecting means having an instantaneous load variation value detection menas for detecting instantaneous values of variation in the load on said agitating body, and level judging means for judging the levels of said values and having integrating means for integrating said instantaneous values of the variations in the load over predetermined periods of time and comparator means for comparing the integrated values with a predetermined value for producing a washing load size signal; and control means to which said size detecting means is connected for controlling the washing operation of said washing machine in response to said washing load size signals.

4,553,414
THEFT PREVENTION DEVICE FOR AUTOMOBILE AUDIO EQUIPMENT
Mario A. Caputo, 4905 Avenue "M", and Jeffrey C. Caputo, 4903 Avenue "M", both of Brooklyn, N.Y. 11234
Filed Jun. 4, 1984, Ser. No. 617,015
Int. Cl.⁴ B65D *55/14;* E05B *73/00*
U.S. Cl. 70—58 **10 Claims**

1. An improved theft prevention device for an automobile radio receiver as installed within a dashboard and enclosed behind an instrument panel trim plate, said improvement comprising a mounting assembly secured to a portion of the automobile body behind the dashboard, said mounting assembly including an anchor bracket attached to said auto body portion and at least one support rod extending from said anchor bracket forwardly to the dashboard, guide plate means attachable to the radio, said guide plate means being adapted for accommodatingly positioning a forward end of the support rod, said forward end of the support rod further including a coupling member, a cover plate having integral fastening means, said fastening means being adapted for engaging the coupling member for adjustable tightening of the cover plate to urge the cover plate into abutting contact with the dashboard in overlaying relationship with respect to the radio receiver.



4,553,415
TRAILER KINGPIN LOCKING DEVICE WITH PROTECTED LOCKING BAR APERTURE
Constant O. Maffey, 34 Burchfield Ave., Cranford, N.J. 07016
Filed Nov. 16, 1984, Ser. No. 671,989
Int. Cl.⁴ F16B *41/00*
U.S. Cl. 70—232 **4 Claims**



1. In a locking device for use in connection with a trailer kingpin having a circumferential recess therein, said locking device comprising (1) a casing having a first aperture therein for receiving said kingpin and having a substantially thick wall surrounding said aperture, said casing being provided with a second aperture extending completely through the wall thereof and opening into said first aperture; (2) a locking bar having an inner end and an outer end and slidably disposed in said second aperture whereby upon predetermined inward sliding movement thereof its inner end enters said recess in the kingpin, said locking bar having further a determinate transverse cross-section normal to its line of sliding movement, and (3) a locking means disposed within the locking bar and engageable with and releasable from said casing, the improvement comprising a protrusion on the outer wall of the casing in the area of the second aperture whereby the outer end of said locking bar is recessed within said second aperture when said locking bar is in locked position extending into the recess in said kingpin, said second aperture from the outer end of said locking bar in locked position to the outer wall of the protrusion on said casing being counterbored beyond said transverse cross-section of said locking bar.

4,553,416
DRY TYPE CONTINUOUS WIRE DRAWING PROCESS
Chuzoh Sudoh; Hyoji Hagita, and Satoru Fujii, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Filed Jun. 20, 1983, Ser. No. 505,843
Int. Cl.⁴ B21C *9/00, 9/02, 43/04*
U.S. Cl. 72—40 **7 Claims**



1. A dry type continuous wire drawing process comprising the following continuously conducted steps of:
feeding continuously a steel wire by unwinding the same from a pay-off stand;
mechanically descaling the continuously fed wire;
guiding and passing the descaled wire through a lubricant surfacer bath, a reinforcing lubricant bath and a pre-die lubricant bath, which baths are arranged in tandem in the recited order so that the wire runs therethrough continuously;
said lubricant surfacer bath containing therein a lime powder having a mean particle diameter not larger than 50 microns and having near an exit thereof a powder applying die having an internal diameter which is from 0.1 to 0.2 mm larger than the diameter of the descaled wire so as to permit application of a lime coating on the surface of the wire while said wire passes through said lubricant sufacer bath;
said reinforcing lubricant bath containing therein a sodium stearate powder having a mean particle diameter not smaller than 2 microns and having near an exit thereof a powder applying die having an internal diameter slightly larger than the diameter of the lime-coated wire so as to apply a coating of sodium stearate on the surface of the lime-coated wire while allowing the wire to run through said reinforcing lubricant bath;
said pre-die lubricant bath containing a calcium stearate powder for applying a coating of calcium stearate on the surface of the sodium stearate-coated wire, thereby forming three layers of coating on the surface of the descaled wire; and
drawing the lubricant-coated wire through a drawing die.

4,553,417
IMPLANTATION OF CERTAIN SOLID LUBRICANTS INTO CERTAIN METALLIC SURFACES BY MECHANICAL INCLUSION
Philip O. Badger, Niles, Mich., assignor to Miracle Metals, Inc., Denver, Colo.
Continuation-in-part of Ser. No. 465,333, Feb. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 254,944, Apr. 16, 1981, abandoned. This application Jun. 12, 1984, Ser. No. 619,823
Int. Cl.⁴ B21D *53/10;* B05D *3/00;* C21D *6/00, 9/46;* F16C *33/10*
U.S. Cl. 72—42 **13 Claims**

1. A process of providing a lubricious surface for certain carbon and stainless steels for high wear applications wherein a length of the steel is reduced from an initial larger to a final smaller cross-sectional size by one or more cold workings, characterized by: preparing the surface of the steel including annealing the steel in order to form voids on the surface thereof; covering the surface of the steel by coating the same with micrometer sized particles of at least one inorganic solid lubricant; and subsequently cold working the steel after said coating to reduce the same to said final cross-sectional size, the

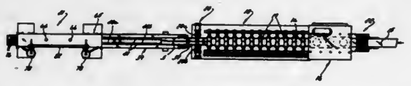
temperatures during said coating and subsequent cold working being below the oxidation temperature of the lubricant.

4,553,418

APPARATUS FOR PRODUCING ELONGATED WORKPIECES OF PREDETERMINED TRANSVERSE PROFILE

Herbert M. Stoehr, New Berlin, and John J. Toben, Milwaukee, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Mar. 15, 1984, Ser. No. 589,758
Int. Cl.⁴ B21D *5/08, 7/06, 43/12;* **B21B** *1/24*
U.S. Cl. 72—132 **14 Claims**



6. Apparatus for converting lengthwise continuous flat metal strip into substantially identical elongated workpieces, each having a fold along its length intermediate its side edges and having curvature across its width between said fold and at least one of its side edges, said apparatus comprising:

A. roller forming means through which strip passes in constant lengthwise motion in one direction at a first speed and by which said curvature is imparted;

B. a flying shear at a cutoff station spaced in said direction from the roller forming means whereby transverse cuts are made through the strip as it continues in said motion, to sever workpiece blanks from it;

C. an endless conveyor comprising a pair of laterally spaced apart top stretches cooperable to support a workpiece blank bridging across them and

(1) which extend from said cutoff station to a folding station spaced in said direction from the cutoff station and

(2) which move constantly in said direction at a second speed, faster than said first speed, to lengthwise separate each severed blank from the strip while carrying the blank to the folding station;

D. a folding press at said folding station comprising

(1) a ram having a blade-like upper portion movable up and down between said stretches and having an upper edge extending in said direction,

(2) means for actuating said ram up from and down to a lowered position at which said top edge is below a blank on said stretches, and

(3) a folding die above said ram, said folding die

(a) having a downwardly opening groove wherein the upper edge portion of the ram is receivable and which cooperates with the same in folding a workpiece that is between the ram and the folding die, and

(b) being movable up and down between

(i) a defined lower position wherein the folding die is above said stretches and a workpiece blank on them but is engageable by the blank as it is lifted off of said stretches by the rising ram, and from which the folding die is raised by the ram, and

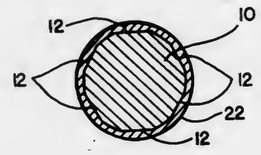
(ii) a defined raised position which the folding die attains while the ram continues to rise and at which the ram cooperates with the folding die to fold a workpiece.

4,553,419

PROCESS FOR FORMING CELL CANS HAVING INTERNAL LONGITUDINAL RIBS

John T. Goodman, Croton-on-Hudson, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Mar. 29, 1982, Ser. No. 363,172
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—349 **9 Claims**



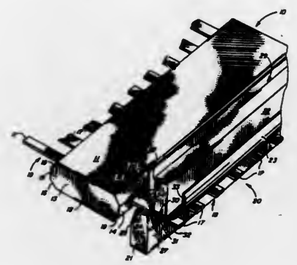
1. An improved process for forming an electrochemical cell having a cylindrical cell container whereby upon construction of the cell the contact between the cell container and an electrode material contained therein is enhanced, said cylindrical cell container being formed by an ironing punch upon which a metal blank container having a cup-like configuration is positioned, said ironing punch forcing said metal blank through a series of ironing rings, each successive ring having a smaller inner diameter than the previous ring, said rings successively deforming the metal container so as to progressively thin the walls of the container, said improvement comprising, as part of said deformation step, simultaneously forming a wall having a non-cylindrical inner surface, and a substantially cylindrical exterior surface, and thereafter disposing an electrode into contact with said non-cylindrical inner surface, with said non-cylindrical inner surface having at least one internally extending portion, whereby the contact of said container wall with said electrode material is enhanced.

4,553,420

METHOD AND APPARATUS FOR TOUCH-FREE LEAD BENDING

Richardus H. J. Flerkens, Herwen, and Ireneus J. T. M. Pas, Rozendaal, both of Netherlands, assignors to ASM Fico Tooling, b.v., Herwen, Netherlands

Filed Sep. 30, 1983, Ser. No. 537,681
Int. Cl.⁴ B21D *5/02*
U.S. Cl. 72—380 **20 Claims**



1. An apparatus for bending the leads of a dual-in-line semiconductor package from a manufacturing position in which a plurality of leads are disposed on each of two sides of the package and extend outwardly from the side of the package substantially parallel to the plane of the top surface thereof to a use position in which said plurality of leads on each side of the package are operably disposed substantially nearly vertically downward and approximately nearly normal to the plane of the bottom face of said package for engaging pin sockets and

the like for incorporation into an electrical circuit, said bending apparatus comprising:

an anvil means having a substantially flat distal end for operatively engaging and supporting that portion of the underside of said leads immediately adjacent at least one side of said package for supporting said leads to prevent bending and the like from immediately adjacent said package to a bending point on the opposite side of the anvil means.

a vertically movable punch means operably disposed over the top portion of all of the leads on at least one side of the package immediately adjacent to said anvil means for bending all of said plurality of leads on said at least one side of said package from the horizontal position to the substantially nearly vertical position; and

a smooth thin band of metal operably disposed about the lead-engaging end portion of said punch means for creating a barrier between said punch means and said leads so that substantially all sliding, scoring, scratching, and the like, of said plurality of leads is eliminated as the punch slides across said band instead of across said leads and said band remains in contact with the top side of said leads during the entire bending operation.

4. A method of bending leads in a multiple lead dual-in-line package having two rows of leads, one on each side of said package, and wherein the said plurality of leads are originally substantially parallel to the surface of the package and ultimately substantially nearly vertical to the plane of the package for insertion into electrical sockets and the like, said method comprising the steps of:

supporting the base of at least one row of leads proximate the junction where one end of said leads is disposed in said package;

forming a U-shaped channel having a length at least equal to the length of said row of leads from a smooth thin sheet of metal;

inserting a vertically positionable bending member within said U-shaped channel;

lowering said bending member and said surrounding metal sheet to operatively engage the top portions of one row of leads immediately outside of said supported bases; and

bending said row of leads from the horizontal position to the substantially nearly vertical position without said bending member physically touching said leads, so that any sliding of the bending member is over the surface of the steel sheet to substantially eliminate scratching and similar damage to said leads.

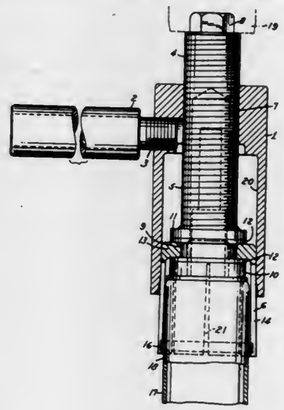
4,553,421

RING COMPRESSOR TOOL

Lawrence A. Provost, Warren, and Robert D. Boyer, Ferndale, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Apr. 30, 1984, Ser. No. 605,057
Int. Cl.⁴ B21D *41/04*
U.S. Cl. 72—402 **4 Claims**

1. A tool for compressing a non-resilient metal ring to a smaller diameter comprising in combination a receiver, a threaded shaft mounted in the receiver, a collet having a rotatable connection with the shaft, said receiver being a hollow member into which the collet retreats upon turning of the threaded shaft, means adjacent the ends of the collet fingers when open which receive a ring to be compressed whereby upon turning the threaded shaft the collet is drawn into the receiver and the fingers coact with the inner wall of the receiver to move the fingers of the collet toward closed position and thereby decrease the diameter of the collet and compress the ring to a smaller diameter, and a handle for manually holding the receiver against turning while the threaded shaft is turned to draw the collet into the receiver.

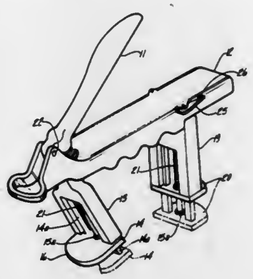


4,553,422

TAP DUCT CRIMPING TOOL

Robert M. Bilkie, 6936 Gillman, Garden City, Mich. 48135

Filed Dec. 5, 1984, Ser. No. 678,588
Int. Cl.⁴ B21J *13/08*
U.S. Cl. 72—458 **6 Claims**



1. A bending tool for securing a tap duct to a main duct wherein the tap duct has a flanged interior end extending into the main duct through an opening therein and also has an open exterior end, said tool comprising:

(a) base means for extending transversely across and seating in supported relationship against the exterior open end of the tap duct;

(b) a handle means pivotably attached to said base means;

(c) a rear leg assembly attached to said base means, said rear leg assembly adapted to extend interiorly into said duct, said rear leg assembly having a rear leg means, a retaining plate integrally attached thereto, and a duct-engaging foot means; and wherein said foot means is slidably attached to said rear leg assembly; and

(d) manually actuated bending means mounted on said base means for extending therefrom into the open end of said tap duct and having anvil means movable in a bending movement upon actuation of said bending means for bending a flange of said flanged end outwardly of said tap duct and toward the interior surface of said main duct adjacent to said opening; said bending means comprising a duct-engaging front leg assembly including a front leg inte-

grally attached to said handle and adapted to extend into said duct and an anvil means slidably attached to said front leg means and having a duct-engaging crimping face; wherein said front leg extends substantially perpendicular to said handle means and is adjustable so as to accommodate tap ducts of varying depths.

4,553,423

GAS DOSER

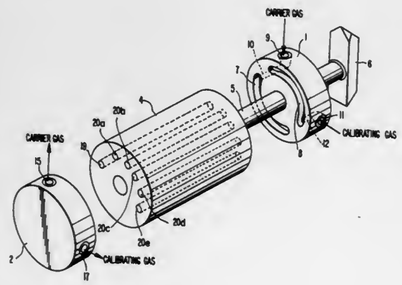
Masahiro Tanimoto, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jun. 11, 1984, Ser. No. 619,273

Claims priority, application Japan, Jun. 28, 1983, 58-101578[U]

Int. Cl.⁴ G01C *17/38*

U.S. Cl. 73—1 G **6 Claims**



1. A gas doser, comprising

a gas input member having a carrier gas input port and a calibrating gas input port, and having a first gas chamber communicating with said carrier gas input port and a second gas chamber communicating with said calibrating gas input port;

a gas output member having a carrier gas output port and a calibrating gas output port, and having a third gas chamber communicating with said carrier gas output port and a fourth gas chamber communicating with said calibrating gas output port; and

a change-over rotor rotatable about a longitudinal axis of rotation, disposed between said gas input member and said gas output member, having a carrier gas ventilating conduit for providing communication between said first gas chamber and said third gas chamber and a plurality of calibrating gas measuring conduits for providing communication between said second gas chamber and said fourth gas chamber, opposite ends of said carrier gas ventilating conduit and said plurality of calibrating gas measuring conduits being mutually spaced from each other about said longitudinal axis of rotation equal distances from said axis, said change-over rotor being successively rotatable between a first position in which said second gas chamber communicates with said fourth gas chamber through said carrier gas ventilating conduit and a plurality of second positions in which said first gas chamber communicates with said third gas chamber through a successively increasing number of said plurality of calibrating gas measuring conduits.

4,553,424

METHOD FOR DETECTING AN OXYGEN CONCENTRATION AND A METHOD FOR CONTROLLING AN AIR-TO-FUEL RATIO BASED ON THE DETECTED OXYGEN CONCENTRATION

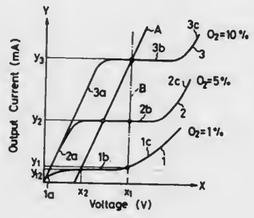
Shigenori Sakurai; Takashi Kamo, and Shirou Kimura, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 22, 1983, Ser. No. 477,845

Claims priority, application Japan, Mar. 23, 1982, 57-45902; Apr. 5, 1983, 58-56365

Int. Cl.⁴ G01N *27/04*

U.S. Cl. 73—27 R **6 Claims**



1. A method for measuring the concentration of oxygen in a gas to be detected using a limiting current type oxygen sensor which is adapted to output a current in response to the oxygen concentration of the gas and the characteristic curve between voltage applied to the oxygen sensor and the current outputted therefrom of which consists of a first leading edge portion that increases in current intensity level with the increase in the voltage applied to the oxygen sensor within a voltage range less than a first magnitude of voltage, a flat portion of a substantially constant current intensity level from the first magnitude to a second magnitude of voltage even with the increase in voltage, and a second leading edge portion for a voltage more than the second magnitude, and said limiting current type oxygen sensor having the voltage range of from the first to second leading portions which gives rise to the flat portions of the voltage-current characteristic curves shift depending on the different oxygen concentrations of the gas, which method comprising the steps: determining the position and slope relationships of an inclined straight line having voltage applied to the oxygen sensor and the current outputted from the oxygen sensor as its variables that the voltages applied to the oxygen sensor and taken along the inclined straight line at different oxygen concentrations fall within the specified voltage range which gives rise to the flat portion at each of said oxygen concentrations;

determining the relationship of an outputted current-oxygen conversion straight line with reference to the voltage-current characteristic curve and the inclined straight line;

inputting a given magnitude of initial voltage to the oxygen sensor to cause it to output a current;

correcting the initial voltage based on the outputted current with reference to the inclined straight line;

inputting the corrected voltage to the oxygen sensor to cause it to output a current; and

determining the concentration of oxygen in the gas from the current thus outputted from the application of the corrected voltage with reference to the outputted current-oxygen concentration conversion straight line.

4,553,425

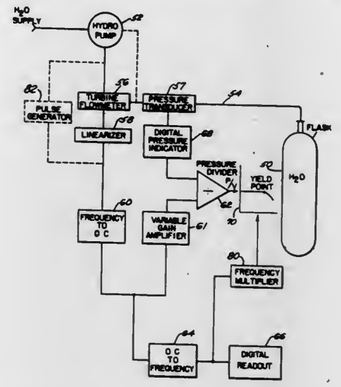
DYNAMIC PRESSURE TEST UNIT-RATIO METHOD

Peter R. Tkachuk, Exeter, N.H., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1984, Ser. No. 576,229

Int. Cl.⁴ G01M *5/00*

U.S. Cl. 73—37 **1 Claim**



1. A dynamic pressure test unit comprising:

a water supply pump for supplying water;

a flask connected to said water supply pump for receiving said water;

a turbine flowmeter connected for measuring the amount of water flow to said flask and for supplying frequency pulses directly proportional to the volume flow rate from said pump to said flask;

linearizer means connected to said flowmeter for minimizing the effects of magnetic drag and increasing the range and linearity of said flowmeter, said linearizer means for providing pulse output signals whose frequency is proportional to the volume flow rate from said pump to said flask;

a frequency to DC transmitter connected to receive the pulse output signals from said linearizer means and providing an output DC signal proportional to the frequency of the received pulse signals;

a variable gain amplifier connected to receive said frequency to DC transmitter DC output for adjusting the gain of said DC output and providing output signals;

a pressure transducer connected for measuring the pressure of water in the flask and for supplying an output of continuous electrical signals indicative of said pressure of water;

a divider network connected to receive said variable gain amplifier output signals and said pressure transducer output signals and providing an output electrical signal indicative of a quotient of the received signals; and

a stripchart recorder connected to receive said output electrical signal from said divider network for displaying said received signal as it varies over a time frame.

4,553,426

REFERENCE PULSE VERIFICATION CIRCUIT ADAPTABLE FOR ENGINE CONTROL

Zbynek A. Capurka, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 23, 1984, Ser. No. 613,653

Int. Cl.⁴ G01M *15/00*

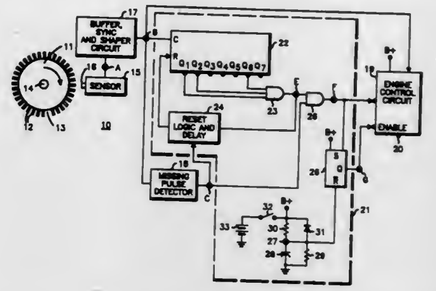
U.S. Cl. 73—116 **15 Claims**

1. A reference pulse verification circuit comprising;

means for producing reference pulses corresponding to the occurrence of predetermined reference rotational positions of a rotating shaft,

means for producing a pulse train comprising a plurality of pulse train pulses which occur between the occurrence of said reference rotational positions of said shaft, and

means for receiving both said reference pulses and said pulse train pulses and verifying the correctness of the occurrence of said reference pulses by providing a verified



reference pulse in response to each reference pulse which occurs at substantially a predetermined number of pulse train pulses after the occurrence of a preceding reference pulse, whereby spurious reference pulses can be differentiated from true reference pulses.

4,553,427

ROTATIONAL REFERENCE POSITION DETECTION APPARATUS

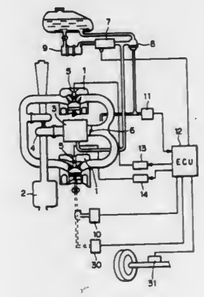
Hiroaki Kuraoka; Toshinori Mizuno, both of Oubu; Katsumasa Matsui, and Masahiro Ohba, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 7, 1984, Ser. No. 587,011

Claims priority, application Japan, Mar. 8, 1983, 58-37785; Mar. 14, 1983, 58-42974

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—117.3 **8 Claims**



1. An engine crank angle determining arrangement comprising:

a rotatable member coupled to a crankshaft of said engine so as to rotate in synchronism therewith and having a plurality of spaced sensible elements, said sensible elements being arranged with uniform angular spacing except that one such element shall be missing;

detecting means for detecting the rotation of said sensible elements and generating an angle signal indicative thereof, said angle signal including information as to the times said sensible elements are in a predetermined positional relationship with said detecting means;

sensor means for sensing at least one engine condition and generating an engine condition signal indicative thereof; and

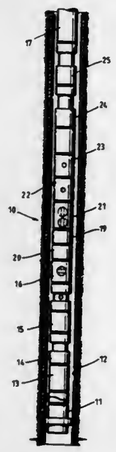
an electronic control device, coupled to receive said engine condition signal and said angle signal, said electronic control device including an engine condition detecting means for determining, responsive to said engine condition signal, whether said engine is operating in a "low" state or not, and crank angle determining means, coupled to said engine condition detecting means, for processing said angle signal to determine a reference crank position either (a) based on a time difference between the times adjacent sensible elements are in said predetermined positional relationship with said detecting means if the engine is not operating in said low state or (b) based on a ratio of time differences between the times that adjacent pairs of sensible elements are in said predetermined positional relationship with said detecting means if said engine is operating in said low state.

4,553,428

DRILL STEM TESTING APPARATUS WITH MULTIPLE PRESSURE SENSING PORTS

James M. Upchurch, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 3, 1983, Ser. No. 549,361
Int. Cl.⁴ E21B *47/06*
U.S. Cl. 73—152 **12 Claims**



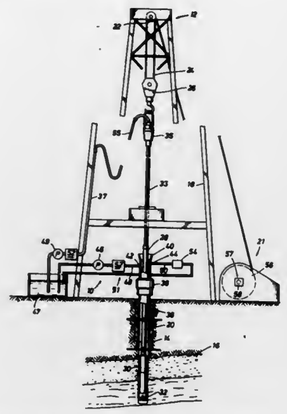
1. Well testing apparatus, comprising:
a tubular housing having a bore therethrough;
a valve for opening and closing said bore;
a pressure transducer mounted in the wall of said housing for sensing well fluid pressure and providing an indication thereof;
first, second and third passages in said wall for respectively communicating said transducer with fluid pressures at first, second and third locations external of said wall, each of said passages joining at least one other of said passages; and
user settable plug means positioned at said passage junctions for communicating a selected one of said first, second and third location pressures with said pressure transducer.

4,553,429

METHOD AND APPARATUS FOR MONITORING FLUID FLOW BETWEEN A BOREHOLE AND THE SURROUNDING FORMATIONS IN THE COURSE OF DRILLING OPERATIONS

John L. Evans; George F. Gehrig, and Jerry M. Speers, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Feb. 9, 1984, Ser. No. 578,721
Int. Cl.⁴ E21B *49/00*
U.S. Cl. 73—155 **14 Claims**



1. A method for monitoring fluid flow between a borehole containing drilling fluid and the surrounding subterranean formations in the course of moving a drill string within the borehole, the method comprising the steps of:
transferring drilling fluid between said borehole and a drilling fluid handling system at a rate adequate to maintain the drilling fluid at a substantially constant reference level in said borehole;
generating a first signal representing the rate at which drilling fluid is added to the borehole by the drilling fluid handling system;
generating a second signal representing the rate at which drilling fluid is removed from the borehole to the drilling fluid handling system;
generating a third signal representing the net rate at which the fluid capacity of the borehole changes in response to changes in the length of the drill string within the borehole; and
summing the first, second and third signals to obtain a fourth signal substantially representing the rate at which fluid is transferred between the borehole and the formations surrounding the borehole.

4,553,430

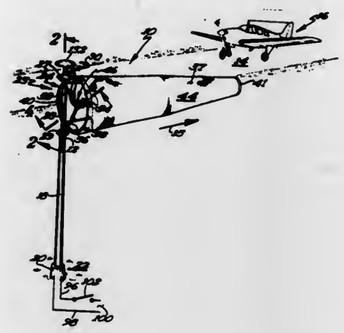
ILLUMINATED WIND SOCKS FOR AIRPORTS

Walter R. Behrens, Rte. 6, Country Club Rd., Minot, N. Dak. 58701

Filed Jun. 29, 1984, Ser. No. 626,522
Int. Cl.⁴ G01W *1/00*
U.S. Cl. 73—188 **8 Claims**

1. A vibration resistant, glowing wind indicator for indicating nighttime wind conditions and usable with a rigid upright post and with an electric power source with first and second energizable electric power wires comprising:
a wind sock assembly mountable to the post for swinging movement about a vertical axis in response to wind conditions, said wind sock assembly including a circular rim, a wind sock formed of translucent material carried on said rim, said wind sock having interior and exterior surfaces

and a generally horizontal central axis coaxial with said circular rim;
a light fixture connectable to the power source and mounted on said wind sock assembly and spaced laterally outward from said vertical axis to rotate with said assembly about said vertical axis and being stationary relative to said swingable wind sock to thereby reduce destructive vibration of said light fixture, said fixture including a bulb socket and a plurality of arms extending outwardly from said bulb socket and each said arm having a remote end attached to said circular rim to retain said socket along said horizontal central axis of said wind sock and confronting said interior surface of said wind sock and first and second electrical conductors electrically connected with said sock and electrically connectable to said power source; and
a light bulb operatively installed in said bulb socket and spaced laterally outward from said vertical axis to swing with said wind sock assembly thereby reducing destructive vibration of said bulb, said bulb confronting said interior surface of said wind sock to continually and uninterruptedly illuminate said interior surface during swinging of the assembly and cause said outer surface of said translucent material to glow in the night, making said glowing wind sock highly visible to observers.

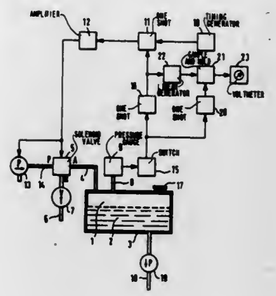


4,553,431

DETERMINING AND INDICATING THE QUANTITY OF A STORED MATERIAL

Walter Nicolai, Maria Louisen Strasse 144, D-2000 Hamburg 60, Fed. Rep. of Germany

Division of Ser. No. 424,663, Sep. 27, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,500
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206130
Int. Cl.⁴ G01F *23/14*
U.S. Cl. 73—290 B **19 Claims**



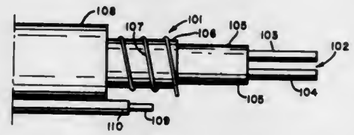
1. Apparatus for determining and indicating the quantity of a stored liquid or solid product contained in a closed container of constant volume together with a gaseous or vaporous filling material filling the residual volume of the container interior and held under a limitedly variable pressure said residual volume serving as a measure of the quantity of the product stored in said container, said apparatus comprising:
a pressure to voltage converter connected to said residual volume for generating a voltage signal indicative of the pressure in said residual volume;
voltage responsive switching means connected to said converter and adapted to assume a first switching state when said converter voltage signal indicates the pressure within said residual volume is below a first preset value and to assume a second switching state when said converter voltage signal indicates the pressure within said residual volume is above a second preset value;
pneumatic source means having an automatic switch-on and switch-off control;
means defining a pressure compensation path between the residual volume and a reference pressure location;
a controllable valve adapted to assume a first value state in which said pressure compensation path is blocked and to assume a second value state in which said pressure compensation path is open;
control means for causing said valve to assume the first value state and switching on said pneumatic source means and for subsequently causing said valve to assume the second value state and switching off said pneumatic source means; and
means responsive to operation of said control means for indicating the pressure within said residual volume.

4,553,432

TEMPERATURE-HUMIDITY SURVEILLANCE EQUIPMENT

Reinhold Barlian, Dieselstrasse 6, D-6990 Bad Mergentheim, Fed. Rep. of Germany, and Martin Fischle, Bad Mergentheim, Fed. Rep. of Germany, assignors to Reinhold Barlian, Bad Mergentheim, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,444
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225921
Int. Cl.⁴ G01N *25/64, 27/14*
U.S. Cl. 73—336 **57 Claims**



1. A measurement cable surveillance provision for pipe-like containers of fluids for continuous temperature and humidity sensing comprising
a first electrical conductor wire;
a second electrical condutor wire running substantially parallel to the first electrical conductor wire and where the first and the second conductor wire are substantially similar;
a hygroscopic insulator means disposed between the first and the second electrical conductor wires for providing humidity control and for spacing said conductor wires at a predetermined distance relative to each other;
a humidity permeable insulator surrounding the hygroscopic insulating means and the first and second electrical conductor wires;
a helically disposed resistance wire for temperature sensing purposes running on the outside of the humidity permeable insulator and about along the electrical conductor

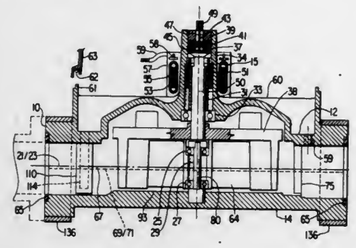
wires and disposed at a spaced distance from the first and the second electrical conductor wires.

4,553,433

ROTARY METER WITH INTEGRAL INSTRUMENT HOUSING

Irwin A. Hicks, Radnor, Pa., assignor to The Singer Company, Stamford, Conn.

Filed May 13, 1983, Ser. No. 494,598
Int. Cl.⁴ G10F *15/14*
U.S. Cl. 73—273 **8 Claims**



1. In a rotary fluid meter, the combination of a lower housing and an upper housing together forming a pressure hull for the meter for connection in a pipeline, the lower and upper housings being adapted to contain the rotating measurement elements of the meter on vertical axes of rotation, and a cover adapted for connection to said upper housing to define therewith an enclosure outside said pressure hull for containing fluid measurement instruments, said upper housing being formed with integral instrument mountings outside said pressure hull adapted to be within said enclosure when said cover is connected to said upper housing, said upper and lower housings being joined along a plane which coincides with the centerline of said pipeline.

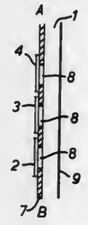
7. The combination according to claim 1 wherein said meter includes an output shaft and said upper housing includes a tower extending into said enclosure, said tower being adapted to contain said output shaft therein, and further including an electrical generator coupled to said output shaft through said tower, said electrical generator having rotating field magnets mounted on said output shaft inside said tower within said pressure hull and a stationary coil surrounding said tower within said enclosure.

4,553,434

CAPACITIVE LEVEL GAUGE

Klaas Spaargaren, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 19, 1983, Ser. No. 524,514
Claims priority, application United Kingdom, Sep. 9, 1982, 8225676
Int. Cl.⁴ G01F *23/26*
U.S. Cl. 73—304 C **12 Claims**



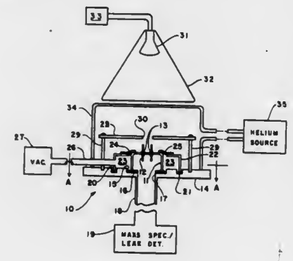
1. An apparatus for use in measuring the level of a fluid in a container, said apparatus comprising: first means adapted for capacitive measurements and having a plurality of individual sections with each of said sections having a predetermined size; second means adapted for capacitive measurements, said first and second means being adapted to be positioned in a fluid at a predetermined distance from one another; and a screen positioned between said first and second means having openings therein proximate said sections of said first means to define areas of transmission between said sections and said second means.

4,553,435

ELEVATED TRANSIENT TEMPERATURE LEAK TEST FOR UNSTABLE MICROELECTRONIC PACKAGES

Harold Goldfarb, Irvine; Kenneth L. Perkins, Yorba Linda, and Bernard L. Weigand, Fullerton, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 19, 1983, Ser. No. 515,240
Int. Cl.⁴ G01M *3/20*
U.S. Cl. 73—40.7 **2 Claims**



1. Apparatus for detecting leaks through glass-to-metal seals in an electronic device or the like, comprising:

a. a substantially flat base plate having upper and lower surfaces and including means defining a first central opening therethrough between said upper and lower surfaces;

b. a first annular gasket on said upper surface of said plate surrounding said first opening for sealably supporting said device around a peripheral portion thereof;

c. helium detector means operatively connected to said lower surface of said plate at said first opening, said helium detector means including a source of vacuum providing a first vacuum seal between said device and said first gasket and whereby a first side of said glass-to-metal seals of said device is exposed to said helium detector means;

d. a source of helium;

e. a shroud, supported by said plate and enclosing said device, and conduit means operatively connecting said shroud to said source of helium for providing an atmosphere containing helium over said device at the second side of said glass-to-metal seals;

f. a vacuum fixture supported by said plate intermediate said shroud and device and defining a marginal space around said device, said vacuum fixture having a second opening for exposing the second side of said glass-to-metal seals of said device to said helium containing atmosphere within said shroud;

g. a second annular gasket between the contacting surfaces of said vacuum fixture and said plate;

h. a third annular gasket attached to said vacuum fixture at said second opening for providing a second vacuum seal between said vacuum fixture and said device around a peripheral portion of said device around said second side of said glass-to-metal seals; and

i. a source of vacuum operatively connected to said vacuum fixture for evacuating said marginal space around said device and thereby providing said second vacuum seal between said vacuum fixture and said device at said third

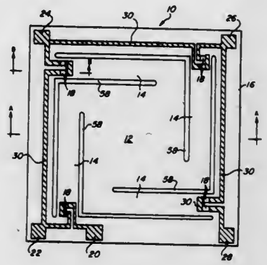
gasket and a third vacuum seal between said vacuum fixture and said plate at said second gasket by the pressure difference between the vacuum maintained within said marginal space and the pressure of said helium containing atmosphere, and for preventing said helium from permeating said third seal between said device and said plate at said first gasket.

4,553,436

SILICON ACCELEROMETER

Jan I. Hansson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 9, 1982, Ser. No. 440,462
Int. Cl.⁴ G01P *15/12*
U.S. Cl. 73—517 R **6 Claims**



1. An acceleration sensor comprising:

a substantially planar semiconductor support frame;

four flexible, elongate semiconductor support members each rigidly attached at a first end to said support frame, and disposed substantially perpendicular to each adjacent support member;

a semiconductor deflection mass positioned internally of and movable relative to said support frame, in a direction perpendicular to the plane of said support frame, and attached to a second end of said support members; and

piezoresistive means for sensing stress in said support members, said piezoresistive means oriented with respect to a crystalline plane and capable of providing a differential output as a function of the magnitude and direction of bending of said support members.

4,553,437

HYBRID NON-INVASIVE ULTRASONIC IMAGING SYSTEM

Ajay K. Luthra; Saleem Kassam, both of Bala Cynwyd, and J. William Mauchly, Ambler, all of Pa., assignors to Imaging Associates, Villanova, Pa.

Filed Jan. 30, 1984, Ser. No. 574,883
Int. Cl.⁴ G01N *29/04*
U.S. Cl. 73—602 **14 Claims**

1. A method for producing signals for forming images of a predetermined scene within a body comprising:

(a) projecting acoustic energy from a predetermined small aperture onto a plurality of parts of said scene in sequence,

(b) receiving acoustic energy reflected from said respective parts in sequence and producing corresponding first electrical signals;

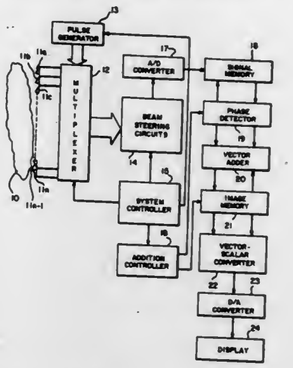
(c) processing said first electrical signals to produce first image signals in which signals corresponding to echoes from the same targets are additively combined

while the entire vectorial information represented by said signals is preserved,

(d) projecting acoustic energy from at least one other small aperture onto said plurality of parts of said scene in said sequence,

(e) receiving acoustic energy reflected from said parts in response to step (d) and producing at least corresponding second electrical signals,

(f) processing said second electrical signals to produce second image signals in which signals corresponding to echoes reflected from the same targets additively combine



while the entire vectorial information represented by said second signals is preserved, and

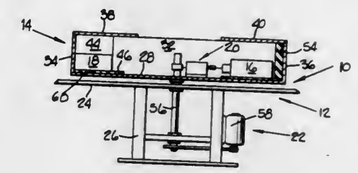
(g) combining all of said image signals vectorially thereby to produce an output signal which is to be supplied to a utilization circuit.

4,553,438

CENTRIFUGAL CARTON TESTER

Raymond L. Dawson, Monroe; Clayton Dodd, Farmerville; Bobby E. Harrell, and Grady E. Lee, both of West Monroe, all of La., assignors to Manville Service Corporation, Denver, Colo.

Filed Apr. 19, 1984, Ser. No. 601,893
Int. Cl.⁴ G01N *3/08*
U.S. Cl. 73—830 **5 Claims**



1. A centrifugal test apparatus for determining the failure point of a carton for packaging bottles or cans comprising:

a box for receiving a test carton and a counterweight, said box having a bottom wall, first and second sidewalls, first and second end walls, and first and second lids which overlay opposite first and second end portions of said box where the test carton and the counterweight are located during testing to prevent fragments from being thrown from said box during testing;

said box being affixed at its horizontal balance point to a drive shaft, said drive shaft being driven by a variable speed motor to regulate the rotational speed of said box and the force exerted on the test carton;

means for locating the test carton in said first end portion of said box in a spaced relationship to said first end wall and for attaching a handle of the test carton to a force gauge, said locating and attaching means simulating the gripping of the test carton by a person; and

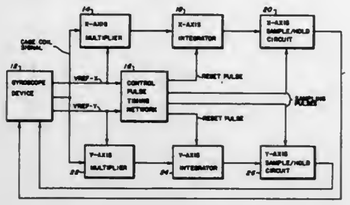
said force gauge being affixed in said box.

4,553,439

APPARATUS FOR DEMODULATING GYROSCOPE POSITION INFORMATION

Ronald Hooper, Dahlgren, and Kenneth Nichols, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,535
Int. Cl.⁴ G01C *19/30, 19/32*
U.S. Cl. 74—5.4 **7 Claims**



1. An apparatus for demodulating position information from a gyroscope device including an associated gyroscope having a predetermined spin frequency, the position information consisting of a cage coil signal and a spin reference signal, said apparatus comprising:

first means operatively connected to said gyroscope device for multiplying the cage coil signal and the spin reference signal;

second means operatively connected to said first means for integrating over a predetermined integration interval the resulting signal from the output of said first means;

third means operatively connected to said second means for sampling and holding at the end of the predetermined integration interval the output signal of said second means; and

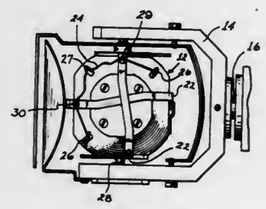
fourth means operatively connected at its input to said gyroscope device and at its outputs to said second means and to said third means for generating a sample pulse for proper operation of said third means and a reset pulse for resetting of said second means to zero at a time slightly after the end of the predetermined integration interval.

4,553,440

LIMIT MEANS FOR AIR JET RESPONSIVE GYROSCOPES

Caesar J. Miles, 1715 Portage Ave., South Bend, Ind. 46616

Filed Nov. 20, 1981, Ser. No. 323,193
Int. Cl.⁴ G01C *19/52, 19/30*
U.S. Cl. 74—5.43 **3 Claims**



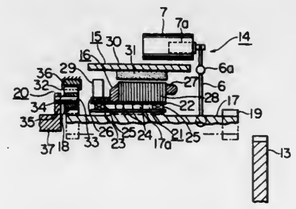
1. In an attitude indicator for aircraft including a gyro which is contained in a housing having an air inlet opening and a plurality of air outlet openings, a gimbal joint mounting said gyro housing, said gyro spinning in response to air drawn through said inlet opening and outlet openings by a vacuum pump, valve means pivotally connected to said gyro housing and responsive to the position of said gyro housing to regulate the rate of flow of air from said outlet openings in response to movement of said aircraft from a selected horizon reference attitude, and limit means for controlling the amount of travel of said valve means, the improvement wherein said limit means includes a light-weight flexible strand having a breaking point greater than the force exerted by pivotal movement of the valve means, said strand being anchored at spaced parts thereof to said gyro housing and to said valve means at a midpoint of said strand whereby travel of said valve means is limited by the length of said strand between the points of connection thereof to said housing and to said valve means, said valve means pivoting substantially without restraint between said limits.

4,553,441

STARTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Isao Hamano; Akira Morishita; Yoshifumi Akae; Toshinori Tanaka, and Kiyoshi Yabunaka, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 543,455
Int. Cl.⁴ F02N *11/00*
U.S. Cl. 74—7 R **6 Claims**



1. A starting system for an internal combustion engine, comprising a stator; a cylindrical armature rotor which is arranged on an inner peripheral side of said stator with a predetermined gap therefrom; an overrunning clutch which includes a first cylindrical clutch body that is mounted on an inner periperal surface of said rotor, and a second cylindrical clutch body that is clutch-coupled with said first clutch body; a rotary shaft which is penetratingly arranged on an inner peripheral portion of said second clutch body of said overrunning clutch, which is axially movable relative to said second clutch body and which rotates along with said second clutch body; a pinion which is disposed at one end of said rotary shaft and which is brought into meshing engagement with a ring gear of the engine being a first load device; a power transmission mechanism which is disposed at the other end of said rotary shaft and which transmits power to a second load device; and a shift lever which slides said rotary shaft in the axial direction thereof so as to connect a turning force of said rotary shaft to either of the first load device or the second load device.

4,553,442

STARTER FOR HEAT ENGINE COMPRISING A REINFORCED SUPPORT

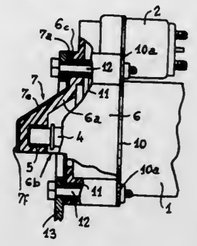
Alfred B. Mazzorana, Venissieux, France, assignor to Societe Paris-Rhone, Lyons, France

Filed May 16, 1983, Ser. No. 494,846
Claims priority, application France, May 18, 1982, 82 08981
Int. Cl.⁴ F02N *15/06*
U.S. Cl. 74—7 A **6 Claims**

1. A starter assembly for mounting to the casing of an engine, the assembly including an electric motor having an axial shaft for extending through an opening in the casing and the shaft supporting a starter pinion moveable thereon to an engaged position, and the assembly including relay contactor means operative to move the pinion on the shaft, the starter assembly further comprising:

a metal base plate fixed to the motor and the contactor and having an axial opening through which the shaft extends;

a support member made of material which is less than fully rigid, the support member being disposed against the plate and having a shoulder disposed to abut the casing at its opening and having an axial opening to receive the shaft and pinion, and the support member having a nose portion carrying a bearing supporting the motor shaft and having a transverse opening opposite the pinion when in said engaged position;



a metal reinforcing shell shaped to cover and closely fit said nose portion and having a transverse cut-out registering with the transverse opening of the nose portion, and having a flange shaped to lie against said shoulder portion and against said casing; and

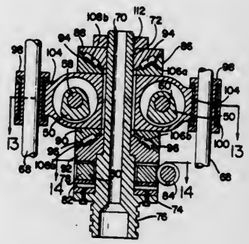
the plate and the support member and the shell flange and the casing having multiple aligned screw holes, and the assembly having mounting screws extending through the holes and mounting the assembly to the engine.

4,553,443

HIGH FREQUENCY VIBRATORY SYSTEMS FOR EARTH BORING

Andre M. Rossfelder, La Jolla, and Peter A. Jung, San Diego, both of Calif., assignors to Geomarex, La Jolla, Calif.

Filed Nov. 19, 1982, Ser. No. 443,069
Int. Cl.⁴ B06B *1/16;* **B23Q** *5/027*
U.S. Cl. 74—22 R **1 Claim**



1. A vibrating system adapted to be attached to a body, comprising:

a housing;

a pair of wheel means including axle means disposed parallel to each other mounted to said housing;

a mass secured to at least one of the wheel means so that the center of gravity of that wheel means is offset with respect to its axis of rotation;

means for rotating one of the wheel means including a flexible shaft means coupled to the axle of the wheel means being so rotated;

endless belt means connecting the pair of wheel means so that when one of the wheel means rotates the belt means transmits rotational motion to the other wheel means, said belt means being adapted to dampen vibrations propagating between said wheel means so that the frequency of vibrations in said body can exceed 150 hertz for sustained periods without damaging the rotating means or the belt means;

thrust bearings mounted to said housing to allow said body to rotate while vibrating;

a clutch mounted to said housing for disengaging said body from further rotation;

a flexible shaft for driving said wheel means; and

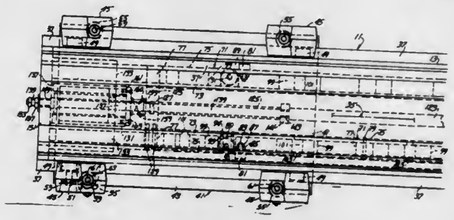
a worm and crown gear mounted to said housing and also driven by said flexible shaft for causing rotation.

4,553,444

RETRACTOR MECHANISM FOR ARTICLE TRANSFER APPARATUS

Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed Oct. 17, 1983, Ser. No. 542,746
Int. Cl.⁴ F16H *21/44*
U.S. Cl. 74—110 **10 Claims**



1. In a multiple stroke retractor mechanism for article transfer apparatus having an elongated body having a central longitudinal axis suspended from a support, a pair of parallel spaced tracks depending from, projecting laterally outward of and secured to said body along its length upon opposite sides of said axis, a continuously reciprocal carriage adapted to mount an article gripping tool underlying and guidably mounted upon said tracks for reciprocal movements, a pair of depending laterally spaced first racks upon said body along its length, a pair of laterally spaced second racks upon said carriage along its length opposed to said first racks, a reciprocal pinion carrier between said body and carriage for driving said carriage including longitudinally spaced laterally opposed pairs of pinions in mesh with and interconnecting said first and second racks respectively, a power means upon said body connected to and reciprocating said pinion carrier;

the improvement comprising said pinion carrier being continuously reciprocal and including an elongated upwardly opening channel having opposed first side plates;

said pairs of pinions being journaled upon said side plates;

longitudinally spaced laterally opposed pairs of first cam followers extending outwardly of, journaled upon said channel upon horizontal axes and supportably mounted upon said tracks, respectively, constraining reciprocal movements of said pinion carrier to a single horizontal plane; and

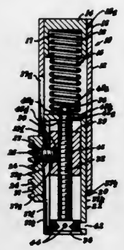
longitudinally spaced laterally opposed pairs of second cam followers extending outwardly of and journaled upon said channel upon vertical axes and retainingly engaging the inner sides of said tracks respectively, constraining the reciprocal movements of said pinion carrier to a single vertical plane.

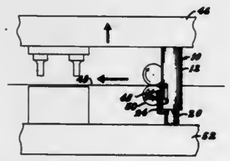
4,553,445

INTERMITTENT MOVEMENT-CONTROLLING INDEXING SHUTTLE DEVICE

Joe C. Holbrook, R.R. 2, Box 167, Clayton, Ind. 46118, and Bobby L. Shepard, R.R., North Vernon, Ind. 47265

Filed Mar. 20, 1984, Ser. No. 585,452
Int. Cl.⁴ F16H *27/02*; B26D *5/22*; B65H *35/04*
U.S. Cl. 74—130 **11 Claims**





1. An intermittent movement-controlling indexing shuttle device, for causing an associated work object to move intermittently in response to shuttle reciprocation movement of an associated mechanism, the shuttle device comprising, in combination:

a carrier means adapted to be operatively connected to the associated mechanism, for achieving reciprocation movement cyclically in response to the cycles of shuttle movement of the associated mechanism;

a shuttle assembly carried by the carrier means by means permitting relative movement thereof;

the carrier means and the shuttle assembly being provided with co-operative abutment means which when in operatively abutting engagement limit relative movement of the shuttle assembly outwardly of the carrier means;

spring means operatively bottoming against the carrier means and the shuttle assembly, biasing the shuttle assembly outwardly of the carrier means; and

a gear means carried by the shuttle assembly for drivingly engaging associated gearing of the drive means by which driving actuation is imparted to the work object;

the components providing that (a) in a first stage of actuation the carrier means and the shuttle assembly are in a relatively extended relative position, and while in such relative position are moved in a first direction by the associated mechanism, (b) in a second stage of actuation the shuttle assembly is caused to stop, but the carrier means is permitted to keep moving in the first direction, and thus the carrier means and the shuttle assembly are moved toward a relatively non-extended relative position against the bias of the said spring means, and causing the spring means to be compressed, and (c) in a third stage of actuation, the carrier means is moved in the opposite direction by the associated mechanism, but the compression in the spring means causes the shuttle assembly to not move correspondingly in said opposite direction for the portion of the carrier means' movement in said opposite direction and instead causes the shuttle assembly to move relatively to the carrier means and toward extended position, and to remain in its stopped condition of the second stage, maintaining a rest or dwell condition of the shuttle assembly's gear means and thus also of the associated gearing of the work object's drive means during that portion of the movement of the carrier means in said opposite direction, but in continued movement of the carrier means in said opposite direction the shuttle assembly and its gear means are also moved by their retention by the carrier means in said opposite direction, once relative outward movement of the shuttle assembly with respect to the carrier means has brought the outward-movement-limiting co-operative abutment means into operatively abutting engagement;

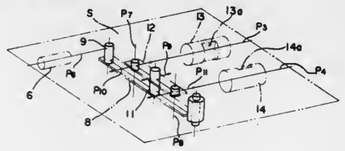
the device thereby imparting an intermittent power stroke output, from the shuttle assembly's gear means to the work object's drive means, by which intermittent power stroking is accomplished which is adjustably different, in stroke length and in the timing thereof from the intermittent shuttle movement of the associated mechanism although cyclically co-ordinated therewith.

4,553,446

CONTROL DEVICE

Yoshitaka Matsubara, Osaka, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Oct. 31, 1983, Ser. No. 547,529
Claims priority, application Japan, Jun. 11, 1983, 58-89348
Int. Cl.⁴ G05G *9/00*
U.S. Cl. 74—471 R **1 Claim**



1. A control device comprising a control arm,

one end of said control arm being pivoted about a fixed support shaft,

a control means including a rod pivotably secured at one end thereof to the opposite end of said control arm,

a first pin secured to said control arm at a mid-point linearly of said control arm and extending perpendicular thereto,

a swing link positioned above said control arm and pivotably secured on said first pin at the midsection of said swing link,

first and second control members spaced from each other and secured parallel with each other,

said first control member pivotably connected at one end thereof to one end of said swing link and pivotably connected at its other end to a first hydraulic control valve for operation thereof,

said second control member pivotably connected at one end thereof to the opposite end of said swing link a distance from said first pin equal to said pivotable connection of said first control member and pivotably connected at its other end to a second hydraulic valve for operation thereof,

a lock member positioned between said first and second control members and adapted to selectively lock one of said first and second control members in a fixed position while permitting parallei movement of the non-locked control member,

said swing link being positioned parallel with said control arm with their linear axis in the same vertical plane when said first and second control members and said control means are in their neutral position,

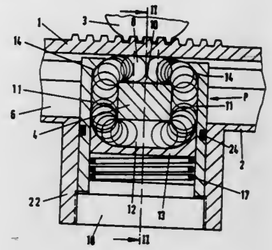
whereby a central axis of said rod, said swing link and a central axis of said first and second control members are located substantially on a single plane.

4,553,447

PRESSURE SUPPORT MEANS IN RACK AND PINION STEERING

Ansgar Betz, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,389
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244531
Int. Cl.⁴ F16H *1/04*
U.S. Cl. 74—422 **20 Claims**



2. In a rack and pinion mechanism having a housing (2) and pressure means (P) therein comprising parallel endless ball arrays (B) on respective sides of the median plans (M) of a rack (1);

including coacting races (10, 10') for said ball arrays on respective sides of said rack and on respective sides of said pressure means for rolling support of said rack;

the improvement wherein:

the ball arrays are in planes normal to the rack:

the coacting ball races on each side of said rack and pressure means are in ball retaining face to face relation with the races of said rack and the coacting races of said pressure means being disposed so that support forces on respective flights of balls therebetween are in planes (A) angularly related to respective sides of the median plane (M) of said rack for ball support of said rack in normal and lateral directions.

4,553,448

DUAL-RATE CONTROL ASSEMBLY

Stephen A. Youngers, Clearwater, and Robert G. Draney, Wichita, both of Kans., assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 2, 1983, Ser. No. 500,430
Int. Cl.⁴ G05G *11/00*
U.S. Cl. 74—480 R **11 Claims**

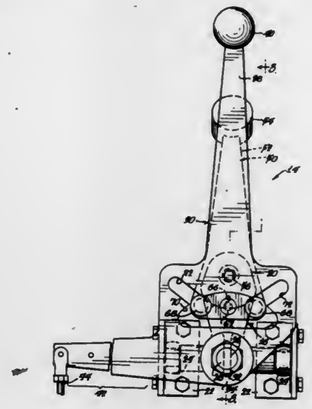
1. A dual-rate control assembly for an implement, comprising:

a control lever support member adapted to be mounted on said implement;

a first control lever pivotally connected to said support member for pivotal movement about a first axis, said control lever including an input portion adapted to be manipulated by an operator, and an output portion adapted to be operatively connected with associated means to be controlled, whereby a given angular movement of said input portion about said first axis results in movement of said output portion about said first axis at a first rate;

a second control lever pivotally mounted on said support member and adapted for manipulation by an operator, said second control lever being pivotally mounted on said support member for pivotal movement about a second axis spaced from and parallel to said first axis; and

cam means operatively interconnecting said second control lever with said first control lever comprising cam pin means mounted on one of said control levers and cooperating cam opening means defined by the other of said control levers, whereby said given angular movement of



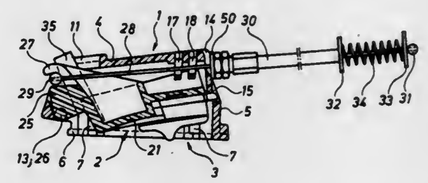
said second lever moves said first lever about said first axis at a second rate.

4,553,449

APPARATUS FOR ACTIVATING A BOWDEN CABLE

Heinrich Korn, Gersthofen, Fed. Rep. of Germany, assignor to Röder GmbH, Sitzmöbelwerke, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,326
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1982, 8227885[U]
Int. Cl.⁴ F16C *1/10*
U.S. Cl. 74—501 R **18 Claims**



1. An apparatus for activating a Bowden cable, comprising:

a double-armed activating member; an insert body;

mounting element means arranged on the insert body for pivotally mounting the activating member to the insert body; and

latch means slidably mounted on the activating member, said latch means being slidable from a first position wherein the activating member can pivot within the insert body to a second position wherein the latch means engages with the insert body to prevent the activating member from pivoting therein;

said activating member, comprising:

an activating arm; and

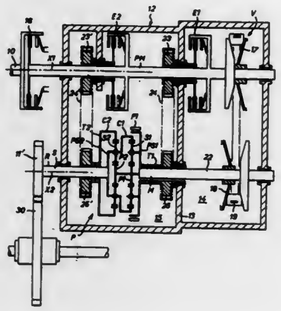
a pulling arm which includes a means for engaging the Bowden cable.

4,553,450

TRANSMISSION BETWEEN A POWER INPUT AND AN OUTPUT SHAFT SUITABLE FOR AN AUTOMOBILE VEHICLE

Michel Gizard, Croissy sur Seine, France, assignor to Valeo, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,636
Claims priority, application France, Feb. 22, 1982, 82 02888
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—689 **12 Claims**



1. A transmission for transmitting power from a power input shaft to an output shaft, said transmission being mounted in housing and comprising a variable speed pulley drive having a driving pulley, a driven pulley and a transmission belt therebetween, the driving pulley being directly driven by the power input shaft, a planetary gear unit having four elements including a permanently active input element connected to the driven pulley and a permanently active output element connected to said output shaft, and first and second switching elements, control means for making a selected one of said switching element active while the non-selected is passive and making the non-selected one active while the selected one is passive, said planetary gear unit comprises first and second simple planetary gear trains, each of said planetary gear trains comprising a planetary gear, a ring gear and a satellite carrier having satellite gears meshing with the associated planetary gear and the ring gear, the planetary gears of said planetary gear trains being connected together and define the input element, the ring gear of said first planetary gear train and the satellite carrier of the second planetary gear train being connected to each other and define the output element, the satellite carrier of said first planetary gear train defining the first switching element and the ring gear of the second planetary gear train defining said second switching element, said control means comprising a clutch and a drive means for connecting the power input shaft to said satellite carrier of said first planetary gear, and a brake for fixing said satellite carrier of the first planetary gear against rotation to obtain a reverse drive, said clutch being engageable to define a forward gear range and disengageable when said brake fixes said satellite carrier of the first planetary gear train against rotation.

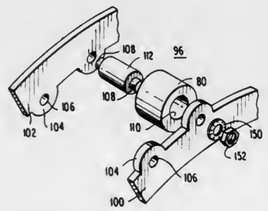
4,553,451

PIN CONTROLLED RETAINER FOR EPICYCLIC TRANSMISSION

Robert G. Distin, Jr., and Thomas J. Lang, both of Louisville, Colo., assignors to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,931
Int. Cl.⁴ F16H *1/28*
U.S. Cl. 74—805 **12 Claims**

1. An epicyclic speed reducing transmission, comprising:
first gear means (**70**) having a first surface region (**72**);
second gear means (**50**) having a second surface region (**53**) which confronts said first surface region;
cam means (**10, 30**) for orbitably driving one of said gear means and said corresponding confronting surface region;
a set of cylindrical rollers (**80**) disposed between said first and second confronting surface regions for transmitting torque therebetween;
said first and second confronting surface regions each comprising a series of lobes (**126**) and recesses (**128**) shaped and arranged such that a first recess (**128'**) on said first confronting surface region confronts a second recess (**128''**) on said second confronting surface region and also such that a first lobe (**126'**) on said first confronting surface region confronts a second lobe (**126''**) on said second confronting surface region;
said first and second confronting recesses being on a substantially diametrically opposite side (**130, 132**) of said first and second confronting surface regions, respectively, than said first and second confronting lobes;



said first and second confronting surface regions being further shaped and arranged such that only one of said cylindrical rollers can be contained between said confronting recesses and only one of said cylindrical rollers can be contained between said confronting lobes;
a retainer (**96**) for retaining said plurality of cylindrical rollers in spaced relationship between said first and second confronting surface regions, said retainer comprising:
first and second rings (**100, 102**), said first ring having a series of holes (**106**) therein which confront corresponding holes in said second ring;
a series of roller pins (**108, 112**) having opposite ends (**108**) supported by said first and second rings in said holes;
said cylindrical rollers being rotatably supported by said series of pins so as to confront said first and second confronting surface regions and transmit torque therebetween.

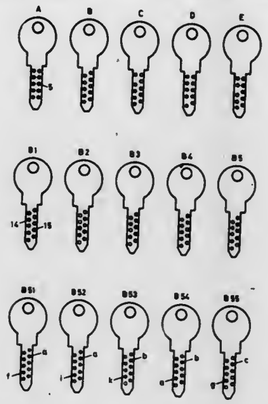
4,553,452

METHOD FOR PRODUCING SECURITY KEYS HAVING CLOSURE POSSIBILITIES DIFFERING FROM ONE ANOTHER

Ernst Keller, Untere Schwandenstr. 22, CH-8805 Richterswil, Switzerland

Filed Nov. 9, 1983, Ser. No. 550,115
Int. Cl.⁴ B21K *13/00*
U.S. Cl. 76—110 **4 Claims**

1. A method for producing a plurality of security keys having closure possibilities differing from one another, wherein spring-loaded pin tumblers supported in radially extending bores in the cylinder of a lock, said cylinder including a cylinder plug having a key path are displaceable by means of a security key to permit rotation of the cylinder plug, the security key being insertable into the key path of the cylinder plug and capable, by means of bores, of effecting a correctly displaced position of the rows of pin tumblers, wherein at least one of the bores has two or more different shapes for the head of an associated pin tumbler, comprising:
producing different bore patterns in said plurality of keys, each bore pattern having the same number of bore locations, the positional arrangement of said bore hole locations being different in each of said patterns;
selecting, in each bore pattern, a prespecified number of bore hole locations, said prespecified number being at least 1;



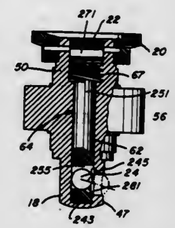
varying the position within said bore hole pattern of said preselected number of bore hole locations;
additionally varying at each specified bore location, a prespecified number of bore shapes differing from one another, said prespecified number being at least 1.

4,553,453

STEPLESS WRENCH INCLUDING QUICK RELEASE MECHANISM

John D. Dempsey, 2024 Rivermont Ave., Lynchburg, Va. 24503, and Jock D. Dempsey, Rte. 2, Box 407, Gladys, Va. 24554

Division of Ser. No. 242,314, Mar. 10, 1981, Pat. No. 4,491,043. This application Aug. 1, 1984, Ser. No. 616,122
Int. Cl.⁴ B25B *13/00*
U.S. Cl. 81—58 **20 Claims**



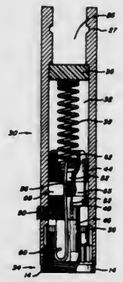
1. A mechanism for securing and releasing a fixture having a detent, said mechanism comprising:
a disc;
elongated tube means having a fixture-receiving end;
elongated plunger means having a disc-receiving end and an actuator end, said plunger means slidably received in said tube means;
first slot means provided in said fixture-receiving end for permitting a portion of said disc to protrude out of said tube means, said first slot means including a first inclined cam surface;
second slot means provided in said disc-receiving end for receiving said disc and for communicating with said first slot means, said second slot means including a second inclined cam surface, said first and said second inclined cam surfaces defining an acute angle;
positioning means for normally placing said plunger means in a first position relative to said tube means so that said second slot means urges said disc into said first slot means with a portion of said disc protruding out of said tube means;
said plunger means movable against said positioning means to a second position relative to said tube means to allow said disc to move from said first slot means into said second slot means during attachment of said fixture to said fixture-receiving end of said tube means, said positioning means becoming active to return said plunger means to said first position so that said portion of said disc extends into the detent of the fixture upon completion of the attachment to the fixture, said first and second inclined cam surfaces cooperating to prevent said disc from disengaging from the detent when said disc extends into the detent of the fixture and an attempt is made to remove the fixture from said fixture-receiving end of said tube means; and
releasing means for placing said plunger means into a third position relative to said tube means to allow said disc to move from the detent of the fixture into said second slot to permit easy removal of the fixture.

4,553,454

NUT RETAINING SOCKET WITH REPLACEABLE NUT RETAINER

Daniel A. Laskey, Saugus, Mass., assignor to Charles D. Lancaster, Saugus and Richard F. Laskey, Malden, both of, Mass.

Filed Nov. 28, 1983, Ser. No. 555,532
Int. Cl.⁴ B25B *13/02*
U.S. Cl. 81—125 **4 Claims**



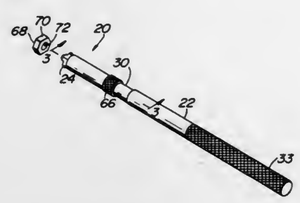
1. A nut retaining socket which comprises:
(a) a housing member having wall means defining a central bore, wherein one end of said housing member is a tool engaging socket and the other end is a nut engaging socket, said housing member having a support plate separating said tool engaging socket from said central bore and a removable detent protruding through said member into said central bore;
(b) a nut engaging insert positioned within said central bore, said insert having a nut bore engaging end of a first diameter slightly less than the diameter of a nut bore to be engaged, a radial slot in said nut bore engaging end and an opposite end of larger diameter than said nut bore engaging end, whereby a shoulder is formed at the junction of the larger diameter end of said insert with the smaller diameter nut engaging end of said insert;
(c) a spring member having one end secured within said insert and a second end extending into said radial slot, said second end of said spring member being movable across said slot and being biased radially outward for securing a nut within said nut engaging socket by pressing the nut against said wall means; and
(d) a compression spring, resiliently urging said insert away from said support plate towards said nut engaging socket, whereby said detent contacts said shoulder to confine said insert within said central bore of said member;
wherein withdrawal of said detent from said central bore permits removal of said insert.

4,553,455

NUT STARTER WITH SPECIAL BLADES

Melvin S. Wilcox, 347 Rosemore Dr., Davison, Mich. 48423, and Vernon L. Schwerin, 1148 Nottingham Dr., Lapeer, Mich. 48446

Filed Dec. 27, 1983, Ser. No. 565,551
Int. Cl.[4] B25B *23/08*
U.S. Cl. 81—443 **6 Claims**



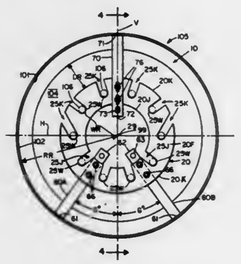
1. A nut starter with special blades, said nut starter comprising a shank portion and a bit portion formed on one end thereof, said bit portion comprising two divergent blades secured on said shank portion, said blades having outer edges extending from the tip of the blades, said outer edges possessing at least one flat extending generally parallel to the axis of said bit portion, said outer edges further including for each flat an adjoining generally slightly less than perpendicular step, each flat being adapted to be releasably secured within the opening of a nut, each of said flats having an edge which makes an angle with the adjoining step not exceeding 85°, a sleeve movably mounted over said shank portion and said bit portion, said blades including divergent surfaces within the area covered by said sleeve whereby movement of said sleeve in a forward direction will cause said blades to converge to allow any one of said flats to enter within the opening of the nut and wherein movement of said sleeve in a rearward direction will permit said blades diverge whereby one of said flats contacts a portion of the surface of said nut defining said nut opening.

4,553,456

WRENCH-HOLDING FIXTURE FOR VEHICULAR WHEELS

Don L. Rafert, R.F.D. #1, Box 24, Gresham, Nebr. 68367

Continuation of Ser. No. 466,788, Mar. 25, 1983, abandoned. This application Aug. 6, 1984, Ser. No. 637,734
Int. Cl.[4] B25B *29/00*
U.S. Cl. 81—462 **15 Claims**



1. For use in removable combination with a vertically upright vehicular wheel having an inwardly horizontally extending circular ridge spaced a finite ridge-radius from the wheel geometric-center, and said vehicular wheel being provided with a plural-number of horizontal apertures in a circular array spaced a constant bore-radius from said geometric-center and at equal angular intervals thereabout, a wrench-holding fixture comprising:

(A) a vertically upright annular jig-plate having a central reference-point horizontally alignable with said geometric-center and also having a larger outer-periphery surrounding a smaller annular-periphery and said reference-point, that part of the outer-periphery located above a horizontal plane passing through the jig-plate reference-point being spaced less than said ridge-radius from said reference-point, said jig-plate being provided with a plural-number of downwardly extending slots, said downwardly extending slots being wholly linearly extending along the length thereof and terminating as a lower-end of circular arc configuration, a plurality of said slots being as upper-slots extending wholly linearly downwardly from portions of the outer-periphery located above said horizontal plane, another plurality of said slots being as lower-slots extending wholly linearly downwardly from portions of the annular-periphery located below said horizontal plane, the majority of said downwardly extending slots being in lineraly extending radial relationship to the jig-plate central reference-point, and each downwardly extending slot circular arc lower-end being spaced substantially said bore-radius from the jig-plate reference-point and providing a horizontal wrench-resting shelf, thereby providing a plural number of circular arc wrench-resting shelves equal to the plural-number of lineal slots and spaced at equal angular intervals about said reference-point;

(B) sturdy riser means extending rigidly downwardly from the jig-plate and located wholly below the reference horizontal plane thereof, said riser means having a lower-base means located on both lateral sides of a vertical plane passing perpendicularly through the jig-plate reference-point and being adapted to rest downwardly against the circular wheel ridge, said lower-base means being spaced substantially said ridge-radius from the jig-plate reference-point whereby the riser means at downwardly resting condition has the tendency to horizontally align the circularly arrayed wrench-resting shelves with the circularly arrayed wheel apertures; and

(C) an upright topleg attached to the jig-plate and located above said horizontal plane and riser means, said topleg being laterally narrower than the riser means lower-base means and having a free-edge spaced substantially said ridge-radius from the jig-plate reference-point, said topleg free-edge providing the fixture upper terminus and being frictionally engageable with the wheel circular ridge whereby the topleg free-edge and the lower-base means together cooperatively maintain the jig-plate wrench-resting shelves horizontally aligned with the wheel apertures.

4,553,457

MACHINING A COOLED CYLINDRICAL OPTIC TO COMPENSATE FOR PRESSURE DISTORTION

Frederick G. Eitel, North Palm Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 17, 1983, Ser. No. 505,166
Int. Cl.[4] B23B *1/00, 5/00*
U.S. Cl. 82—1 C **8 Claims**

1. A system for finish contour machining the optical surface of a fluid flow cooled cylindrical optic and replicating the predetermined operational coolant fluid flow local pressure in said optical surface during said machining, wherein said cylindrical optic has a fluid flow passageway therein, with said passageway being located adjacent to and internal of said optical surface, said system comprising:

a rotatable spindle;

means operably connected to said spindle for selectively rotating said spindle;

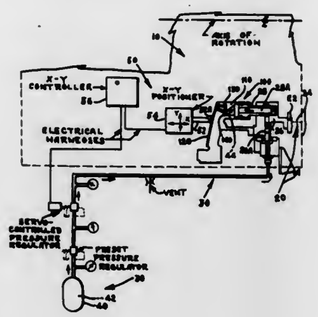
an adapter detachably connected to said spindle releasably holding said cylindrical optic;

a fluid flow connector removably interconnected between said adapter and said fluid flow passageway of said cylindrical optic;

a single point tool;

means operably connected to said single point tool positioning said tool relative to said optical surface;

means operably connected to said tool positioning means controlling the movement of said tool positioning means so as to control the movement of said tool, said controlling means also providing a signal representative of said predetermined operational local pressure in said optical surface of said cylindrical optic based upon the position of said tool relative to said optical surface of said cylindrical optic;



means providing pressurized fluid to said optical surface of said cylindrical optic; and

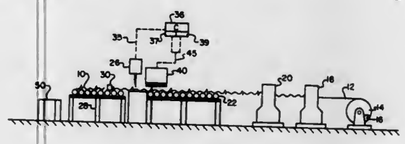
means regulating the pressure of said fluid in accordance with said signal from said controlling means, said pressurized fluid providing means delivering said fluid at a pressure substantially equal to said predetermined operational local pressure in said optical surface, whereby said predetermined operational local pressure in said optical surface of said cylindrical optic is substantially replicated.

4,553,458

METHOD FOR MANUFACTURING HEAT TRANSFER ELEMENT SHEETS FOR A ROTARY REGENERATIVE HEAT EXCHANGER

John M. Schoonover, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,155
Int. Cl.[4] B23Q *15/12;* **B26D** *5/20*
U.S. Cl. 83—33 **1 Claim**



1. A method for forming and cutting heat transfer element sheets from a continuous sheet of material being passed beneath cutting shears positioned along the feed path of the material whereby the element sheets are cut in such a manner that nesting of adjacent element sheets when subsequently assembled within an element basket for a rotary regenerative heat exchanger is precluded, comprising:

a. drawing a sheet of heat transfer element material from a source thereof, the element material having a plurality of outwardly extending notches formed therein with the notches being spaced apart at equal intervals along the length of said sheet;

b. shearing a leading edge on a first subsheet along a first line disposed transversely across said notched sheet;

c. detecting the location of a first notch in said notched sheet upstream of the cutting shears and determining the distance therefrom to the first line along which the leading edge was sheared on said first subsheet;

d. advancing said notched sheet a desired length and shearing a trailing edge on said first subsheet along a second line parallel to and spaced from said first line whereby said first subsheet is sheared to fit into the element basket;

e. detecting the location of a second notch in said notched sheet upstream of the cutting shears and determining the distance therefrom to the second line along which the trailing edge was sheared on said first subsheet;

f. calculating the difference in distances between the location of the first notch in said notched sheet detected in step (c) and the location of the second notch in said notched sheet detected in step (e);

g. comparing the difference in distances calculated in step (f) to a preselected minimum tolerance indicative of the distance to be maintained between notches of adjacent element sheets in order to preclude nesting;

h. if the difference in distances calculated in step (f) is at least equal to said preselected minimum tolerance, proceeding directly to step (j);

i. if the difference in distances calculated in step (f) is less than said preselected minimum tolorence, advancing said notched sheet an amount about equal to said preselected minimum tolerance and shearing a leading edge along a third line disposed transversely across said notched sheet prior to proceeding to step (j); and

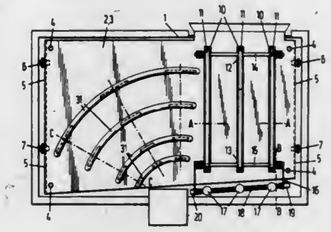
j. repeating steps (c) through (i) in succession until the element basket is fully stacked with alternate juxtaposed subsheets.

4,553,459

METHODS AND AN APPARATUS FOR TRILATERALLY OPENING AN ENVELOPE

Jacobus F. Gombault, Drachten, Netherlands, assignor to Hadewe B.V., Drachten, Netherlands

Filed Nov. 2, 1983, Ser. No. 548,079
Claims priority, application Netherlands, Nov. 9, 1982, 8204336
Int. Cl.[4] B43M *7/00*
U.S. Cl. 83—36 **13 Claims**



1. A method of cutting open more than one edge of an envelope, the method including conveying the envelope disposed in a first orientation along a supply path to contact an edge opening device for cutting open a first edge of the envelope, and subsequently transporting the envelope for cutting open at least a second edge thereof, wherein said step of subsequently transporting the envelope comprises:

returning the envelope to a location on the supply path upstream of said edge opening device after cutting open the first edge;

rotating the envelope in its own plane by 90 degrees to a second orientation wherein the second edge is located in a position corresponding to that of the first edge in the first orientation; and

conveying the envelope along the same supply path to contact the same edge opening device for cutting open the second edge.

4,553,460

WORK-HOLDING FIXTURE FOR METAL POWER SAWS

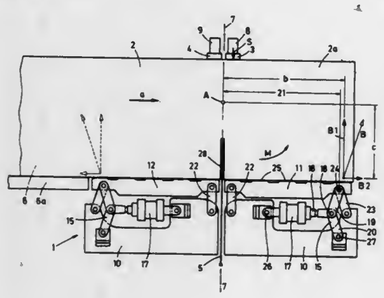
Werner Stahl, Aug der Hube 35, and Axel Barten, Siegener Strasse 227, both of 5910 Kreuztal 5, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,689

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238809

Int. Cl.⁴ B26D *47/06*

U.S. Cl. 83—113 **8 Claims**



1. Work-holding fixture for a metal power saw (**5**) that cuts through a metal workpiece (**2**) along a cutting plane (7—7), comprising two gripping jaws (**3,4**) disposed on opposite sides of and closely adjacent the cutting plane, means (**8,9**) for selectively separately urging each of said gripping jaws toward the workpiece in a direction opposite the direction in which the saw cuts through the workpiece, and on the other side of the workpiece two work-holding supports (**11,12**) on opposite sides of said cutting plane and elongated in a direction perpendicular to the cutting plane, a toggle lever (**15**) for selectively individually swinging the end of each of said supports remote from the cutting plane toward the workpiece, a hydraulic clamping cylinder (**17**) for actuating said toggle lever (**15**), said cylinder extending perpendicular to said cutting plane (7—7), said toggle lever (**15**) comprising two arms (**19, 20**) that are pivotably interconnected at a joint (**16**) secured to a piston rod (**18**) of said clamping cylinder (**17**), one end of one said arm (**20**) being pivotably connected to a machine frame (**10**) that supports said work-holding fixture, one end of the other said arm (**19**) being pivotably connected to the associated work-holding support (**11, 12**), and means (**22**) movably interconnecting the end of said elongated work-holding support (**11, 12**) adjacent said cutting plane to said machine frame (**10**) at a point substantially in line with the direction in which the associated said gripping jaw (**3, 4**) acts on the workpiece.

4,553,461

ROTARY WEB PROCESSING APPARATUS

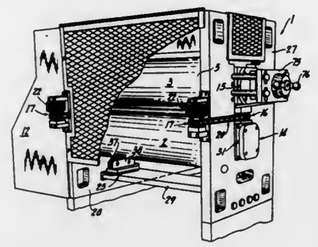
Larry P. Belongia, Oconto, Wis., assignor to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Oct. 12, 1982, Ser. No. 433,651

Int. Cl.⁴ B26D *1/56*

U.S. Cl. 83—344 **10 Claims**

1. A rotating web processing apparatus having a pair of opposed working cylinders, at least one of which includes a web working means, comprising a support, bearing means secured to said support and to the opposite ends of said cylinders for rotatably supporting said cylinder, at least one of said bearing means at each end of said cylinders being movable to vary the spacing between the cylinders, a separate gap adjustment means located between said bearing means at each end of the cylinders and having relatively moving elements including a rotating element for separately varying the spacing of said bearing means at each end of the cylinder, and separate actuator means for each of said gap adjustment means and each including a motion reduction means having a reduction on the order of 100 to 1, said motion reduction means mounted to said support in spaced relation to said gap adjustment means and having a rotating output member spaced from the rotating element, and a transmitting member connected to said rotating



output member and to said rotating element for establishing accurate and small changes in the gap adjustment means for precise location of said cylinders.

4,553,462

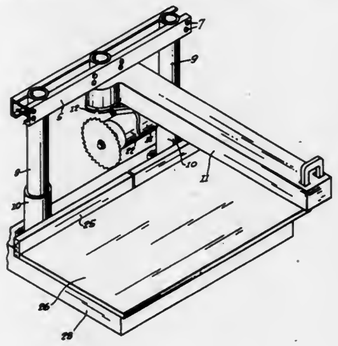
RADIAL ARM SAW

Howard Silken, 8676 Bridle Path Course, Davie, Fla. 33328

Filed Oct. 26, 1983, Ser. No. 545,617

Int. Cl.⁴ B27B *5/20*

U.S. Cl. 83—471.3 **16 Claims**



1. A radial arm assembly for mounting a power saw, said assembly comprising:

a horizontally disposed base frame;

two vertically adjustable mounting posts disposed at opposite sides of an edge of said base frame;

means for precisely coordinating adjustment of said vertical posts;

a cross-bar means horizontally mounted on said posts at opposite ends of said cross-bar means;

an arm means for supporting said saw, said arm means being rotatably attached to said cross-bar means about a vertical axis between said ends, said arm means being thereby adapted to rotate over said base frame about said vertical axis, said arm means comprising a guideway along substantially all of said arm; and,

said saw being mountable on said arm means and adapted to translate along said guideway, a blade of said saw being moveable with said saw along said guideway, unobstructed by either of said posts, to and from a position substantially intersecting said vertical axis, whereby vertical and rotational adjustments of said saw are independent of one another and cuts substantially corresponding to the full length of said arm means may be effected.

4,553,463

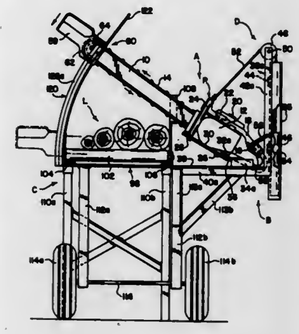
PORTABLE WOOD CUTTING DEVICE

Richard C. Engel, 3208 Windsor Rd., Orrwell, Ohio 44076

Filed Jul. 8, 1983, Ser. No. 511,872

Int. Cl.⁴ B27B *17/08*

U.S. Cl. 83—796 **9 Claims**



1. A mounting assembly for a chain saw having a body portion comprised of a driving motor and a motor housing; a generally elongated blade projecting from said motor housing and having a cutting chain drivable about the periphery of the blade by the motor, said chain having a cutting run and defining a cutting plane with said blade, said motor having a throttle for accelerating said chain between an idling speed and a cutting speed; said mounting assembly comprising: a support frame including means thereon for mounting said motor housing for pivotal movement in said cutting plane of said saw about a horizontal axis adjacent to the motor housing between an elevated non-cutting position and a lowered cutting position; a handle means attached to said chain saw blade at the free end thereof for direct operator movement of the blade between said elevated non-cutting and lowered cutting positions; and throttle actuating means comprising a stiffly elastic strip member straddling and engageable with said throttle on downward movement of the saw blade and secured at the opposite ends of said member to said support frame so as to be elastically stretched by the throttle on downward movement of the saw blade from its elevated non-cutting position to its lowered cutting position, thereby effecting actuation of the throttle during the downward motion of the blade and maintaining the throttle in actuated position until the blade is returned to the elevated non-cutting position.

4,553,464

SIZE TRIMMER

Edward W. Turner, Deerfield; Peter J. Blake, Bondsville, and Joseph C. Strzegowski, Jr., Conway, all of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Continuation of Ser. No. 247,555, Mar. 25, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 562,519

Int. Cl.⁴ B26D *3/00*

U.S. Cl. 83—865 **17 Claims**

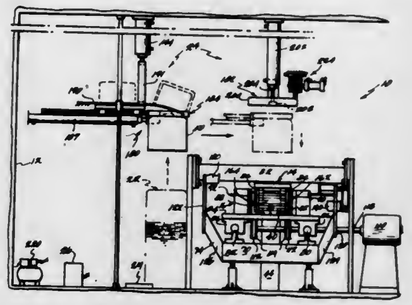
1. Apparatus for trimming walls of plastic containers comprising:

support means for supporting the container being trimmed, said support means including a support tongue having an outer shape comparable to the interior shape of the container;

first cutting means for moving in a direction parallel to at least one wall and slicing through the thickness of said at least one wall while moving in said direction parallel thereto;

second cutting means for moving in a direction parallel to at least one other wall normal to said at least one wall and slicing through the thickness of said at least one other wall while moving in said direction parallel thereto;

drive means for driving each of said first and second cutting means; and



control means for controlling the cutting sequence of said first and second cutting means.

4,553,465

ELECTRONIC MUSICAL INSTRUMENT PRODUCING BASS AND CHORD TONES UTILIZING CHANNEL ASSIGNMENT

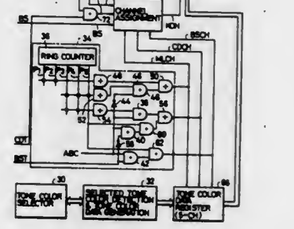
Susumu Kawashima, Hamamatsu, and Shigeru Yamada, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 3, 1984, Ser. No. 596,246

Claims priority, application Japan, Apr. 13, 1983, 58-065013

Int. Cl.⁴ G10H *1/38, 1/42*

U.S. Cl. 84—1.03 **2 Claims**



1. An electronic musical instrument, comprises:

keyboard means having keys representing respective notes and being capable of being depressed;

key data producing means for producing a plurality of key data respectively representing a plurality of tones to be sounded based on depression of the keys in said key-board means;

tone production means having a plurality of tone production channels each for producing a tone as designated by any one of said key data;

channel assignment means for respectively assigning a plurality of said key data supplied from said key data producing means to said plurality of tone production channels of said tone production means each to designate a tone to be produced therefrom; the improvement wherein

said key data producing means comprises:

first key data producing means for producing a plurality of first key data respectively representing a plurality of tones to be produced as a first kind of performance

based on the depression of the key or keys in said keyboard means;

accompaniment pattern generating means for generating accompaniment controlling data and accompaniment timing signals in a predetermined accompaniment pattern; and

second key data producing means for producing second key data representing accompaniment tones to be produced as a second kind of performance based on the depression of the key or keys in said keyboard means and on said accompaniment controlling data,

said electronic musical instrument further comprising:

controlling means for supplying a controlling signal to said channel assignment means to thereby cause this latter means to perform a first operation of assigning said plurality of first key data respectively to said plurality of tone production channels when said accompaniment timing signal does not instruct the production of said accompaniment tone, and to perform a second operation of assigning said second key data, one at a time, to one of said plurality of tone production channels when said accompaniment timing signal instructs the production of said accompaniment tone.

4,553,466

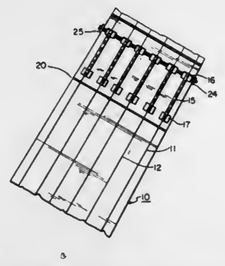
EASY FINGERS

John Palmieri, 335 Mercer St., Stirling, N.J. 07980

Filed Oct. 12, 1983, Ser. No. 516,255

Int. Cl.[4] G10D *3/08*

U.S. Cl. 84—317 **20 Claims**



1. Selectively operated lever apparatus to enable the playing of a stringed musical instrument such as a guitar, a banjo, or the like, said instrument including a head and a neck section depending therefrom and a plurality of strings directed from said head to neck section, comprising:

a rod directed across said neck section and positioned above the strings and transverse thereto,

a pivotable housing coupled to said rod, an enlongated lever arm secured to said housing at one end and extending above and parallel to at least one of said strings at the other end,

a contact pad located on said lever arm at said other end,

spring bias means coupled between said lever arm and said rod to allow said housing and therefore said rod to remain out of contact with said string in a first position and to allow said housing to pivot upon application of pressure to said arm in a second position to cause said pad to contact said string whereby said spring means returns said arm to said first position when pressure is removed.

4,553,467

PAGE TURNING APPARATUS AND METHOD

Richard Goldner, 3717 Toad Lake Rd., Bellingham, Wash. 98226

Filed Oct. 24, 1983, Ser. No. 544,694

Int. Cl.[4] G10G *7/00*

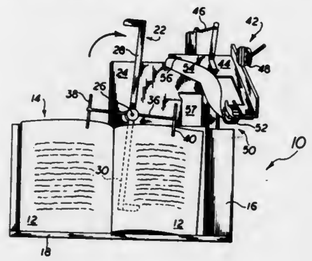
U.S. Cl. 84—487 **13 Claims**

1. An apparatus for turning the leaves of an open volume having a centerline about which leaves may be turned, comprising:

(a) a first elongated arm member, said first arm member mounted relative to said open volume for rotation in a plane generally parallel to the plane of said open volume, said path of rotation of said first arm member including a path portion which is a first distance over said open volume;

(b) means for lifting at least a portion of a top leaf a second distance above the underlying leaves of said open volume, said second distance being greater than said first distance;

(c) means for rotating said first elongated arm member through said path portion in a direction from the side of said volume centerline in which said top leaf is positioned toward the opposite side of said volume centerline,



whereby said first arm member while rotating through said path portion becomes interposed between said top leaf and the underlying leaves of said open volume to turn said top leaf about said volume centerline; and

(d) means for actuating said top leaf lifting means in synchronization with the rotation of said first arm member, such that at least a portion of said top leaf is lifted said second distance upon the arrival of said first arm member above that side of the volume centerline on which said top leaf is positioned to permit said first arm member to be interposed therebetween, further wherein said first arm member includes oppositely extending arm portions relative to the point of rotation of said first arm member, said arm portions alternatively turning the top leaf of said open volume.

4,553,468

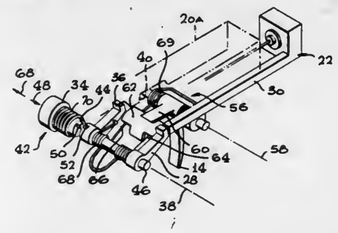
REPEATING FIREARM TRIGGER MECHANISM

Thomas P. Castellano, Los Angeles, Calif., and Nathan Mandel, 20283 Lorenzana Ave., Woodland Hills, Calif. 91364, assignors to Nathan Mandel, Woodland Hills, Calif.

Continuation-in-part of Ser. No. 434,564, Oct. 15, 1982, Pat. No. 4,421,009. This application Sep. 16, 1983, Ser. No. 532,710

Int. Cl.[4] F41D *11/02*

U.S. Cl. 89—140 **8 Claims**



1. In a repeating firearm which includes a bolt and firing pin device that can independently slide forward and rearward within a gun frame that holds a barrel, and which also includes a trigger mechanism that can depress a primary sear to release the firing pin device held by the primary sear, the improvement of an auto control for enabling full automatic operation comprising:

a secondary sear which can be depressed by said bolt as said bolt moves forward; and

mode control means including a manually moveable control member moveable between full auto and semiauto positions, and also including means responsive to the position of said control member, for urging depression of said primary sear at each forward movement of said bolt in the full auto position of said control member, and for refraining from urging depression of said primary sear at each forward movement of said bolt in the semiauto position of said control member, said mode control means coupling said secondary sear to said primary sear at least in the full auto position of said control member so the primary sear can then be depressed by depression of the secondary sear by said bolt;

said trigger mechanism includes a trigger which can be pulled and means connecting said trigger to said primary sear to depress said primary sear each time said trigger is pulled;

said trigger mechanism also including a stop which lies in the path of depression of said primary sear to prevent its depression when said trigger is not pulled, said stop lying out of the path of depression of said primary sear when said trigger is pulled, whereby even in the full auto position of the manually moveable member release of the trigger stops the firearm from firing.

4,553,469

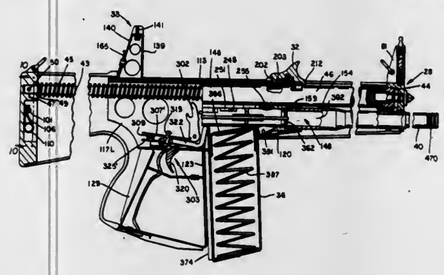
LOW-RECOIL FIREARM WITH NONCIRCULAR GUIDE ROD FOR ANGULARLY LOCATING BOLT CARRIER ASSEMBLY

Maxwell G. Atchisson, 6695 Ridgemoore Dr., Doraville, Ga. 30360

Continuation of Ser. No. 336,328, Dec. 31, 1981, abandoned. This application Aug. 8, 1984, Ser. No. 639,526

Int. Cl.[4] F41D *5/10, 11/12*

U.S. Cl. 89—191.02 **26 Claims**



1. A gas operated firearm comprising:

means defining a buttplate at the rear of the firearm for resting against the shoulder of a shooter;

a barrel;

means defining a gas cylinder affixed to said barrel so as to receive the reaction force of firing, and in gas flow communication with the barrel;

guide rod means connected at a rear end to said buttplate so that longitudinal forces applied to the guide rod means are transferred to the buttplate;

said guide rod means extending from said buttplate and rigidly connected to said gas cylinder so that the reaction force received by the gas cylinder is imparted to the guide rod means;

means providing a gas piston supported on said guide rod means for reciprocal movement therealong so that the guide rod means extends through said gas piston, whereby the reaction force exerted on the gas cylinder is transferred from the gas cylinder to the buttplate by the guide rod means to reduce the recoil of the firearm; and

action spring means operative to urge said gas piston forwardly along said guide rod means, whereby said gas piston can compress the action spring means and travel rearwardly on said guide rod means toward said buttplate in response to gas from said barrel entering said gas cylinder.

4,553,470

ASSISTOR FOR REDUCING STEPPING FORCE

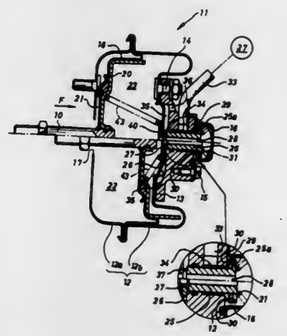
Toshiaki Shimazu, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Continuation of Ser. No. 520,259, Aug. 4, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,598

Claims priority, application Japan, Aug. 4, 1982, 57-136561

Int. Cl.[4] F15B *15/10*

U.S. Cl. 91—6 **5 Claims**



1. An assistor comprising:

an assistor casing;

a push rod disposed in said casing and being freely movable in the axial direction thereof, said push rod having an outside end and an inside end, said outside end being connected to a clutch pedal;

a piston disposed within said casing and connected to the inside end of said push rod, said piston dividing said casing into first and second chambers, said first chamber freely communicating with the atmosphere;

a first rubber diaphragm securely attached around a peripheral edge of said piston, and having an outer peripheral edge securely fixed to said casing;

change-over valve means for switching said second chamber from communication with the atmosphere to communication with a negative pressure source and vice-versa, said change-over valve means including a poppet valve connecting said negative pressure source to said second chamber and a second rubber diaphragm operatively connected to said poppet valve for sealing said second chamber from communication with the atmosphere; and

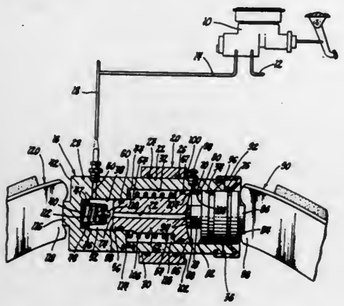
a negative-pressure setting spring and and thus said piston being operatively interlocked with said change-over valve means such that upon the movement of said push rod toward said change-over valve means, said negative pressure source is communicated with said second chamber and the atmosphere is sealed off therefrom.

4,553,471

WHEEL CYLINDER ASSEMBLY WITH PROPORTIONER

David L. Brademeyer, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1984, Ser. No. 590,477
Int. Cl.⁴ F15B *11/20*; F01B *7/02*
U.S. Cl. 91—173 **3 Claims**



1. A wheel cylinder assembly adapted to act on an oppositely disposed pair of brake shoes, said wheel cylinder assembly having a brake actuating pressure proportioner therein actuatable to proportionately increase brake actuating pressures in said wheel cylinder assembly and thereby being adapted to act to decrease the forces exerted by the wheel cylinder assembly on the oppositely disposed pair of brake shoes in relation to the forces that would be so exerted should no proportioning action occur, said wheel cylinder assembly comprising:

a fixed cylinder having a bore therethrough,

a first wheel cylinder piston having a stepped recessed bore therein open at the larger bore end and closed at the smaller bore end to provide an abutment adapted for engagement with one brake shoe, said first piston being sealingly and slidably mounted in said fixed cylinder bore with both ends thereof extending outwardly of said fixed cylinder bore, said smaller bore end defining an inlet pressure chamber having a brake actuating pressure inlet;

a valve seat retainer secured within said smaller bore end and having a valve seat mounted therein for limited axial movement and a spring biasing said valve seat axially toward said larger bore end;

a second wheel cylinder piston reciprocably and sealingly received in said first piston larger bore end and extending outwardly thereof and having its outer end providing an abutment adapted for engagement with another brake shoe;

a proportioning piston having a smaller end and a larger end respectively reciprocably and sealingly received in said first piston smaller bore end and larger bore end, said proportioning piston having a bore formed axially therethrough and its smaller end defining a movable wall of said inlet pressure chamber and its larger end cooperating with said second piston to define axially spaced movable walls of a second pressure chamber in continuous fluid communication with said proportioning piston bore, the end of said proportioning piston bore adjacent said valve seat being engageable therewith upon sufficient movement of said proportioning piston axially toward said valve seat, and spring means continually urging said proportioning piston axially away from said valve seat;

and stop means in said first piston bore limiting axial movement of said proportioning piston in either axial direction;

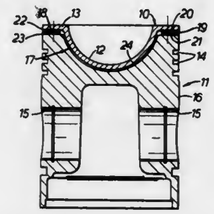
brake actuating pressure introduced through said inlet into said inlet pressure chamber initially flowing through said proportioning piston bore into said second pressure chamber and acting on said first and second wheel cylinder pistons, said first and second wheel cylinder pistons being adapted to move against respectively abutting brake shoes, the pressure in said second pressure chamber also acting on the larger effective area of said proportioning piston larger end and at a predetermined pressure moving said proportioning piston against the force of said spring means to engage said valve seat and momentarily close said proportioner piston bore and thereafter move relative to said valve seat to proportion pressure from said inlet pressure chamber to said second pressure chamber and generate proportional forces adapted to be applied on the brake shoes adapted to be actuated thereby.

4,553,472

PISTONS AND METHOD FOR THEIR MANUFACTURE

Robert Munro, Avenue House, 9 Sutherland Rd., Lymington, Hampshire SO4 9GP; David A. Parker, Orchard Cottage, Broadwell, Rugby, Warwickshire CV23 8HB, and Neil A. Graham, 162 Keresley Rd., Coventry, Warwickshire CV6 2JJ, all of England

Filed Aug. 22, 1983, Ser. No. 525,462
Claims priority, application United Kingdom, Aug. 20, 1982, 8224040
Int. Cl.⁴ F04B *31/08*
U.S. Cl. 92—176 **10 Claims**



1. A piston for an internal combustion engine comprising:

a crown of an iron based material,

a piston body of aluminium or an aluminium alloy,

an annular intermediate member of an iron based material and arranged between the crown and the piston body to space the crown from the piston body and define a heat insulating chamber therebetween,

a layer of an aluminium alloy roll bonded to a surface of the intermediate member which is adjacent the piston body,

a weld joining the roll bonded layer to the piston body,

a weld joining the intermediate member to the crown,

said welds extending around the whole circumference of the piston to seal the chamber.

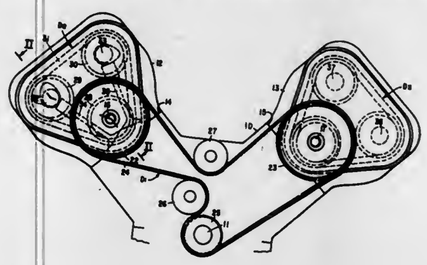
4,553,473

VALVE ACTUATING MECHANISM FOR ENGINES

Katsumi Ichida, Tokyo; Koichi Fukuo, Saitama; Junichi Araki, Saitama, and Isao Machida, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 539,044
Claims priority, application Japan, Oct. 20, 1982, 57-183840
Int. Cl.⁴ F01B *1/04*
U.S. Cl. 92—261 **3 Claims**

1. In a DOHC engine of the V-type, the combination of: a cylinder block having a crank shaft, two cylinder heads on said cylinder block to form a V-shape relationship, each cylinder head having two cam shafts and an intermediate shaft mounted thereon, a first wrap-around transmission connecting said crank shaft to both of said intermediate shafts, a second wrap-around transmission connecting one of said intermediate shafts to the two cam shafts on the same cylinder head with that intermediate shaft, and a third wrap-around transmission connecting the other of said intermediate shafts to the two cam shafts on the same cylinder head with said other intermediate shaft, whereby either of the cylinder heads may be removed from said cylinder block upon disassembly of the first wrap-around transmission and without disturbing the said second or third wrap-around transmissions.

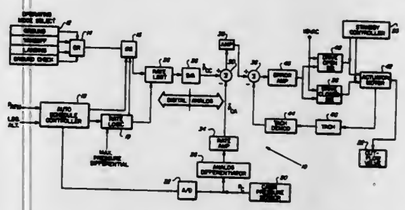


4,553,474

AIRCRAFT CABIN PRESSURIZATION SYSTEM

Paul P. Wong, Rancho Palos Verdes; John B. Lippold, Huntington Beach, and Glenn A. Burgess, Downey, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 25, 1981, Ser. No. 325,089
Int. Cl.⁴ B64D *13/04*
U.S. Cl. 98—1.5 **29 Claims**



26. A method for controlling air pressure in an aircraft cabin, comprising:

sensing air pressure in said aircraft cabin;

generating a signal indicative of the actual rate of change of air pressure in said aircraft cabin;

measuring ambient pressure on the exterior of the aircraft to provide an indication of the altitude of said aircraft;

calculating a commanded rate of change of air pressure in said aircraft cabin in response to aircraft altitude;

controlling the air pressure in said aircraft cabin in response to said cabin altitude signal and said commanded rate of change;

initiating a constant pressure situation in said aircraft cabin when aircraft altitude varies by less than a first predetermined values over a preset time period; and

maintaining air pressure in said aircraft cabin constant during said constant pressure situation by clamping said air pressure in said aircraft cabin to a constant value.

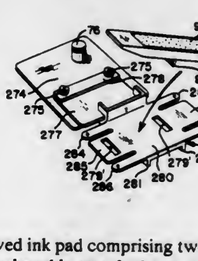
4,553,475

LABORATORY HOOD ATTACHMENT

G. Thomas Saunders, Geneva, Ill., assignor to St. Charles Manufacturing Co., St. Charles, Ill.

Filed Apr. 21, 1983, Ser. No. 487,162
Int. Cl.⁴ F24F *11/00*
U.S. Cl. 98—36 **9 Claims**

1. An attachment for a laboratory hood having an opening lead to a work area comprising an elongated housing having front, rear and top walls, and a lower open end with said rear wall attached to said hood above said opening, opening means extending across said front wall adjacent an upper edge thereof, support means in said housing between said opening means and said lower open end of said housing, a plurality of fans supported in spaced relation on said support means, baffle means between said support means and said lower open end for diverting flow toward said front and rear walls so that air can be drawn through said opening means by said fan means and exhausted through said lower open end and provide a fluid barrier across said opening.



4,553,476

INK PAD

Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 941,352, Sep. 11, 1978, Pat. No. 4,261,857, which is a continuation-in-part of Ser. No. 811,239, Jun. 29, 1977, abandoned, which is a division of Ser. No. 642,037, Dec. 18, 1975, Pat. No. 4,052,938, which is a continuation-in-part of Ser. No. 537,630, Dec. 30, 1974, Pat. No. 3,933,092. This application Sep. 10, 1979, Ser. No. 74,380
The portion of the term of this patent subsequent to Jan. 20, 1993, has been disclaimed.
Int. Cl.⁴ B41J *1/20*
U.S. Cl. 101—111 **2 Claims**

1. An improved ink pad comprising two and only two pieces adapted to be releasably attached to a carrier support having spaced holes, the ink pad including an elongated one-piece body of molded plastics construction having a relatively thin bottom wall and another piece comprising an ink-receptive pad supported by the bottom wall, a pair of longitudinally spaced and integrally molded fingers depending downwardly from the bottom wall, each finger having opposite sides and a holding projection at only one side, the holding projections being spaced from the bottom wall, the holding projections extending in opposite directions and being adapted to engage in corresponding holes within a carrier support, at least one of the fingers being flexible relative to the bottom wall to provide for releasably inserting the fingers and holding projections into the holes.

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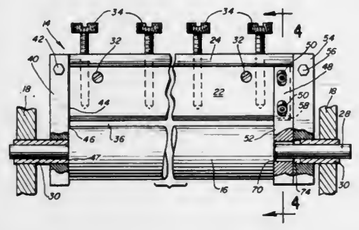
INK FOUNTAIN FOR DUPLICATING MACHINES

Stanley Witczak, Chicago, Ill., assignor to A.M. Internation, Inc., Chicago, Ill.

Continuation of Ser. No. 484,408, Apr. 13, 1983, abandoned. This application Dec. 10, 1984, Ser. No. 680,009

Int. Cl.⁴ B41F *31/04, 31/06;* **B41L** *27/08*

U.S. Cl. 101—365 **2 Claims**



1. An ink fountain assembly for use in duplicating machines, such as rotary offset lithographic machines, including a fountain trough defined by an elongated blade and an ink fountain roller, the roller having flat end faces, comprising:

fixed wall means defining one end of the fountain trough for flush abutment against the adjacent end of the blade and the respective flat end face of the fountain roller to prevent ink leakage therebetween; and

adjustable wall means defining and opposite end of the fountain trough, the adjustable wall means having flat surface means on the underside thereof for securing against the top surface of the blade to prevent ink leakage therebetween, and releasable fastening means for securing said adjustable wall means against the top surface of the blade whereby the wall means is adjustable relative to the blade and axially of the fountain roller to bring the adjustable wall means into flush abutment against the opposite flat end face of the ink fountain roller to prevent ink leakage therebetween.

4,553,478

PRINTING MACHINE PRE-SETTING ARRANGEMENT

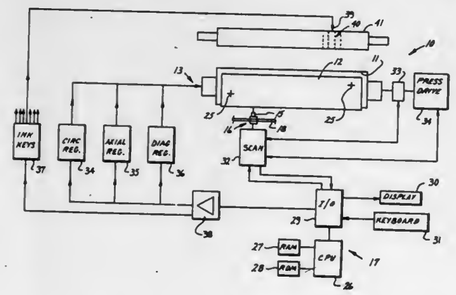
Harry M. Greiner, Offenbach am Main; Hermann Fischer, Augsburg, and Claus Simeth, Offenbach am Main, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,693

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302798

Int. Cl.⁴ B41F *5/06, 5/16*

U.S. Cl. 101—426 **14 Claims**



1. In a rotary printing machine having a printing plate mounted on a plate cylinder, a machine frame to which the plate cylinder is journaled, a drive for rotating the plate cylinder, automatic means for adjusting the axial and circumferential register of the plate cylinder, and automatic means for dosing a desired amount of ink to a plurality of axially-displaced inking zones on the printing plate, an apparatus for presetting the axial and circumferential register and the means for zonally dosing ink comprising, in combination,

means for sensing the angular position of the plate cylinder drive,

an optical scanner and traversing mechanism mounted to the machine frame for axial scanning of the printing plate including means for driving the optical scanner to a commanded axial position, and

a numerical computer including memory, being responsive to the angular position of the plate cylinder drive, the axial position of the optical scanner, and a signal from the optical scanner, and having means to selectively operate the machine drive, move the optical scanner to commanded axial positions, and generate control signals for said means for adjusting axial and circumferential register and said means for dosing ink, said numerical computer further comprising

(a) means for sensing the axial and circumferential positions with respect to the machine frame and machine drive, respectively, of at least one register mark engraved on the printing plate,

(b) means for adjusting the axial and circumferential positions of the register mark so that the register mark is aligned with predetermined axial and circumferential positions, and

(c) means for scanning printing areas on the printing plate and determining ink dosing control signals responsive to the ratio of printing to non-printing area in the respective inking zones on the printing plate,

so that a single optical scanner multi-functionally scans the printing plate to preset the register and zonal ink dosing within the printing machine under control of the numerical computer.

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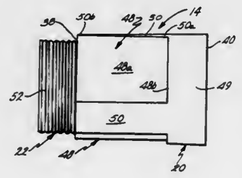
PLASTIC BULLET

Marshall O. Willoughby, Orchard Lake, Mich., assignor to Tolcon Steel Corporation, Grand Rapids, Mich.

Filed Apr. 11, 1983, Ser. No. 483,916

Int. Cl.⁴ F42B *5/02*

U.S. Cl. 102—430 **7 Claims**



1. A bullet projectile comprising:

a body portion having a blunt forward end and a rearward end, said body portion being frustoconically shaped and including a larger base comprising said forward end and a smaller base comprising said rearward end, whereby, during travel in a firearm barrel, said frustoconically shaped body creates air turbulence along the side of said body portion to coact with any rifling in the barrel, said body portion defining a plurality of pockets about the body circumference, said pockets being separated by ribs longitudinal to said body, each of said pockets terminating short of said forward end of said body, each of said ribs tapering from said forward end to said rearward end, each of said pockets including a floor comprising a segment of a right circular cylinder; and

means for securing said rearward end of said body portion to a bullet casing, said securing means being concentric with and diametrically smaller than said rearward end of said body portion.

6. An improved bullet including a projectile, having a stud, and a casing having a chamber wall defining a chamber for closely receiving said projectile stud to retain said projectile in said casing, the improvement comprising:

a plurality of annular, uniformly axially spaced ridges extending from said stud; and

said chamber wall having a plurality of annular, uniformly axially spaced serrations, the spacing of said serrations being different from the spacing of said ridges, whereby not all of said ridges and said serrations will matingly engage at one time regardless of the axial orientation of said stud within said chamber, whereby said projectile releases from said casing relatively smoothly.

4,553,480

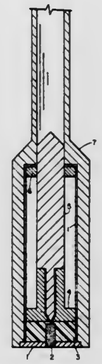
NO FLASH, VERY LOW NOISE HOWITZER ROUND AND TUBE

Norvel J. McLellan, 1002 N. Main St., Pleasanton, Tex. 78064

Continuation-in-part of Ser. No. 356,817, Apr. 29, 1982, abandoned. This application Aug. 3, 1983, Ser. No. 519,839

Int. Cl.⁴ F42B *13/16;* **F41F** *1/00*

U.S. Cl. 102—430 **2 Claims**



1. A howitzer round and matching tube comprising a generally cylindrical case, a primer situated at the rear of said case, a propellant contained within said case adjacent the primer, a projectile, and a tube connected to the front of said case which forms a barrel of the same diameter as said projectile, wherein the improvement comprises:

said case containing a plunger, said plunger having a rear portion adjacent the propellant of essentially the same diameter as the interior of said case and a plug portion of a smaller diameter extending forwardly from said rear portion, said plunger having a longitudinal hole through the rear and plug portions;

said projectile being the diameter of said plug portion of the plunger and having a tail portion which fills said longitudinal hole in the plunger, said projectile extending into said tube when at rest, thereby forming an enclosed annular space between the projectile and the case;

said case also containing a washer adjacent the tube which is in air tight engagement with said case and said projectile.

4,553,481

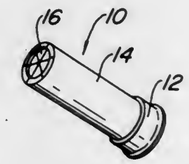
SHOT GUN SHELL TRACER WAD

Vero Ricci, 106 E. Stiles Ave., Collingswood, N.J. 08108

Filed Apr. 11, 1984, Ser. No. 599,093

Int. Cl.⁴ F42B *7/02*

U.S. Cl. 102—458 **5 Claims**



1. In a shot shell having a primer, propellant and shot, a unitary molded plastic wad comprising:

a generally cylindrical shot compartment at the upper end of the wad with sidewalls having a first predetermined outer diameter for receiving and retaining the shot;

a generally cylindrical stem portion extending downwardly from the shot compartment along a common axis, the stem portion having sidewalls with an outer diameter less than the outer diameter of the shot compartment;

a generally conical portion having sidewalls and extending downwardly from the lower end of the stem portion along a common axis, the upper end of the conical portion having an outer diameter substantially equal to the outer diameter of the lower end of the stem portion and the lower end of the conical portion having an outer diameter substantially equal to the outer diameter of the shot compartment, the sidewalls of the conical portion being tapered from a first thickness at the upper end to a second thickness at the lower end;

a generally cylindrical portion extending downwardly from the lower end of the conical portion, the cylindrical portion having sidewalls and an outer diameter substantially equal to the outer diameter of the shot compartment;

an overpowder wad secured to the lower end of the cylindrical portion and engaging the propellant, the overpowder wad cooperating with the cylindrical portion, the conical portion and the stem portion to form a generally enclosed chamber whereby upon ignition of the shot shell primer the overpower wad moves upwardly into the chamber and the conical portion inverts to provide shock absorption for the shot compartment; and

tracer means within the chamber for forming a chemiluminescent tracer to accompany the shot.

4,553,482

PRACTICE PROJECTILE

Adolf Weber, Neunkerchen, and Carmen Porzelt, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 331,777, Dec. 17, 1981, abandoned. This application May 22, 1984, Ser. No. 611,928

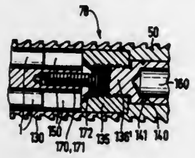
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048206

Int. Cl.⁴ F42B *13/20, 9/20*

U.S. Cl. 102—529 **7 Claims**

1. Practice projectile consisting of at least two axially extending and transversely divided projectile parts; a single shear bolt extending centrally within and along the longitudinal axis of said practice projectile and interconnecting said projectile parts; a time-delayed self-destruct arrangement in said projectile for dividing said projectile into at least said projectile parts, said self-destruct arrangement being actuatable upon said projectile traversing a predetermined flying distance; said self-destruct arrangement comprising at least two mutually independent, pyrotechnic time-delay self-destruct means having gas-pressure generating charges constituted of a two-based

propellant triggerable responsive to firing of the projectile, said bolt being shearable through the action of a gas pressure



generated by said charges for effectuating the separation of said projectile parts.

4,553,483

WORKTABLE, ESPECIALLY OFFICE TABLE

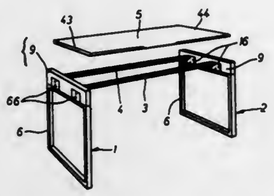
Arno Votteler, Stuttgart, Fed. Rep. of Germany; Max Lanuzzi, Weisslingen, Switzerland; Fredi Dubach, Adetswil, Switzerland, and Herbert Schreiner, Frauenfeld, Switzerland, assignors to Planmöbel Eggersmann GmbH & Co. KG, Espelkamp, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,347

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128137

Int. Cl.⁴ A47F *5/12*

U.S. Cl. 108—4 **9 Claims**



1. A worktable, set on a surface, and comprising:

two side legs, each being provided with threaded holes;

support bars rigidly interconnecting said side legs respectively; each support bar having at least two fastening and support surfaces respectively which extend substantially parallel to the axis of said support bar;

fastening plates respectively connected to the ends of each support bar at right angles to the axis of said support bar, and in particular being eccentrically connected with the ends of said support bar in such a way that when the two fastening plates of a given support bar are rotated, said fastening and support surfaces of that support bar are located at different heights above said surface upon which said worktable is set; each fastening plate being provided with holes which are equally spaced from, and are rotationally symmetrical to, the middle point of said fastening plate, with the centers of said holes lying on an imaginary circle of symmetry, and with a given one of said holes being equidistant from its adjacent holes as viewed along said imaginary circle of symmetry; said holes of said side legs being arranged in such a way as to correspond with said holes of said fastening plates in order to effect said interconnection of said side legs by said support bars;

a table-top supported directly on said fastening and support surfaces of said support bars; and

fastening means provided on the underside of said table-top for holding the latter on said support bars.

4,553,484

CORNERBOARD FOR PALLETS

Clayton E. Cox, 1181 San Andreas Rd., Watsonville, Calif. 95076

Filed Sep. 30, 1982, Ser. No. 429,062

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.⁴ B65D *19/14*

U.S. Cl. 108—55.1 **1 Claim**



1. A corner structure for a pallet comprising in combination:

(a) a top section, said top section having two side walls disposed at right angles to each other, forming an L-shaped structure;

(b) a top cap bridging the top walls of said L-shaped structure;

(c) a plurality of pins directed inwardly from each side wall of said top section, each of said pins terminating in a shoulder with an enlarged cap thereon;

(d) a bottom section of the same general configuration as said top section having side walls at right angles to each other and a bottom cap bridging the lower surfaces of said side walls;

(e) said lower section having a plurality of holes formed in each side wall corresponding in placement and separation to the pins in the top section each hole comprising a large top portion corresponding in diameter to a cap and a smaller lower portion corresponding in size to a shoulder whereby said top and bottom sections can be locked together to form a pallet corner, with said pins entering said slots and locking against the side walls of the bottom section,

(f) said top section and said bottom section have a plurality of pins and holes in the respective sections, spaced vertically from each other whereby said sections can be locked together at various preselected heights to change the distance between said top and bottom caps and

(g) said lower section having at least one hole missing at the top thereof whereby at least three pins must always be in locking position for the sections to lock together.

4,553,485

EXTENSION TABLE WITH SINGLE LEG

Chain-Hsiang Lee, No. 303, Tze-Li 1st Rd., Kaohsiung, Taiwan

Filed Nov. 8, 1982, Ser. No. 440,009

Int. Cl.⁴ A47B *1/08*

U.S. Cl. 108—86 **1 Claim**

1. An extension table with a single leg comprising

a leg;

a bottom plane mounted on said leg;

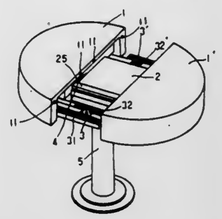
two top sections movably mounted on said bottom plane, each top section having an inclined guidance provided thereunder, each guidance having enlarged ends, and four holes on each side surface facing the center of the table,

two rods mounted apart but along a straight line on each side of said bottom plane;

two gears, one disposed between the ends of said two rods;

four rods two of which are mounted to one of said top sections and the other two of which are mounted to the other top section, said racks being engageable with said gears;

two detachable leaves provided on each side with a guide



rod for engaging said guidances of said top sections, each said detachable leaf being formed at two opposite sides with four pins insertable into the four holes on each said top section, said detachable leaves being connected together by hinges, each said detachable leave having a wing hinged to the outer side thereof; and

two supporting plates for steadying the movement of the leaves being fixed on the bottom of and extending from two sides of the detachable leave which forms the lower one when the two detachable leaves are folded on top of each other.

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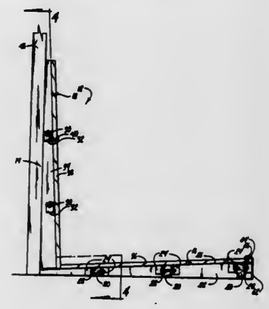
BEVERAGE DISPLAY SHELVING

Bradley G. Muhl, Keomah Village, Oskaloosa, Iowa 52577

Filed Dec. 27, 1982, Ser. No. 453,713

Int. Cl.⁴ A47B *9/00*

U.S. Cl. 108—108 **7 Claims**



1. A freestanding beverage display shelving system comprising,

a display unit including a pair of horizontally spaced apart L-shaped support members, each support member including a horizontally disposed channel member adapted to be supported by the floor and integrally connected at its inner end to the lower end of a vertically disposed channel member,

a back member vertically disposed and positioned against said vertically disposed channel members and operatively supported on said horizontally disposed channel members,

a shelf member horizontally disposed and positioned on said horizontally disposed channel members;

said vertical channel members being tapered from bottom to top to position the back member at angle to the vertical and to maintain the back member by gravity against the vertical channel members;

said horizontal channel members being tapered front to rear to maintain the shelf member by gravity operatively against the vertical channel members and maintain beverage products toward the inner rear end of the shelf member;

said L-shaped support members being interconnected by spaced apart cross members to provide support for said shelf member and said back member;

said cross members on said horizontal channel members being supported along their bottom sides by the floor and the height of said cross members from the front to rear being sequentially shorter corresponding to the taper of said channels to provide a top shelf supporting surface in a common horizontal plane including the top surface of said horizontal channel members.

4,553,487

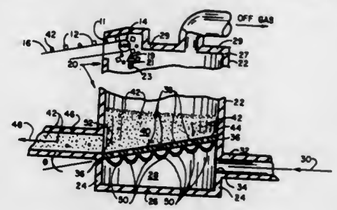
REMOVAL OF TRAMP MATERIAL FROM FLUID BED VESSELS

George P. Rasmussen, and Earl S. Grimmett, both of Idaho Falls, Id., assignors to Waste-Tech Services, Inc., Idaho Falls, Id.

Continuation-in-part of Ser. No. 528,815, Sep. 2, 1983, abandoned. This application Jun. 11, 1984, Ser. No. 619,678

Int. Cl.⁴ F23G *5/00*

U.S. Cl. 110—245 **10 Claims**



1. A fluidized bed system comprising:

a vessel;

stationary flat sloped grid plate means comprising an array of fluidizing apertures disposed in and peripherally connected to the lower portion of the vessel;

a shallow fluid bed resting entirely on the plate means and comprising a variable depth transversely across the vessel, the bed being formed of inert granular material;

means by which fuel particles, containing non-combustible tramp objects, are delivered to the interior of the vessel and to the fluid bed therein;

a source of fluidizing air;

means by which influent fluidizing air is delivered to a site within the vessel below the plate means and the fluid bed;

means at a first elevation above the highest plate means elevation by which influent bed material is delivered to the vessel and the fluid bed within the vessel;

effluent means at a second elevation immediately above the lowest plate means elevation by which effluent bed material and tramp objects exit the fluid bed and the vessel after migrating downwardly along the plate means;

the stationary sloped grid plate means being angularly disposed between the fluid bed and the influent fluidizing air site within the vessel by which the entirety of the bed is uniformly fluidized without internal rotational circulation of the bed while retaining the surface of the bed essentially level, the tramp objects being walked downwardly along the top of the stationary sloped grid plate means to the effluent means solely by gravity and fluidizing air and bed material being prevented from passing through the sloped

plate means during both periods of fluidization and non-fluidization.

4,553,488

PROCEDURE AND FURNACE TO INCINERATE WASTE MATERIALS WITHOUT PRODUCING SMOKE

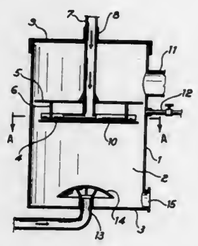
Carrara Giuseppe, Via Cavour, 125, Cernusco sul Naviglio, Italy

Filed Dec. 28, 1984, Ser. No. 687,266

Claims priority, application Italy, Jan. 12, 1984, 19138 A/84

Int. Cl.⁴ F23G *3/00, 5/00, 7/00*

U.S. Cl. 110—346 **5 Claims**



1. Procedure to incinerate waste materials without producing smoke, consisting in causing carbonization, distillation and combustion of a mass of waste material to be destroyed, characterized in that the carbonization and distillation of the material are achieved by the effect of the heat transferred to said mass by a steel plate pre-heated to red heat condition, said plate being caused to press down on the mass, and in that the complete combustion of the volatile substances derived from the distillation is achieved by introducing air under pressure; the heat which develops as a result of the combustion of said substances is utilized to maintain said plate heated in the red hot condition up to total exhaustion of the material to be incinerated.

4,553,489

SEWING DEVICE WITH A SEWING HEAD INCLUDING A ROTARY HOUSING

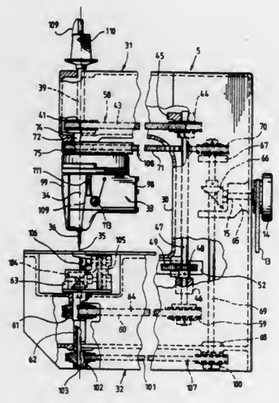
Günter Landwehr, Bielefeld, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,448

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 8329089[U]; Mar. 27, 1984, 3411177

Int. Cl.⁴ D05B *21/00*

U.S. Cl. 112—121.12 **4 Claims**



1. A sewing device having:

a sewing head;

a feeding means for producing a two-axis-relative-movement between said sewing head and a workpiece to be sewn;

a drive means including a main drive shaft driving said sewing head and said feeding means;

said sewing head having:

a housing rotatably arranged at said sewing head about an axis of rotation, said housing having:

drive elements pivotally arranged, bearing means displaceably fastened to said housing,

gear means drivingly connected to said drive elements to impart jogging movements to said bearing means

a needle bar pivotally received in said bearing means

crank means connected to said drive elements, and

link means drivingly connecting said crank means with said needle bar as to superpose a reciprocating motion with said jogging movements, wherein said reciprocating needle bar is joggingly driven lateral relative to said axis of rotation;

a bearing including a hook operable by said drive means and cooperating with said needle bar, said bearing being rotatably arranged about said axis of rotation,

transmitting means for equiangularly rotating said housing and said bearing,

a control including a drive for rotating said housing and said bearing, and

a drive connection operably connecting said drive means with said drive elements, and

said drive connection comprising:

a double-timing-belt-pulley concentrically pivoted relative to said axis of rotation, said double timing-belt-pulley having an upper part and a lower part;

an upper timing belt drivingly connecting said upper part with a timing-belt-pulley connected to said main drive shaft; and

a lower timing belt drivingly connecting said lower part with another timing-belt-pulley comprised in said drive elements.

4,553,490

LOCKSTITCH SEWING MACHINE

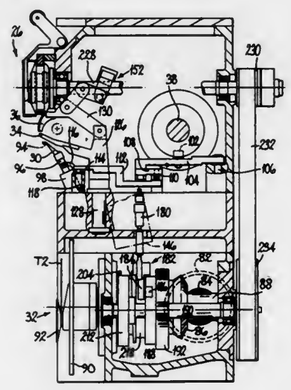
Geoffrey K. Collett, Glenfield; Christopher B. Martin-Jones, Birstall; Peter N. Tapner, Twickenham; David J. Commander, Milton Keynes; Mark S. Gilbey, Edgware, and Robert S. Berks, Milton Keynes, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Sep. 7, 1984, Ser. No. 648,658

Claims priority, application United Kingdom, Sep. 8, 1983, 8324064

Int. Cl.⁴ D05B *15/02*

U.S. Cl. 112—38 **9 Claims**



1. A lockstitch sewing machine comprising stitch forming instrumentalities, including a reciprocating hooked needle, on to the hook of which a loop of (needle) thread can be looped, when the needle has penetrated a workpiece and while it is projecting therethrough, and also a rotatable shuttle, by which the loop of thread is engaged, after retraction of the needle, and a lockstitch is formed using said loop and a further (bobbin) thread,

thread measuring means for supplying a measured quantity of needle thread for each stitch formation,

means, arranged "upstream" of the stitch forming instrumentalities, for clamping the thread after the measured quantity has been supplied as aforesaid,

and means, arranged between the thread clamping means and the stitch forming instrumentalities, and including a thread take-up arrangement, by which said measured quantity of thread is controlled during stitch formation and by which also a formed lockstitch can be drawn into the body of the workpiece, such drawing of the formed stitch taking place while the thread remains clamped by the thread clamping aeans, but after the start of the formation of the next following stitch, wherein, for the final stitch formed in a machine stitching cycle, stitch setting means is provided which is arranged "downstream" of the thread clamping means and which, in response to an "end of cycle" signal, is caused to pull on the thread to draw the formed stitch into the body of the workpiece, prior to the release of the thread by the thread clamping means, the latter thereafter being operated to release the thread.

4,553,491

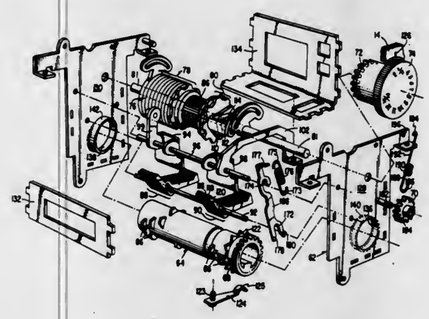
CONTROL MECHANISM IN A SEWING MACHINE FOR PATTERN AND BUTTONHOLE SEWING

Robert B. Brauch, Wayne, and John Mihovch, Keansburg, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 4, 1984, Ser. No. 646,890

Int. Cl.⁴ D05B *3/02, 3/04*

U.S. Cl. 112—465 **5 Claims**



1. In a sewing machine, a dial for selecting an operating mode, a gear rotatable by said dial, an idler gear rotatable by the dial rotatable gear, a cam selecting rotatable drum with fingers thereon, a gear on the cam selecting drum in engagement with the idler gear for rotationally positioning said drum in response to operation of the dial, a ratchet wheel on the drum, a fixed indexing detent spring for the ratchet wheel, a continuously rotatable drum with stitch controlling cams thereon, cam followers selectively positionable, in response to indexed movements of the cam selecting drum by the fingers thereon, against said cams for actuation thereby, and mechanism operably associated with the cam followers for controlling stitch forming instrumentalities on the machine, said cam selecting drum being loosely supported in the machine and being forcibly engaged by a spring biased member to establish a stabilized location for the drum in the indexed positions thereof, the idler gear also being loosely supported on the machine and being biased by a spring for a loose meshing relationship with the gear on the cam selecting drum resulting in play in said dial when in mode selecting positions.

4,553,492

NEEDLE GUIDE FOR SEWING MACHINES

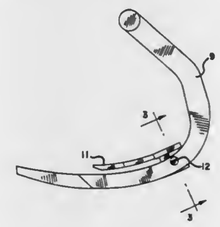
Erwin F. Jürgens, Hemmingen, Fed. Rep. of Germany, assignor to Union Special GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 648,927

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333310

Int. Cl.⁴ D05B *55/06*

U.S. Cl. 112—227 **1 Claim**



1. In combination with a sewing machine having a work supporting surface, a series of needles arranged to reciprocate in a generally vertical path, a spreader movable horizontally above the work supporting surface on one side of the needles vertical path and in timed relation with the needles reciprocatory movement, and a needle guide comprising:

operative means arranged above said work supporting surface and carried by said spreader means, said operative means having an extension arranged on the opposite side of the needles path whereby forming a recess through which the needles are guided while above the work supporting surface of the machine.

4,553,493

WARSHIP WITH STANDARDIZED OPERATING UNITS

Karl-Otto Sadler, Hamburg, and Willy Schmidt, Ellerbek, both of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

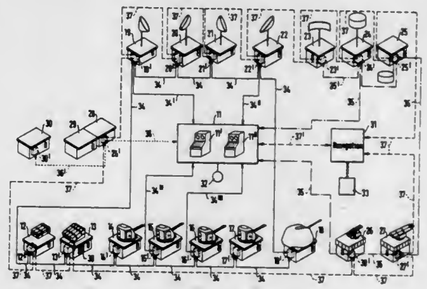
PCT No. PCT/EP82/00272, § 371 Date Jul. 29, 1983, § 102(e) Date Jul. 29, 1983, PCT Pub. No. WO83/02317, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 21, 1982, Ser. No. 522,362

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150894

Int. Cl.⁴ B63G *1/00, 9/00*

U.S. Cl. 114—1 **9 Claims**



1. A warship having a central command post unit, a navigation unit, a communication unit, and a plurality of standardized operating units including controlling units and controlled

units, each of which includes a container which is closed at the top by a standardized platform, wherein power supply lines and information lines connected to the central command post unit and/or to other standardized operating units terminate at each standardized operating unit, comprising:

a plurality of data processors, each having standardized hardware and software modules and being located inside a standardized operating unit such that the associated standardized operating unit is capable of operating independently of the other standardized operating units, each data processor including a memory for storing data specific to the associated standardized operating unit;

said controlling and controlled standardized operating units forming functional groups;

said data processors of the standardized operating units which belong to the same functional group only exchanging digitized crude information; and

standardize information transmission lines laid between the data processors of the standardized operating units of a functional group independently of the nature of the different standardized operating units;

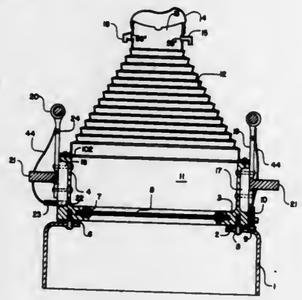
whereby each data processor provides a standardized electronic interface equipped with the same connection contacts and sockets.

4,553,494

AQUATIC CAMERA

Spiridon Constantinescu, 30 Golders Green Ave., Scarborough, Ontario, Canada (M1C 3P6)

Filed Feb. 9, 1984, Ser. No. 578,747
Int. Cl.⁴ B63B *35/00*
U.S. Cl. 114—66 **4 Claims**



1. An aquatic camera apparatus for looking into the water from a watercraft, said aquatic camera comprising:

(A) a looking mask being lightproof and including:

(a) a flexible strap for securing said looking mask upon the viewer face,

(b) an air intake valve, and

(c) an air exhaust valve;

(B) a folding camera obscura including:

(a) groove means provided at the upper end of said folding camera obscura for receiving a sliding adaptor fixed either to said looking mask or to an objective of a camera, and

(b) a downwardly facing first frame;

(C) a first casing including:

(a) an upwardly facing second frame matching to said first frame,

(b) a downwardly facing third frame being perimetrically inwardly trimmed for receiving an elastomeric gasket adapted to receive and to seal a horizontal transparent screen, said transparent screen being waterproof mounted and solidly secured against a downwardly movement relative to said third frame,

(c) a pair of vertical ribs for each short side of said first casing, which ribs are placed symmetrically outside of said first casing for reinforcing and supporting reasons,

(d) a bracket for each pair of said ribs, said bracket being fixed to said first casing by screw means and having, for manipulating and supporting reasons, a handle, a spindle and a lever articulated by a fix bolt,

(e) a horizontal threaded drainage hole located above said third frame and tangentially to said elastomeric gasket, and

(f) a flashlight attached to said first casing;

(D) a second casing having a cross section of similar shape and bigger area relative to said first casing and including:

(a) an upwardly facing fourth frame matching to said third frame,

(b) a vacuum wet chamber,

(c) a vertical threaded vacuum hole located outside of perimeter of said first casing;

(E) first connection means and sealing means for waterproof joining said first frame to said second frame;

(F) second connecting means and sealing means for waterproof joining said third frame to said fourth frame;

(G) two valves, one of them for drainage being located in said drainage hole, and the second for vacuum being located in said vacuum hole, and each of said two valves including:

(a) a cylindrical housing having an axial opening therethrough, an inner end, an outer end, a lateral drainage nipple, an internal seat at said inner end, and outside thread means at each end, said inner end being screwed to said aquatic camera into one of said locations,

(b) an internal cylindrical valve having third sealing means matching with said seat, said internal cylindrical valve having an axial opening inside communicating outside through a slot and a first slit,

(c) a threaded lid matching with said outer end, said lid having an axial hole and connecting means,

(d) a compressible spring located between said third sealing means of said internal cylindrical valve and said lid, and receiving inside said internal cylindrical valve,

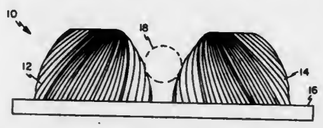
(e) an activator having a cable incased in a flexible tube, and said cable having a node at each end, said flexible tube being fixed at one end to said connecting means of said lid and at the other end of said bracket, one of said nodes passing through said slot and said first slit and the second of said nodes passing through a second slit provided in a spur attached to said lever, therefore said cable connecting said internal cylindrical valve to said lever articulated to said bracket.

4,553,495

CLEAT

Michael Lerner, 152 Marshall St., Duxbury, Mass. 02332

Filed Sep. 13, 1983, Ser. No. 531,814
Int. Cl.⁴ B63B *21/08*
U.S. Cl. 114—218 **9 Claims**



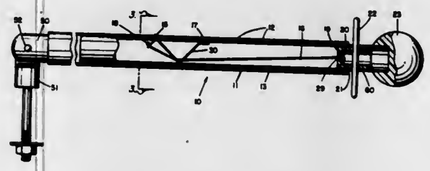
1. A cleat for securing a line, which cleat comprises a base plate; and a pair of first and second dome-shaped, non-rotating elements fixed to the base plate, the elements being characterized by high friction, line-engaging grooved surfaces which are spaced apart and adapted to receive and hold a line therebetween, whereby the line may be secured by drawing it towards the base plate and may be released by lifting it away from the base plate.

4,553,496

QUICK RELEASE TILLER EXTENSION

Robert Foresman, 26902 Paceo Cardero, San Juan Capistrano, Calif. 92675

Filed Jan. 6, 1984, Ser. No. 568,786
Int. Cl.⁴ B63H *25/06*
U.S. Cl. 114—144 R **9 Claims**



1. An extendable apparatus comprising,

an outer tube (**11**),

an inner tube (**13**) movably mounted within the outer tube, said inner and outer tubes being free to slide relative to each other,

said outer tube having a plurality of co-linear apertures (**12**) therethrough,

said outer tube has a first indicia (**100**) at at least one end thereof aligned with said co-linear apertures,

spring loaded button means (**15**) mounted within said inner tube and adapted to extend therefrom and to engage one of said apertures in said outer tube,

said inner tube has a second indicia (**101**) theron aligned with said button means whereby said first and second indicia can be aligned with each other in order to align said button means with said apertures,

linkage apparatus (**16,18,20**) connected to said spring loaded button means in order to selectively cause said button to be withdrawn from engagement with any of said apertures,

said linkage apparatus comprises elongated wire means (**16**),

retainer means (**19**) slidably mounted within said inner tube and connected to selectively operate said linkage apparatus,

said retainer means comprises a sleeve member (**19**) adapted to retain one end (**20**) of said linkage apparatus therein, and

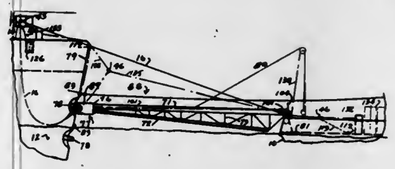
gripping means (**23**) attached to an exposed end of said inner tube which extends beyond said outer tube.

4,553,497

TOW OF BARGES BY TUGS

Arthur J. Nelson, P.O. Box 3007, Daly City, Calif. 94015

Filed Nov. 15, 1982, Ser. No. 441,751
Int. Cl.⁴ B63B *21/56*
U.S. Cl. 114—246 **4 Claims**



1. A mode of operating a fleet of tugs and barges as outfitted to facilitate changes in arrangement between a tug and barge to suit encounters throughout a voyage, comprising:

(a) outfitting the tug with: a powered controllable pitch propeller; auxiliary power for a bow thrustor, a capstan with auxiliary towline, and dual traction winches each having a towline; an 'A' frame, pivotally mounted to the tug after deck stern rail; a travelling crane means to lift and move heavy parts; a portable derrick with a winch operated wire likewise mounted and adjacent to the 'A' frame; and, a reel contained extendable wire with the free end having a coupling means;

(b) outfitting the barge with: a mechanism transmitting towline tension to the barge and establishing corrective rudder as monitored by said arrangement, a first series of light duty padeyes at the barge stem for a selected aft one end connection of a stub length wire, heavy duty padeyes establish a second series with each one located immediate to and beneath a said light duty padeye, a pair of equal length, socket ended, pin connecting bridle legs oppositely arranged as connected to said mechanism with the other end extending forward of the barge, a flounder plate being the vertex connecting means between the towline distal end pin connecting means and said bridles, and featuring a cufflink with anchoring chain; and,

(c) said arrangement and suitablity being:

Arrangement 1—a tug using one of its towlines for automatic control of a barge at sea;

Arrangement 2—a tug using its two towlines for double tow of arrangement 1;

Arrangement 3—a tug using two towlines for selective control of a barge in coastal inlets;

Arrangement 4—said above arrangements are adaptable by means to augment the rudder ability to turn a barge;

Arrangement 5—. An integrated tug and barge adapted only in sheltered waters as articulated to contend with conditioning forces and allow selective angular alignment between the tug and barge—a mooring requirement to exchange barges;

Arrangement 6—a triple tow of barges, an adaptation of arrangement 2, with redundancy by a second tug; and, said change to adapt the tow from arrangement 1 to arrangement 3 comprising:

(1) employing the flounder plate adapted with means to establish a span, from said vertex connection to said connection with the mechanism, selectively with equal measurement or slightly unequal measurement of oppositely arranged bridle legs while the alterable extension of a towline disposed the flounder plate from an aboard tug position to a selected distance aft of the tug;

(2) performing said change in arrangement by a sequence of acts comprising:

(a) Act 1—locating the flounder plate said aboard and employing a cufflink to provide an interim fix together of bridle leg socket ends for a deck anchor means with the cufflink to assume tension in bridle legs with the towline slack;

(b) Act 2—removing pins from the flounder plate releases attachments thereto;

(c) Act 3—employing a lifting means to remove and dispose the flounder plate to a conveniently located securing fixture with said deck;

(d) Act 4—accommodating cufflink means provide for the mating connection together of distal ends of towlines and bridle legs for alterably extended bridle legs as dual towlines;

(e) Act 5—powering traction winches to free said anchoring means and remove said interim fix of the cufflink therefrom; and,

(f) Act 6—paying out said dual towlines for a required sternward barge position establishes said arrangement (3).

4,553,498

DEVICE FOR CLAMPING AND TENSIONING AN ELASTIC DOCTOR BLADE

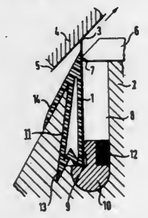
Herbert Sommer, Dusseldorf, and Gerhard Wohlfeil, Monheim, both of Fed. Rep. of Germany, assignors to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 10, 1984, Ser. No. 598,561
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1983, 3313972
Int. Cl.⁴ B05C *11/04*
U.S. Cl. 118—126 **16 Claims**

1. In a device for unilaterally clamping an elastically deform-

able doctor blade into a cutting beam and for varying the force of the blade on a web of material that is to be coated and that runs over a mating roll, wherein the doctor blade rests against the web of material along a doctor line parallel to the cutting beam and is rigidly supported in its midsection along a line of support that is in fixed position with respect to the web of material parallel to the doctor line and the lower edge of the doctor blade can be displaced with respect to the plane of the doctor line and in the line of support, the improvement which comprises

(a) providing the cutting beam with a longitudinal recess in which the doctor blade is positioned,



(b) providing an elastic pressure-medium hose adjacent one side of the blade to push the doctor blade into the longitudinal recess and providing an elastic resistance in the recess in the cutting beam so as to clamp the blade between the resistance and the elastic pressure-medium hose, and

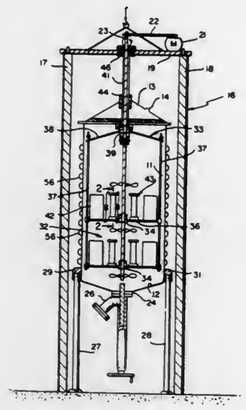
(c) providing means directly abutting the lower edge of the doctor blade for guiding the lower edge of the doctor blade toward the line of support and displacing the lower edge out of a plane defined by the doctor line and the line of support.

4,553,499

METHOD AND APPARATUS FOR THE PRODUCTION OF EXHAUST GAS FILTERS

John M. Crone, Jr., Fishkill; Erven J. Kuhlmann, and Matthew A. McMahon, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,187
Int. Cl.⁴ B05C *3/04, 3/09*
U.S. Cl. 118—428 **7 Claims**



1. An apparatus for reacting aluminum with an alkali solution to form a coating composition which is deposited onto a filter substrate, and during which reaction residual electrons are released at the surface of the reacted aluminum, which apparatus includes:

a tank for holding a quantity of the alkali solution;

a mounting frame removably received in said tank to be immersed in the coating composition, and for holding the filter substrate;

a perforate wall container carried on said frame for holding discrete particles of the reactant aluminum,

said perforate wall container being electrically isolated from the tank and mounting frame respectively, whereby to avoid the formation of bubbles at the tank wall and the subsequent flaking of coating segments as a result of said bubble formation; and

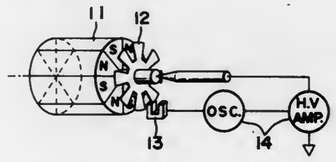
a non-electrically conductive means interposed between said perforate wall container and said frame, which spaces the container from the mounting frame.

4,553,500

APPARATUS AND METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Masahiko Itaya; Satoshi Haneda, and Makoto Tomono, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 382,719, May 27, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,673
Claims priority, application Japan, Jun. 8, 1981, 56-88569; Jun. 30, 1981, 56-102543
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 118—657 **3 Claims**



1. In an apparatus for developing an electrostatic latent image on an electrostatic latent image receptor using a one-component dielectric magnetic toner wherein said electrostatic latent image receptor and a developing sleeve retaining thereon said toner are arranged such that the toner does not contact with said latent image receptor when a developing electric field is not applied, and a magnetic roller formed thereon with magnet poles of different polarity alternately is arranged in said developing sleeve rotatably, the improvement characterized by comprising a bias application device having a rotary member rotatable in synchronism with said rotatable magnetic roller, synchronizing signal generation means for taking out a synchronizing signal from said rotary member, and bias means controlled by said synchronizing signal from said synchronizing signal generation means and forming an oscillating electric field between said developing means and said electrostatic latent image receptor, wherein said oscillating electric field is so formed that when the boundary portion of the magnet poles of the magnetic roller is faced to said electrostatic latent image receptor said toner flies from said developing sleeve toward said electrostatic latent image receptor and near the boundary portion said flight toner is attracted toward said developing sleeve.

4,553,501

SELECTIVE PLATING APPARATUS

Hiroshi Kobayashi; Shinichi Muramatsu, both of Nagano; Yoshiro Ichikawa, Suzaka, and Seizo Mitsui, Nagano, all of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Mar. 14, 1984, Ser. No. 589,694
Int. Cl.⁴ B05C *3/15, 3/18*
U.S. Cl. 118—669 **8 Claims**

1. A selective plating apparatus for selectively plating an elongated metal strip, stored on first and second reels, at intervals of a predetermined length in the lengthwise direction thereof, while the strip is being fed in the lengthwise direction thereof, said selective plating apparatus comprising:

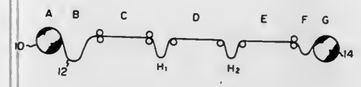
strip discharge means for delivering the strip from the first reel in a direction in which the strip is fed, said strip discharge means comprising:

a drive motor, coupled to the first reel, for driving the first reel;

detecting means, disposed adjacent to the strip and operatively connected to said drive motor, for controlling said drive motor, said detecting means controlling said drive motor so that slack in the strip is formed following the first reel, the slack in the strip being within a predetermined range;

a pre-treating station, disposed following said strip discharge means in the direction in which the strip is fed, for providing continuous strip feeding and treating the strip before the strip is plated, the slack in the strip being formed between the first reel and the pre-treating station;

intermittent feeding means, disposed following said pre-treating station in the direction in which the strip is fed, for converting the continuous strip feeding into an intermittent strip feeding and the intermittent strip feeding into the continuous strip feeding;



a plating station, disposed following said pre-treating station in the direction in which the strip is fed, for selectively plating the strip while the strip is stopped during the intermittent strip feeding;

an after-treating station, disposed following said plating station in the direction in which the strip is fed, for treating the strip after the strip is plated;

strip take-up means, disposed following said after-treating station in the direction in which the strip is fed, for winding up the strip on the second reel after the strip has been treated;

tension mechanisms, one of said tension mechanisms disposed between said pre-treating and plating stations and another of said tension mechanisms disposed between said plating and after-treating stations, said tension mechanisms imparting a predetermined tensile force to the strip by passing the strip via at least one fixed roller and at least one tension roller having a position; and

synchronizing means, operatively connected to said pre-treating and after-treating stations and said tension mechanisms, for synchronizing the continuous and intermittent strip feeding by detecting the position of the at least one tension roller.

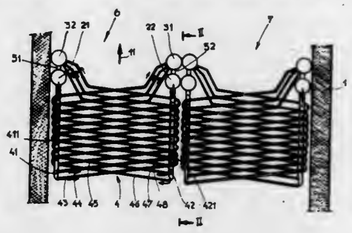
4,553,502

TUBE-TYPE HEAT EXCHANGER

Jacques Dreuilhe, L'Isle Adam, and Paul-Victor Landet, Aulnay s/Bois, both of France, assignors to Framatome & Cie, Courbevoie; Charbonnages de France, Paris and Institut Francais du Petrole, Rueil Malmaison, all of, France

Filed Feb. 4, 1985, Ser. No. 697,678
Claims priority, application France, Feb. 3, 1984, 84 01666
Int. Cl.⁴ F22B *1/02*
U.S. Cl. 122—4 D **8 Claims**

1. A tube-type heat exchanger placed in a fluid at elevated temperature and comprising two inlet headers, two outlet headers, a plurality of panels of tubes extending below said two inlet headers and said two outlet headers, to which headers the tubes are connected at upstream and downstream ends of the tubes and form two semi-panels which are imbricated one inside the other, each semi-panel comprising a sub-header tube which is connected to an inlet header and divided into at least one tube having a laced configuration so that the two sub-header tubes pertaining to the two semi-panels extend vertically inside an envelope of said laced tubes and support said laced tubes by means of cantilever supports.

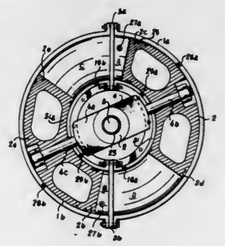


4,553,503

ROTARY PISTON MACHINE

Arnulfo Q. Cena, 1415 Hollywood Ave., Glenview, Ill. 60025

Filed Aug. 22, 1983, Ser. No. 525,126
Int. Cl.⁴ F02B *53/00*
U.S. Cl. 123—18 A **2 Claims**



1. In a rotary internal combustion engine of the type having

support means;

first and second shafts;

means mounting said first and second shafts on said support means for rotation about a first axis;

annular cylinder block means connected to said first shaft for rotation therewith about said first axis;

piston means arcuately reciprocable within, and rotable with, said annular cylinder block means, and connected to said second shaft for rotation therewith about said first axis;

off-axis journal means on said support means;

off-axis rotation means journaled on said off-axis journal means for rotation about a second axis parallel to said first axis;

and respective means interconnecting rotation of said first and second shafts about said first axis with rotation of said off-axis rotation means about said second axis;

the improvement wherein:

said support means comprises at least two wall means spaced along and substantially perpendicular to said axes with at least one of said shafts continuously extending past opposite sides of said support means;

said off-axis journal means comprises substantially circular boss means fixedly mounted on said wall means with the center of said circular boss means at said second axis;

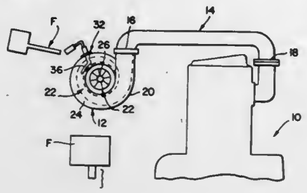
and said off-axis rotation means comprises means circularly interfitting with said boss means in a manner to be rotatably supported thereon.

4,553,504

MEANS AND METHOD FOR ALTERNATE FUEL FUMIGATION IN INTERNAL COMBUSTION ENGINES

Vinod K. Duggal; Edward J. Lyford-Pike, both of Columbus, and Edward D. Smith, Greensburg, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 30, 1983, Ser. No. 567,179
Int. Cl.⁴ F02M *25/04*
U.S. Cl. 123—25 J **28 Claims**



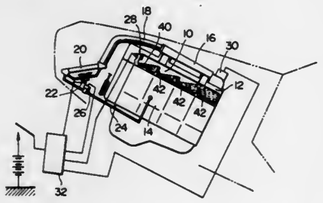
1. A method of partially replacing the primary fuel supplied to an internal combustion engine having an intake air means, a combustion chamber with the primary fuel being supplied to the combustion chamber through an injector which meters the amount of fuel injected into the combustion chamber in response to variation in pressure of fuel supplied to the injector, comprising the step of preventing addition of secondary fuel to the air intake means until engine load reaches 25% of full load, further including a step of gradually increasing the amount of secondary fuel supplied to the engine while correspondingly increasing an amount of the primary fuel supply that is diverted from the engine in a manner causing the proportion of secondary fuel to increase from zero percent to fifty percent of the total amount of fuel supplied to the engine as engine load increases from 25% of full load to 50% of full load.

4,553,505

CYLINDER HEAD OF INTERNAL COMBUSTION ENGINE

Yoshinori Hirano, Yokohama; Masahiko Kondo, and Takao Kubozuka, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 25, 1984, Ser. No. 624,369
Claims priority, application Japan, Jul. 11, 1983, 58-124802
Int. Cl.⁴ F01P *3/22*
U.S. Cl. 123—41.2 **9 Claims**



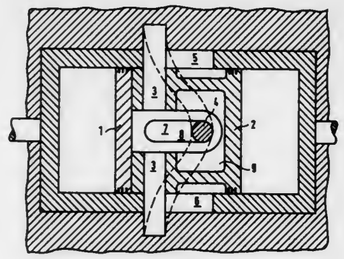
1. A boiling liquid cooling system for an internal combustion engine including a cylinder head having therein at least one combustion chamber, comprising:
- first means defining about said combustion chamber a coolant jacket into which a coolant is introduced in a liquid state and from which the coolant is discharged in a gaseous state;
- second means for condensing and thus liquifying the gaseous coolant introduced thereto from said coolant jacket;
- third means for feeding to the coolant jacket coolant liquified by said second means;
- fourth means for maintaining the level of the liquid coolant in the coolant jacket at a first level higher than said combustion chamber; and
- at least one imperforate baffle member disposed in and extending completely across said coolant jacket, said baffle having its lower end integrally connected with the upper wall of said combustion chamber, said baffle extending upwardly from said combustion chamber wall to a second level intermediate of said first level and said combustion chamber upper wall when said engine is in a generally level state, said baffle member acting as means for inhibiting movement of the liquid coolant within said coolant jacket during changes in attitude of the engine.

4,553,506

ENGINE WITH ROTATING CYLINDER WALL

Prodromos Bekiaroglou, Karl-Theodorestrasse 54/IV, 8000 München 40, Fed. Rep. of Germany

PCT No. PCT/EP82/00213, § 371 Date May 18, 1983, § 102(e) Date May 18, 1983, PCT Pub. No. WO83/01088, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 23, 1982, Ser. No. 503,192
Claims priority, application Greece, Sep. 23, 1981, 66123; Fed. Rep. of Germany, Jun. 30, 1982, 3224482
Int. Cl.⁴ F02B *75/28*
U.S. Cl. 123—45 R **5 Claims**



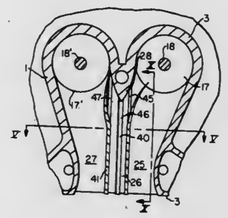
1. A machine comprising two pistons of equal masses, a single cylinder having openings on its surface, a stationary member surrounding said cylinder, means provided in said stationary member for introducing a fluid into two cylindrical working chambers defined by said pistons and opposite terminal walls of said cylinder, means provided in said stationary member for discharging a fluid from said working chambers, wherein said cylinder rotates upon movement of said pistons whereby to allow fluid to enter or leave said working chambers or to be retained therein depending upon the extent of rotation, and wherein said openings are in periodic registry with said means for introducing or discharging fluid whereby to allow fluid to enter or leave said working chambers depending upon the extent of rotation, wherein said stationary member has a single curved guide disposed about said cylinder, said cylinder having four linear guides in its wall, each being set apart 90°, two opposed linear guides being engaged by a portion of one piston, and two other opposed linear guides being engaged by a portion of the other, said piston portions being set 90° apart, whereby rotation of said cylinder about its longitudinal axis causes said pistons to rotate about and simultaneously perform symmetrical opposite linear movements along their longitudinal axis.

4,553,507

ENGINE WITH ADDITIONAL SHARED FLOW CONTROL RUNNER FOR TWO CYLINDERS

Donald J. Shaffer, P.O. Box 88, Upper Strasburg, Pa. 17265

Division of Ser. No. 205,649, Nov. 10, 1980, Pat. No. 4,381,738, which is a continuation-in-part of Ser. No. 24,049, Mar. 26, 1979, Pat. No. 4,232,639. This application Aug. 2, 1982, Ser. No. 404,298
Int. Cl.⁴ F02B *75/18*
U.S. Cl. 123—52 M **8 Claims**



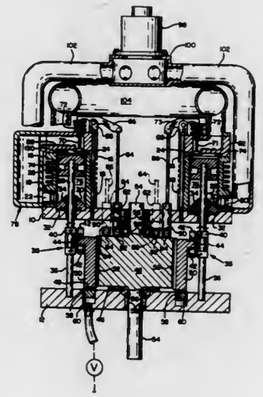
1. An internal combustion engine, including:
two expansible working chambers;
separate first and second intake valve means for respectively supplying working fluid to said two expansible chambers;
a source of working fluid; and
a manifold serially connected between said source of working fluid and said valve means to supply working fluid to said two expansible chambers, said manifold having a single plenum chamber for receiving the working fluid, a first runner fluid connected between said plenum chamber and said second intake valve means so as to substantially exclusively provide working fluid from said source to said first one of said valve means, a second runner fluid connected between said plenum chamber and said second intake valve means so as to substantially exclusively provide fluid from said source to said second intake valve means, and a third runner fluid connected between said plenum chamber and both of said intake valve means so as to commonly provide working fluid from said source to each of said intake valve means and so that said single plenum chamber is common to all three of said runners;
first flow control means for manually controlling the flow of fluid through said first and second valve means only and having a closed idle position and open position;
second flow control means independent of said first flow control means, having a first closed position restricting fluid flow through said third runner and a second open position permitting free fluid flow through said third runner; and
control means automatically responsive to an engine output condition correlated to speed of said engine to maintain said second flow control means in its first closed position at idle and speeds below a fixed low engine speed that is substantially above idle and maintain said second flow control means in its second open position at all engine speeds above a fixed high speed independently of the manual operation of said first flow control means.

4,553,508

INTERNAL COMBUSTION ENGINE

Donald E. Stinebaugh, 2320 N. Corbin Rd., Post Falls, Id. 83854

PCT No. PCT/US82/00507, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03889, PCT Pub. Date Nov. 11, 1982
Continuation-in-part of Ser. No. 257,967, Apr. 27, 1981, abandoned. This PCT application Apr. 22, 1982, Ser. No. 456,036
Int. Cl.⁴ F02B *75/26*
U.S. Cl. 123—58 AA **4 Claims**



4,553,509

CHAIN DRIVE OF A RECIPROCATING-PISTON INTERNAL COMBUSTION ENGINE

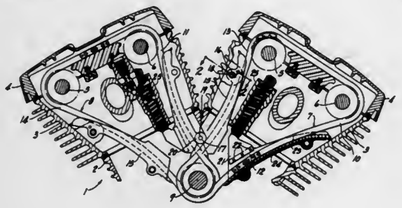
Hans Mezger, Freiberg, and Reinhard Konneker, Monsheim, both of Fed. Rep. of Germany, assignors to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jul. 13, 1984, Ser. No. 630,698

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326319

Int. Cl.[4] F01L *1/04*

U.S. Cl. 123—90.27 **8 Claims**



1. A chain drive apparatus for a reciprocating-piston internal combustion engine of the type having cylinders arranged in a V-configuration above a crankcase and which has overhead camshafts driven by a pair of chains coupled to the crankshaft, said apparatus comprising a tensioning bar for each chain, each of said tensioning bars including two arms arranged generally at right angles with respect to each other, each of said tensioning bars being pivotably mounted to said engine by a single lateral bearing lug so as to form a lever, a first arm of said tensioning bar pressing against the loose strand of its respective chain, chain tensioner means bearing against the second arm of said tensioning bar to vary the pressure of the first arm against said chain, and a sliding bar means for each chain, secured to said engine, to guide the driving strand of its respective chain.

4,553,510

CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINES

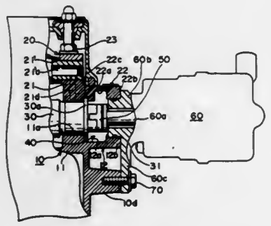
Yoshiki Yano, Saitama, and Yuji Kawaguchi, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 545,905

Claims priority, application Japan, Oct. 27, 1982, 57-162731[U]

Int. Cl.[4] F01M *1/06*

U.S. Cl. 123—90.34 **10 Claims**



1. A cylinder head for an internal combustion engine which incorporates an overhead camshaft and an auxiliary device designed to be attached onto the end of the camshaft through a coupling, comprising, a camshaft support assembly with an upper and lower portion and means to attach the same, a lubricant inlet portion and cylindrical recesses in said assembly to provide a camshaft support bearing and to form an enclosure around the coupling, and a groove formed in said enclosure portion of said assembly leading to another portion to allow the excess lubricant to return to its source.

4,553,511

STARTER CONTROL APPARATUS FOR AUTOMOTIVE VEHICLES

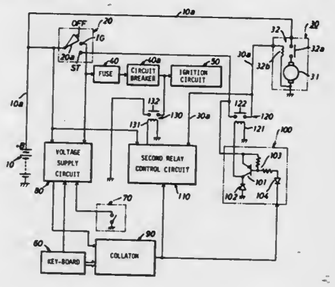
Shoichi Hayakawa, Nishikasugai, and Muneo Saito, Yokkaichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 28, 1983, Ser. No. 546,385

Claims priority, application Japan, Nov. 2, 1982, 57-192875

Int. Cl.[4] B60R *25/04*

U.S. Cl. 123—179 B **6 Claims**



1. A starter control apparatus for a vehicle having a starter circuit activating a starter motor for a prime move of the vehicle when supplied with electric power from an electric power source, an ignition circuit cooperating with said starter circuit for effecting start of said prime mover when supplied with electric power from said power source, and an operator-actuable key switch arranged to selectively interrupt electric power to said starter and ignition circuits in a designated inoperative position thereof and to conduct said electric power to said starter and ignition circuits in a designed operative position thereof, the starter control apparatus comprising:

input means, operable by an operator prior to operation of said key switch, for producing an electric code signal entered by said operator;

collator means, having a specific code memorized therein and responsive to said electric code signal, for outputting while activated a concord signal when said electric code signal accords with said memorized specific code and for outputting while activated a discord signal when said electric code signal discords with said memorized specific code;

power supply circuit means, connected to said power source, said key switch and said input means, for activating said collator means in response to a signal from said input means and for maintaining said collator means activated while said key switch is maintained in its operative position;

first power supply control means, responsive to said collator means and said key switch, for conducting said electric power to said starter circuit when said key switch is in its operative condition and said collator means is outputting said concord signal, and for interrupting electric power to said starter circuit when said collator means is outputting said discord signal; and

second power supply control means, connected to said starter and ignition circuits and responsive to said collator means, for conducting electric power to said ignition circuit when said key switch is in its operative condition and said collator means is outputting said concord signal, and for interrupting electric power to said ignition circuit when said collator means is outputting said discord signal while said starter circuit is directly connected to said power source for activation of said starter motor.

4,553,512

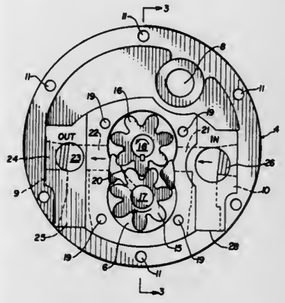
FLUID PUMP ASSEMBLY

Gerald Showman, 440 E. Georgia Ave., Connellsville, Pa. 15245

Filed Jan. 17, 1985, Ser. No. 691,979

Int. Cl.[4] F01M *1/00*

U.S. Cl. 123—196 S **17 Claims**



1. A fluid pump assembly comprising:

a starter motor having a drive shaft means protruding therefrom,

a pump housing secured to and operatively associated with said starter motor, said pump housing having a chamber which houses a fluid cavity and an annular flange and a generally circular rim on the base of said pump housing, the maximum transverse dimension of said annular flange generally being about 2 to 8 inches and the height from the base of said pump housing to the top of said upper chamber generally being about 1½ to 5 inches, said pump housing also having fluid inlet means and fluid outlet means,

gear means positioned within said fluid cavity having one gear wheel which is operatively associated with the drive shaft of said starter motor, another gear receiving an idler shaft and being in mesh with a driven gear whereby the drive shaft of said starter motor drives said gear means,

a fluid delivery system operatively associated with said pump assembly, for supplying fluid to said pump,

securing means for securing said pump housing to said starter motor,

receiver means which receives fluid exiting from said pump housing, and

an end cap which covers the fluid cavity in said pump housing.

4,553,513

THERMODYNAMIC ROTARY ENGINE

Perry E. Miles, and Mary A. P. Miles, both of 45 Kimberley Rd., Penylan, Cardiff, Wales

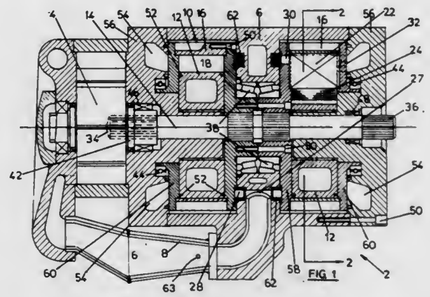
Continuation of Ser. No. 247,796, Mar. 26, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 536,531

Claims priority, application United Kingdom, Mar. 28, 1980, 8010588

Int. Cl.[4] F02G *3/00*

U.S. Cl. 123—204 **14 Claims**

1. A rotary engine which operates on a single-pass, constant pressure, thermodynamic process, which rotary engine comprises a rotary positive-displacement compressor for supplying continuous compressed air, a combustion chamber which is for receiving the compressed air from the compressor and in which a fuel is burned at substantially constant pressure, a rotary gas expander through which the products of combustion from the combustion chamber are passed for the purpose of the generation of useful mechanical power, and mechanical connector means by which the expander drives the compressor, the expander comprising a rotor which is mounted for rotation in a cylinder which is itself rotatable about an axis displaced from that of the rotor so as to create between the cylinder and the rotor a chamber, the volume of which chamber varies with rotation of the cylinder and the rotor, and an inwardly projecting vane fixed to the cylinder and slidably engaging in a pivotable sealing means in the rotor so as to divide the chamber whilst permitting engagement between the rotor and the cylinder throughout 360° of rotation, and the expander having a fixed housing part containing inlet means for entry of the products of combustion to the chamber, which inlet means comprise a fixed first port in the housing part of the engine, which port is in communication with the combustion chamber, and a second port which rotates with and is located in one end face of the cylinder, and said expander also having outlet means for the products of combustion, which outlet means comprises an outlet port which communicates with the chamber and which is located in a circumferential face of the cylinder and rotates with the cylinder for the purpose of continuous passage of the exhaust gases to atmosphere.



4,553,514

INTERNAL COMBUSTION ENGINE

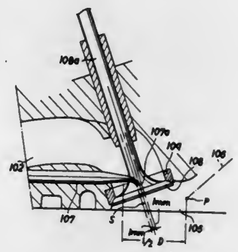
Yuzuru Namba; Kenichi Aoyagi, and Hiroshi Yokoyama, all of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kamimura Takatsuka, Japan

Division of Ser. No. 289,700, Aug. 3, 1981, Pat. No. 4,450,803. This application Mar. 23, 1984, Ser. No. 581,091

Claims priority, application Japan, Aug. 13, 1980, 55-111351; Sep. 29, 1980, 55-135606; Sep. 29, 1980, 55-135607

Int. Cl.[4] F02B *31/00;* **F02M** *35/10*

U.S. Cl. 123—308 **3 Claims**



1. An internal combustion engine comprising:

a combustion chamber defined by a cylinder, a cylinder head and a piston fitted in said cylinder;

a main suction path having a suction port formed in said cylinder head and adapted to be opened and closed by a suction valve at an open end portion of said suction port, which is opened into said combustion chamber; and

a sub-suction path provided separately of said main suction

path and having an outlet end opened immediately upstream of said suction valve,

wherein the improvement resides in that the outlet end of said sub-suction path is positioned within a sphere with its center being a spark point of an ignition plug and with the same diameter as the internal diameter of said cylinder, and within a range of ±1 mm from a plane which contains both the center line of a stem of said suction valve and a point of tangency along a valve facing circle of a valve seat of the suction valve through which a tanget line containing the spark point passes, said point of tangency being the point of tangency nearer a wall of the cylinder.

4,553,515

CYLINDER HEAD FOR SPARK IGNITION INTERNAL COMBUSTION ENGINE

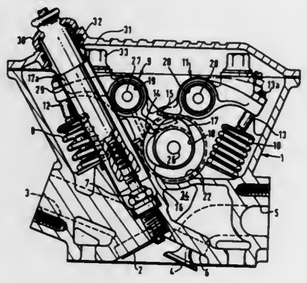
Charles S. King, Warwickshire, and Joseph J. Poole, Coventry, both of England, assignors to BL Technology Limited, United Kingdom

Filed Oct. 11, 1984, Ser. No. 659,787

Claims priority, application United Kingdom, Oct. 22, 1983, 8328319

Int. Cl.⁴ F02F *1/32*

U.S. Cl. 123—308 **9 Claims**



1. A cylinder head for a multiple cylinder spark ignition internal combustion engine, comprising two inlet and two exhaust valves per cylinder operated by a single overhead camshaft, the inlet and exhaust valves being inclined relative to each other when viewed in a direction parallel to a camshaft axis and each sparking plug being positioned within its axis entirely within an area bounded by an angle defined by the axes of the inlet and exhaust valves when viewed in the same direction and with a spark gap lying between heads of the four valves, wherein the camshaft operates the valves via rockers on at least one rocker shaft and the axis of the camshaft is nearer to a face of the cylinder head than is an entire axis of each rocker, and wherein each rocker shaft is continuous along an entire length of the cylinder head.

4,553,516

IDLING RPM CONTROL METHOD FOR AN INTERNAL COMBUSTION ENGINE ADAPTED TO IMPROVE FUEL CONSUMPTION CHARACTERISTIC OF THE ENGINE

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

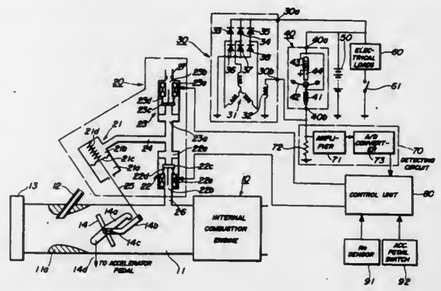
Filed Feb. 22, 1984, Ser. No. 582,318

Claims priority, application Japan, Feb. 28, 1983, 58-32538

Int. Cl.⁴ F02D *9/02, 11/10*

U.S. Cl. 123—339 **13 Claims**

1. A method of controlling the rotational speed of an internal combustion engine during idling operation thereof, said engine having an output shaft, an actuator operable to vary output torque produced by said engine through said output shaft, an alternating-current generator driven by said engine through said output shaft for rotation therewith, said alternating-current generator being adapted to generate electric power in an amount corresponding to a value of field current flowing therein and the rotational speed of said engine, and regulator means adapted to vary the value of said field current of said alternating-current generator in response to electrical load applied on said alternating-current generator, the method comprising the steps of: (a) detecting a value of a parameter indicative of said field current of and applied electrical load on said alternating-current generator; (b) determining whether or not said engine is operating in an idling condition; and (c)



controlling the operation of said actuator in response to the detected value of said parameter to vary said output torque of said engine, to thereby control the rotational speed of said engine such that the value of said field current of said alternating-current generator becomes equal to a predetermined value approximately equal to the value required for the applied electrical load on said alternating-current generator, when it is determined that said engine is operating in said idling condition.

4,553,517

IGNITION SYSTEM WITH ADDITIONAL FUNCTIONS

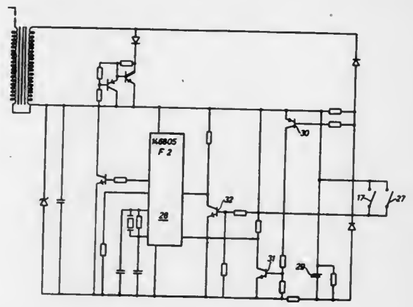
Bo C. Andreasson, Gothenburg, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 5, 1984, Ser. No. 596,943

Claims priority, application Sweden, Apr. 15, 1983, 8302113

Int. Cl.⁴ F02P *5/14*

U.S. Cl. 123—417 **2 Claims**



1. In an ignition system for an internal combustion engine, wherein the ignition system includes an ignition generator with a winding for producing a voltage that varies cyclically with engine rotation, a microcomputer connected to control the speed of the engine by controlling the timing of the ignition thereof, the microcomputer including a first memory portion for storing first control characteristics for controlling the timing of the ignition as a function of a first input to the microcomputer, and means applying a signal to said first input in response to a determined amplitude of said voltage; the improvement comprising a start switch connected to apply a signal to a second input of said microcomputer, said microcomputer having a second memory portion for storing second control characteristics controlling the timing of the ignition as a function of the first input in the microcomputer, said second control characteristics permitting a lower maximum speed than said first control characteristics, in response to said second input, whereby the speed of said engine is limited upon starting.

4,553,518

AIR-FUEL RATIO CONTROL FOR AN EXHAUST GAS RECIRCULATION ENGINE

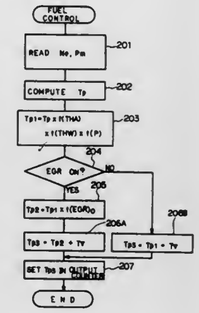
Mitsunori Takao, Kariya; Takahiko Kimura, Nagoya, and Norio Omori, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 10, 1984, Ser. No. 598,592

Claims priority, application Japan, Apr. 14, 1983, 58-66455

Int. Cl.⁴ F02M *51/00, 25/06*

U.S. Cl. 123—478 **14 Claims**



1. An apparatus for controlling an air-fuel ratio of an engine having an exhaust gas recirculation (EGR) arrangement, comprising;

(a) engine condition sensor means for detecting engine parameters including at least an air intake pressure;

(b) fuel injection means for supplying fuel to the engine;

(c) an exhaust gas recirculation system for recirculating a portion of an exhaust gas from an exhaust manifold of said engine to an intake manifold of said engine as a function of an operating condition of the engine;

(d) memory means for storing as map data fuel injection amount correction coefficients addressed by said parameters for use when the engine is operating in an EGR control mode; and

(e) control means for controlling said fuel injection means in response to said parameters and said correction coefficients, said control means comprising:

first means for computing a basic amount of fuel to be injected from said parameters,

second means for reading a desired correction coefficient from said memory means as a function of said parameters and for determining whether the latest correction coefficient thus read is different from a previous correction coefficient,

third means for correcting said basic amount with said latest correction coefficient if said latest and previous correction coefficients are the same,

fourth means for determining a modified correction coefficient related to said latest and previous correction coefficients if said latest and previous correction coefficients are different from each other and for correcting said basic amount with said modified correction coefficient so that simultaneous change in the air-fuel ratio of said engine with change in the correction coefficient from the previous one to the latest one is prevented, and

fifth means for controlling said fuel injection means so as to supply fuel based on the basic amount as corrected by either said third or fourth means.

4,553,519

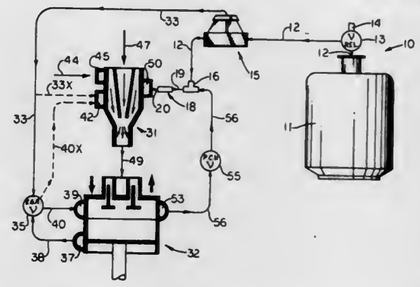
PROPANE FEEDING DEVICE FOR INTERNAL COMBUSTION ENGINES

Laverne F. Masson, 246 Harcourt Dr., Saginaw, Mich. 48603

Continuation-in-part of Ser. No. 424,922, Sep. 27, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,405

Int. Cl.⁴ F02B *43/00*

U.S. Cl. 123—527 **28 Claims**



1. In combination with an internal combustion engine having a gasoline-vaporizing carburetor, a fuel system for supplying gasoline to said carburetor and vacuum source increasing engine speed, the improvement comprising:

a propane supply reservoir;

a conduit leading from said supply reservoir to said carburetor;

a propane metering and throttling valve positioned in said conduit for providing and controlling the flow of propane through said conduit from said reservoir to said carburetor at the same time gasoline is supplied to said carburetor, said valve having vacuum responsive means associated therewith to actuate said valve and change the flow of propane therethrough in direct relationship with the change of said vacuum pressure, said vacuum responsive means being operably connected to said vacuum source means;

an aspirating aerating unit located in said conduit between said valve and said carburetor for aspirating air into said conduit and mixing the air with propane; and

said aspirating aerating unit comprising an inner tubular sleeve means having at least one aperture through its tubular wall and an outer tubular sleeve having a tubular sidewall and being slidably positioned over said inner sleeve means; said outer tubular sleeve having at least one aperture through its tubular sidewall; said inner sleeve means and outer sleeve being slidable relative to one another so that said apertures are alignable to allow air to be aspirated into inner tube and mixed with propane flowing therethrough;

whereby propane can simultaneously be injected into said carburetor in increasing amounts with increased engine speed.

4,553,520

DEVICE FOR THE GENERATION OF A DEFINED FUEL VAPOR/AIR MIXTURE

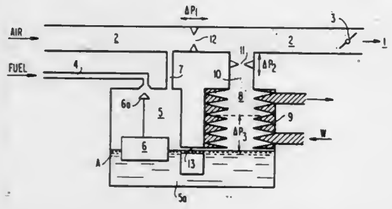
Klaus Lindenmaier, Stuttgart, and Josef Zieger, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,006

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1983, 3332933

Int. Cl.⁴ F02M *31/00*

U.S. Cl. 123—557 **3 Claims**



1. In a device for the generation of a defined fuel vapor/air mixture for spark-ignition engines having an intake pipe, a float chamber and a vaporizer chamber with heated vaporizer surface, said float chamber and said vaporizer chamber having a gas space and a liquid space, the intake pipe being provided with a first fixed diaphragm or nozzle, the liquid space of the float chamber and the liquid space of the vaporizer chamber being connected to one another by means of a line, the gas space of the float chamber being connected upstream of the first fixed diaphragm or nozzle, viewed in the direction of flow, and the gas space of the vaporizer chamber being connected downstream of the diaphragm, viewed in the direction of flow, to the intake pipe, a second fixed diaphragm or nozzle arranged in a second line from the gas space of the vaporizer chamber into the intake pipe, which diaphragm or nozzle induces a pressure drop of 85 to 99.99% of the first diaphragm, the vaporizer surface arranged above the vaporizer chamber liquid level for adjustment by means of the float chamber in such a way that, with increasing liquid level, wetted vaporizer surface increases, and wherein the improvement comprises

a damping line disposed between vaporizer chamber and float chamber at the height of the fuel level with the engine at rest, through which line the liquid fuel can transfer from the vaporizer chamber into the float chamber, and vice versa.

4,553,521

INTAKE SECONDARY AIR SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Eiji Kishida; Yoshinobu Isobe, both of Tokyo; Fumio Hara, and Shumpei Hasegawa, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

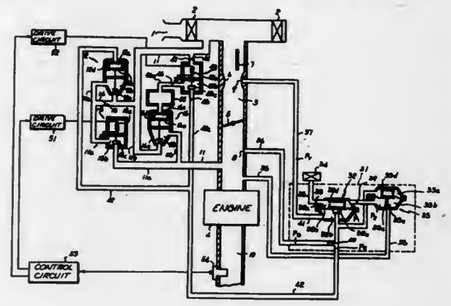
Filed Dec. 6, 1983, Ser. No. 558,605

Claims priority, application Japan, Dec. 10, 1982, 57-217548; Dec. 10, 1982, 57-217549

Int. Cl.⁴ F02M *23/04*

U.S. Cl. 123—587 **14 Claims**

1. An intake secondary air supply system for an internal combustion engine having an exhaust system and an air intake passage with a throttle valve, comprising: two intake secondary air passages communicating with the engine air intake passage downstream of the throttle valve; an oxygen concentration sensor disposed in the exhaust system for generating an output signal; means for judging the air-fuel ratio on the basis of the output signal level of said oxygen concentration sensor to generate a rich signal when said air-fuel ratio is in a rich range; a control valve disposed in one of said intake secondary air passages and adapted to be opened in response to said rich signal; a flow rate control valve having a fluid chamber for causing the operation thereof; said flow rate control valve disposed in the other of said intake secondary air passages for varying the effective area of said other intake secondary air passage in accordance with the fluid pressure supplied to said fluid chamber; and integration means for supplying said flow



rate control valve with a fluid pressure which varies such that said effective area is gradually increased in the presence of said rich signal and is gradually decreased in the absence of said rich signal.

4,553,522

MOUNTING MEANS FOR BOW STABILIZERS

Donald G. Topping, 886 Woodbine Dr., Crestwood, Mo. 63126

Filed Oct. 3, 1983, Ser. No. 538,214

Int. Cl.⁴ F41B *5/00*

U.S. Cl. 124—89 **3 Claims**



1. A device for mounting a pair of stabilizers on a bow for universal adjustment of their angular projection from opposite sides of a bow comprising:

a central, elongated section **(12)** having an intermediate portion arranged for the transverse, fixed attachment to a bow,

said central section **(12)** also being provided with a cylindrical portion **(28)** extending axially outward from each end,

a pair of elongated intermediate sections **(14)** each having a bore **(30)** extending axially inward from one end and each fittingly receiving therein one of said cylindrical portions **(28)** for rotation thereon about a first axis,

said pair of intermediate sections **(14)** each having a slot **(32)** extending axially inward from its other end thereby to bifurcate said other end and to provide two spaced portions **(34)** with adjacent flat surfaces,

said pair of intermediate sections **(14)** each being further provided with a slit **(42)** extending axially from the bottom of said slot **(32)** into said bore **(30)** thereby to provide resiliency,

a pair of elongated end sections **(16)** each having a flat sided portion **(36)** extending axially outward from one end and

fittingly inserted between said spaced portions **(34)** of one of said pair of intermediate sections **(14)**, and

each of said pair of end sections **(16)** having a screw threaded bore extending axially inward from its other end for the screw threaded attachment thereto of one end of a stabilizer **(60)**,

aligned aperatures **(40)**, **(41)** and **(43)** extending through said spaced portions **(34)** and said flat sided portion **(36)** of each of said sections **(14)** and **(16)** are provided, and

a single screw **(38)** extending through said aligned apertures in said portions **(34)** and **(36)** of each of said sections **(14)** and **(16)** provides a second, perpendicular axis of rotation for each end section **(16)** relative to each intermediate section **(14)** when loosened, and when tightened sufficiently screw **(38)** clamps a cylindrical portion **(28)** of central section **(12)** in a bore **(30)** of intermediate section **(14)** and clamps said flat sided portion **(36)** of end section **(16)** between spaced portions **(34)** of intermediate section **(14)** to provide a locked universal adjustment of each stabilizer.

4,553,523

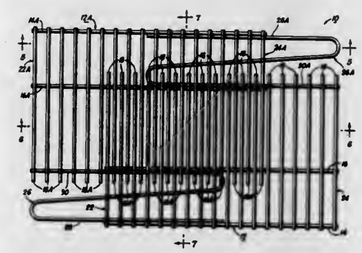
TWO-WAY ADJUSTABLE GRATE AND METHOD FOR ADJUSTING THE LENGTH AND WIDTH

Charles E. Stohrer, Jr., Hickory Hills, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Nov. 29, 1982, Ser. No. 445,202

Int. Cl.⁴ F24C *1/16;* F24B *3/00*

U.S. Cl. 126—9 B **15 Claims**



7. A method for adjusting the length and width of a grate wherein said grate includes first and second identical grate members, each said first and second grate member includes upper and lower ends, each said first and second grate member includes first and second base members, a plurality of upper support elements secured to an upper surface of each of said first and second base members and a plurality of lower support elements secured to a lower surface of each of said first and second base members, said upper and lower support elements each include ends spaced from said first and second base members wherein said ends of said upper support elements are adjacent to and spaced from said ends of said lower support elements, said method for adjusting comprising the steps of:

aligning said second base member of said first grate member between said ends of said upper and lower support elements of said second grate member,

aligning said second base member of said second grate member between said ends of said upper and lower support elements of said first grate member, and

moving said first grate member toward said second grate member to position said first base members of said first and second grate members a predetermined distance apart.

4,553,524

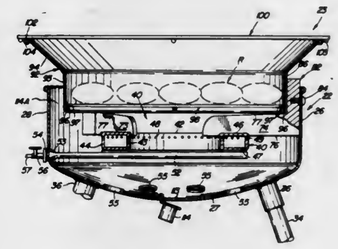
PORTABLE COOKING AND BARBECUING DEVICE

Don R. Wheat, 114 Cottonwood Trail, Durango, Colo. 81301, and Don H. Coers, 1533 Heatherton Ct., Naperville, Ill. 60540

Filed Sep. 6, 1983, Ser. No. 529,498

Int. Cl.⁴ A47J *37/00*

U.S. Cl. 126—25 R **7 Claims**



1. A portable cooking device comprising a bowl-shaped body having a bottom and an upstanding cylindrical side wall, means carried by said body for supporting the body in an upright position on a horizontal surface, an annular burner, means for supplying a combustible mixture of air and gas to said burner, at least one elongated support member connected to said burner and said side wall and supporting said burner in said body generally adjacent to the bottom thereof so that the flame of said burner is protected from the effects of wind during cooking, an annular adapter member having upper and lower ends, said lower end resting on said support member, the diameter of the lower end of said adapter member being greater than the diameter of said burner and less than the diameter of said cylindrical side wall so that an annular gap is defined between said cylindrical side wall and the lower end of said adapter member, and a food supporting grill resting on the upper end of said adapter member, whereby said adapter member is effective to direct heat from said burner upwardly through said food supporting grill to cook food resting thereon and the gap between the cylindrical side wall and the lower end of said adapter member permits air to flow downwardly through said gap when said burner is in operation in countercurrent relation to the upward flow from said burner to cool said cylindrical side wall and to supply additional air to said burner.

4,553,525

BARBEQUE GRILL ASSEMBLY

Charles G. Ruble, 2520 S. Fairview, Santa Ana, Calif. 92704

Filed Apr. 23, 1984, Ser. No. 603,182

Int. Cl.⁴ F24B *3/00*

U.S. Cl. 126—30 **7 Claims**

1. A barbeque grill assembly providing infinitely variable positioning of a grill over a fire which comprises:

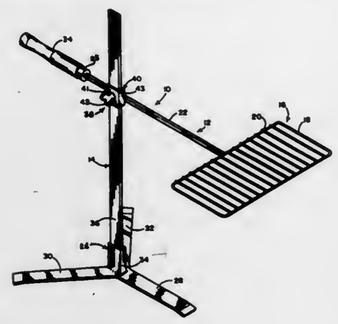
(a) a standard supported on a moveable base;

(b) a grill sub-assembly including a grill distally supported on an elongated bar with a handle on the opposite end thereof;

(c) a bracket slideably mounted on said standard with clamp means to adjustably secure said bracket to said standard independently of said grill subassembly and a first post carried by and projecting from the forward edge of one side of said bracket to provide a rest support for said bar and restraining means including a second post of shorter length than said first post and carried by and projecting from the rearward edge of said one side of said bracket and positioned above said first post to provide a cantilevered engagement of said grill sub-assembly when said elongated bar is mounted on said first post and beneath said second post;

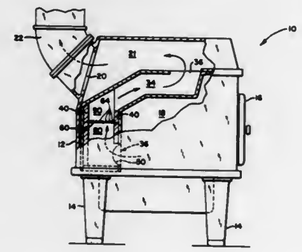
(d) indexing means coextensive the length of said bar and

coacting indexing receptacle means on said bracket to restrain said grill sub-assembly against rotation about the longitudinal axis of said elongated bar, and operable at any position of said bar in said bracket; and



(e) restraining means comprising a first, upwardly facing lip distally carried on said first post and a second, downwardly facing lip distally carried on said second post, whereby said elongated bar is captured between said first and second posts and said grill sub-assembly is laterally restrained against rotation about the axis of said standard.

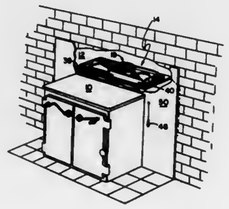
4,553,526
SECONDARY COMBUSTION SYSTEM FOR WOODBURNING STOVE
Peter E. W. von Conta, Montgomery Center, Vt., assignor to The Hearthstone Corporation, Morrisville, Vt.
Filed Feb. 27, 1984, Ser. No. 584,082
Int. Cl.⁴ F24C *1/16*; F23B *5/00*
U.S. Cl. 126—58 **20 Claims**



1. An improved secondary combustion system for combusting the exhaust gases in a woodburning stove comprising:
an insulated conduit defining an exhaust passageway and having an intake opening and an exit opening;
dispersion means defining a plurality of apertures interposed across said passageway in the vicinity of the intake opening to disperse exhaust gases injected through the intake opening;
a primary mixing chamber formed in the exhaust passageway for mixing the dispersed exhaust gases;
restriction means defining a plurality of apertures interposed across said passageway and spaced from said dispersion means to increase the exhaust velocity and turbulence of the exhaust gases;
turbulence means to increase the turbulence in the exhaust gases exiting the restriction means; and
a secondary combustion chamber formed in the exhaust passageway between the restriction means and the exit opening for combusting the exhaust gases.

17. A method for removing pollutants from an exiting exhaust stream of unconsumed oxygen and exhaust gases produced by the combustion of combustibles in a woodburning stove comprising:
(a) dispersing the exhaust stream into a plurality of small stream segments flowing in divergent directions;
(b) recombining and intermixing the stream segments to form a more homogeneous mixture of the unconsumed oxygen and the exhaust gases;
(c) restricting the exiting of the exhaust stream downstream of the intermixing thereby accelerating the gas stream;
(d) imparting a turbulence to the accelerated gas stream thereby combusting the exhaust gases in the presence of the unconsumed oxygen.

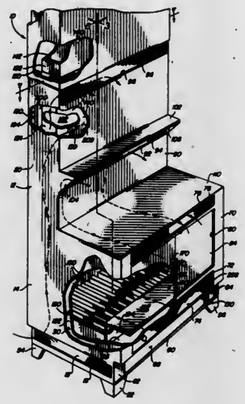
4,553,527
CATALYTIC UNIT FOR BURNERS
Peter S. Albertsen, Warwick, R.I., assignor to Nu-Tec Incorporated, East Greenwich, R.I.
Filed Feb. 16, 1984, Ser. No. 580,663
Int. Cl.⁴ F23J *15/00*
U.S. Cl. 126—58 **3 Claims**





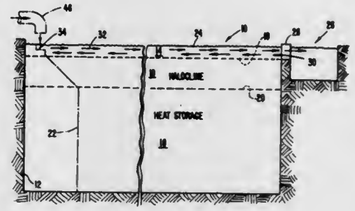
1. Apparatus supporting a catalytic converter for a combustion chamber having an exhaust opening and including an upper wall and a front wall, said apparatus comprising
a support for mounting across a rear portion of said upper wall of said combustion chamber having said exhaust opening, said support including an opening for positioning over said exhaust opening for passage of exhaust gases therethrough, said support also including a pair of guide walls defining an operating region over said exhaust opening and a nonoperating region horizontally adjacent to said operating region along said rear portion of said burner, said support having a horizontal sliding axis that passes through said operating region and said nonoperating region and is parallel to said front,
a catalytic converter mounted on said support for sliding movement between said operating and nonoperating reions along said sliding axis, and
a pair of flexible tension members connected to opposite sides of said converter and extending from said support for causing said catalytic converter to be moved between said operating and nonoperating regions, said flexible tension members being connected such that pulling one said flexible tension member causes said converter to move along said sliding axis in one direction, and pulling the other said flexible tension member causes said converter to move along said sliding axis in the opposite direction.

4,553,528
FREE-STANDING STOVE AND FIREPLACE APPARATUS
William T. Wells, P.O. Box 7097, Tucson, Ariz. 85725
Filed Jan. 4, 1982, Ser. No. 336,886
Int. Cl.⁴ F24B *7/00*
U.S. Cl. 126—123 **25 Claims**



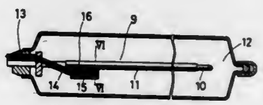
1. Free-standing fireplace apparatus for a room, comprising, in combination:
combustion chamber means in which combustion occurs to provide heat and including a front portion, a rear portion, and first and second side portions;
chimney flue means communicating with the combustion chamber and extending upwardly therefrom through which combustion gases flow from the combustion chamber and out of the structure in which the fireplace apparatus is disposed;
heated air chamber means through which air flows to be heated by the heat from the combustion chamber means, including
a first heated air chamber adjacent to the first side portion of the combustion chamber means and the chimney flue means,
a second heated air chamber adjacent to the second side portion of the combustion chamber means and the chimney flue means,
third heated air chamber means adjacent to the rear portion of the combustion chamber means and the chimney flue means and communicating with the first and second heated air chambers at a lower part of the third heated air chamber means, and
fourth heated air chamber means above the combustion chamber means communicating with the third heated air chamber means through the chimney flue means; and
combustion air means disposed rearwardly of and adjacent to the first and second heated air chambers and the third heated air chamber means and disposed about the chimney flue means for providing a flow of outside air to the combustion chamber for warming the air to the combustion chamber and for cooling the combustion gases flowing through the chimney flue means; and
opening means through which air flows into and out of the heated air chamber means, including
a first opening in the first heated air chamber through which room air flows into the first heated air chamber,
a second opening in the second heated air chamber through which room air flows into the second heated air chamber,
a third opening below the first side portion of the combustion chamber means and communicating with the third heated air chamber means through which room air flows into the third heated air chamber means,
a first outlet through which heated air flows from the fourth heated air chamber means, and
a second outlet above the first outlet through which heated air flows from the first and second heated air chambers.

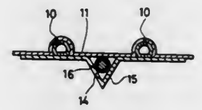
4,553,529
METHOD OF AN APPARATUS FOR DYNAMICALLY STABILIZING THE WIND-MIXED LAYER OF A SALT-WATER SOLAR POND
Gad Assaf, Rehovot, Israel, assignor to Solmat Systems Ltd., Yavne, Israel
Filed Jul. 9, 1982, Ser. No. 396,759
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—415 **8 Claims**



1. A method for dynamically stabilizing the convective wind-mixed layer of a salt-water solar pond, which covers a nonconvective halocline, the method comprising creating a two-layer flow regime in the wind-mixed layer due to differences in salinty, whereby lighter less dense water flows in one direction adjacent the surface of the pond, and heavier, more dense water, flows in a different direction beneath the lighter water, wherein the two-layer flow regime is created by selectively connecting the wind-mixed layer to a source of brine whose salinity exceeds the average salinity of water in the wind-mixed layer.

4,553,530
DEVICE FOR COLLECTING SOLAR HEAT
Akihiko Mizukami, and Tetsushi Shimaya, both of Shiga, Japan, assignors to Kyocera Corporation, Kyoto, Japan
Filed May 15, 1984, Ser. No. 610,828
Claims priority, application Japan, May 17, 1983, 58-74397[U]
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—422 **8 Claims**

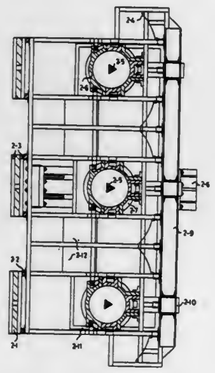




1. A solar heat collecting device having a light-transmitting vacuum tube, a heat medium tube for passing a heat medium therethrough disposed in said vacuum tube, a protection tube inserted fixedly into said vacuum tube and a temperature sensor disposed in said protection tube so as to permit free inser-

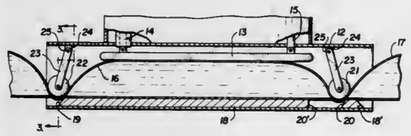
tion of the sensor into and drawing thereof out of said tube from outside and solar heat collecting device.

4,553,531
SOLAR RADIATION COLLECTOR
Francisco J. B. Rosende, Ibiza, 37 - 7°Izqda., Madrid 9, Spain
Filed Apr. 27, 1984, Ser. No. 604,603
Claims priority, application Spain, May 10, 1983, 522.290; Jan. 31, 1984, 529.345; Mar. 20, 1984, 530.792
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—440 **4 Claims**



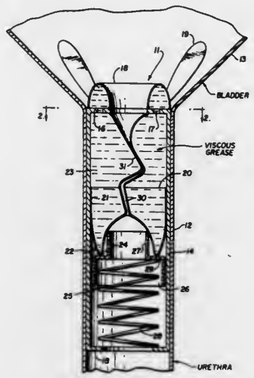
1. A solar radiation collector comprising an elongated receiver having a polygonal shape in cross-section through which a medium to be heated by solar radiation passes in a direction parallel to the length of said receiver, a concentrator for concentrating solar radiation onto said receiver, and an intermediate device positioned between said concentrator and said receiver for reducing energy losses due to radiation emitted by said receiver, said intermediate device having a uniform cross-sectional configuration along portions of length parallel to the length of said receiver and having at least one elongated window parallel to the length of said receiver for transmitting solar radiation focussed by said concentrator onto said receiver, said intermediate device having reflective arcuate surfaces for reflecting solar radiation emitted from said receiver back on said receiver and onto other arcuate surfaces of said intermediate device thereby to reduce the amount of radiation exiting through said window.

4,553,532
EXTERNALLY VALVED SHUNT FOR CARDIOPULMONARY BYPASS PUMP
Fred O. Bohls, Austin, Tex., assignor to Thomas M. Runge, Austin, Tex.
Filed Jul. 18, 1983, Ser. No. 514,601
Int. Cl.⁴ A61M *1/03*; A61F *1/24*
U.S. Cl. 128—1 D **7 Claims**



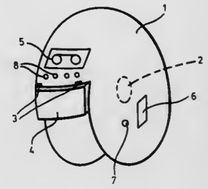
5. In a cardiopulmonary bypass pump adapted to operate with a valveless compressible tubing shunt, a pump compression passage means through which the shunt extends and including a valve plate external to the shunt on one side of the shunt, a pump compression plate movable across the passage means toward and away from the valve plate and being disposed externally to the other side of the shunt to cyclically compress and release a sack portion of the shunt within the passage means in cooperation with the valve plate, and a pair of spaced movable valve elements external to the shunt within the passage means and being adapted to compressively engage the shunt across the shunt, one valve element being biased by gravity to engage and pinch the shunt closed against an abutment surface of the valve plate, and the other valve element being biased by gravity away from pinching engagement with the shunt against another abutment surface of the valve plate spaced from the first mentioned abutment surface.

4,553,533
INTRA-URETHRAL PROSTHETIC SPHINCTER VALVE
Stephen B. Leighton, 93 Jefferson Ave., Maplewood, N.J. 07040
Filed Nov. 8, 1983, Ser. No. 550,040
Int. Cl.⁴ A61F *1/00*
U.S. Cl. 128—1 R **12 Claims**



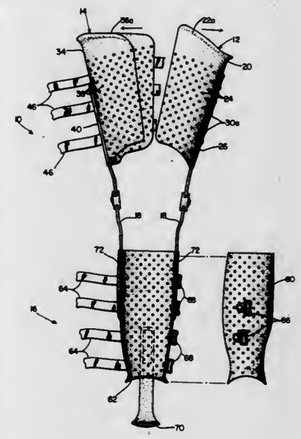
11. A prosthetic urethral sphincter valve for implantation within the urethra adjacent the bladder, and capable of control by the exertion by the patient of sustained intra-abdominal pressure for at least several seconds, said valve comprising
tubular casing means for said valve, said casing means being adapted to be placed in a patient's urethra with its top end portion located adjacent and exposed to the patient's bladder;
holding means on the top end portion of said casing for holding said casing in place within the patient's urethra;
valve means for maintaining said urethra in a normally closed condition;
damping means for transmitting sustained intra-abdominal pressure from the patient to the valve means, whereby sustained intra-abdominal pressure from the patient causes movement of said damping means from an initial at rest position to a threshold detection position;
biasing means for biasing and returning said damping means to said initial position;
threshold detection means for detecting when said damping means has reached said threshold position; and
wherein the valve means opens to permit passage of urine therethrough upon actuation by said threshold detection means upon said damping means reaching said threshold position, said valve closing as said biasing means moves said damping means away from said threshold position.

4,553,534
APPARATUS FOR RELIEVING PSYCHOLOGICAL STRESS
Reinhard Stiegler, Breitenseerstrasse 108/7, A-1140 Wien, Austria
Filed Jun. 16, 1983, Ser. No. 505,059
Claims priority, application Austria, Jun. 16, 1982, 2332/82
Int. Cl.⁴ A61M *21/00*
U.S. Cl. 128—24.1 **6 Claims**



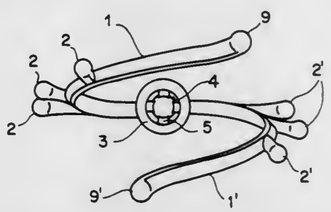
1. An apparatus for treating stress, the apparatus comprising:
a support in the form of a helment shaped to fit on the head and constructed to shield the ears from external noise;
a visible display carried on the support and pivotable into a position in which it completely blocks out external visual stimulus;
sound transducers in the support positioned to be juxtaposed with the wearer's ears; and
means including a tape player mounted in the support, said tape player having means for activating the transducers and display providing stress-reducing sounds and images.

4,553,535
THIGH BRACE
Alan Finnieston, 2380 W. 82nd St., Hialeah, Fla. 33016, and Joseph B. Zagorski, 355 Marquesa Dr., Coral Gables, Fla. 33156
Filed Sep. 7, 1983, Ser. No. 530,005
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—88 **8 Claims**



1. A thigh brace for maintaining broken bone segments in the proper healing orientation by protecting and reinforcing the surfaces of the upper leg between the hip and knee, said brace comprising:
an elongage, generally U-shaped interior member having a base and sidewalls extending around the laterally interior surface of the upper leg, said interior member being made of semi-rigid material with said sidewalls capable of being flexed;
an elongate, generally C-shaped exterior member having a base and sidewalls extending around the laterally exterior surface of the upper leg, said exterior member being made of semi-rigid material with said sidewalls capable of being flexed, the longitudinal side edges of said exterior member being disposed in overlapping relationship with the longitudinal side edges of said interior member whereby said interior and exterior members encase the upper leg with the inner surfaces of said interior and exterior members in contact with the surface of the upper leg;
a keeper means for stabilizing said members in mating relation to one another;
a retaining means for retaining said members in the desired location on the upper leg,
said retaining means including a tibia brace which is secured about the lower leg and a connecting means for connecting said tibia brace to said thigh brace such that said tibia brace and said thigh brace move as a unit along the longitudinal length of the leg, said connecting means including a pair of pivoted struts attached to respective lateral sides of said thigh brace and said tibia brace;
the pivot of each of said pivoted struts comprising a two-axis pivot to accomodate the changing center axis of the knee as the knee flexes.

4,553,536
INTRAUTERINE CONTRACEPTIVE DEVICE
Enrico Chiozza, Rome, Italy, assignor to Uniderm Farmaceutici s.n.c., Rome, Italy
Filed Feb. 24, 1983, Ser. No. 469,448
Int. Cl.⁴ A61F *5/46*
U.S. Cl. 128—130 **7 Claims**

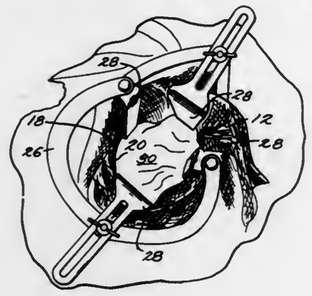


1. An intrauterine contraceptive device comprising a rigid post having an insertion end and a sleeve pivotally connected at the insertion end, said sleeve being freely rotatable around the axis of the post, a pair of arms being integral with said sleeve, each arm being positioned opposite from the other and extending outwardly from the longitudinal axis of the sleeve, each arm having an essentially circular curve having the concave portion facing towards the post, the free end of said arms extending for a minor length beyond the post with respect to the rest of the arm such that the post is interposed between and extends beyond the pair of arms thereby preventing the arms from contacting each other the arms lying in a plane essentially parallel to and spaced from the axis of the post.

4,553,537
SURGICAL BARRIER
Max Rosenberg, 1721 Nashville Ave., New Orleans, La. 70115
Filed Jun. 9, 1983, Ser. No. 502,729
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—132 R **15 Claims**

1. A woven structure for use in a surgical operation comprising an elongate, tubular knit fabric having opposite ends, means closing said ends so that said fabric will be flattened and malleable and conformable to internal body cavities, said structure including means for reducing absorption of liquids by the

fabric, said fabric having a selected width and length and said means for reducing absorption of liquids comprising a thin sheet of liquid impervious material disposed within said tubular



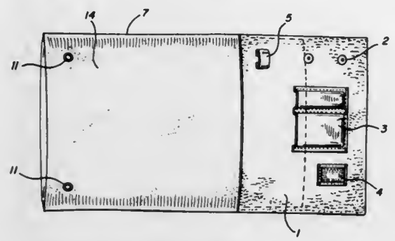
fabric, said sheet having substantially the same width and length as said fabric, means securing said sheet in place within said fabric.

4,553,538

ENDOSCOPIC PILLOW COVERING WITH HIGH ABSORBENCY CHARACTERISTICS

Stephen Rafelson, 20 Stratford La., Mount Laurel, N.J. 08054

Filed Dec. 8, 1983, Ser. No. 559,422
Int. Cl.[4] A61B *19/06*
U.S. Cl. 128—132 D **21 Claims**



1. A covering for a pillow adapted to be located beneath a patient's head and mouth used in conjunction with medical instruments during endoscopy of the upper gastrointestinal tract, said covering comprising:

an absorbent extended edge of a pillow covering adapted to extend beyond the perimeter of a pillow and adapted for placement beneath a patient's mouth; and

means for anchoring medical instruments to said pillow covering during a medical procedure performed upon said patient.

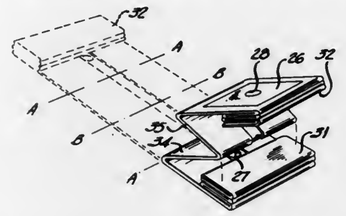
4,553,539

BILATERAL FENESTRATED DRAPE

Henrietta K. Morris, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Filed Sep. 30, 1983, Ser. No. 538,060
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—132 D **3 Claims**

1. A bilateral, fenestrated, surgical drape comprising a rectangular main sheet having an upper surface and a lower surface, a top edge, a bottom edge and two opposing side edges, two fenestrations spaced apart from each other and spaced inwardly from the side edges of the drape and located along a line parallel to said top and bottom edges, a portion of the main sheet between said line and the top edge and a portion of the main sheet between said line and the bottom edge being fan folded in the longitudinal direction to form two longitudinally folded stacks of folds, the longitudinally folded stacks of folds overlying the upper surface of the drape, and the inner edge of the longitudinally folded stacks lying adjacent the fenestrations, the longitudinally folded stacks being fan folded from the side edges of the drape to form two transversely folded stacks of folds overlying a portion of the upper surface of the main



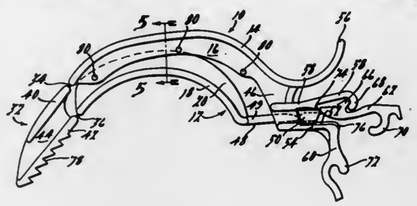
sheet adjacent each of the fenestrations and separated by a central portion of the drape between the transversely folded stacks, the central portion of the drape being folded along fold lines toward a fold line passing through the center of said central portion to form two flaps, the flaps being folded over the lower surface of the drape to cover the fenestrations.

4,553,540

AIRWAY

Richard E. Straith, 17100 W. 12 Mile Rd., Southfield, Mich. 48076

Filed Aug. 16, 1983, Ser. No. 523,707
Int. Cl.[4] A61M *29/00, 16/00*
U.S. Cl. 128—200.26 **10 Claims**



1. A tongue retracting airway comprising

elongate upper and lower body members disposed in generally parallel relation closely adjacent to each other and having substantially coterminous inner and outer end portions, said body members being adapted to be manually inserted in superimposed orientation into the mouth of an individual and similarly removed therefrom, and adapted further to overlay the tongue of such individual in the inserted position and being longitudinally curved to conform at least generally to the top surface of the tongue;

extensions on the outer end portions of said body members of sufficient length to project from the mouth when said body members are fully inserted, at least one of said extensions having a laterally extending portion disposed to bear on the face of said individual in said fully inserted position to limit further insertion thereof;

an elongate clamping member disposed longitudinally beyond the inner end portions of said body members;

a pair of spaced hinge means spaced transversely with respect to the length of said airway, both of said hinge means being connected to said clamping member and each being connected to a respective one of said body members at the inner end of the latter whereby said clamping member extends into the throat of said individual in the fully inserted position of said airway;

means holding and guiding said body members for limited longitudinal sliding movement of one body member relative to the other of said body members; and

manually operable actuator means cooperable with said body members in the fully inserted position of said airway for sliding said one body member longitudinally back-and-forth relative to the other of said body members,

said clamping member being connected to said body members by said hinge means such that sliding movement of said one body member in one direction with respect to the other acts through said hinge means to swing said clamping member to a nonaligned position with respect to said body members and toward the front of the throat and into pressed engagement with the latter at the base of the tongue to compress the latter forwardly, and

sliding movement of said one body member in the opposite direction with respect to the other acts through said hinge means to swing said clamping member to an aligned position with respect to said body members and toward the back of the throat to release said tongue and to permit ready removal of said airway.

4,553,541

AUTOMATIC RETRACTABLE LANCET ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Co., Paramus, N.J.

Division of Ser. No. 322,344, Nov. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 246,523, Mar. 23, 1981, Pat. No. 4,388,925. This application Jan. 20, 1984, Ser. No. 572,335
Int. Cl.[4] A61B *17/34*
U.S. Cl. 128—314 **4 Claims**

1. An automatic retractable lancet assembly comprising:

a housing having an aperture;

a slidable plunger inside said housing;

a lancet mounted on the distal end of said plunger with its point lying adjacent the interior side of said aperture;

a coiled flat spring inside one end of said housing adapted to contact the proximal end of said plunger and become compressed, said flat spring adapted to decompress upon release to cause the movement of said lancet outward of said aperture for penetration of the skin of a patient, said flat spring adapted to become dissociated from further movement of said lancet after said lancet completes its outward movement;

actuating means for retaining said flat spring in the compressed condition and for releasing same to cause the movement of said plunger;

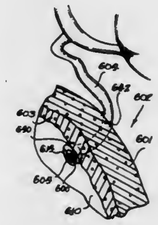
a pair of leaf springs mounted inside the other end of said housing substantially parallel to the axis of movement of said plunger when said leaf springs are in the relaxed condition, said leaf springs adapted to be contacted by said plunger after said flat spring is released whereby said leaf springs are adapted to deflect outwardly to become momentarily biased and thereafter return to their original position and automatically retract said lancet back inside said housing after the flat spring has become dissociated from further movement of said lancet.

4,553,542

METHODS AND APPARATUS FOR JOINING ANATOMICAL STRUCTURES

Robert R. Schenck, 1100 N. Lake Shore Dr., (Apt. 33A), Chicago, Ill. 60611, and Harry P. Weinrib, 2644 W. Estes Ave., Chicago, Ill. 60645

Continuation-in-part of Ser. No. 548,867, Sep. 29, 1983, , which is a continuation-in-part of Ser. No. 349,885, Feb. 18, 1982, Pat. No. 4,474,181. This application Jun. 15, 1983, Ser. No. 504,683
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 R **13 Claims**



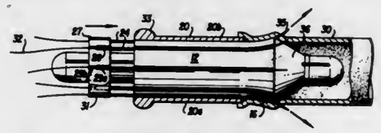
1. An encircling device formed of biocompatible material for joining a first tubular anatomical structure that is supported within the body by connective tissue and has a prepared open end, to a second anatomical structure, said device including a body which is substantially encircling an open interior region for receiving the end of the tubular anatomical structure, but which is not entirely encircling and has spaced ends closely adjacent with a gap therebetween, said gap being provided for accommodating the connective tissue supporting said first tubular anatomical structure, tethering means on the body at at least three spaced apart locations generally along a circle of substantially greater diameter than the diameter of the prepared open end for tethering the tubular anatomical structure thereto and for applying outward radial stress to the tubular anatomical structure, and means associated with the body for attaching said tethered tubular anatomical member to the second anatomical structure, said body being sufficiently rigid to act as the sole support for said anastomosed anatomical structures.

4,553,543

SUTURING ASSEMBLY AND METHOD

Disamodha C. Amarasinghe, 4068 Bridge Hampton La., Virginia Beach, Va. 23455

Filed Mar. 5, 1984, Ser. No. 586,473
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R **11 Claims**



10. The process of attaching suturing thread to a severed tubular body duct at multiple points about said duct comprising the steps of:

inserting a flared end of an elongated core into said severed tubular body duct, said elongated core defining a plurality of longitudinally-oriented slots positioned about an outer surface thereof and located adjacent said flared end, each of said slots being of a size for receiving a needle therein, but for allowing said needle freedom for longitudinal movement therein;

driving a plurality of needles longitudinally along said slots, each needle being in a separate one of said slots and each

needle having a distal, pointed end and a proximal end attached to a suturing thread, said distal pointed ends being driven into said severed tubular body duct against said flared surface of said core thereby causing said needles to bend outwardly and be driven through the wall of said tubular body duct at said multiple points; and

forcing said needles and threads through the wall of said tubular body duct at said multiple points about said severed tubular body duct.

4,553,544

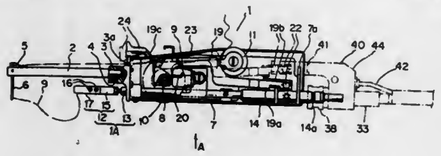
SUTURING INSTRUMENT FOR SURGICAL OPERATION

Reishi Nomoto; Masayoshi Takahashi, both of Kanagawa, and Yoshikazu Ebata, Tokyo, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 421,119, Sep. 20, 1982, abandoned. This application Oct. 12, 1984, Ser. No. 660,391

Int. Cl.⁴ A61B *17/06*; D05B *97/00*

U.S. Cl. 128—340 **5 Claims**



1. A suturing instrument for surgical operations, comprising a main body; a needle guide connected to the main body and having a needle thereon carrying a suturing thread; a shuttle holder reciprocable within said main body and carrying a shuttle extended outwardly from said main body to receive the suturing thread from the needle and cooperating with the needle for forming on a human part to be sutured up lock stitches; drive means positioned outside said main body and being operative for reciprocating said shuttle holder; connecting means for connecting said drive means to said main body; actuating means including an operating member operated externally from said main body and an actuating member positioned in said main body and connected to said operating member to be rotated thereby; switch means including a control magnet member mounted on said actuating member inside said main body, and signal-generating means for producing a signal and adapted to be actuated by said control magnet; holding means accommodating said signal-generating means and positioned outside of said main body and being partially insertable thereinto so as to insert said signal-generating means into said main body, said holding means being connected to said connecting means outside of said main body; means for transmitting said signal from said switch means to said drive means; and cable means for transmitting an output of said drive means actuated by said signal to said main body to drive the latter, whereby said switch means can operate only when said holding means is partially inserted into said main body whereas said drive means can operate for reciprocating said shuttle holder only when said drive means are connected to said main body by said connecting means so that when the operating member is pushed by an operator relative to said actuating member the actuating member is rotated to move said control magnet of said switch means toward said signal-generating means to actuate the latter to cause the signal-generating means to actuate said drive means which will reciprocate said shuttle holder when said main body and said drive means are connected to each other by said connecting means and when said holding means is partially inserted into said main body.

4,553,545

DEVICE FOR APPLICATION IN BLOOD VESSELS OR OTHER DIFFICULTLY ACCESSIBLE LOCATIONS AND ITS USE

Dierk Maass, Zürich, and Hans I. Wallstén, Denens, both of Switzerland, assignors to Medinvent S.A., Lausanne, Switzerland

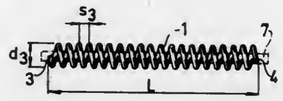
PCT No. PCT/SE82/00283, § 371 Date May 5, 1983, § 102(e) Date May 5, 1983, PCT Pub. No. WO83/00997, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 15, 1982, Ser. No. 498,189

Claims priority, application Sweden, Sep. 16, 1981, 8105510; Apr. 30, 1982, 8202740

Int. Cl.⁴ A61M *29/00*; C21B *15/00*

U.S. Cl. 128—341 **19 Claims**



1. A device of the type including a helically shaped spring of a predetermined length and pitch provided with first and second ends and means for expanding the spring from a first state of a certain diameter to a second state of a larger diameter and vice versa, the improvement comprising: an arrangement of said expanding means to rotate the ends of the spring relative to each other solely by means of mechanical actuation of said expanding means so as to maintain said predetermined length of the spring, transition from said first state to said second state effected by reduction of a number of spring turns in the length of the spring with a simultaneous increase in the pitch of the spring.

4,553,546

ASSEMBLY FOR REGULATING THE ENERGY CIRCULATING IN THE MERIDIANS AND METHOD OF USE

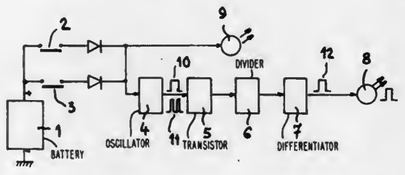
Edmond Javelle, Résidence Méridien A/21 20 rue Gembloux, 59240 Dunkerque, France

Continuation of Ser. No. 343,711, Jan. 28, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 604,121

Claims priority, application France, Feb. 5, 1981, 81 02792

Int. Cl.⁴ A61N *5/00*

U.S. Cl. 128—395 **2 Claims**



1. Applicator for application to known points of acupuncture for regulating the energy circulating in the meridians of the human body in the sense of dispersion or stimulation of the energy in accordance with disorders to be treated and of the type employing radiation from an emitting diode, said applicator comprising:

a body portion;

an emittting diode carried by the body portion;

an electrical circuit means in said body portion for supplying energizing pulses to said diode such that said diode emits a chopped wave; and

the pulses being of a substantially constant amplitude and at either one of two frequencies which are related to each other in substantially a one-to-two ratio, one of the pulse frequencies being for dispersion and the other of the pulse frequencies being for stimulation, and wherein said circuit means supplies said diode with pulses only at:

a dispersion frequency with a pulse repetition interval of 1720 microseconds plus or minus ten per cent, and

a stimulation frequency with a pulse repetition interval of 860 microseconds plus or minus ten per cent.

4,553,547

CARDIAC PACEMAKER SYNCHRONIZED PROGRAMMING

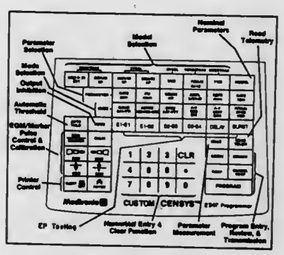
John G. Keimel, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 371,335, Apr. 23, 1982, Pat. No. 4,515,160. This application Jul. 25, 1984, Ser. No. 634,236

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **4 Claims**



1. A method of controlling the output pulse intervals of the pulses emitted by an implantable programmable cardiac pulse generator means which normally operates under the control of a main program transmitted from a control location to said pulse generator means comprising the steps of:

(a) transmitting secondary pulse interval program information from a control location to said pulse generator means which specifies the interval between at least one cardiac depolarization event and an ensuing output pulse;

(b) sensing the occurrence of cardiac depolarization events at said control location;

(c) interrupting the control of said pulse interval established by said main program of said pulse generator means upon the satisfaction of predetermined criteria by said sensed cardiac depolarization event;

(d) utilizing repeated transmissions of said secondary pulse interval program information to provide the specified interval between said cardiac events and said ensuing pulses before said ensuing pulses are specified to occur; and,

(e) re-establishing control of the operation of said pulse generator by said main program upon utilization of said secondary pulse interval program information by retransmitting said main program to said pulse generator.

4,553,548

INTERROGATOR FOR MUSCLE STIMULATOR

Anthony J. Varrichio, and Pat L. Gordon, both of Austin, Tex., assignors to Neuromedics, Inc., Coute, Tex.

Filed Aug. 19, 1983, Ser. No. 524,851

Int. Cl.⁴ A61N *1/00*

U.S. Cl. 128—421 **25 Claims**

1. A method for interrogating a remote counter included in a medical treatment device, wherein the count stored in the counter indicates the accumulated time of therapy for the device, including the steps of:

generating a clocking signal;

transmitting said clocking signal over a transmission line to the clock input of the remote counter to cause it to increment;

generating a full cycle of clocking signal to the remote counter equivalent to its maximum number of counts thereby not changing the count stored within;

receiving an overflow signal from the remote counter over a second transmission line indicating that the maximum count capacity of the counter has been exceeded;

counting said clocking signal from the time said overflow signal is detected until the end of the full cycle of clocking signal thereby generating a duplication of the number of counts in the remote counter; and

storing said duplication.

4,553,549

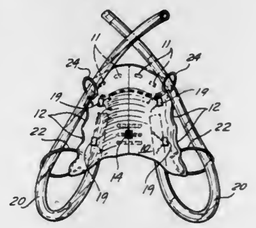
ORAL ORTHOPEDIC/ORTHODONTIC APPLIANCE FOR TREATING NEUROMUSCULAR IMBALANCE

Bryan M. Pope, 709 Hobbs, Jefferson City, Mo. 65101, and Richard Hawkins, 4480 Kendall Cir., Gulfport, Miss. 39501

Filed Oct. 9, 1984, Ser. No. 659,094

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—421 **21 Claims**



17. A method for treating neuromuscular imbalance which hinders balanced myofacial growth and development comprising:

establishing neuromuscularly-balance rest position of the subjects mandible when the mouth is closed,

maintaining the mandible in said position, and

equalizing the pressure in the oral-pharyngeal cavity to the ambient atmospheric pressure outside the user's head whereby orthodontic and orthopedic adjustments are facilitated.

4,553,550

PERSONAL WEARING ARTICLE

Morihisa Hattori, Suita, Japan, assignor to Nikko Kakoozai Co., Ltd., Suita, Japan

Filed Apr. 22, 1981, Ser. No. 256,565

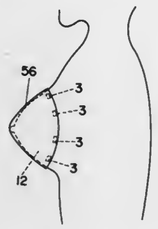
Claims priority, application Japan, Jun. 26, 1980, 55-86958

Int. Cl.⁴ A41C *3/00*

U.S. Cl. 128—505 **18 Claims**

1. A two-piece breast undergarment comprising a breast

covering and a sheet-like retainer, said breast covering having fastening means on the back side thereof, said retainer having mating fastening means on the front side thereof and a pressure-sensitive adhesive layer on the back side thereof for attaching said retainer to the human body, wherein said fastening

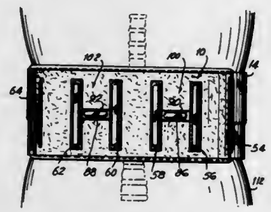


means comprise a number of loops, said mating fastening means comprise a number of linear rods having front end hooks engageable with said loops of said fastening means, and said mating fastening means are removably fastened to said fastening means.

4,553,551
LIFTING BELT

Clifford M. Gross, New York, N.Y., assignor to Hospital for Joint Diseases Orthopedic Institute, New York, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,919
Int. Cl.⁴ A41C *1/00*
U.S. Cl. 128—567 **18 Claims**

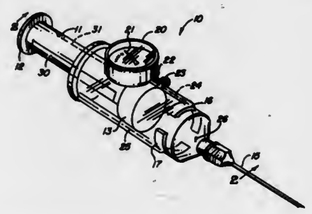


1. A lifting belt; comprising:
(a) body encircling belt means;
(b) said body encircling belt means including only a first section and a second section, said first section being formed of relatively stretchable material and said second section being formed of relatively non-stretchable material;
(c) said first section and said second section being secured together at respective attaching ends to provide a belt of predetermined length and width and which has a first free end a second free end and opposed spaced longitudinally extending side edges;
(d) a plurality of bendable support means carried by said body encircling belt means and disposed at selected positions in spaced relationship with respect to each other along the longitudinal extent thereof and so as to extend from proximate one of said side edges to proximate the other of said side edges;
(e) said positions of said bendable support means being selected so that when said belt means is worn about the waist of a person and proximate their lumbar and pelvic regions that at least first predetermined ones of said plurality of bendable support means tend to prevent rapid bending of a person wearing said belt means, and so that at least second predetermined ones of said plurality of bendable support means transmit at least some of the spinal stress of the wearer to the wearer's pelvic area; and
(f) securing means disposed proximate one of said free ends of said belt means for coaction with said other of said free ends of said belt means to secure same in body encircling position about a person.

4,553,552
HEMODIALYSIS METER

Joseph M. Valdespino, 5023 Golf Club Pkwy., Orlando, Fla. 32808; Allen K. Holcomb, 200 W. Gore St., Orlando, Fla. 32806, and William M. Hobby, 244 Sylvan Blvd., Winter Park, Fla. 32789

Filed Feb. 21, 1984, Ser. No. 581,996
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—637 **13 Claims**



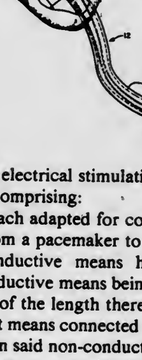
1. A conductivity meter comprising in combination:
a syringe body having a needle attached thereto;
a syringe plunger coacting with the syringe body to draw a fluid into said body when slid in one direction in said body;
a plurality of electrodes attached to said syringe body positioned for contact with a fluid in the syringe body;
a source of electrical power located on said syringe body and being operatively connected to at least one of said electrodes; and
signal output means for generating a visual output responsive to the conductivity of an electrolyte solution covering said electrodes when said source of electrical power is applied across the electrodes, whereby a self-contained syringe can test a liquid by drawing a portion of fluid into the syringe.

4,553,553
DEVICE FOR THE DETECTION OF BACTERIA, FUNGI, AND VIRUSES IN BLOOD

Ernst Homann, Laudenbach; Michael Nelboeck, Tutzing; Klaus Schlieder, Mannheim, and Gernold Bayer, Brühl, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,455
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 8207121[U]
Int. Cl.⁴ B01D *27/00*; A61M *5/00*
U.S. Cl. 128—749 **16 Claims**

1. In a device for use in the detection of at least one of bacteria, fungi, and viruses in blood, the device having a housing, particulate adsorbent capable of binding at least one of the bacteria, fungi, and viruses from blood flowing therethrough and suitable for subsequent use in at least one of bacteriological, virological, mycological, and electron-microscopic investigations in the housing, and means for connecting the housing into an extracorporeal blood circulation in such a way that the blood flows through the particulate adsorbant in the housing, the improvement comprising:
a piston rod movably projecting through one side of the housing;
piston means on the piston rod and in the housing for forcing at least part of the particulate adsorbent out of the housing; and
a removable cover on another side of the housing such that, when the cover is removed and the piston rod moved into the housing, the piston means forces at least part of the

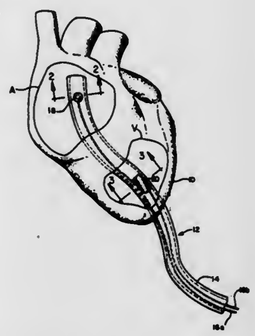


particulate adsorbent out of the housing, whereby it is available for the investigations.

4,553,554
ELECTRICAL LEAD AND METHOD FOR TEMPORARY CARDIAC PACING

Gerald M. Lemole, 404 Tomlinson Rd., Huntingdon Valley, Pa. 19046

Filed Sep. 9, 1983, Ser. No. 530,532
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—784 **7 Claims**

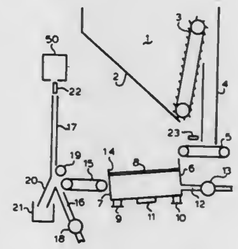


1. A lead for applying electrical stimulation to a heart from an external pacemaker, comprising:
a pair of wire means each adapted for communicating electrical stimulation from a pacemaker to the heart;
an elongated non-conductive means housing said wire means, said non-conductive means being formed having a slot along a portion of the length thereof;
a first electrical contact means connected to one of said wire means and fixed upon said non-conductive means so as to be adapted for intimate contact with the wall of the atrium of the heart; and
a second electrical contact means connected to the other of said wire means and movably mounted upon said non-conductive means within said slot at an adjustable longitudinal distance apart from said first contact means so as to be adapted for intimate contact with the wall of the ventricle of the heart.

4,553,555
CIGARETTE MAKING MACHINES

Adrian R. Stewart-Cox, Eastleigh, England, assignor to British-American Tobacco Company Limited, London, England

Continuation-in-part of Ser. No. 543,127, Oct. 18, 1983, abandoned. This application Feb. 9, 1984, Ser. No. 578,778
Claims priority, application United Kingdom, Oct. 19, 1982, 8229842
Int. Cl.⁴ A24C *5/39*
U.S. Cl. 131—110 **6 Claims**

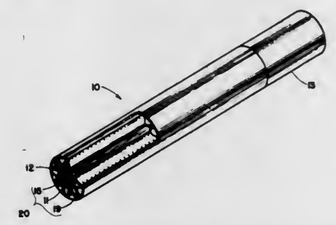


1. A smoking article making machine comprising a rod forming assembly, tobacco supply means, tobacco conveying means operable to convey cut tobacco from said supply means to said rod forming assembly, said conveying means comprising a fluidized-bed particle separator operable to separate particles of cut tobacco, said particle separator comprising a casing, an air permeable membrane extending across said casing, and fluidizing medium supply means operable to supply fluidizing medium under pressure to said casing beneath said membrane.

4,553,556
CIGARETTE HAVING A CORRUGATED WRAPPER

John O. Lephardt, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

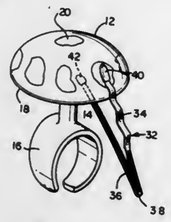
Filed Mar. 22, 1984, Ser. No. 592,063
Int. Cl.⁴ A24D *1/02*
U.S. Cl. 131—336 **4 Claims**



1. A filter cigarette, comprising an elongated rod of smoking material, a filter attached to the mouth end of the rod, and a corrugated wrapper enclosing the rod of smoking material along substantially the full length of the rod, the corrugated wrapper comprising:
a. an inner layer of sheet material peripherally enclosing the rod;
b. an outer layer of sheet material peripherally enclosing the inner layer, spaced outwardly from the inner layer and defining a gap therebetween, the gap being thinner than the minimum transverse dimension of the rod, said gap and layers of sheet material comprising from at least about 1 mm to about 2.5 mm of the diametrical thickness of the rod and the wrapper; and
c. a layer of corrugated sheet material peripherally enclosing the inner layer, forming axially extending channels, the channels being closed substantially to prevent axial flow

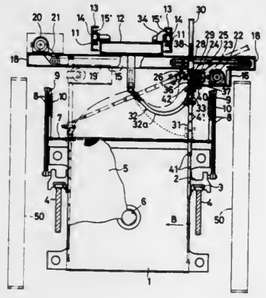
of smoke or air through the channels to the mouth end of the cigarette and disposed within the gap between the inner and outer layers, the corrugated sheet material providing a rigidity and firmness to the cigarette which is relatively independent of rod density.

4,553,557
HAIRPIN OPENER
Frances M. Johnson, 3739 Suncrest Dr., Lake Worth, Fla. 33463
Filed May 27, 1983, Ser. No. 498,650
Int. Cl.⁴ A45D *44/00*
U.S. Cl. 132—1 R **20 Claims**



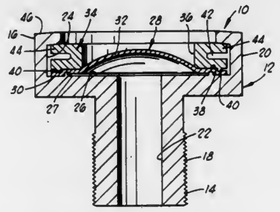
1. An apparatus for use in opening hairpins and the like, adapted to be worn on a finger, comprising:
an arched shell having a smooth edge;
a centrally disposed pedestal for supporting the shell on finger engaging means; and,
a plurality of ribs and grooves in the inner surface of the shell, radiating from the pedestal, each having one end adjacent the edge of the shell, whereby upon slipping one end of a hairpin and the like under the edge, the one end most often catches in one of the grooves, the groove guiding and directing the pin inwardly in a movement which opens the hairpin and the like simultaneously with the inward movement.

4,553,558
CLEANING DEVICE FOR A FILTER PRESS
Haruo Hamazaki, Yao, and Makinoda Mitsugi, Kobe, both of Japan, assignors to Kurita Machinery Manufacturing Company Limited, Osaka, Japan
Filed Feb. 28, 1984, Ser. No. 584,314
Int. Cl.⁴ B08B *3/02*
U.S. Cl. 134—181 **3 Claims**



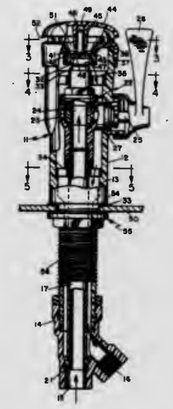
3. In a cleaning device for a filter press wherein, a spray tube is movable into a position between spaced adjacent pairs of filter plates for cleaning the filter plate surface and filter cloth, including a first carrier disposed above the filter plates movable into positions between open pairs of adjacent filter plates, a second carrier movably mounted on the first carrier to move in opposite directions thereon parallel to the surfaces of the filter plates, a spray tube supporting means mounted on the second carrier and a flexible tube connected at one end to the outlet of a source of cleaning liquid on the first carrier and at the other end to the spray tube for supplying cleaning liquid thereto, the improvement comprising:
a spray tube operating shaft rotatably mounted on the second carrier;
a reversible motor means mounted on the second carrier;
means operatively connecting said motor means to said shaft to drive said shaft by said motor means;
a spray tube operating arm mounted on said shaft to be rotated thereby and extending radially therefrom;
a spray tube support member pivotally connected to said arm at a pivot position radially spaced from said shaft, and supporting said spray tube thereon;
a stop means on said support member cooperatively engageable with said arm when said arm is in a non-used storing position with the pivotal connection above said shaft so that said spray tube is held above the filter plates;
a first support member receiving stop element projecting from said arm substantially oppositely relative to said spray tube; and
a second support member receiving stop element projecting downwardly from the second carrier;
said stop elements being positioned so that when said arm is in a position for use where the pivotal connection is below said shaft and said spray tube is substantially vertical, said support member is engaged on opposite sides by respective stop elements to retain said spray tube substantially vertically.

4,553,559
RUPTURABLE PRESSURE RELIEF ASSEMBLY
Edward H. Short, III, Tulsa, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.
Continuation-in-part of Ser. No. 490,132, Apr. 29, 1983, abandoned. This application Sep. 25, 1984, Ser. No. 654,755
Int. Cl.⁴ F16K *13/04*
U.S. Cl. 137—68.1 **11 Claims**



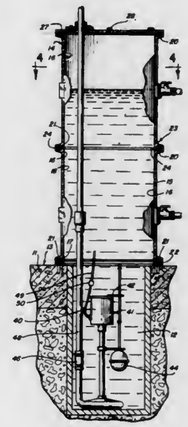
1. A rupturable pressure relief assembly comprising:
a hollow housing having an inlet end and an outlet end and including an annular supporting shoulder within the interior thereof facing the outlet end, said annular supporting shoulder having a protruding annulet of substantially rectangular cross-sectional shape formed thereon;
a circular rupture disk positioned within said housing, the outer annular portion of said rupture disk being supported by said annular supporting shoulder and said protruding annulet of said housing;
an annular supporting member positioned within said housing adjacent said rupture disk including an annular supporting surface to coact with said annular supporting shoulder in said housing and clamp the outer portion of said rupture disk therebetween, said annular supportng surface including a protruding annulet of substantially rectangular cross-sectional shape formed thereon and positioned exteriorly of said protruding annulet on said supporting shoulder of said housing;
a deformable annular spring means positioned on the opposite side of said annular supporting member from said rupture disk whereby when said spring means are deformed towards the inlet end of said housing, said supporting member and said rupture disk are rigidly clamped against said supporting shoulder within said housing and said protruding annulet bites into said rupture disk thereby preventing said rupture disk from moving or pulling out from between said supporting member and housing; and
means for deforming said deformable annular spring means towards the inlet end of said housing attached to said housing.

4,553,560
ANTI-SIPHON CONTROL VALVE
Abraham I. Tucker, and Leonard G. Spelber, both of San Diego, Calif., assignors to Wastemate Corporation, San Diego, Calif.
Filed Jun. 14, 1983, Ser. No. 504,219
Int. Cl.⁴ F16K *24/02*
U.S. Cl. 137—218 **4 Claims**



1. An anti-siphon control valve for fluid flow comprising;
an enclosed, elongated housing having a first end, a top end, an exterior wall, and an open interior;
an inlet tube mounted within said housing, said tube having a first end secured within said first end of said housing, and a top end having an outlet port positioned within the interior of said housing intermediate said first and top ends thereof; said top end being cone-frustum shaped externally;
an open/close valve in said inlet tube for controlling fluid flow through said inlet tube; said valve having an open position for providing for substantially unobstructed fluid flow through said inlet tube;
means operatively connected to said open/close valve and extending outside said housing for controlling the operation of said open/close valve;
a poppet valve assembly mounted to said top end of said housing, said assembly having vent openings therethrough, and the interior of said housing being selectively in communication with the atmosphere through said vent openings, said poppet valve assembly further comprising:
a valve seat;
a vertically movable poppet valve having an open position whereby said poppet valve seats against and closes said outlet port of said inlet tube when the fluid pressure in said inlet tube at said outlet port is less than or substantially equal to the fluid pressure in the interior of said housing between said outlet port and said housing wall, and whereby said poppet valve opens said outlet port of said inlet tube and engages said valve seat to close the interior of said housing to the atmosphere when the fluid pressure within said inlet tube adjacent said outlet port is greater than the fluid pressure in the interior of said housing adjacent and exterior to said outlet port; and said poppet valve is formed with a cup-faced side facing said outlet port, said cup-shaped side for selectively redirecting fluid flow in reverse direction around said inlet tube in the closed position, and for closing said outlet port in the open position; the shape of said cup-shaped side being such that no fluid escapes through said vent openings upon moving to the closed position; and
an exit port in said housing wall adjacent said first end of said housing for fluid communication between the interior and exterior of said housing.

4,553,561
DEVICE FOR THE PREVENTION OF FLOODING FROM DRAINAGE SYSTEMS
Daniel C. Morris, 1450 W. 71st St., Downers Grove, Ill. 60516
Filed Jun. 22, 1984, Ser. No. 623,476
Int. Cl.⁴ E03F *5/12*; A47K *1/14*
U.S. Cl. 137—362 **15 Claims**



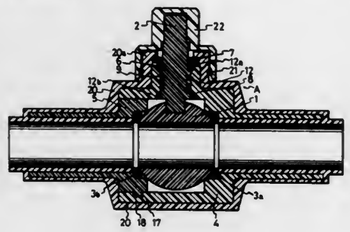
1. A flood control device to limit flooding from a drainage structure, sump well or the like, having an apron defining an opening and extending below a floor, the device being removeably and sealably installable on the apron and extending above the opening and the device comprising:
(a) an upper and a lower container segment, each segment including a tubular member having a top end, a bottom end and a substantially rigid sidewall between the two ends together defining an enclosure and the sidewall defining at least one raised planar surface, each container segment also including a top flange sealingly mounted on the top end and bottom flange sealingly mounted on the bottom end, said top and bottom flanges extending outwardly from the sidewall of the tubular member and each defining a sealing surface;
(b) a cover removeably and sealably mountable on said sealing surface defined by the top flange wherein said flange defines the sealing surface of the upper container segment;
(c) coupling means associated with the sealing surfaces of the bottom flange of the upper container segment and the top flange of the lower container segment for providing a liquid tight seal between the upper and lower container segments; and
(d) attachment means associated with the bottom flange of the lower container segment for removeably and sealingly mounting the lower container segment on the apron about the opening whereby said device extends above the level of said floor to contain flooding from said sump well,

drainage structure or the like in the event that the level of liquid within the sump well, the drainage or like structure exceeds the containment capacity of the drainage structure.

4,553,562
RESIN-MOLDED VALVE AND METHOD OF MAKING THE SAME

Morihito Nakada, Namerikawa, Japan, assignor to Toyo Kako Kabushiki Kaisha, Toyama, Japan

Filed Oct. 25, 1983, Ser. No. 545,403
Claims priority, application Japan, May 4, 1983, 58-78647
Int. Cl.⁴ F16K *5/06*
U.S. Cl. 137—375 **13 Claims**

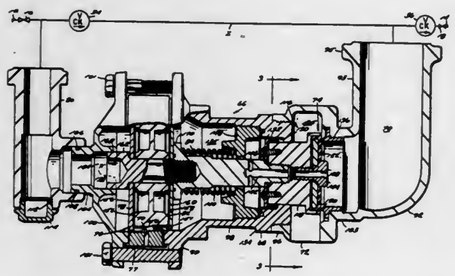


1. A valve, comprising:
a preassembled valve body of resin, including an inner housing having a fist port therein and having a cavity therein which is in fluid communication with said first port, a housing cap having a portion lockingly held in said cavity in said inner housing and having a second port therein which is in fluid communication with said cavity in said inner housing, a valve element movably supported in said cavity so as to permit adjustment of the degree of fluid communication between said first and second ports, and a driving stem which extends through an opening in said inner housing and is coupled to said valve element for effecting movement thereof; and
a cover of resin provided over said preassembled valve body so as to substantially cover exterior surfaces of said inner housing and said housing cap.

4,553,563
RELIEF VALVE ASSEMBLY FOR USE WITH BACKFLOW PREVENTERS

Joseph L. Daghe, Decatur, and Robert E. Sands, Shelbyville, both of Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 383,306, May 28, 1982, Pat. No. 4,506,694.
This application Dec. 3, 1984, Ser. No. 677,691
Int. Cl.⁴ F16K *31/126, 24/00*
U.S. Cl. 137—494 **14 Claims**

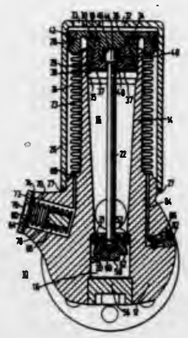


8. A differential pressure relief valve assembly for mounting in a horizontal position on a backflow preventer system having at least one check valve, said differential relief valve assembly comprising:
a housing having a horizontal axis, said housing including an elbow-shaped first member defining a passage with a liquid inlet adapted to be connected to the system on one side of the check valve and a downwardly facing liquid outlet open to atmosphere, said housing further having a generally tubular second member having one end threadedly connected to said first member and another end closed by a cap plate having an opening therethrough with an annular collar surrounding the opening and extending outwardly thereof;
an elbow-shaped connector member having a passage with a liquid inlet adapted to be connected to the system on the other side of the check valve and an outlet slidably receivable on said collar;
sealing means between said collar and said connector member;
a valve seat ring threadedly carried by said elbow-shaped first member and having a seat coaxially aligned with the axis of said housing;
a rolling diaphragm means carried by said second member and having one face exposed to the opening through said cap plate and the other face operatively exposed to the passage in said first member;
a valve element for cooperating with said valve seat, said valve element being operatively connected to said diaphragm means for movement dependent upon changes in differential pressure across said diaphragm means;
sealing means between said second member and said valve element and a passageway through said valve element whereby pressure of fluid in the passage of said first member is exposed to the other side of said diaphragm means.

4,553,564
VALVE

David Baram, 19, Meadow Bank Ave., Sheffield, England (S7 1PB)

Continuation of Ser. No. 318,873, Nov. 6, 1981, abandoned. This application Mar. 30, 1984, Ser. No. 595,298
Claims priority, application United Kingdom, Nov. 7, 1980, 8035791; Dec. 5, 1980, 8039083; Jan. 20, 1981, 8101590; Oct. 27, 1981, 8132348
Int. Cl.⁴ F16K *37/00, 31/163;* **F16J** *9/12*
U.S. Cl. 137—554 **45 Claims**



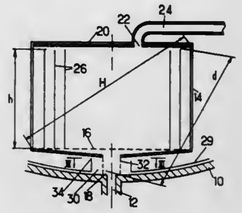
1. A valve comprising a housing having a head end, and open-ended portion of circular internal cross-section, an inlet port and an outlet port, a flow chamber interconnecting the ports, an obturator located within the flow chamber, a moveable head positioned at said head end to which said obturator is attached whereby fluid flow through said valve may be regulated by said obturator by movement of said head, a seal which is retained on said head, said seal bearing upon and sealing said open-ended portion of the housing so as to resist fluid flow past said head, and biasing means which apply a uniform bias to the circumference of said seal, said biasing

means being independent of system fluid pressure said sealing being nonenhanced by system fluid pressure.

4,553,565
LIQUID STORAGE RESERVOIR WITH CAPILLARY CONFINEMENT

Alain Kerebel, Paris, France, assignor to Matra, Paris, France

Filed Jun. 19, 1984, Ser. No. 622,322
Claims priority, application France, Jun. 20, 1983, 83 10161
Int. Cl.⁴ B64D *37/08*
U.S. Cl. 137—590 **11 Claims**

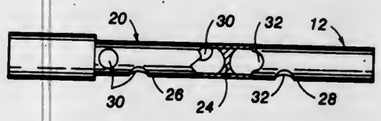


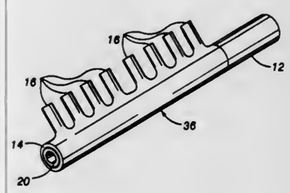
1. A storage reservoir for pressurized liquid storage, comprising a reservoir wall, a liquid outlet passage through said reservoir having a surface tension retention device defining a buffer zone communicating with said outlet passage and communicating with supply channels formed along the wall of the reservoir through orifices and a liquid meniscus breakage zone, wherein said orifices are capillary and are provided in a partition situated in the immediate proximity of a point of drawing-off through the outlet passage, which partition defines, with a capillary storage volume, a dead space of comperatively small volume.

4,553,566
ROTARY MULTIPOSITION VALVE

John A. Barclay, and Jack E. Dyson, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1984, Ser. No. 597,802
Int. Cl.⁴ F16K *11/07*
U.S. Cl. 137—625.11 **12 Claims**



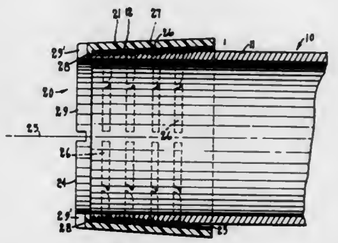


1. A rotary multiposition valve for selectively directing the flow of a fluid through a plurality of paths comprising:
a. a housing, said housing having a portion defining a hollow tube;
b. a plurality of ducts, said ducts being disposed longitudinally in a spaced-apart relationship on the periphery of said housing and being in fluid communication with said hollow tube; and
c. an inner member having an engaging section and a base section connected thereto, said engaging section being received in said hollow tube and having a seal means disposed within and dividing said engaging section into a hollow inlet segment and a hollow outlet segment, said base section being outside of said hollow tube and having a hollow interior segment in fluid communication with said inlet segment, said inlet segment having portions defining a plurality of inlet apertures, said plurality of inlet apertures being disposed in a longitudinally and radially spaced-apart pattern in said inlet segment, said outlet segment having portions defining a plurality of outlet apertures, said plurality of outlet apertures being disposed in a corresponding spaced-apart pattern in said outlet segment, so that as said inner member is rotated relative to said housing, whenever an inlet aperture overlaps with one of said ducts, the corresponding outlet aperture will overlap with a different duct, whereby a fluid pathway is formed through which fluid introduced into said base section can flow when the corresponding ducts are connected.

4,553,567
PIPE THREAD PROTECTOR

Lee W. Telander, 1810 Manor Dr., Alexandria, Minn. 56308

Continuation of Ser. No. 605,126, Apr. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 282,067, Jul. 10, 1981, abandoned. This application Mar. 7, 1985, Ser. No. 709,823
Int. Cl.⁴ B65D *59/00*
U.S. Cl. 138—96 T **24 Claims**



4. A removable protector for a tapered and internal threaded end section of a cylindrical pipe extending axially from one end thereof, wherein said pipe is subject to moisture and temperature extremes, said protector comprising: a tubular body of substantially rigid plastic material for telescoping reception and substantially concentric positioning in unsealed relation with respect to a said threaded end section of the pipe to protect the same, said tubular body having a first end, a second end opposite therefrom, a longitudinal axis therethrough, and inner and outer wall surfaces extending between said ends, said body first end having radially projecting stop means thereon for engagement with said pipe to limit telescoping motion with respect thereto, said tubular body wall surfaces having a taper between the ends thereof substantially similar to that of the tapered and threaded end section of the pipe with which the same is telescopingly associated, said outer wall surface of said body adapted to be disposed in spaced telescoped confronting relation to said internal threaded end section of the pipe, a plurality of circumferentially disposed flexible ribs extending freely from said outer wall surface of the body for engagement with a threaded end section of the pipe, said ribs being disposed on said outer wall surface of said body for cooperative association with the tapered and internally threaded end section of the pipe, said ribs forming an acute angle with said body wall surface in unflexed condition and normally extending in a direction from said first end toward said second end of said

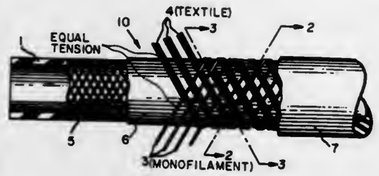
body, said ribs having sufficient flexibility to revert upon engagement and axial telescoping motion with respect to a said threaded end section of the pipe thereby to extend in a direction from said body second end towards said body first end, said outer wall surface of said body with said ribs thereon having a diameter sufficient to radially space said outer wall surface from said threaded end section of the pipe so that said reverse flexing of said ribs occurs upon telescoping said protector with respect to said pipe, and to preclude circumferential and radial destructive stress contact between said threaded end section of the pipe and said protector wall surfaces upon thermal expansion and contraction of said pipe, and wherein said spacing allows fluids to flow through the space, said stop means at said body first end having means for cooperation with a tool to unthread the protector when desired from a said threaded end section of the pipe.

4,553,568

SHAPE RESTORING HOSE

Dante E. Piccoli, Canton, and Pradeep D. Nadkarni, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 562,665, Dec. 19, 1983, abandoned.
This application May 8, 1985, Ser. No. 731,759
Int. Cl.⁴ F16L *11/10*
U.S. Cl. 138—125 **9 Claims**



1. A flexible, kink resistant hose capable of regaining an original shape after crushing comprising: an elastomeric tube; a shape restoring layer of a single braided spiral sleeve surrounding said elastomeric tube having a first braid member and a second braid member under equal tension at braid angles between 50° and 60°, said first braid member being composed of at least one strand of relatively stiff, uncrimped monofilament helically wound about said elastomeric tube only in one direction to form a uniform diameter non-overlapping spiral, wherein said uncrimped monofilament is selected from the group consisting of polyesters, copolyesters, aromatic polyamides, non-aromatic polyamides and fiberglass, said second braid member being composed of a plurality of relatively flexible, crimped textile filaments helically wound only in an opposite direction to said first braid member and interwoven with said first braid member such that said second braid member is crimped at each point of contact with said first braid said monofilament contacting only said second braid member, whereby said braided spiral layer acts to restore the hose to the original shape after crushing.

4,553,569

CONTROL METHOD OF STOPPING A LOOM AT A PREDETERMINED POSITION THEREOF

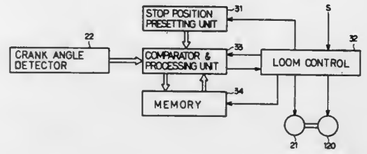
Masahiko Kimbara, and Akio Arakawa, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 4, 1984, Ser. No. 596,545
Claims priority, application Japan, Apr. 13, 1983, 58-63737
Int. Cl.⁴ D03D *51/00*
U.S. Cl. 139—1 E **7 Claims**

1. A method of stopping a loom at a predetermined position thereof in a weaving operation wherein the braking load is varied with operating cycles of the loom in repeated patterns each of which includes a group of succeeding different phases which are of a number N, greater than one, said pattern and said number N being determined according to the kind of texture of fabric to be woven, said method comprising:

first step of separately detecting, for each phase in which the loom is stopped, the quantity of deviation, if any, of the actual stop position of the loom from said predetermined position resulting from loom braking operation in the same phase that precedes the current braking operation and storing data regarding said deviation;

second step of executing arithmetic operation on said data for compensation thereby to adjust the position at which brake is to be applied in the current loom braking operation for said phase in which the loom is stopped;



third step of applying braking when said position determined through said arithmetic operation is reached by the loom; and

fourth step of detecting for said phase in which the loom is stopped the quantity of deviation, if any, of the actual stop position of the loom from said predetermined position resulting from the current braking operation in said phase in which the loom is stopped;

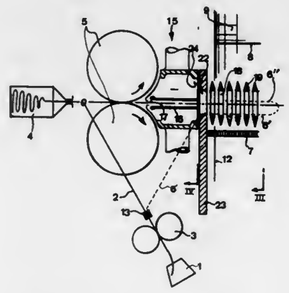
said steps being performed for each group of corresponding phases in which the variation in said braking load in each group is substantially the same.

4,553,570

PROCESS FOR THE INSERTION IN THE FORM OF A LOOP OF A WEFT YARN IN THE SHED OF A WEAVING MACHINE AND WEAVING MACHINE EQUIPPED WITH A DEVICE FOR CARRYING OUT THIS PROCESS

Albert Moessinger, Vaud, Switzerland; Guy Gosciniak, Illfurth, and Joël Angebault, Riedisheim, both of France, assignors to Societe Alsacienne de Construction de Material Textile, Mulhause, France

Filed Aug. 30, 1983, Ser. No. 527,848
Claims priority, application France, Sep. 3, 1983, 82 15144
Int. Cl.⁴ D03D *47/30*
U.S. Cl. 139—435 **6 Claims**



1. A weaving machine of the type comprising:

a reserve of weft yarn located outside the shed;

a metering device issuing a given length of yarn into an accumulator;

an inserting member drawing the yarn from the accumulator and throwing it in the form of a loop having one end fastened and one end thrown;

means for pressing against the fell of cloth the weft yarn which has just been inserted;

pneumatic means producing an air stream inside the shed, during the insertion, the speed of the air stream being at most equal to the speed of the thrown end and being exerted at least over a major part of the length of said shed, said air stream tending to maintain the two ends of the loop separate from each other;

wherein the air stream produced by the pneumatic means is confined inside the shed by a channel constituted by leaves spaced apart from one another to allow passage of the warp yarn therebetween;

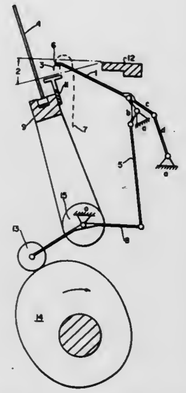
and wherein the pneumatic means comprises a single nozzle disposed near the entrance of the shed, the outlet aperture of the nozzle presenting a section similar to that of the channel.

4,553,571

APPARATUS FOR THE CONSTRAINED ACTUATION OF THE CLAMPING SYSTEM OF FILLING YARN INSERTION DEVICES IN SHUTTLELESS WEAVING MACHINES

Fritz Gehring, Lindau-Bodolz, and Stephan Arndt, Sigmarszell, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Mar. 20, 1984, Ser. No. 591,497
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320064
Int. Cl.⁴ D03D *47/18*
U.S. Cl. 139—446 **6 Claims**



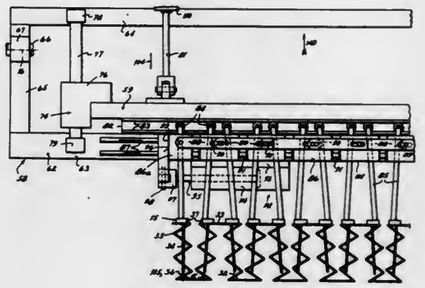
1. In an apparatus for controlling the opening and closing of a thread gripper device in a shuttleless weaving machine, wherein a control member for said gripper device is driven by cam and cam follower means including a first rocker lever carrying a cam follower, the improvement comprising articulated link drive means (b, c, d) including a second rocker lever (b), pivot means (a) securing said link drive means in an articulated manner to said machine, a coupling link (5) articulated at one end to said first rocker lever (8) and at the other end to said second rocker lever (b) for transmitting a cam drive motion from the first rocker lever (8) to said second rocker lever (b), said articulated link drive means further including a guide link (d) and a connector link (c) articulated to said second rocker lever (b) and to said guide link (d) which is pivoted to said machine, said connector link (c) having an extension (1) forming said control member for controlling the operation of said gripper device in accordance with a control path (6, 7) enforced by said articulated link drive means.

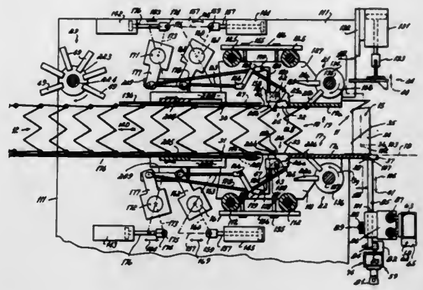
4,553,572

COIL SPRING ASSEMBLY MACHINE

Henry Zapletal, Carthage, Mo.; Horst F. Wentzek, and George M. Chembakaffery, both of Kenosha, Wis., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Division of Ser. No. 300,995, Sep. 10, 1981, Pat. No. 4,492,298.
This application May 17, 1984, Ser. No. 611,370
Int. Cl.⁴ B21F *21/00*
U.S. Cl. 140—92.8 **6 Claims**





1. A machine for manufacturing coil spring assemblies, said machine comprising

a frame,

a support platen mounted upon said frame,

means mounted adjacent said support platen for moving successive rows of coil springs onto said support platen,

a compression device mounted upon said frame for compressing a coil spring row to a predetermined height while said row is supported upon said support platen so as to locate the top end loops of said coil springs in a common upper plane and the bottom end loops of said coil springs in a common lower plane,

plural sets of clamping dies mounted upon said frame, each of said sets of dies including a leading and a trailing die,

an advancing mechanism mounted upon said frame for advancing said trailing spring row from said compression device into said closed leading clamping dies at which end loops of a leading spring row are juxtaposed to end loops of said trailing spring row between closed leading dies and open trailing dies of each of said sets of said clamping dies,

motive means operatively connected to said trailing dies for closing said trailing clamping dies so as to hold said juxtaposed spring rows in juxtaposition while said rows are tied together,

feeding means mounted on said frame for directing a helical lacing wire through said closed sets of clamping dies so as to lace together said juxtaposed coil rows,

motive means operatively connected to said leading and

trailing dies for opening both of said leading and trailing dies of said sets of clamping dies, and

a feed-out mechanism mounted on said frame for feeding a coil spring assembly away from said open sets of clamping dies.

3. A machine for manufacturing coil spring assemblies, said machine comprising

a frame,

a support platen mounted upon said frame,

means mounted adjacent said support platen for moving successive rows of coil springs onto said support platen,

a compression device mounted upon said frame for compressing a coil spring row to a predetermined height while said row is supported upon said support platen so as to locate the top end loops of said coil springs in a common upper plane and the bottom end loops of said coil springs in a common lower plane,

plural sets of clamping dies mounted upon said frame,

an advancing mechanism mounted upon said frame for advancing a trailing spring row from said compression device into said clamping dies at which end loops of a leading spring row are juxtaposed to end loops of said trailing spring row between open sets of said clamping dies,

motive means operatively connected to said sets of dies for closing said sets of clamping dies so as to hold said juxtaposed spring rows in juxtaposition while said rows are tied together,

feeding means mounted on said frame for directing a helical lacing wire through said closed clamping dies so as to lace together said juxtaposed coil rows,

motive means operatively connected to said clamping dies for opening said clamping dies,

a mechanism mounted on said frame for feeding a coil spring assembly away from said open clamping dies,

said means for moving successive coil spring rows onto said support platen including a plurality of fingers extendable into and retractable from the barrels of said coil springs, and

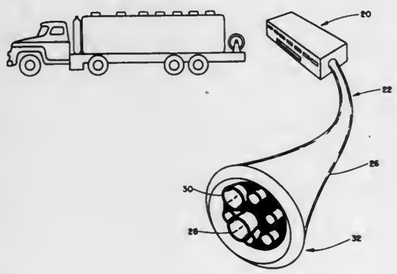
means operatively connected to said fingers for, in sequence, extending said fingers into the barrels of said coil springs at an infeed location, (b) pivoting said fingers through at least at 90° arc so as to move said coil springs onto said support platen, and (c) retracting said fingers from said coil springs so as to leave said coil springs deposited upon said support platen.

4,553,573

BULK SYRUP DELIVERY SYSTEM

Robert McGarrah, Melville, N.Y., assignor to PepsiCo Inc., Purchase, N.Y.

Filed Oct. 20, 1983, Ser. No. 543,846
Int. Cl.⁴ B65B *3/04*
U.S. Cl. 141—98 **28 Claims**



21. A bulk syrup system for the bulk receipt and storage by an account of a plurality of different flavored syrups, to thereby eliminate many of the problems associated with the delivery of syrups to accounts in individual transfer containers, the delivery of which requires a substantial amount of manual labor in a time consuming and labor intensive delivery operation, and also eliminates the sizeable investment in transfer tanks and the problems associated with the storage of and connection to the transfer tanks, the bulk delivery system, comprising:

a. the account having a plurality of separate syrup storage tanks for the receipt and storage of a plurality of different flavored syrups;

b. a multichannel hose coupled at a first end to said plurality of separate syrup storage tanks and having at least one channel for each different flavored syrup; and

c. a syrup delivery receiving terminal mounted exterior to a building at the account, comprising a terminal housing with a lock thereon to prevent unauthorized access thereto; and

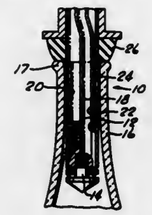
d. a multichannel receiving coupling at a second, syrup delivery receiving end of said multichannel delivery hose mounted in said syrup delivery receiving terminal, and having a plurality of closure valves therein, one for each channel in the delivery coupling, whereby a bulk syrup delivery to the account can be made by coupling a multichannel delivery coupling from a syrup delivery truck to said receiving coupling.

4,553,574

VALVE TIP FOR FILLING APPARATUS

Giovanni G. Le Donne, Coraopolis, Pa., assignor to Horix Manufacturing Co., Pittsburgh, Pa.

Filed Sep. 22, 1983, Ser. No. 534,811
Int. Cl.⁴ B67C *3/26*
U.S. Cl. 141—286 **7 Claims**



1. In a container filling apparatus wherein a filler valve assembly includes a central tube portion and a coaxial sleeve portion which is movable axially with respect to said central tube portion into biased engagement with a valve tip sealing means for selectively closing the filler valve assembly, said valve tip sealing means comprising:

a rigid seal member adapted to present a seal surface for engagement with a mating surface of such sleeve portion;

securing means cooperable with such central tube portion for captively retaining said rigid seal member with respect to such central tube portion with said seal surface positioned for such biased engagement thereof by such sleeve portion;

resiliently deformable backup means captively retained with respect to said rigid seal member to support said rigid seal member in a manner that said deformable backup means is resiliently deformable upon biased engagement of said rigid seal member by such sleeve portion; and

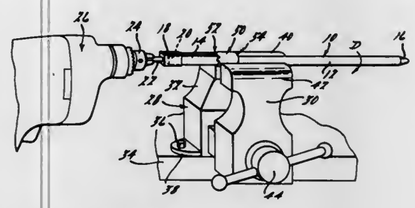
said rigid seal member being movable with respect to such central tube portion to selected misaligned orientations corresponding to respective misaligned orientations of such sleeve portion with respect to such central tube portion by deformation of said backup member in response to a bias of said sleeve portion upon said rigid seal member whereby said rigid seal member is oriented for effective sealing engagement with such sleeve portion when said valve assembly is closed.

4,553,575

DOWEL CUTTER AND SIZER

Kenneth L. Brown, 15913 Amherst, Birmingham, Mich. 48009

Filed Dec. 13, 1983, Ser. No. 561,213
Int. Cl.⁴ B27C *9/00*
U.S. Cl. 144—12 **14 Claims**



1. A dowel cutter apparatus comprising

a rotatable chuck;

means for rotating said chuck;

means for holding a length of woodstock in said chuck to be rotatable with said chuck;

A cylindrical cutting tool having a cylindrical inner surface, a cylindrical outer surface, an inside diameter, an input end having at least one cutting edge disposed along said inside diameter, an output end spaced apart from said input end, and at least one planar face extending from said cutting edge on said inner surface to said outer surface, forming an angle with a line parallel to said axis, and intersecting said edge;

means for holding said tool in a stationary position;

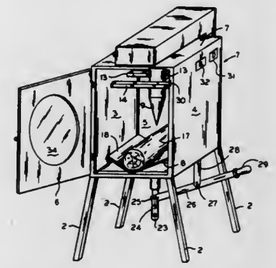
wherein said woodstock is rotated by said chuck and inserted axially into said tool at said cutting edge to form a length of dowel.

4,553,576

WOOD SPLITTING MACHINE WITH A THREADED ROTATING CONE

Gérard Maingueneau, Les Trois-Moutiers, France, assignor to Mecanique des Moutiers Route de Loudun, Les Trois Moutiers, France

Filed Jul. 24, 1984, Ser. No. 634,045
Int. Cl.⁴ B27L *7/00*
U.S. Cl. 144—194 **9 Claims**



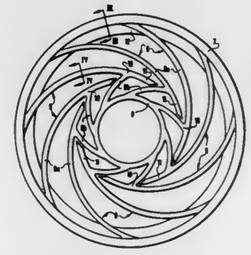
8. A log splitter comprising a closed box having a vertically positioned cone splitter rotatably mounted with its point extending downwardly, motor driven means for rotating said cone splitter, said driven means being an electrical motor and means for reversing the direction of cone rotation by reversing the turning direction of said motor means, a V-support beneath said cone for supporting said log in a horizontal position with the cross section of the log centered under said cone splitter, and elevator means comprising a lever arm for raising said V-support to engage said cone splitter, said box being too small relative to the length of said log for said log to rotate freely under the impact of the rotation of said cone splitter.

4,553,577

WHEEL STRUCTURE WITH RESILIENT SPOKES

John D. W. Gregg, Tobarcooran House, Glebe West, Newtownabbey, Northern Ireland

Continuation of Ser. No. 319,394, Nov. 9, 1981, abandoned. This application May 14, 1984, Ser. No. 609,865
Claims priority, application United Kingdom, Nov. 10, 1980, 8036070
Int. Cl.⁴ B60B *9/26*
U.S. Cl. 152—12 **17 Claims**



12. A wheel structure of integral synthetic polymer material comprising: a continuous rim integrally connected to a hub by a plurality of equispaced identical spokes, each of said spokes inculding a shorter portion connected to said hub at a hub origin point and a longer portion connected to said rim at a rim origin point, said portions of each spoke extending from their respective origin points in generally different directions and meeting at a meeting location that is radially closer to said hub than to said rim, whereby flexure takes place around said meeting location to resiliently support a load applied to said wheel structure, each of said spokes further comprising an extension to said longer portion originating at said meeting location and extending towards the meeting location of the next spoke to provide a mechanical stop against distortion.

4,553,578

STAR-SHAPED POLYMERS FOR IMPROVED TIRE TREADS

Francis J. Vitus; Ivan G. Hargis; Russell A. Livigni, and Sundar L. Aggarwal, Summit County, all of Ohio, assignors to GenCorp Inc., Akron, Ohio

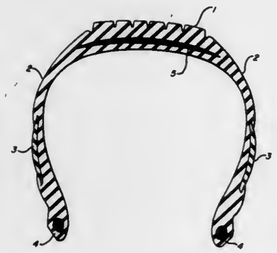
Continuation-in-part of Ser. No. 421,699, Sep. 22, 1982, Pat. No. 4,497,748, which is a division of Ser. No. 282,671, Jul. 13, 1981, Pat. No. 4,409,368. This application Jan. 30, 1985, Ser. No. 696,555
The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.
Int. Cl.⁴ B60C *11/00*; C08L *67/06*; C08F *227/04*
U.S. Cl. 152—209 R **6 Claims**

1. A tire having a tread of a compounded carbon black reinforced and vulcanized composition of a blend of (A) from about 40 to 60% by weight of a solution polymerized rubbery substantially random star-shaped polymer and (B) from 60 to 40% by weight of at least one rubbery polymer selected from the group consisting of natural rubber, synthetic cis-1,4-polyisoprene rubber, cis-1,4-polybutadiene rubber, high trans-1,4-polybutadiene rubber and high trans-1,4-butadiene-styrene rubbery copolymer,

(A) being at least one polymer selected from the group consisting of polybutadienes, polyisoprenes, butadiene-styrene copolymers, butadiene-isoprene copolymers, isoprene-styrene copolymers, butadiene-isoprene-styrene copolymers and mixtures of the same, said styrene containing copolymers containing up to about 30 weight % of

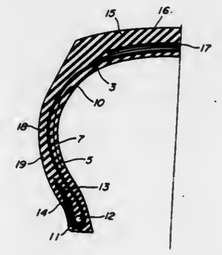
styrene, preferably from about 10 to 25 weight % of styrene,
having a vinyl content for the diene segments of from about 12 to 60 weight %,
having an average of from about 4 to 9 arms,
having a $\overline{M}n$ of from about 100,000 to 500,000,
and having a nucleus from an initiator (1) having a VPO $\overline{M}n$ of from about 750 to 4,000, (2) having an average of from about 4 to 9 C-Li sites and (3) being the adduct of an aromatic compound selected from the group consisting of divinyl benzene and diisopropenyl benzene and mixtures thereof and RLi where R is selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals of from 2 to 20, or from 2 to 10, carbon atoms, the mold ratio of RLi to said aromatic compound being about 1:0.83.

3. A vulcanizable composition comprising a blend of (A) from about 40 to 60% by weight of a solution polymerized rubbery substantially random star-shaped polymer and (B) from 60 to 40% by weight of at least one rubbery polymer selected from the group consisting of natural rubber, synthetic cis-1,4-polyisoprene rubber, cis-1,4-polybutadiene rubber, high trans-1,4-polybutadiene rubber and high trans-1,4-butadiene-styrene rubbery copolymer,



(A) being at least one polymer selected from the group consisting of polybutadienes, polyisoprenes, butadiene-styrene copolymers, butadiene-isoprene copolymers, isoprene-styrene copolymers, butadiene-isoprene-styrene copolymers and mixtures of the same, said styrene containing copolymers containing up to about 30 weight % of styrene, preferably from about 10 to 25 weight % of styrene,
having a vinyl content for the diene segments of from about 12 to 60 weight %,
having an average of from about 4 to 9 arms,
having a $\overline{M}n$ of from about 100,000 to 500,000,
and having a nucleus from an initiator (1) having a VPO $\overline{M}n$ of from about 750 to 4,000, (2) having an average of from about 4 to 9 C-Li sites and (3) being the adduct of an aromatic compound selected from the group consisting of divinyl benzene and diisopropenyl benzene and mixtures thereof and RLi where R is selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals of from 2 to 20, or from 2 to 10, carbon atoms, the mold ratio of RLi to said aromatic compound being about 1:0.83.

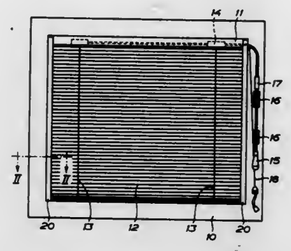
4,553,579
PNEUMATIC TIRES HAVING A HIGH RESISTANCE TO CUT GROWTH
Kenji Matsumoto, Kodaira, and Yasuo Suzuki, Akigawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Continuation of Ser. No. 438,187, Nov. 1, 1982, abandoned, which is a division of Ser. No. 324,898, Nov. 25, 1981, abandoned. This application Jun. 7, 1984, Ser. No. 618,752
Claims priority, application Japan, Dec. 3, 1980, 55-169658; Dec. 3, 1980, 55-169659
Int. Cl.⁴ B60C *5/14, 1/00*
U.S. Cl. 152—450 **10 Claims**



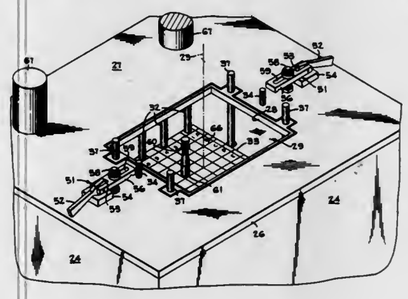
1. A pneumatic tire having an excellent cut resistance, comprising: an annular crown portion constituting a tread, a pair of side portions supporting said crown portion, a pair of bead portions located at each foot of said side portions for fitting to a rim, a carcass layer composed of at least one rubberized cord ply toroidally extending between said bead portions and a liner layer disposed inside and adjacent to said carcass layer, and, a low modulus middle rubber layer consisting of rubber having a 300% modulus of not more than 30 kg/cm^2 and lower than that of the rubber adjacent to said middle rubber layer, said middle rubber layer intercepting the crack growth from the outside of the tire, said low modulus middle rubber layer disposed in said liner layer at said side portion and having a thickness of 0.2 to 5 mm.

4,553,580
VENETIAN BLIND
Evert Christoffersson, Stenbrunnsvagen 11, S-216 22 Malmo, Sweden
Filed Jun. 15, 1983, Ser. No. 504,131
Claims priority, application Sweden, Jun. 15, 1982, 8203704
Int. Cl.⁴ E06B *9/30*
U.S. Cl. 160—172 **19 Claims**

1. A venetian blind having a plurality of slats for mounting in a window casement, said venetian blind comprising a channelled suspension rail horizontally arranged at the top of said window casement, an operating mechanism mounted to said suspension rail for manipulation of said slats, a pull cord, a flexible shaft connected to said operating mechanism, a conducting piece arranged in said channelled suspension rail for the extension of said pull cord and said flexible shaft through an opening formed in the side of said suspension rail, a pair of guide rails for guiding said slats, said guide rails vertically mounted along opposed vertical sides of said window casement and supporting said suspension rail horizontally therebetween, engaging means arranged on one of said guide rails for releasably engaging an adjacent portion of one end of said suspension rail, and a latch element arranged at the other end of said suspension rail for securely engaging an adjacent portion of the other of said guide rails upon manipulation of said latch element.

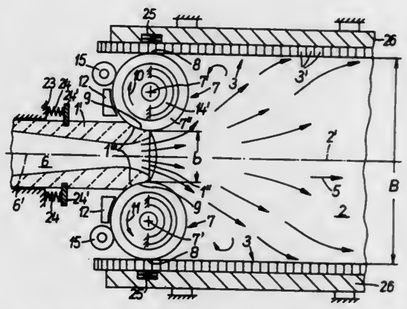


4,553,581
SAND MOLD MAKING MACHINE APPARATUS AND METHOD IMPROVEMENTS
John J. Uppgren, St. Paul, and James W. Scott, Minneapolis, both of Minn., assignors to FMC Corporation, Chicago, Ill.
Filed Apr. 11, 1983, Ser. No. 483,792
Int. Cl.⁴ B22C *15/24*
U.S. Cl. 164—16 **17 Claims**



8. A method of forming cores and molds on a core blowing machine of the type which sequentially dispenses mold sand and bonding agent mixture and gaseous medium for hardening the mold mixture, wherein a gassing chamber is mounted on the machine having an opening in one surface thereof adapted to accept a match plate, and further having a support platform therewithin aligned with the opening and spaced from the one surface, comprising the steps of
constructing a reference surface having a match plate receiving aperture therein,
spacing an auxiliary support platform from the reference surface by substantially the same spacing between the one surface of the gassing chamber and the support platform,
positioning the match plate in the receiving aperture and against the reference surface,
adjusting the length of a support jack to extend between and substantially conform in length to the distance between the match plate and the auxiliary support platform,
noting the position of the support jack on the auxiliary support platform,
placing the support jack in position on the support platform in the gassing chamber corresponding to the noted position,
positioning the match plate in the opening in and against the one surface of the gassing chamber, and
surrounding the match plate in the last mentioned position with a flask, whereby match plate bending deformation due to sequential dispensing of mold mixture and gaseous medium in the flask is restricted by the support jack, and mold component desired surface shapes are maintained.

4,553,582
APPARATUS FOR CASTING STEEL IN A CONTINUOUS CASTING MOLD EQUIPPED WITH COMOVING MOLD WALLS
Gerd Artz, Ratingen; Dieter Figge, Essen; Thomas Hoster, Essen, and Jürgen Pötschke, Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany
Filed Oct. 15, 1984, Ser. No. 661,251
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337583
Int. Cl.⁴ B22D *11/06*
U.S. Cl. 164—432 **20 Claims**



1. In an apparatus for the continuous casting of steel sheet, particularly to sheet cross sections of a small thickness down to a lower limit of about 30 mm and a width of about 500 to 1500 mm, comprising a continuous caster having comoving mold walls which define a casting cavity and including a pair of oppositely disposed endless casting belts which form the upper and lower walls of said casting cavity and a pair of oppositely disposed endless lateral dams which form the lateral walls of said casting cavity, and a tubular casting nozzle having a mouthpiece which extends symmetrically into said casting cavity and contacts said casting belts forming said upper and lower casting cavity walls to form a seal therebetween; the improvement wherein: the width of said mouthpiece of said casting nozzle at its exit cross section is less than approximately 50% of the width of said casting cavity; and said apparatus further comprises: means for sealing the space in said casting cavity between each of said lateral dams and the adjacent side wall of said mouthpiece of said nozzle, said sealing means including a pair of wheels each having a ceramic outer rim portion, means for mounting each of said wheels for rotation about a respective vertical axis such that said wheels are symmetrically disposed between said mouthpiece and said dams, and each of said wheels has a diameter such that its said rim portion contacts one of said lateral dams and the said adjacent side wall of said mouthpiece and a height such that is upper and lower surfaces contact said upper and lower walls respectively of said casting cavity formed by said endless belts; and means for rotating said wheels.

4,553,583

METHOD OF CONTROLLING TEMPERATURE OF DIE CASTING MOLD

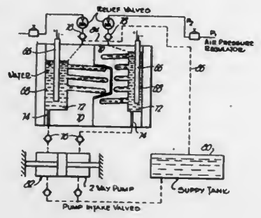
Guido Perrella, Sonneville, Canada, and William E. Thompson, Anderson, Ind., assignors to DBM Industries Limited, Quebec, Canada

Continuation of Ser. No. 361,710, Mar. 25, 1982, abandoned, which is a division of Ser. No. 191,624, Sep. 29, 1980, Pat. No. 4,356,858, which is a division of Ser. No. 929,148, Jul. 31, 1978, Pat. No. 4,248,289. This application May 15, 1984, Ser. No. 610,919

Claims priority, application United Kingdom, Dec. 1, 1977, 501179/77; Canada, Jun. 12, 1978, 305228

Int. Cl.⁴ B22D *17/32*

U.S. Cl. 164—458 **7 Claims**



1. A method of controlling the temperature of a mold in a die casting machine having manifold means for retaining cooling water in the mold adjacent the cavities of the mold; inlet and outlet means associated with the manifold means; pressure relief means associated with said outlet means; adjustable regulator means for controlling said pressure relief means; a water supply means for injecting a make-up volume of water into said manifold means comprising a supply line from said supply means; pump means in said line and inlet valve means between said pump and said manifold means; said method comprising:

(a) maintaining the water in said manifold means at a predetermined temperature and pressure by setting of said pressure relief means;

(b) evaporating amounts of said cooling water in the manifold means responsive to heat absorbed from the mold cavity through the walls of said mold, said evaporated water being intermittently released from said manifold means through said pressure relief means in the form of steam;

(c) actuating said pump means to inject into said manifold means a make-up volume of water in an amount sufficient to only replace water volume that has evaporated therefrom in the form of steam.

4,553,584

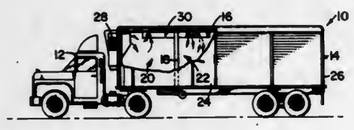
REFRIGERATION/AIR EXCHANGER SYSTEM MAINTAINING TWO DIFFERENT TEMPERATURE COMPARTMENTS

Dayton E. Bloomquist, New Hope, Minn., assignor to Red Owl Stores, Inc., Minneapolis, Minn.

Filed Dec. 7, 1983, Ser. No. 558,932

Int. Cl.⁴ F25B *29/00;* **B60H** *3/00;* **F25D** *17/08*

U.S. Cl. 165—30 **9 Claims**



1. Apparatus for use with a vehicle having first and second compartments and a main refrigeration unit for maintaining the first compartment at a predetermined temperature below freezing, which comprises:

a duct fluidly interconnecting the first and second compartments, said duct having a first duct portion extending between the first and second compartments and a second duct portion extending only in said second compartment;

the first portion of said duct having a first inlet and outlet both located in said first and second compartments, respectively, and the second portion of said duct having a second inlet and outlet both located in said second compartment;

a divider wall in said duct to isolate the first and second duct portions from fluid communication;

a cooling fan located in said first duct portion between said first inlet and outlet for selectively drawing cold air from said first compartment into said second compartment;

a recirculation fan located in said second duct portion between said second inlet and outlet for continuously recirculating air in said second compartment;

a heating element associated with said recirculation fan in said second duct portion between the second inlet and outlet; and

means including a thermostat and associated temperature sensor for controlling said cooling fan and said heating element to maintain the temperature in said second compartment at a predetermined temperature relatively higher than the temperature in said first compartment.

4,553,585

COOLING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES WITH COMBINED SEAWATER-FRESH WATER COOLING

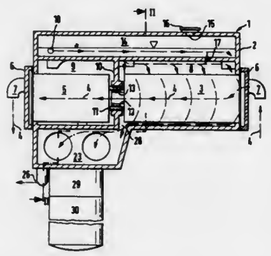
Albert Pfleger, Munich, and Peter Klesel, Dachau, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 435,922

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, 8202493[U]

Int. Cl.⁴ F28F *9/00*

U.S. Cl. 165—41 **9 Claims**



4. A cooling arrangement for a liquid-cooled internal combustion engine with combined seawater-fresh water cooling, comprising a first heat exchanger means for seawater-fresh water heat exchange and a second heat exchanger means for seawater-lubricating oil heat exchange, one-piece housing means within which said first and second heat exchanger means are arranged, wherein said first and second heat exchanger means are arranged behind one another in the flow direction of the seawater in respective chambers of the one-piece housing means, said chambers being arranged opposite one another and separated by a partition having an opening through which said first and second heat exchanger means are connected, said one-piece housing means including an inlet duct, a short-circuit duct and a thermostat for fresh water, wherein an additional thermostat and an exchange filter for the lubricating oil are fluidly connected to each other and to said seawater-lubricating oil heat exchanger, provided adjacent to said first and second heat exchanger means to permit the lubricating oil to bypass said seawater-lubricating heat exchanger means, and a storage tank means connected with the inlet duct, the short-circuit duct and the housing chamber for the first heat exchanger means by a narrow venting and volume-balancing opening, the storage tank means having inlet and outlet openings for connection with said venting opening connection and with an inlet and outlet area of the cooling circulation system of the engine, respectively, and wherein said fresh water thermostat is located adjacent to a main portion of said housing means and bypasses fresh water around said seawater-fresh water heat exchanger means from said chamber via said short-circuit duct and said fresh water thermostat to the inlet area of said cooling circulation system of the engine.

4,553,586

MOTOR VEHICLE OIL COOLER

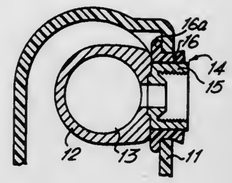
Graham G. Lardner, Llanelli, Wales, assignor to Unipart Group Limited, England

Filed Jun. 15, 1983, Ser. No. 504,493

Claims priority, application United Kingdom, Jun. 19, 1982, 8217836

Int. Cl.⁴ F28F *9/06*

U.S. Cl. 165—76 **9 Claims**



1. A heat exchanger including: a header tank shell, a heat exchanger located with the shell, a hollow connector passing through an aperture in a wall of the shell to permit fluid to be passed through the aperture to and from the heat exchanger, an elastomeric bush having a bore, the bush effecting a seal between the hollow connector and the shell wall, the bush including a portion which is located around the hollow connector where it passes through the shell wall, the bore of the elastomeric bush being tapered in its undeformed state from one bore end to the other bore end such that insertion of the connector into the elastomeric bush causes the bush to be expanded into sealing contact with the rim of the aperture in the shell wall, and a retaining member within the shell abutting and restraining the heat exchanger against movement away from the aperture in the shell wall through which the hollow connector passes, the heat exchanger also being located in the shell by an integral web moulded in the shell and opposing said retaining member, the web constraining the heat exchanger against movement in a direction towards the aperture in the shell and also in a direction perpendicular to the said direction.

4,553,587

BACKFLUSH COUPLING AND METHOD FOR INTERNAL COMBUSTION ENGINE COOLING SYSTEM

Paul L. Traylor, 16591 Milliken Ave., Irvine, Calif. 92714

Filed Aug. 15, 1983, Ser. No. 523,371

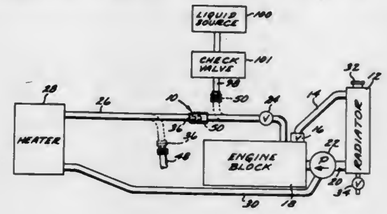
Int. Cl.⁴ F28G *1/12*

U.S. Cl. 165—95 **16 Claims**

1. In an internal combustion engine having a cooling system which includes a heater hose, an improved backflush coupling disposed in fluid communication with said heater hose as an integral part thereof during normal operation of said engine and comprising:

a male connector half having an elongated hollow body fixed at its outer extremity in communication with said heater hose and provided at its inner extremity with male threads; and

a female connector half having an elongated hollow body fixed at its outer extremity in communication with said heater hose, the inner extremity of said hollow body of said female connector half including an annular flange having a front seating surface and a rear seating surface, first sealing means disposed between said male and female connector halves to provide a fluid tight seal therebetween, said female connector half further having a union sleeve having an annular wall at one extremity for seating against said rear seating surface, and having female threads at its opposite extremity threadable upon said male



threads whereby said union sleeve may be rotated in one direction to compress said sealing means, against the adjacent end of said male connector thereby to establish a fluid tight connection whereby said backflush coupling may serve as a conduit for coolant in the normal operation of said engine, said union sleeve being rotatable in an opposite direction to enable separation of said male connector half from said femal connector half for attachment of a hose to one of said male and female connector halves to apply fluid to said cooling system, and for use of the other of said male and female connectors as a drain.

4,553,588

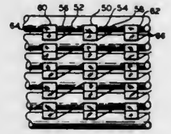
TUBE SUPPORT

Bernhard H. Geissler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 457,310, Jan. 11, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,135

Int. Cl.⁴ F28F *1/32*

U.S. Cl. 165—162 **13 Claims**



1. A tube bundle suitable for use in a shell and tube heat exchanger, said tube bundle comprising:

(a) a first tube sheet;

(b) a second tube sheet;

(c) a plurality of parallel tubes extending between the first tube sheet and the second tube sheet arranged to form a first plurality of parallel tube rows and a second plurality of parallel tube rows; and

(d) a plurality of tube support elements extending between the tube sheets with the tube support elements being positioned between adjacent parallel tubes, where each tube support element comprises;

(i) a first member having a first end and a second end and a shape which can be contacted tangentially by a plurality of lines parallel to the plurality of parallel tubes and an axis of rotation between the first end and the second end generally normal to the parallel tubes such that

rotation of the first member around the axis of rotation causes at least two of said lines to spread further apart;

(ii) a first tether attached to the first end of the first member; said first tether extending toward the second tube sheet;

(iii) a second tether attached to the second end of the first member; said second tether extending toward the first tube sheet;

(iv) a means connecting the first tether to the second tube sheet; and

(v) a means connecting the second tether to the first tube sheet; wherein

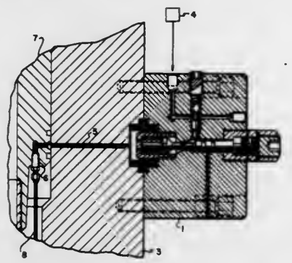
tensioning of the means connecting the first tether to the second tube sheet and the means connecting the second tether to the first tube sheet causes rotation of the first member about the axis of rotation.

4,553,589

FIRE-SAFE SURFACE-CONTROLLED SUBSURFACE SAFETY VALVE CONTROL LINE/WELLHEAD CONNECTOR AND BLOWOUT PREVENTER

Charles E. Jennings; Charles D. Bridges, and Warren D. King, all of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Jul. 12, 1984, Ser. No. 630,122
Int. Cl.[4] E21B *34/10, 34/16*
U.S. Cl. 166—53 **2 Claims**



1. A system mounted on or near an oil well to respond to temperatures of a fire to prevent oil well production from reaching the fire at the wellhead, including,

a source of hydraulic fluid pressure connected by a control conduit to a downhole safety valve to maintain the valve open against its spring force,

a first valve of the system connected to control the conduit between the source and the downhole valve,

a second valve of the system connected to control the bleed of the conduit between the source and the downhole valve,

a control piston contacting the first and second valves of the system,

and at least one eutectic body against which the control piston abuts from the force of a spring of the second valve,

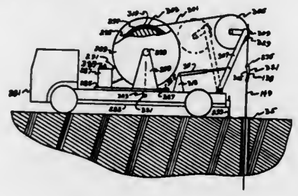
whereby removal of the eutectic body by a predetermined temperature of a fire releases the piston and allows the system pressure to move the piston and thereby close the first valve to isolate the source of fluid pressure to the downhole safety valve and establishes a bleed of the control conduit.

4,553,590

APPARATUS FOR PUMPING SUBTERRANEAN FLUIDS

Edward H. Phillips, Middletown, Calif., assignor to Hidden Valley Associates, Middletown, Calif.

Division of Ser. No. 245,614, Mar. 19, 1981, Pat. No. 4,451,209.
This application Jan. 30, 1984, Ser. No. 575,844
Int. Cl.[4] B66D *1/60, 3/24;* E21B *19/02, 43/00*
U.S. Cl. 166—53 **4 Claims**



1. A subterranean pump installation and removal apparatus for a pump suspended in a hole in the earth by a flexible line, the apparatus comprising:

engaging means for engaging the flexible line;

drum means coupled to the engaging means;

motive means coupled to the drum means for causing the drum means to turn in a first direction to wind the flexible line about the drum means and for causing the drum means to turn in a second direction to unwind the flexible line from the drum means;

oscillating means coupled to the drum means for causing the drum means to oscillate while the flexible line is being wound about the drum means to more evenly distribute the flexible line over the surface of the drum means;

a mobile support structure for supporting and transporting the engaging means, the drum means, the motive means and the oscillating means;

support means mounted on the mobile support structure;

pulley means for supporting and guiding the flexible line;

hinge means for supporting the pulley means on the support means and having a hinge axis, the hinge axis being substantially coincident with the axis of the portion of the flexible line between the pulley means and the hole; and

a junction box in which the flexible line is terminated and which comprises an outer casing having first and second curved sides, the radius of curvature of the first side being substantially equal to the radius of curvature of the pulley means and the radius of curvature of the second side being substantially equal to the radius of curvature of the drum means, the drum means having a slot for receiving the junction box.

4,553,591

OIL WELL DRILLING APPARATUS

Richard T. Mitchell, P.O. Box 236, Broussard, La. 70518

Filed Apr. 12, 1984, Ser. No. 599,581
Int. Cl.[4] E21B *33/02*
U.S. Cl. 166—76 **8 Claims**

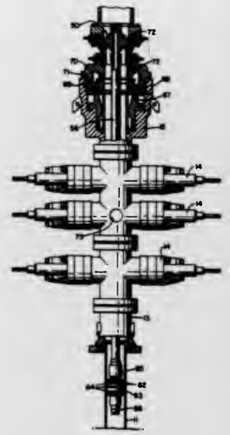
2. A device for a drilling rig wireline operation, the rig including an annular blowout preventer, comprising:

a. an annular spool secured on top of the blowout preventer;

b. a mandrel secured in and sealed to the spool bore, said mandrel having an internal bore of less diameter than the internal diameter of said blowout preventer;

c. a bell nipple superimposed on said annular spool; and

d. a wireline riser sub secured to said mandrel and extending upwardly therefrom to project through the upper bell nipple, said riser sub being of substantially the same internal diameter as the internal bore of said mandrel, the reduced diameter bore of said mandrel protecting the annular blowout preventer against whipping of a wireline



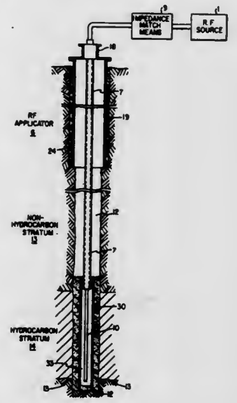
assembly extending through said riser sub and said mandrel.

4,553,592

METHOD OF PROTECTING AN RF APPLICATOR

Mark D. Looney, Missouri City, and Kerry D. Savage, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 9, 1984, Ser. No. 578,453
Int. Cl.[4] E21B *36/04*
U.S. Cl. 166—248 **19 Claims**



1. A method for protecting an RF applicator during the in situ RF retorting of an oil shale stratum, from a borehole traversing the oil shale stratum comprising the steps of:

lining with a liner at least that portion of the borehole traversing the oil shale stratum with a non-conductive high temperature material of sufficient thickness to protect the RF applicator from expansion of the oil shale stratum, and

cementing said liner in place with a high temperature, non-conductive cementing material.

4,553,593

OIL RECOVERY METHOD

James E. Shaw, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1984, Ser. No. 618,292
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—270 **10 Claims**

1. A process for the recovery of oil from an oil bearing subterranean formation penetrated by at least one injection well and at least one production well which comprises forming surfactants in situ comprising the steps of:

(a) injecting a slug of an aqueous alkaline hypochlorite solution through an injection well under conditions to cause oxidation of oil in the formation and product surfactants comprising carboxylates;

(b) injecting an aqueous alkaline alcohol solution to form a carboxylate-alcohol surfactant system,

(c) causing the so-injected slugs to move from the injection well towards one or more production wells displacing oil present in said formation, and

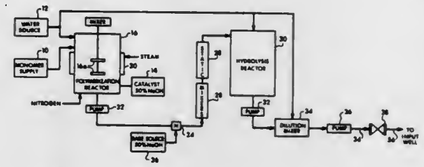
(d) recovering displaced oil from at least one of said production wells.

4,553,594

FLOW CONTROL METHOD

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 361,622, Mar. 25, 1982, Pat. No. 4,510,993.
This application Apr. 8, 1983, Ser. No. 483,149
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—275 **5 Claims**



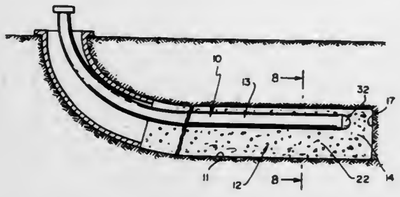
1. A method for controlling the flow of polymer solutions of the type employed as drive fluids and/or mobility control agents in the recovery of oil from subterranean oil-bearing formations to prevent shear degradation of the polymer comprising the solution prior to introducing the polymer solution into an input well of the oil-bearing formation: including the steps of diluting the polymer solution to provide a concentration of the polymer in the solution sufficient to enable the solution to substantially meet the permeability requirements of an oil-bearing subterranean formation, transporting the diluted polymer solution through conduit means having flow control means positioned therein and across which a fluid pressure differential exists in the conduit means, said flow control means being in the form of a needle valve which is movable to a substantially fluid flow limiting position and to a fluid flow open position whereby the flow of the diluted polymer through the conduit means and across the flow control means is selectively regulated, passing the diluted polymer solution at one fluid pressure through said flow control means to effect a lowering of the fluid pressure of the polymer solution while at the same time preventing any shear degradation of the polymer comprising the solution, and conveying the polymer solution through said conduit means to an input well site where it is injected into an oil-bearing formation.

4,553,595

METHOD FOR FORMING A GRAVEL PACKED HORIZONTAL WELL

Wann-Sheng Huang, and Alfred Brown, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,090
Int. Cl.⁴ E21B *43/04*
U.S. Cl. 166—278 **8 Claims**



1. Method for forming a gravel packed, horizontal well completion in a hydrocarbon productive subterranean formation comprised of unconsolidated sand particles which hold a viscous hydrocarbon, whereby to minimize the amount of said sand particles carried from the formation when the hydrocarbon is thermally stimulated and produced, which method includes the steps of;

forming a wellbore into the formation substrate and deviating said wellbore to form a substantially horizontal segment when the bore lies within the productive formation,

depositing a gravel foundation in the horizontal segment of said wellbore to occupy only the lower portion thereof, while leaving the upper portion unoccupied,

longitudinally inserting an elongated well liner along said gravel foundation to be supported by the latter in the unoccupied upper portion of the wellbore, and

depositing a second flow of gravel slurry into the unoccupied upper portion of said wellbore horizontal segment, whereby gravel from the said slurry will fill the wellbore upper portion above said gravel foundation and enclose the liner within a gravel pack.

4,553,596

WELL COMPLETION TECHNIQUE

John W. Graham, Alvin, and A. Richard Sinclair, Houston, both of Tex., assignors to Santrol Products, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 437,431, Oct. 27, 1982, Pat. No. 4,518,039, which is a continuation-in-part of Ser. No. 294,813, Aug. 20, 1981, abandoned. This application Jul. 28, 1983, Ser. No. 518,197
Int. Cl.⁴ E21B *43/116*
U.S. Cl. 166—295 **8 Claims**

1. A method of forming supported perforation tunnels extending from a well bore into a subterranean formation comprising:

placing a suspension of self-consolidating resin coated particles in a completion fluid in the well bore in the interval to be perforated;

positioning a means for forming said perforations in the interval to be perforated;

providing a differential pressure between the well bore and the formation whereby the pressure in said well bore is higher than the pressure in said formation;

firing said perforating means so as to form perforation tunnels extending from said well bore into said formation;

causing said suspension to flow into said perforation tunnel by means of said pressure differential so as to form a packed matrix of self-consolidating resin coated particles in said perforation tunnels; and

curing said resin coated particles into a consolidated permeable matrix capable of supporting said perforation tunnels.

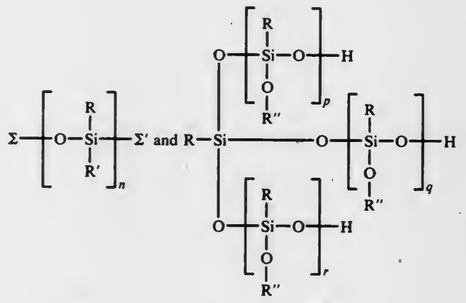
4,553,597

PROCESS FOR ELIMINATING CLAYS FROM ROCKS AND SEDIMENTARY ENVIRONMENTS

Loïc P. Le Ribault, La Teste de Buch; Jacques P. Donoguès, Talence, and Norbert C. Duffaut, Podensac, all of France, assignors to Lamothe, Boulan, Dunogues, Duffaut, and Ribault, France

Filed Jul. 21, 1983, Ser. No. 515,603
Claims priority, application France, Jul. 21, 1982, 82 12856
Int. Cl.⁴ E21B *43/22, 43/27;* C09K *3/00*
U.S. Cl. 166—305 R **5 Claims**

1. A process for eliminating clays from rocks and sedimentary environments comprising applying into said sedimentary environments or rocks organo-silicon compounds selected from:



wherein:

n is a whole number between 1 and 1,000;

p, q and r are whole numbers between 0 and 1,000;

R and R' are selected from the group consisting of aliphatics, cycloaliphatics, olefinics, aromatics; heteroatom-containing aliphatics, cycloaliphatics, olefinics and aromatics; and combinations of the above;

R can also be OH, OR and $OSiR_3$;

Σ is selected from R, H, and SiR_3;

Σ' is selected from R, OR, OH, and $OSiR_3$; and

R'' is selected from R, R', Σ and a di or trifunctional polysiloxane chain formation in which the silicon substituents are R, OH or OM, M being a potassium atom.

4,553,598

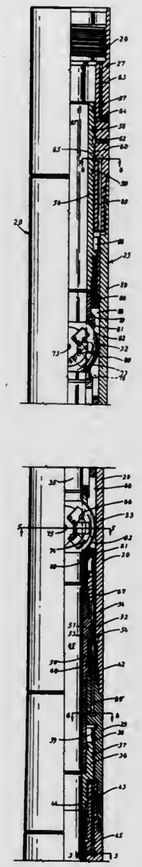
FULL BORE SAMPLER VALVE APPARATUS

Dale E. Meek, Missouri City, and James M. Upchurch, Stafford, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 290,659, Aug. 6, 1981,. This application Sep. 24, 1984, Ser. No. 654,516
Int. Cl.⁴ E21B *43/12, 42/00*
U.S. Cl. 166—317 **13 Claims**

1. Apparatus adapted for use in closing the bore of a pipe string during a well testing operation comprising: a housing having an actuator mandrel assembly slidably disposed therein, said housing and mandrel assembly defining a passage for the flow of formation fluid in a direction therethrough; axially spaced full-opening valve means mounted on said mandrel assembly for opening said flow passage in one longitudinal position of said mandrel assembly within said housing and for closing said flow passage in another longitudinal position therein; hydraulically operable means on said mandrel assembly for shifting said mandrel assembly from said one position to said other position, said hydraulically operable means being normally subject to balanced atmospheric or other low pressures and normally not subject to the pressure of fluids in the well annulus surrounding said housing; and means responsive to a predetermined well annulus pressure for subjecting said

hydraulically operable means to well annulus pressure to cause shifting of said mandrel assembly in the direction of the flow of said formation fluid to said other position and closure of said



flow passage by said valve means, a region of said flow passage located between said valve means defining a sample chamber adapted to trap a flowing sample of formation fluids.

4,553,599

CONTROL APPARATUS FOR OIL WELL PRODUCTION STRING CLOSING TOOL

Bernard J. Glotin, Saint Maur, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

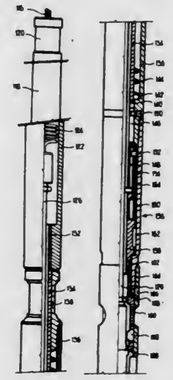
Filed Jul. 6, 1982, Ser. No. 395,447
Claims priority, application France, Jul. 8, 1981, 81 13810
Int. Cl.⁴ E21B *34/14*
U.S. Cl. 166—332 **9 Claims**

1. Control apparatus for a tool placed in the production string of a well, said apparatus being capable of being lowered into the well at the end of a cable, comprising:

a first mechanism for transforming a longitudinal reciprocating movement into an alternating rotary movement, the longitudinal reciprocating movement being obtained by pulling on and releasing said cable; and a second mechanism made up of a roller-type clutch connected with the first mechanism for transforming said alternating rotary movement into a one-directional rotary movement;

said first mechanism comprising a rod sliding along the longitudinal axis of the apparatus under the action of pulling forces exerted on the cable, said sliding rod having a groove of helical form;

said second mechanism comprising a drive shaft equipped with a tenon engaging in said groove so that the drive shaft describes an alternating rotary movement when said rod moves longitudinally in a to-and-fro movement, and driven shaft having slots and rollers placed in said slots, said shafts and rollers forming said clutch so that said driven shaft is imparted only a one-directional rotary movement;



said driven shaft comprising a first bearing surface equipped with a first hollow; and said apparatus including an actuator mobile longitudinally between a first and a second postion, connected with a element of the tool to be controlled and having a part kept against said bearing surface, said part engaging in said hollow for a given angular position of said driven shaft in relation to said actuator, thereby causing said actuator to go from the first to the second position.

4,553,600

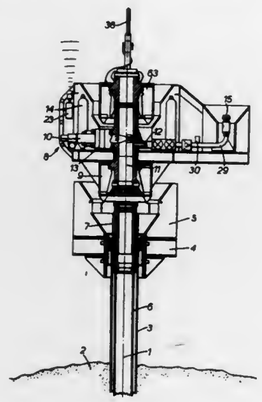
SAFETY INSTALLATION FOR A SUBMERGED DRILLING WELL-HEAD

Georges Vigouroux, Carrieres; Gilbert Fort, Paris, and Louis Soleille, Les Clayes-sous-bois, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Jan. 19, 1984, Ser. No. 572,047
Claims priority, application France, Jan. 26, 1983, 83 01142
Int. Cl.⁴ E21B *29/08, 43/01*
U.S. Cl. 166—343 **6 Claims**

1. A safety installation for a submerged wellhead incorporating at least one well shut-off unit (**60**) located above a tubing receptacle (**7**), said safety installation comprising an emergency unit (**8**) comprising a well shut-off means (**10**), an injection pipe (**12**) for opening into the well-head between the well shut-off unit and the tubing receptacle, a lateral fluid inflow (**15**) for an intervention fluid for said well shut-off means and for said injection pipe, and means (**29, 37, 36**) connecting said lateral fluid inflow to said injection pipe, a re-entry structure (**39**) disposed on the sea bottom (**2**) at a horizontal distance from said well-head and provided with a first inflow funnel (**41**) for receiving externally an intervention fluid supply fitting (**64**), and a flexible pipe (**47**) having a first end and a second end and for connection by its said first end to said first inflow funnel and by its said second end to said lateral fluid inflow, whereby upon the failure of the shut-off unit flowing a blowout, inter-

vention fluid may be supplied to the re-entry structure from a surface location horizontally removed from the well-head to actuate the shut-off means and inject the well-head via the pipe.



4,553,601

METHOD FOR FRACTURING SUBTERRANEAN FORMATIONS

Stephen W. Almond, Ventura, Calif., and Michael W. Conway, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 26, 1984, Ser. No. 654,823
Int. Cl.[4] E21B *43/267*
U.S. Cl. 166—308 **17 Claims**

1. A method for fracturing a subterranean formation comprising:

preparing a fracturing fluid by admixing an aqueous liquid, a gelling agent comprising a cellulose ether which is chemically modified to incorporate pendent vicinal dihydroxy groups in an amount sufficient to provide a DS of about 0.3 to about 1.3 and exhibits shear-thermal stability at a temperature in excess of 200° F., said gelling agent being present in an amount in excess of about 0.2 percent by weight of said aqueous liquid and a crosslinking agent present in an amount of at least about 0.001 percent by weight of said aqueous liquid; and

introducing said fracturing fluid into a subterranean formation at a rate and pressure sufficient to fracture said formation.

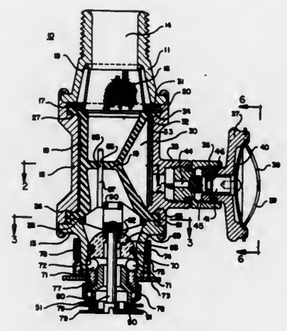
4,553,602

AUTOMATIC ON-OFF SPRINKLER HEAD

George S. Pieczykolan, c/o Central Sprinkler Corp., Fourth St. and Cannon Ave., Lansdale, Pa. 19446

Continuation-in-part of Ser. No. 289,451, Aug. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 250,097, Apr. 11, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,860
Int. Cl.[4] A62C *37/20*
U.S. Cl. 169—19 **6 Claims**

1. A sprinkler head for automatic sprinkler systems comprising a housing having a fluid inlet and a fluid outlet communicating with a chamber therebetween, a fluid responsive valve member within said chamber and biased to a closed position by fluid pressure from said inlet, a downstream surface of said valve member being in fluid communication with said outlet, means for equalizing fluid pressure upstream and downstream of said valve member, valve means movably supported by said housing for controlling flow through said outlet, a first temperature responsive controller, said temperature responsive controller being connected to said movable valve means whereby the movable valve means moves to an open position when said temperature controller senses a predetermined temperature, said movable valve means supporting a fluid deflector and said temperature responsive controller for movement therewith, and a pilot valve for relieving the effective inlet pressure on a surface of said valve member to permit discharge through said outlet when said valve means is in its open position, said pilot valve being responsive to a second temperature responsive controller, said second temperature responsive controller being responsive to a higher temperature than said first temperature responsive controller.

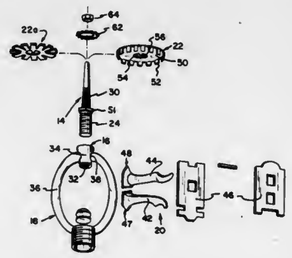


4,553,603

REPLACEABLE DEFLECTORS FOR THE SPRINKLER HEADS OF AUTOMATIC FIRE EXTINGUISHING SYSTEMS

John J. Dwyer, 22 Grove Ave., Randolph, Mass. 02368

Continuation-in-part of Ser. No. 447,534, Feb. 24, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 685,956
Int. Cl.[4] A62C *37/08*
U.S. Cl. 169—38 **2 Claims**



1. A sprinler head of the automatic type comprising a body portion, a nozzle, a thermally responsive element, a pintle, a seal element, a connector and a deflector,

the thermally responsive element having a first thermal end and a second terminal end spaced from the first terminal end,

the deflector removeably attached to the pintle,

the connector engaged to the body portion and the pintle engaged to the body portion through the connector and with the first terminal end of the thermally responsive element,

the seal element positioned with the nozzle and engaged by the second terminal end of the thermally responsive element,

the connector including an internally threaded axial bore,

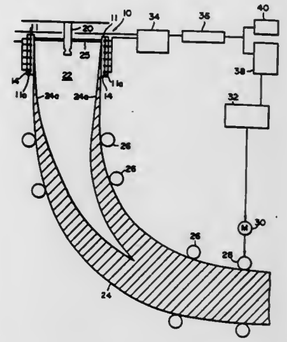
and the pintle having a first externally, threaded end, a second end, a free end and a center portion, the center portion includes a threaded portion and an unthreaded engagement portion, an annular shoulder portion extending from the junction of the first end and the engagement portion in right angle relationship to the longitudinal axis of the pintle, the shoulder portion having a greater diameter than the engagement portion, the free end threaded into the axial bore of the connector and the deflector attached to the externally threaded center portion of the pintle by a nut and the shoulder portion positioned between the deflector and the connector.

4,553,604

METHOD OF CONTROLLING CONTINUOUS CASTING EQUIPMENT

Motoyasu Yaji; Masuto Shimizu; Hiromitsu Yamanaka, and Takao Koshikawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 31, 1983, Ser. No. 537,403
Claims priority, application Japan, Feb. 24, 1982, 57-29237; Feb. 26, 1982, 57-31024; Feb. 26, 1982, 57-31025; Feb. 26, 1982, 57-31026; Feb. 26, 1982, 57-31027
Int. Cl.[4] B22D *11/16*
U.S. Cl. 164—453 **11 Claims**



1. A method of controlling continuous casting equipment, comprising the steps of:

providing a heat flux meter on an outer surface of a side shell plate of a mold;

measuring a local heat flux waveform commensurate to a local extracted heat value of said mold with said heat fux meter;

detecting an abnormality of said local heat flux waveform; and

adjusting the operation of said equipment responsive to said detection of an abnormality.

4,553,605

WORK-VEHICLE WITH ROLLING-CONTROL MECHANISM

Yoshiyuki Katayama, Osaka, and Tetsuya Nishida, Kawachinagano, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 11, 1983, Ser. No. 493,473
Claims priority, application Japan, Jul. 16, 1982, 57-124565
Int. Cl.[4] A01B *63/10*
U.S. Cl. 172—2 **21 Claims**

1. A work vehicle which comprises

a vehicle body,

a ground engaging implement adjustably connected to said vehicle body by a three point link mechanism,

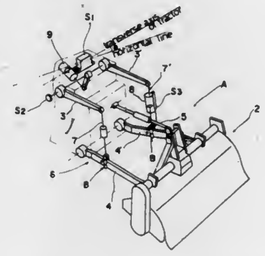
said three point link mechanism including lower links connected to said body and said ground engaging implement, said lower links being adjustable in width therebetween where they attach to said implement, lift arms and lift rods connected between said lift arms and said lower links and adjustable in a vertical direction for lifting said ground engaging implement,

a first sensor means (S1) on said vehicle body for detecting a right-and-left slant and a slant angle θ of said vehicle body,

a rolling control mechanism,

said rolling control mechanism adapted to adjust said ground engaging implement relative to ground by adjusting one of said lift rods in response to said slant angle θ, and

said rolling control mechanism comprises means for shifting a control gain corresponding to said slant angle θ detected by said first sensor means (S1) to a different gain in response to adjustment of said lower links to a different width with respect to said ground engaging implement.

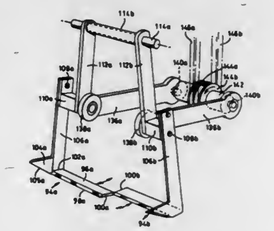


4,553,606

SOD CUTTING MACHINE HAVING SPLIT UNDERCUTTING BLADE

William T. Arnold, Sutton West, Canada, assignor to Brouwer Turf Equipment Limited, Keswick, Canada

Filed Nov. 4, 1982, Ser. No. 439,254
Claims priority, application Canada, Jan. 25, 1982, 394835
Int. Cl.[4] A01B *45/04*
U.S. Cl. 172—19 **7 Claims**



1. A machine for cutting a thin strip of sod, said machine having:

(a) a frame adapted for travel forwardly along a path of travel,

(b) first and second cutting knives,

(c) each cutting knife having an elongated undercutting blade having a sharpened forward edge, an upper surface, a lower surface, and inner and outer ends, and a side cutting blade connected to said outer end and extending substantially at right angles thereto, said side cutting blade also having a sharpened forward edge,

(d) means mounting said knives on said frame for reciprocation of said knives back and forth along said path of travel from a position in which said undercutting blades are aligned transversely and in a common substantially horizontal plane with said inner ends substantially touching each other and with said upper surfaces aligned horizontally with each other and with said lower surfaces aligned

horizontally with each other and with said side cutting blades extending upwardly from said undercutting blades so that said undercutting and side cutting blades effectively form a single knife for undercutting and cutting the edges of a strip,

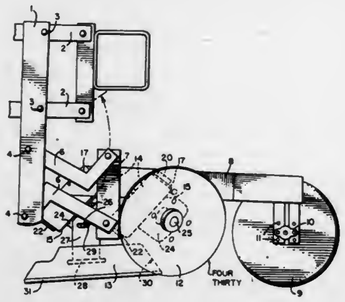
(e) and drive means connected between said frame and said mounting means (d) for reciprocating said knives in opposite directions, whereby to reduce vibration of said machine.

4,553,607

RIDGE CLEANING ATTACHMENT FOR PLANTERS

Ernest E. Behn, R.R. #1, Boone, Iowa 50036, and Jerome L. Behn, R.R. #1, Madrid, Iowa 50156

Filed Oct. 17, 1983, Ser. No. 542,534
Int. Cl.⁴ A01B *39/08, 39/14*
U.S. Cl. 172—156 **6 Claims**



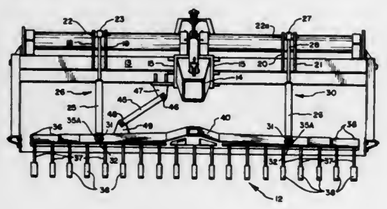
1. An attachment for a planter designed to plant on level ground to adapt the planter to plant along ridges, said planter including a transversely extending tool bar having at least one planter unit secured thereto by laterally spaced upper and lower arms arranged in a parallelogram type linkage, said attachment comprising a pair of laterally spaced vertically extending mounting bars each having spaced apart openings to align with and pivotally attach to the upper and lower arms of the parallelogram linkage, the lower end of each said mounting bar pivotally mounting a rearward end of a forwardly extending parallelogram linkage comprising a plurality of arms attached at their forward ends to a vertical outer frame portion of a generally horizontally extending main frame, said main frame including a forward centrally mounted gauge wheel, a pair of forwardly and downwardly converging discs aligned with said gauge wheel, a sweep mounted behind and aligned with said discs.

4,553,608

SCRAPER WITH RIPPER ASSEMBLY

Richard B. Miskin, P.O. Box 218, Ucon, Id. 83454

Filed Feb. 16, 1984, Ser. No. 580,678
Int. Cl.⁴ A01B *49/02;* **E02F** *3/85*
U.S. Cl. 172—197 **1 Claim**



1. A scrapper with a ripper assembly comprising

a wheeled scraper unit including a main tongue for pulling by a prime mover, said scraper unit having an elevated top rail movable up and down with a cutting edge of the scraper

a ripper assembly comprising a support bar and spaced apart ripper teeth spaced along the support bar and extending downwardly therefrom said support bar being positioned generally beneath the top rail;

hydraulic cylinder means interconnecting the top rail and the support bar through universal joint means that will raise and lower the ripper assembly relative to the scraper unit, said hydraulic cylinder means comprising

a pair of spaced apart hydraulic cylinders, each said cylinder having a rod thereof pivotally connected by a ball journal to the top rail and a housing thereof pivotally connected to the support bar, and means to selectively supply fluid to and to exhaust fluid from the hydraulic cylinders, said means comprising

a pump,

a fluid storage reservoir,

a valve means supplying fluid from the reservoir through the pump to the valve,

a hydraulic line having a pressure relief valve therein interconnecting the end of one hydraulic cylinder opposite the rod of the cylinder,

a hydraulic line interconnecting the other end of the one hydraulic cylinder with the end of the other hydraulic cylinder opposite the rod of that cylinder, a line with a restrictor therein interconnecting the other end of the other cylinder and the valve,

a hydraulic line connecting the valve to the reservoir, and

a ripper tongue having one end fixed to the support bar and an opposite end pivotally connected to the main tongue;

a guide arm;

means pivotally connecting one end of said guide arm to the top rail; and

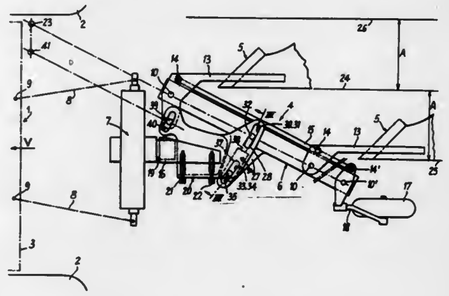
means pivotally connecting an opposite end of the guide arm to the support bar at a location offset from directly beneath the one end, whereby the guide arm pivots transversely to the longitudinal axis of the ripper tongue.

4,553,609

GANG PLOW OF VARIBLE WORKING WIDTH

Henri E. Salva, Croix, France, assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 27, 1983, Ser. No. 517,549
Int. Cl.⁴ A01B *65/02, 69/00*
U.S. Cl. 172—647 **8 Claims**



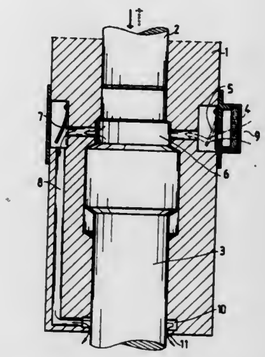
1. A gang plow of the type having a plurality of plow bottom support brackets each rigidly fixed to one plow bottom and uniformly mounted along a plow beam about vertical axes, a coupling member pivotally attached to the plow bottom support brackets and defining with the plow beam deformable parallelograms, and a forecarriage unit adapted to be carried by the link arms of a tractor hitch wherein the improvement comprises said plow beam being movable relative to said forecarriage unit such that it pivots about a first vertical axis fixed relative to said forecarriage unit, control means connected to said plow beam and said forecarriage unit for pivoting said plow beam about said first vertical axis to thus vary the angle formed by said plow beam and the direction of forward travel of the tractor, the position of said first fixed vertical axis being located forward of the articulation of the first support bracket along a line parallel to the direction of forward travel whereby pivoting of said plow beam about said first fixed axis causes a variation of the cutting width between the plow bottoms of a certain value and at the same time a transverse displacement of said certain value of the first plow bottom in the appropriate direction.

4,553,610

HYDRAULIC STRIKING MACHINE

Raimo K. Pelto-Huikko, Helsinki; Esko A. O. Åhlman, and Pertti V. Rautimo, both of Salpakangas, all of Finland, assignors to Kone Oy, Helsinki, Finland

Continuation of Ser. No. 179,658, Aug. 20, 1980, abandoned. This application Mar. 13, 1984, Ser. No. 588,947
Claims priority, application Finland, Aug. 21, 1979, 792591
Int. Cl.⁴ E21B *7/00*
U.S. Cl. 173—1 **7 Claims**



1. A method for operating a hydraulic-actuated striking machine comprising a body part and a hydraulically operated piston moving to and for in the body, with said piston being accelerated to strike intermittently against a tool, wherein the improvement comprises:

(a) passing a current of air directly from the atmosphere through a filter then through an inlet check valve into an impact compression space located between the piston and the tool to provide an intermittent puffing air current; and

(b) leading the air current from said impact compression space through an outlet check valve and then uniformly along the outer surface of said tool to clean the tool.

4,553,611

PRESSURE DROP REGULATOR FOR DOWNHOLE TURBINE

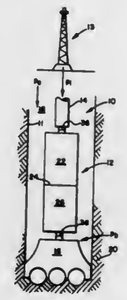
William C. Lyons, P.O. Box 2457, Santa Fe, N. Mex. 87504-2457

Filed Apr. 20, 1984, Ser. No. 602,396
Int. Cl.⁴ F03B *13/02;* **E21B** *4/02*
U.S. Cl. 175—71 **11 Claims**

1. Method of drilling a borehole with a downhole pneumatically actuated motor supported by a pipe string wherein a drill bit is connected to be rotated by the pneumatic motor and the motor is located downhole adjacent to the bit, with gas flowing down the pipe string to the motor, and spent gas flowing up the borehole annulus, comprising the steps of:

(1) providing a first pressure differential between the motor inlet and the source of air pressure to cause sonic or subsonic flow to occur to the motor;

(2) providing a second pressure differential between the air motor outlet and the drill bit outlet to cause sonic flow to occur into the annulus;



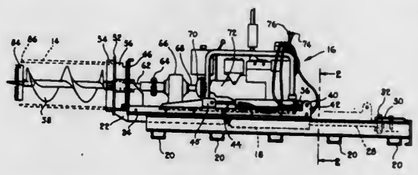
(3) whereby; the pressure drop across the motor is substantially constant so long as the critical pressure at the drill bit outlet is not exceeded.

4,553,612

EARTH BORING MACHINE

Marion E. Durham, 10 Curtis Rd., Greenville, S.C. 29611

Filed Nov. 9, 1983, Ser. No. 549,876
Int. Cl.⁴ E21B *7/20*
U.S. Cl. 175—122 **5 Claims**



1. An earth boring machine for boring straight and level elongated holes through rock-laden earth and inserting lengths of pipe in said bored hole comprising:

a stationary horizontally extending frame;

a first slide carried on said stationary elongated frame;

a second slide carried on said first slide;

an elongated auger guiding sleeve carried adjacent one end of said first slide, said guiding sleeve having a cutting edge on a remote end thereof, said guiding sleeve being a length of tubular pipe to be inserted in a bored hole;

a power-driven auger assembly carried on said second slide, said power-driven auger including an elongated auger carried within said guiding sleeve;

a cutting tool carried on the end of said auger adjacent a remote end of said length of pipe;

means for advancing said first slide driving said cutting edge of said guiding sleeve into said earth while said power-driven auger removes said earth as said guiding sleeve is advanced into a bored hole in said earth,

means for retracting said first slide after said guiding sleeve has been advanced and inserted in said bored hole for attaching another length of pipe to said previously inserted length of pipe and to said one end of said first slide, and

means for advancing said second slide on said first slide advancing said cutting tool out beyond said remote end of said guiding sleeve for cutting through obstructions in the earth.

4,553,613

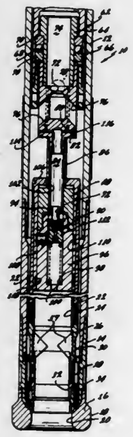
HYDRAULIC LIFT INNER BARREL IN A DRILL STRING CORING TOOL

Steven R. Radford, West Jordan, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Sep. 9, 1983, Ser. No. 530,492

Int. Cl.⁴ E21B *25/10*

U.S. Cl. 175—250 **18 Claims**



1. An apparatus for hydraulically lifting an inner tube concentrically disposed within an outer tube in a drill string comprising:

first means for selectively and automatically diverting hydraulic flow within said outer tube;

second means for providing longitudinal upward displacement of said inner tube in response to said selectively diverted hydraulic flow, said first means selectively diverting hydraulic flow to said second means and said second means being coupled to said inner tube wherein said inner tube is longitudinally displaced upward by said second means; and

third means for selectively locking said second means in a fixed position with respect to said outer tube, said third means also being selectively provided with hydraulic flow by said first means, said third means for automatically unlocking said second means after a first predetermined magnitude of hydraulic pressure has been supplied to said second and third means, said second means then longitudinally displacing said inner tube upward with respect to said outer tube by a predetermined distance, said first means then for selectively and automatically rediverting said hydraulic flow when a second predetermined magnitude of said pressure is achieved, said third means then locking said second means with respect to said outer tube in a second relative configuration thereto,

whereby said inner and outer tube may be selectively longitudinally displaced with respect to each other in an automatic fashion by activation of said first means.

4,553,614

COMPENSATION DEVICE FOR INSERTION IN A DRILL STRING FOR DEEP-WELL DRILLING TOOLS

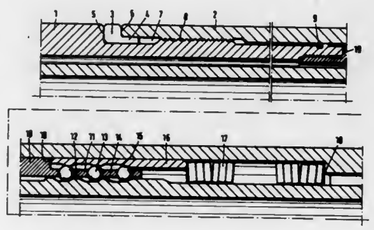
Rainer Jürgens, Celle-Osterloh, and Thomas Jüng, Isernhagen, both of Fed. Rep. of Germany, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 2, 1984, Ser. No. 585,812

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308441

Int. Cl.⁴ E21B *4/06, 17/043*

U.S. Cl. 175—302 **5 Claims**



1. A compensation device for insertion in and adjusting a drill string for deep-well drilling tools axially within a whole predetermined compensating region of axial length, the drill string having a transversely divided outer pipe, including outer pipe members which can be rigidly connected to one another by a cylindrical screw thread and have adjacent faces as external stop faces extending radially and axially opposite one another adjacent outer diameters of the pipe members and which approach one another during screwing together of the pipe members and move apart from one another during unscrewing and an annular gap formed between different inner smaller diameters of the pipe members adjacent to and extending axially from the faces, the compensation device comprising a spacing member composed of segments each having an outer compensating region of predetermined axial length between axially opposite sides extending radially adjacent its outer diameter, situated axially opposite and engageable by the faces and an inner axially projecting collar insertable into the annular gap and which segments can upon partial unscrewing of the pipe members, be inserted radially from outside and located between the faces of the pipe members and joined together to form a ring between the faces and a collar retained in the annular gap by tightening the pipe members and that the screw thread has a length of engagement which is increased by the axial length of the whole predetermined compensating region and the collar.

4,553,615

ROTARY DRILLING BITS

Alfred J. Grainger, Longlevens, England, assignor to NL Industries, Inc., New York, N.Y.

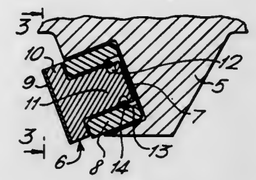
Filed Feb. 17, 1983, Ser. No. 467,672

Claims priority, application United Kingdom, Feb. 20, 1982, 8205073

Int. Cl.⁴ E21B *10/52, 10/56*

U.S. Cl. 175—329 **13 Claims**

1. A rotary drilling bit, for drilling, from the surface, deep holes in sub-surface formations, comprising a bit body with a face and a shank having a bore for the passage of drilling fluid to the face of the bit, the diameter of the body of the bit exceeding 100 mm, and a plurality of rotatable cutting elements, each of said cutting elements being in the form of a disc having a cutting face comprising an agglomerate of diamond particles in the form of a thin flat layer, bonded to a thicker backing layer of cemented tungsten carbide, each disc having a cylindrical spindle extending from the backing layer and rotatably mounted in a hole in an element set in the body of the bit, the



axis of rotation of the spindle extending perpendicularly to the cutting face of the cutting element, said spindle, in a direction away from the cutting face, being inclined rearwardly with respect to the direction of rotation of the bit and in a direction away from the surface of the formation being cut by said cutting element, said cutting elements being free to rotate in use of the bit.

4,553,616

COMBINATORIAL WEIGHING APPARATUS HAVING MEMORY FOR STORING WEIGHING CONDITIONS

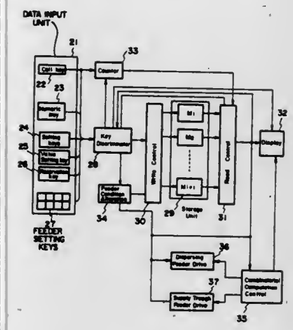
Setsuo Haze, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Aug. 12, 1983, Ser. No. 522,566

Claims priority, application Japan, Aug. 13, 1982, 57-123283[U]

Int. Cl.⁴ G01G *19/34*

U.S. Cl. 177—1 **7 Claims**



7. A combinatorial weighing method for use with a plurality of weighed batches of articles which are fed to hoppers by feeders, comprising the steps of:

(a) entering, as plural sets of reserved values, sets of weighing conditions necessary for different types of combinatorial weighing, said step (a) including entering, for each of the sets of reserved values, a target weight value, upper and lower limit values for defining preset allowable limits for the combinatorial weighing, and values indicative of the amplitude and duration of feeder vibration;

(b) storing the plural sets of reserved values in respective memories;

(c) reading a selected one of the plural sets of reserved values from the corresponding one of the memories in accordance with the type of combinatorial weighing which is to take place; and

(d) controlling combinatorial computation and the feeding of articles to the hoppers in dependence upon the set of weighing conditions specified by the selected set of reserved values.

4,553,617

ARTICLE DISCHARGE APPARATUS IN AUTOMATIC WEIGHING SYSTEM

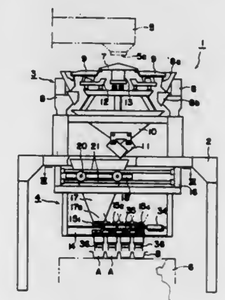
Takashi Tatematsu, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jul. 1, 1983, Ser. No. 510,097

Claims priority, application Japan, Jul. 6, 1982, 57-102649[U]

Int. Cl.⁴ G01G *19/22, 13/16;* **B65B** *1/04;* **B67D** *3/00*

U.S. Cl. 177—25 **11 Claims**



1. An apparatus for discharging weighed articles from an automatic weighing system into a plurality of containers, the automatic weighing system being of the type in which a weighing unit weighs and then discharges articles from a collecting chute having a discharge port at the conclusion of each weighing cycle, comprising:

a base having a longitudinal axis;

a plurality of timing hoppers disposed on said base above respective ones of the containers;

a movable chute, transportable along said longitudinal axis of said base, for successively introducing weighed articles, discharged from the collecting chute, into each of said timing hoppers; and

means, provided on said base, for opening all of said timing hoppers in unison when all of said timing hoppers are provided with articles by said movable chute.

4,553,618

WEIGHING CELL

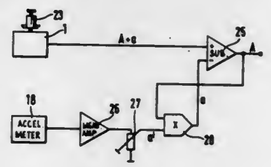
Karl-Heinz Kusmenskji, and Harald Beck, both of Pohlheim, Fed. Rep. of Germany, assignors to Mettler-Waagen GmbH, Giessen, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,435

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230998

Int. Cl.⁴ G01G *23/10, 7/00*

U.S. Cl. 177—185 **6 Claims**



1. A weighing cell, in which the weight forces of the load are compensated by deformation or electromechanical forces, including a load carrier which receives the load, a mechanical-

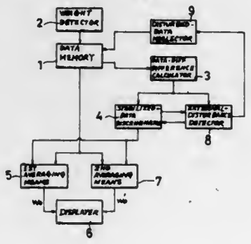
electrical load-measuring cell, an acceleration meter which experiences the same vertical accelerations as the weighing cell, wherein the load cell and the acceleration meter are connected electrically with one another such that the measuring signal which is adulterated by the acceleration action is corrected correspondingly, including the improvement comprised in that the load cell has an output signal (A+a) comprising a weighing signal (A) superposed by a spurious signal (a) due to said acceleration, a subtractor receiving said output signal (A+a), means for balancing the output signal of the acceleration meter to a value (a'), a multiplier receiving said balanced signal (a'), the multiplier also receiving from the subtractor a weighing signal (A) from which said spurious signal (a) has been cleaned, said multiplier producing a signal corresponding to said spurious signal (a) and feeding it to the subtractor.

4,553,619

ELECTRONIC BALANCE WITH AVERAGING FEATURE FOR VIBRATION ERROR CORRECTION

Yasuhiro Fujinaga, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 21, 1984, Ser. No. 622,834
Claims priority, application Japan, Jun. 30, 1983, 58-120005
Int. Cl.⁴ G01G *23/10, 9/00*
U.S. Cl. 177—185 **2 Claims**



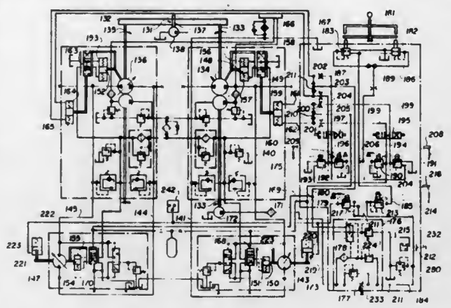
1. An electronic balance comprising:
a data memory for storing the weight data sampled at predetermined time intervals from the output of the weight detecting means provided in said electronic balance;
a data difference calculating means for calculating the differences between a newest weight data d_0 and the data d_n, d_{n-1}, . . . , d_1 of a predetermined number n continually preceding to said newest weight data d_0;
a data stabilization judging means for judging the n+1 data d_n, d_{n-1}, . . . , d_1 to be stabilized, if an equation $|d_j-d_0| \leqq R\sqrt{n+1}$ is satisfied, where R is the sensitivity of said electronic balance and j stands for 1, 2, . . . , n;
a first data-averaging means for calculating, when said n+1 weight data are not judged to be stabilized, an average W_0 over said n+1 weight data;
a second data-averaging means for calculating, when said n+1 weight data are judged to be stabilized, an average W_0' with the basis data for averaging increased one by one at each time a new weight data d_0 is sampled;
an external-disturbance judging means for judging, if a new weight data d_0 which does not satisfy said equation is sampled after the preceding weight data have been judged to be stabilized, said new weight data to be due to an external disturbance, and for judging the weight data to have been brought into an unstabilized state, so long as such a weight data as said new weight data which does not satisfy said equation is successively sampled;
a disturbed-data disposing means for displacing, when a weight data is judged to be due to an external disturbance, with the average W_0' calculated when the weight data just preceding to said weight data judged to be due to an external disturbance was sampled; and
a displaying means for displaying said W_0 or said W_0'.

4,553,620

VEHICLES WITH DIFFERENTIAL SPEED STEERING

Erich Eckhardt, Grossumstadt; Karl Schmitt, Sailauf; Wolfgang Grone, Aschaffenburg, and Binio Binev, Sulzbach/Main, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,260
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3241793
Int. Cl.⁴ B62D *11/04*
U.S. Cl. 180—6.48 **24 Claims**



2. In a control for the drive of a vehicle with differential speed steering and with a hydrostatic transmission for the drive of the drive wheels of each side of the vehicle, a final control element of each of the two transmissions connected with a spring-loaded servo piston capable of sliding in an operating cylinder for moving the final control element to control the direction and speed of each of said transmissions, a pressure chamber provided on each side of the servo piston in the operating cylinder, the servo piston acted upon by a selectively adjustable control pressure, at least one control pressure pick-off assigned for controlling the forward and backward travel and selectively connected with the operating cylinders of the transmission of the two vehicle sides, two additional control pressure pick-offs, each one assigned to one direction of turning and selectively connected with the operating cylinder of the drive unit of the vehicle side on the inside of a turn, each servo piston for controlling the direction and speed of travel being acted upon on the one side by the control pressure pick-off assigned to this control, and for controlling the turning radius on the other side, being acted upon by a control pressure pick-off of the pair assigned to turning, a pilot valve selectively controlled as a function of the switching state of an selectively actuable direction and speed selection lever located in the connection line between a control pressure pick-off assigned to the turning and the operating cylinder of the assigned drive unit, said pilot valve connecting this control pressure pick-off assigned to turning with the second pressure chamber of the operating cylinder of the drive unit on the inside of the turn, the second pressure chamber of which is acted upon by the control pressure pick-off determining the control pressure of travel speed and direction, the control pressure pick-off assigned to one direction of turning of the control pressure pick-off pair determining the direction and radius of turning being a control pressure pick-off that with slight actuation first reduces the control pressure in the pressure chamber of the operating cylinder acted upon by the control pressure pick-off determining the direction and speed of travel and furnishes a control pressure only with greater actuation on the opposite side of the servo piston and is connected at least with its pressure-building section for supplying pressure to the outlet of the control pressure pick-off determining the travel speed, the improvement wherein the control pressure pick-off section that reduces the control pressure of each control pressure pick-off assigned to a turning direction is a control pressure reducing valve that reduces the pressure with prescribed characteristics following a preselected movement of said valve without pressure change

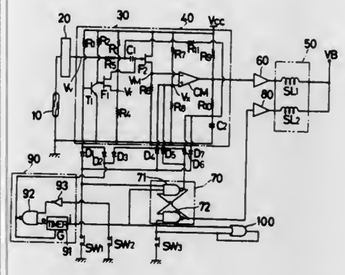
and independently of the magnitude of the incoming pressure with respect to the control pressure pick-off that controls travel.

4,553,621

AUTOMOBILE SPEED CONTROL SYSTEM

Hitoshi Hyodo, Okazaki; Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Okazaki, Japan

Filed Sep. 21, 1983, Ser. No. 534,463
Claims priority, application Japan, Sep. 21, 1982, 57-165274; Sep. 21, 1982, 57-165275; Sep. 21, 1982, 57-165277
Int. Cl.⁴ B60K *31/00*
U.S. Cl. 180—179 **4 Claims**



1. An automobile speed control system comprising:
a comparator circuit for issuing a speed difference signal when there is a difference between an automobile speed signal indicative of an actual automobile speed and an automobile speed setting signal indicative of a desired automobile speed;
an actuator responsive to said speed difference signal for adjusting the opening of a throttle valve to change the speed of an automobile in order to eliminate said speed difference signal;
a cancel switch for cancelling a constant-speed travel mode of the automobile;
a resume switch for resuming the constant-speed travel mode which has been cancelled;
a timer circuit energizable for a prescribed interval of time in response to the operation of said resume switch while the automobile is running in the constant-speed travel mode;
an acceleration signal generator circuit for generating an acceleration signal in response to the operation of said resume switch for returning said automobile to said desired speed and wherein said acceleration signal generator circuit issues said acceleration signal after said resume switch has been actuated for a period of time which exceeds said prescribed interval of time;
whereby after said prescribed interval of time has elapsed, said automobile speed signal provides said automobile speed setting signal indicative of a desired speed for said constant-speed traveling mode and increases the actual speed of said automobile, while said resume switch is actuated.

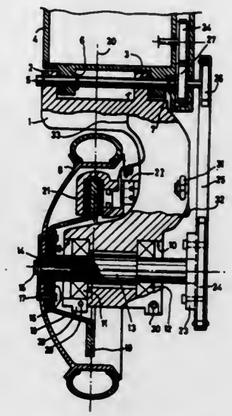
4,553,622

SUPPORTING ARM ASSEMBLY FOR A DRIVING WHEEL OF AN AUTOMOTIVE VEHICLE

André De Cortanze, Chevry, France, assignor to Elf France, Paris, France

Filed Sep. 1, 1983, Ser. No. 528,582
Claims priority, application France, Sep. 17, 1982, 82 15728
Int. Cl.⁴ B60G *7/02*
U.S. Cl. 180—227 **6 Claims**

1. An oscillating supporting arm assembly for the driving wheel of a motorcycle, comprising an arm mounted to oscillate angularly about a connecting shaft of said motorcycle and cooperating with suspension means between said arm and motorcycle, said wheel being removably fixed to a supporting shaft on one side of the free end of the supporting arm, the supporting shaft extending through said arm on two bearings, a wheel driving pinion is fixed to the supporting shaft, on the side of the arm opposite to the wheel and is driven by a chain mechanically connected to the driving means of the motorcycle, said supporting arm having the configuration of a U with two legs between which the rim and the tire of said rear wheel



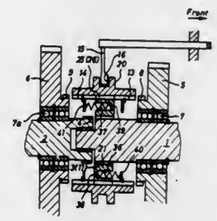
are located, one of the legs having hinge connections which cooperate with the connecting shaft of the motorcycle, said wheel has its median plane extending at substantially equal distances from the two hinge connections of the supporting arm, the wheel is rigidly connected to a brake disc cooperating with brake tightening means fixed to said supporting arm and wherein the brake disc is mounted substantially on the longitudinal axis of the motorcycle coinciding equally with the transverse median plane of the wheel so as to limit the torsion of the supporting arm and the reactions to the braking forces.

4,553,623

POWER CHANGE-OVER MECHANISM OF A VEHICLE FOR INDUSTRIAL MACHINERY

Masahiro Ohkubo, Kadoma, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Jun. 15, 1984, Ser. No. 621,318
Claims priority, application Japan, Jun. 15, 1983, 58-108286
Int. Cl.⁴ B60K *17/34, 41/22*
U.S. Cl. 180—247 **8 Claims**



1. A power change-over mechanism of a vehicle for industrial machinery including a first driving shaft and a second driving shaft arranged on the same axis center, a high-speed gear and a low-speed gear fitted in said first and second driving shafts respectively, splines formed on said both shafts and both gears, a power change-over annular spool disposed between

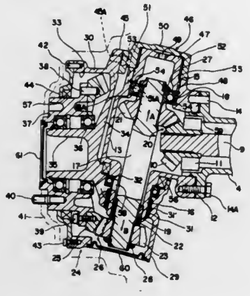
the both gears freely slidingly operably in the axial direction, splines formed on said spool, the slow-speed gear being interconnected through the spool to the first and second driving shafts when the spool is at a four-wheel drive position, and the high-speed gear being interconnected through the spool to the first driving shaft when the spool is at a two-wheel drive position; characterized by that the spool is divided into two members: an outer peripheral side member having splines meshing freely with the splines of said gears and an inner peripheral side member having a spline meshing freely with the splines of said driving shafts, and the both members are connected each other so as to integrally rotate in the rotational direction and to relatively slide through a damper means in the axial direction.

4,553,624

FRONT-WHEEL DRIVING APPARATUS

Takashi Yoshii, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Jun. 6, 1983, Ser. No. 501,235
Int. Cl.⁴ B60K *17/30*
U.S. Cl. 180—255 **8 Claims**



1. A front wheel driving apparatus comprising:
a front axle case (4) housing a differential output shaft (9) with an output bevel gear (10) at the end portion thereof;
a bevel gear case (13) removably attached to the outer end of said front axle case (4) and having upper and lower tubular portions aligned coaxially; and
a kingpin (17) journalled at the upper portion thereof to said upper tubular portion by a radial bearing (18) and at the lower portion thereof to said lower tubular portion (16) by a needle bearing (19) and securing at the upper end thereof a thrust retainer (27) upwardly adjacent to said radial bearing (18), said kingpin (17) having a bevel gear (21) in mesh with said output bevel gear (10) and a bevel gear (23) in mesh with a reduction bevel gear (25) for driving a front wheel (2) at the lower end thereof downwardly projecting from said bevel gear case (13), said two bevel gears (21), (23) being so disposed that axial thrust exerted on said kingpin (17) by said respective gears (21), (23) can be balanced.

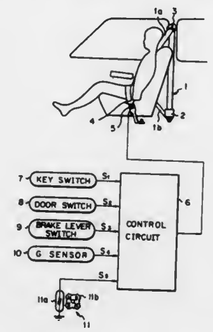
4,553,625

AUTOMOBILE SEAT BELT SYSTEM WITH AUTOMATIC UNLOCKING FUNCTION

Noboru Tsuge, Kariya, and Masahiro Taguchi, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 22, 1983, Ser. No. 525,542
Claims priority, application Japan, Aug. 30, 1982, 57-150455
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 180—268 **22 Claims**

4. A seat belt system for an automobile, comprising:
a seat belt retractor anchored to a frame of said automobile;
a seat belt having one end anchored to said automobile frame and another end secured to said retractor;
a tongue plate secured at an intermediate position of said seat belt;
a buckle anchored to said automobile frame, said buckle having a means for locking said tongue plate and a means for unlocking said tongue plate;
means for selectively actuating said unlocking means; and



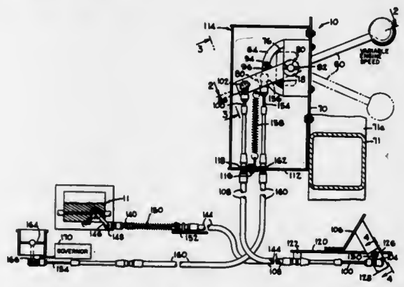
means for controlling said actuating means, wherein said controlling means includes a means for detecting whether a brake lever of said automobile is turned on and a means for driving said actuating means to actuate said unlocking means a predetermined time period after said brake lever is turned on.

4,553,626

SPEED CONTROL MECHANISM FOR A HYDROSTATICALLY DRIVEN VEHICLE

Walter Kazmierczak, Colton, and Edward M. Assony, Westminster, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 9, 1983, Ser. No. 530,831
Int. Cl.⁴ B60K *26/00*
U.S. Cl. 180—307 **25 Claims**



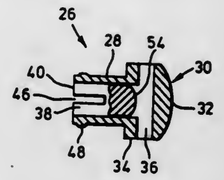
1. A speed control mechanism for controlling the throttle of a governor controlled engine and an inching valve of a hydrostatic pump that is operatively connected to at least one hydraulic motor connected to wheel means, the improvement comprising:
a depressible accelerator means movable in a range between engine idle and high speed positions;
selector lever means movable between variable and governor controlled engine speed positions;
first movable arm means operatively connected to the engine throttle, to said selector lever, and to said accelerator means for movement by depressing said accelerator means between an idle and a high engine speed position when said lever is in said variable engine speed position, when said lever is in said governor controlled engine speed position, said first arm means being maintained in said governor speed position and out of operative engagement with said accelerator means; and
second movable arm means operatively connected to said accelerator means, the inching valve, and said first arm means;
when said selector lever is in said variable engine speed position, progressive depression of said accelerator means being effective to progressively move said first and second arm means for progressively opening the engine throttle from idle speed to a high speed, and progressively closing said inching valve from an open position to a substantially closed position being. effective to progressively drive said wheel means at higher speeds;
when said selector lever is in said governor speed position, progressive depression of said accelerator means being effective to progressivley close only said inching valve for controlling the speed of said wheel while the engine speed is controlled by the governor.

4,553,627

HEARING AID WAX GUARD

William J. Gastmeier, Waterloo, and Rolf Dohmer, Kitchener, both of Canada, assignors to Unitron Industries, Kitchener, Canada

Filed Oct. 22, 1984, Ser. No. 663,735
Int. Cl.⁴ A61B *7/02;* **H04R** *25/02*
U.S. Cl. 181—135 **8 Claims**



1. A wax guard comprising:
(a) a head of substantially circular configuration as viewed from one end thereof,
(b) a stem projecting axially from the other end of said head and being integral with said head, said stem having a substantially circular cross section and being of smaller diameter than that of said head,
(c) said head having a cross passage extending therethrough, said cross passage having in cross section a substantially planar lower surface adjacent said other end of said head and having a domed upper surface,
(d) said stem having an axial passage extending therethrough and intersecting said cross passage in said head,
(e) an acoustic filter located in said axial passage and clear of said cross passage to allow a cleaning instrument to be pushed through said cross passage, and
(f) said stem having a free end having a flared resilient tip adapted to secure said stem within an opening of a hearing aid.

4,553,628

SPEAKER SYSTEM

Hisatsugu Nakamura, 13-3-1001 Roppongi, 5-chome, Minato-ku, Tokyo, Japan (106)

Filed Aug. 15, 1983, Ser. No. 523,454
Claims priority, application Japan, Oct. 18, 1982, 57-182273
Int. Cl.⁴ H05K *5/00*
U.S. Cl. 181—145 **10 Claims**

1. A speaker system comprising:
a plurality of speakers, each of said speakers having a diaphragm for radiating sound, each of said diaphragms having a front and a rear face;
a plurality of acoustical baffle means equal in number to the number of said speakers, each of said acoustic baffle means associated with the rear face of one of said speakers, each of said acoustic baffle means having an opening with said opening located in said acoustic baffle means so as to receive sound radiated from said rear face of its respective associated diaphragm;
a plurality of sound radiation conducting tubes, each of said tubes having a first end and a second end with a hollow interior extending between said ends, said plurality of tubes equal in number to the number of said speakers, each of said tubes associated with one of said acoustic baffle means by attaching said first end of said tube to said one of said acoustic baffle means at said opening in said acoustic



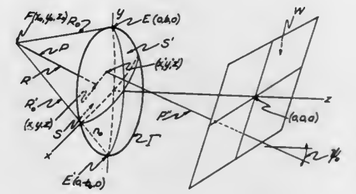
baffle means and when so attached said tube receiving sound radiation propagated through said opening in said acoustic baffle means from said rear face in said diaphragm;
an acoustic resonator chamber for radiating sound, said acoustic resonator chamber having a receiving opening and a radiating opening, each of said second ends of said tubes attaching to said receiving opening so as to propagate sound radiation through said receiving opening to said resonator chamber, at least a portion of said sound radiation being further propagated from said resonator chamber through said radiating opening.

4,553,629

ELLIPTICIZED ACOUSTICAL LENS PROVIDING BALANCED ASTIGMATISM

Robert L. Sternberg, Noank, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 949,711, Oct. 10, 1978, Pat. No. 4,224,626. This application Apr. 7, 1980, Ser. No. 138,013
Int. Cl.⁴ G10K *11/00*
U.S. Cl. 181—176 **7 Claims**



1. An ellipticized singlet azimuth versus elevation optimized and aperture extremized nonspherical acoustic lens with surfaces S and S' specified by the partial differential equations

$$S: \frac{\partial z}{\partial x} = F(A) \qquad \frac{\partial z}{\partial y} = G(A),$$

-continued

$$S': \frac{\partial(z',y')}{\partial(x,y)} = F(A)\frac{\partial(x',y')}{\partial(x,y)}, \frac{\partial(x',z')}{\partial(x,y)} = G(A)\frac{\partial(x',y')}{\partial(x,y)},$$

the symmetry conditions

$$z(-x,y) = z(x,y),\ z'(-x',y') = z'(x',y'),$$

$$z(x,-y) = z(x,y),\ z'(x',-y') = z'(x',y'),$$

and the boundary conditions

$$z(x,y)=z'(x,y)=0,$$

on the ellipse

$$\Gamma: (x^2/b_o^2\cos^2\psi_o)+(y^2/b_o^2)=1$$

where

S and S' are the lens surfaces having functional representations of the forms $z=z(x,y)$ and $z'=z'(x',y')$ wherein x' and y' are themselves functions $x'=x'(x,y)$ and $y'=y'(x,y)$ of the independent variables x and y, $(\partial z/\partial x)$ and $(\partial z/\partial y)$ are the partial derivatives of z with respect to the independent variables x and y respectively, $\partial(z',y')/\partial(x,y)$, $\partial(x',y')/\partial(x,y)$ and $\partial(x',z')/\partial(x,y)$ are the Jacobian of z' and y' with respect to the independent variables x and y, the Jacobian of x' and y' with respect to the independent variables x and y and the Jacobian of x' and z' with respect to the independent variables x and y respectively, F(A), G(A), F'(A) and G'(A) are the functions of the arguments $A=(x,y,z,x',y',z')$ defined as

$$F(A) = \frac{n_o(x'-x)p - xp'}{(z-z_o)p' - n_o(z'-z)p},$$

$$G(A) = \frac{n_o(y'-y)p - (y-y_o)p'}{(z-z_o)p' - n_o(z'-z)p},$$

$$F(A) = \frac{n_o(x'-x)}{p'\cos\psi_o - n_o(z'-z)},\ G'(A) = \frac{n_o(y'-y) + p'\sin\psi_o}{p'\cos\psi_o - n_o(z'-z)},$$

and where p and p' denote the path length elements defined by the expressions

$$p^2=x^2+(y-y_o)^2+(z-z_o)^2, p'^2=(x'-x)^2+(y'-y)^2+(z'-z)^2,$$

and n_o, y_o, z_o and ψ_o are respectively, the index of refraction of the lens material, the y and z coordinates of the finite focal point F and the off-axis angle to the infinite focal point F_∞, Γ is the ellipse bounding the lens formed by S and S' and is defined by the equation shown in which x and y are the independent variables and b_o is the maximum radius of the lens formed by S and S' and the semi-major axis of the ellipse Γ.

4,553,630

SPEAKER WITH TWEETER ANGLE ADJUSTING DEVICE

Tomiaki Ando, Yamagata, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 17, 1985, Ser. No. 692,349

Claims priority, application Japan, Jan. 19, 1984, 59-4606[U]

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 181—144 **3 Claims**

1. A compound speaker with a tweeter angle adjusting mechanism including

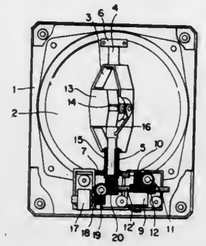
a woofer having a sound axis extending in a vertical direction;

a horizontal shaft supported on said woofer perpendicularly to said sound axis of the woofer and axially rotatable;

a horizontal adjusting knob axially disposed in parallel with and in a same rotating direction as said horizontal shaft, said horizontal adjusting knob being connected to said horizontal shaft through a first interlocking mechanism;

a tweeter having a sound axis perpendicular to said horizontal shaft;

a tweeter housing which is secured to said horizontal shaft



and which supports said tweeter through a vertical shaft rotatably in a direction perpendicular to the horizontal shaft; and

a vertical adjusting knob connected to said tweeter through a second interlocking mechanism to rotate in a same direction as the tweeter and journalled in a direction perpendicular to said horizontal shaft.

4,553,631

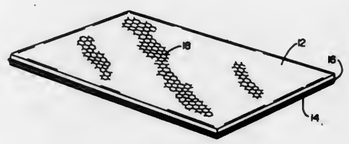
SOUND ABSORPTION METHOD AND APPARATUS

Michael J. Panza, Erie, Pa., assignor to United McGill Corporation, Groveport, Ohio

Filed May 19, 1983, Ser. No. 496,066

Int. Cl.⁴ E04B *1/82*

U.S. Cl. 181—291 **32 Claims**



1. Sound-absorbing panel for use in clean-room environment comprising:

a fibrous core having a first extensive surface, a second extensive surface parallel to and spaced apart from said first extensive surface and a thickness being the perpendicular distance between said extensive surfaces;

a non-porous membrane being disposed to enclose said fibrous core, said membrane being attached to at least one of said extensive surfaces in a continuous pattern of closed geometric figures, the places of attachment defining the edges of said geometric figures, the membrane occupying the central portion of each of said geometric figures defining a diaphragm, the dimensions of said diaphragm being configured such that the low order natural frequencies of vibration of said diaphragm substantially corresponds to the sound wave frequency range to be absorbed.

4,553,632

AUTO-LEVELED CRANE BOOM MAN BASKETS

Edward E. Griffiths, 3200 Polaris St. #23, Las Vegas, Nev. 89102

Filed Apr. 6, 1984, Ser. No. 597,500

Int. Cl.⁴ B66F *11/04;* **G08B** *21/00*

U.S. Cl. 182—2 **6 Claims**

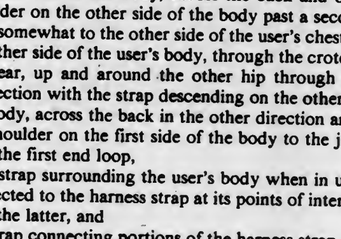
1. An automatically leveled man basket for attachment to the end of a crane boom, such as an electrically insulated crane boom for electrical isolation from ground, said basket including:

a D.C. power source at the basket;

first pivoting means pivotally mounting a lower end of the basket to the end of the boom

a D.C. powered linear power actuator pivotally connected to said boom and to a second pivoting means on the side surface of said basket for tilting said basket around said first pivoting means;

a gravity controlled tilt sensor attached to said basket, said sensor including a fluid chamber containing a weighted



paddle the upper end of which is coupled to a horizontally supported rotatable shaft;

a first potentiometer coupled to said rotatable shaft and said D.C. power source for producing an output signal representing the angle of said weighted paddle from the vertical;

a second potentiometer coupled to said D.C. power source and positioned for producing an output signal representing the angle of tilt of said basket about said first pivoting means; and

servo circuitry responsive to the output signals of said first and said second potentiometers for applying electrical power of appropriate polarity to said power actuator.

4,553,633

SAFETY HARNESS SYSTEM FOR CONFINED SPACE WORKERS

Timothy J. Armstrong, 15 Lisa Ct., Hamilton, Ontario, Canada (L8V 4P9), and Gerrard A. Wynen, 646 Maple Ave., Burlington, Ontario, Canada (L7S 1M6)

Filed Aug. 13, 1984, Ser. No. 640,650

Int. Cl.⁴ A62B *1/06, 35/00*

U.S. Cl. 182—3 **4 Claims**

1. In a safety body harness for use by workers operating in confined spaces comprising:

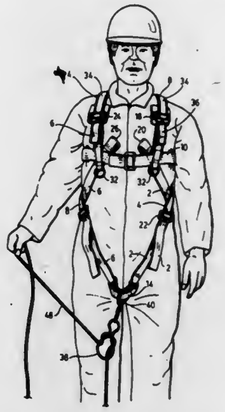
a harness strap extending when in use past a junction of a first end loop in front of and somewhat to a first side of a user's chest, descending downwardly and around said first side of the user's body, through the user's crotch from the rear, up and around the hip on said first side of the body through a cross connection with the strap descending on said one side of the body, across the back and over the shoulder on the other side of the body past a second end loop somewhat to the other side of the user's chest, round the other side of the user's body, through the crotch from the rear, up and around the other hip through a cross connection with the strap descending on the other side of the body, across the back in the other direction and over the shoulder on the first side of the body to the junction with the first end loop,

a chest strap surrounding the user's body when in use, and connected to the harness strap at its points of intersection with the latter, and

a seat strap connecting portions of the harness strap passing beneath the buttocks of the user;

the improvement comprising:

a first additional cross strap connecting portions of the harness strap in front of the crotch of the user; and



a second additional cross strap connecting portions of the harness strap behind the neck of the user.

4,553,634

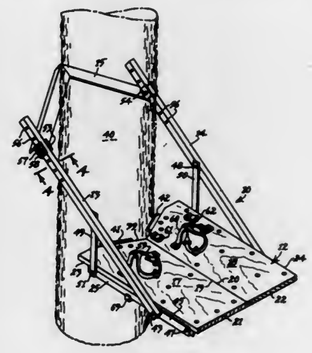
TREE STAND

Manuel E. Roberts, 4309 Westlawn Dr., Nashville, Tenn. 37209, and Thomas W. Ketchum, Hannah Ford Rd., Pegram, Tenn. 37143

Filed Feb. 26, 1985, Ser. No. 705,784

Int. Cl.⁴ A47C *9/10;* **A45F** *3/26;* **A01M** *31/02*

U.S. Cl. 182—134 **14 Claims**



1. A tree stand comprising:

(a) a platform having a rear edge for engaging a tree trunk, a front edge, a pair of opposed straight, parallel side edge portions, and top and bottom surfaces,

(b) a pair of opposed elongated support arms, each arm having a front and rear end portion and an intermediate portion,

(c) a pair of struts, each strut having upper and lower ends,

(d) first means pivotally connecting each of the upper ends of said struts to an intermediate portion of a corresponding support arm,

(e) second means pivotally connecting each of the lower ends of said struts to a rear portion of the corresponding side edge portion of said platform,

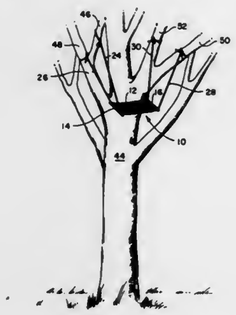
(f) pivotal mounting means for mounting the front end portions of both said support arms for swinging movement in planes normal to said platform and parallel to said side

edge portions, whereby said support arms may be moved between an operative position inclined upward and rearward from said platform and extending rearward behind said rear edge, and a collapsed position in which said support arms lie substantially colinearly of said corresponding opposite side edge portions,

(g) a cross bar having opposite end portions and adapted to engage a tree trunk,

(h) connector means for adjustably connecting the opposite end portions of said cross bar to said pair of support arms, to position said cross bar against and behind a tree trunk straddled by said support arms and engaged by said rear edge of said platform.

4,553,635
PORTABLE TREE STAND
Vaino A. Johnson, 215 Rankin St., Rockland, Me. 04841
Filed Apr. 25, 1985, Ser. No. 727,106
Int. Cl.[4] A47C *9/10*; A45F *3/26*; A01M *31/02*
U.S. Cl. 182—187 **3 Claims**



1. A portable tree stand having a generally rectangular seat, for use by hunters, nature observers and the like, comprising:

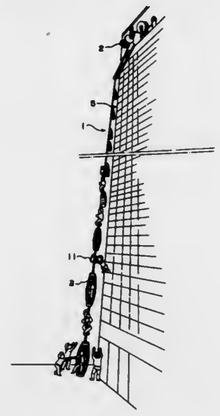
a pair of rigid structural elements adjacent opposite side edges of said seat, each said structural element defining a through opening generally transverse to the axis of said element adjacent each end thereof, at the corners of said seat,

at each side of said seat, attachment means consisting of first and second lengths of rope, each said length of rope having a center portion extending parallel to said structural element and forming a side edge of said seat along the inside of the respective structural element, and said lengths of rope, at both ends of each said center portion, extending through said openings in the respective structural elements, the free ends of said ropes adapted for attachment to said tree,

the seat extending between the side edges formed by the center portions of said ropes comprising a multiplicity of crossed seat cords, said cords being affixed to each other at their intersections to form a weight-supporting mesh, and said seat being affixed to the center portions of the ropes at the side edges of said seat, at the corners of said seat, ends of said cords extending through said openings in said rigid structural elements and joined to said first and second ropes outside said rigid structural elements, the means joining said ropes and said cords being of a size relative to the openings in said elements to prevent movement of said structural elements outwardly, along the free ends of the first and second ropes, away from the side edges of said seat,

whereby the seat is adapted to be suspended in a tree by attachment of the free ends of the first and second ropes extending from adjacent the corners of the seat to branches of the tree, and, upon removal from the tree, the tree stand is further adapted to be rolled into a compact package for ease of carrying.

4,553,636
LIFESAVING APPARATUS FOR ESCAPING FROM A BUILDING
Hideo Itoh, 10 27-chome, Kita 7 Jo Nishi Chuo-ku Sapporo City Hokkaido; Hideki Itoh, 21 11-Chome, Kita 23 Jo Nishi Kita-ku Sapporo City Hokkaido, and Hideya Itoh, 10 27-Chome Kita 7 Jo Nishi, Chuo-ku Sapporo City Hokkaido, all of Japan
Filed Apr. 3, 1984, Ser. No. 596,351
Claims priority, application Japan, Apr. 25, 1983, 58-61870
Int. Cl.[4] A62B *1/02*
U.S. Cl. 182—231 **10 Claims**



1. A lifesaving apparatus for providing quick escape from the upper floors of a tall building, said apparatus including

a hoisting device positionable on the building at a point above the floors thereof from which escape is desired,

a fire-resistant rope element connected to said hoisting device so as to be raised and lowered with respect to the ground by said hoist device, said rope element including at least one attachment means, and

at least one container device which is removably attachable to an attachment means on said rope element, each container device including an upwardly open, bowl-shaped bottom, a downwardly open, bowl-shaped top, a hook device attached to said top, and a collapsible, fireproof wall means connected between said bottom and said top, said collapsible, fireproof wall providing a closable entry opening.

4,553,637
POLLUTION INHIBITOR PACKING NUT
Mark Tanner, Rte. 5, 412 Canal St., Houma, La. 70360
Filed Mar. 29, 1984, Ser. No. 594,788
Int. Cl.[4] A47L *25/00*; F16N *31/02*
U.S. Cl. 184—15.1 **6 Claims**

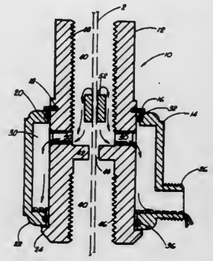
1. A wireline cleaning unit, comprising:

a. a packing nut having a longitudinal bore therethrough;

b. means in said bore for removing fluid from a wireline running through said bore;

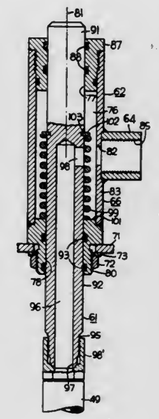
c. means for channeling said fluid out of said longitudinal bore; and

d. means for receiving and channeling said fluid from said longitudinal bore to a container comprising



a housing in sealed engagement around said packing nut, the walls of said housing defining a chamber around said packing nut.

4,553,638
HOSE TENSIONING DEVICE
William C. Ray, Cedar Lake, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jul. 13, 1984, Ser. No. 630,746
Int. Cl.[4] B66B *9/20*
U.S. Cl. 187—9 E **8 Claims**



1. A hose tensioning device for a flexible hose comprising:

a pair of relatively reciprocatable fluid conveying elements, one of said elements being adapted for rigid mounting on a support and including wall means defining a passage therethrough including cylindrical surfaces defining coaxial cylindrical bores adjacent opposite ends of said passage and a port at one side of said one element in fluid communication with an intermediate part of said passage and adapted for connection to a fluid conduit,

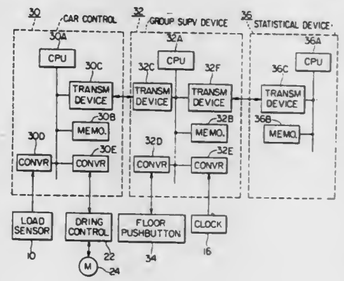
the other of said elements including cylindrical portions complementary to and slidingly engaging said cylindrical surfaces and having an end portion extending in one axial direction beyond said one element,

said other element including wall means defining an axial port in said end portion, a radial opening in an intermediate part of said other element, said intermediate part disposed within said one element and an interior passageway extending between and interconnecting said axial port and said radial opening,

said end portion being adapted for connection to a flexible hose extending in said one axial direction in generally aligned relation to said bores, and

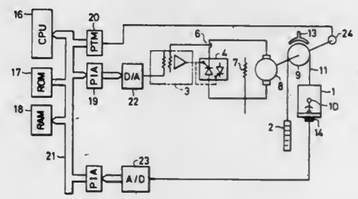
resilient biasing means interposed between said elements operative to urge said other element axially in an axial direction opposite to said one axial direction whereby said hose is tensioned.

4,553,639
ELEVATOR SUPERVISION SYSTEM
Kenichi Uetani, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1984, Ser. No. 577,781
Claims priority, application Japan, Feb. 21, 1983, 58-27274
Int. Cl.[4] B66B *1/18*
U.S. Cl. 187—29 R **5 Claims**



1. An elevator supervision system for supervising the operation of elevator cars by determining statistics of past traffic statuses of said elevator cars with respect to a time thereof on every day by a statistical device, and for predicting a present or a future traffic status of said elevator cars from the results of said statistics, which system comprises a traffic pattern sensing means for sensing the occurrence of a load on said elevator car which is not less than a predetermined magnitude and for also sensing the absence of said elevator cars with said loads which are not less than said predetermined magnitude, said traffic pattern sensing means recording a time of the occurrence of said load and a time of the absence of said elevator cars with said loads, and a traffic pattern selecting means for predicting a time of selection of a present or a future traffic pattern of said elevator cars on the basis of said recorded times.

4,553,640
CONTROLLER FOR ELEVATOR
Hiromi Inaba; Seiya Shima, both of Katsuta; Takeki Ando, Naka; Toshiaki Kurosawa, Katsuta; Yasunori Katayama, Hitachi; Takanobu Hatakeyama, and Sadao Hokari, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 1, 1982, Ser. No. 413,820
Claims priority, application Japan, Sep. 4, 1981, 56-138448
Int. Cl.[4] B66B *1/28*
U.S. Cl. 187—29 R **18 Claims**



1. In an elevator system consisting of an elevator car that services a plurality of floors, a rope attached to the car at one end and a counterweight at the other, and a motor for driving

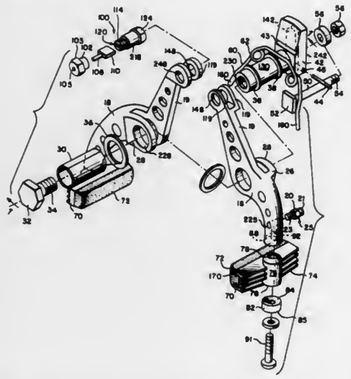
the elevator car through the rope; an elevator controller comprising means for generating an acceleration command for the elevator car and a means for directly controlling the motor according to the acceleration command.

4,553,641

HAND-OPERATED BICYCLE BRAKE ASSEMBLY

Edward L. Scott, South Highway 75, Ketchum, Id. 83340, and Walter D. Teague, Jr., 155 Tweed Blvd., Nyack, N.Y. 10960

Filed Sep. 22, 1983, Ser. No. 534,678
Int. Cl.[4] B62L *1/00, 1/10*
U.S. Cl. 188—24.22 **22 Claims**



1. A hand-operated bicycle brake comprising:
a pair of caliper arm means of complementary, similar construction for effecting a braking action;
means for mounting a brake shoe at one end of each of said pair of caliper arm means;
means at the opposite end of each pair of caliper arm means for attaching actuating cable structure thereto;
bearing means for pivotably supporting said pair of caliper arm means in an interengaged manner from a bicycle frame;
said means for attaching actuating cable structure to said caliper arm means including cable clamp structure comprising a complementary nut and bolt, and cable clamping means therebetween;
said cable clamping means comprising said bolt having a threaded projection extending therefrom with a slot extending from the outer end of said projection toward the bolt head, and said nut having an internally threaded portion for complementary threaded engagement with the threaded projection of said bolt, and means on said nut for squeezing the cable and locking it in position as the nut and bolt are screwed together; and
said means for squeezing and locking the cable including a clamping block attached to the nut, said clamping block being rotatably mounted on the nut.

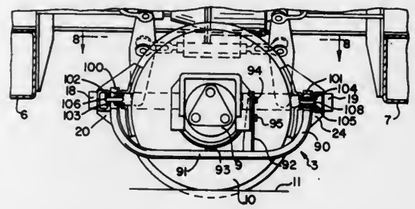
4,553,642

BRAKE ARRANGEMENT FOR SINGLE AXLE WHEEL TRUCK OF RAILWAY CAR

Donald B. Yates, Homewood, Ill., assignor to Pullman Standard Inc., Chicago, Ill.

Filed Oct. 17, 1983, Ser. No. 542,443
Int. Cl.[4] B61H *13/36*
U.S. Cl. 188—56 **17 Claims**

1. In a brake arrangement for a single axle wheel truck for a railway car having a car body portion, said truck having a wheel and axle assembly including an axle having a wheel mounted adjacent an end portion, said wheel having a braking surface and said end portion of said axle being rollingly engaged with an axle housing, the improvement comprising:
a pair of brake beams, each of said brake beams being positioned on opposite sides of said axle and having a brake head for brakingly contacting said braking surface on said wheel;
means for movably suspending said brake beams from said body portion of said car for enabling said brake beams to move laterally and longitudinally with respect to said body portion of said car;
means for selectively forcing said brake heads of said brake beams into braking engagement with said braking surface of said wheel, said forcing means being movingly supported on said body portion of said car and on said brake beams; and



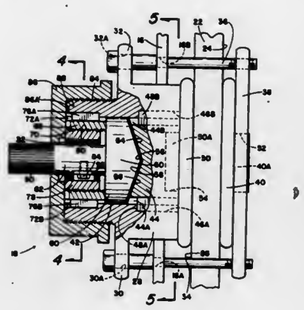
engaging means being connected to said brake beams and said axle housing and engaging each of said brake beams to said axle housing for causing said brake beams to move with said wheel and axle assembly when said wheel and axle assembly moves laterally and longitudinally with respect to said body portion of said car for maintaining said brake heads aligned with said braking surface on said wheel under substantially all operating conditions of said wheel truck, and
said engaging means having means limiting lateral and longitudinal movement of the brake beams relative to the axle housing whereby said brake beams are forced to move with said wheel assembly and are able to move with respect to said body portion of said railway car for maintaining said brake beams operatively aligned with said wheel assembly.

4,553,643

DISC BRAKE FOR TRUCKS

Charles F. Wilcox, Box 3, Bartlesville, Okla. 74003

Filed Nov. 9, 1983, Ser. No. 549,796
Int. Cl.[4] F16D *65/56*
U.S. Cl. 188—71.9 **3 Claims**



1. A brake system for a vehicle having an axle rotatably supporting a wheel hub, comprising:
a brake disc coaxially positioned on a vehicle axle, the disc having inboard and outboard parallel planar surfaces;

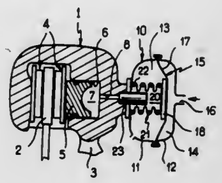
a housing supported by the vehicle in proximity to said disc, the housing having a forward end and a rearward end, the rearward end facing said disc, the housing having an opening therein the longitudinal axis of which is perpendicular the disc planar inboard surface;
a pad support slideably and non-rotatably received in said housing opening at the housing rearward end, the pad support on its forward end being defined by two planes intersecting a plane of the pad support longitudinal axis at equal angles whereby in cross-section the pad support forward end defines an obtuse V;
an actuator rotatably supported within said housing opening having a shaft portion extending externally of the housing forward end, the actuator having a rearward face defined by two planes intersecting at equal angles to a plane of the shaft axis, the end surface of the actuator defining an obtuse V, the rearward end face of the actuator engaging said pad support forward end;
a first brake pad affixed to said pad support rearward end;
an outboard pad support means affixed to said housing and extending past said disc outboard planar surface;
a second brake pad affixed to said outboard pad support mean spositioned in close proximity to said disc outboard surface, whereby when said actuator shaft is rotated said actuator rearward face reacts with said first pad support forward face to displace said pad support towards said disc inboard surface and as said housing is deflected by contact of said first pad with said disc force is applied to move said second pad against said disc outboard surface;
a tubular actuator locator slideably and non-rotatably supported within said housing opening having a rearward end in engagement with said actuator forward end, the interior tubular surface being threaded;
a tubular ratchet member having external threads and being threadably positioned within said tubular actuator locator, the interior diameter of the ratchet member being greater than the external diameter of said actuator shaft and having paralleled, evenly spaced slots therein in planes of the tubular axis, said actuator locator and ratchet member being axially concentric about said actuator shaft; and
a pawl member affixed at one end to said actuator shaft and extending in a plane perpendicular the shaft axis, the other end engaging said slotted interior surface of said ratchet member.

4,553,644

HYDRO-PNEUMATIC BRAKING DEVICE

Carlos M. Folch, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Apr. 5, 1984, Ser. No. 597,147
Claims priority, application Spain, Apr. 8, 1983, 521783
Int. Cl.[4] F16D *65/20*
U.S. Cl. 188—72.4 **8 Claims**



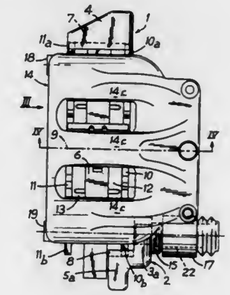
1. A hydro-pneumatic braking device, comprising at least one friction member mounted adjacent a rotatable component to be braked, a hydraulic operating device mounted adjacent said friction member and operable by a liquid under pressure to urge said friction member into braking engagement with said rotatable component, and pneumatic actuator means for supplying liquid under pressure to said hydraulic operating means, said pneumatic actuator means including a casing mounted adjacent said hydraulic operating device, an elastic bellows mounted within said casing and defining a hydraulic chamber within said bellows, said hydraulic chamber being in fluid communication with the hydraulic operating device, said bellows cooperating with said casing to define another chamber therebetween, a movable wall structure mounted in said casing and extending transversely across said casing and cooperating with the casing to divide a pneumatic section out of said another chamber, means communicating said pneumatic section with a source of gas under pressure, said bellows having a transverse wall in contact engagement with said movable wall to permit movement of said movable wall to contract said bellows when gas under pressure is communicated into said pneumatic section.

4,553,645

DISC BRAKE

Jean-Claude Méry, Pavillons S/Bois, France, assignor to Allied Corporation, Morristown, N.J.

Filed Jan. 31, 1984, Ser. No. 575,619
Claims priority, application France, Feb. 2, 1983, 83 01621
Int. Cl.[4] F16D *65/09*
U.S. Cl. 188—73.34 **4 Claims**



1. Disc brake of the type consisting of a fixed support or yoke (2) provided with at least one lateral web (3) and end arms (4,5) having transverse guide housings (7,8), a rotating brake disc (6) positioned beside at least one lateral web (3) of the fixed support (2) and covered by at least one of the end arms (4,5) of the fixed support (2), a pair of friction pads (12,13) positioned on each side of the brake disc (6) and each provided with a lining carrier plate (10 or 11) of which at least one end (10*a*, 10*b* or 11*a*, 11*b*) is mounted and guided in a direction parallel to the axis (9) of the brake disc (6) in one of the transverse guide housings (7,8), together with a caliper (14) which, firstly, covers the friction pads (12,13) and the corresponding portion of the brake disc (6) and secondly, by means of a single pin (15), is mounted on the fixed support (2) so that it is able to move in a direction parallel to the axis (9) of the brake disc (6) under the action of an actuator (16) incorporated in said caliper (14), the caliper (14) also having, on the outer side (14*b*) associated with the outer pad (13), a locking means (18) such as a threaded bolt, whose free end connects the caliper to the outer lining carrier plate, said bolt having an axis offset from the axis of said pin so as to prevent any undersirable pivoting of the caliper (14), characterized in that the single pin (15), viewed in the direction of forward motion (F), is positioned opposite the rear end portion of the inner friction pad (12) in such a way that its orthogonal projection onto the brake disc (6) is at least partially in the path of the latter, and taken in the direction of motion, slightly downstream of the corresponding guide housing (8) made in the fixed support (2), the fixed support (2) having the shape of an L so that its rear arm (5) only extends as far as the inner surface of the brake disc (6) and that the rear end (11*b*) of the outer lining carrier plate (11) has no corresponding guide housing, and in that the caliper (14) incorporates on the outer side (14*b*), a removable suspension means

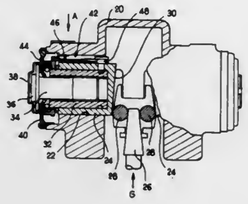
having an axis (19) securing the rear end portion of the outer lining carrier plate (11) to the outer side of the caliper to secure said outer lining carrier plate thereto, the axis of said suspension means being coaxial with the axis of said pin.

4,553,646

BRAKE MOTOR WITH AUTOMATIC ADJUSTMENT

Jean-Jacques Carré , Le Raincy, and Pierre Pressaco, La Courneuve, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed May 21, 1984, Ser. No. 612,942
Claims priority, application France, May 31, 1983, 83 08975
Int. Cl.⁴ F16D *65/56*
U.S. Cl. 188—196 BA **11 Claims**



1. Brake motor with automatic adjustment of the type incorporating a screw/nut system, the lengthening of which is controlled by a device with a toothed wheel and with a pawl which are sensitive to relative axial displacement between a control piston and a fixed body receiving said piston, characterized in that said pawl is associated with said piston to move axially therewith by means of a pivot forming a knuckle, which is functionally integral with said piston, in that said pawl

has a slope interacting elastically with a part fixed to said body, to convert said relative axial displacement into a rotary movement of a portion of said pawl, in that said pawl is applied elastically against the toothed wheel associated with said nut and in that said pivot incorporates

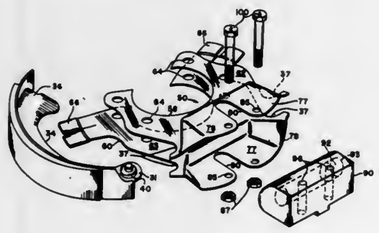
a portion of which is slidable in a groove formed in the body, thus ensuring circumferential relative positioning between the body, the piston and the slope.

4,553,647

WHEEL CYLINDER AND TORQUE PLATE CONSTRUCTION

Robert Spaargaren, Granger, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Apr. 5, 1984, Ser. No. 597,146
Int. Cl.⁴ F16D *65/14*
U.S. Cl. 188—206 R **4 Claims**



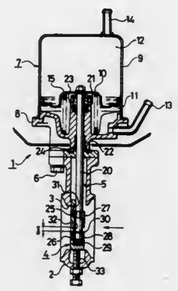
1. A wheel cylinder and torque plate combination for a drum brake assembly wherein the wheel cylinder includes an actuating piston, said combination including two torque plate parts each comprising a central planar portion affixed to the central planar portion of the other part and to a wheel axle housing or the like, one part having outwardly extending ears with each ear axially parted to provide a space for receiving a portion of an associated brake shoe web therebetween, each part having circumferentially spaced-apart notched portions each oppositely disposed and axially spaced-apart from a notched portion of the other torque plate part and for receiving a brake shoe web between the adjacent torque plate parts, the axially spaced-apart notched portions being shaped to provide curved recesses with each pair of recesses receiving therein a pin extending from an associated brake shoe, and a wheel cylinder housing portion comprising a surface disposed in a plane axially spaced-apart from the plane of the associated central planar portion, the wheel cylinder housing portions having a wheel cylinder with through passages disposed therebetween so that said actuating piston engages an associated brake shoe web extension disposed between said torque plate parts, and the spaced-apart housing portions having openings and interconnected by a pair of connectors extending through the openings of the portions and the through passages of the wheel cylinder in order to secure together and strengthen the housing portions and fixedly capture the wheel cylinder therebetween so that torque received from a pin and associated curved recesses is transmitted to said central planar portions of the torque plate.

4,553,648

EXHAUST BRAKE APPARATUS OF SLIDING TYPE

Isao Suzuki, and Kenichi Abe, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,489
Claims priority, application Japan, Aug. 3, 1983, 58-121114[U]
Int. Cl.⁴ F02D *9/06*
U.S. Cl. 188—273 **3 Claims**



1. An exhaust brake apparatus of sliding type including a valve body which slidably receives a main valve therein for opening or closing an exhaust gas passage, a vent hole formed in the main valve to permit a communication thereacross through the exhaust gas passage, a sub-valve disposed on the main valve so as to be capable of relative displacement within a limited extent thereto for opening or closing the vent hole, and an actuator including an operating rod which drives the sub-valve, the arrangement being such that whenever the exhaust gas passage is to be closed, the main valve is driven to close the exhaust gas passage while simultaneously causing the sub-valve to close the vent and whenever the exhaust gas passage is to be opened, the sub-valve is moved out of its position closing the vent hole before the main valve is driven;

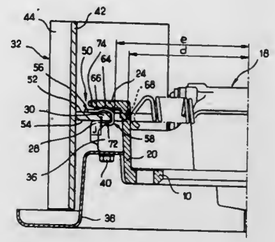
characterized in that the main valve is formed with a plurality of vent holes, which are individually opened or closed by a plurality of sub-valves mounted on the operating rod.

4,553,649

AXIAL RETENTION OF THE SHOE OF A DRUM BRAKE AND A DRUM-BRAKE SHOE EQUIPPED WITH AN AXIAL-RETENTION DEVICE

Ronald D. Bailey, Elyria, Ohio; Jacques Charbonnier, Clichy, and Michel Chotard, Drancy, both of France, assignors to Allied Corporation, Morristown, N.J. and Societe Anonyme D.B.A., Paris, France

Filed Dec. 2, 1983, Ser. No. 557,563
Claims priority, application France, Mar. 11, 1983, 83 04044
Int. Cl.⁴ F16D *65/02*
U.S. Cl. 188—340 **6 Claims**



1. Drum brake assembly comprising a fixed support, a pair of brake shoes slidably mounted on said fixed support, each of said shoes having an end adjacent a corresponding adjacent end of the other brake shoe, a brake motor located between said adjacent ends, each of said brake shoes including an arcurate web having a pair of opposite faces, boss means on said fixed support slidably engaging one face of said webs, said fixed support including arm means including a radially projecting portion cooperating with the boss means for receiving said webs therebetween when said brake shoes are installed on the fixed support, and an elastic retention member including a locking portion engaging said one face of said web before said brake shoes are installed on the fixed support and a pair of resilient arm members extending from the locking portion engaging the other face of said web, said resilient arm members engaging said web on portions of the latter offset from the portion of the web engaged by the locking portion to thereby prestress the retention member against said web, said retention member including release means for cooperating with the radially projecting portion of the arm means to release said locking means from said one face of said web when the brake shoes are installed on said fixed support.

4,553,650

DUAL FUNCTION BRAKE PEDAL PROVIDING SEPARATE CONTROLS FOR HYDRAULIC AND MECHANICAL BRAKES

Edward H. Warwick, Englewood, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

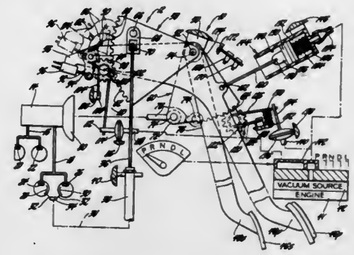
Filed Mar. 7, 1983, Ser. No. 472,711
Int. Cl.⁴ B60K *41/28*; G05G *5/24, 13/02*
U.S. Cl. 192—4 A **5 Claims**

1. A brake pedal arm service brake and parking brake arrangement for a motor vehicle comprising:

a vehicle brake having a service brake operator and a parking brake operator;

a brake pedal arm assembly having first and second pedal arms selectively movable together from a first position to a second position to cause operation of said service brake operator, said first pedal arm being selectively movable to a third position and selectively movable from said third position toward said first position to cause operation of said parking brake operator;

each of said first and second pedal arms including pedal positioned for operative foot operation, and means including portions of said first and second pedal arms acting in overlapping relation so that both of said pedal arms are moved together between said first and second positions while permitting said first pedal arm to be moved between said first and third positions without corresponding movement of said second pedal arm, and



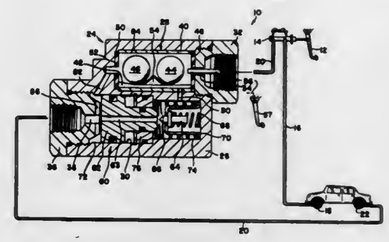
means responsive to establishment of a first vehicle control condition to move said first pedal arm to said third position and to disestablishment of the first vehicle control condition to move said first pedal arm from said third position to said first position and to release said parking brake operator.

4,553,651

COMBINATION HILL HOLDER AND PROPORTIONING VALVE MECHANISM

Robert F. Gaiser, Stevensville, Mich., and Lawrence R. Myers, South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Sep. 2, 1983, Ser. No. 528,812
Int. Cl.⁴ B60K *41/24*; B60T *8/00*
U.S. Cl. 192—13 A **9 Claims**



1. A control device for a vehicle having a clutch-like assembly and a brake system wherein fluid pressure is generated in a master cylinder and communicated to a front brake and a rear brake, the control device being disposed in a connecting line between the master cylinder and rear brake so that fluid pressure generated in the master cylinder is communicated through the line to the rear brake via the control device, the control device comprising a proportioning valve responsive to a brake application to selectively alter fluid communication from the control device to the rear brake, and valve means associated with the proportioning valve to control operation of the latter, characterized in that said control device defines a pair of independent fluid paths communicating said master cylinder with said rear brake, said proportioning valve disposed within one of said pair of independent fluid paths and said valve means disposed in the other of said pair of independent fluid paths, said valve means including a pair of valve members and one of said valve members operating in response to the attitude of the vehicle and to the clutch-like assembly in order to close and maintain fluid pressure within the rear brake when the vehicle is disposed on a hill, and the other of said pair of valve members being inertia responsive in order to close and prevent fluid

communication through said other independent fluid path and cause fluid communication through said one independent fluid path when deceleration of the vehicle is above a predetermined value.

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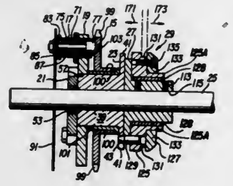
COUPLING MECHANISM

George Fallos, Easton, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Continuation-in-part of Ser. No. 249,562, Mar. 31, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,386

Int. Cl.⁴ F16D *7/04, 67/02;* **F16H** *55/30*

U.S. Cl. 192—18 R **15 Claims**



1. A coupling device for selectively connecting driving machinery to driven machinery and for selectively imparting motion to said driven machinery, said coupling device comprising:

support means;

driven means mounted in said support means;

driving means, for imparting motion to said driven means when said driven means engages said driving means, said driving means having a first portion thereof engaged by a drive chain and a second portion thereof selectively engageable with said driven means, said driving means second portion being connectable to said driving means first portion, said driving means second portion comprises:

connector means adapted to selectively connect said driving means second portion to said driving means first portion so long as the torque of said driving means does not exceed a predetermined limit;

carriage means whereon said connector means is mounted;

hub means adapted to be engaged by said driven means; and,

clamping means, said clamping means being secured to said hub means and to said carriage means, said clamping means having means for adjusting the angular relationship of said carriage means with respect to said hub means, and thereby means to permit the adjustment of the positional relationship of said driving means first portion connectable to said driving means second portion with respect to said drive chain engaging said driving means first portion.

4,553,653

RAPID-STOP TORQUE-TRANSMITTING DEVICE

Rudolf Schneider, Meckenbeuren, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshaften, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,340

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116902

Int. Cl.⁴ B60K *41/24*

U.S. Cl. 192—18 B **3 Claims**

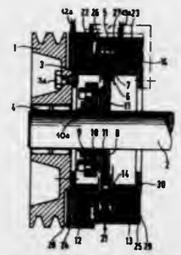
1. A torque-transmitting device for transmitting a torque from a driving element to a driven element rotatable about an axis and for the rapid braking of said driven element, said device comprising:

an armature disk having

an annular inner portion fixed to said driven element,

an annular outer portion surrounding said inner portion and mounted to shift axially relative to said inner portion, said inner portion having outwardly extending radial arms interdigitating with but spaced from inwardly extending radial arms of said outer portion, said arms being coplanar, and

a pair of thin circularly continuous spring rings composed of spring metal flanking said arms and interconnecting same whereby said outer portion can shift axially relative to said inner portion, said spring rings having identical inner and outer diameters and being connected to said arms along a circle centered on said axis;



a first annular member forming a pair of annular magnetic poles connected to said driving element and juxtaposed with said outer portion on one side thereof;

a fixed second annular member having a pair of annular poles juxtaposed with said outer portion on an opposite side thereof; and

selectively operable electromagnetic coils respectively associated with said members for energizing the respective pairs of poles to displace said outer portion into selective engagement with said first member to angularly couple said elements for torque transmission, and into engagement with said second member to brake said driven element.

4,553,654

INSTALLATION FOR CONTROLLING A CLUTCH IN RESPONSE TO DRIVE PEDAL POSITION AND ENGINE SPEED

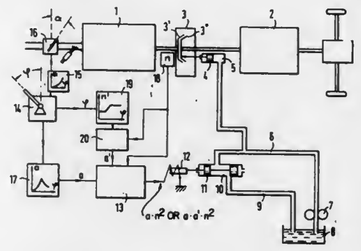
Gerd Bofinger, Stuttgart; Norbert Stelter, and Rainer Wüest, both of Weissach, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,727

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209645

Int. Cl.⁴ B60K *41/02*

U.S. Cl. 192—0.076 **16 Claims**



1. An installation for control of a motor vehicle drive unit having a reciprocating piston engine, clutch means and a transmission, comprising pick-up means for sensing engine rotational speed (n), an actuating means for operatively controlling the force acting on the clutch means, a drive pedal pick-up means for sensing a position of a drive pedal, said drive pedal controlling throttle valve position of the engine and therewith the engine torque by way of a first characteristic curve converter means, the drive pedal pick-up means applying a signal (a) dependent on the sensed drive pedal position by way of a second characteristic curve converter means to a control means, said control means being operatively connected to the rotational speed pick-up means, and said control means being operable to produce a signal for the actuating means of the clutch means which is equal to the product $a \cdot n^2$ so that torque transmitted by the clutch means is substantially proportional to $a \cdot n^2$.

4,553,655

TWO-STAGE CLUTCH DAMPER ASSEMBLY

Thaddeus Lech, Jr., Farmington Hills, and Paul L. Schmitz, Warren, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 30, 1983, Ser. No. 556,475

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **14 Claims**



1. A two-stage clutch damper assembly for an automotive vehicle clutch driving a transmission input shaft, including a hub assembly having a barrel splined onto the input shaft and a radial flange having circumferentially spaced windows therein, a clutch plate carrying friction facings at the outer periphery thereof, a spring retainer plate secured to the clutch plate to sandwich the hub flange therebetween, said plates having circumferentially spaced windows therein axially aligned with said hub flange windows, and damper springs received in each set of windows, the improvement comprising a cam and detent arrangement between said clutch plate and hub, a plurality of axially extending compression springs between said hub and one of said cam, spring retainer plate or clutch plate, said hub flange windows extending circumferentially beyond said plate windows to allow limited rotation of the plates relative to said hub without compression of said damper springs, said cam and detent arrangement yieldably resisting said limited rotation.

11. A two-stage clutch damper assembly for an automotive vehicle clutch driving a transmission input shaft, including a hub assembly having a barrel splined onto the input shaft and a radial flange, a clutch plate carrying friction facings at the outer periphery thereof, a spring retainer plate secured to the clutch plate to sandwich said hub flange therebetween, said plates and hub flange having axially aligned sets of circumferentially spaced windows therein, and damper springs received in each set of windows, the improvement comprising a cam and ramp arrangement between said clutch plate and hub including a cylindrical cam splined onto said input shaft, axially aligned facing pockets formed in said cam and hub, and compression springs received in said pockets biasing said cam and hub apart, said hub flange windows extending circumferentially beyond said plate windows to allow limited rotation of said plates relative to said hub without compression of said damper springs, said cam and ramp arrangement yieldably resisting said limited rotation.

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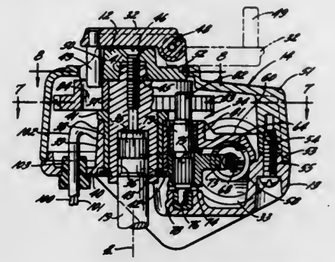
POWER ACTUATED OPERATOR FOR WINDOWS AND THE LIKE

Robert F. Lense, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Oct. 27, 1983, Ser. No. 545,780

Int. Cl.⁴ E05F *15/10*

U.S. Cl. 192—142 R **18 Claims**



1. A power actuated operator for a movable closure, said operator having, in combination, a housing, a driven member mounted on said housing and adapted to be coupled to the closure, a rotatable drive member journaled in said housing and connected to said driven member whereby turning said drive member operates said driven member and moves said closure, a motor disposed within said housing, a speed reducing transmission disposed within said housing and having an input member driven by said motor and an output member, clutch means selectively operable to couple and uncouple said drive member and said output member whereby said motor drives said driven member through said transmission and said drive member when said output member is coupled to the drive member, and a manual member operatively connected to said drive member to turn the latter and drive said driven member independently of said motor and said transmission when the drive member is uncoupled from the output member.

4,553,657

MAGNETICALLY SELECTIVE TOKEN SYSTEM

David F. Kilmartin, Glocester, R.I.; David F. Kilmartin, Jr., North Attleboro, Mass., and Albinas A. Cibulsky, North Providence, R.I., assignors to Kilmartin Industries, Inc., Attleboro, Mass.

Filed Feb. 10, 1984, Ser. No. 580,092

Int. Cl.⁴ G07D *5/08;* **G07F** *7/00*

U.S. Cl. 194—4 R **20 Claims**

1. A magnetically selective token system comprising:

(a) a magnetically responsive valid token having a nonmagnetically responsive peripheral portion; and

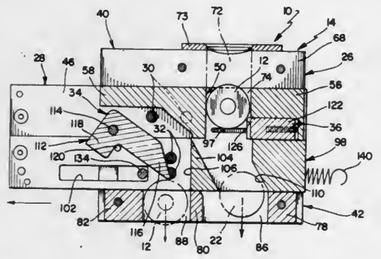
(b) a token acceptor comprising:

(i) an acceptor body made of nonmagnetically responsive material having a token inlet slot and first and second token outlet slots therein, said body also having an upper token station therein for receiving tokens from said inlet slot and a lower token station therein for receiving tokens from said upper station;

(ii) first magnetic means operative at said upper token station for magnetically communicating with the peripheral edge portions of a valid token positioned at said upper station but not with other portions of said valid token so that when said valid token is positioned at said

upper station it is substantially unaffected by said first magnetic means but so that when a magnetically responsive counterfeit token having a similar dimension and configuration to said valid token and having a magnetically responsive peripheral portion is positioned at said upper station it is retained at said upper station by said first magnetic means;

(iii) second magnetic means operative at said lower token station for magnetically communicating with the nonp-



eripheral edge portions of said valid token when it is positioned at said lower station to retain it at said lower station;

(iv) means operative for removing said counterfeit token from said upper station and for guiding it to said first outlet slot; and

(v) means operative for removing said valid token from said lower station and for guiding it to said second outlet slot.

4,553,658

APPARATUS FOR DEFLECTING ARTICLES

Markus Gasser, Gächlingen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

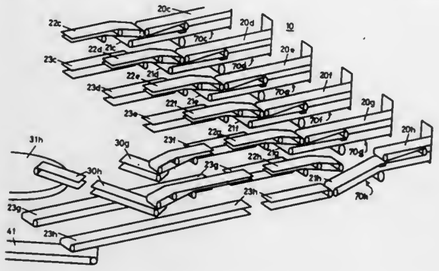
Filed May 3, 1983, Ser. No. 491,240

Claims priority, application Switzerland, May 3, 1982, 2707/82

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.⁴ B65G *47/46*

U.S. Cl. 198—369 **4 Claims**



1. An article processing line comprising:

(a) a plurality of continuously moving first conveyor means each having a discharge end and a first direction of conveyance; said discharge end having an advanced first position and a withdrawn second position; means for moving said discharge end of each said first conveyor means into and out of said first and second positions;

(b) a plurality of second conveyor means each having an inlet end and a second direction of conveyance; the inlet end of each of said second conveyor means being in a zone of the discharge end of an associated separate, single one of said first conveyor means; said first and second directions of conveyance of each associated said first and second conveyor means being substantially parallel to a common vertical plane; in said first position of the discharge end of any selected one of said first conveyor means the inlet end of the associated second conveyor means adjoins the discharge end of the selected first conveyor means for receiving articles directly therefrom; in said second position of the discharge end of any selected one of said first conveyor means the inlet end of the associated second conveyor means is operatively disconnected from the discharge end of the selected first conveyor means;

(c) a plurality of normally operating processing machines each associated with a respective second conveyor means for receiving articles therefrom;

(d) standby conveyor means situated underneath said second conveyor means for cooperating with each said first conveyor means;

(e) a standby processing machine associated with said standby conveyor means for receiving articles therefrom; and

(f) each said first conveyor means including a deflector conveyor portion adjacent the discharge end of each respective first conveyor means; each deflector conveyor portion being pivotal in a vertical plane to assume an upper position and a lower position; and means for pivoting each deflector conveyor portion into and out of said upper and lower positions; in said lower position the deflector conveyor portion being operatively connected with said standby conveyor means for receiving articles from the discharge end of the respective first conveyor means which has been moved to said second, withdrawn position and transferring articles to said standby conveyor means; in said upper position the deflector portion being inoperative relative to said standby conveyor means.

4,553,659

INSERTION APPARATUS

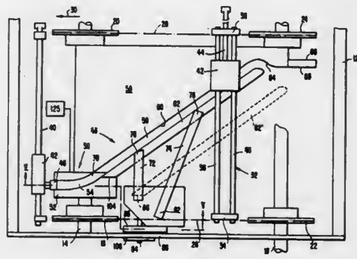
Werner Reim, Waldbronn, and Dieter Plüschow, Stutensee-Friedrichstal, both of Fed. Rep. of Germany, assignors to IWK Verpackungstechnik GmbH, Stutensee, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,369

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119081

Int. Cl.⁴ B65G *47/46*

U.S. Cl. 198—372 **23 Claims**



1. An insertion apparatus for ejecting products which are continuously supplied into containers, said apparatus comprising:

(a) ejection means arranged to move parallel to said products along an endless conveyor system;

(b) a directrix adapted to guide said ejection means laterally shift to said products, said directrix being inclined relative to the direction of movement of said product line; and

(c) means for bypassing the movement of said ejection means relative to said directrix whereby said ejection means moves independently thereof, said by passing means including

a guide curve adapted to guide the movement of said ejection means relative to said directrix, said guide curve being defined by a groove formed in a cylinder casing mounted on a guide cylinder, said guide cylinder being rotatable, whereby rotation of said guide cylinder from a normal operating position will cause said ejection means to bypass said directrix.

4,553,660

HANDLING ROD-LIKE ARTICLES

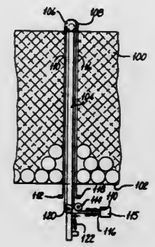
George R. Bennett, and Robert S. Day, both of London, England, assignors to Molins plc, London, England

Continuation of Ser. No. 453,091, Dec. 27, 1982, abandoned, which is a division of Ser. No. 90,432, Nov. 1, 1979, Pat. No. 4,366,895. This application Aug. 29, 1984, Ser. No. 645,178

Claims priority, application United Kingdom, Nov. 1, 1978, 42710/78

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—425 **20 Claims**



1. Apparatus for handling rod-like articles comprising means defining a path for rod-like articles in multi-layer stack formation, a separating device including at least two separate bands forming the respective outer sides of the device and guide means for guiding said bands respectively on paths which at least partially overlap in the region of said guide means, means for movingly projecting said device through said stack formation of articles across said path intermediate the ends of said path in a direction transverse to the lengths of the articles in said path and from one side of said path towards the opposite side to locally reduce the width of said path proportionally with said movement, and means for holding part of said bands stationary in said path as said device is moved across said path relative to the articles on either side of said separating device, so that both outer sides of the device comprise stationary parts of the respective bands when said separating device is projected across said path.

4,553,661

APPARATUS FOR HORIZONTALLY AND VERTICALLY TRANSPORTING EGGS WITHOUT DROPPING THEREOF

Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B.V., Aalten, Netherlands

Filed Nov. 17, 1983, Ser. No. 552,739

Claims priority, application Netherlands, Nov. 24, 1982, 8204580

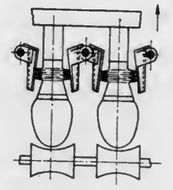
Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—428 **4 Claims**

1. Apparatus for horizontally and vertically transporting articles, such as eggs, without dropping thereof, comprising:

a. an intermittently substantially horizontally movable conveyor means having a plurality of holders, each designed to hold a single article, and each holder comprising at least two rotary portions, movable between a position in which it supports an article and an open position in which it releases an article; and

b. a transfer station into which said conveyor means transports the articles while the holders are in closed positions, said transfer station including a plurality of gripping means, one for each associated holder in the transfer sta-



tion, each gripping means gripping an article in a holder, while the holder is in a closed position, and after the holder is opened, each gripping means transporting the article substantially vertically downwardly through opened rotary portions of the associated holder, to minimize dropping and possible breakage of the article.

4,553,662

APPARATUS FOR FEEDING PIECES OF LAUNDRY ON A CONVEYOR

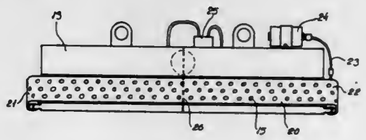
Jorn Munch Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Son Maskinfabrik A/S, Ronne, Denmark

Filed Sep. 7, 1983, Ser. No. 530,130

Claims priority, application Denmark, Sep. 14, 1982, 4093/82

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—456 **6 Claims**



1. In an apparatus for the centered feeding of pieces of laundry to a conveyor having a centerline comprising holding means for hangingly supporting a piece of laundry to be fed to said conveyor, said holding means comprising a hollow body having a front face with a plurality of apertures therethrough, said front face disposed transversely to said conveyor centerline, said holding means being reciprocally movable, parallel to said conveyor centerline, between a first position wherein said front face is in front of said conveyor and a second position wherein said front face is disposed above said conveyor; a vacuum source; valve means for connecting said vacuum source to said hollow body and controlling the application of vacuum to said hollow body; the improvement comprising:

said front face comprising a movable member having apertures therethrough, said movable member being movable transversely with respect to said conveyor centerline and said hollow body; and

displacement means for moving said movable member transversely with respect to said conveyor centerline,

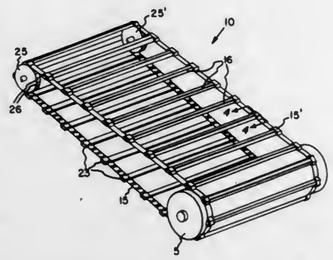
whereby an edge of a piece of laundry to be fed to said conveyor may be held against said movable member by vacuum pressure and centered with respect to said conveyor centerline by transverse movement of said movable member, when said holding means is in said first position, and then said holding means may be moved to said second position and said edge of said piece of laundry may be dropped upon said conveyor, by release of vacuum pressure, in centered relation thereto.

4,553,663

CONVEYOR FOR A CROP HARVESTER

David W. Johnson, Bennet, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 10, 1984, Ser. No. 609,041
Int. Cl.⁴ B65G *19/24*
U.S. Cl. 198—731 **11 Claims**



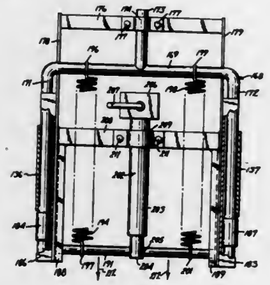
1. A crop conveying assembly comprising:
a plurality of side by side, spaced apart, flexible belts; and a plurality of connecting links positioned transversely between said side by side belts, each of said belts having an elastomeric body with a top surface, a bottom surface, a high modulus tensile member disposed within said elastomeric body, a plurality of longitudinally spaced lugs integrally molded to the elastomeric body to form the bottom surface, a plurality of longitudinally spaced raised cleats integrally molded to the elastomeric body to form the top surface, a plurality of said cleats having an aperture extending transversely therethrough and wherein the cleats of each belt are positioned such that the apertures therein are transversely aligned with the apertures of an adjacent belt and wherein the plurality of connecting links are positioned to transversely span the space between adjacent belts by removeably engaging the ends of the connecting links within the apertures of the belts.

4,553,664

APPARATUS FOR TENSIONING A BELT

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Continuation of Ser. No. 215,314, Dec. 11, 1980, abandoned, which is a division of Ser. No. 115,608, Jan. 28, 1980, Pat. No. 4,320,825. This application Jan. 3, 1984, Ser. No. 567,147
Int. Cl.⁴ B65G *23/44*
U.S. Cl. 198—814 **10 Claims**



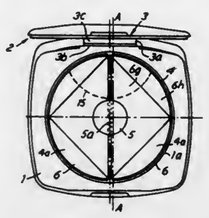
1. An apparatus for tensioning an endless belt comprising:
a fixed support having first and second opposite side members, pulley means for engaging an arcuate end section of an endless belt associated with said support, said belt being movable in a longitudinal direction, a U-shaped tensioning frame including first and second parallel legs connected by a transverse cross member and located adjacent said first and second opposite side members and movably mounted on said support, means rotatably mounting said pulley means on said tensioning frame, first guide means on the first and second support side members mounting said legs of the tensioning frame on said support for linear movement in a direction parallel to said legs to apply tension on the endless belt by shifting said pulley means carried thereby, a tension-enhancing element for said frame having first and second transverse ends, second guide means on the first and second support side members movably mounting the transverse ends of said element on the support for independent movement in the same direction of movement as said tensioning frame, biasing means disposed between said first and second parallel legs connecting said tensioning frame cross member with said tension-enhancing element to bias said tensioning frame in the direction to shift the pulley means to apply tension on the belt, expandable and contractible means disposed between said frame parallel legs having a fixed portion connected to said support and a movable portion connected to said tension-enhancing element, said expandable and contractible means being adjustable by movement of the movable portion with respect to the fixed portion to shift and hold said tension-enhancing element in a selected position relative to said support to adjust the biasing force of the biasing means, drive means including a motor and power transmitting means drivably connecting the motor to the pulley means for rotating said pulley means, and means mounting said motor on said tensioning frame whereby the motor, power transmitting means and pulley means move with the tensioning frame.

4,553,665

REFILLABLE CASE FOR FRESHEN-UP CLOTHS

Heinz H. Weick, 94 Rue de la Servette, 1202 Geneve; Walter Hesener, 66 Rue de la Prulay, 1217 Meyrin-Geneve, and Rolf Wattinger, Im Isisbuel 6, 8800 Thalwil, all of Switzerland

PCT No. PCT/CH82/00133, § 371 Date Aug. 17, 1983, § 102(e) Date Aug. 17, 1983, PCT Pub. No. WO83/02051, PCT Pub. Date Jun. 23, 1983
PCT Filed Dec. 16, 1982, Ser. No. 537,383
Claims priority, application Switzerland, Dec. 17, 1981, 8052/81
Int. Cl.⁴ A45D *37/00, 34/00*
U.S. Cl. 206—37 **10 Claims**



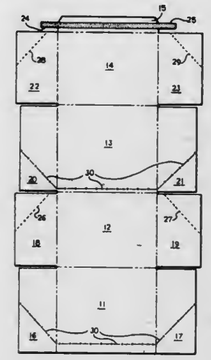
1. A refillable case for a plurality of liquid-impregnated, mutually independent, folded freshen-up cloths, the case having a shallow chamber for accommodating the cloths and comprising: a substantially flat shallow bottom shell having an interior curved peripheral upstanding wall defining an interior chamber having an opening; a substantially flat shallow cover shell engageable with the bottom shell to overlie the chamber over its entire area, the cover shell including an interior curved depending peripheral wall engageable with the peripheral wall in the bottom shell and being displaceable from a closed position in which it at least substantially gas-tightly closes the chamber, into an open position in which the opening of the chamber is exposed; a flat retaining member for retaining the freshen-up cloths and disposed within the plan outline of the chamber and lying substantially in the plane of the edge of the opening of the chamber, the retaining member overlying a portion of the area of the chamber and carried on a stem secured to the inner surface of the bottom shell, the retaining member extending substantially diametrically across the chamber and projecting for part of its area over at least a substantially half-round region of the plan outline of the chamber.

4,553,666

SHIPPING AND DISPLAY CARTON WITH CUT PROTECTION FOR CONTENTS

Ralph G. Gullikson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 4, 1985, Ser. No. 697,606
Int. Cl.⁴ B65D *5/54*
U.S. Cl. 206—44 R **4 Claims**



1. A display and shipping carton comprising a front, a top, a back and a bottom panel foldably connected together to form a tubular configuration with open ends, a partial panel connected to said bottom panel and glued to the inside of said front panel at the bottom thereof, a flap foldably connected to the ends of each front, top, back and bottom panel, said flaps being folded over to close said open ends of the tubular configuration with outside flaps being glued to underlying flaps to form closed ends of double wall thickness, a horizontal cut designating line marked across said front panel at a location overlying said partial panel, a horizontal cut designating line marked across the back panel at a position adjacent the top thereof, and diagonal, cut designating lines marked across the outside flaps extending from the ends of the cut designating line on the front panel to the end of the cut designating line on the back panel, and a diagonal perforated line in said underlying flaps in exact underlying registry with the cut designating lines in the outside flaps.

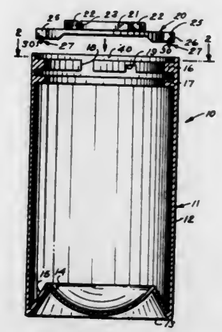
4,553,667

BOWLING BALL CARRYING CONTAINER

John E. Hudson, and David B. Yohe, both of Rte. 1, Box 68, Manton, Calif. 96059

Filed Dec. 27, 1983, Ser. No. 566,048
Int. Cl.⁴ B65D *1/16, 39/10, 85/00*
U.S. Cl. 206—315.9 **1 Claim**

1. A bowling ball carrying container, comprising, in combination, a hollow beer can shaped main body having a cylindrical side wall and a circular bottom wall, said bottom wall including an inwardly extending frustro-conical outer portion around a central outwardly extending rounder portion for mating a spherical contour of a bowling ball that is rested thereupon, an upper end of said main body having a full opening for receiving said bowling ball, a bowler's shoes and other accessories into said container, a removable lid for closing said opening, a pair of spaced apart, inwardly extending annular flanges around said opening for retaining said lid therebetween, a pair of radially outwardly extending projections on diametrically opposite side edges of said lid, a pair of diametrically opposite notches in an upper of said flanges for passage of said projections therethrough and a pair of diametrically spaced-apart recesses on an underside of said upper flanges for



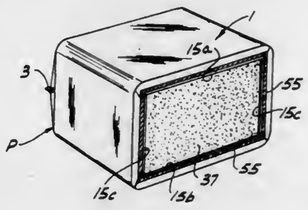
locking said projections therein, a spring-biased pin extending downwardly from each said projection for bearing against a top side of a lower of said flanges and raising said projections into said recesses for said locking; a handle upon a top of said lid, and a beverage brand name being printed on an outer side of said main body.

4,553,668

PACKING ARTICLES, SUCH AS PACKAGES OF ROLLS OF PAPER

Robert C. James, and Lloyd Kovacs, both of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed May 19, 1983, Ser. No. 495,976
Int. Cl.⁴ B65D *33/16*
U.S. Cl. 206—391 **22 Claims**



1. A package comprising:
a bag of flexible packaging material which is heat-sealable at least on the inside;
said bag being formed with a first end closure at one end and an open mouth at its other end;
product in the bag of generally rectangular shape in section transverse to the bag and of generally rectangular shape in section lengthwise of the bag thereby having four generally rectangular sides and first and second generally rectangular ends;
said first end closure of the bag being such as to enable opening up of the bag with portions of said flexible packaging material of the bag at said first end closure of generally rectangular shape corresponding to the shape of said first end of said product;
said product being packed in the bag with its said first end at said first end closure of the bag with said portions of said material of the bag at its said first end closure of generally rectangular shape corresponding to the shape of said first end of said product and generally flat at said first end of

said product, and with the bag generally tight girthwise around said four generally rectangular sides of said product;

the height of the bag being such in relation to the height of the product that, with the bag at its said first end closure of generally rectangular shape and generally flat at said first end of said product, the bag has a lip all around the bag at the mouth of the bag projecting beyond said sides of said product;

a flat closure panel inserted in the bag on said second end of said product;

said closure panel being generally rectangular in shape corresponding generally in shape to said second end of said product and having edges adjacent the edges of said second end of said product;

said closure panel being heat-sealable compatibly with the bag at least around the margin thereof on the ouside for heat sealing of said lip of the bag to said margin;

said lip providing four marginal portions of the bag at the mouth of the bag constituting flaps at each of the four edges of the closure panel;

each flap at any point thereof being of relatively narrow width substantially less than half the distance across the panel from said point;

said flaps being folded over on the outside of said closure panel overlying the closure panel all around the margin thereof and being heat-sealed to said margin thereby forming a second end closure, with a substantial portion of the panel exposed within said flaps.

15. The method of packaging utilizing a bag of flexible packaging material which is heat-sealable at least on the inside and which is formed with a first end closure at one end and an open mouth at its other end, said method comprising:

loading the bag with product through the mouth of the bag;

said product being of generally rectangular shape in section transverse to the bag and of generally rectangular shape in section heightwise of the bag thereby having four generally rectangular sides and first and second generally rectangular ends;

said first end closure of the bag being such as to enable opening up of the bag with portions of said flexible packaging material of the bag at said first end closure of generally rectangular shape corresponding to the shape of said first end of said product;

the product being loaded in the bag with its said first end first and at said first end closure of the bag with portions of the material of the bag at its said first end closure of generally rectangular shape corresponding to the shape of said first end of said product and generally flat at said first end of said product;

the girth of the bag and the girth of the product being such and the product being so loaded in the bag that the bag is generally tight girthwise around said four generally rectangular sides of said product;

the height of the bag and the height of the product being such that, with the bag at its said first end closure of generally rectangular shape and generally flat at said first end of said product, the bag has a lip all around the bag at the mouth of the bag projecting beyond said sides of said product;

inserting a flat closure panel in the bag to lie against said second end of the product;

said closure panel being generally rectangular in shape corresponding generally in shape to said second end of said product and having edges adjacent the edges of said second end of said product;

said closure panel being heat-sealable compatibly with the bag at least around the margin thereof on the outside for heat sealing of said lip of the bag to said margin;

said lip providing four marginal portions of the bag at the mouth of the bag constituting flaps at each of the four edges of the closure panel;

each flap at any point thereof being of relatively narrow width substantially less than half the distance across the panel from said point; and

folding said flaps over on the outside of said closure panel so that they overlie the closure panel all around the margin thereof and heat-sealing said flaps to said margin to form a second end closure, with a substantial portion of the panel exposed within said flaps.

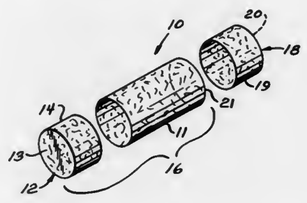
22. The method of packaging comprising loading a bag of flexible packaging material with product through the mouth of the bag and inserting a closure panel through the mouth of the bag with the inside of the closure panel lying against the product, the product height being such that, with the closure panel on the product, the bag has a lip all around the bag projecting beyond said panel at the mouth of the bag, the lip at any point around the bag being of relatively narrow width substantially less than half the distance across the panel from said point, the lip on the inside thereof and the margin of the panel on the outside thereof being of compatible sealing material, folding over the lip on the outside of the panel, the lip extending all around the margin of the panel on the outside of the panel with a substantial portion of the panel exposed within the lip, and sealing the lip to the margin of the panel on the outside of the panel, the bag being a heat-sealable plastic bag and the closure panel being compatibly heat-sealable on the outside face thereof with the plastic of the bag, the lip of the bag being heat-sealed to the outisde face of the panel, the bag being spread open at its mouth, and the product and the end closure panel being simultaneously pushed into the bag through its mouth and the product thereby compressed, compression being maintained while the lip of the bag is folded over on the outside face of the panel and heat-sealed to the coating on said face, the product in section transverse to the bag and the panel being generally rectangular, the product and bag being dimensioned for a relatively tight fit of the product in the bag, the lip comprising four marginal portions of the bag which are folded over around the four sides of the panel on the outside face of the panel, and each of the four marginal portions being heat-sealed to the outside face of the panel, said four marginal portions being heat-sealed to the panel at intervals while compression is maintained, the folding over of the marginal portions being effected by folding members having gaps therein and the heat sealing being effected by entering heat sealing members in the gaps.

4,553,669

STERILIZATION CONTAINER FORMED OF NONWOVEN MATERIAL

George A. M. Butterworth, Wilbraham, Mass.; William M. Evans, Mundelein, and Howard J. Goldner, Highland Park, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 15, 1983, Ser. No. 532,462
Int. Cl.⁴ B65D *85/50, 5/68, 81/24*
U.S. Cl. 206—439 **5 Claims**



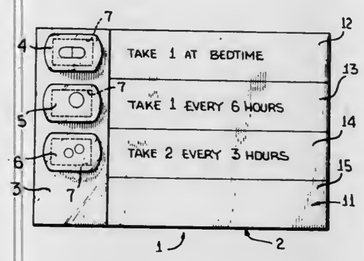
1. A sterilization container capable of withstanding steam sterilizaion without substantial change in physical properties comprising: a receptacle of fluid-repellant, semi-rigid nonwoven material and including a bottom and upstanding side wall means integral with said bottom; and a cover of fluid-replellant, semi-rigid nonwoven material and including a top, and depending side wall means conforming in shape with said side wall means of said receptacle and sized to engage frictionally and continuously the outer surface thereof to provide a bacterial seal when said receptacle and cover are assembled; said cover and container characterized in that they retain their respective semi-rigid properties after sterilization and are capable of supporting and maintaining the sterility of the contents thereof.

4,553,670

MEDICAL REMINDER DEVICE

Richard Collens, 613 Pinebrook Blvd., New Rochelle, N.Y. 10804

Continuation of Ser. No. 316,917, Oct. 30, 1981, abandoned, which is a continuation of Ser. No. 123,011, Feb. 20, 1980, abandoned. This application Dec. 7, 1983, Ser. No. 558,964
Int. Cl.⁴ B65D *83/04*
U.S. Cl. 206—534 **1 Claim**



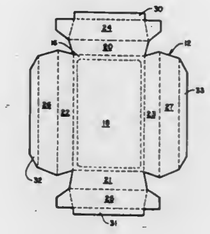
1. A method of dosing dispensible ingestible medicinal substances from dispensing containers by correlating the same with respect to identical ingestible though nondispensible medicinal substances comprising the steps of providing a generally planar sheet having opposite surfaces and at least first and second normally open chambers each generally immediately adjacent respective first and second surface portions of the sheet upon which instructions may be written; selecting from first and second sources respective first and second dispensible ingestible medicinal substances and placing a plurality of the first dispensible ingestible medicinal substances in a first dispensing container and a second plurality of the second dispensible ingestible medicinal substances in a second dispensing container with the first and second sources and dispensing containers being separate and isolated from each other and from the first and second open chambers; placing at least one of the first and second dispensible ingestible medicinal substances into the respective first and second normally open chambers; closing the chambers to thereby render the latter ingestible medicinal substances nondispensible while permitting the same to be viewed therein; placing dosing instructions on said first and second surface portions to specifically define the manner, number and/or time at which the first and second nondispensible ingestible medicinal substances in the respective first and second chambers are to be ingested; and following said dosing instructions withdrawing said first and second ingestible medicinal substances from the respective first and second dispensing containers and dosing a patient therewith in the absence of dosing from the first and second chambers whereby, though ingestible, the ingestible medicinal substances of the first and second chambers are neither dispensed nor ingested and function solely as a reminder to select the same dispensible and ingestible medicinal substances from the first and second dispensing containers.

4,553,671

TEAR-OPEN COMPARTMENTED CAT LITTER CONTAINER

Anthony Cheesman, 3959 32nd St., San Diego, Calif. 92104

Filed Sep. 2, 1983, Ser. No. 529,155
Int. Cl.⁴ B65D *5/54*
U.S. Cl. 206—611 **3 Claims**



1. A disposable container with litter for animals compising:

a top wall member in the form of an elongated sheet of material having a front edge and rear edge and lateral side edges, said top wall member having a central perforated tear-out portion;

a pair of inside end walls and a pair of inside side walls having their bottom edges connected to the respective side edges and end edges of said top wall member;

a pair of outside end walls and a pair of outside side walls having their top edges connected to the respective top edges of said inside end walls and said inside side walls, said outside end walls and said outside side walls having a height greater than that of said inside end walls and said inside side walls, respectively;

means for attaching a bottom cover member to the bottom of said outside walls comprising inwardly extending flanges;

a bottom cover member;

a chamber formed between the bottom surface of said top wall member, said end walls, said side walls, and said bottom cover member; and

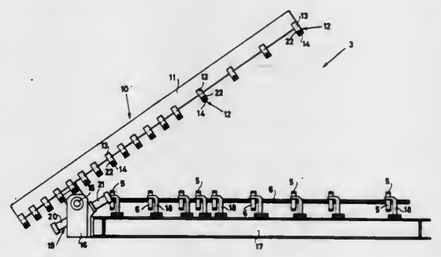
said chamber being filled with a predetermined amount of animal litter material.

4,553,672

SELECTION SYSTEM FOR FLAT ARTICLES, PARTICULARLY METAL SHEETS OF DIFFERENT SIZES COMING FROM A SHEARING MACHINE

Guido Salvagnini, Sarego, Italy, assignor to Salvagniri Transferica S.p.A., Sarego, Italy

Filed May 17, 1984, Ser. No. 611,154
Claims priority, application Italy, May 20, 1983, 21197 A/83
Int. Cl.⁴ B07C *5/04, 9/00;* **B65G** *37/00*
U.S. Cl. 209—615 **7 Claims**



1. Selection system for flat articles, particularly for metal sheets of different sizes coming from a shearing machine, comprising a plurality of selectors which are arranged along an

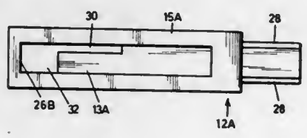
advancement path of the articles and can be worked alternately to deviate selected articles from said path to respective collection places, characterized in that each of said selectors is constituted by a rake structure with L-shaped prongs, which is arranged transversally with respect to the advancement path of the articles and can be moved from an upper rest position, where said prongs do not interfer with the advancement of said articles along said path, to a lower pick up position, where said prongs stop the advancement of the articles and then lifted again to an upper discharge position where said prongs, after having lifted said engaged articles, allow their conveyance towards said collection places.

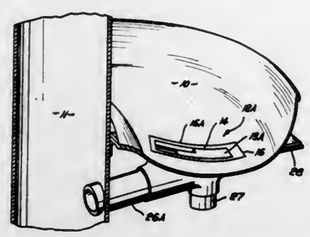
4,553,673

METHOD AND APPARATUS FOR OBTAINING UNDERCUTS OF CONCENTRATES FROM PULP FLOW IN SPIRAL SEPARATORS

Douglas C. Wright, Terranora, Australia, assignor to Mineral Deposits Ltd., Queensland, Australia

Filed Nov. 2, 1982, Ser. No. 438,590
Int. Cl.⁴ B03B *11/00, 5/52*
U.S. Cl. 209—697 **1 Claim**





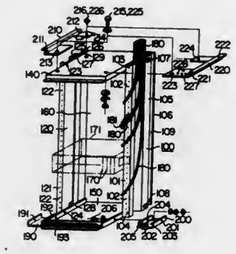
1. A take-off assembly for a spiral separator having a trough through which the particles to be separated flow, a mounting member defining a transversely extending substantially rectangular opening adapted to be mounted within said trough, with the upper surface of said opening being substantially flush with the trough lower surface, and tongue means comprising a single member slidably supported in said mounting member for occluding a portion of said opening, said tongue having a peripheral notch at an upstream edge to define a first concentrate opening of a width substantially less than the width of said mounting member, said tongue being retractable transversely from said mounting member so as to form a second concentrate opening of a width substantially equal to the width of said mounting member, said second concentrate opening being adjacent said first concentrate opening, said tongue means having no portion thereof extending above said mounting member opening.

4,553,674

CASING CONSTRUCTION FOR ELECTRONIC EQUIPMENT

Hiroshi Yoshikawa, Fujisawa; Tetsuya Hattori, Yokohama, and Hideaki Sato, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1982, Ser. No. 344,185
Claims priority, application Japan, Jan. 30, 1981, 56-11182[U]; Aug. 12, 1981, 56-118777[U]; Sep. 30, 1981, 56-144139[U]; Dec. 11, 1981, 56-183641[U]; Dec. 11, 1981, 56-183642[U]; Dec. 11, 1981, 56-198533; Dec. 11, 1981, 56-198534; Dec. 14, 1981, 56-200169
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—26 **11 Claims**



1. A casing construction for electronic equipment including a plurality of shelves mounted therein, comprising:
(a) a left post and a right post forming a pair, each having a large width and comprising:
a first mounting portion at the front for mounting a plurality of shelves;
a second mounting portion located in the vicinity of the upper end for mounting a ceiling board; and
a third mounting portion located in the vicinity of the lower end for mounting a floor board;
(b) a ceiling board mounted on said second mounting portions of said left post and right post; and
(c) a floor board mounted on said third mounting portions of said left post and right post;
wherein said left post and right post forming a pair are each formed by a single member with a reinforcing bent portion disposed sightly toward the rear as viewed widthwise of the posts, said reinforcing bent portion projecting outwardly of a plane connecting the second and third mounting portions together as viewed widthwise of the casing, and wherein a space defined by the bent portion, second mounting portion and third mounting portion forms a space for holding cables.

4,553,675

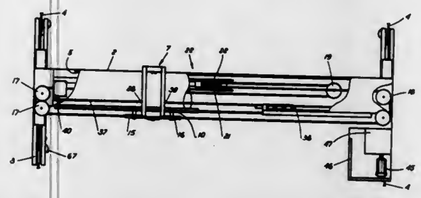
HYDRAULICALLY OPERATED CRANES

Geoffrey F. Kirk, 30 Freyberg Crescent, Waikanae Beach, New Zealand

Filed Nov. 24, 1982, Ser. No. 444,302
Claims priority, application New Zealand, Nov. 26, 1981, 199082
Int. Cl.⁴ B66C *11/16*
U.S. Cl. 212—205 **10 Claims**

1. A hydraulically operated crane comprising a support structure having a hollow cylindrical travelling bridge, trolley tracks on said cylindrical travelling bridge to support the trolley to a side of said travelling bridge, a hoist block supported from said trolley, a balanced fleet through rope and reeve system supported by said structure to control the lifting and lowering of the hoist block, a hydraulic multiplying linear motor having one end anchored in the support structure to provide operating power for the hoist block, said linear motor having twin opposed hydraulic cylinders, tie rods connecting the cylinders in line with the length of tie rods between adjacent ends of the cylinders determining the operating stroke of

the linear motor, a reeve sheave carrier connected in the space between the cylinders to each operating piston extending from the cylinders, two reeve sheaves mounted on said reeve sheave carrier, end return sheaves at each end of said support structure, two trolley sheaves mounted on said trolley and a diverter sheave supported in said support structure with the operating rope for the hoist block having the ends anchored to a support base associated with the linear motor with the rope from one anchor point passing about one reeve sheave



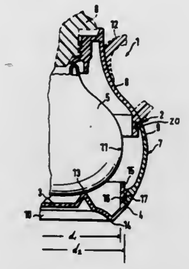
mounted on the reeve carrier supported by the pistons of the linear motor, and the end return sheaves at the end of the structure before being returned to the trolley sheave and about the hoist block and the rope from the other anchor point passing about the second reeve sheave on the reeve carrier supported by the pistons of the linear motor and about the diverter sheave before returning to pass about the end return sheaves at the opposite end of the structure and then to the second trolley sheave about the hoist block.

4,553,676

INSULATED CONTAINER

Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 532,858, Sep. 16, 1983, abandoned. This application Jan. 24, 1984, Ser. No. 573,471
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 8302563[U]; Dec. 29, 1983, 3347481
Int. Cl.⁴ A47J *41/00*
U.S. Cl. 215—13 R **7 Claims**



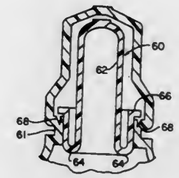
1. An insulated container comprising:
an outer shell including a removable base, a predominantly convex portion and a predominantly non-convex portion, said convex portion being a lower section of said outer shell, and said convex portion and said non-convex portion meeting at a seam which is disposed substantially at a transition between convex and non-convex outer surface portions of said outer shell, said outer shell having a lower opening with a first diameter and in which said base is removably secured; and
an insulating insert having a convex configuration positioned in said outer shell and having a maximum diameter less than said first diameter so that said insulating insert is insertable into said outer shell through said lower opening prior to securing said base in said lower opening.

4,553,677

DILUTION BOTTLE

Herbert V. Shuster, Waban, Mass., assignor to Aseptic Technologies, Inc., Quincy, Mass.

Filed Jun. 8, 1984, Ser. No. 618,832
Int. Cl.⁴ B65D *1/02*
U.S. Cl. 215—33 **7 Claims**



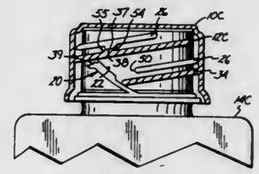
1. A dilution bottle for mixing sample material with a sterile diluent solution, said bottle comprising, in combination:
side wall portions of blow-moldable, synthetic polymeric material formed around the longitudinal axis of said bottle, a bottom wall of said polymeric material closing off one end of said bottle, and the opposite end of said bottle including an opening, at least one side wall portion of said bottle being formed with a protrusion extending into the interior of said bottle; and
means for sealing said opening of said bottle so as to maintain aseptic conditions within said bottle,
said means for sealing said bottle comprising an ancillary sterile stopper emplaced in said opening, and a seal formed of said plastic material integrally with said bottle and spaced from and encapsulating said stopper,
said stopper being shaped as an extended closed cylinder surrounded coaxially at one end thereof by a hemi-torus which in turn is surrounded coaxially by a disc-shaped rim, said cylinder, hemi-torus and rim being formed integrally of a resilient, liquid-impermeable material.

4,553,678

TAMPER INDICATING CONTAINER SAFETY COVER

Arden L. Thorsbakken, 931 Richard Dr., Apartment 9, Eau Claire, Wis. 54701

Filed Jun. 21, 1984, Ser. No. 623,033
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 215—218 **12 Claims**



1. A locking safety cap for closing a screw type container having a container thread of a container neck, said safety cap comprising:
cap means having internal screw threads dimensioned to mate with the external container threads, said cap means arranged for rotational movement about and longitudinal movement along the container neck axis; and
lock means comprising a removable ring assembly of size to fit within the cap means and having portions which engage portions of a neck of a container as the cap means is

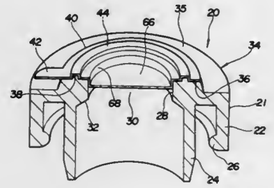
tightened down, said ring assembly including at least one resilient projection having an end engageable with a surface of the cap and yielding in axial direction of the neck as the cap is tightened and engaging a surface of the cap to tend to extend axially and resist unscrewing motion of the cap as portions of the ring assembly react forces to portions of a container on which the cap is mounted, said projection being compressible by downward motion of the cap to a release condition and permit unscrewing motion.

4,553,679

INNER CLOSURE CAP FOR BOTTLE OR TUBE TYPE CONTAINER

Yoshiharu Hatakeyama, Tokyo, and Yoshio Minosawa, Omiya, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1984, Ser. No. 612,026
Claims priority, application Japan, May 25, 1983, 58-77475[U]
Int. Cl.⁴ B65D *41/00*
U.S. Cl. 215—232 **3 Claims**



1. An inner closure cap adapted to be tightly fitted to an open end of a neck portion of a container and covered by an outer closure cap engageable with the outer periphery of the neck portion, said inner closure cap comprising:
a cylindrical cap body having an upper surface and a pouring hole formed radially centrally of said upper surface, said upper surface having a flat portion and a ring formed at a position radially spaced from said pouring hole, said ring having a substantially rectangular cross section forming vertical sides; and
a sealing member for hermetically closing said pouring hole, said sealing member including a flat portion and a ring corresponding to and adhered to said flat portion and said ring, respectively, of said cap body, and said sealing member further including a stepped lower portion formed radially centrally of said sealing member at a position radially spaced from said ring of said sealing member, said lower portion being fitted in said pouring hole and having a vertical peripheral portion adhered to an interior surface of said cap body defining said pouring hole.

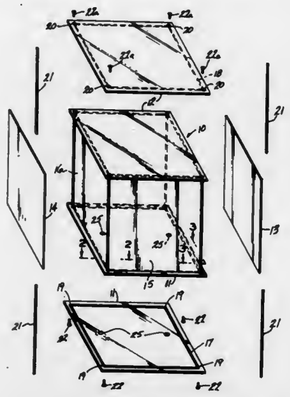
4,553,680

DISPLAY CASE

James S. Griggs, Branford, Conn., and Laura K. Lada-Mocarski, 123 York St., New Haven, Conn. 06510, assignors to Laura K. Lada-Mocarski, New Haven, Conn.

Continuation of Ser. No. 511,656, Jul. 7, 1983, abandoned. This application Aug. 23, 1984, Ser. No. 643,474
Int. Cl.⁴ B65D *6/00*
U.S. Cl. 220—4 F **6 Claims**

1. A demountable display case comprising upper and lower panels, at least said upper panel being transparent, a continuous groove of essentially rectangular shape defined in the facing surfaces of each of said upper and lower panels, first and second surfaces of each of said upper and lower panels, first and second pairs of rectangular transparent side panels, said first pair of side panels being dimensioned to fit in opposite sides of said groove and define two opposite sides of said case, said second pair of side panels being dimensioned to fit in the other opposite sides of said groove and define the other two opposite sides of said case, and four securing means at the corners of said grooves and compressively holding said side panels in said grooves in said upper and lower panels, said securing means



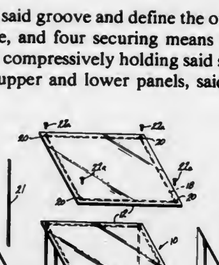
comprising rod-like members which substantially abut the vertical edges of said side panels, and means at each end of said rod members engaging said top and bottom panels said rod-like members being substantially the same dimension in diameter as the thickness of said side panels.

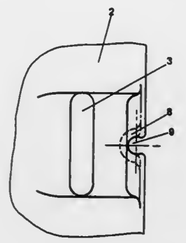
4,553,681

FUEL TANK FOR A MOTOR VEHICLE

Jean Héaumé, Laval, France, assignor to Societe de Transformation des Matieres Plastiques, Laval, France

Filed Feb. 4, 1981, Ser. No. 231,324
Claims priority, application France, Feb. 4, 1980, 80 02411
Int. Cl.⁴ B65D *1/42, 90/12, 88/02*
U.S. Cl. 220—72 **7 Claims**





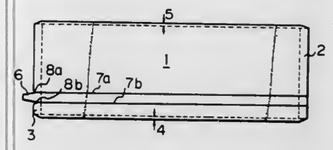
1. Fuel tank for a motor vehicle, which is intended to be suspended under the vehicle by means of suspension hooks, each suspension hook having a straight part and a curved head, characterised in that its lower wall possesses, on its periphery, downwardly protruding bosses which permit the engagement of the curved head of the suspension hooks, its side wall possesses vertical grooves located at right-angles to the bosses, which can house the straight part of the suspension hooks, and the vertical grooves are profiled so as to permit the snapping-in of the straight part of the hooks.

4,553,682

BONDED CAN OF KEY-OPENING TYPE AND PROCESS FOR PRODUCTION THEREOF

Michiko Tsurumaru, Tokyo; Seiichi Nakazato, Yokohama; Atsushi Nunokawa, Kawasaki; Hiroshi Ueno, Yokosuka, and Seishichi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 597,859
Claims priority, application Japan, Apr. 9, 1983, 58-61534
Int. Cl.⁴ B65D *17/20*
U.S. Cl. 220—75 **14 Claims**



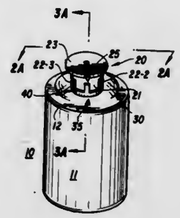
1. A bonded can of the key-opening type comprising a coated metal blank and a seam formed by lap-bonding outer and inner end edge portions of the coated metal blank to each other by a tape of a thermoplastic resin adhesive, wherein the adhesive is a polyamide type or polyester type adhesive, the inner end edge portion forming the seam of the bonded can is completely covered with the adhesive tape, the outer edge portion has a winding-starting tongue piece integrated therewith, a plurality of scores are formed on the outer surface of the coated metal blank from the base of the tongue piece along the entire circumference inclusive of the seam, the scores have a knife angle of 45° to 120° and a depth corresponding to 8 to 45% of the thickness of the metal blank, a coating of an epoxy resin having a thermal softening point of 65° to 150° C. as measured according to the thermomechanical method is formed at least at the seam-forming part on the outer surface and said epoxy resin coating forms a continuous layer adhering closely to the metal blank even in the portion of said scores.

4,553,683

TAMPER RESISTANT CLOSURES

Joseph R. Paradis, 60 Plymouth Rd., Holden, Mass. 01520

Continuation-in-part of Ser. No. 441,557, Nov. 15, 1982, Pat. No. 4,462,505. This application Jul. 30, 1984, Ser. No. 635,409
Int. Cl.⁴ B65D *41/02, 41/32*
U.S. Cl. 220—266 **19 Claims**



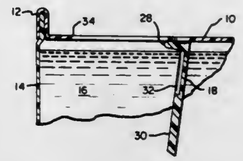
1. A tamper-proof closure comprising
a cap that is integrally sealed to a housing;
said cap having a body portion that extends above the level of the seal to said housing to provide a clear visual indication that the connection of the cap to the housing has not been disturbed;
a flange on said cap to facilitate the rupture of the seal connecting said cap to said housing and providing a clear visual indication of when the seal of the cap to the housing has been disturbed; and
means interconnecting said flange and said housing for stabilizing said seal against accidental rupture.

4,553,684

ONE PIECE PRESS AND LOCK TAB FOR CONTAINERS

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06612

Filed Nov. 30, 1984, Ser. No. 677,072
Int. Cl.⁴ B65D *41/32*
U.S. Cl. 220—268 **7 Claims**



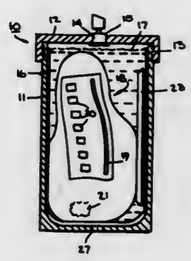
1. A disc adapted to be placed in sealing engagement with the open top of a container and comprising:
a thin flat disc having a member disposed therein, said member being coplanar with the disc and constituting a tab, said tab having as a portion of its periphery a straight edge integral with the remainder of the disc, the remaining portion of said periphery being scored and defining a border; and
a horizontally elongated straight bar lying in an essentially vertical plane and being essentially parallel to said edge, said bar being integral with said tab and extending upward for a short distance, said bar after said scoring is broken being adapted to be moved into an essentailly horizontal plane in a position adjacent but below the disc with the tab projecting downwardly therefrom whereby an opening is formed in said disc, and is spanned by said bar, the length of said bar having such relation to said opening that each end of the bar extends beyond said opening to underlie the disc and lock the bar in said position whereby said tab is also locked in position.

4,553,685

DISPENSING SYSTEM AND A REFILL POUCH

David J. Magid, Doylestown, Pa., assignor to Enviro-Spray Systems, Inc., New York, N.Y.

Continuation of Ser. No. 365,552, Apr. 5, 1982, Pat. No. 4,513,884. This application Dec. 21, 1984, Ser. No. 684,742
Int. Cl.⁴ B65D *83/14*
U.S. Cl. 222—1 **18 Claims**



1. A method of using a pressurizable dispensing assembly

including a container with a receptacle chamber and an opening communicating with said chamber, closure means removably engageable with said container for closing said opening, and outlet means provided on said closure means for dispensing a flowable product from within said chamber, said method comprising the steps of:

removing the closure means from the container;

withdrawing, from the receptacle chamber of said container through the opening thereof, a first product-containing pouch at least partially emptied of product;

upon the completion of said step of withdrawing, inserting into said receptacle chamber through said opening a second product-containing pouch including therein a prepackaged flowable product to be dispensed, said second product-containing pouch being sealed and inflatable to define a liner within said container upon expansion therein of said second product-containing pouch, said second product-containing pouch further including therein a sealed expandable pressure-generating bag for exerting pressure on said prepackaged flowable product, said bag including therein first bag inflation means for expanding said bag to force said prepackaged flowable product from said second product-containing pouch and out of said container through the outlet means on said closure means, said bag further including therein triggering means for activating said first bag inflation means and second bag inflation means for generating additional bag expansion as said prepackaged flowable product is dispensed from said second product-containing pouch through said outlet means;

opening said second product-containing pouch to enable communication of said prepackaged flowable product held therein with said outlet means; and

upon the completion of said steps of removing, withdrawing and inserting, reattaching said closure means to said container.

4,553,686

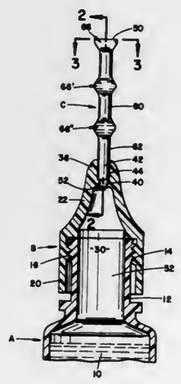
DROP DISPENSER

Delford O. Dougherty, Shaker Heights, Ohio, assignor to St. Luke's Hospital, Cleveland, Ohio

Filed May 17, 1984, Ser. No. 611,473

Int. Cl.⁴ B65D *47/18*

U.S. Cl. 222—212 **2 Claims**



1. An eye drop dispensing arrangement for dispensing individual droplets, comprising in combination: a closed compressible plastic container; a cap member including means for securing said closure liquid-tight to said container; and an elongated dispenser tube extending from said cap member with a drop dispensing free end substantially spaced therefrom, said tube being formed of a resilient thermoplastic material having an outer diameter of about 0.042 inches and an inner wall surface defining a passageway communicating the interior of said container with said drop dispensing free end, the walls of said tube at said free end being permanently heat deformed on opposed sides of said tube by transverse depressions such that opposed portions of said inner wall surface abut along a linear interface to provide a normally closed, resilient, integral valve-like arrangement, said valve-like arrangement slightly opening when the pressure within said container increases a sufficient amount to cause yielding deformation of the deformed end to permit individual droplets to form and be dispensed.

4,553,687

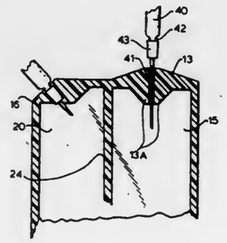
NEEDLE BREAKING AND STORAGE DEVICE

Desira Harkins, 2854 Harmony Pl., La Crescenta, Calif. 91214, and Farid MuAddi, 370 Fairview, Arcadia, Calif. 91006

Filed Jan. 13, 1983, Ser. No. 431,682

Int. Cl.⁴ B26F *3/00*

U.S. Cl. 225—93 **19 Claims**



1. A hypodermic needle breaking and storage device comprising:

a housing including a cavity for retention of severed hypodermic needles;

an opening in said housing for receiving the end of a hypodermic needle, said opening having a fixed diameter;

said housing including a surface against which said needle may be bent when in said opening to fracture said needle and separate the tip region from the remainder of the needle, and an internal surface surrounding the opening in the cavity, that internal surface being shaped and arranged to direct severed needle tips away from said opening;

said opening communicating with said cavity within the housing whereby the severed tip region of the needle may fall into said cavity after having been severed for retention therein.

4,553,688

TAG ATTACHING DEVICE

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Continuation-in-part of Ser. No. 313,714, Oct. 21, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,741

Claims priority, application Japan, Oct. 24, 1980, 55-148173

Int. Cl.⁴ B25C *7/00, 5/06, 1/00*

U.S. Cl. 227—67 **3 Claims**

1. A tag attaching device for dispensing tag pins joined to a connecting bar from a tag pin assembly, each said tag pin having a head portion, a lateral bar portion, a filament portion coupling said head portion of said lateral bar portion and a joint portion coupling said tag pin to said connecting bar, comprising:

a main body;

an intermediate lever pivotally secured to said main body;

a first spring mounted between said intermediate lever and said main body and adapted to project a lever, which is pivotally secured to said main body through said intermediate lever, forwardly from a grip portion of said main body;

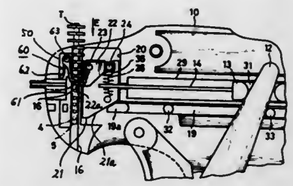
a slider loosely fitted to said intermediate lever and slidably mounted in said main body;

a cam driving member loosely fitted to said intermediate lever and disposed substantially parallel with said slider;

a driver fixed to said slider;

a hollow needle positioned ahead of a said driver and fixed to said main body;

a guide groove formed at the rear side of said hollow needle;



a cam plate disposed adjacent said guide groove so as to correspond to said cam driving member;

an engaging claw rockably mounted on said cam plate, said engaging claw having an end which engages intermediate adjacent joint portions of said tag pin assembly; and

a second spring mounted between said engaging claw and said main body and adapted to bias said cam plate downwardly and bias said engaging claw toward said hollow needle and said tag pin assembly.

4,553,689

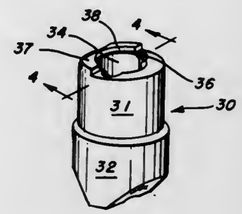
STAPLE THROAT FOR STAPLING MACHINE

James W. Wilkerson, Highway 64 East, Savannah, Tenn. 38372

Filed Oct. 28, 1982, Ser. No. 437,346

Int. Cl.⁴ B25C *5/02*

U.S. Cl. 227—139 **9 Claims**



1. In a stapling apparatus including a frame, having a stapling station, an anvil in the stapling station for receiving a workpiece, an elongated flat staple driver, and means for reciprocally moving the staple driver toward and away from the anvil in the stapling station, a staple throat comprising:

(a) an elongated body member having an operative end portion and an opposite entry end portion,

(b) a longitudinal straight bore extending longitudinally through said elongated body member and opening through both said end portions,

(c) a pair of elongated opposed, parallel, coplanar guide slots in opposite sides of said bore extending the length of said bore and opening through both said end portions,

(d) the depth of said guide slots permitting the reception and passage of a staple of predetermined size longitudinally through said slots,

(e) the breadth of said guide slots being substantially less than the corresponding dimension of said bore normal to the plane of said guide slots,

(f) means fitting said body member in the frame of the stapling apparatus in the stapling station with said operative end portion opposing the anvil, said bore being in longitudinal alignment with the staple driver, and said slots receiving the opposite edges of the staple driver as the staple driver reciprocates through said bore, so that said body member, the staple driver and the anvil cooperate to drive a staple from the position between said guide slots to an operative position engaging the workpiece on the anvil.

4,553,690

CLUTCH ROTOR FOR AN ELECTROMAGNETIC CLUTCH AND METHOD OF MAKING THE ROTOR

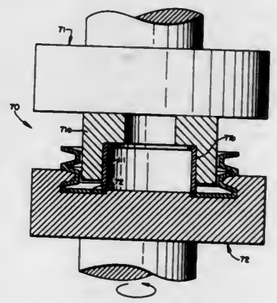
Yasuo Nakamura, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 8, 1983, Ser. No. 511,961

Claims priority, application Japan, Jul. 9, 1982, 57-119290

Int. Cl.⁴ F16H *7/02;* **B21D** *53/26*

U.S. Cl. 29—159 R **3 Claims**



1. A method of making a clutch rotor for use in an electromagnetic clutch comprising the steps of:

(a) forming a cup-shaped blank with a generally cylindrical flange wall and bottom plate by bending a piece of sheet metal;

(b) forming at least one approximately V-shaped groove in said blank flange wall by holding the cup-shaped blank in a first die, pressing on the outer edge of the blank flange wall with a second die to form the approximately V-shaped groove within a confined space between a projection of the second die and a cup receiving depression of the first die;

(c) forming a final V-shaped groove by applying a roller working operation to said approximately V-shaped groove; and

(d) welding an inner cylindrical member to a radial inner surface of said bottom plate of said cup-shaped blank.

4,553,691

EGG CARTON ADAPTER

E. Donald Morando, Flossmoor, Ill., assignor to Queen Anne Candy Company, Hammond, Ind.

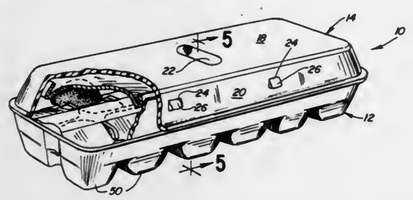
Filed Aug. 10, 1984, Ser. No. 639,625

Int. Cl.⁴ B65D *5/50*

U.S. Cl. 229—2.5 EC **4 Claims**

1. An adapter for fitting within an egg carton to adapt the carton for containing in relatively snug fashion a plurality of candy pieces of substantially smaller size than conventional eggs for which the carton is designed, said egg carton being of the type having two longitudinal rows of a plurality of individual compartments which each receives an individual egg, said carton having a plurality of longitudinal and transverse divider walls to define said compartments, the adapter comprising, in combination, a first adapter part comprising a thin integral sheet of flexible material positioned within the inside of the top of said egg carton and having a center portion which forms a new top for the egg carton of reduced height as compared to the original carton top, and a second adapter part comprising

a thin integral sheet of flexible material positioned within the top of the carton base, said second adapter part being folded along two longitudinal fold lines to provide two inclined floors, one floor extending longitudinally along one row of said individual compartments and the other along a second row of said individual compartments, said two inclined floors being of a greater height than the original floors of said individual



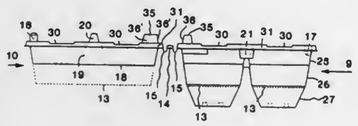
compartments, and said second adapter part having a plurality of transverse slots for receiving said transverse divider walls therethrough, whereby said first and said adapter parts and the upper ends of said transverse divider walls define a plurality of individual compartments of reduced size for containing in relatively snug fashion a plurality of candy pieces of substantially smaller size than conventional eggs.

4,553,692

CONTAINER HAVING CLOSURE GUIDE MEMBERS

Pietro Padovani, Verona, Italy, assignor to Industrie Specializzate Articoli Plastici SpA, Parona, Italy

Filed Jun. 11, 1984, Ser. No. 619,350
Int. Cl.⁴ B65D *1/26*
U.S. Cl. 229—2.5 EC **17 Claims**



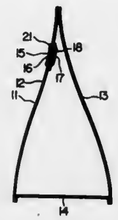
1. A container having closure guide members for eggs, fruit or like products, which container is constructed from a sheet of synthetic thermoplastics material and is formed of two portions held together by a flat spine and by two grooves binding the spine, and having recesses to house the products in at least one of the portions which have mating ledges and cylindrical spacers, the said portions being capable of being closed together by means of pressure closure members in such a way that the said mating ledges are in contact with each other, in which the closure guide members comprise a ramp made as a continuation of the grooves on the portions and a ramp on the spine, the ramps matingly engaging one another to align the two portions during closure of the container, and also in which additional spacers are provided and are of a height corresponding to the height of said cylindrical spaces.

4,553,693

BAG-SHAPED CONTAINER WITH A STRAW INSERT HOLE FORMED AND METHOD OF PRODUCING THE SAME

Yoshimi Terajima, Ebina; Hiroshi Akitoshi, Zushi, and Nobuaki Nagatani, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,116
Claims priority, application Japan, Feb. 17, 1984, 59-21433[U]
Int. Cl.⁴ B65D *1/08*
U.S. Cl. 229—7 S **6 Claims**



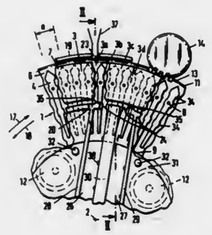
1. A bag-shaped container with a straw insert hole formed thereon comprising;
- a body having a straw insert hole formed thereon, said straw insert hole extending through the thickness of the body,
- a first inside sealing piece adhered to the inner surface of the body to fully cover the straw insert hole,
- a second inside sealing piece adhered to the inner surface of the body or to the area of the first inside sealing piece located offset from the straw insert hole to fully cover the first inside sealing piece, and
- a tab disposed on the outer surface of the body, the central part of said tab being deformed into the straw insert hole to be adhered to the first inside sealing piece.

4,553,694

COIN COLLECTION BOX FOR AUTOMATIC CASHIERS AND COIN CHANGERS

Fritz Siegenthaler, Trub, Switzerland, assignor to Autelca AG., Gümligen, Switzerland

Filed Oct. 29, 1984, Ser. No. 665,558
Claims priority, application Switzerland, Nov. 18, 1983, 6206/83
Int. Cl.⁴ G07F *1/00*
U.S. Cl. 232—7 **10 Claims**



1. Coin collection box for automatic cashiers and coin changers, with a compartment ring (1) comprising compartments (3, 3*a*–3*d*) formed between compartment walls (4) radially to the ring axis (2) and accommodating respectively one coin, this compartment ring being rotatable about the ring axis (2) in steps corresponding respectively to a compartment division (a) by means of a rotary drive mechanism (13, 14) in opposite directions (17, 18), and the compartments (3, 3*a*–3*d*) of this ring being bounded along their periphery by annular

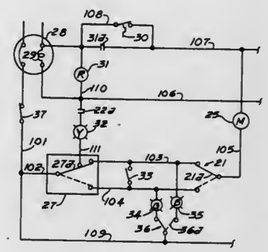
walls (6, 7, 19, 20) coaxial to the compartment ring (1), of which a first, fixed annular wall (19) has an inlet opening (23) leading from above into respectively one (3*a*) of the compartments (3), and a second, fixed annular wall (20, 21) has an outlet opening (24) extending at the bottom from one or several compartments (3*b*, 3*d*) offset with respect to this compartment (3*a*) in a ring rotation direction (17), characterized in that the wall (20, 21) of the annular walls on which drops a coin falling through the inlet opening (23) is inclined at least partially with respect to the inlet direction in such a way that this coin will not rebound into the inlet opening (23); and that the compartment walls (4) exhibit protuberances (34) limiting their contact with a coin to such a small area that the coin cannot stick to the compartment walls (4); and that at least one of the rims of the outlet opening (24) extending transversely to the direction of rotation (17, 18) of the compartment ring exhibits a rib (35) which latter lifts the coins during rotation (17, 18) of the compartment ring (1) prior to reaching the outlet opening (24).

4,553,695

AUTOMATIC DAMPER MEANS FOR AIR DUCTS

Willie T. Grant, 400 S. Simms St., Lakewood, Colo. 80228

Filed Jan. 4, 1984, Ser. No. 568,057
Int. Cl.⁴ F24F *13/10*
U.S. Cl. 236—9 A **4 Claims**



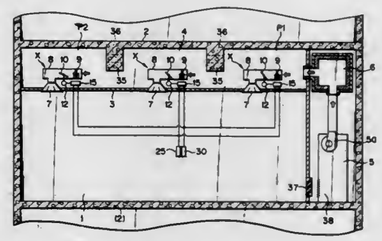
1. Automatic damper means having rotatable damper means controlling and regulating the flow of a heating/cooling medium through duct means, said duct means being part of a central heating/cooling system of a residence or like structure; said duct means transporting said heating/cooling medium to a plurality of rooms or zones of said residence or like structure; said heating/cooling means being energized concurrently with said automatic damper means by a plurality of thermostatic means; said automatic damper means comprising:
- (a) operating means, said operating means having motor means and switch means; said motor means having external shaft means engaging switch operating means and said damper means; said switch means comprising a first manual switch interconnecting said fuel control means with a plurality of said thermostatic means; a second manual switch bypassing said thermostatic means and energizing said motor means independently of said thermostatic means; an automatic hold-in switch interconnecting said thermostatic means and said motor means, preventing said motor means from deenergizing until said damper means has reached a fully open or closed position when said motor means are being controlled by said thermostatic means, a second automatic switch interconnecting said thermostatic means and said motor means, said second automatic switch controlling said motor means in response to said thermostatic means; said switch operating means actuating said hold-in switch and said second automatic switch;
- (b) support means, said support means comprising engaging means, said engaging means occupying a circumferential position about a portion of said duct means, said engaging means having bracket means attaching thereto; said engaging means supporting said damper means and said bracket means; said bracket means supportedly engaging said automatic switch means and said motor means;
- (c) control means, said control means comprising said thermostatic means providing an electrical interlock between said fuel control means, said switch means and said motor means; said motor means operating said damper means; relay means and high temperature thermostatic means, said relay means and high temperature thermostatic means electrically interconnecting said fuel control means and motor means to maintain a last operable damper means in an open position after said fuel control means deenergizes; indicating means electrically interconnecting said thermostatic means, said motor means, said relay mean, and said fuel control means, said indicating means communicating a current operation 21 status of said damper means and said fuel control means.

4,553,696

AIR CONDITIONING APPARATUS

Isamu Ichikawa, Kashiwa; Yutaka Fukushi, Sagamihara; Keiji Kamata, Yamato, and Hikoshiro Suzuki, Sagamihara, all of Japan, assignors to Topre Corporation, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,376
Claims priority, application Japan, Apr. 28, 1982, 57-62520[U]
Int. Cl.⁴ F24F *7/00*
U.S. Cl. 236—49 **11 Claims**



1. An air conditioning apparatus comprising:
- a ceiling board for defining the ceiling of a room to be air conditioned;
- a slab provided in a predetermined space above said ceiling board, said ceiling board and said slab forming a double ceiling structure, the space between said ceiling board and said slab defining a supply chamber;
- air conditioning means for conditioning air passing therethrough;
- communicating means provided in said ceiling board for communicating said supply chamber with said room, said communicating means having a plurality of through holes formed at said ceiling board;
- circulating means for passing the air in said room through said air conditioning means and returning the air in the room through said supply chamber into the room through said plurality of through holes;
- ducts provided corresponding to the respective through holes in said supply chamber, each connected at one end thereof to the corresponding through holes and at the other end thereof into said supply chamber;
- air quantity detecting means provided in said respective ducts for detecting the air quantity in the respective ducts;
- throttle means provided at the downstream side of said air quantity detecting means and movably supported to vary the opening extent of said ducts for adjusting the air quantity of the air flowing through the ducts;
- drive means connected to said respective throttle means for driving said throttle means;
- a plurality of control means each connected to a respective one of said drive means for driving said drive means based on

detected air quantity by said air quantity detecting means so that the corresponding throttle means having controlled apertures in their respective ducts; and

a first setter provided in said room and connected to the respective control means for setting the air quantities in the respective ducts to desired values.

4,553,697

SYSTEM FOR SUPPLYING MOTOR VEHICLE DIESEL ENGINES WITH FUEL

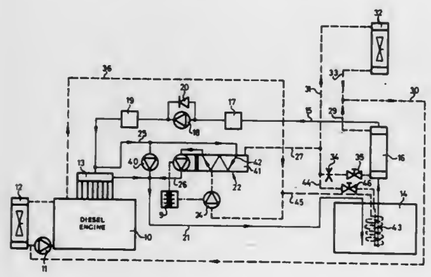
Michael Nothen, Ascholding, and Erhard Bartsch, Nersingen, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,403

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308891

Int. Cl.⁴ B60H *1/02*; F02N *17/02*

U.S. Cl. 237—12.3 B **25 Claims**



1. A system for supplying motor vehicle diesel engines with fuel, having a fuel circulation system loop, said fuel circulation loop comprising a fuel supply pipe leading from a fuel tank, via preliminary and fine mesh fuel filters, to an injection pump driven by the diesel engine; a fuel return pipe leading back from the injection pump to the fuel tank; a fuel-circulating pump that is operable independent of the operator of the diesel engine; and a heat exchanger for causing heat exchange between the fuel flowing through the fuel supply pipe and a liquid heat-transfer medium; wherein the fuel-circulating pump is drivable by an on-board power supply source, when the diesel engine is stopped, and the fuel system loop is arranged in such a way that, when the fuel-circulating pump is operated with the engine stopped, said fuel circulation system is flushed over its whole length by fuel circulated by the fuel-circulating pump, through the fuel supply pipe, heat exchanger, preliminary and fine-mesh fuel filters, return pipe, and fuel tank.

4,553,698

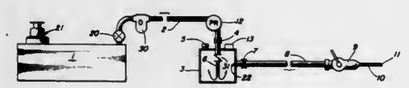
PNEUMATIC PESTICIDE DUSTER FOR TREATMENT OF STRUCTURES

Richard L. Parker; Richard J. Swords, and Larry E. Griffin, all of Ponca City, Okla., assignors to Parker Pest Control, Ponca City, Okla.

Filed Feb. 7, 1983, Ser. No. 464,369

Int. Cl.⁴ B05B *5/08, 7/14*

U.S. Cl. 239—3 **10 Claims**



1. An improved method for treating structures with pesticide dust by placing said dust into pest harborages within said structures, the improvement comprising closely controlling the distribution of said dust within said harborages by imparting a friction induced electrostatic charge to said dust to mutually repel and suspend said particles while electrostatically attaching said particles to the structure and pests therein, wherein the dust is applied by

(a) placing pesticide dust in a dust reservoir having attached thereto an air input aperature connected to a source of pressurized air and a dust/air mixture outlet aperture connected to

(b) a manually operated valve regulating the flow of dust/air mixture, and

(c) a metallic tube downstream of said valve capable of imparting a friction induced electrostatic charge to discharged dust, said tube having an opening up to about ¾ inch, and

(d) a flexible tube attached at one end to said air input aperature within said dust reservoir vessel, and having a free end depending within said reservoir vessel, such that air/dust mixture released by actuating said valve allows air to enter the dust reservoir from the pressurized air source through said flexible tube, said tube being agitated by the incoming air exiting through the free end of said flexible tube and directing said air throughout said reservoir such that substantially all dust is entrained by said air and forced through the exit aperature when the valve of (b) is actuated.

4,553,699

IRRIGATION SYSTEM

Alvar Bengtsson, Pilevägen 4, S-237 00 Bjärred, Sweden

PCT No. PCT/SE82/00174, § 371 Date Jan. 14, 1983, § 102(e) Date Jan. 14, 1983, PCT Pub. No. WO82/03964, PCT Pub. Date Nov. 25, 1982

PCT Filed May 14, 1982, Ser. No. 460,236

Claims priority, application Sweden, May 18, 1981, 8103079

Int. Cl.⁴ B05B *3/00*

U.S. Cl. 239—183 **6 Claims**



1. An irrigation system comprising a self-propelled carriage provided with drive wheels and a fluid motor for driving said drive wheels, a pipe-line which is laid on the ground and along which the carriage is movable, a transfer unit connected to said carriage and moved together therewith, said transfer unit being adapted to transfer water from said pipe-line to said fluid motor and to ground to be irrigated, said pipe-line being provided on its outer surface with a plurality of clamp means spaced apart equidistantly along the length of said pipe-line, each clamp means having cooperable parts that embrace the outer surface of the pipe-line and having a valve extending through the pipe-line wall, said transfer unit having endless chain means passed over spaced guide pulleys and forming elongated loop means with a lower elongated side of said loop means parallel to said pipe-line at a constant height above said pipe-line, said chain means carrying, at intervals corresponding to the spaces between successive clamp means, connectors which are successively moved into alignment with said clamp means, each connector being provided with an actuator which opens the valve of a clamp means aligned with the connector, each connector having a cup open outwardly from said chain means and provided at an outer edge with a seal for sealing the connector against the pipe-line, said cups extending downwardly from said lower elongated side of said loop means and being stationary relative to said pipe-line while sealed against the pipe-line and while the carriage moves along the pipe-line, and said cups being interconnected hydraulically with each other and with said fluid motor, said carriage and said pipe-line having cooperable means for guiding said carriage along said pipe-line.

4,553,700

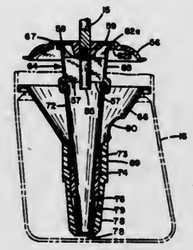
CENTRIFUGAL SPRAYER HAVING HOLLOW CONE FEEDER

Irving F. Snyder, Minneapolis, and Duane A. Luebeck, Blaine, both of Minn., assignors to Polaris Home Systems, Inc., Minneapolis, Minn.

Filed Mar. 19, 1984, Ser. No. 590,769

Int. Cl.⁴ B05B *3/10*

U.S. Cl. 239—215 **4 Claims**



1. A centrifugal sprayer of the type having a disc member attached to a rotatable drive member proximate the top of a liquid container which is itself attachable to a housing enclosing the rotatable drive member, comprising

(a) a hollow cone member attached to said rotatable drive member in spaced relation to said disc, to provide an annular gap therebetween, said cone member having a conical interior surface with an opening positioned proximate the bottom of said container, said cone member further having an exterior cylindrical surface section segment; and

(b) an outer funnel-shaped housing supported in said container, said housing having an upper cone shaped portion encircling said hollow cone member in spaced relationship, and having an interior cylindrical surface section segment in at least partial alignment with said cone member exterior cylindrical surface section segment, and having a lower internal surface closely fitted to said cone member, whereby during rotation of said cone member bearing surfaces are formed between said aligned cylindrical surfaces.

4,553,701

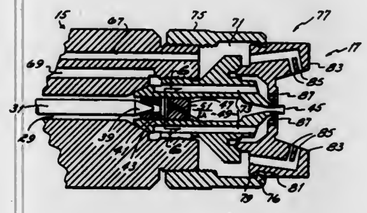
FOAM GENERATING NOZZLE

William R. Rehman, Vermillion, and James C. Smith, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 22, 1982, Ser. No. 436,012

Int. Cl.⁴ B05B *7/06*

U.S. Cl. 239—432 **9 Claims**



1. A nozzle assembly for converting a liquid/gas solution into a foam, the gas being maintained under pressure in solution in the liquid, said nozzle assembly comprising:

chamber means including an obstruction for receiving the liquid/gas solution and causing the gas to leave solution and form a foam, said chamber means having a pressure lower than that required to maintain the gas in solution in the liquid;

a discharge orifice communicating with said chamber means;

delivery means including an inlet passageway communicating with said chamber means for directing the liquid/gas solution to said chamber means while maintaining the gas in solution;

said inlet passageway directing the liquid/gas solution into said chamber means and into engagement with said obstruction to agitate the liquid/gas solution, the agitation of the liquid/gas solution within said chamber means inducing the gas to leave solution and form a foam within said chamber means, said foam thereafter being emitted from said chamber means through said discharge orifice.

4,553,702

SPRAYING SYSTEM

Ronald A. Coffee, Haslemere; Peter C. Bennett, Churt; Leonard E. Houghton, Petworth; Graham C. Johnson, Hindhead; John A. Sommerville, Cirencester; Peter H. Boyce, Dorchester, and William J. P. Currall, Swindon, all of England, assignors to Imperial Chemical Industries PLC, London, England

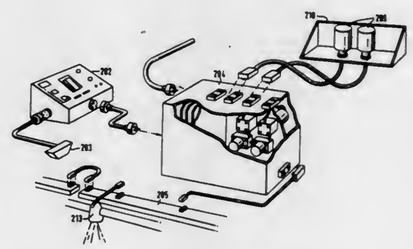
Filed Feb. 4, 1983, Ser. No. 463,938

Claims priority, application United Kingdom, Feb. 5, 1982, 8203420; Feb. 5, 1982, 8203395

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.⁴ B05B *5/08*

U.S. Cl. 239—690 **17 Claims**



1. A modular fluid spraying system comprising:

at least one fluid container for supplying fluid to be sprayed having a fluid outlet port;

at least one fluid pumping means having a fluid inlet port and a fluid outlet port;

said fluid outlet port of the container being plug connectable with the fluid inlet port said pumping means;

a plurality of boom sections being third plug connectable with each other and with the fluid outlet port of the pumping means;

at least one sprayhead assembly detachably securable and fluid plug connectable to at least one of said boom sections; and

at least one electronic data processing circuit electrically plug connectable to the system and pre-set to regulate at least one electrically responsive operating parameter of the system when in use;

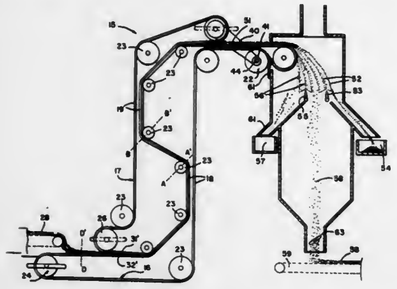
different containers and boom sections thereby being plug connectable within said system so as to readily achieve different system configurations of fluid delivery and sprayed area.

4,553,703

MACHINE AND PROCESS FOR GRINDING GRANULAR PARTICLES

Raul M. Villarreal, Privada Cervantes #150 Col., Obispado Monterrey, N. L. 64010, Mexico

Filed Feb. 23, 1984, Ser. No. 582,814
Int. Cl.⁴ B02C *19/00*
U.S. Cl. 241—24 **6 Claims**



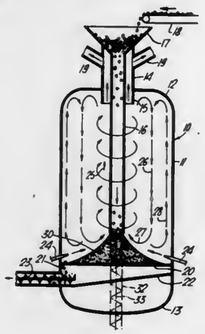
1. A grinding process comprising the steps of
providing a grinding cavity formed between two opposed flexible continuously movable belts which are in contact with each other at least along their transverse edges forming a tubular like spill free conveyor, adjusting said belts relative to each other to form a cavity of predetermined size based on the type of granular particles to be ground,
grinding said particles by imparting a rotating action upon the outer surface of the particles while the particles are in said cavity,
said rotating action causing said particles to rub and grind against each other and said belts to a predetermined condition,
said rotating action being effected by moving said belts relative to one another at different speeds,
said particles being conveyed along said belts without spillage in any direction and without any undesired contact with foreign surfaces due to said belts being in contact with each other,
and discharging the ground material from said cavity.

4,553,704

PULVERIZING APPARATUS

Robert R. Wilson, Kilmacolm, and Roy D. Falconer, Bridge of Weir, both of Scotland, assignors to James Howden & Company Limited, Glasgow, Scotland

Filed Feb. 21, 1984, Ser. No. 581,109
Int. Cl.⁴ B02C *19/06*
U.S. Cl. 241—39 **5 Claims**



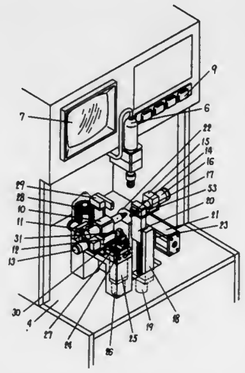
1. Pulverizing apparatus comprising a generally cylindrical vessel, a plurality of circumferentially spaced fluid injection nozzles each angled between a radius of the cylindrical vessel passing through the nozzles and a direction perpendicular to said radius, to inject fluid into the vessel and induce an axially flowing vortex in the vessel having its axis generally centrally of the vessel, transverse wall means is said cylindrical vessel, a generally axially extending feed tube passing through the transverse wall means for feeding the material to be pulverized into said vessel, said feed tube extending to a point in said vessel effective to feed the material to a point adjacent the axial center of the vessel in the vicinity of said nozzles, said transverse wall means being positioned at a location remote from the nozzles to intercept the vortex and to deflect a portion of the fluid medium and entrained particles of material to effect a recirculation of the fluid medium within the vessel and thus to form a curtain surrounding the vortex, whereby the material is pulverized by interparticle collisions and the curtain reduces high speed particle contact with the cylindrical wall of the vessel, and an outlet in said transverse wall through which a fraction of the pulverized material below a predetermined mass will pass generally along the axis of the vortex, said feed tube passing through said outlet in the transverse wall, so that the outlet is thus made annular.

4,553,705

TOROIDAL CORE WINDING METHOD AND APPARATUS

Yoshihisa Uchida, Neyagawa, and Kazuichi Yamashita, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00235, § 371 Date Feb. 16, 1984, § 102(e) Date Feb. 16, 1984, PCT Pub. No. WO84/00077, PCT Pub. Date Jan. 5, 1984
PCT Filed Jun. 18, 1982, Ser. No. 584,438
Int. Cl.⁴ H01F *41/08;* **B65H** *81/02;* **G11B** *5/42, 5/20*
U.S. Cl. 242—4 R **3 Claims**



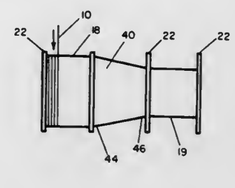
2. An apparatus for winding a wire onto a toroidal core having a hole therein, comprising:
core holding means for holding the core;
a wire gripping means operable for alternatively gripping and releasing the wire;
moving means on which said wire gripping means is mounted for moving said wire gripping means while gripping the wire for inserting the tip of one end of the wire through the hole from one side of the core so that it protrudes from the hole on the other side of the core, said wire gripping means then being operable for releasing the wire upon completion of the inserting;
a wire drawing out means for gripping the end of the wire protruding from the hole on the other side of the core and drawing the wire through the hole and out from the core until said drawing out means reaches a drawn out position;
said moving means including means for moving said gripping means from the position on the one side of the hole of the core at which the wire has been released to the other side of the core and to a gripping position spaced predetermined distance toward the core from said drawn out position, said gripping means then being operable for gripping the wire at said gripping position; and
a cutting means for cutting the wire gripped by said gripping means at said gripping position at a point which is portion of said predetermined distance from said drawn out position, said moving means including means for moving said gripping means from said gripping position to again insert the wire through the hole of the core.

4,553,706

LIGHTGUIDE FIBER SPOOL CHANGEOVER TECHNIQUE

Ralph E. Frazee, Jr., Brick Township, Ocean County, and David H. Smithgall, Sr., East Windsor Township, Mercer County, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 25, 1984, Ser. No. 623,900
Int. Cl.⁴ B65H *67/056*
U.S. Cl. 242—18 A **8 Claims**



1. A method for dynamically transferring a strand of material from a full, rotating, take-up spool of strand material to an empty, rotating, take-up spool, axially aligned therewith, comprising the steps of:
delivering the strand to a take-up spool at a substantially constant linear velocity to fill said spool;
rotating the full and empty spools along with a tapered transition section axially interposed therebetween, at the same rotational velocity;
winding the strand along the tapered section, from the greater to the smaller cross-sectional diameter thereof, while simultaneously increasing the rotational velocities of the spools and the tapered transition section; and
transferring the strand from the tapered transition section onto the empty spool when the strand is at the diameter of the taper equal to the diameter of the empty spool.

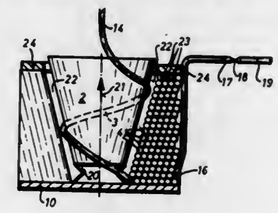
4,553,707

PROCESS FOR WINDING WIRE UPON A REEL

Werner Henrich, Am Wachtgipfel, D-6349 Hörbach, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,907
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948241
Int. Cl.⁴ B65H *54/04, 54/28, 55/04, 49/02*
U.S. Cl. 242—25 R **18 Claims**

1. In a process for winding wire upon a reel and the like, the steps of winding a wire in conical layers upon a conical core of a reel until a predetermined outer diameter of a wound package is reached, and subsequently winding the wire in layers of



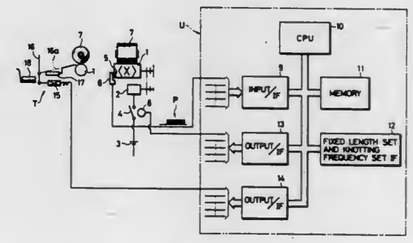
decreasing lengths to form a wound package having an outer cylindrical shape of the predetermined diameter.

4,553,708

DEFECTIVE PACKAGE SELECTOR FOR WINDERS

Isamu Matsui, Kyoto, and Yutaka Ueda, Nara, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Nov. 1, 1982, Ser. No. 438,333
Claims priority, application Japan, Nov. 2, 1981, 56-175889
Int. Cl.⁴ B65H *63/02*
U.S. Cl. 242—36 **4 Claims**



1. A defective package selector for a yarn winding apparatus, the apparatus of the type having a rotating yarn package being wound with a fixed, predetermined length of yarn, the selector comprising:
pulse signal producing means for producing a pulse signal in response to detection of a knotting operation, the pulse signal producing means including a rotatable body contacting the rotating yarn package and sensor means for generating a pulse signal each time the rotatable body makes a revolution,
a defective package selector control unit for receiving the pulse signals generated by the sensor means and determining and storing a value representing the number of yarn knots on the package being wound based on the number of pulse signals generated during yarn winding on the package, comparing the stored value of the number of yarn knots on the package with a preset number of yarn knots per the predetermined length of yarn, and producing a defective package signal when the stored value of the number of yarn knots on the package exceeds the preset number of yarn knots, and
a processing unit responsive to the defective package signal from sdid control unit for sorting out and processing doffed packages separately as normal and defective packages.

4,553,709

YARN ACCUMULATOR

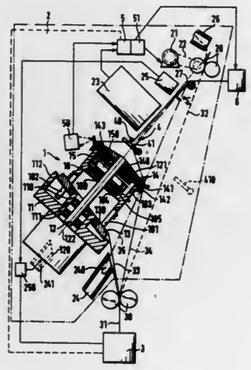
Erich Bock, Wettstetten; Kurt Lovas, Böhmfeld; Johann-Christian Promoli, and Joachim Dämmig, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,289

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 3238376; Oct. 16, 1982, 3238375

Int. Cl.⁴ B65H *51/00;* **D01H** *1/00*

U.S. Cl. 242—47.01 **43 Claims**



1. A yarn accumulator comprising:

(a) a rotary drive means;

(b) an accumulator roller driven by said rotary drive means having a rotary axis;

(c) a feed end formed on one end of said accumulator roller and an exit end formed at a distal end of said accumulator roller;

(d) a yarn feed station for feeding yarn substantially tangential to said feed end of said accumulator roller;

(e) a rotatable yarn restraining element carried at said exit end of said accumulator roller;

(f) said yarn restraining element being rotatable relative to said accumulator roller;

(g) yarn guide means arranged in prolongation of said rotary axis of said roller accumulator;

(h) said yarn being unwound from said accumulator roller through said yarn guide and counter to the movement of said yarn restraining element;

(i) said yarn restraining element including a radially outwardly extending open yarn restrainer for engaging yarn lying in a prescribed path at an angle to said axis of said accumulator roller; and

(j) said yarn guide means having a standby position and a closed yarn guiding position, said yarn guide being movable for engaging said yarn lying in said prescribed yarn path when moving from said standby position to said closed yarn guiding position causing said yarn in said prescribed path to be caught and deflected by said radially extending open yarn restrainer and wound about said roller accumulator.

4,553,710

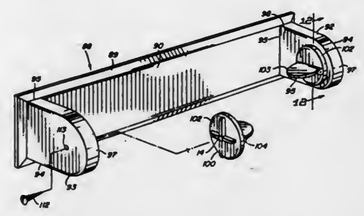
ROLL HOLDING FIXTURE

Daniel L. Pool, Phoenix, Ariz., assignor to PC Manufacturing Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 357,624, Mar. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 205,233, Nov. 10, 1980, abandoned. This application Aug. 16, 1983, Ser. No. 523,434

Int. Cl.⁴ B65H *19/04*

U.S. Cl. 242—55.2 **10 Claims**



1. A fixture for attachment to a surface and for rotatably holding a roll of coiled sheet material, which roll includes a hollow core, a generally cylindrical outer surface, and a pair of spaced apart ends, such fixture comprising:

a. a base securable to said surface;

b. a pair of support members carried by said base and spaced apart to receive the ends of said roll therebetween;

c. a pair of opposed support elements;

d. pivot means connecting each of said support elements to a respective one of said pair of support members for pivotal rotation between (i) an inwardly extending normal first position to be received within said roll to support said roll along a support axis extending between said support members, and (ii) a separable second position for receiving the end of said roll therebetween in response to urging of said roll to move therebetween, said pivot means extending along an axis substantially perpendicular to the support axis of said roll and selectively angularly positionable relative the plane of said base; and

e. a carrier element carried by each of said pair of support members, each said carrier element being selectively rotatably positionable relative said support axis and pivotably carrying a respective one of said pair of support elements.

4,553,711

MODULAR HOLDER FOR ROLLS

Kenard E. Urion, Gloucester County, N.J., and Peter Bressler, Philadelphia County, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jun. 21, 1984, Ser. No. 623,186

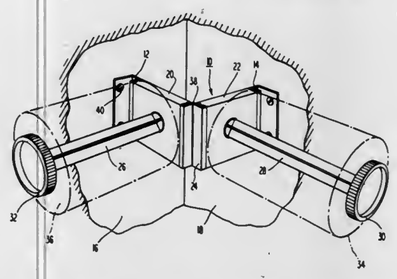
Int. Cl.⁴ B65H *19/04*

U.S. Cl. 242—55.3 **15 Claims**

1. A modular roll product holder comprising:

(a) first and second panels, each panel having an edge that includes a flange-shaped element;

(b) a hinged connector having two panel receiving elements separated by a hinge, each panel receiving element having a groove that mates with the flange-shaped element, whereby each panel can be removably secured to the connector, the hinge allowing the first and second panels to be connected together at different angles; and



(c) first and second roll support means having one end secured respectively to the first and second panels.

4,553,712

FEEDING WEB MATERIAL

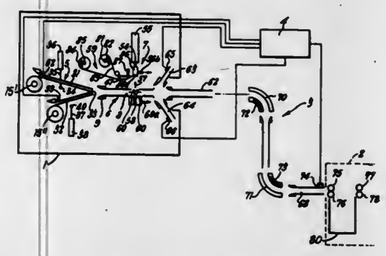
Wladyslaw H. Krywiczanin, Fairoak, and William Lumsden, Winchester, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Dec. 8, 1981, Ser. No. 328,672

Claims priority, application United Kingdom, Dec. 22, 1980, 8041062

Int. Cl.⁴ B65H *19/18, 21/00;* **B31F** *5/06*

U.S. Cl. 242—58 **7 Claims**



1. Apparatus for supplying web material from reels thereof to a web-utilising machine, comprising a reel changer including a reel store, means operable to advance reels in said store in succession to a reel-unwinding location, a web-transport system having an outlet end and means operable to feed and guide to the machine a web extending in a web path from a reel at the said unwinding location, which system comprises at least one air mover, means to supply air under pressure to the said air mover, means operable to sense the absence of web from a portion of the extent of the transport system and control means responsive to signals from said sensing means to activate air-supply to said air mover, wherein the web path of the transport system includes at least one curved portion defined by an air being and comprising means operative to supply air to the said air bearing when the web is running through the transport system but not to the air mover and when a web end is advanced to the air mover air is supplied to said air mover but not to said air bearing, whereby said leading end of a web length extending from a said reel can be fed to the outlet end of the said system.

4,553,713

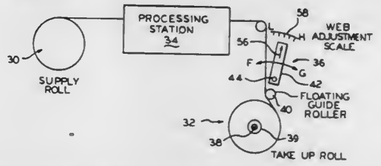
COIL WINDING CONTROL GUIDE

Richard M. Hecht, Chicago, and Robert G. Seaverns, Northbrook, both of Ill., assignors to Gasway Corporation, Chicago, Ill.

Filed Jun. 21, 1983, Ser. No. 506,301

Int. Cl.⁴ B65H *23/16*

U.S. Cl. 242—78.1 **5 Claims**



1. A guide system for a web which is wound into a coil having an increasing diameter, said guide system comprising an elongated generally vertical supporting arm extending across and adjacent an approximate radius of said coil, linear bearings comprising at least one guide rail extending longitudinally along the length of said support arm and at least one sliding bearing riding on said guide rails, rotatable guide roller means mounted on said sliding bearing for guiding and directing a web onto said coil in tangential alignment with the circumference thereof, the incoming web entering from a point above the supporting arm and moving down and under the guide roller and the outgoing web leaving the guide roller to be wound on the circumference of a coil which is below the guide roller, said incoming and outgoing web forming an obtuse angle which varies as a function of the instantaneous diameter of the coil, and means responsive to tension in the web applied to said guide roller along the sides of said angle for positioning said guide roller along said supporting arm so that said varying obtuse angle continuously urges said sliding bearing to a position which maintains the position of said guide roller at a substantially constant distance from the periphery of said coil as said diameter increases.

4,553,714

FISHING REEL WITH A VARIABLE PRESSURE CLICK PAWL

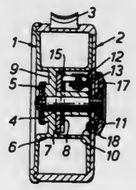
Raymond Humble, Alnwick, England, assignor to Hardy Bros (Alnwick) Ltd., Alnwick, England

Filed Aug. 15, 1983, Ser. No. 523,458

Claims priority, application United Kingdom, Aug. 16, 1982, 8223516

Int. Cl.⁴ A01K *89/02*

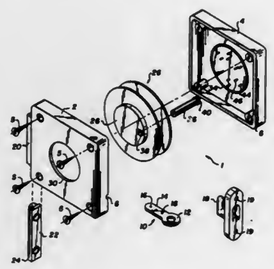
U.S. Cl. 242—84.1 R **7 Claims**



1. A fishing reel including a rotatable drum (1) having a central axis (4) of rotation and a cage (2) carrying the drum and having a check mechanism comprising a check wheel (7) having radially disposed teeth (8) projecting in a direction parallel to said axis (4) of rotation, a check tongue (12), a pivotal connection pivotally connecting said tongue to said reel at a position spaced axially from said axis (4) for pivotal movement in opposite directions to engage said teeth upon rotation of said check wheel in opposite directions, said tongue (12) extending from said pivotal connection in a direction parallel to said axis

(4) of rotation for engagement with the teeth (8), said pivotal connecting of said tongue (12) having a pivot axis at a right angle relative to said central axis (4); and biasing means for biasing said tongue in both directions of pivotal movement about said pivotal connection and into engagement with said teeth in both directions of rotation of said wheel.

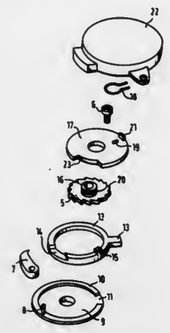
4,553,715
EXTENDIBLE LINE
Federico Roselli, 6961 Russell Ave., Burnaby, British Columbia, Canada (V5J 4R8)
Filed Aug. 31, 1984, Ser. No. 646,701
Int. Cl.⁴ B65H *75/38*
U.S. Cl. 242—100 **5 Claims**



1. A device to store and pay out a line comprising:
a casing;
a reel located in the casing and having an open side;
a plurality of discrete projections on the housing to engage the open side of the reel to guide the reel, the discrete projections extending radially inwardly of the casing;
means to locate the line on the reel;
an opening in the casing through which the line can pass;
a handle in the reel movable from an outward position to a retracted position, the outward position enabling rotation of the reel to wind or unwind the line and the inward position enabling the handle to abut the projections within the casing to stop rotation.

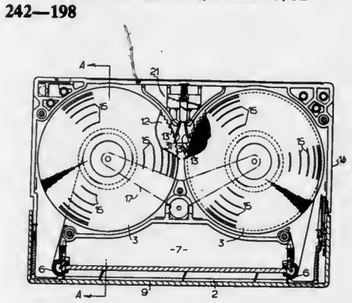
4,553,716
MECHANISM IN ROLL-UP DEVICE FOR SAFETY BELTS IN MOTOR VEHICLES
Wolf-Dieter Hönl, Böbingen, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Aldorf, Fed. Rep. of Germany
Continuation of Ser. No. 468,979, Feb. 23, 1983, abandoned. This application Oct. 9, 1984, Ser. No. 659,028
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206627
Int. Cl.⁴ A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107.7 **6 Claims**

1. A safety belt retractor assembly having a belt reel which is rotated to retract the safety belt, said retractor assembly comprising a ratchet wheel connected with the belt reel and having a circular array of teeth, a control pawl having an end portion movable into engagement with the circular array of teeth on the ratchet wheel to prevent retraction of the safety belt, and control means for blocking engagement of said control pawl with said ratchet teeth during retraction of a substantial length of the safety belt and for enabling said control pawl to engage said ratchet teeth upon withdrawal of a short length of the safety belt from the reel, said control means including a first control member having a circular blocking surface means for engaging said end portion of said pawl to block engagement of said pawl with said circular array of teeth on said ratchet wheel during retraction of a substantial length of the safety belt, said blocking surface means at least partially circumscribing said ratchet wheel and being disposed radially outwardly of and in axial alignment with said circular array of ratchet teeth, said first control member having a circular inner side surface which at least partially circumscribes said ratchet wheel and is disposed radially outwardly of and in axial alignment with said circular array of ratchet teeth, said first control



member having an opening extending between said blocking surface means and said inner side surface, said opening being disposed radially outwardly of and in axial alignment with said circular array of ratchet teeth, said end portion of said pawl being movable through said opening to engage said ratchet teeth upon withdrawal of a short length of the safety belt.

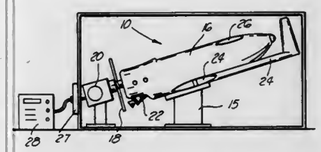
4,553,717
RECORDING TAPE CARTRIDGE
Hiroyoshi Takagi, Kameoka, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan
Filed Dec. 13, 1983, Ser. No. 560,870
Claims priority, application Japan, Dec. 14, 1982, 57-189807[U]
Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—198 **8 Claims**



1. A recording tape cartridge which comprises a bottom section, a top section assembled with the bottom section to form a case body, at least one tape reel accommodated in said case body with a recording tape wound therearound, each of said tape reels having at least one flange with its peripheral edge formed as engaging teeth, an opening defined in the bottom section for allowing entrance of a tape reel releasing member provided on a tape recording apparatus and tape reel braking means for preventing rotation of said tape reel when said recording tape cartridge is not in use, said tape reel braking means comprising a pair of guide wall projections formed at both sides of said opening in said bottom section forming a space therebetween, a stopper member having at least one braking member for engagement with any one of the teeth of said tape reel and being guided by said guide walls so as to move between a first position where said braking member can engage at least one of the engaging teeth of said tape reel for

preventing rotation of said tape reel and a second position where said braking member is disengaged from said teeth to allow rotation of said tape reel, means for resiliently biassing said stopper member toward said first position and an engaging means for preventing disengagement of said stopper member from said guide walls in an upward direction.

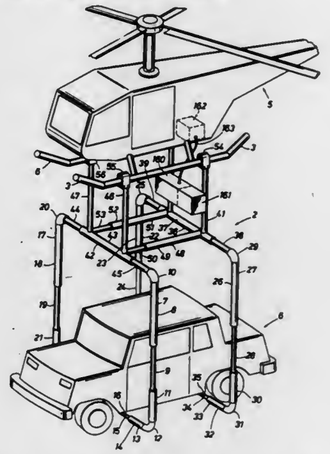
4,553,718
NAVAL HARRASSMENT MISSILE
George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 30, 1982, Ser. No. 430,346
Int. Cl.⁴ F41G *7/22*
U.S. Cl. 244—3.15 **11 Claims**



1. A naval harrassment missile for launching frpom shipboard and autonomously flying to a designated target area and attacking a target and providing a homing signal for other missiles to guide them in attacking the target, the missile comprising:
a missile airframe with deployed wings, the wings when deployed fixed to the missile for controlling the missile during target harrassment, observation and terminal attack flight;
drive means mounted on the airframe for propelling the missile to the target area;
a missile flight computer mounted on the airframe and adapted for interfacing with a control computer on shipboard and receiving mission data therefrom, the flight computer receiving a command from the control computer to initiate take-off, the flight computer having preprogrammed information for flight to a designated target area, the flight computer controlling the speed of the drive means;
a target sensor mounted on the airframe and activated when the missile arrives in the designated area, the sensor when activated searches for and detects a target, the sensor providing guidance data on the target to the flight computer and control computer, the flight computer and control computer with the target data having the option to instruct the missile to enter a harrassment loiter pattern, an observation pattern and attack the target; and
a navigational signal unit mounted on the airframe for providing information to the flight computer and control computer for providing target data to other missiles to guide the other missiles in attacking the target.

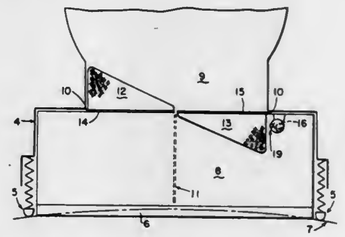
4,553,719
VEHICLE LIFTING SYSTEM AND METHOD
David Ott, 3944 W. Alabama, Suite 101, Houston, Tex. 77027
Continuation-in-part of Ser. No. 548,652, Nov. 4, 1983, abandoned. This application Apr. 1, 1985, Ser. No. 717,644
Int. Cl.⁴ B64D *9/00*
U.S. Cl. 244—118.1 **11 Claims**

1. Apparatus for seizing and lifting a motor vehicle and the like, comprising
a first plurality of spaced-apart extensible frame members,
a second plurality of spaced-apart extensible frame members each interconnected across adjacent ends of said first extensible frame members,
a plurality of first suspension members each interconnected at one end of a selected one of said second plurality of frame members and each adapted at the other end to movably interconnect with the skid of a helicopter and the like,
a plurality of second suspension members each interconnected with and selectively extensible from one of the ends of one of said second plurality of frame members to and about a portion of said vehicle,



a plurality of hydraulically-actuated selectively extensible jacking means each disposed at the lower end of one of said second suspension members and being adapated to engage the chasis of the motor vehicle, and
a plurality of rotating members each fixedly mounted on the lower end of one of said second suspension members for swinging the jacking means in and out from under the motor vehicle.

4,553,720
CONNECTING MECHANISM FOR AN AIRPLANE PASSENGER BRIDGE
Helmut Harder, Kassel, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany
Filed Aug. 16, 1983, Ser. No. 523,694
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 8309614[U]
Int. Cl.⁴ B64D *9/00*
U.S. Cl. 244—137 P **5 Claims**



1. A connecting mechanism for an airplane passenger bridge which provides a passageway for passengers who are boarding or deplaning an aircraft having a door; said connecting mechanism comprising:
a cabin which can be connected to said aircraft and which has a circumferential seal for placement against said aircraft is such a way as to extend completely around the door thereof; said cabin having a bottom which is in two different parts, namely a tiltable outer section which is

adapted to face said aircraft, and a rigid inner section; said outer section being arranged capable of being positioned horizontally, and being embodied as an inclinable floor having an essentially horizontal pivot axis which is disposed in the direction in which passengers walk; each of said sections of said bottom of said cabin having an end which is directed toward the other of said bottom sections; and

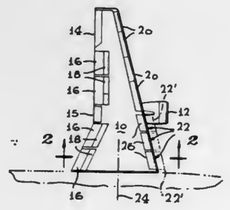
one triangular transition ramp provided on each of said ends of said bottom sections which face one another; said transition ramps being disposed next to one another, and each capable of being selectively folded over about a transverse axis, into and out of the direction in which passengers normally walk, located in spaced parallel relationship to the pertaining walking surface; when in use, the hypotenuse region of that side of each transition ramp which faces downwardly being directed toward the middle of the passageway and being supported on that bottom section to which the pertaining transition ramp is not connected.

4,553,721

SPOILER DEVICE FOR ATTACHMENT TO A LEADING EDGE SLAT

Bernard J. Jorgensen, Chatsworth, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Aug. 5, 1983, Ser. No. 520,796
Int. Cl.⁴ B64C 9/22, 9/32
U.S. Cl. 244—213 **5 Claims**



1. A spoiler device for an aircraft, said aircraft having a leading edge slat mounted on at least a portion of the leading edge of the wing of said aircraft, said slat moveable from a retracted position to an extended position, said spoiler device comprising:

a rear portion of said slat rotatably mounted thereto moveable from a retracted position, to an extended position so as to act as a spoiler;

biasing means adapted to yieldably hold said rear portion of said slat in said retracted position; and

actuation means mounted on said wing in detachable contact with said rear portion of said slat, said actuation means adapted to extend said rear portion when said slat is in said retracted position.

4,553,722

VARIABLE-CAMBER AIRFOIL

James B. Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01822, § 371 Date Dec. 30, 1982, § 102(e) Date Dec. 30, 1982, PCT Pub. No. WO84/02691, PCT Pub. Date Jul. 19, 1984
PCT Filed Dec. 30, 1982, Ser. No. 491,951
Int. Cl.⁴ B64C 3/50
U.S. Cl. 244—219 **15 Claims**

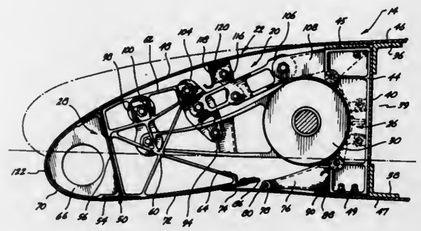
1. A variable-chamber airfoil having a span and a chord, comprising:

a front spar assembly, said front spar assembly extending spanwise through said airfoil and being affixed to said airfoil;

a nose structure, said nose structure including the leading edge of said airfoil;

an upper panel, said upper panel extending from adjacent said front spar assembly to adjacent said nose structure, said upper panel being flexible in a chordwise direction and forming a continuous upper aerodynamic surface of said airfoil between said front spar assembly and said nose structure, said nose structure and said upper panel being movable between a first position wherein said upper panel has a minimum curvature and a second position wherein said upper panel has a maximum curvature;

linkage means for swingably moving said nose structure downwardly and rearwardly from said first position to said second position; and



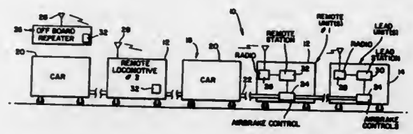
a lower aerodynamic surface, said lower aerodynamic surface extending from said front spar assembly to said nose structure, said lower aerodynamic surface including a rigid panel and a flexible panel, said rigid panel being affixed to said nose structure and movable therewith, a pivot mounted on the inner surface of said flexible panel, said flexible panel being pivotally mounted to said front spar assembly, said flexible panel having forward and rear ends that are biased upwardly, said pivot that is mounted on said inner surface of said flexible panel being mounted forward of the midpoint between said forward and rear ends of said flexible panel, said rigid panel movement being controlled by the linkage mechanism to remain in sliding contact with said forward end of said flexible panel when said nose structure moves between said first and second positions.

4,553,723

RAILROAD AIR BRAKE SYSTEM

Richard E. Nichols, and Dale H. Delaruelle, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 15, 1983, Ser. No. 532,522
Int. Cl.⁴ B61L 3/00
U.S. Cl. 246—167 R **10 Claims**



1. In an air brake system for a train having at least a lead unit, one or more remote units and a plurality of cars which are provided with air brakes, the remote units each having an equalizing reservoir for providing a pressure reference for air brake control, and a relay valve in communication with each equalizing reservoir for applying pressurized air equal in pressure to the air pressure in the equalizing reservoir to a brake pipe coupled to the air brakes for the activation and deactivation of the air brakes of the plurality of cars, a main reservoir of air coupled to each relay valve for charging the brake pipe with air and means disposed between the main reservoir and

the relay valve for reducing the rate of flow of air between the main reservoir and the relay valve; an apparatus for analyzing air flow rate between the main reservoir and the relay valve comprising:

(a) means for measuring the pressure drop across the means for reducing flow rate, the means for measuring having a response time which is required to sense any change in pressure drop; and

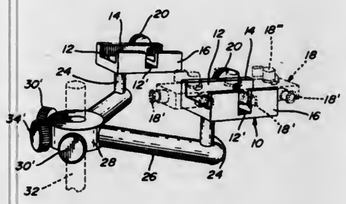
(b) means for analyzing the pressure drop over a time interval longer than the response time to detect a characteristic of the pressure drop as a function of time which is indicative of a flow rate change across said means for reducing.

4,553,724

STOP COCK MANIFOLD HOLDER

Maurice St-Amand, 44 Orléans St., Vimont, Laval, Quebec, Canada (H7M 1P2)

Filed Nov. 28, 1983, Ser. No. 555,597
Int. Cl.⁴ F16L 3/22
U.S. Cl. 248—68.1 **8 Claims**



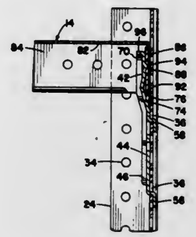
1. A holder for a medical stop cock manifold, the latter being in the shape of an elongated rectangular box; having at least one transverse nipple projecting out of the middle of one of the longer side walls thereof; the other longer side wall being free of any nipples; further having stopcocks projecting upwardly of the top wall thereof and a central protuberance extending downwardly of the bottom wall thereof; the holder comprising a rectangular block having a longitudinal channel open at both ends; said channel having a width slightly larger than the width of said box; said channel defining two spaced-apart upright longitudinal side flanges; said manifold being fittable longitudinally in said channel between said flanges; one of said flanges having a middle opening for said transverse nipple; the other of said flanges having a manifold fastening means; further comprising support means to securely and detachably support the holder above a floor.

4,553,725

STEEL SHELVING MOUNTING CLIP AND SHELVING STRUCTURE

William R. Vargo, 2101 Randall Ave., Lithonia, Ga. 30058

Continuation-in-part of Ser. No. 352,116, Feb. 25, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,070
Int. Cl.⁴ A47B 57/24
U.S. Cl. 248—221.3 **2 Claims**



1. In a support assembly including an upstanding post having spaced apertures along the length thereof, and a shelf having an upper support surface, an underside, and a flange of predetermined length and thickness having apertures therethrough, said flange extending from the periphery of said shelf adjacent said underside thereof and having a lower edge:

a mounting clip comprised of a channel-shaped body portion having an upper segment and a lower segment, said segments being generally planar, with said upper segments being laterally offset from said lower segment such that said upper segment is approximately parallel to said lower segment;

at least one tab extending from said lower segment through the apertures in said post to interlock said clip with said post and define a generally U-shaped slot between said upper segment and said post wherein said slot is slightly less than the thickness of said flange;

a protuberance on said upper segment extending toward said post wherein said protuberance engages said aperture in said flange to lock said shelf in place; and

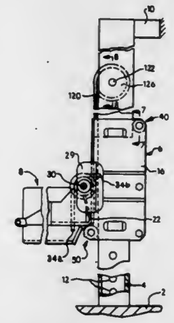
a flat support tab defining the bottom of said U-shaped slot for engaging and supporting the lower edge of said flange when said flange is within said slot, said support tab disposed substantially in the same vertical plane as said lower segment and being located such that a space exists between said clip and the underside of said shelf.

4,553,726

ADJUSTABLE HEIGHT SEAT APPARATUS FOR COMBAT VEHICLE

Theodore A. Jackson, Utica, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 19, 1983, Ser. No. 533,474
Int. Cl.⁴ E04G 3/00
U.S. Cl. 248—297.1 **8 Claims**



1. An adjustable height seat apparatus comprising:

(a) a base,

(b) a support means extending upwardly from the base and having a plurality of height adjustment means spaced along the length thereof,

(c) a carriage means carrying a seat on a front side thereof and forming a channel receiving said support means, said carriage means including a first guide roller means behind said support means in rolling contact therewith and a second guide roller means in front of said support means in rolling contact therewith and diagonally disposed relative to said first guide roller means to guide said carriage means and allow vertical movement thereof relative to said support means, said carriage means further including releasable locking means to engage said height adjustment means of said support means to releasably lock the carriage and seat in an adjusted position, and

(d) spring means having a spring member wound on a spool rotatably supported on said support means above the car-

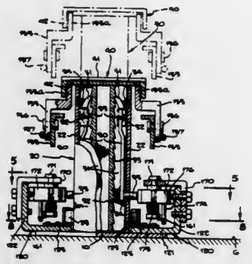
riage means with the spring member having a vertically extending portion secured to said carriage to bias same upwardly when said locking means is released.

4,553,727

EXTENDIBLE JACK STAND ADAPTED FOR REMOTE CONTROL

Harry H. Arzouman, Los Angeles, Calif., assignor to Safe-T-Jack, Inc., Irvine, Calif.

Division of Ser. No. 261,686, May 7, 1981, Pat. No. 4,462,569.
This application Apr. 20, 1984, Ser. No. 602,476
Int. Cl.⁴ B66F *5/04*
U.S. Cl. 248—354.7 **9 Claims**



1. An extendible jack stand comprising, in combination:
a flat base plate;
a frame of hollow rectangular cross sectional configuration rigidly attached to said base plate and extending upwardly therefrom;
a vertical shaft positioned in telescoping relationship to said frame including a first pair of parallel plates longitudinally slidable within said frame, and a second pair of parallel plates extending transversely between said first pair of plates, said second plates being spaced apart and also being inset from the edges of said first plates;
a horizontal load-bearing seat carried on the upper end of said shaft;
ratchet means carried by said frame and said shaft for locking said shaft in a selected elevational position relative to said base plate, said ratchet means including a vertical series of teeth formed on the outer surface of each of said second plates, and a pair of tooth members each pivotally supported from the inner surface of an associated wall of said frame, each tooth member having a single tooth adapted for engagement with the vertical series of teeth on the corresponding one of said second plates;
means associated with said frame and base plate for releasably securing a power unit thereto; and
means associated with said frame for selectively unlocking said ratchet means.

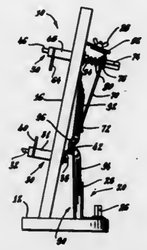
4,553,728

MULTIPLE POSITION BOOKSTAND

Thomas Corsello, 100 Alvord Park Rd., Torrington, Conn. 06790

Filed May 23, 1984, Ser. No. 613,336
Int. Cl.⁴ A47B *97/04*
U.S. Cl. 248—452 **4 Claims**

1. A multiple position bookstand for holding a book having a back, sides and pages which permits positioning and holding an open book on its side to permit reading the book in a reclining position comprising:
a laterally extending supporting base having an angled upright support with a front and a back mounted thereon and extending upward therefrom in a fixed position, said back of said angled upright support forming an angle of less than 90° with said base,
an upstanding base bracket mounted on said base and spaced behind said back of of said angled upright support adapted to bear on the pages of an open book placed on its side behind the back of said angled upright support, said upstanding base bracket being adjustable in a direction toward and away from said upright support
a downwardly extending bracket movably mounted on said back of said angled upright support above said upstanding base bracket adapted to hold the pages of an open book placed on its side behind said back of said angled upright support said downwardly extending bracket being adjustable both toward and away from, as well as in a generally vertical direction with respect to said upright support,
a first movable support means mounted on said back of said angled upright support between said upstanding base



bracket and said downwardly extending bracket and being adjustable in a generally vertical direction with respect to said upright support, said first movable support means having a free extremity which is spaced from the back of said upright support a distance less than the maximum adjusted spacings of said upstanding base and said downwardly extending bracket from said upright support, said free extremity being adapted to contact the back of the book and urge outward an open book positioned on its side between said base bracket and downwardly extending bracket on said back of said angled upright support thereby flattening the open book between said base bracket and said downwardly extending bracket.

4,553,729

MULTI-PANELLED CONCRETE FORMING STRUCTURE FOR FORMING FLAT CURVED WALLS

Frank T. Connors, Deerfield, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Continuation of Ser. No. 326,824, Dec. 4, 1981, abandoned. This application Jan. 10, 1984, Ser. No. 568,937
Int. Cl.⁴ E04G *17/08*
U.S. Cl. 249—40 **11 Claims**



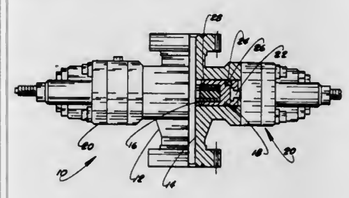
1. In a modular curved concrete form structure, wherein the improvement comprises a pair of curved sections with one section having a greater diameter, each section including a series of at least three vertically extending rows of modular concrete form panels joined together in curving side-by-side relation as a gang providing a generally curved surface concrete forming area, the panels each having confronting slotted panel margins about its perimeter, fasteners securing the confronting panel margins in curving side-by-side relation, a series of spaced vertically aligned and horizontally positioned modular flat sided walers mounted in lapped engagement against said confronting slotted panel margins, said walers each having a width less than the width of a pair of the panels but exceeding the width of one of said form panels only being of sufficient additional width to extend over joints formed between the confronting slotted panel margins at opposite sides of each panel to provide a backing, fasteners securing the spaced vertically aligned horizontally positioned walers to the panels, upright strongback structure mounted in abutment against said spaced vertically aligned horizontally positioned walers generally in right angle relation thereto, and fastener means securing said strongback structure in unitary assembly with said panels.

4,553,730

RAM-TYPE BLOWOUT PREVENTER AND PACKER THEREFOR

John C. Vicic, c/o Cameron Iron Works, Inc., P.O. Box 1212, Houston, Tex. 77251

Filed Aug. 16, 1983, Ser. No. 523,421
Int. Cl.⁴ E21B *33/06*
U.S. Cl. 251—1.3 **13 Claims**



1. A ram-type blowout preventer comprising
a housing having a bore with aligned ram guideways extending through the housing from opposite sides of said bore,
a ram in each of said ram guideways having a front face facing said bore,
means for moving the rams inwardly and outwardly in said guideways, and
a front packer positioned in the front face of each of said rams,
each of said front packers including
a packing of resilient material having upper and lower surfaces,
a reinforcement means consisting of a plurality of layers of reinforcing non-metallic fabric material embedded in said packing, said plurality of layers being confined to a region in said packing located immediately below the front portion of said upper plate and spaced a substantial distance above the lower plate.

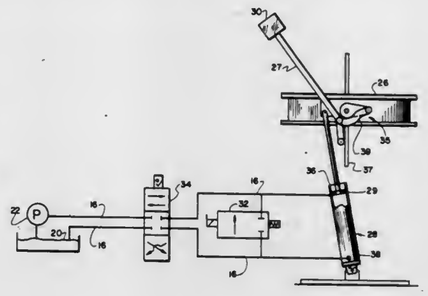
4,553,731

FAIL-CLOSED, TIGHT SEAL GAS SAFETY VALVE SYSTEM

John A. Carpenter, Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 7, 1984, Ser. No. 648,101
Int. Cl.⁴ F16K *31/42*
U.S. Cl. 251—27 **2 Claims**

2. A fail-closed tight seal gas safety valve system for blast furnace stove operations comprising an elastic-seated tight seal butterfly valve actuated by a double acting cylinder operating in conjunction with a spring-closed two-way solenoid valve and a servovalve which controls said double acting cylinder the operation of said butterfly valve being such that when carbon monoxide is being burned in the blast furnace stove, the solenoid on said solenoid valve and the balancing coils of said servovalve are energized causing said solenoid valve to close and allowing fluid to be pumped from a fluid reservoir through said servovalve into said cylinder, with the flow of the fluid being modulated by said servovalve, whereupon the piston in said cylinder will move upward allowing gas to flow from the furnace through said butterfly valve to the burner passageway and also allowing said butterfly valve to regulate the amount of gas flow into the blast furnace stove, and the operation of said butterfly valve being such that in the event of a power failure, said solenoid on said solenoid valve and said balancing coils of said servovalve will de-energize causing said solenoid valve to open, said servovalve to cease modulating fluid flow, and fluid to flow from the closed end of said cylinder to the rod end of said cylinder, thereby forcing the piston in said cylinder to retract and said butterfly valve to fail-closed with the aid of a



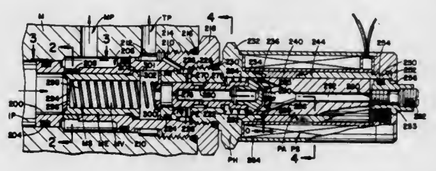
counterweight attached to and acting in conjunction with a progressively increasing leverage linkage system consisting of two pivotally-connected levers, one of which is attached to said shutoff valve via a third lever, other of which is attached to said cylinder and carries said counterweight, whereupon such fail closure said butterfly valve will shut off the flow of gas from the furnace to the burner passageway, cease regulating the amount of gas flow in the blast furnace stove, and prevent the leakage of carbon monoxide gas into the stove area, and the operation of said butterfly valve being such that in the event of a hydraulic failure, said butterfly valve will fail-closed in the same manner in which it fail-closes in the event of a power failure as described above.

4,553,732

SOLENOID CONTROLLED FLOW VALVE

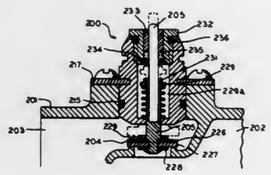
Robert W. Brundage, 135 Paradise Rd., and Gene Swatty, 182 Grenney La., both of Painesville, Ohio 44077

Filed Feb. 13, 1984, Ser. No. 579,571
Int. Cl.⁴ F16K *11/10*
U.S. Cl. 251—30.01 **14 Claims**



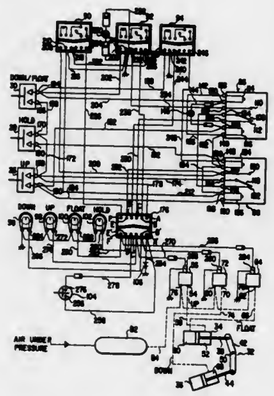
12. In an electrically controlled flow valve comprising in combination: a spring-biased, pressure-differential actuated main valve; an adjustable pilot flow valve, the flow of which, when varied, varies the pressure difference on said main valve; the improvement which comprises said pilot flow valve being of the pressure compensated type; and electro-magnetic means for varying the flow of fluid through said pilot valve and the pressure differential across said main valve.

4,553,733
ZONE CONTROL VALVE
Michael D. West, Arlington Heights, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 17, 1983, Ser. No. 458,556
Int. Cl.⁴ F16K *31/00*
U.S. Cl. 251—291 **6 Claims**



1. A zone valve comprising:
a valve unit comprising a valve plug having a generally cylindrical portion, of a first diameter, and a circumferential groove on said cylindrical portion;
an operator unit comprising a frame member having a valve plug receiving aperture, said plug receiving aperture having a diameter at least equal to said first diameter, a wire locking spring coupled to said operator unit having first and second arm portions spaced apart a distance less than said first diameter, said first and second arm portions being positioned on one side of said frame member adjacent said aperture such that when said valve plug is inserted through said frame member said first and second arm portions engage said circumferential groove to prevent movement of said valve plug relative to said operation unit in a direction along the axis of insertion while permitting rotational movement of said valve plug relative to said operator;
said wire locking spring including said first and second arm portions integrally formed with first and second handle portions respectively to connect and an interconnecting web integrally formed said first handle portion to said second handle portions in a unitary construction, said wire locking spring being operable such that when said first and second handle portions are moved in a direction towards each other, said first and second arm portions are outwardly deflected and disengage said groove; and
said frame member including first and second apertures spaced a predetermined distance from said aperture and wherein said wire locking spring includes a first offset portion intermediate said first arm portion and said first handle portion and a second offset portion intermediate said second arm portion and said second handle such that said first and said second arm portions lie in a first plane and said first and second handle portions lie in a second plane, said first offset portion being received in said first aperture, said second offset portion being received in said second aperture such that said wire locking spring is retained in position relative to said plug receiving aperture.

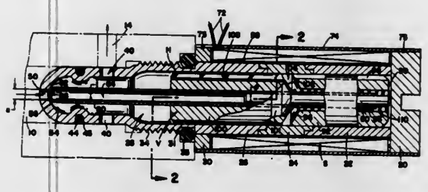
4,553,734
FINGER PRESSURE ACTUABLE DUMP CONTROL SYSTEM FOR DUMP VEHICLES
Koichi Oka, and Fumio Shintani, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Dec. 28, 1983, Ser. No. 566,251
Int. Cl.⁴ F15B *13/044*; F01B *1/00*
U.S. Cl. 251—58 **3 Claims**



1. A finger pressure actuable dump control system for a dump vehicle having a dump body, comprising:
(a) a hoist valve actuating means for operating a hoist valve comprising first and second fluid actuated cylinders operatively connected to the hoist valve, the first cylinder having an "up" chamber and a "float" chamber, the second cylinder have a "down" chamber:
(b) a source of fluid under pressure;
(c) "up" valve means for on-off control of communication between the "up" chamber of the first cylinder and the pressurized fluid source;
(d) "float valve means for on-off control of communication between the "float" chamber of the first cylinder and the pressurized fluid source;
(e) "down" valve means for on-off control of communication between the "down" chamber of the second cylinder and the pressurized fluid source;
(f) an "up" switch to be activated manually;
(g) a "hold" switch to be activated manually;
(h) a "down/float" switch to be activated manually;
(i) "up" circuit means for opening the "up" valve means in response to the activation of the "up" switch;
(j) "hold" circuit means for closing the "up", "float" and "down" valve means in response to the activation of the "hold" switch;
(k) "down" circuit means for opening the "down" valve means in response to the activation of the "down/float" switch; and
(l) "float" circuit means for opening the "float" valve means in response to the release of the "down/float" switch.

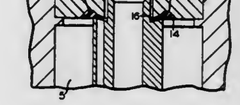
4,553,735
SOLENOID CONTROLLED VALVE
Robert W. Brundage, 135 Paradise Rd., Painesville, Ohio 44077
Filed Jan. 13, 1982, Ser. No. 339,092
Int. Cl.⁴ F16K *31/06, 25/00*
U.S. Cl. 251—129.16 **5 Claims**

1. A fluid pressure valve comprising in combination a housing having an elongated cylindrical cavity therein; said housing being comprised of first, second and third lengths of tubing fastened in end to end relationship, one end of said first length being formed to a portion of lesser diameter and having a drilled axial opening therethrough providing a high pressure inlet port defined by a valve seat, means closing the open end of said third length, an outlet port drilled through a side of said first length spaced from said formed end, said second length being of magnetically non-permeable material, a valve member including a magnetically permeable armature slidable in said cavity and having an axially facing surface; a valve stem



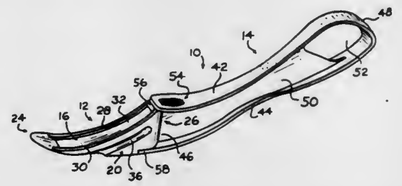
formed from hypodermic tubing fastened to said armature and extending therebeyond toward said inlet port, a magnetically permeable core member inside of said cavity and having an axially facing surface in spaced relationship to said armature surface, the end of said tubing being formed to a lesser diameter to form a valve seat engaging surface having a passage therethrough to the inside of said tubing, and means spaced from said passage closing the inside of said tubing.

4,553,736
PNEUMATIC PLUNGER-TYPE VALVE
Patrick R. Dellario, Northridge, Calif., assignor to American Standard Inc., Lexington, Ky.
Continuation of Ser. No. 331,503, Dec. 17, 1981, abandoned. This application May 30, 1984, Ser. No. 602,875
Int. Cl.⁴ F16K *1/42*
U.S. Cl. 251—334 **7 Claims**



1. A valve device comprising:
(a) a housing;
(b) a separating wall securely positioned in said housing for defining a fluid supply chamber and a fluid delivery chamber within said housing;
(c) a central opening through said separating wall for providing a fluid communication passageway between said fluid supply chamber and said fluid delivery chamber;
(d) an annular channel formed in said separating wall on the side thereof adjacent said fluid delivery chamber, said annular channel being spaced a predetermined distance from an annular wall defining said central opening in said separating wall;
(e) an annular tapered portion on said separating wall on said side thereof adjacent said fluid delivery chamber, said tapered portion being tapered from a point beginning substantially at the edge of said central opening adjacent said fluid delivery chamber and terminating at a point along a wall which defines the inside diameter of said annular channel; the thickness of said separating wall along said tapered portion being greatest at said edge of said central opening
(f) a resilient valve seat fixedly engaged in said annular channel in said separating wall positioned in said housing;
(g) a fluid flow control valve stem reciprocably operable within said housing;
(h) a valve member carried on said fluid flow control valve stem for making seating contact on said resilient valve seat upon movement of said fluid flow control valve stem in one direction; and
(i) an outer edge on said valve member formed by a tapered annular disk-like surface sloping downwardly and inwardly toward the center of said fluid flow control valve stem, said outer edge and said tapered annular disk-like surface making said seating contact with said resilient valve seat.

4,553,737
PRYING STAPLE REMOVER
Chol H. Yi, 1919 Citron St., #901, Honolulu, Hi. (96826)
Filed Mar. 4, 1985, Ser. No. 707,684
Int. Cl.⁴ B25C *11/00*
U.S. Cl. 254—28 **4 Claims**

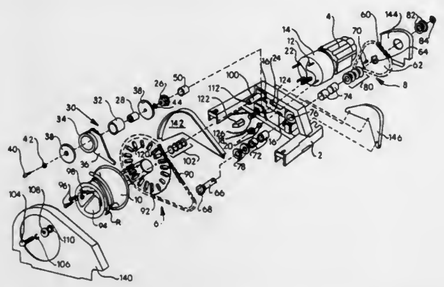


1. A prying staple remover for staples having a base and two depending legs, said remover comprising:
a head portion having an arcuate bottom surface, an arcuate top surface, and a pair of side surfaces connecting said bottom surface to said top surface; said bottom surface having a greater radius of curvature than said top surface; said top surface including a pair of separated rails and a ferromagnetic member disposed between and recessed downwardly from said rails; said top surface and said bottom surface meeting at a blunt prying tip; said pair of side surfaces each including arcuate side grooves which follow the curvature of said top surface and which open on said bottom surface; whereby a base of a removed staple is magnetically attracted against said rails by said ferromagnetic member, and the legs of said staple are engaged with and channeled away from said bottom surface by said side grooves; and
an arcuate handle portion connected to an end of said head portion that is distal from said prying tip.

4,553,738
CABLE PULLING DEVICE WITH ANTI-REVERSING CLUTCH
Jeffrey J. Plummer, and Larry G. Adleman, both of Rockford, Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.
Continuation of Ser. No. 435,171, Oct. 19, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 646,991
Int. Cl.⁴ B66D *1/20, 3/16, 5/32*
U.S. Cl. 254—358 **2 Claims**

1. A cable pulling device, comprising a support frame, a capstan rotatably mounted on the support frame about a rotational axis, an electric driving motor mounted on the support frame and having an output shaft rotatable about an output rotational axis substantially parallel with the rotational axis of the capstan, a chain and sprocket means between the output shaft and capstan, said means having a first sprocket mounted on the output shaft and driven thereby and having a second sprocket attached to the capstan for rotating same in one direction to pull cable when the driving motor is actuated, and an anti-reversing roller clutch means including a housing with a lateral extension member mounted thereon extending trans-

versely of the rotational axis of the capstan and output shaft, said extension member fixedly retained on the support frame against rotation and with a housing bore within said housing coaxially aligned with the output shaft for receiving the output shaft, an inner race in said housing bore mounted on the output shaft for rotation therewith and an outer roller clutch and bearing assembly with a non-rotatable outer race in said housing bore and bearings between said inner race and outer race



for rotation in said one direction when the driving motor is actuated for cable pulling but said bearings binding between the inner race and outer race when rotated in the reverse direction so as to prevent rotation of said inner race and thereby lock said output shaft, chain and sprocket means and capstan against rotation in the reverse direction, preventing rotation thereof in the reverse direction by cable loads when the driving motor power is interrupted.

4,553,739

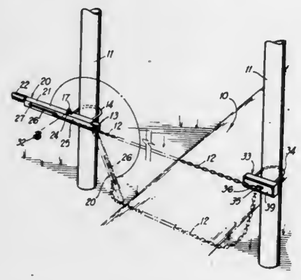
FLEXIBLE BARRIER HOLDING AND MANIPULATING MECHANISM

Richard M. Baines, Rte. 5, Sentry Dr., Cartersville, Ga. 30120

Continuation-in-part of Ser. No. 463,340, Feb. 3, 1983,. This application Apr. 13, 1984, Ser. No. 600,147

Int. Cl.[4] A01G *17/06;* **E04H** *17/00*

U.S. Cl. 256—23 **5 Claims**



1. A mechanism for adjusting a flexible barrier element across a passageway defined by two spaced upstanding posts, said mechanism comprising a first bracket means secured to one post at an elevation above the lower end of such post, a second bracket means secured to the other post at substantially the same elevation and having a substantially level top face, a hand lever pivotally attached to the second bracket means on a horizontal pivot axis so that the hand lever can swing in a vertical arc, the hand lever being adapted in a substantially level position to rest on the second bracket means and in a second position to extend downwardly from the second bracket means, said hand lever comprising an angle bar section having a top web and a depending vertical side web, said top web engaging and resting on said top face of the second bracket means when the hand lever is in said level position, a flexible barrier element connected with the first bracket means, and a lost motion connection between the flexible barrier element and said hand lever said lost motion connection including a slot in said side web.

4,553,740

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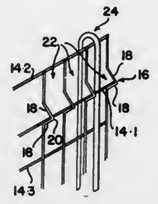
Alan Bailey, Cape Town, South Africa, assignor to Cape Gate Fence & Wire Works (Proprietary) Limited, Cape Province, South Africa

Filed May 3, 1984, Ser. No. 606,630

Claims priority, application South Africa, May 10, 1983, 83/3337

Int. Cl.[4] E04H *17/02;* **B21F** *27/00*

U.S. Cl. 256—33 **8 Claims**



1. A fence structure including a mesh fence panel and a fence panel securing element of inverted U-shape, said panel comprising at least one horizontally extending zone at which at least one horizontally extending wire is offset horizontally with respect to the horizontally extending wires above and below it whereby these three wires bound a space which is open both upwardly and downwardly, said U-shaped fastener comprising two spaced limbs, one of said limbs passing downwardly through said space behind said one wire and the other of said limbs passing downwardly externally of said space and behind the other two wires, the limbs of said fastener entering the ground to secure said panel to the ground.

4,553,741

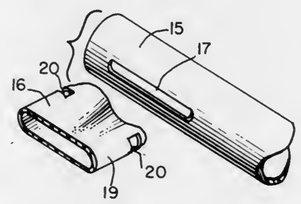
PLASTIC FENCE ASSEMBLY

Charles K. Creasy, Rte. 1, Box 107-B, and Eustis Hendley, Rte. 1, Box 109-B, both of Brooklet, Ga. 30415

Filed Oct. 4, 1984, Ser. No. 657,678

Int. Cl.[4] E04H *17/14*

U.S. Cl. 256—66 **2 Claims**



1. A fence section having two plastic fence posts comprising lengths of hollow cylindrical tubing anchored to stand vertically above the ground at a predetermined spacing and defining therein an axially spaced set of two or more axially elongated oval shaped apertures for receiving thereinto mating rails of elongated oval shape extending between two spaced posts and extending into the hollow cylindrical tubing of said posts, two hollow plastic rails held between said posts with oval shaped ends thereon mating with said oval shaped apertures of said posts, the rails being of a length substantially that of the predetermined spacing such that the ends thereof at opposite ends of the rail extend through the apertures into the hollow cylindrical tubing of the respective spaced posts, wherein the rails are flattened oval shaped members each having flexible deformable plastic ends with a slit on each side of the rail width through the oval shaped members near opposite ends and removed a short distance from the end of the rail, the rail width being slightly greater than the length of the apertures in the posts whereby the rail may be deformed to mate the slits to fit into locking engagement with the apertures in the posts.

4,553,742

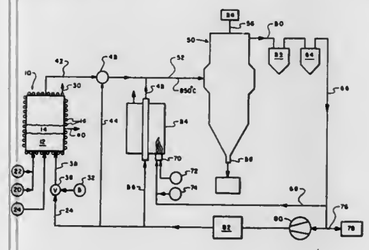
APPARATUS FOR GENERATING A REDUCING GAS

Frank V. Summers; David C. Meissner, and Ronald Brown, all of Charlotte, N.C., assignors to Midrex International BV Rotterdam, Zurich Branch, Zurich, Switzerland

Division of Ser. No. 556,502, Dec. 1, 1983, , which is a continuation-in-part of Ser. No. 360,713, Mar. 22, 1982, abandoned. This application Oct. 9, 1984, Ser. No. 659,109

Int. Cl.[4] F27B *19/04*

U.S. Cl. 266—156 **4 Claims**



1. Apparatus for generating a reducing gas and reducing iron oxide, said apparatus comprising:

(a) a molten bath gasifier for producing a gasifier gas, said gasifier containing a molten iron bath;

(b) a generally vertical shaft furnace for the direct reduction of iron, said furnace having particle introducing means at the top thereof, particle removal means at the bottom thereof for establishing a descending burden therein, reducing gas introduction means between said particle introducing means and said particle removal means and a spent top gas outlet for removing spent top gas from the upper portion of said furnace;

(c) a first conduit communicating with said gasifier and said reducing gas introduction means for removing reducing gas from said gasifier and introducing reducing gas to said shaft furnace;

(d) means for cooling and cleaning said spent top gas removed from the upper portion of said shaft furnace;

(e) a second conduit communicating between said spent gas outlet and said cooling and cleaning means;

(f) acid gas removal means for removing CO_2 from said cleaned, cooled spent top gas;

(g) a third conduit communicating with said spent top gas cooling and cleaning means and said acid gas removal means;

(h) a fourth conduit communicating between said acid gas removal means and the bottom of said gasifier;

(i) a fifth conduit communicating between said acid gas removal means and said first conduit;

(j) a sixth conduit communicating between said acid gas removal means and said first conduit and having heating means therein;

(k) means for injecting solid fossil fuel into the bottom of said gasifier beneath the surface of said molten iron bath; and

(l) means for injecting oxygen into said gasifier beneath the surface of said molten iron bath.

4,553,743

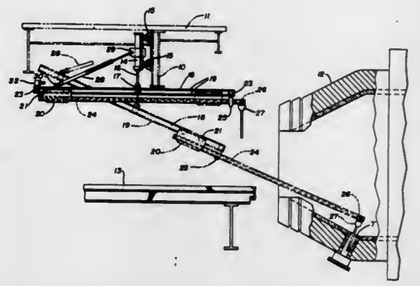
ELEVATED DEVICE FOR PLACING SLAG RETENTION MEANS IN TAPPING CONVERTERS

Michael D. LaBate, II, Ellwood City, and Joseph A. Perri, Coraopolis, both of Pa., assignors to Insul Company, Inc., East Palestine, Ohio

Filed Aug. 23, 1984, Ser. No. 643,499

Int. Cl.[4] C21B *5/46*

U.S. Cl. 266—272 **4 Claims**



1. Apparatus for placing a slag retaining device in a tap hole in a converter comprising a two part boom extensible into said converter, said two part boom including a first part which is movable longitudinally of said second part so that said two part boom is collapsible upon itself, a stationary vertical support member depending from an overhead structure, a lift and lower device mounted on said vertical support member and pivotally engaging said second part of said boom at a first location, a tilt device engaging said lift and lower device and said second part of said boom at a second location which is spaced from said first location for supporting said two part boom and tilting said two part boom with respect to said lift and lower device whereby said two part boom is supported at at least two spaced apart positions, means engaging said lift and lower device and said vertical support member for moving said vertical support member on its longitudinal axis in a rotary motion, a carriage movably mounted on said second part of said boom and means for moving said carriage longitudinally along said boom second part, said first part of said boom affixed at one of its ends to said carriage for movement in a path parallel with said second part of said boom for extending and retracting said boom first part with respect to said boom second part toward and away from said converter and the tap hole therein and means on the other end of said second part of said boom detachably mounting said elongated slag retaining device.

4,553,744

DAMPER DEVICE FOR ENGINE MOUNTINGS OR THE LIKE

Keizo Konishi; Teruo Yonehama, and Takao Yamamoto, all of Aichi, Japan, assignors to Tokai Rubber Industries Ltd., Komaki, Japan

Filed Oct. 27, 1980, Ser. No. 201,341

Claims priority, application Japan, Nov. 6, 1979, 54-143521

Int. Cl.[4] F16F *9/34, 1/36, 9/10*

U.S. Cl. 267—140.1 **6 Claims**

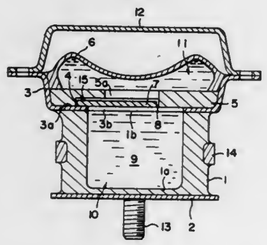
1. A damping device comprising:

an elastic member having first and second opposed ends and a generally cylindrical first chamber extending into the first end thereof;

a first mounting member affixed to said first end of said elastic member and having a circular opening with a diameter substantially equal to the diameter of said cylindrical first chamber, said circular opening being concentric with said cylindrical first chamber;

a second mounting member affixed to the second end of said elastic member;

a retainer adjacent said first mounting member and on the side thereof opposite said elastic member, said retainer having a shallow cylindrical indentation extending partially into the surface of said retainer adjacent said first mounting member, said shallow cylindrical indentation being defined by a substantially planar bottom wall and a cylindrical side wall, said indentation being partially adjacent and eccentric with said circular opening in said first mounting member, said retainer further including a circular through aperture extending through a portion of said indentation adjacent said circular opening in said first mounting member, said circular through aperture in said retainer being internally tangent with a portion of said



shallow cylindrical indentation of said retainer adjacent said circular opening in said first mounting member;

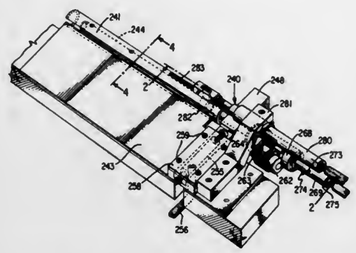
an elastic cover attached to said first mounting member in said retainer, said elastic cover defining a second chamber; and

a substantially circular partition having a continuous central portion disposed in and slightly movable in said indentation in said retainer, the perimeter of said partition being such that a creseent shaped peripheral slot is defined between the perimeter of said partition and both the circular opening in said first mounting member and the through aperture in said retainer, said crescent shaped peripheral slot providing continuous communication between the first and second chambers.

4,553,745
FABRIC CLAMPING MEANS FOR DRIVEN WORK FOLDER

John M. Franke, Sr., Glendale, Calif., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 2, 1985, Ser. No. 719,094
Int. Cl.[4] B42C *1/00*
U.S. Cl. 270—45 **4 Claims**



1. An automatically operable work fabric manipulating device for folding and delivering one edge of a fabric panel, including

a mandrel rotatable about a lengthwise axis;

said mandrel being formed with a fabric accomodating slot extending parallel to the lengthwise axis thereof, and having a mouth opening at one side of said mandrel;

drive means for rotating said mandrel to form a fold in a fabric panel edge inserted in said mandrel slot, said drive means operatively connected to said mandrel adjacent one lengthwise extremity of said slot;

said slot extending continuously to the other and free extremity of said mandrel; and

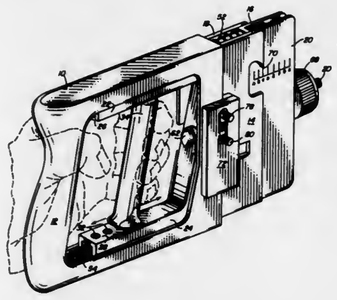
a sheath surrounding at least a portion of said mandrel and providing for frictional engagement of a work fabric panel interposed therebetween by the rotation of said mandrel;

the improvement which comprises fabric clamping means carried by said mandrel for rotation therewith and operating means for selectively shifting said fabric clamping means relative to said mandrel into and out of a position securely clamping a fabric panel to said mandrel.

4,553,746
HAND EXERCISER

Valerie H. Lee, Star Route 1, Box 542, 6914 E. Continental Mnt. Dr., Cave Creek, Ariz. 85331, assignor to Valerie Holdeman Lee; William Matthias Lee; Arlene Schaffner and Donald Schaffner, all of Scottsdale, Ariz.

Filed Aug. 19, 1983, Ser. No. 524,565
Int. Cl.[4] A63B *21/30*
U.S. Cl. 272—68 **9 Claims**



1. A hand exerciser, comprising:

a frame having a contoured hand grip portion;

a slide mechanism supported within said frame for reciprocative movement therein including a slide element for supporting a finger grip and an insert element, said insert element being slidably received by said slide element, said slide element including a first plurality of support means in a lower portion thereof and a second plurality of support means in an upper portion thereof, said finger grip being rotatable on a rod having the ends thereof positioned by any one of said first plurality of support means and any one of said second plurality of support means, said first and second pluralities of support means being aligned with the direction of reciprocation so as to enable a stroke distance between said contoured hand grip portion and said finger grip to be varied and depending upon what first and second support means are utilized to vary the angle of said finger grip portion with respect to said hand grip portion

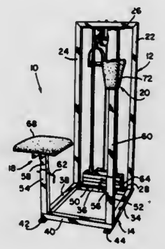
resilient means coupled between said frame and said slide mechanism for resisting movement between said frame and said slide mechanism and resisting the insertion of said insert element into said slide element; and

adjusting means for varying the resistance of the resilient means between said frame and said slide mechanism including an adjustment element extending between said slide element and said insert element and means coupled to said adjustment element for manually adjusting the resistance of said resilient means.

4,553,747
ROTATOR CUFF MACHINE

David A. Pursley, 599 Doyal Mills Ct., Stone Mountain, Ga. 30083

Filed May 10, 1983, Ser. No. 493,171
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 **18 Claims**



1. A machine for exercising the rotator cuff of a human being, comprising:

an upright support frame having a front, a back and two sides;

a handle;

tension means mounted on said upright support frame for biasing said handle said handle being movable forwardly of said support frame under tension;

a first body support member comprising a set spaced from said upright support frame and containing a first body support surface positioned in front of said upright support frame;

a second body support member comprising an arm rest spaced from said upright support frame and containing a second body support surface positioned in front of said upright support frame, said second body support surface being spaced vertically above said first body support surface such that the arm of a user can rest in a substantially horizontal position on said second body support surface while the user sits on said first body support surface,

said seat and said arm rest being positioned in a plane which passes through the shoulders of a user such that the users arm is positioned substantially in said plane to isolate the rotator cuff for exercising.

4,553,748
ELECTROSTATICALLY ENHANCED GAME

Ray L. Allen, 204 Townsend Pl., Atlanta, Ga. 30327, and N. Cole Harrison, 1438 Tullie Rd., Atlanta, Ga. 30329

Filed Jul. 26, 1983, Ser. No. 517,465
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—1 E **10 Claims**



1. In an electronic game including game signal means for providing a control signal upon the occurrence of a predetermined event in said game, an electrostatic enhancement apparatus for said game, comprising:

electrostatic generator means operative to generate a high voltage low current electrical charge upon being provided with power;

electrode means coupled to said generator means for providing said electrical charge to the person of a player;

isolation booth means containing said electrode means for surrounding and electrically isolating a player from the surrounding environment and for preventing accidental discharge of said electrical charge; and

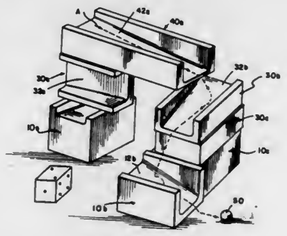
control means responsive to said control signal from said game for providing power to said generator means and for causing said generator means to provide said electrical charge to the player,

whereby upon the occurrence of said predetermined event in said game, a player in physical contact with said electrode will experience a safe high voltage low current static electrical charging, causing the player's hair to raise.

4,553,749
TOY AND GAME APPARATUS

Robert L. Bender, and Annie L. Bender, both of 513 W. Ferry St., Berrien Springs, Mich. 49103

Filed Oct. 14, 1983, Ser. No. 542,159
Int. Cl.[4] A63F *7/02*; A63H *18/02*
U.S. Cl. 273—1 R **8 Claims**



1. A game apparatus comprising:

a plurality of block elements having integral surface means therein for providing at least one recessed, inclined passageway extending between sides of the individual block elements, wherein said block elements may be arranged during the course of play such that various paths may be defined along a plurality of said inclined passageways;

random number generating means for determining the number of said block elements which may be arranged at a particular time during the course of play; and

freely movable means for traveling along said paths defined by said passageways.

5. A method of employing a game apparatus having a predetermined number of block elements with integral recessed surface means therein for providing passageway means extending to at least one side of said block elements, comprising:

arranging said block elements in vertically and horizontally adjacent and spaced apart orientations until all of said block elements are so employed; and

reorienting said block elements so as to align a plurality of said passageway means and block element surfaces to define at least one extended path.

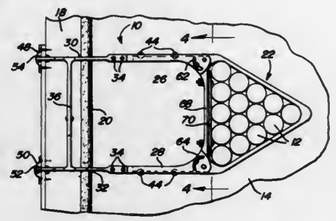
4,553,750
RACK ATTACHMENT FOR GAME TABLES

Glenn W. Kintz, 3306 Ammon Way, Forest Grove, Oreg. 97116

Filed Sep. 8, 1983, Ser. No. 530,221
Int. Cl.[4] A63D *15/00*
U.S. Cl. 273—22 **16 Claims**

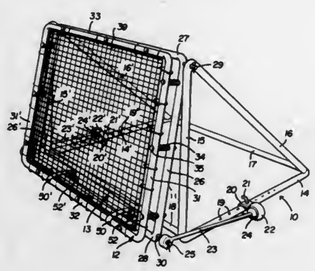
1. An attachment for use on a conventional pool table for the placement of game playing pieces such as pool balls in required location and orientation on the surface of the table, the attachment comprising a rack of specified shape for receiving a complement of the playing pieces and orienting the complement in a required configuration, a support frame extending from the rack, and mounting means for mounting the frame

detachably and pivotally on the table surround for pivotal movement of the rack about a horizontal axis between a lowered operative position in which the rack is supported on the playing surface for placement of the playing pieces, and a raised inoperative position for detachment of the rack from the table after placement of playing pieces, the length of the support frame effectively fixing the position of the rack relative to the table in a longitudinal direction and the location of the mounting means relative to the table surround effectively fixing the position of the rack in the transverse direction,



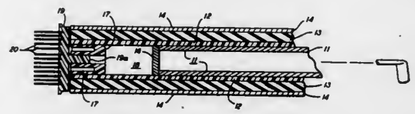
wherein the support frame comprises support arms extending from the rack, the support arms having telescopic portions for adjusting the length of the support frame to suit the length of a table with which the attachment is used, adjustable swivel connections between the rack and the respective arms for adjusting the angular alignment of the entire rack relative to the support frame and wherein the mounting means comprises a ball-shaped member at the end of each arm and a corresponding socket member for attachment to the table surround to receive and releasably locate the ball-shaped member.

4,553,751
REBOUND APPARATUS
John L. Ketchum, 3200 SW. 94th Pl., Miami, Fla. 33165
Filed Nov. 2, 1984, Ser. No. 667,800
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 A **8 Claims**



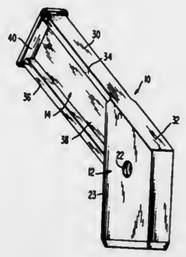
1. A rebound apparatus comprising:
a support base having a pair of rigid, laterally spaced, opposite, upwardly extending side members;
frame means extending between said side members at the front of said support base and pivotally mounted on the upper ends of said side members;
means for selectively adjusting the fore-and-aft position of the lower end of said frame means with respect to said support base;
and a rebound member on said frame means;
said frame means comprising a rear frame horizontally pivoted at the top to said support base, a front frame positioned in front of said rear frame and carrying said rebound member, and springs engaged between said front and rear frames and permitting rearward displacement of said front frame toward said rear frame in response to an impact on said rebound member;
said support base comprising a pair of rigid, laterally spaced, opposite, bottom members extending rearward respectively from the lower ends of said side members, each of said bottom members having a plurality of openings spaced apart along its length rearward;
and said means for adjusting said frame means comprising a pair of sliders slidably adjustable respectively along said bottom members and a locking member on each slider selectively insertable into said openings in said bottom member, a pair of rigid members respectively extending forward from said sliders and pivotally coupled to said rear frame at its lower end, and a respective ball-and-socket joint connecting the rear end of each said rigid member to the corresponding slider.

4,553,752
GOLF APPARATUS
Robert D. Bagg, 387 Chestnut St., Oneonta, N.Y. 13820
Filed Nov. 23, 1984, Ser. No. 674,497
Int. Cl.[4] A63B *57/00*
U.S. Cl. 273—32 A **4 Claims**



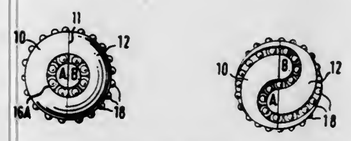
1. In a golf club having a generally-cylindrical handle portion, the combination of: a chamber adapted to carry powder formed in said handle portion; and cap means on said handle, said cap means carrying brush means on an exterior surface of said cap means, and said cap means being movable to open and close said chamber to allow powder to fall from said chamber.

4,553,753
ANGULAR HOCKEY STICK GRIP
Gerald F. Gibbons, 9610 51st Pl., College Park, Md. 20740
Continuation-in-part of Ser. No. 552,896, Nov. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 526,288, Aug. 25, 1983, abandoned. This application Mar. 22, 1984, Ser. No. 592,311
Int. Cl.[4] A63B *59/12*
U.S. Cl. 273—67 A **10 Claims**



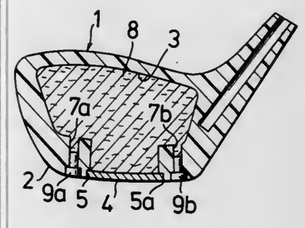
1. An auxiliary angular hockey stick handle for attachment to the upper end of the shaft of an ice hockey stick for providing improved control of said stick and increased efficiency, comfort, and safety in the use thereof, said handle comprising:
an elongated, rigid, lower handle portion having a first axis and top and bottom ends, said bottom end of said lower handle portion defining a downwardly-opening socket, said lower handle portion and said socket each being generally rectangular in cross-section, said socket being sufficiently large to coaxially receive an upper end of a shaft of an ice hockey stick;
receiving means in said lower handle portion adapted to receive a fastener for securing said lower handle portion to a shaft located within said socket;
an elongated, rigid, upper handle portion having a second axis, said upper handle portion and said lower handle portion being formed in one piece, said upper handle portion being shaped to form a gripping portion having substantially the same nominal cross-sectional dimensions as said socket, said upper handle portion rigidly joined the top end of said lower handle portion so that said first and second axes intersect at a fixed, predetermined angle of between about 125 degrees and about 160 degrees to thereby form an angled gripping portion for a shaft.

4,553,754
BEAD PUZZLE
Christopher C. Wiggs, 48A Queenstown Rd., London, England (SW8 3RY), and Christopher J. Taylor, Flat 3, 17 Queensgate Pl., London, England (SW7)
Filed Feb. 16, 1982, Ser. No. 348,825
Claims priority, application United Kingdom, May 1, 1981, 8113543
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—153 S **27 Claims**



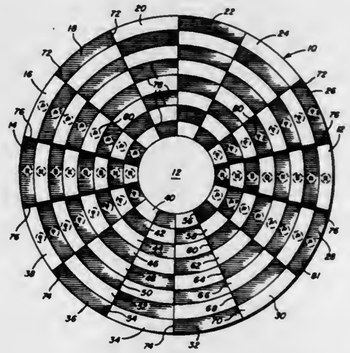
26. A puzzle comprising at least two relatively movable members in contact with one another at a division line and movable with respect to each other along said division line, means in each of said members defining a plurality of tracks spaced along the division line, at least two of the tracks in at least two of said members connecting two points spaced along said division line, said plurality of tracks forming continuous paths between said members in at least two different positions of said members with respect to each other, and a plurality of elements of at least two distinguishable types substantially filling said plurality of tracks and being displaceable along said paths when said members are disposed in each of said at least two positions.

4,553,755
GOLF CLUB HEAD
Magoichi Yamada, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Kurume, Japan
Filed Jan. 16, 1984, Ser. No. 570,783
Claims priority, application Japan, Jan. 28, 1983, 58-10872[U]; Jan. 28, 1983, 58-10873[U]
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—171 **2 Claims**



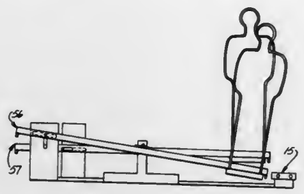
1. A golf club head:
(a) a golf club head body made of molded material having a specific gravity that is large relative to conventional wood materials, said body having a large weight compensating central cavity opening at the sole of said body;
(b) said body having toe and heel lobes that protrude inwardly there to reduce the cavity opening, said cavity overlying said toe and heel lobes;
(c) said body having stepped portions between said lobes to provide mounting areas for a sole plate;
(d) a sole plate fitted to the cavity opening at said sole, seated on said areas and fitted around said lobes;
(e) said lobes having fill holes for injection of foamable plastic into said cavity and for purging of air during the molding process, said fill holes being independent of said sole plate whereby finishing of said sole plate can be achieved before injection of foamable plastic;
(f) foamed plastic entirely filling said cavity;
(g) removable plugs for said fill holes; and
(h) said golf club head body having a hosel out of communication with said cavity.

4,553,756
CIRCULAR CHESS
Robert L. Linnekin, 82 Liberty St., Danvers, Mass. 01923
Filed Aug. 12, 1983, Ser. No. 523,171
Int. Cl.[4] A63F *3/02*
U.S. Cl. 273—261 **5 Claims**



1. A flat, two-dimensional circular chess gameboard apparatus adapted for playing chess by two opposing players and to accommodate a plurality of standard chess pieces, said apparatus defining a circular game area including fourteen generally straight elongated radial zones spaced about and extending outward from a central zone, each of said radial zones including a single column of eight discrete spaces of two alternating colors spaced therealong and with each set of corresponding spaces of said zones disposed in an annular path extending about said central zone and with the colors of each set of annular path spaces alternating thereabout, said fourteen zones including a pair of home zones arranged diametrically opposite each other on opposite sides of said central zone and with six of said radial zones disposed between said home zones in each direction extending about said central zones, boundary line means defining a discrete generally straight boundary line extending generally radially of said central zone between each pair of adjacent radial zones with the boundary line between each side of each home zone and the adjacent radial zone being visually distinct from the boundary lines defined between adjacent radial zones exclusive of said home zones.

4,553,757
COMBAT SIMULATOR
Edward M. Keeney, 120 North St., Monrovia, Calif. 91016
Filed Jan. 25, 1984, Ser. No. 573,792
Int. Cl.⁴ F41J *9/02*
U.S. Cl. 273—369 **16 Claims**



13. A firearm training system comprising a master control unit and at least one slave unit, each comprising:
a track having first and second ends, said track being pivotally movable between a first inclined position wherein the first end is higher than the second end and a second inclinded position wherein the first end is lower than the second end;
reciprocating means for moving the track between the first and second inclined positions;
a lifelike target slidably engaging said track so that when the first end of the track is higher than the second end, the target moves toward the second end, and when the first end of the track is lower than the second end, the target moves toward the first end;
wherein the master control unit further comprises a switch for simultaneously activating and deactivating the reciprocating means for each unit; and
wherein the firearm training system further comprises an ultrasonic motion detector for sending a signal to the switch when motion is detected and wherein the switch activates the reciprocating means when the signal from the ultrasonic motion detector is received and deactivates the reciprocating means when the signal from the ultrasonic motion detector ceases.

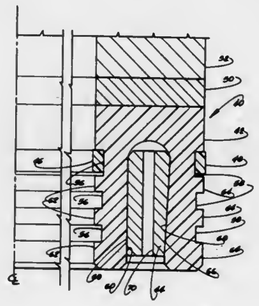
4,553,758
SKIPPING STONES AND METHOD OF USE THEREOF
John S. Zehr, 5118 Marine View Dr. NE., Tacoma, Wash. 98422
Filed May 21, 1985, Ser. No. 736,451
Int. Cl.⁴ A63B *67/06, 65/10*
U.S. Cl. 273—424 **11 Claims**



1. A skipping stone having characteristics enhancing its ability to skip a large number of times on the surface of a body of water across which it is thrown and enhancing the distance it will travel across the water before sinking, said skipping stone comprising;
a cementitious body having a lower, generally circular water engaging surface which is centrally dimpled in its near-center region and progressively outwardly convex in its near-edge region;
such water engaging surface being bounded by a sharply convex peripheral edge and a generally cylindrical side wall, the configuration of the sharply convex peripheral edge of the water engaging surface and the adjoining sidewall being such, as to minimize surface tension induced suction on the stone, caused by the water across which the water engaging surface of the stone is moving.

7. The method of use of a skipping stone as set forth in claim 1, comprising:
soaking the stone in water for a time sufficient for the stone to absorb a substantial amount of water, and
throwing the water saoked stone in a flat trajectory and with a spinning action across a body of water so that it will skip repeatedly on the water, the water emerging from the stone by reason of such spinning action providing an enhanced water-to-water contact of the stone with thesurface of the body of water, thereby reducing frictional drag during such contact and enhancing the distance the stone travels across the water before sinking.

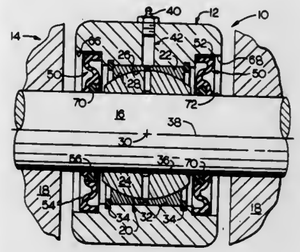
4,553,759
VALVE AND IMPROVED STEM SEAL THEREFOR
James E. Kilmoyer, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Dec. 10, 1984, Ser. No. 680,185
Int. Cl.⁴ F16J *15/18;* **F16K** *41/04*
U.S. Cl. 277—12 **17 Claims**



1. A valve comprising
a body having a valve chamber, an inlet into, an outlet from and an opening from said valve chamber extending through said body and a valve seat in said valve chamber surrounding said outlet,
a valve member movably positioned in said valve chamber,
a stem connected to said valve and extending through said opening,
means coacting with said stem to move said valve member with respect to said valve seat to control flow through said valve,
a stem sealing assembly for sealing between said stem and said opening and including
a sealing ring having an internal and an external sealing lip and an end recess, and
a load ring positioned in said end recess and having its external surface tapered toward the axis of said stem and toward said valve member, and
means for retaining said stem sealing assembly between said stem and said opening.

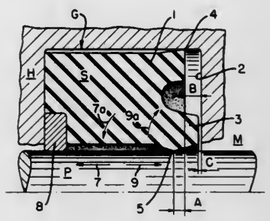
4,553,760
FLEXIBLE SEAL FOR A SPHERICAL JOINT
Lyle T. Reed, Farmington, and Arthur E. Olt, Jr., Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 19, 1984, Ser. No. 672,725
Int. Cl.⁴ F16J *15/24, 15/32;* **B62D** *55/00*
U.S. Cl. 277—12 **8 Claims**

1. In a flexible seal assembly for use in sealing a spherical joint, said flexible seal assembly having an outer mounting ring, an inner lip restraining ring, and an elastomeric body, said body having an outer diameter portion secured to said mounting ring, an inner diameter portion secured to said lip restraining ring and a thin walled convoluted intermediate portion having a generally S-shaped configuration interconnecting said outer and inner diameter portions and providing sufficient flexure capability for accommodating pivotal movement of said spherical joint, the improvement comprising:
said inner lip restraining ring being constructed of a rigid plastic material; and



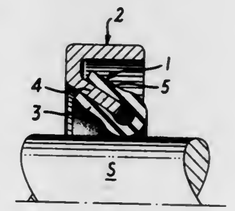
said elastomeric body being of a unitary construction of a tough wear resistant elastomer and including an integral radial seal lip extending from the inner diameter portion of the body in proximate relationship to the lip restraining ring.

4,553,761
SEAL
Dieter Blesing; Erich Habel, both of Fürth, and Hans J. Walther, Hemsbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Sep. 1, 1983, Ser. No. 528,512
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245338
Int. Cl.⁴ F16J *9/20, 15/32*
U.S. Cl. 277—152 **9 Claims**



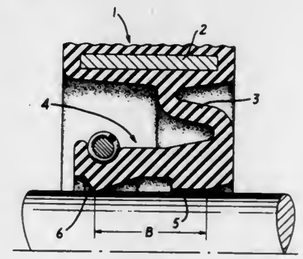
1. In a U ring for a seal for a machine part relatively axially displaceable through an annular, internally-open groove having an end face in a relatively stationary machine part, the U ring for the seal having a body of resilient material, an enlarged, radially-outside sealing-lip portion for forming a statically-acting seal with the groove, and an enlarged, radially-inside sealing lip portion near one end of the U ring for forming a dynamically-acting seal with the axially-displaceable machine part which extends therethrough, the improvement to the U ring made by the process comprising:
dimensioning the U ring along the radially outside, statically-acting seal portion thereof to the end having the dynamically-acting seal relative to the end face of the groove in which the U ring will be used such that the spacing between the outside portion and the groove end face is greater than the spacing between the inside portion and the groove end face; and
positioning the statically-acting and the dynamically-acting seals along the respective radial outside the inside portions of the U ring relative to the resilience of the U ring body such that the dynamically-acting seal tilts from the relatively displaceable machine part when the latter moves to force the U ring against the groove end face.

4,553,762
SHAFT SEAL RING
Helmut Hoelzer, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Jul. 1, 1983, Ser. No. 510,344
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1982, 3237638
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—152 **18 Claims**



1. A shaft seal ring made by the process comprising:
providing a reinforcing ring having an inwardly-directed at least partly-conical extension;
providing an elastically deformable lip ring having a hose-like, axial portion with an outwardly-directed flange on one side thereof; and
inserting the hose-like, axial portion of the lip ring first into the extension of the reinforcing ring in the direction in which the extension conically narrows with an axial pressure acting on the inside diameter of the flange of the lip ring until the flange is sufficiently elastically deformed that the elastic deformability of the lip ring turns the hose-like portion up against the side of the extension opposite the flange,
the lip ring then having a general U-shape engaging opposite sides of the extension with the arms of the generally U-shaped lip ring only sufficiently to form relatively-rotatable sealing surfaces with the extension, the base of the generally U-shaped lip ring extending about the innermost end of the extension to form a static shaft-bearing seal surface on the outside thereof.

4,553,763
SEAL RING HAVING AN AXIS PARALLEL INTERMEDIATE RING
Peter Ehrmann, Hemsbach, Fed. Rep. of Germany, assignor to Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Mar. 1, 1984, Ser. No. 585,487
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307470
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—153 **3 Claims**



1. A seal ring, comprising:

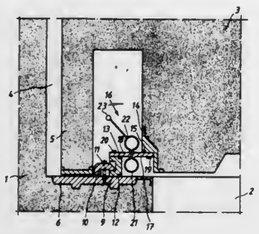
a lip ring (4) which is at least radially resilient and has a sealing lip (6) and a support surface (5) axially spaced from the sealing lip;
a reinforcing ring (1) radially spaced from the lip ring and coaxial therewith; and
a resilient intermediate ring (3) which extends, in part, approximately parallel to the axis of the lip and reinforcing rings, is joined at one end to the lip ring within the axial range of the support surface and, via the axis parallel part, is joined at the other end to the reinforcing ring within an axial region (B) bounded by the sealing lip and the end of the support surface axially remote therefrom.

4,553,764

FLEXIBLE, ANNULAR METALLIC SEALING DEVICE

Bo Borrman, and Roberto Puggioli, both of Västerås, Sweden, assignors to AB Asea Atom, Sweden

Filed Dec. 27, 1984, Ser. No. 686,801
Claims priority, application Sweden, Dec. 30, 1983, 8307230
Int. Cl.⁴ F16J *15/08, 15/48*
U.S. Cl. 277—226 **2 Claims**



1. A flexible, annular sealing device arranged for sealing between a high-pressure fluid and a low-pressure fluid, said sealing device having a high-pressure surface arranged in contact with said high-pressure fluid, and a low-pressure surface arranged in contact with said low-pressure fluid, and comprising a rigid, radially inner annular member (17), a radially outer annular member (18), and a flexible annular portion, said inner annular member and said outer annular member being mechanically and pressure-tightly connected to each other by means of said flexible annular portion (21, 22), wherein said high-pressure surface is partially constituted by the external surface of a first hollow, metallic ring (21) included in said flexible portion, whereas said low-pressure surface is partially constituted by the external surface of a second hollow metallic ring (22) included in said flexible portion, each of said hollow rings along its entire tangential extension having a gap, the edges of which are pressure-tightly mechanically connected to said inner and said outer annular member, respectively, said hollow rings (21, 22) being pneumatically connected to each other by means of said annular members (17, 18).

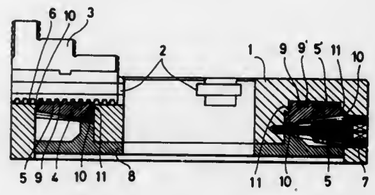
4,553,765

DUST GUARD FOR A SCROLL CHUCK

Hisao Negoro, Ohkubo 335, Kumatori-cho, Sennangun, Osaka, Japan

Filed Nov. 2, 1984, Ser. No. 667,522
Claims priority, application Japan, Jul. 26, 1984, 59-114385[U]
Int. Cl.⁴ B26B *31/16*
U.S. Cl. 279—1 ME **1 Claim**

1. In a scroll chuck comprising a main body having a plurality of chuck slots radially formed in its surface, a chuck jaw slidably fitted in each of said chuck slots, and a scroll plate accommodated in said main body and provided with a scroll thread on its front surface in the form of a continuous groove for engaging with a rack provided on the rear surface of said chuck jaw,
the improvement comprising:
a dust guard consisting of an elastic cord made of a material having rubberlike elasticity,



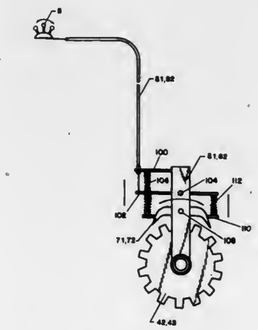
said elastic cord being fitted in said continuous groove over the full length thereof in such a manner that the inmost surface of said elastic cord touches the root of said scroll thread while the outside surface of said elastic cord is substantially flush with the crest of said scroll thread.

4,553,766

ROCKING AND MOVING MIMIC HORSE

Chen-Chia Liu, No. 32 Ta Jen Kung Rd., Kaohsiung, Taiwan

Filed Nov. 15, 1982, Ser. No. 441,629
Int. Cl.⁴ A63F *1/07*
U.S. Cl. 280—1.182 **5 Claims**



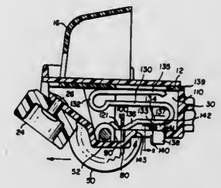
1. A rocking and moving mimic horse comprising:
a wheel supporting frame;
a simulated horse body pivotally mounted on said frame for forward and backward rocking movement;
a set of wheels rotatably mounted on said frame for forward, backward, and turning movement of the frame;
a steering device operatively mounted on said frame and operatively connected to said wheels to turn the wheels to steer the frame and horse body comprising,
a steering handle, a first downwardly projecting steering rod connected to said handle, a first substantially horizontal rod connected to said steering rod, a second substantially horizontal rod spaced rearwardly from said first rod, substantially parallel steering links pivotally connected at their ends to the ends of said first and second rods, a second downwardly projecting steering rod connected to said second substantially horizontal rod, a third substantially horizontal rod connected to said second downwardly projecting steering rod, and a pair of crossed steering links each connected at one end to one end of said third substantially horizontal rod and at their other ends to respective ones of said wheels mounted on said frame for turning, said handle, steering rods, substantially horizontal rods and steering links being connected so that turning said handle steers the mimic horse when moving forward and backward;
at least one power drive mechanism operatively engageable between said set of wheels and said horse body so that when engaged rocking motion of said horse body drives said set of wheels to propel said frame and horse body forward and backward; and
a direction control device operatively engageable with said at least one power drive mechanism to selectively shift said mechanism between forward, backward and neutral non-engaged positions.

4,553,767

ROLLER SKATE WITH INTEGRAL RATCHET MEANS

Frederick B. Robjent, Orchard Park, N.Y., and Reuben B. Klamer, La Jolla, Calif., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 9, 1984, Ser. No. 578,473
Int. Cl.⁴ A63C *17/14*
U.S. Cl. 280—11.21 **9 Claims**



1. A roller skate adapted for selectable unidirectional or bidirectional motion comprising:
a hollow body;
a plurality of wheels attached to said body, at least one of said wheels having a cylindrical rolling portion including an inner surface surrounding a hollow inner chamber;
a plurality of ratchet teeth formed in said surface;
a vertically oriented plate mounted for slidable movement vertically within said body and having pawl means at one end of said plate extending out of said body and at least partially into said chamber; and
control means for moving said plate between a first position wherein said pawl means is lowered into engagement with said teeth in a ratcheting manner and a second position wherein said pawl means is raised out of engagement with said teeth.

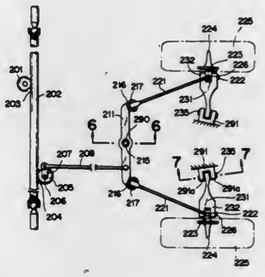
4,553,768

REAR SUSPENSION FOR VEHICLES

Yoshimi Furukawa, Saitama; Shoichi Sano, Tokyo; Hiroshi Takamatsu, Saitama, and Makoto Sato, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,704
Claims priority, application Japan, Nov. 19, 1982, 57-204296; Dec. 8, 1982, 57-214817
Int. Cl.⁴ B62D *7/00*
U.S. Cl. 280—91 **7 Claims**

1. A rear suspension for a vehicle including a vehicle body, a front wheel, a rear wheel and a steering system for steering both said front wheel and said rear wheel by a steering wheel, comprising:
a rear wheel support member for supporting said rear wheel with respect to said vehicle body;
biasing means, interposed between said vehicle body and said rear wheel support member, for biasing said rear wheel to restore the steering position thereof to the neutral position thereof;
a knuckle arm supporting said rear wheel, and a lower arm turnable relative to said vehicle body integrally with said knuckle arm; and



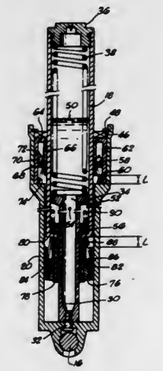
said biasing means comprising a resilient member interconnecting said vehicle body and a transversely inner end of said lower arm, said resilient member being of strong resiliency.

4,553,769

FRONT FORK FOR A TWO-WHEELED VEHICLE

Takeshi Kawaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 624,932
Claims priority, application Japan, Jun. 28, 1983, 58-116773
Int. Cl.⁴ B62K *25/08*
U.S. Cl. 280—276 **12 Claims**



11. A strut for a telescopic front fork of a two-wheeled vehicle, comprising
a first tube;
a second tube partially telescoped together with said first tube;
a first collar positioned between said first and second tubes and being slidably mounted to said first tube;
second collar positioned between said first and second tubes and being slidably mounted to said second tube;
a first ball bearing between said first collar and said second tube;
a second ball bearing between said first collar and said first tube;
a first stop between said first and second tubes and fixed to said second tube adjacent said first collar;
a second stop between said first and second tubes and fixed to said first tube adjacent said second collar;

a first spring biasing said first collar away from said first stop; and

a second spring biasing said second collar away from said second stop.

4,553,770

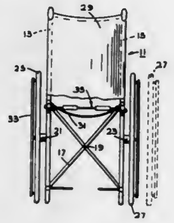
WHEELCHAIR ATTACHMENT

Roger T. Lyman, 2810 Marlin Ct., Punta Gorda, Fla. 33950

Filed Jul. 6, 1983, Ser. No. 511,382

Int. Cl.⁴ A61G 5/00

U.S. Cl. 280—289 WC **8 Claims**



1. In a wheelchair of the foldable type having vertical side frames with wheels journaled thereto, the improvement for maintaining said wheelchair at a reduced width comprising

(a) a flexible elongate member disposed between said side frames,

(b) means for adjusting the length of said elongate member, said means comprising,

(i) a pair of turnbuckle-like members having an open ended threaded cavity therein and an aperture in a closed end portion thereof,

(ii) a pair of eyebolt members threadedly received in said turnbuckle-like members, and

(iii) a flexible cable extending through said apertures with stop members within each cavity fixed to the ends of said cable,

(c) a length of flexible cable looped through the eye portion of each eyebolt and looped around said side frame;

(d) a bent plate having one aperture therein through which one end of said length of flexible cable passes, said one end carrying a stop member that is incapable of passing through said one aperture; and

(e) a second aperture in said plate of such size and shape that a stop member fixed to the other end of said length of flexible cable is incapable of passing through another portion of said second aperture.

4,553,771

SKI BINDING FOR CROSS-COUNTRY SKIING

Jean Bernard; Jean J. A. Beyl, both of Nevers; Christian Campillo, Garchizy, and Daniel le Faou, Varennes Vauzelles, all of France, assignors to Ste Look, Nievre, France

Filed May 10, 1983, Ser. No. 493,265

Claims priority, application France, May 21, 1982, 82 08885

Int. Cl.⁴ A63C 9/00

U.S. Cl. 280—615 **2 Claims**

1. In a ski binding for cross-country skiing which comprises:

a shoe-retaining member which is secured to the ski and adapted to receive by downward engagement a toe end of the ski shoe;

a locking lever mounted on a cross-pin for pivotal displacement in a direction parallel to the ski and having locking means for maintaining the toe end of the ski shoe within the shoe-retaining member;

an elastic element for urging the locking lever pivotally toward the position in which it retains the toe end of the shoe;

the improvement comprising a rigid extracting appendage rigid with the locking lever and adapted to exert an upwardly directed thrust beneath the toe end of the ski shoe when the locking lever undergoes a pivotal displacement towards its shoe-releasing position in opposition to said elastic element, said elastic element comprising an elastic block fixedly secured to the ski forwardly of and bearing rearwardly directly against the locking lever.

2. In a ski binding for cross-country skiing which comprises:

a shoe-retaining member which is secured to the ski and adapted to receive by downward engagement a toe end of the ski shoe;

a locking lever mounted on a cross-pin for pivotal displacement in a direction parallel to the ski and having locking means for maintaining the toe end of the ski shoe within the shoe-retaining member;

an elastic element for urging the locking lever pivotally toward the position in which it retains the toe end of the shoe;

the improvement comprising a rigid extracting appendage rigid with the locking lever and adapted to exert an upwardly directed thrust beneath the toe end of the ski shoe when the locking lever undergoes a pivotal displacement towards its shoe-releasing position in opposition to said elastic element, said elastic element comprising a coiled torsion spring acting between the ski and the locking device.

4,553,772

SAFETY SKI BINDING

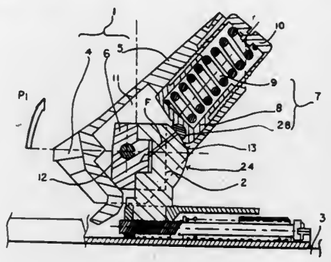
Jean-Pierre Boussemart, Choisy; Rene Bressand, Saint-Jorioz, and Roger Pascal, Annecy-le-Vieux, all of France, assignors to Salomon S.A., Annecy, France

Filed Mar. 17, 1983, Ser. No. 476,202

Claims priority, application France, Mar. 17, 1982, 82 04948

Int. Cl.⁴ A63C 9/00

U.S. Cl. 280—628 **78 Claims**



1. A safety binding for a ski, comprising:

(a) a support, attached to said ski having a front surface; and

(b) an assembly comprising:

(i) a jaw, adapted to hold at least a portion of a boot and to be able to pivot both laterally and vertically;

(ii) a pivoting element having a rear surface, adapted to engage said front surface of said support and to pivot with respect to said support, wherein said jaw is adapted to pivot vertically on said pivoting element around a transverse axis; and

(iii) an elastic means for biasing said jaw against lateral and vertical pivoting.

4,553,773

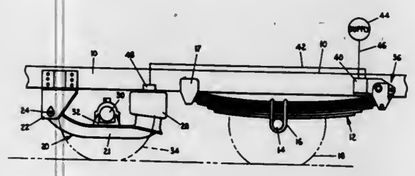
LOAD EQUALIZER VALVE AND SUSPENSION SYSTEM

William C. Pierce, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 5, 1983, Ser. No. 520,810

Int. Cl.⁴ B60G 5/00

U.S. Cl. 280—676 **22 Claims**



1. A suspension for wheeled vehicles comprising:

a leaf spring suspension mounted at opposing ends to a vehicle frame;

a first axle secured to said leaf spring suspension and mounting ground-engaging wheels;

a pneumatic suspension secured to said vehicle frame;

a second axle secured to said pneumatic suspension and mounting ground-engaging wheels;

said pneumatic suspension including:

an air spring mounted between said vehicle frame and said second axle;

a source of pressurized air for supplying air to said air spring;

an air line communicating said source of pressurized air with said air spring;

pressure regulator means mounted in said air line for controlling the air pressure in said air spring;

said pressure regulator means including:

valve means for regulating the flow of pressurized air through said regulator means so as to control the pressure in said air spring; and

actuator means having a bearing member for controlling operation of said valve means responsive to the force applied to said bearing member so as to regulate said air flow, said bearing member at least in part operatively supporting an end of said leaf-spring suspension so that said actuator means directly measures the load at the end of said leaf-spring suspension;

wherein said pressure regulator means controls the pressure in said air spring so as to distribute the load on said vehicle between said first and second axles.

4,553,774

VEHICLE SUSPENSION

George D. Malcolm, P.O. Box 334, Station T, Calgary, Alberta, Canada (T2H 2G9)

Filed Sep. 6, 1983, Ser. No. 529,640

Claims priority, application New Zealand, Sep. 7, 1982, 201835

Int. Cl.⁴ B60G 11/04

U.S. Cl. 280—718 **8 Claims**

1. A vehicle suspension comprising:

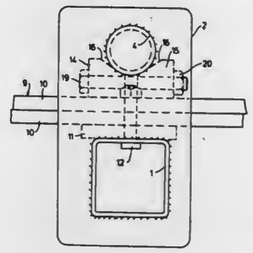
(a) a beam axle;

(b) two pair of plates one said pair being mounted on each end of the beam axle and the two plates of each pair being spaced from each other along the axis of the beam axle;

(c) two stub axles each being offset from the beam axle and each extending between the plates of one of the said pairs of plates;

(d) two leaf springs each extending transversely of the beam axle between the plates of one of the said pairs of plates;

(e) two pairs of opposed wedges one pair being situated between each said leaf spring and its adjacent stub axle and positioned to form a cradle for its stub axle; and



(f) means for drawing the wedges of each said pair of opposed wedges together to wedge the leaf spring and the stub axle apart.

4,553,775

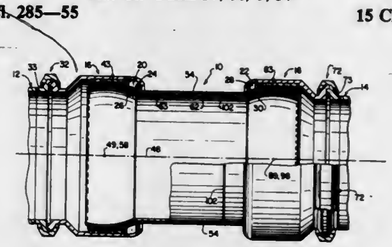
RESILIENT ANNULAR SEAL WITH SUPPORTING LINER

Horace P. Halling, Laurel, Md., assignor to Pressure Science Incorporated, Beltsville, Md.

Filed Apr. 26, 1983, Ser. No. 488,648

Int. Cl.⁴ F16L 27/06, 9/14

U.S. Cl. 285—55 **15 Claims**



1. In a fluid-tight sealing apparatus for sealing a pair of tubes, the first tube having an inner tubular surface and the second tube having a metallic, resilient annular sealing member extending therefrom, the sealing member comprising a ring portion having a curved outer surface for engagement with the inner tubular surface, the curved outer surface having a free maximum radius greater than the largest radius of the inner surface to provide an interference fit between the curved outer surface and the inner tubular surface, the improvement comprising:

rigid means, coupled to said sealing member and located inside and substantially concentric to said ring portion but spaced inwardly therefrom, for limiting radially inward deformation of said ring portion to prevent plastic deformation thereof,

said ring portion having a curved cross section in the axial direction, which cross section is concave in the radially inwardly facing direction,

said rigid means having an outer surface which has a curved cross section in the axial direction and is convex in the radially outwardly facing direction.

4,553,776

TUBING CONNECTOR

Paul L. Dodd, Metairie, La., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1983, Ser. No. 545,304

Int. Cl.⁴ F16L 5/00

U.S. Cl. 285—212 **11 Claims**

1. A small-diameter tubing connector and sealing apparatus for anchoring a small-diameter tubing in fluidtight flow com-

munication with a body element having a recess therein in communication with a flow passage in said body element, said apparatus comprising

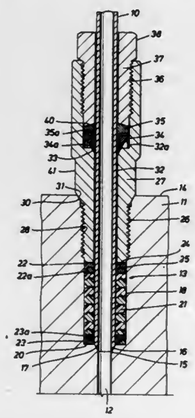
a body element having a cylindrical shouldered recess therein at least twice the diameter of a tubing to be sealed therein to form an annular space around the tubing;

a tubing axially extending into said recess to the bottom thereof;

first sealing means between the end of said tubing in said recess and the surface of the body element at the bottom of the recess;

second sealing means between said tubing and body elements in the annular space outside the lower end of the tubing;

packing gland means having a tubing bore therethrough and being positioned in said annular space, one end of said packing gland means being engageable with said second



sealing means and the other end extending outside said body element, said other end having an enlarged bore therein, said packing gland having a seating shoulder formed on the outer wall of said gland at its seated position in the body element;

third sealing means formed between said packing gland means seating shoulder and a mating shoulder around the top of the body element recess;

fourth sealing means positioned at the bottom of the enlarged bore of said packing gland means between said tubing and said packing gland means;

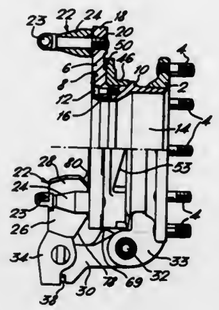
first actuating means operatively engaging said packing gland means and said body element for energizing said second and third sealing means, and

second actuating means operatively engaging said packing gland and said tubing for energizing said fourth and first sealing

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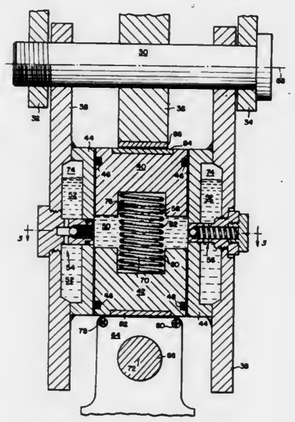
4,553,777
PIPE COUPLERS
Arthur L. Paddington, 8 Glenside, Whitstable, Kent, England (CT5 3DT)
Filed Apr. 7, 1983, Ser. No. 482,784
Claims priority, application United Kingdom, Apr. 15, 1982, 8210954
Int. Cl.⁴ F16L *25/00*
U.S. Cl. 285—420 **10 Claims**

1. A coupler for coupling together two pipes, which comprises a plurality of pivotally mounted hook arms and an actuator ring which is capable of rotation to pivot the hook arms into and out of a pipe-coupling position, said coupler further comprising a substantially cylindrical body on which the hook arms and actuator ring are mounted, wherein the actuator ring is provided with a cam track arranged to cause the hook arms to pivot into and out of a position in which they serve to lock a flange at the end of a pipe to said substantially cylindrical body, and wherein the cam track and the hook arms are so



configured that frictional forces therebetween are capable of locking the hook arms against vibration when used with varying thicknesses of flanges and without the provision of any other movable clamping means.

4,553,778
IMPLEMENT SNUBBING DEVICE
Robert C. Tyer, Keystone Heights, Fla., assignor to Rockland, Inc., Bedford, Pa.
Filed May 6, 1983, Ser. No. 492,176
Int. Cl.⁴ B66C *1/00*
U.S. Cl. 294—86.4 **52 Claims**



1. An implement snubbing device positionable between a boom and an implement comprising:

a compressible member positioned generally between, and having a longitudinal axis extending generally between, the boom and the implement,

a boom connecting means for connecting said compressible member to the boom, and

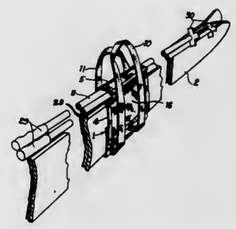
an implement connecting means for connecting the implement to said compressible member,

said compressible member including a compressing means for compressing said compressible member along said longitudinal axis,

said compressing means being actuated by the swinging movement of the implement about a first lateral axis generally perpendicular to said longitudinal axis, and

said compressing means including a cam means rotatable about said first lateral axis thereby snubbing the rotational movement of the implement about said first lateral axis.

4,553,779
SKI CADDY
Timothy D. Shortridge, 4460 50th St., San Diego, Calif. 92115
Filed May 30, 1984, Ser. No. 615,355
Int. Cl.⁴ A63C *11/02*
U.S. Cl. 294—147 **7 Claims**



1. A foldable clutch for carrying a first set of elongated objects, such as skis, and a second set of elongated objects, such as ski poles, comprising:

a main rectangular body of pliable material, having an inner face and an outer face, for wrapping around said first set of elongated objects;

first fastener means for releasably securing said outer face at one end of said main body to the inner face at the opposite end thereof when said main body is in a wrapped conformation around said first set of elongated objects;

said first fastener means comprising interengageable strips of hook and loop fastening material secured along the inner and outer edges respectively of the shorter sides of said rectangular body, and said strips being located and dimensioned to releasably mate when the inner edge overlaps the outer edge and when the outer edge overlaps the inner edge;

an auxiliary flap of pliable material, also having an inner face and an outer face, for wrapping around said second set of elongated objects;

the outer face of said auxiliary flap being permanently secured to the outer face of said main body and off the median area of said outer face;

said second set of elongated objects being positioned above said first set of elongated objects;

second fastener means for releasably securing one side of said auxiliary flap to the opposite side thereof when said auxiliary flap is in a wrapped conformation around said second set of elongated objects; and

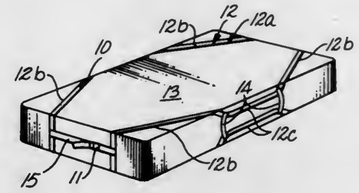
a pair of handles comprising an elongated continuous loop of ribbon having two parallel spaced-apart, linear portions running along the longer sides on the outer face of said rectangular body and being permanently attached to the median area of said outer face.

4,553,780
MATTRESS CARRYING HARNESS
Donald C. Strachan, 11969 Pendleton Rd., Yucaipa, Calif. 92399
Filed Jun. 18, 1984, Ser. No. 621,422
Int. Cl.⁴ B65D *63/18*
U.S. Cl. 294—152 **4 Claims**

1. A carrying harness, comprising:

two flexible belts of substantially equal length formed into two separate elongated continuous loops by having their own ends fastened together;

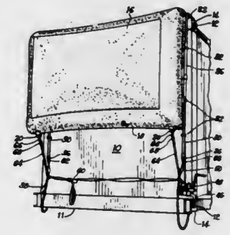
four flexible connecting belts, two of which are fastened between opposing points on each of the continuous loops so that the opposite ends of each continuous loop are formed into two spaced-apart corner loops adapted to fit over adjacent corners of an object to be carried, the corner loops being connected by two segments of the continuous loop extending between the fastening points of the connecting belts, the segments being adapted to lie along the edges of the object to be carried when the corner loops are fitted over the corners of the object;



two flexible end belts connecting the ends of the continuous loops so as to lie along the remaining edges of the object to be carried when the corner loops are fitted over the corners of the object; and

means for adjusting the length of the two end belts.

4,553,781
STREAMLINING APPARATUS FOR SEA/LAND CONTAINERS
David W. Johnson, 1884 Sunset Blvd., San Diego, Calif. 92103
Continuation-in-part of Ser. No. 337,809, Jan. 8, 1982, Pat. No. 4,427,229. This application Aug. 1, 1983, Ser. No. 519,076
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.⁴ B62D *35/00*
U.S. Cl. 296—1 S **22 Claims**



1. An apparatus for mounting a drag-reducing body on the bluff front face of a vehicle, comprising:

(a) a cable;

(b) an anchor means for securing one end of said cable adjacent an upper portion of said face;

(c) a pulley and pulley mounting means mounting same adjacent an upper portion of said face spaced from said anchor means;

(d) said cable passing from said anchor means through said pulley defining a midsection between said means and an extensible end beyond said pulley extensible to vary the slack in said midsection;

(e) means on said cable midsection for engaging an upper portion of a drag reducing body;

(f) means on said vehicle for holding a lower portion of said body down against said bluff face, whereby said body can be engaged in a lowered position by the slack midsection of said cable, raised into operative position by pulling the extensible end of said cable, and the lower portion of said body held against said face.

4,553,782

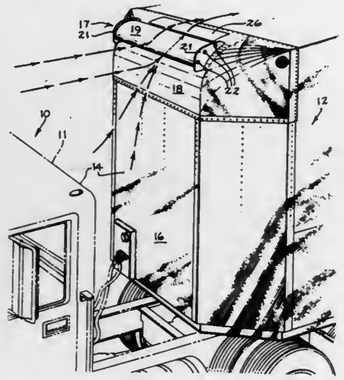
AIR RESISTANCE REDUCING ASSEMBLY FOR TRUCKS

Richard D. Markland, Cupertino, Calif., assignor to Consolidated Freightways, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 385,896, Jun. 7, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 580,111

Int. Cl.⁴ B62D *35/00*

U.S. Cl. 296—1 S **4 Claims**



1. An air resistance assembly for use in combination with tandemly coupled vehicles, one of said vehicles being a hauling vehicle, another of said vehicles being a trailing vehicle, said hauling vehicle and said trailing vehicle each normally having a drag following therebehind serving to act upon and tend to retard the vehicle movement through air, said drag acting parallel and opposite to the direction of movement of said vehicles, said trailing vehicle including a front wall and a top panel, air deflector means having leading and trailing edges disposed transversely of the direction of forward movement of said vehicles and carried at an upper leading end portion of said trailing vehicle, said deflector overlying the surface of said upper leading end portion while remaining disposed respectively behind and below the plane of said front wall and said top panel, said air deflector means being formed and disposed to deflect air to pass therebeneath adjacent the surface of said upper leading end portion and along the top of said trailing vehicle, the last named said means serving to evacuate sufficient air from behind the hauling vehicle to substantially reduce said drag acting thereon.

4,553,783

MOTOR VEHICLE WITH ITS BODY IN THE FORM OF A VOLUMETRIC SHELL OF RESILIENT MATERIAL

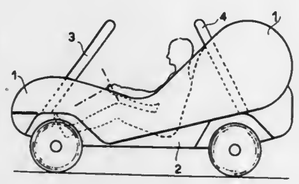
Giuseppe Lagana, Via Fiano n. 14, Torino, Italy

Filed Mar. 8, 1983, Ser. No. 473,614

Claims priority, application Italy, Mar. 19, 1982, 67352 A/82

Int. Cl.⁴ B62D *29/04*

U.S. Cl. 296—31 P **2 Claims**



1. A motor vehicle comprising a load-bearing base which houses a rear engine of the vehicle, and on the load-bearing base a soft body which has in its center a concavity for seats for the driver and passenger, said body being entirely of molded expanded soft cellular material, and roll bars fixed rigidly to said base, there being a forward said roll bar which embraces a wind screen of the vehicle.

4,553,784

LINKAGE ARRANGEMENT FOR A CONVERTIBLE TOP

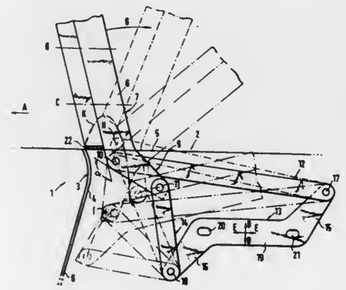
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,101

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148849

Int. Cl.⁴ B60J *7/12*

U.S. Cl. 296—107 **14 Claims**



1. A linkage arrangement for a convertible top for a passenger motor vehicle, the top having a main roof column, the arrangement comprising a plurality of lever means for operably displacing the main roof column between a first position associated with an up position of the top and a second position associated with a down position of the top, the main roof column including a lever section having pivot means and joint means for connection of the plurality of lever means, the plurality of lever means including a first guide lever means pivotally connected at one end to said pivot means and at a second end to a body of said vehicle and a second guide lever means pivotally connected at one end to said joint means and at a second end to the body of said vehicle, the second end of said first guide lever means being pivoted about a pivot axis fixed relative to the body of the vehicle, said first guide lever means being disposed generally horizontally and said second guide lever means being disposed generally vertically when said top is in the up position, said joint means moving from one side of an imaginary line connecting the pivot means and the point at which the second end of the second guide lever means is pivotally connected to the body of the vehicle to an opposite side of the imaginary line when the main roof column is displaced from said first position to said second position, said plurality of lever means controlling movement of said main roof column, when said main roof column is displaced from said first position to said second position, including moving the main roof column initially upwardly and subsequently downwardly such that said main roof column is recessed within said vehicle body.

4,553,785

LOUNGE CHAIR COVER

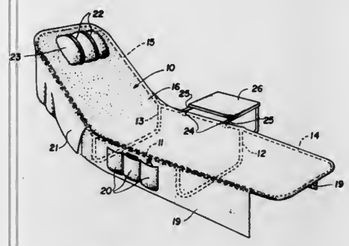
George B. Duke, Jr., and S. Mark Pierce, both of 1677 Dylan Dr., Virginia Beach, Va. 23464

Filed Sep. 22, 1983, Ser. No. 534,608

Int. Cl.⁴ A47C *31/10*

U.S. Cl. 297—229 **1 Claim**

1. A cover for a folding lounge chair comprising an elongated body portion of textile fabric of a shape and size to completely cover the top surfaces of a folding lounge chair, opposite end pockets on the bottom of the body portion formed by panels of flexible sheet material and having open interior ends in opposing relationship toward the longitudinal center of the body portion, said pockets being closed at their outer ends and sides and the pockets conforming to the shape of corresponding end portions of said body portion, opposite side free-hanging skirts on the body portion and having utility



pockets thereon which are open at their tops when the skirts are hanging substantially vertically at opposite sides of the body portion, and the body portion having a pair of slits formed therethrough in longitudinally spaced relationship near one side thereof adapted to receive support arms of an attachable side table and a pair of spaced head pillow support straps attached near one end of the body portion.

4,553,786

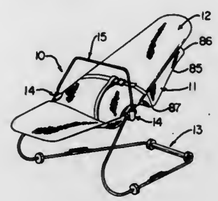
INFANT SEATING AND LOUNGE UNIT

William Lockett, III, 9902 W. Layton Ave., Littleton, Colo. 80123, and Edward D. Oliver, Manchester, N.H., assignors to William Lockett, III, Littleton, Colo.

Filed Aug. 10, 1983, Ser. No. 521,653

Int. Cl.⁴ A47C *1/12*

U.S. Cl. 297—440 **19 Claims**



1. An infant chair comprising:

upper and lower frame members, said lower frame member having a substantially horizontal ground-engaging portion with opposite sides extending forwardly from a common cross member, and upwardly and rearwardly inclined portions at forward ends of said sides of said lower frame, said upper frame having a back and seat support portion and a lower leg support portion; and

releasable connector means releasably interconnecting upper extremities of said inclined portions of said lower frame to said back and seat and leg support portions whereby said back and seat support portions incline rearwardly and upwardly from their connection to said inclined portions and said leg support portion inclines forwardly from its connection to said inclined portion, a body having spaced longitudinally extending openings therein, each of said inclined portions and said support portions terminating in connecting ends releasably insertable into said openings, said leg support portion having connecting ends inserted into one of said openings and said inclined portions in said back and seat support portions having connecting ends insertable into opposite ends of the other of said longitudinal openings, and a covering positioned over said back and seat support portion and said leg support portion.

4,553,787

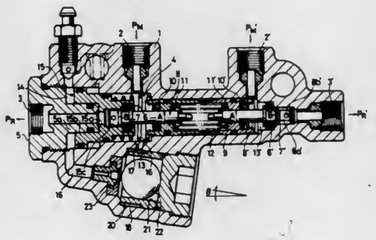
VEHICLE DECELERATION SENSING TYPE TWO-SYSTEM LIQUID PRESSURE CONTROL VALVE

Michio Moriya, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Nov. 29, 1983, Ser. No. 555,924

Int. Cl.⁴ B60T *8/26*

U.S. Cl. 303—6 C **6 Claims**



1. A vehicle deceleration sensing type two-system liquid pressure control valve, comprising:

two liquid pressure systems, each having a liquid pressure path;

two reducing valve mechanisms arranged coaxially in a valve body, said mechanisms having valve seats at opposed ends;

a set spring disposed between plungers of said two reducing valve mechanisms in such a manner as to move said plungers away from each other;

an inertial valve communicating with a liquid pressure path of one of said two systems; and

a liquid-pressure-operated piston which, as a sealed liquid pressure of a liquid seal chamber is increased by said inertial valve, moves one of said plungers of said reducing valve mechanisms to vary the length of said set spring.

4,553,788

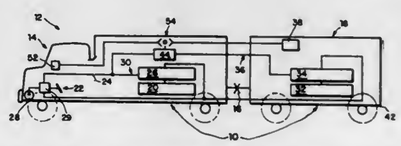
AUTOMATIC AIR BRAKE CONTROL

Frank R. Smith, 606 Osage Ct., San Jose, Calif. 95123

Filed Jun. 29, 1984, Ser. No. 626,301

Int. Cl.⁴ B60T *13/00, 8/18*

U.S. Cl. 303—7 **9 Claims**



1. In a braking apparatus (**10**) for an articulated vehicle (**12**) having a towing vehicle (**14**) attached across an articulated joint (**16**) to a towed vehicle (**18**) which is adapted to carry a load, said towing vehicle (**14**) having a towing vehicle brake system (**20**) which brakes said towing vehicle (**14**) in an amount determined by the pressure of air supplied thereto, an air supply (**28**), an operator-controlled brake actuator (**22**) adapted to control the pressure of air supplied to said towing vehicle brake system (**20**), a towing vehicle brake valve (**26**) movable between a first towing vehicle brake valve position which applies pressure to the towing vehicle brake system (**20**) and a second towing vehicle brake valve position which prevents application of pressure to the towing vehicle brake system (**20**) and being biased into a respective one of said first and second towing vehicle brake valve positions, means (**30**) for applying

the pressure controlled by the brake actuator (22) in opposition to the biasing of the towing vehicle brake valve (26), the towed vehicle (18) having a towed vehicle brake system (32) which brakes the towed vehicle (18) in an amount determined by the pressure of air supplied thereto, a towed vehicle brake valve (34) movable between a first towed vehicle brake valve position which applies pressure to the towed vehicle brake system (32) and a second towed vehicle brake valve position which prevents application of pressure to the towed vehicle brake system (32) and being biased into a respective one of said first and second towed vehicle brake valve positions, and means (36) for applying the pressure controlled by the brake actuator (22) in opposition to the biasing of the towed vehicle brake valve (34), an improvement comprising:

modulating means (29) for modulating application of pressure from the air supply (28) in response to operator control of said brake actuator (22);

signal generating means (38) for generating a first signal in response to the weight of the load exceeding a selected value and a second signal in response to the weight of the load being less than said selected value;

pressure reducing means (44) for substantially reducing the pressure controlled by the brake actuator (22) and modulated by the modulating means (29) in opposition to the biasing of the towed vehicle brake valve (34) in response to generation of the second signal by the signal generating means (38) and for not substantially reducing the pressure controlled by the brake actuator (22) and modulated by the modulating means (29) in opposition to the biasing of the towed vehicle brake valve (34) in response to generation of the first signal by the signal generating means (38); and

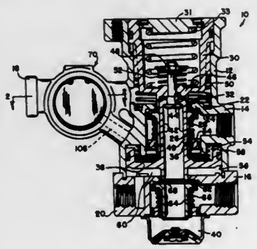
manual overriding means (52) for manually overriding the pressure reducing means (44) when the signal generating means (38) generates the second signal for supplying substantially unreduced pressure controlled by the brake actuator (22) and modulated by the modulating means (29) in opposition to the biasing of the towed vehicle brake valve (34).

4,553,789

DUAL BRAKE VALVE WITH BRAKE PROPORTIONING

James G. Pugh, Elyria, and Richard W. Carmichael, Parma, both of Ohio, assignors to Allied Corporation, Morristown, N.J.

Filed May 10, 1984, Ser. No. 608,688
Int. Cl.⁴ B60T *11/12*
U.S. Cl. 303—54 **11 Claims**



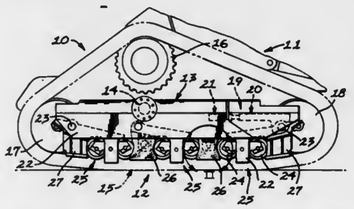
1. Dual circuit brake valve having a pair of inlet ports, a pair of outlet ports, a pair of valve members in said housing, one of said valve members controlling communication between one of said inlet ports and a corresponding outlet port, the other valve member controlling communication between the other inlet port and its corresponding outlet port, manually actuated means for controlling one of said valve members, fluid pressure responsive relay means for operating the other valve member, passage means communicating the outlet port controlled by said one valve member with said fluid pressure responsive relay means for causing the latter to operate said other valve member in response to pressure changes at said outlet port controlled by said one valve member to thereby establish a corresponding pressure level at the outlet port controlled by the other valve member, and pressure proportioning means controlling communication through said passage means, said pressure proportioning means including a control port on said housing communicated with a signal pressure, said pressure proportioning means being responsive to said signal pressure to shift between a first condition permitting uninhibited communication through the passage means to communicate a pressure level to the relay means substantially equal to the fluid pressure level communicated to said outlet port controlled by the one valve member and a second condition wherein said pressure proportioning means proportions communication through said passage means to establish a fluid pressure level at said relay means which is a predetermined poroportion of the fluid pressure level communicated to said outlet port controlled by said one valve member.

4,553,790

FLEXIBLE DIRT GUARD WITH BACK-UP PLATE FOR TRACK-TYPE VEHICLE

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 29, 1982, Ser. No. 648,233
Int. Cl.⁴ B62D *55/10, 55/16*
U.S. Cl. 305—12 **11 Claims**



1. In a track-type vehicle having a track roller frame (13), an endless track assembly (15) mounted on said frame (13), a plurality of track rollers (24) mounted below said frame (13) to engage said track assembly (15), and at least one flexible guard (26) mounted at its upper end on said track roller frame (13) and suspended downwardly between a laterally adjacent pair of rollers (24) to prevent the ingress and compaction of materials within the confines of said track assembly (15), the improvement comprising:

backup means (35) for preventing inward movement of said flexible guard (26) substantially within the confines of said track assembly (15) when said track assembly (15) separates from said track roller frame (13) during operation of said vehicle (10) to define a space (34) between said pair of track rollers (24) and said track assembly (15) that is greater than adjacent outer dimensions of said flexible guard (26).

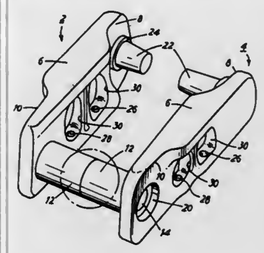
4,553,791

LINKED CHAIN

Ian L. Blair, Dunston, England, assignor to George Blair Public Limited Company, Newcastle upon Tyne, England

Filed Oct. 12, 1983, Ser. No. 541,103
Claims priority, application United Kingdom, Oct. 15, 1982, 8229549
Int. Cl.⁴ B62D *55/20*
U.S. Cl. 305—39 **9 Claims**

1. A length of chain including a plurality of interconnected chain links in which the links each comprise a pair of opposed link parts, the link parts including side portions and, projecting substantially perpendicularly inwardly of said side portions adjacent the end regions thereof, pin portions and bush portions, the opposed bush portions of a link abutting one another and the bore of a bush portion being continued through the



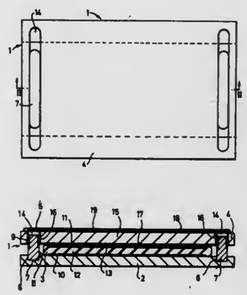
associated side portion, the arrangement being such that opposed pin portions of one link are received within, to be rotatable in, opposed bush portions of the adjacent link.

4,553,792

STRUCTURAL SLIDE BEARING

William E. Reeve, Hemingford Grey, England, assignor to Dixon International Limited, England

Filed Oct. 3, 1983, Ser. No. 538,102
Claims priority, application United Kingdom, Oct. 1, 1982, 8228063
Int. Cl.⁴ F16C *29/02*
U.S. Cl. 308—3 R **4 Claims**



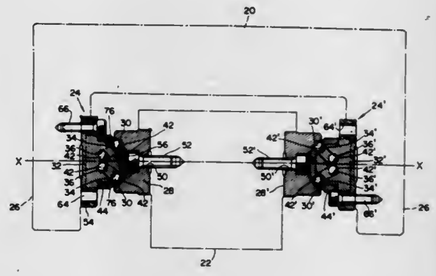
1. A structural bearing comprising: a bottom bearing plate and a top bearing plate; sliding surfaces in mutual sliding contact and fixed against horizontal movement relative to the bottom bearing plate and the top bearing plate respectively; one of the bearing plates being provided with one or more spigots engaging in slots in the other bearing plate, the spigot(s) substantially preventing relative rotation of the bearing plates about a vertical axis and substantially preventing relative horizontal movement of the plates in one direction but allowing relative horizontal movement of the plate in a direction normal thereto, wherein there is disposed between the top and bottom bearing plate at least one layer of rubber or other elastomeric material for absorbing relative rotational movement about a horizontal axis between the top and bottom bearing plates.

4,553,793

RECIRCULATING-BALL LINEAR BEARING WITH A GUIDE RAIL

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,736
Claims priority, application Japan, Mar. 16, 1982, 57-41241
Int. Cl.⁴ F16C *29/06*
U.S. Cl. 308—6 C **9 Claims**



1. A recirculating-ball linear bearing apparatus for use in moving an object along a rectilinear path with a minimum of friction, comprising:

a guide rail having a pair of divergent surfaces formed longitudinally thereon, the divergent surfaces each having a raceway formed thereon of arcuate cross section extending longitudinally of the guide rail;

a bearing body having a pair of convergent surfaces opposed to the pair of divergent surfaces of said guide rail, the convergent surfaces each having a raceway formed thereon of arcuate cross section extending longitudinally of the bearing body in opposed relation to one of the raceways on the guide rail, the bearing body also having a pair of return passageways extending longitudinally therethrough;

a pair of end covers at the opposite ends of the bearing body each having formed therein two hairpin grooves each intercommunicating one raceway on the bearing body and one return passageway in the bearing body;

rolling balls capable of recirculating through respective closed paths comprising the raceways on the bearing body, the return passageways in the bearing body, and the hairpin grooves in the end covers, the balls while rolling along the raceways on the bearing body also making rolling engagement with the raceways on the guide rail to allow the bearing body to travel along the guide rail; and

a cage integral with said pair of end covers and disposed on the bearing body for guiding the rolling balls as they roll between the raceways on the bearing body and the raceways on the guide rail, and the cage being transversely split into a pair of segments, such that

(a) a line of contact of each ball with respect to the associated raceways in opposed relation on the bearing body and on the guide rail converges toward the inside of the bearing body at an angle approximately 45 degrees with respect to a longitudinal central plane between the raceways on the bearing body; and

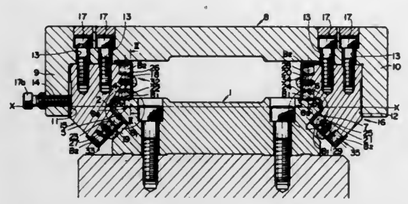
(b) the return passages in the bearing body are positioned close to the longitudinal central plane in a manner such that they are disposed near the contact line of each ball and such that the hairpin grooves in each cover do not cross the longitudinal central plane.

4,553,794

LINEAR SLIDE ROLLER BEARING UNIT

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed May 24, 1984, Ser. No. 613,618
Claims priority, application Japan, May 26, 1983, 58-92017
Int. Cl.⁴ F16C *29/06*
U.S. Cl. 308—6 C **9 Claims**



1. A linear slide roller bearing unit comprising:
a track shaft extending in the longitudinal direction of said linear slide roller bearing unit and having right and left ridges horizontally projecting therefrom with each ridge having loaded roller rolling surfaces respectively formed on the upper and lower side surface portions thereof;
a movable table constituted by along block member disposed so as to straddle said track shaft, said movable table having longitudinal recesses respectively formed in the opposing inner surfaces of skirt portions thereof;
a pair of right and left bearing bodies each constituted by a long block member which is screwed to the corresponding recess in said movable table, each bearing body having an upper and a lower guide ridge projecting from each said block body toward said track shaft, each said upper and lower guide ridge having one side surface thereof defined as a loaded roller rolling surface confronting the corresponding loaded roller rolling surface of said track shaft and the other side surface defined as a non-loaded roller rolling surface;
barrel-shaped rollers adapted to be recirculated along said loaded roller rolling surfaces and non-loaded roller rolling surfaces of said bearing bodies and to come in contact with said loaded roller rolling surfaces on said track shaft when rolling along said loaded roller rolling surfaces on said bearing bodies; and
a roller retainer attached to each of said guide ridges so as to face the corresonding inner surface portion of the associated bearing body and adapted to guide said rollers so that they can recirculate through the space defined between said roller retainer and inner surface portion.
wherein one group of said rollers in the state of serving as loaded rollers are brought into contact with said loaded roller rolling surfaces on said track shaft at a contact angle of about 90° with respect to the horizontal axis, while the other group of said loaded rollers are brought into contact with said loaded roller rolling surfaces on said track shaft at a contact angle of about 45° with respect to said horizontal axis.

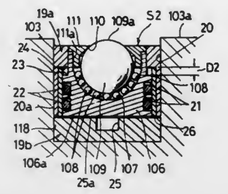
4,553,795

MOLD SUPPORTING ARRANGEMENT

Shozo Takagi, 950, Nakayama-cho Nishi 2-chome, Nara, Japan

Division of Ser. No. 364,676, Apr. 2, 1982, Pat. No. 4,459,909.
This application Mar. 30, 1984, Ser. No. 595,300
Int. Cl.⁴ F16C *17/00, 19/00, 21/00, 29/00*
U.S. Cl. 308—6 R **3 Claims**

1. A mold supporting arrangement for a press comprising:
a plurality of elongated blocks each of which is independently attachable to and detachable from any one of a plurality of spaced mounting slots formed in a press bolster;
a plurality of spaced bearing units incorporated in each of said elongated blocks, each of said bearing units including a seat body having a hemispherical concave seat formed in a top wall thereof, a layer of small steel balls disposed on said concave seat, and a main large ball seated on said layer of small steel balls for free rotation in every direction, each of said elongated blocks including a pressure fluid passage formed internally thereof, and



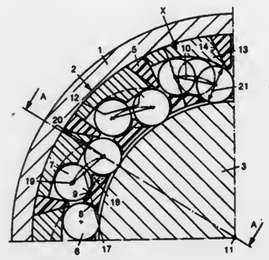
a plurality of piston-cylinder arrangements arranged within each of said elongated blocks in cooperation with said fluid passage to apply pressure fluid upon each of said bearing units for limited vertical movement of said bearing units so that a top part of said large main ball of each of said bearing units can protrude slightly above an upper surface of said elongated block.

4,553,796

MECHANISM INCLUDING A BEARING ASSEMBLY FOR MEMBERS ADAPTED FOR LONGITUDINAL MOVEMENT RELATIVE TO ONE ANOTHER

Lothar Walter, Schweinfurt; Walter Reith, Bad Bocklet, and Otmar Winkler, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,406
Claims priority, application Japan, Jul. 23, 1983, 58-3326601
Int. Cl.⁴ F16C *31/06, 29/06*
U.S. Cl. 308—6 C **8 Claims**



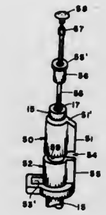
1. A ball bearing for longitudinal movement on a shaft member or the like comprising a cage which at least partially surrounds the shaft and disposed in the bore of a housing, a raceway element (13) supported in the bore of the housing having a raceway surface for a plurality of axially extending circumferentially spaced guide members disposed adjacent the shaft member, each guide member including arcuate guide tracks (8, 9) for the loaded and unloaded balls, deflector tracks joining adjacent pairs of said guide tracks, a longitudinally extending fillet (18) at the juncture of the radially outwardly directed arcuate ball guide track (8) and the arcuate circumferentially directed guide tracks (9) for the loaded balls, said fillets (18) projecting between adjacent rows of loaded and unloaded rows of balls approximately as far as the height of a line through the centers of the balls (6, 7) between two guide tracks (8, 9) of each ball guide and formed on the cage in such a way that the radius of curvature of each ball guide passing through the centers of the balls of the deflector tracks is equal to or slightly larger than half the diameter (21) of the balls.

4,553,797

MOUNTING BRACKET

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jan. 21, 1982, Ser. No. 341,284
Int. Cl.⁴ H01R *39/00*
U.S. Cl. 339—22 **15 Claims**



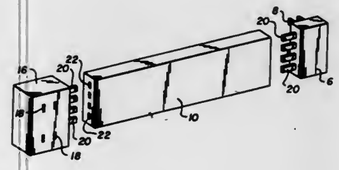
4. A visor rod and mounting bracket assembly comprising:
a mounting bracket having flange means including means for mounting said flange means to a vehicle and a support collar integrally formed with said flange means and defining a generally cylindrical opening for securing a rod end therein;
a visor rod having a cross section shaped to permit extension of an end thereof into said opening of said collar, said rod including means defining a radially extending flat for locking said rod within said collar; and
locking means having one end coupled to said flange means and extending to lockably engage said flat of said rod when positioned within said cylindrical opening for holding said rod therein.

4,553,798

ELECTRICAL OUTLET

Peter Murphy, 5027 Erin Way, Delta, British Columbia, Canada (V4M 1K2)

Filed Apr. 4, 1984, Ser. No. 596,610
Int. Cl.⁴ H01R *41/00*
U.S. Cl. 339—9 R **5 Claims**



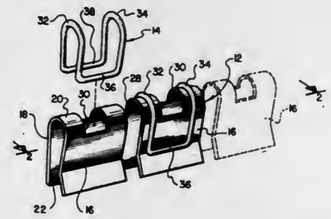
1. Apparatus to provide a remote outlet from a master electrical outlet provided with electrical conducting recesses connected to an electrical power source, the apparatus comprising:
a plug member;
conductor prongs on the plug member to engage the recesses in the master outlet;
conductor attachment means formed on the plug member, in electrical contact with the conductor prongs;
a limb adapted to be attached to the plug member;
conductors in the limb, each conductor adapted to be in electrical contact with one conductor prong of the plug member;
conductor attachment means in the limb to releasably engage the conductor attachment means at the master outlet and in electrical contact with the conductors in the limb;
a remote outlet;
further conductor attachment means at the distal end of the limb, in electrical contact with the conductors in the limb;
conductor recesses in the remote outlet, each recess adapted to be in electrical contact with a conductor in the limb;
conductor attachment means in the remote outlet corresponding to the further conductor attachment means at said distal end of the limb and in electrical contact with the recesses in the remote outlet, whereby the limb may be disconnected from the plug member and the remote outlet;
whereby a secondary outlet is provided remote from but duplicating the master outlet and adapted to be in electrical contact with the master outlet.

4,553,799

ELECTRICAL CONNECTOR CLIP ASSEMBLY

Paul M. Deters, 2105 Harkness St., Manhattan Beach, Calif. 90266

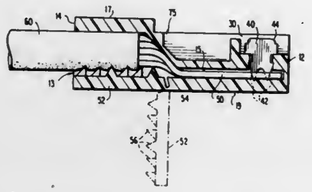
Filed Jul. 11, 1983, Ser. No. 512,905
Int. Cl.⁴ H01R *31/08*
U.S. Cl. 339—19 **1 Claim**



1. In combination with a plurality of elongated spaced-apart terminal posts, an electrical connector assembly for electrically connecting at least one said terminal post to another said terminal post, said electrical connector assembly comprising:
an elongated electrical conducting clip member defining in lateral cross-section a pair of spaced-apart leg members, said leg members having facing inner surfaces, a gap located between said facing inner surfaces, an apex section, said leg members being attached to said apex section, said apex section including a plurality of spaced-apart holes, a said terminal post to extend through a said hole with said facing inner surfaces being in contact with said terminal posts, said clip member being constructed of substantially pure copper thereby having a high electrical conductivity but lacking in resiliency to be biased into tight engagement with said terminal posts; and
means connected to said clip member for exerting a continuous bias against said leg members forcing said leg members into tight engagement with said terminal posts, said means being removably connected to said clip member, said means comprising a continuous wire member, said wire member defining a pair of U-shaped members located in a spaced-apart relationship, each said U-shaped member having a pair of substantially parallel arms, the outer end of one said arm of one said wire member being connected by a first connecting member to the outer end of an arm of the other said U-shaped wire member, the outer end of the remaining said arm of said one U-shaped wire member being connected by a second connecting member to the outer end of the remaining said arm of said the other said U-shaped wire member, said first connecting member being parallel to said second connecting member, said first

connecting member to be in contact with one said leg member with the other said connecting member being in contact with the other said leg member with each said U-shaped member being located on a different side of one of said holes.

4,553,800
LOW PROFILE MODULAR PLUG
Charles E. Bogese, Roanoke, Va., assignor to Virginia Patent Development Corp., Roanoke, Va.
Filed Oct. 15, 1982, Ser. No. 434,639
Int. Cl.⁴ H01R *11/00*
U.S. Cl. 339—59 M **21 Claims**



1. A modular plug for terminating a cable having an outer jacket covering a plurality of conductors, and for making electrical contact with a mating modular jack, the mating modular jack including a plug-receiving opening with an arm-receiving recess and a plurality of spring contact members in the opening, the modular plug comprising:

a unipartite dielectric housing having opposed top and bottom walls, opposed side walls, a free end for insertion into the plug-receiving opening of the mating modular jack, a cable-receiving end having a relatively large cable-receiving opening for receiving the outer jacket of the cable, said cable-receiving opening defined by a floor, a ceiling and opposed inner side walls, relatively small conductor-receiving openings adjacent to and in communication with said cable receiving opening and extending to said free end for receiving and enclosing the individual conductors of the cable, said free end also including terminal-receiving slots extending through said top wall to said conductor-receiving openings;

a latching arm mounted on one of said side walls and extending angularly rearwardly from said free end of said housing for releasably mating with the arm-receiving recess in the modular jack;

substantially planar, electrically conductive contact terminals extending through said terminal-receiving slots and having insulation-piercing tangs at the lower portion thereof for terminating the conductors of the cable and an upper portion for making electrical contact with the spring contact members of the modular jack; and

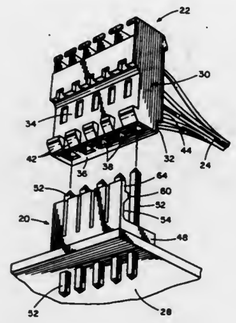
said bottom wall including means integrally formed therein for providing access to the cable in said cable-receiving opening, said access means comprising a door pivotally connected to said housing and forming when closed said floor of said cable-receiving opening, said access means including integral locking means for securing said door in its closed position.

4,553,801
LOCKING AND POLARIZING HEADER
Robert B. Zajeski, Hickory Hills, Ill., assignor to Panduit Corp., Tinley Park, Ill.
Filed Sep. 23, 1982, Ser. No. 422,049
Int. Cl.⁴ H01R *9/22*
U.S. Cl. 339—59 M **2 Claims**

1. An elongate header for mounting a connector to interconnect wires terminated in said connector and corresponding circuits of another electrical component such as a circuit board, said header comprising:

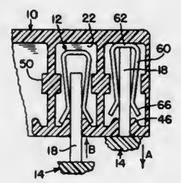
a series of insulative L-shaped segments joined by frangible interconnection means whereby a group of segments can be broken away by hand from the remainder of said header, each segment including a base having an aperture for receiving a header post and further including a resilient, deflectable wall extending from said base, said group of segments extending in a generally longitudinal direction; and

a header post disposed in each aperture, wherein each aperture has a first dimension in said longitudinal direction of



said header substantially complimentary to a corresponding cross-sectional dimension of said header post, and each aperture has a dimension transverse to said longitudinal direction of said header which is less than a corresponding cross-sectional dimension of said header post whereby any force applied by said posts to said header is directed transversely to said longitudinal direction and any resulting slight bowing in each segment due to said force is non-cumulative with that in other segments to preclude substantial longitudinal bowing of said header, and wherein said transverse dimension of each aperture is defined by opposing convexities.

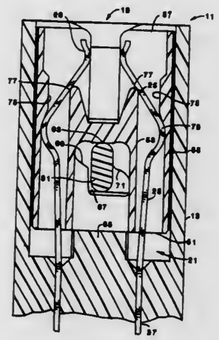
4,553,802
MODULAR BRIDGING CLIP
William E. Ruehl, Wheeling, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation of Ser. No. 289,022, Aug. 3, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,793
Int. Cl.⁴ H01R *13/62*
U.S. Cl. 339—74 R **12 Claims**



1. A modular bridging device for use with a telecommunications terminal block having plural rows of contact terminals, said device including non-conductive housing means having at least one compartment therein and a discrete generally U-shaped electrically conductive bridging clip installed in each said at least one compartment, each said bridging clip including a bight portion and pair of resilient legs defining a throat adapted to receive a contact terminal, each said at least one compartment having interior wall means for loosely retaining

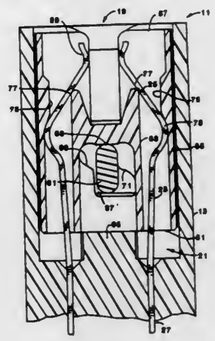
in an inverted manner the bridging clip installed therein and for permitting said bridging clip to slide in a generally parallel direction to said pair of legs, each said at least one compartment including slot means in communication with said interior wall means and in general alignment with and providing access to said throat of the bridging clip retained therein, and cam means carried by said interior wall means adjacent to said slot means in each said at least one compartment for engaging and spreading the legs of the bridging clip retained therein in direct response to said housing being moved away from said terminal block in a generally parallel direction to said pair of legs of each of said bridging clips thereby facilitating removal of said device from said terminal block.

4,553,803
ELECTRICAL CONNECTOR
Scott J. Lapraik, Pleasantville, and Wayne A. Becker, Meadville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed May 7, 1984, Ser. No. 607,840
Int. Cl.⁴ H01R *13/629*
U.S. Cl. 339—74 R **7 Claims**



1. A zero or low insertion force connector for making electrical connection between a circuit board and an external circuit comprising an elongated outer housing having a channel extending in a longitudinal direction, a plurality of contacts mounted in said outer housing on either side of said channel to form a pair of rows of contacts, said contacts having lower end portions projecting exteriorly of said outer housing through the bottom of said channel and upper portions interior of said outer housing adapted to contact opposite sides of a circuit board, an inner housing mounted within said outer housing for movement inwardly and outwardly along a vertical direction normal to said longitudinal direction, said inner housing having a pair of sidewalls and an upright intermediate said sidewalls, each of said rows of contacts being intermediate said upright and a respective side wall, an elongated cam disposed in said channel, said inner housing including a first cam engaging means and said outer housing including a second cam engaging means whereby said inner housing is movable from a first position to a second position when said cam is actuated, each of said sidewalls including an inwardly facing protrusion adapted to engage contacts in a respective row and urge engaged contacts toward a circuit board when said housing is in one of said positions, said upright including a pair of contact engaging portions, each portion being adapted to engage contacts in a respective row and urge said contacts away from a circuit board when said inner housing is in the other of said positions.

4,553,804
ELECTRICAL CONNECTOR
Scott J. Lapraik, Pleasantville, and Wayne A. Becker, Meadville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed May 7, 1984, Ser. No. 607,841
Int. Cl.⁴ H01R *13/629*
U.S. Cl. 339—74 R **5 Claims**

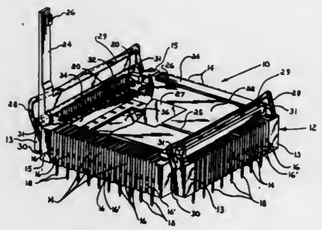


1. A zero or low insertion force connector for making electrical connection between a circuit board and an external circuit comprising: an elongated outer housing having a channel extending in a longitudinal direction; a plurality of contacts mounted in said outer housing on either side of said channel, said contacts having lower end portions projecting exteriorly of said outer housing through the bottom of said channel and upper portions interior of said outer housing adapted to contact opposite sides of a circuit board; an inner housing mounted within said outer housing for movement upwardly and downwardly in a vertical direction normal to said longitudinal direction; and ovally shaped cam having an axis or rotation extending in said longitudinal direction, said cam being adapted to be rotated from a first position presenting a narrow cross-section in the vertical direction to a second position presenting a wider cross-section in the vertical direction; a pair of first cam engaging surfaces and a pair of second cam engaging surfaces; said inner and outer housing each including a respective first and second cam engaging surface, said first cam engaging surfaces being diametrically opposed in said vertical direction and being adapted to be moved apart when said cam is rotated from said first position to said second position, said second surfaces being laterally displaced from said first surfaces along the direction of rotation of said cam and adapted to be moved apart when said cam is rotated from said second position to said first position, said inner housing including means adapted to engage and urge said upper portions of said contacts apart when said cam is rotated from one of said positions, whereby removal or insertion of a circuit board is permitted.

4,553,805
CHIP CARRIER CONNECTOR
Paul W. Aikens, Etters, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 23, 1984, Ser. No. 573,215
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—75 MP **6 Claims**

1. In an electrical chip carrier connector for connecting a semiconductor chip to a printed circuit board having a dielectric frame with two pairs of oppositely facing sidewalls, each sidewall having a plurality of vertically extending slots, each sidewall further having a stepped shelf on an interior surface with the remainder of the interior surfaces of the sidewalls together defining a central enclosed cavity, a conductive spring member within each slot having an upper contact por-

tion exposed on the sidewall stepped shelf and a lower portion extending from the bottom of the sidewall, the improvement comprising a pair of compression springs, each having a lower and an upper end, each compression spring mounted at its lower end in a spring tension groove located on a lower side surface of each of the sidewalls of one pair of oppositely facing sidewalls, a pair of latch arms, each latch arm corresponding to one of the compression springs and pivotally mounted on an



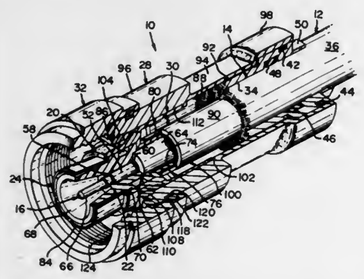
upper side surface of the same sidewall as its respective compression spring, the latch arms being mounted in diagonally opposed positions, the upper end of each compression spring being positioned above the upper surface of the sidewall and remaining in constant contact under spring tension with its corresponding latch arm so that movement of the compression spring towards the central cavity causes the latch arm to move down and lock over the top surface of the semiconductor chip carrier.

4,553,806

COAXIAL ELECTRICAL CONNECTOR FOR MULTIPLE OUTER CONDUCTOR COAXIAL CABLE

Edgar W. Forney, Jr., Harrisburg, and Richard S. Hogendobler, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1983, Ser. No. 475,572
Int. Cl.⁴ H01R *4/00*
U.S. Cl. 339—94 C **17 Claims**



8. A coaxial electrical connector of the type wherein for connection with a center conductor and multiple outer conductors of a coaxial cable, the connector comprises a center contact member securable onto the center conductor and positionable within a bore of an inner dielectric member of an inner contact assembly, an inner contact member of the inner contact assembly to which is electrically connectable an inner conductor of the multiple outer conductors, an outer contact assembly including an outer dielectric member having a bore in which the inner contact assembly is disposed and an outer contact member to which an outer conductor of the multiple outer conductor is electrically connectable, the connector comprising

a crimping and sealing ferrule positionable onto an outer jacket of the cable and having a sealing member disposed within an inner recess of the crimping and sealing ferrule forming a seal between the ferrule and the outer jacket of the cable;

a crimping ferrule member crimpably connecting the inner conductor of the multiple outer conductors to the inner contact member of the inner contact assembly and the inner contact assembly containing the center contact member terminated to the center conductor and positioned in the bore of the inner dielectric member and the inner conductor terminated to the inner contact member being positioned within the bore of the outer dielectric member and the crimping and sealing ferrule sealingly positioned on the outer jacket of the cable being positioned within the outer contact member and the outer contact member being crimpable onto the crimping and sealing ferrule with the outer conductor captured therebetween;

sealing means disposed between said crimping and sealing ferrule and said crimping ferrule member for sealing the same; and wherein

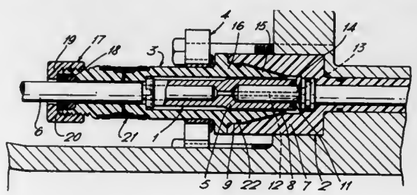
a gold plated sealing ring is press-fitted into a recess on a front surface of the outer contact member to secure said outer dielectric member in said outer contact member and to electrically connect with a complementary coaxial electrical connector.

4,553,807

SEPARABLE ELECTRICAL CONNECTORS WITH FLUID ESCAPE PATH

Michael R. Cane, Prescot, England, assignor to BICC Public Limited Company, England

Filed Mar. 12, 1984, Ser. No. 588,707
Claims priority, application United Kingdom, Mar. 31, 1983, 8308978
Int. Cl.⁴ H01R *13/523*
U.S. Cl. 339—94 R **4 Claims**



1. A separable electric connector comprising three relatively movable parts, namely:

a socket part formed about an axis and which, prior to the assembly of the parts, is to be filled with a viscous insulating fluid;

a plug part having

(a) a tubular member which is closed at one end and surrounds the socket part with a clearance when the connector is assembled and

(b) a male member upstanding from the closed end of the tubular member to enter the socket part and make at least one electrical contact with it;

there being at least one passage allowing flow of the viscous insulating fluid from the socket part into the tubular member adjacent its closed end as the socket part and the plug part are brought together; and

a sleeve part surrounding the socket part, axially movable relative thereto and capable of entering the tubular member to displace the viscous insulating fluid therefrom; said connector further comprising:

means for forming a seal between the tubular member and the sleeve part after the space between them has been filled with the fluid but before they are fully assembled;

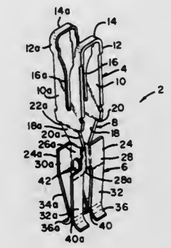
and an escape path other than between the tubular member and the sleeve part which permits passage of fluid from said space to the exterior of the connector as said three relatively movable parts are brought from a seal-forming position to a fully-assembled position, the fluid to be forced through the escape path by axial movement of the sleeve part relative to the socket part and into the tubular member.

4,553,808

ELECTRICAL TERMINAL INTENDED FOR MATING WITH A TERMINAL TAB

Charles H. Weidler, Lancaster, and George E. Trout, Etters, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 564,670, Dec. 23, 1983, abandoned. This application Apr. 26, 1985, Ser. No. 727,193
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—97 R **4 Claims**



1. A stamped and formed electrical terminal of the type comprising a conductor-receiving portion and a contact portion, the conductor-receiving portion comprising first and second aligned flat plate-like members which are connected to each other, the plate-like members having aligned conductor-receiving slots so that a conductor can be moved laterally of its axis and into the conductor-receiving slots, the contact portion comprising first and second pairs of contact arms, the first pair of contact arms extending from the first plate-like member and the second pair of contact arms extending from the second plate-like member, and first and second transition sections between the first and second plate-like members and the first and second pairs of contact arms respectively, the terminal being characterized in that:

each transition section is flat and in inclined from its respective plate-like member towards a medial plane that is parallel to, and between, the first and second plate-like members, each transition section having convergently tapered side edges,

first and second U-shaped sections extend from the first and second transition sections, each U-shaped section comprising a web and sidewalls, the web of each U-shaped section extending from its associated transition section, the webs being on each side of the medial plane and the sidewalls extending in opposite directions away from the medial plane,

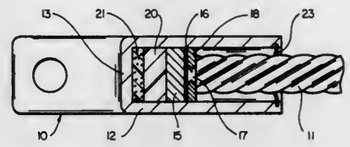
the first and second pairs of contact arms extending from the sidewalls of the first and second U-shaped section, the arms of each pair of contact arms having free ends and having opposed contact zones on their free ends whereby a terminal tab can be inserted between the contact zones of the first and second pairs of contact arms and the terminal tab will extend normal the medial plane.

4,553,809

ELECTRICAL CONNECTOR

Neil L. Holt, Foster City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 24, 1984, Ser. No. 654,602
Int. Cl.⁴ H01R *11/06*
U.S. Cl. 339—275 T **5 Claims**



1. An electrically conductive connector for electrical conductors comprising:

(a) at least one metallic tubular sleeve having an open end for receiving an electrical conductor and a closed end, the peripheral inner wall of the sleeve being pretinned;

(b) a slug of solder having a flux associated therewith, hermetically sealed within the sleeve proximate the closed end;

(c) a piston, capable of axial motion within the sleeve, positioned between the solder slug and the closed end;

(d) means which on application of heat sufficient to raise the temperature of the connector to a first temperature, T_1, the activation temperature of the flux, breaks the hermetic seal and permits the activated flux to expand and flow toward the conductor; and

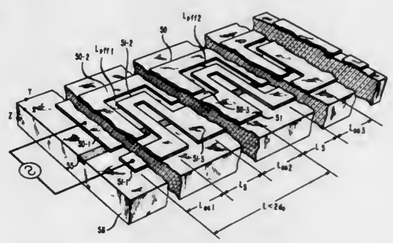
(e) pressuring means positioned between the piston and the closed end of the sleeve which, on application of heat sufficient to raise the temperature of the connector to a second temperature, T_2, which is higher than the first temperature and which is the melting temperature of the solder, exerts sufficient force on the piston to cause it to move toward the open end of the sleeve and to pressure the slug of solder toward the open end of the sleeve.

4,553,810

TRAVELING WAVE ELECTROOPTIC DEVICES

Rodney C. Alferness, Holmdel; Steven K. Korotky, Toms River, and Enrique A. J. Marcatili, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 21, 1983, Ser. No. 487,249
Int. Cl.⁴ G02B *5/174*
U.S. Cl. 350—96.14 **18 Claims**



1. A device comprising:

a substrate comprising electrooptic material;

first waveguiding means adapted for guiding electromagnetic radiation of optical wavelengths, such radiation to be referred to as the "optical signal", the first waveguiding means comprising at least one waveguide formed in the substrate, the waveguide to be referred to as the "optical waveguide"; and

second waveguiding means, disposed on the substrate, adapted for supporting a propagating electrical signal comprising a wavelength λ_m, the second waveguiding

means comprising a multiplicity of spaced sections, to be referred to as the "on" sections, that are disposed such that the propagating electrical signal does operatively interact with the optical waveguide by means of the electrooptic effect, such relationship to be referred to as an "electrooptically interacting" relationship, and further comprising at least one further section, to be referred to as the "off" section, that is disposed such that the propagating electrical signal does not operatively interact with the optical waveguide by means of the electrooptic effect, such relationship to be referred to as an "electrooptically noninteracting" relationship, the "off" section being located between two "on" sections;

characterized in that

each "on" section is substantially of length L_{on}, the at least one "off" section is substantially of length L_{off}, with

$L_{off} > (1 - N_o/N_m)L_{on}$

where:

N_o is the effective refractive index of the optical waveguide at the wavelength of the optical signal;

and:

N_m is the effective refractive index of the second waveguiding means at the wavelength λ_m of the electrical signal.

4,553,811

OPTOELECTRICAL COUPLING ARRANGEMENT

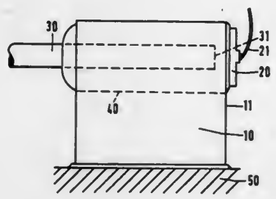
Reinhard Becker, deceased, late of Senden-Ay; Gudula Seber, legal representative, Bielefeld; Ulrich Becker, legal representative, Blaustein; Hans C. Becker, legal representative, Trier-Irsch; Gero Becker, legal representative, Sarstedt-Gödringen; Artur Müssigmann, Ehingen, and Anton Schurr, Senden-Wullenstetten, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,893

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142918

Int. Cl.⁴ G02B *7/26*

U.S. Cl. 350—96.20 **11 Claims**



1. Optoelectrical coupling arrangement comprising: a carrier element having a side face and provided with at least one trough-shaped recess extending to the side face; at least one optical fiber element fastened in the recess, having a longitudinal axis perpendicular to said side face, and presenting an end face positioned to lie in the region of said side face of said carrier element; and at least one photodetector having transverse dimensions smaller than that of said side face and fastened to said side face via opposed edges of said photodetector so that said photodetector is located within the boundaries of said side face, and having a light-sensitive region positioned parallel to said side face to receive a substantial portion of the light emanating from said end face of said optical fiber element, and wherein said carrier element comprises at least one electrical conductive path connected electrically with said photodetector.

4,553,812

PENETRATION ASSEMBLY FOR BRINGING AN OPTICAL FIBER CABLE THROUGH A VESSEL WALL

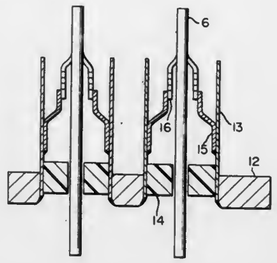
Tetsuya Kōjiro, Kobe, and Jun Takeda, Akashi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,912

Claims priority, application Japan, Jun. 8, 1982, 57-99899

Int. Cl.⁴ G02B *7/16*

U.S. Cl. 350—96.20 **11 Claims**



1. A penetration assembly for bringing optical fiber cable through a wall comprising:

first and second axially aligned sleeves having inner surfaces;

an optical fiber cable segment centrally disposed inside said first and second sleeves; said optical cable segment having opposite ends for being connected to optical fiber cables on opposite sides of a wall;

first and second open-ended flexible metal connectors, having respective annular cross-sectional areas and being concentrically disposed about said optical fiber cable segment, respectively inside said first and second sleeves; said first metal connector having first and second axially opposite metal connector ends, said first metal connector end having a first metal connector circumference surrounding said cable segment and rigidly secured over the entire extent thereof to said first sleeve, said second metal connector having third and fourth axially opposite metal connector ends, said fourth metal connector end having a second metal connector circumference surrounding said cable segment and rigidly secured over the entire extent thereof to said second sleeve; and

first and second open-ended glass connectors, having respective annular cross sections and being concentrically disposed about said optical fiber cable segment, respectively inside said first and second sleeves; said first glass connector having first and second axially opposite glass connector ends, said first and second glass connector ends having respective first and second glass connector circumferences surrounding said cable segment and respectively rigidly secured over the entire extents thereof to said second metal connector end and to said cable segment; said second glass connector having third and fourth axially opposite glass connector ends, said third and fourth glass connector ends having respective third and fourth glass connector circumferences surrounding said cable segment and being respectively rigidly secured over the entire extents thereof to said third metal connector end and to said cable segment.

4,553,813

FIBER OPTIC CONNECTOR SYSTEM FOR INTEGRATED CIRCUIT MODULES

James L. McNaughton, Hyannis, Mass., and James R. Petrozello, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1983, Ser. No. 494,760

Int. Cl.⁴ G02B *7/26*

U.S. Cl. 350—96.20 **2 Claims**

1. A fiber optic connector system for transmitting input and output signals to and from an integrated circuit module which comprises:

a connector housing;

a plurality of optical terminators mounted in said housing, each terminator containing either an input signal or an output signal fiber optic strand;

a plurality of conical holes in said housing and in alignment with said terminators;

a substrate having an integrated circuit chip thereon;

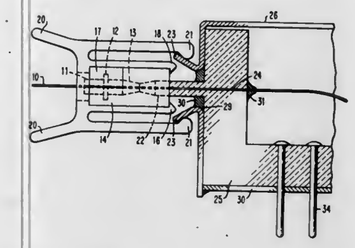
a plurality of light emitting diodes on said chip;

a wall member integrally connected to said substrate and approximately perpendicularly disposed with respect to said substrate;

an alignment plate positioned over said chip and having holes in alignment with said diodes;

a cap attached to the wall member and to the substrate, said cap having an opening;

a plurality of cones integrally attached to said wall member



and partially extending through said opening in said cap, each cone having a fiber optic strand which is connected through said alignment plate to an associated one of said light emitting diodes; and

latching means for latching the connector housing to the cap, said cones being seated in the conical holes in the connector housing thereby positioning the strands in the terminators in alignment with the strands in the cones, said latching means comprising,

retention ledges formed on said cap opening and being angularly oriented with respect to said cap opening, and

a retention housing encompassing said connector housing including latching arms operable to snap into and out of engagement with the angularly oriented retention ledges, the angular orientation of the retention ledges functioning to press the strands in the terminators snugly against the strands in the cones when the latching arms are snapped into engagement with the angularly oriented retention ledges.

4,553,814

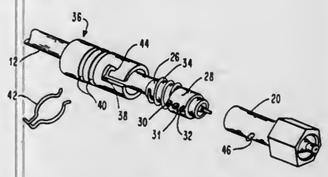
DETACHABLE FIBER OPTIC CONNECTOR ASSEMBLY

Andrew L. Bahl; George R. Stilwell, Jr; Edward C. Uberbacher, all of Raleigh, and Charles A. Williamson, Apex, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1983, Ser. No. 531,886

Int. Cl.⁴ G02B *7/26*

U.S. Cl. 350—96.21 **12 Claims**



1. A connector assembly for an optical fiber cable of the type including a protective jacket characterized by:

a cable terminator permanently secured at one end of the cable and further including

a generally cylindrical housing slidable along the protective jacket, and

a collar immovably secured to the protective jacket for retaining the generally cylindrical housing, an exposed end of said fiber extending beyond the collar; and

a connector unit including

a housing, and

an optical medium permanently retained within said housing, said medium having an exposed face at one end and guide means at the opposite end for guiding the exposed end of said fiber into optical communication with said medium,

said housings in both said cable terminator and said connector unit having complementary fastening means for releasably securing said connector unit to said cable terminator.

4,553,815

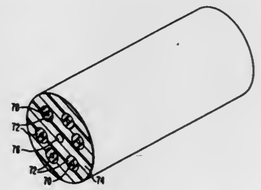
OPTICAL FIBER CABLE CONSTRUCTION

Frank E. Martin, Chester, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 4, 1983, Ser. No. 464,433

Int. Cl.⁴ G02B *5/13*

U.S. Cl. 350—96.23 **7 Claims**



1. An improved optical fiber cable construction, comprising:

(A) an optical fiber for conduction of light energy signals;

(B) a coating of elastomeric material around the surface of said optical fiber;

(C) a liquid-crystal polymer protective cladding around the surface of said elastomeric material; and

(D) said liquid-crystal polymer being of the type which is thermoplastic and which forms rigid, rod-like molecular aggregates in an overlapping, orientable fashion, at a point in its melt cycle.

4,553,816

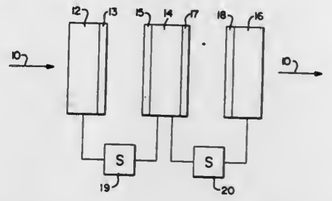
TUNABLE FABRY-PEROT FILTER

William W. Durand, Edina; Anil K. Jain, New Brighton, and Ronald E. Peterson, Shoreview, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 216,420, Dec. 15, 1980, abandoned. This application Feb. 17, 1983, Ser. No. 467,619

Int. Cl.⁴ G02B *5/28*

U.S. Cl. 350—166 **10 Claims**



1. A fully tunable Fabry-Perot filter device, comprising: at least three low index substrates having a refractive index

of less than 2.4 and mounted in parallel relationship so as to present two pairs of facing sides to each other in an optical path:

a high index, non-metallic coating having a refractive index of at least 4.0 and an optical thickness less than one half of the minimum wavelength to be transmitted, said high index coating being on said facing sides of each of said low index substrates with the thickness of the coating on at least one of the pairs of facing sides being less than the thickness of the coating on the other of the pairs of facing sides; and

spacer means for mounting said low index substrates and for adjusting the distance between either pair of said facing sides.

4,553,817

AUTOMATIC AND MANUAL FOCUSING EXCHANGEABLE LENS ASSEMBLY

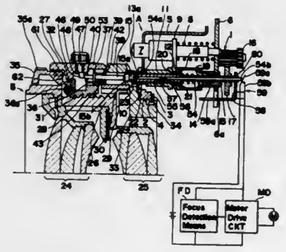
Makoto Ando, 21-308, 3-Ban, 2-Cho, Chayama-Dai, Sakai-Shi, Osaka-Fu; Tsuneyo Metabi, 12-306, 29-Ban, 1-Cho, Harumi-Dai, Sakai-Shi, Osaka-Fu; Yukio Miki, 560-4, Horiage-Cho, Sakai-Shi, Osaka-Fu, and Takeshi Egawa, 1789-107, Zinenda, Hannan-Cho, Sennan-Gun, Osaka-Fu, all of Japan

Filed Apr. 4, 1983, Ser. No. 481,933

Claims priority, application Japan, Apr. 8, 1982, 57-59278; May 27, 1982, 57-78823[U]

Int. Cl.⁴ G02B *7/10*; G03B *13/22, 3/00*

U.S. Cl. 350—255 **14 Claims**



1. A lens assembly detachably mountable on an optical apparatus which includes an automatic focusing device whose output driving shaft has a front end located in or adjacent to a mount surface at the front of said optical apparatus, said lens assembly comprising:

a stationary barrel integrally provided with a mount surface contacting said mount surface at the front of said optical apparatus when said lens assembly is mounted on said optical apparatus;

an optical system adjustable for focusing;

a single focus adjusting mechanism for adjusting said optical system for focusinq;

a manual focusing ring manually operable for rotation relative to said stationary barrel about the optical axis of said optical system for operating said focus adjusting mechanism;

a driven mechanism driven by said output driving shaft for operating said focus adjusting mechanism, said driven mechanism including a driven shaft having a rear end located in or adjacent to said mount surface of said lens assembly and shiftable relative to said stationary barrel in the direction parallel to the optical axis of said optical system between an engaging position wherein said rear end engages said front end of said output driving shaft and a disengaging position wherein said rear end disengages from said front end of said driving shaft, said rear end also disengaging from said front end of said output driving shaft even with said driven shaft being at said engaging position when said lens assembly is detached from said optical apparatus;

a change-over member provided on said stationary barrel separately from said manual focusing ring and manually operable between a manual focusing position and an automatic focusing position; and

means, interlocking said change-over member with said driven shaft, for shifting said driven shaft to said engaging position in response to the manual operation of said change-over member to said automatic focusing position and to said disengaging position in response to the manual operation of said change-over member to said manual focusing position.

4,553,818

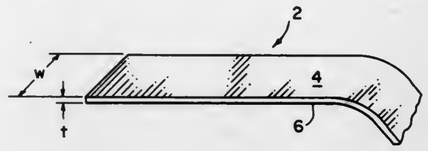
DIRECTIONAL FILTER FOR FILTERING AMBIENT LIGHT

Richard L. Cohen, Matawan, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 12, 1983, Ser. No. 560,689

Int. Cl.⁴ G02B *5/20*

U.S. Cl. 350—276 R **11 Claims**



1. A directional filter for filtering ambient light, characterized by:

first and second sections of a roll formed by winding a thin base strip into a plurality of convolutions, with each of the convolutions having an opaque surface:

the first and second sections being cut from the face of the roll, with said first and second sections being disposed relative to each other so that their respective convolutions are in an orthogonal relationship;

said convolutions in an orthogonal relationship cooperating to form light directing channels which are bounded by opaque surfaces: and

said light directing channels imparting directional characteristics to light entering the filter from outside a predetermined angle and for thereby filtering said light

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4,553,819

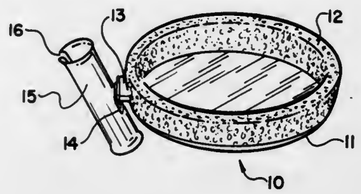
VISUAL AID APPARATUS FOR VIEWING OBJECTS BENEATH WATER SURFACE

Charles Correll, 161 Haigler Rd., Lenoir, N.C. 28645

Filed Jun. 27, 1984, Ser. No. 625,442

Int. Cl.⁴ G02B *5/00*

U.S. Cl. 350—319 **4 Claims**



1. A visual aid apparatus for forming a flat plane on a water surface to permit clear vision of subsurface objects and comprising:

(a) a relatively thin transparent sheet of material;

(b) a buoyant, closed wall member secured in a leakproof manner to said sheet to define a relatively shallow pan-like container for floating on the water surface, said wall preventing water from entering said container, and said transparent sheet permitting viewing of subsurface objects; and,

(c) holding means carried by said container for holding an elongate member by which the container is maneuvered along the surface of the water as desired, said holding means comprising a tube pivotally mounted to the outer periphery of said container for holding a vacuum or suction pipe of the kind used to clean a swimming pool.

4,553,820

KEYBOARD SWITCH WITH A MESH OF FIBERS

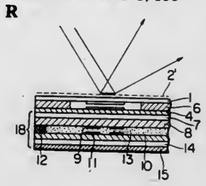
Yuji Harada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,631

Claims priority, application Japan, Aug. 13, 1982, 57-140672

Int. Cl.⁴ G02F *1/133*

U.S. Cl. 350—331 R **7 Claims**



1. A display keyboard comprising:

means for displaying information to be entered; and

a keyboard provided on said display means and including:

a first transparent sheet having at least first and second opposite surfaces;

a coarse mesh layer comprising filaments provided on said first surface of said first transparent sheet, said coarse mesh layer being disposed to be contacted by an operator's finger;

a second transparent sheet provided parallel to and spaced a predetermined distance apart from said second surface of said first transparent sheet; and

a pair of transparent electrodes respectively provided on said first and second transparent sheets so as to be opposed to each other;

wherein the display information is visible through said first and second transparent sheets and said pair of transparent electrodes.

4,553,821

LIQUID CRYSTAL DISPLAY DEVICES

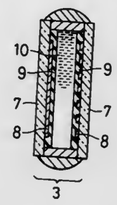
Yutaka Ishii, Nara; Fumiaki Funada, Yamatokoriyama; Toshiaki Takamatsu, Tenri, and Wada Tomio, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 10, 1985, Ser. No. 233,289

Claims priority, application Japan, Feb. 29, 1980, 55-25914

Int. Cl.⁴ G02F *1/135*

U.S. Cl. 350—339 R **14 Claims**



1. A matrix liquid crystal display device for video image using depolarization in twisted-nematic mode comprising a pair of transparent substrates defining a pair of mutually facing surfaces, transparent electrodes provided on each of said mutually facing surfaces, an insulating layer with orienting property formed on said electrodeds on each of said surfaces, a liquid crystal layer formed by depolarization in a twisted-nematic layer, said liquid crystal being nematic with a negative dielectric anisotropy, and disposed between said mutually facing insulating layers, and a polarizer provided on the opposite surface of each of said substrates from said liquid crystal layer, and the liquid crystal layer contains an ionic dopant such that the cut-off frequency f_c (Hz) of said liquid crystal layer satisfies the following relationship within a range of ambient temperatures:

$$16 \cdot C/C_o \cdot N \cdot F \geqq f_c \geqq 8 \cdot N \cdot F$$

in which N stands for the number of multiplex driving, F stands for the frame frequency of an image signal, C stands for the capacitance per unit area of said insulating layers, and C_o stands for the capacitance per unit area of said insulating layers when they have a specific dielectric constant of about 4, and a thickness of about 100 Å, where the f_c value of the device is at least about 29 KHz and such that the reproduction of a video image with a half-tone is achieved, said insulating layers are treated with an alkoxysilane coupling agent containing a glycidoxy group.

4,553,822

OPTICAL POLARIZER HAVING A DIELECTRIC MULTIPLE LAYER SYSTEM

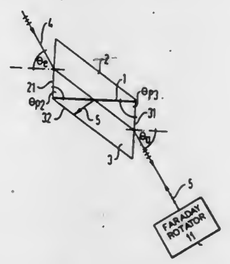
Hans Mahlein, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,955

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137442

Int. Cl.⁴ G02F *1/09*; G02B *5/30*

U.S. Cl. 350—377 **11 Claims**



1. In an optical polarizer comprising a dielectric multiple layer system being composed of a plurality of layers having a low index of refraction alternately arranged with layers having a high index of refraction, said dielectric multiply layer system being disposed between a pair of transparent bodies with one of said pair of transparent bodies having a radiation entrance surface engaged with a medium of relatively lower index of refraction for receiving incident linearly polarized radiation from a source and the other of said pair of bodies having a radiation exit surface engaged with a medium with a relatively low index of refraction for emitting linearly polarized radiation of a first direction from the polarizer to a Faraday rotator, said Faraday rotator returning radiation back to the exit surface with a second direction of polarization perpendicular to the first direction, wherein the index of refraction of the transparent bodies, the high index of refraction layers and the lower index of refraction layers are selected in such a manner that the Brewster condition is respectively met at the boundary sur-

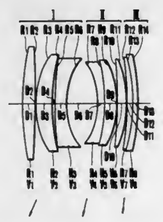
faces between the layers and also between the layer system and each transparent body and also between each transparent body and the surrounding outside medium, the improvements comprising the index of refraction n_G of each of the transparent bodies adjacent to the multiple layer system being selected to be equal to the index of refraction n_L of the layers having the lower index of refraction, and both the angle of incidence of the radiation at the radiation entrance surface as well as the angle of emergence of the radiation at the radiation exit surface being selected to equal the Brewster angle which is respectively given by arc tan (n_L/n_0), wherein n_0 is the low index of refraction of the medium adjacent each of the radiation entrance and exit surfaces and said muliple layer system reflecting the light with the second direction of polarization from the Faraday rotator.

4,553,823

LARGE RELATIVE APERTURE OBJECTIVE LENS

Masatake Kato, Tokyo, and Shigeru Hashimoto, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,672
Claims priority, application Japan, May 25, 1981, 56-79029
Int. Cl.⁴ G02B *9/62, 9/64*
U.S. Cl. 350—463 **2 Claims**



1. A large relative aperture objective lens including:
(a) a first component having a positive refractive power;
(b) a second component arranged on the image side of said first component and having a positive refractive power; and
(c) a third component arranged on the image side of said second component and having a positive refractive power,
whereby as focusing is effected down from infinity to shorter object distances, said first, second and third components move axially toward the object, wherein the speed of movement of said first component is faster than that of movement of said second component, and the speed of movement of said second component is faster than that of movement of said third component.

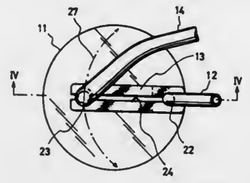
4,553,824

EYEBALL OBSERVING CONTACT LENS PROVIDED WITH ILLUMINATING MEANS

Kuniomi Abe, Kobe, Japan, assignor to Konan Camera Research Institute, Inc., Nishinomiya, Japan

Filed Apr. 27, 1984, Ser. No. 604,929
Claims priority, application Japan, May 13, 1983, 58-72054[U]
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—219 **5 Claims**

1. An eyeball observing contact lens device comprising a lens structure having one major surface to be used as an observation surface and another major surface of concave configuration for contact with the eyeball to be observed, a support member movably carried by said lens structure and a light conductor having a light exit end carried by said support member for projecting light into said one major surface whereby said exit end of said light conductor can be moved



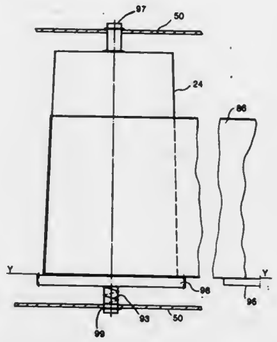
relative to said one major surface for illumination of said eyeball.

4,553,825

PHOTOCOMPOSING APPARATUS AND METHOD

Michel Moulin, Lausanne, and Jean-Claude Risse, Prangins, both of Switzerland, assignors to Autologic, S.A., Bussigny-pres-Lausanne, Switzerland

Filed Jun. 10, 1983, Ser. No. 503,228
Int. Cl.⁴ B41B *13/00*
U.S. Cl. 354—5 **27 Claims**



1. Photocomposing apparatus having means for forming character images on flexible photosensitive sheet material and including feed means for feeding said sheet material past an exposure station, said feed means including at least one rotary roll, guide means comprising a flange extending outwardly from the surface of said roll and having an abutment surface against which one edge of said sheet abuts to align said sheet, said roll being larger in diameter adjacent said abutment surface than at a distance from said abutment surface to give said roll a tapered surface.

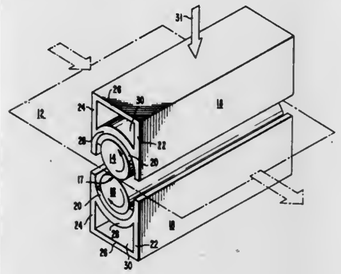
19. A photocomposing method comprising the steps of:
(a) successively forming character images in lines on a web of photosensitive material;
(b) winding the resulting composition-bearing material into a roll in an output cassette while applying tension
roll in an output cassette while applying tension to said material; and
(c) releasing the tension on said material periodically during said winding step.

4,553,826

DEVICE FOR PRESSURE FUSING IMAGES ONTO PAPER IN ELECTROSTATIC COPIERS

Michael Mosholder, Powell, Ohio, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 25, 1983, Ser. No. 516,947
Int. Cl.⁴ G03G *15/20*
U.S. Cl. 355—3 FU **18 Claims**



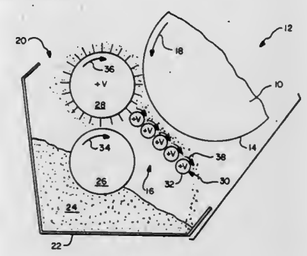
1. A pressure fixing device for a copying machine comprising:
a first cylindrical pressure fusing roll and a second cylindrical pressure fusing roll, said pressure fusing rolls positioned to form a nip therebetween and said pressure fusing rolls each relatively rotatable about their respective longitudinal axis;
each of said pressure fusing rolls being rotatably fixed within substantially rigid bearing housing means for transmitting force to and constraining deflection of said pressure fusing rolls, and said pressure fusing rolls being rotatable solely on a bearing within said bearing housing means, said bearing and said bearing housing means extending substantially the entire longitudinal length of said pressure fusing rolls so that pressure applied to said bearing housing means is transmitted uniformly along the roll axis of said pressure fusing rolls and said pressure fusing rolls are constrained against longitudinal deflection.

4,553,827

ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING AN ENLARGED IMAGE DEVELOPING STATION

Edward F. Mayer, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 510,073
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **6 Claims**



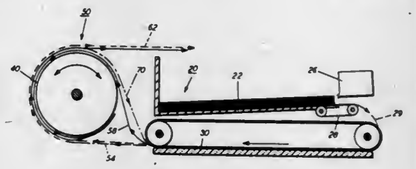
1. An assembly for developing a latent electrostatic image formed on the photosensitive outer surface of a rotating developing drum making up part of an electrophotographic copying apparatus, said assembly comprising:
(a) means for housing a supply of developer including negatively charged toner particles in close proximity to an outer surface segment of said drum as the latter moves through its path of rotation;
(b) means including a primary magnetic developing roller mounted within said housing means for rotating about its own axis in confronting relationship with said outer surface segment of said drum in a way which continuously moves fresh developer within the housing means closer to and in the direction of movement of said surface segment; and
(c) an arrangement for agitating the flow of said developer by means of mechanical agitation only without using a magnetic field as the developer is moved by and away from said primary brush, said arrangement including
(i) a series of adjacent rollers smaller in cross-section than said preliminary roller, successively disposed within said housing means in the path of movement of said developer as the latter moves away from said primary roller.
(ii) means for rotating said secondary rollers whereby to impart a tumbling action to the developer intercepted thereby, and
(iii) means for electrically biasing said rollers with a positive voltage.

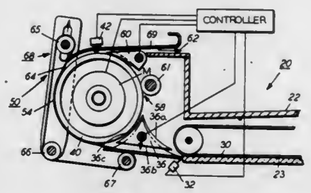
4,553,828

RECIRCULATIVE DOCUMENT INVERTER

William R. Burger, Fairport; James E. Hutton, Webster, and Morton Silverberg, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1983, Ser. No. 510,122
Int. Cl.⁴ G03B *27/32*
U.S. Cl. 355—3 BE **8 Claims**





1. In a recirculating document handling apparatus for a copier, in which a set of document sheets are sequentially circulated from document stacking means to the imaging station for the copier and back to said stacking means, and in which selectable inverting means are provided for inverting or not inverting the document sheets as they are being so circulated and before they are returned to said stacking means, the improvement in said selectable inverting/non-inverting means comprising:
large diameter inverting roller means adjacent the downstream side of the imaging station extending vertically from said imaging station to above said stacking means for feeding of documents between the imaging station and said stacking means,
said inverting roller means having a surface circumference greater than the maximum length of said document sheets in the movement direction of said document sheets,

means for normally rotating said inverting roller means in a first direction of rotation, and for selectably rotating said inverting roller means in the reverse direction of rotation,

repositionable first sheet guide means for guiding, in a first guide position, a document sheet in a first path from said imaging station around the outside of said inverting roller means and then towards said stacking means with said inverting roller means driven only in said first direction,

said first path returning document sheets to said stacking means in their original orientation therein without inversion,

retaining means for retaining document sheets against the outside of said inverting roller means,

said first guide means being repositionable to a second position, in coordination with said selectable reverse rotation of said inverting roller means, in which a document sheet is guided in a second path around the inside of said inverting roller means (between said inverting roller means and the imaging station) and then to the outside of said inverting roller means with said roller means being driven in said reverse direction of rotation,

second guide means defining a third document sheet path from said inverting roller means to said stacking means,

said inverting roller means being automatically re-reversed in rotation to said first direction of rotation after the trail edge of a document sheet in said second path has passed said second guide means and before said document sheet has been completely rotated around said inverting roller,

said second path and said second guide means automatically causing the trail edge of a document sheet fed therepast in said second path to flip relative to said second guide means while said document sheet is held by said retaining means so that upon said re-reversal of said inverting roller to said first direction of rotation said document sheet is automatically fed into said third path toward said stacking means trail edge first by said inverting roller means,

and wherein said first path returns document sheets to said document restacking means through said same third path lead edge first,

said selectable inverting/non-inverting means providing a very short total document sheet path length yet providing a large minimum radii of curvature of all document sheets in all of said first, second and third document paths to minimize document sheet feeding resistance or curling.

4,553,829

METERING BLADE FOR USE IN A DEVELOPMENT SYSTEM

Jan Bares, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 21, 1983, Ser. No. 544,298

Int. Cl.⁴ G03G *15/09*

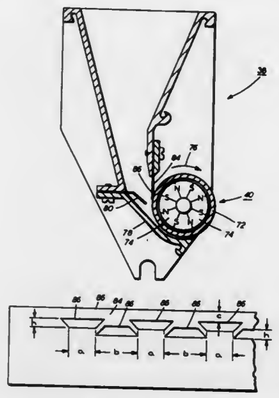
U.S. Cl. 355—3 DD **14 Claims**

1. An apparatus for developing a latent image recorded on an image receiving member, including:

a housing defining a chamber for storing a supply of marking particles therein;

means for transporting the marking particles from the chamber in said housing closely adjacent to the latent image recorded on the image receiving member; and

a blade having at least two rows of apertures therein closely adjacent to the free edge thereof with the rows of apertures forming a substantially uniform cross section thereacross, said blade being attached to said housing with the free edge thereof being in resilient contact with said transporting means so that a portion of the marking particles on said transporting means pass through the apertures in said



blade prior to being transported closely adjacent to the latent image recorded on the receiving member.

4,553,830

SERVICING SYSTEM FOR REPRODUCTION MACHINES

Tuan A. Nguyen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1983, Ser. No. 526,925

Int. Cl.⁴ G03G *21/00*

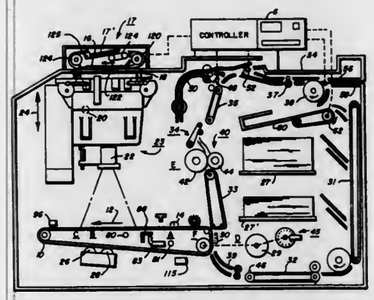
U.S. Cl. 355—14 R **6 Claims**

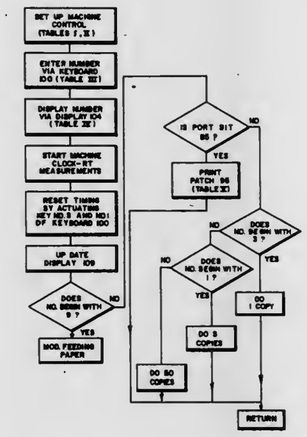
1. A method for adjusting the timing of the exposure lamp means in a reproduction machine to provide optimum copy quality, said machine including programming means for programming said machine for copy runs, display means for displaying the copy program, and memory means for storing the operating timing parameter of said exposure lamp means, comprising the steps of:

(a) using said programming means, inputting a preset machine servicing routine for accessing and displaying on said display means the current operating timing parameter for said exposure lamp means, said servicing routine automatically programming said machine to make a predetermined number of test copies;

(b) actuating said machine;

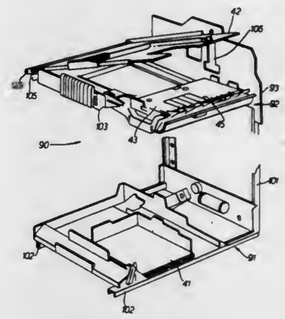
(c) viewing the test copies produced by said machine while adjusting the operating timing parameter for said exposure lamp means; and





(d) repeating step c until the operating timing parameter for said exposure lamp means is adjusted so that said machine makes test copies having the desired copy quality.

said unit being mounted on slides for withdrawal to facilitate access such that said trays are withdrawable together when



said first tray is in its lowered position and said second tray is withdrawable alone when said first tray is in its raised position.

4,553,832

TRI-COLOR ADDITIVE COLOR PRINTING HEAD AND ENLARGER

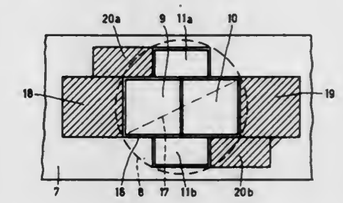
Egbertus J. P. Maassen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1984, Ser. No. 606,017

Claims priority, application Netherlands, May 9, 1983, 8301630

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—32 **4 Claims**



1. A device for adjusting the relative ratio of the colors red, green and blue in light used for making photographic color prints, comprising

a light source providing a convergent beam,

a filter holder disposed in said convergent beam, having an opening therethrough for transmitting light,

additive color filters, respectively transparent to red, green and blue, disposed in a plane and received in said opening, the surface areas of each of said filters being substantially equal to each other; first and second of said filters being each rectangular in shape and being arranged beside each other so as to define a rectangle having major sides whose diagonal defines a circle; and said third filter being formed by two halves disposed symmetrically on either side of the major sides of the rectangle, within said circle, and

a plurality of adjustable screens for screening light passing through respective ones of the filters.

4,553,831

COPIERS

Barry M. Dixon, Letchworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1984, Ser. No. 616,337

Claims priority, application United Kingdom, Jun. 8, 1983, 8315729

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—26 **7 Claims**

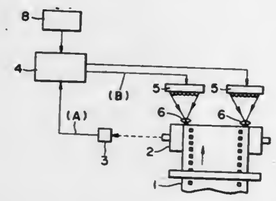
1. A copier including a paper tray unit comprising first and second paper trays having a common sheet feeder in which said first tray is mounted for movement between a lowered, operative position in which it is seated within the second tray and operatively associated with the sheet feeder and a raised, inoperative position in which it is spaced over the second tray and the latter is operatively associated with the sheet feeder,

4,553,833

SIDE PRINTING APPARATUS

Takeshi Kanaoka, and Shigehisa Shimizu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1984, Ser. No. 575,538
Claims priority, application Japan, Feb. 2, 1983, 58-12761[U]
Int. Cl.⁴ G03B *27/52*
U.S. Cl. 355—40 **6 Claims**



1. A side printing apparatus for applying characters, symbols and the like as latent images to the marginal portions of a moving photographic film, said apparatus comprising:

light emitting means for producing a dot pattern with light spots comprising a plurality of light emitting elements arranged in a linear array perpendicular to the direction of the advancement of film, said linear array being positioned above a marginal portion of the film and being longer than the width of said marginal portion;

position detecting means for detecting the advanced length of said film to provide position signals;

control means for selectively driving said light emitting members to emit light in accordance with said position signals; and

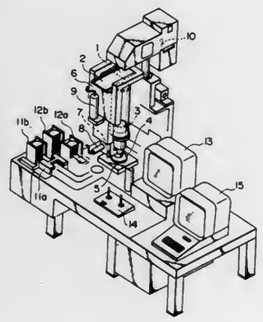
converging means for converging light rays from said light emitting members onto said marginal portion, said converging means comprising one circular converging lens means associated with said linear array of light emitting elements, said circular lens means being common to all said light emitting elements of said linear array.

4,553,834

MASK ALIGNER HAVING A MALFUNCTION DISPOSAL DEVICE

Naoki Ayata, Machida, and Tadashi Konuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,633
Claims priority, application Japan, Dec. 1, 1982, 57-210986
Int. Cl.⁴ G03B *27/42*
U.S. Cl. 355—53 **17 Claims**



1. An exposure apparatus for exposing a radiation-sensitive member to a pattern of an original, comprising:

means for illuminating the original in order to expose the radiation-sensitive member;

means for operating said exposure apparatus, including said illuminating means, in accordance with a predetermined sequence;

means for automatically detecting a malfunction of said exposure apparatus;

memory means for storing plural manners, for one kind of malfunction, of disposing of the malfunction;

selector means for selecting one of the manners of disposing of the malfunction, prior to start of operation of said exposure apparatus by said operating means; and

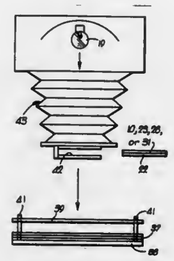
means for controlling said operating means in the manner selected by said selector means when said detecting means detects the malfunction.

4,553,835

PROCESS FOR PRODUCING PRE-PRESS COLOR PROOFS

James T. Morgan, Jr., 1914 Stark Ave., Columbus, Ga. 31906

Continuation-in-part of Ser. No. 347,893, Feb. 11, 1982, abandoned. This application Jnn. 29, 1984, Ser. No. 626,134
Int. Cl.⁴ G03B *27/32, 27/72, 27/76*
U.S. Cl. 355—77 **12 Claims**



1. A method of preparing a pre-press proof of an original subject having highlight, midtone and shadow tone areas using color print paper wherein the dyes of the print paper have been brought into substantial color compliance with the yellow, cyan and magenta process inks to be used in producing a lithographic reproduction of said original subject, and the tonal range of the proof image has been extended to closely match that of the final process ink print, said method comprising the steps of:

preparing yellow, cyan and magenta color half tone separation negatives and positives of the original subject to be reproduced;

separately placing the halftone negatives in sequential order over a sheet of color print paper sensitive to green, blue and red light respectively;

exposing the print paper sheet to light passed through a blue filter when the yellow halftone separation negative is over the print paper sheet, a red filter when the cyan halftone separation negative is over the print paper sheet, and a green filter when the magenta halftone separation negative is in place thereover,

said exposure of the print paper sheet being carried out with each halftone separation negative in place over the print paper sheet for a predetermined time period sufficient to cause the dyes of the print paper sheet upon development thereof to exhibit densitometer readings wherein through a blue filter, the yellow reading of the exposed print paper relatively closely matches the yellow reading obtained by densitometer measurement through a blue filter of the yellow process ink, through a green filter the magenta reading of the exposed print paper relatively closely matches the magenta reading obtained by densitometer measurement through a green filter of the magenta process ink, and through a red filter the cyan reading of the exposed print paper relatively closely matches the cyan reading obtained by densitometer measurement through a red filter of the cyan process ink;

during exposure of the print paper sheet to light through a red filter while the cyan halftone separation negative is over the print paper sheet, also exposing the print paper sheet to light through a green filter for a sufficient period of time to cause the dyes of the print paper sheet upon development thereof to exhibit a densitometer reading wherein the magenta reading through a green filter relatively closely matches the magenta contaminant reading obtained by densitometer measurement through a green filter of the cyan process ink,

during exposure of the print paper sheet to light through a green filter while the magenta halftone separation negative is in place over the print paper sheet, also exposing the print paper sheet to light through a blue filter for a sufficient period of time to cause the dyes of the print paper sheet upon development thereof to exhibit a densitometer reading wherein the yellow reading through a blue filter relatively closely matches the yellow contaminant reading obtained by densitometer measurement through a blue filter of the magenta process ink; and

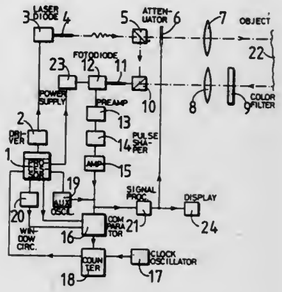
increasing the tonal range of the color print paper proof by also placing on the print paper sheet when the magenta separation halftone negative is associated therewith, the magenta halftone separation positive, and the yellow halftone separation positive on the print paper sheet when the yellow halftone separation negative is associated with the print paper sheet, and the cyan halftone separation negative on the print paper sheet with the cyan separation halftone positive, and in each instance passing additional light through the red, green and blue filters respectively for time periods sufficient to progressively extend the tonal range of the highlight and midtone areas of the film proof without unduly affecting the shadow tone area thereof.

4,553,836

METHOD AND APPARATUS FOR ELECTROOPTICAL DISTANCE MEASUREMENT

Dietrich Meier, Erlinsbach, and Hans-Ulrich Minder, Aarwangen, both of Switzerland, assignors to Kern & Co. AG., Aarau, Switzerland

Filed Aug. 30, 1982, Ser. No. 412,496
Claims priority, application Switzerland, Sep. 29, 1981, 6249/81
Int. Cl.⁴ G01C *3/08;* **G01S** *7/28*
U.S. Cl. 356—5 **7 Claims**



1. A method for electrooptical measurement of the distance between an object (22) and a reference point (5,10), whereby impulses of light are transmitted from a transmitter (3) to the object (22) and back to a photoelectric receiver (12) near to the transmitter (3) and whereby pairs of electrical signal impulses (45, 49) corresponding to the instants of transmission and of reception of the light impulses are generated by means of said photoelectric receiver (12) to obtain the time of travel of said light impulses for computing said distance, comprising the steps

(a) generating signals (46) which last between the occurrence of at least two different threshold values at mutually corresponding edges of said pairs of signal impulses (45, 49),

(b) gating, by means of said gating signals (46) for each threshold value, a gate (18), said gate (18) passing the output of a frequency stabilized clock-oscillator (17) on to a frequency-counter (18), while the switching instants of the gate (18) and the impulses of the clock-oscillator (17) are uncorrelated,

(c) calculating, for each threshold value, a corresponding duration of gating signals by the weighted mean of the more frequent counts of said frequency-counter (18), and

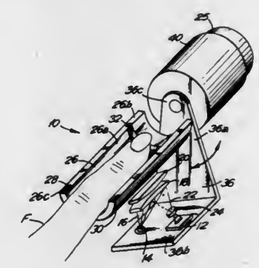
(d) obtaining a characteristic time of travel of said light impulses for said distance from the dependence of said calculated duration of gating signals upon the threshold value.

4,553,837

ROLL FINGERPRINT PROCESSING APPARATUS

Daniel H. Marcus, New City, N.Y., assignor to Fingermatrix, Inc., North White Plains, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,956
Int. Cl.⁴ G06K *9/00, 9/20*
U.S. Cl. 356—71 **10 Claims**



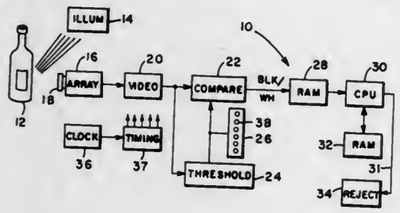
1. An improved fingerprint processing apparatus capable of generating a roll fingerprint image, the apparatus of the type having a source of an interrogating light beam, the beam capable of being modulated to provide a reflected light beam having fingerprint information, optical scanning means capable of causing the interrogating light beam to scan a fingerprint object, an array of photoelectric transducers, an imaging lens positioned in the path of the reflected light to provide a fingerprint image at said array, said array being arranged in a predetermined linear form for receiving the modulated light beam and for converting the fingerprint information carried by said modulated light into a plurality of sets of information signals representing a line by line scan of the fingerprint object, and multi-element electrical scanning means to electronically scan the information signal outputs of the array and to synchronize the electric scan to incremental positions of the optical scanning means, the improvement comprising:

a stationary, cylindrical-segment platen capable of providing a fingerprint object having ridge zones and valley zones, said platen having an upper surface capable of receiving, positioning, and supporting a finger and a lower surface adapted to receive an interrogating light beam, said upper surface having first anti-reflective means for providing said upper surface with image enhancement properties, a finger when positioned on said upper platen surface capable of modulating said interrogating light beam; and

means for rotating said light source, said optical scanning means, said array, said lens means and at least one element of said electrical scanning means such that the axis of rotation

of said optical scanning means is substantially the same as the axis of the upper surface of said cylindrical-segment platen;
said optical scanning means scanning the circumference of said platen such that the angle of incidence of said interrogating light beam on the finger at the curved back surface of said platen is constant;
said electrical scan being along the axis of said cylindrical-segment platen to thus generate a roll fingerprint image.

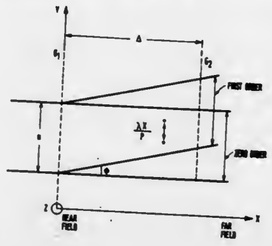
4,553,838
OPTICAL INSPECTION SYSTEM
Kay Madsen, Saratoga, Calif., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 15, 1982, Ser. No. 368,547
Int. Cl.[4] G01N *21/88, 21/90*
U.S. Cl. 356—237 **24 Claims**



1. An optical system for deriving information from an inspected item comprising a radiation source for illuminating the inspected item, a reader responsive to the radiation from said radiation source which is indicative of information sensed on the inspected item for sequentially establishing a plurality of analog signals indicative of the information sensed on the inspected item, each of said signals beings responsive to changing ambient radiation, a threshold circuit for setting a dynamic threshold used to convert each of said analog signals into a binary signal indicative of the information sensed on the inspected item and for compensating for changing ambient radiation, said threshold circuit being responsive to the highest peak in one of said analog signals and generating a high signal indicative thereof and being responsive to the lowest peak in said one analog signal and generating a low signal indicative thereof, said threshold circuit including threshold setting means responsive to said high signal and said low signal for setting a threshold between said highest peak and said lowest peak which dynamically compensates for changing ambient radiation, comparator means for comparing each of said analog signals with said set threshold and converting each of said analog signals to a binary signal indicative of the information sensed on the inspected item which has a high condition when the analog signal exceeds said set threshold and a low condition when said analog signal is less than said set threshold, and indicator means responsive to said high signal and said low signal for generating a visual indication of the difference between said high and low signals and the magnitude of said high and low signals.

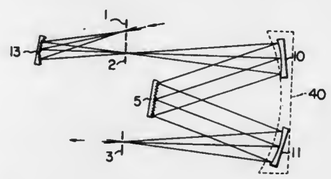
4,553,839
FREQUENCY MARKING SYSTEMS
Oded Kafri, 3 Ehud St., Beer-Sheva 84 234; Ziv Karny, 20 Zeelah St., and Dan Meyerstein, 12 Arava St., both of Omer, all of Israel
Filed Feb. 3, 1983, Ser. No. 463,615
Claims priority, application Israel, Jun. 24, 1982, 66126
Int. Cl.[4] G01J *3/00*
U.S. Cl. 356—300 **6 Claims**

1. A frequency marker system for indicating the wavelength of light rays, said system comprising:
means for collimating said light rays,
first and second light transmitting grating means aligned with at least a portion of said collimated light rays and separated by a distance Δ for providing Moire patterns, and
means for determining the changes in wavelengths of the



collimated light rays by determining shifts of the Moire patterns including light detecting means for determining changes in light amplitude downstream of said second light transmitting grating means.

4,553,840
DOUBLE MONOCHROMETER
Taro Nogami, Katsuta, and Masamichi Tsukada, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 16, 1982, Ser. No. 442,113
Claims priority, application Japan, Nov. 20, 1981, 56-185307
Int. Cl.[4] G01J *3/18*
U.S. Cl. 356—333 **15 Claims**

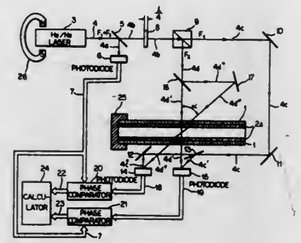


1. A double monochrometer comprising:
a main monochrometer including an entrance slit, a plane grating and an exit slit; and
an auxiliary monochrometer including a concave grating disposed on one of that portion of an entrance optical axis of said main monochrometer in front of the entrance slit thereof and that portion of an exit optical axis of said main monochrometer behind the exit slit thereof, the degree of dispersion of said concave grating being selected to be smaller than that of said plane grating.

4,553,841
METHOD OF AND APPARATUS FOR MEASURING THICKNESS AND REFRACTIVE INDEX OF TRANSPARENT BODIES
Gianni Coppa, Asti, and Giorgio Grego, Turin, both of Italy, assignors to Cselt Centro Studi E Laboratori Telecomunicazioni, S.p.A., Turin, Italy
Filed Feb. 8, 1983, Ser. No. 465,031
Claims priority, application Italy, Feb. 10, 1982, 67149 A/82
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—349 **18 Claims**

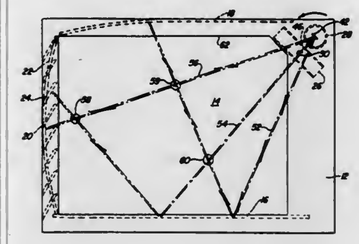
1. A method of measuring the thickness and the refractive index of a test object with substantially parallel major surfaces transparent to luminous radiation, comprising the steps of:
(a) generating a first and a second monochromatic beam of luminous radiations of constant frequencies differing slightly from each other;
(b) photoelectrically deriving from said first and second

beams an electrical reference wave of a beat frequency corresponding to the difference between the beam frequencies:
(c) transluminating the test object with rays of said second beam at a first angle of incidence;
(d) photoelectrically mixing rays of said second beam, passed by the test object in step (c), with rays of said first beam, traveling over a different path, to derive therefrom a first electrical measuring wave of the same beat frequency as said reference wave but differing in phase therefrom to an extent dependent on the thickness and the refractive index of the test object;



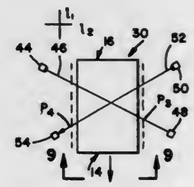
(e) determining the phase difference between said reference wave and said first measuring wave;
(f) repeating steps (c) and (d) with a second angle of incidence, differing from said first angle, to derive two rays of said first and second beams a second electrical measuring wave of the same frequency as said reference wave and differing in phase therefrom;
(g) determining the phase difference between said reference wave and said second measuring wave; and
(h) calculating the thickness and the refractive index of the test object from the values obtained in steps (e) and (g).

4,553,842
TWO DIMENSIONAL OPTICAL POSITION INDICATING APPARATUS
James L. Griffin, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 9, 1983, Ser. No. 492,859
Int. Cl.[4] G01B *11/00, 11/03*
U.S. Cl. 356—375 **14 Claims**



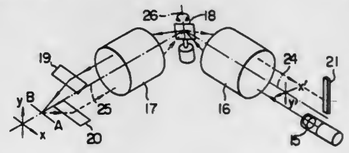
11. An optical position indicating apparatus comprising a light source; detector means for detecting presence of light and producing an electrical output in response thereto; a plurality of reflective means for distributing light emitted from said light source across a target zone, said target zone being at least partially bordered by said reflective means; and a light directing means for directing light from said light source across said target zone and for directing return light received from said target zone to said detector means; said target zone being substantially rectangular; and said light source, said detector means and said light directing means being positioned at a first corner of said target zone and said plurality of reflecting means comprising a first reflector assembly adjacent a second corner of said target zone, said second corner being positioned opposite said first corner; a second reflector assembly defining a second side of said target zone adjacent said second corner, and a third reflector assembly defining a third side of said target zone opposite said first reflector assembly; said second reflector assembly and said third reflector assembly being comprised of retroreflective material.

4,553,843
APPARATUS FOR DETERMINING THE ALIGNMENT OF LEADS ON A BODY
Dennis C. Langley, Palo Alto, and Thomas T. Brekka, Soquel, both of Calif., assignors to Micro Component Technology, Inc., St. Paul, Minn.
Continuation of Ser. No. 289,921, Aug. 3, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 592,759
Int. Cl.[4] G01B *11/04, 11/14*
U.S. Cl. 356—375 **24 Claims**



1. Apparatus for determining the alignment of at least one lead extending from a body having an axis, the lead being subject to bending along a first line parallel to the axis or being subject to bending along a second line perpendicular to the first line or being subject to a combined bending having a component along the first line and a component along the second line, comprising:
(a) first means for producing a first light beam being adapted to traverse a first path along the second line and to intersect the lead;
(b) first means for sensing the first light beam;
(c) second means for producing a second light beam being adapted to traverse a second path at an angle to the first line and the second line and to intersect the lead; and
(d) second means for sensing the second light beam.

4,553,844
CONFIGURATION DETECTING METHOD AND SYSTEM
Yasuo Nakagawa, Chigasaki; Yoshitada Oshida, Fujisawa, and Kanji Ishige, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 5, 1982, Ser. No. 432,799
Claims priority, application Japan, Oct. 6, 1981, 56-158044
Int. Cl.[4] G01B *11/24*
U.S. Cl. 356—376 **11 Claims**



1. A configuration detecting method comprising the steps of passing a laser beam from a laser beam source into a first Fourier transformation lens, reflecting said transformed laser beam by a light deflector, passing said reflected light beam into a second Fourier transformation lens for Fourier inverse trans-

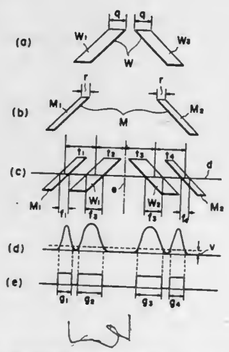
formation, reflecting said inversely-transformed laser beam by a first reflecting mirror to form a laser beam spot on an object to be checked, passing said spot beam into said second lens in the form of a light beam by means of a second reflecting mirror, and passing said spot beam from said second lens into said first lens in the form of a light beam by means of said deflector to form a real image of the laser spot on a photoelectric converter.

4,553,845

DEVICE FOR AND METHOD OF ALIGNING TWO BODIES

Yoichi Kuroki; Yukihiro Yoshinari, both of Kawasaki, and Ryozo Hiraga, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1982, Ser. No. 435,960
Claims priority, application Japan, Oct. 28, 1981, 56-172457
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—400 **12 Claims**



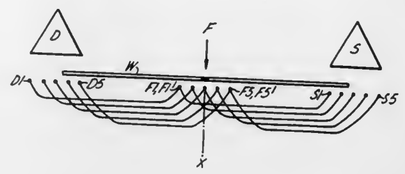
1. A device for aligning two bodies, comprising:
holding means for holding a first body, said first body having thereon a first mark comprising at least one mark element;
moving means for holding a second body and moving said second body relative to said first body in a plane, said second body having thereon a second mark comprising at least one mark element;
mark detecting means for detecting said first mark on said first body and said second mark on said second body and putting out a detection signal steam comprising first and second mark signals respectively, representing at least one mark element comprising said first and at least one mark element comprising said second mark;
discrimination means for receiving said detection signal stream and for putting out discrimination information based on discrimination of whether said first and second mark signals are in a desired distribution in said detection signal stream;
processing means for receiving said detection signal stream and for putting out spacing information representing the spacing between at least one mark element comprising said first mark and at least one mark element comprising said second mark; and
drive means for driving said moving means in accordance with said discrimination information and said spacing information.

4,553,846

OPTICAL DETECTION SYSTEM FOR FEATURES ON A SHEET OR WEB

Graham H. Hilton, Hants, and Barry J. Curl, Southampton, both of England, assignors to De La Rue Systems Limited, London, England

Filed Jun. 1, 1983, Ser. No. 500,241
Claims priority, application United Kingdom, Jun. 1, 1982, 8215978
Int. Cl.⁴ G01N *21/86;* G02B *5/14*
U.S. Cl. 356—429 **5 Claims**



1. An optical detection system for detecting a feature located at a predetermined lateral position on a sheet or web fed along a flow path, comprising:
a first row of spaced light receivers extending transverse tothe direction of feed and positioned so that the row crosses the path of the feature which is required to be sensed, whereby light from the said feature will be received by one of the first row of receivers, depending on the lateral position of the sheet or web relative to the nominal flow path;
output means adapted to provide an output signal in accordance with light received by any of the receivers of the said first row;
and gating means co-operating with the sheet or web according to its lateral position relative tothe flow line for selectively blocking the response of the output means to all but one of the receivers of said first row, said gating means including means providing, at each margin of the nominal flow path, a number of light paths which in the absence of the sheet or web pass through the plane of the flow path, the number of light paths at each margin being equal to the number of light receivers in the said first row and the spacing of the light paths being equal to the spacing of the light receivers of the first row, the sheet or web when present selectively blocking some light paths at one of the margins and other light paths at the other of the margins in accordance with the lateral position of the sheet relative to the nominal flow path and thereby controlling the selective action of the gating means to determine to which of the receivers of the first row the output means will respond.

4,553,847

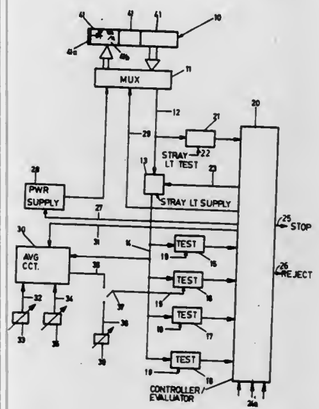
PACKAGING QUALITY CONTROL METHOD AND APPARATUS

Günter Lang, Zainingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,079
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146506
Int. Cl.⁴ G01N *21/55*
U.S. Cl. 356—445 **29 Claims**

1. In a process for testing the quality of a product by directing light produced by a light source to the product and measuring the reflectivity of the product, a first threshold value of reflectivity being compared with a signal commensurate with the actual measured reflectivity and the product being rejected if the actual reflectivity signal falls below the first threshold value, the improvement comprising the steps of:

positioning the product to be tested upon a light transmissive plate;
measuring the stray light passing through the light transmissive plate and being received by a reflected light sensor with the source of the light which is to be directed to the product in the unenergized state;
measuring the light passing through the light transmissive plate and being received by the reflected light sensor with the light source in the energized, light emitting condition and the light emitted thereby being directed through the light transmissive plate to illuminate the product;
subtracting the value of the measured stray light from the value of the light reflected from the product to obtain a measurement of the quality of the product;



comparing the measurement of quality with the first threshold value to determine if the product is acceptable;
measuring the background reflection from the light transmissive plate with the light source in the light emitting energized condition and no test product positioned on the plate;
establishing third and fourth threshold values respectively commensurate with insufficient and excessive background reflection; and
comparing the measured background reflection with the third and fourth threshold values and terminating the testing process if the measured background reflection does not fall between the third and fourth threshold values.

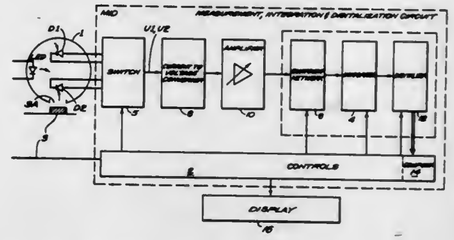
4,553,848

METHOD OF DETECTING AND EVALUATING PHOTOMETRIC SIGNALS AND DEVICE FOR CARRYING OUT THE METHOD

Bernd Rösicke, Mannheim, and Rudolf V. Rosenbladt, Bad Homburg, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,291
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138879
Int. Cl.⁴ G01J *1/00;* G01D *1/00;* G01N *21/00, 33/50*
U.S. Cl. 356—448 **13 Claims**

1. In a method for detecting and evaluating the optical properties of a specimen including producing alternating light and dark phases from a light source, detecting light from the light source by way of an analog specimen to produce a signal, integrating and digitalizing the signal from the detector during the light phase and during the dark phase and subtracting the integral obtained during the dark phase from that obtained during the light phase, the improvement wherein the steps of integrating and digitalizing comprise:
forming a first total integral in a first state including a whole number of measurement voltage periods each including one light and one dark phase
comprising the steps in each period of integrating the detected signal during a part of the light phase with a single



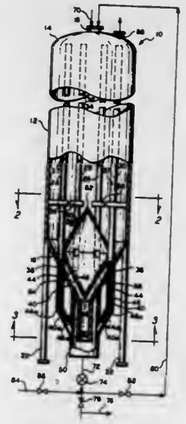
integrator and integrating the detected signal with the reversed polarity with the same single integrator during a part of the dark phase equal in length to the part of the light phase and digitalizing the total integral with the same single integrator.

4,553,849

METHOD FOR BLENDING SOLIDS OR THE LIKE

Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 526,845, Aug. 26, 1983, Pat. No. 4,518,260.
This application Sep. 17, 1984, Ser. No. 651,148
Int. Cl.⁴ B01F *5/24, 15/02*
U.S. Cl. 366—134 **6 Claims**



1. A method of blending solids in solids blending apparatus of the type which includes:
a vessel having a solids inlet in an upper region thereof and solids outlet means in a lower region thereof, the lower region being defined by a downwardly converging generally frustoconically shaped bottom wall;
a plurality of conduits each having upper and lower ends and positioned within said vessel so as to extend in a generally vertical direction downwardly from said upper region of said vessel through said lower region of said vessel and through said bottom wall to said lower end, at least one of said conduits containing at least one longitudinally extending divider means having upper and lower ends for dividing said conduit into a plurality of longitudinally extending compartments, at least a portion of said compartments having at least one opening therein in said upper region of said vessel to permit solids in said upper

region of said vessel to enter the conduit and flow by gravity downwardly through said compartments, and each of said compartments, and each of said compartments of at least one of said conduits extending downwardly from said upper region of said vessel through said lower region of said vessel and through and below said bottom wall;

connecting conduit means communicating between the lower end of each of said conduits and said solids outlet means for conveying solids by gravity therethrough from each of said conduits to said solids outlet means, at least one of said connecting conduit means containing connecting divider means having upper and lower ends and connected at the upper end thereof to the lower end of a corresponding longitudinally extending divider means for dividing said connecting conduit means into a plurality of extensions of said compartments communicating with and extending from the lower ends of the corresponding compartments at least a substantial distance toward said solids outlet means to permit solids flowing downwardly through said compartments to continue to flow by gravity downwardly through said extensions of said compartments and said first connecting conduit means into said solids outlet means; and

first drain conduit means communicating between a corresponding first one of said compartments and a corresponding first opening in said bottom wall intermediate said upper region and said solids outlet means for conveying solids by gravity therethrough from a location in said lower region to said corresponding first one of said compartments, which method comprises:

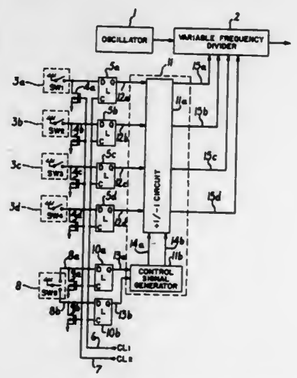
introducing solids to be blended into said vessel through said solids inlet, conveying solids by gravity through said first drain conduit from a location in the lower region to the corresponding first one of the compartments and withdrawing blended solids through said solids outlet means.

4,553,850

LOGICAL REGULATION CIRCUIT FOR AN ELECTRONIC TIMEPIECE

Yosuke Kanno, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,447
Claims priority, application Japan, Mar. 16, 1982, 57-41161
Int. Cl.⁴ G04B *17/12*
U.S. Cl. 368—201 **15 Claims**



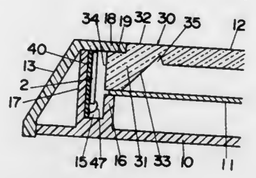
1. In an electronic timepiece having an oscillator for generating a time base signal and a variable frequency divider for dividing the frequency of the time base signal to produce a unit time signal: a logical regulation circuit comprising a first switch group comprised of plural switch members having ON and OFF states; first memory circuits for memorizing the ON-OFF information of the first switch group; a second switch group comprised of at least one switch member having ON and OFF states; second memory circuits for memorizing the ON-OFF information of the second switch group; and a calculation circuit connected to receive the contents of the first and second memory circuits for producing output signals representative of different frequency dividing ratios and for applying the output signals to the variable frequency divider to regulate the frequency dividing ratio thereof.

4,553,851

TIMEPIECE OPERATED BY SOLAR CELLS

Akio Matsumoto, and Takao Yamada, both of Neyagawa, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 558,870
Claims priority, application Japan, Dec. 28, 1982, 57-229483
Int. Cl.⁴ G04B *1/00*
U.S. Cl. 368—205 **9 Claims**



1. A timepiece operated by solar cells comprising:

a base plate defining thereon a face of the timepiece;

a time indicating means comprising at least an hour hand and a minute hand respectively overlying said face on the base plate;

a plurality of flat shaped solar cells mounted on the base plate for energizing said movement, said solar cells being circumferentially spaced along the periphery of said face of said timepiece with the major surfaces of each solar cell being perpendicular to and in a same radial direction of the base plate, said major surfaces of each solar cell defining respectively the light sensitive surface and the opposite surface;

an electrically driven movement provided at the center portion of the base plate for being powered by the solar cells to rotate said hour and minute hand about the center axis of the base plate;

a reflecting prism extending along the periphery of said face and mounted on the base plate for deviatedly transmitting incident light to each of the solar cells, said reflecting prism having a light entrance surface exposed to a top surface of the timepiece for receiving incident light, at least one reflection surface provided at such a relationship to said entrance surface for deviating or changing the course of the incident light, and at least one light exit surface which is parallel to and confronts closely the light sensitive surface of each solar cell and through which the incident light which enters said light entrance surface and is reflected by said reflection surface is transmitted to the major light sensitive surface of each solar cell;

a terminal means extending along the periphery of said face so as to be electrically connected to said solar cells for delivering the electric power produced in the solar cells to said movement, said terminal means having a pair of first and second terminal areas which are respectively electrically connected to the light sensitive surface and the opposite surface of each solar cell, said first terminal area being connected by lead wires to each light sensitive surface at such location that both the first terminal area and the lead wires are out of confrontation with said light exit surface of the reflecting prism and said second terminal area being mechanically coupled to said opposite surface of each solar cell; and

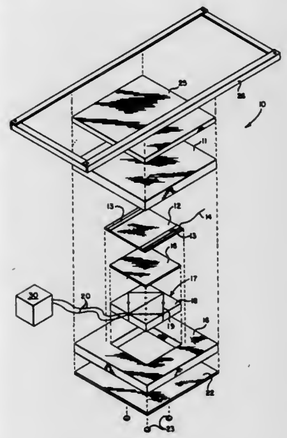
a pair of transparent conductor means provided on the base plate to electrically interconnect said terminal means and the movement.

4,553,852

APPARATUS AND METHOD FOR HEAT FLOW MEASUREMENT

Gregory Derderian, Arlington; Robert D. Orlandi, Tewksbury; Larry S. Shu, Newton Highlands, and Bahram Siadat, Boxboro, all of Mass., assignors to W. R. Grace & Co., Lexington, Mass.

Filed Dec. 7, 1983, Ser. No. 558,750
Int. Cl.⁴ G01K *17/00*
U.S. Cl. 374—1 **19 Claims**



1. An apparatus for calibrating a heat flow sensor, said apparatus comprising:

a first insulation layer;

a second insulation layer having first and second major surfaces, said first major surface being in proximate, face-to-face relation with said first insulation layer;

a heat flow meter located at an interior heat flow metering area of said second insulation layer;

a heating element positioned between said first and second insulating layers and superposed with said heat flow metering area;

a heat conductive layer having the same or larger dimensions than said heat flow metering area and superposed therewith, said layer being positioned between said heating element and said metering area;

means for monitoring the voltage output of said heat flow meter to permit measurement of heat flow across said heat flow metering area;

a test simulation substrate layer in proximate, face-to-face relation with said second surface of said second insulation layer and comprising an exposed test simulation surface comprising a test metering area having approximately the same dimensions as said heat flow metering area and superposed therewith; and

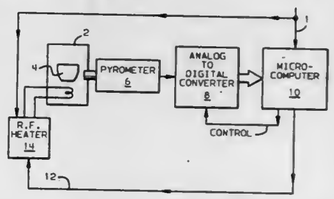
a heat flow sensor affixed to said exposed test simulation surface within said test metering area.

4,553,853

END POINT DETECTOR FOR A TIN LEAD EVAPORATOR

Joseph D. Gregory, Casanova, Va., and James M. Budnik, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,072
Int. Cl.⁴ G01N *25/10*
U.S. Cl. 374—25 **5 Claims**



1. A method for detecting the end point in the evaporation of a two component alloy in a chamber, each component having a different boiling point, comprising the steps of:

optical sensing the relative temperature of a heated vessel from which the lower boiling point component and the higher boiling point component are being evaporated;

detecting a lower temperature plateau for said vessel, corresponding to the evaporation of said lower boiling point component;

detecting a first occurring increase in the temperature of said vessel following said lower temperature plateau, corresponding to the depletion of said lower boiling point component in said vessel;

detecting a higher temperature plateau for said vessel, corresponding to the evaporation of said higher boiling point component;

detecting a second occurring increase in the temperature of said vessel following said higher temperature plateau, corresponding to the depletion of said higher boiling point component in said vessel;

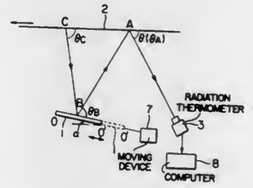
turning off a heat source to said vessel in response to said detecting said second occurring increase in temperature.

4,553,854

METHOD FOR CONTINUOUSLY MEASURING SURFACE TEMPERATURE OF HEATED STEEL STRIP

Takeo Yamada, Yokohama; Naoki Harada, Narashino, and Kiyotaka Imai, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,943
Claims priority, application Japan, Dec. 17, 1982, 57-220084; Mar. 8, 1983, 58-36687
Int. Cl.⁴ G01J *5/10*; G01K *13/06*
U.S. Cl. 374—129 **8 Claims**



1. A method of continuously measuring a surface temperature of a travelling heated steel strip, which comprises:

providing a flat reflecting plate at a prescribed position so as to face a travelling heated steel strip at a first inclination angle (α) relative to said steel strip, said first inclination

angle (α) and said position of said reflecting plate being selectively changeable;

directing a radiation thermometer for measuring an amount of energy of a heat radiation emitted from the surface of said steel strip toward said steel strip at a second inclination angle relative to said steel strip, said second inclination angle being selectively changeable;

continuously measuring with said radiation thermometer the amount of energy of a heat radiation which is emitted from an arbitrary point on the surface of said steep strip and which heat radiation comes directly into said radiation thermometer;

continuously measuring with said radiation thermometer the total sum of the amount of energy of (a) a heat radiation which is emitted from at least one different point on the surface of said steel strip other than said arbitrary point and which comes into said radiation thermometer after having been reflected at least twice between the surface of said steel strip and the surface of said flat reflecting plate and, (b) the amount of energy of a heat radiation which is emitted from a point on the surface of said steel strip which point is a final reflecting point of the heat radiation from said at least one different point, and which radiation comes directly into said radiation thermometer;

continuously calculating emissivity of the surface of said steel strip on the basis of said total sum thus measured of the amounts of energy of the heat radiations (a) and (b), and said amount of energy of said heat radiation emitted from said arbitrary point;

continuously measuring the surface temperature of said steel strip on the basis of said calculated emissivity of the surface of said steel strip and an amount of energy of a reference heat radiation emitted from the surface of a perfect blackbody; and

determining a final angle of reflection (θ) on the surface of said steel strip of said heat radiation emitted from said at least one different point and which has been reflected at least twice between the surface of said steel strip and the surface of said flat reflecting plate, and said prescribed angle of inclination (α) of said reflecting plate with said steel strip, at values which satisfy the following limits:

$40° \leqq \theta < 90°$ (A); and

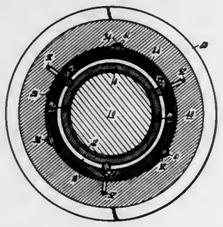
$40° \leqq \theta + 2\alpha \leqq 140°$ (B).

4,553,855

DAMPER AND SPRING SHAFT SUPPORT ASSEMBLY

Pranabesh De Choudhury, Greensburg, Pa., assignor to Elliott Turbomachinery Company, Inc., Jeannette, Pa.

Filed Oct. 18, 1984, Ser. No. 662,006
Int. Cl.⁴ F16C *27/02, 32/06*
U.S. Cl. 384—99 **5 Claims**



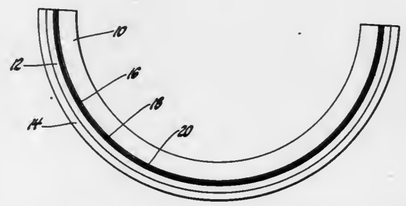
1. A support assembly for a rotating shaft which comprises:
a generally annular bearing in which the shaft is secured;
means for supplying oil between the bearing and the shaft;
an annular retainer mounted about the bearing and defining a void therebetween;
an annular single piece spring located within the void defined between the retainer and the bearing for resisting displacement of the shaft;
first spring support means including a series of axially oriented rods located between the bearing and the spring for transmitting forces therebetween;
second spring support means including a series of axially oriented rods located between the spring and the retainer for transmitting forces therebetween;
wherein said annular retainer further defines means for securing the second spring support means in the desired position; and
squeeze film damper means located within the void for damping motion of the shaft.

4,553,856

BEARING HAVING NICKEL-TIN-COPPER BARRIER LAYER

John C. Bierlein, Washington, and Arnold O. DeHart, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1983, Ser. No. 470,445
Int. Cl.⁴ F16C *33/28, 9/02*
U.S. Cl. 384—276 **2 Claims**



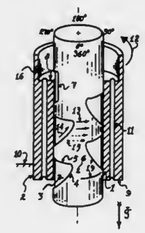
1. A journal bearing having a working surface of lead-tin alloy, a durable metal backing and a plurality of layers therebetween, said layers comprising in sequential order from the working surface inwardly towards the backing; a copper layer; a tin layer; a nickel layer and a copper-lead alloy layer, wherein said copper layer is at least as thick as said tin layer and wherein the thickness of the copper layer is about 25 to 150 microinches; the thickness of the tin layer is about 25 to 50 microinches; and the thickness of the nickel layer is about 50 to 100 microinches.

4,553,857

REVERSIBLE JOURNAL BEARING UNIFLOW LUBRICATION SYSTEM

Robert J. Ney, 2275 E. Bay Dr., Ste. 1103B, Clearwater, Fla. 33546

Filed Dec. 22, 1983, Ser. No. 564,282
Int. Cl.⁴ F16C *3/14, 9/03, 33/06*
U.S. Cl. 384—398 **2 Claims**



1. A lubricating fluid pumping and distribution system for a journal bearing wherein the axial fluid flow is the same for either clockwise or counterclockwise direction of journal bearing rotation, said system comprising a journal encircled by a cylindrical bearing, said system containing an array of close ended, shallow, individual pumping cavities which are arranged in at least two axial columns extending along the length of the relatively rotating surfaces on either the journal or bearing surface, two side walls of the cavities form a left and right helical segment respectively such that when relative rotation between the journal and the bearing occurs the helical segments will impart a uniaxial pressure gradient on the fluid, which pressure causes the fluid to flow from a lubricant reservoir at the bottom of the bearing in an axial direction within the pumping cavity and also into a clearance formed between the journal and bearing surfaces, said adjacent columns of pumping cavities are axially offset from cavities in the first column so that they collect some of the fluid in the clearance between the journal and the bearing and impart further axial movement to the lubricating fluid, said fluid thereby traversing and lubricating the entire length of the journal.

4,553,859

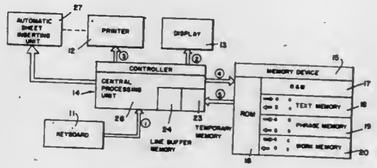
Patent Not Issued For This Number

4,553,860

TEXT PROCESSING METHOD AND APPARATUS

Mamoru Imaizumi, and Yasumichi Kojima, both of Nogoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 2, 1983, Ser. No. 529,696
Claims priority, application Japan, Sep. 10, 1982, 57-158285
Int. Cl.⁴ B41J *5/30*
U.S. Cl. 400—68 **13 Claims**



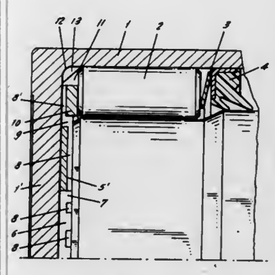
1. A method of printing a plurality of documents based on a text, with alterations of phrases from one document to another in at least one phrase-inserting part of the text, comprising the steps of:
storing into a phrase memory plural sets of phrase data representing plural different phrases to be inserted into the respective documents, said sets of phrase data being designated by respective phrase-indicating codes each consisting of at least one character the number of which is smaller than the number of characters constituting each of said plural different phrases;
storing into a work memory at least one set of work data comprising selected plural ones of said phrase-indicating codes in such manner as to specify the order in which said phrase-indicating codes are read out, said work data being designated by a working-group code;
storing into a text memory at least one set of text data representing a text of document, said text data including said working-group code at a position corresponding to said at least one phrase-inserting part of the text;
printing out said text data to produce a first one of said plurality of documents, while upon reading of said working-group code, reading out from said phrase memory and printing out the first set of said phrase data designated by a first one of said phrase-indicating codes of said work data, so as to insert the first phrase into said at least one phrase-inserting part of the text of the first document; and
printing out said text data to produce second and subsequent ones of said documents, while printing out second and subsequent sets of said phrase data which are designated by second and subsequent ones of said phrase-indicating codes of said work data, so as to insert the second and subsequent phrases into said at least one phrase-inserting part of the text of the second and subsequent documents.

4,553,858

BOTTOM PLATE FOR A BUSHING MOUNTED VIA ROLLING ELEMENTS ON A PIN

Steffen Neugebauer, Hesselbach, and Gunter Scharting, Gochsheim, both of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,331
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337602
Int. Cl.⁴ F16C *33/66*
U.S. Cl. 384—473 **15 Claims**



1. A bottom plate for a bushing, which bushing has an opening in it for receiving the end portion of a pin, and wherein there are rolling elements around the periphery of the pin between the pin and the interior peripheral wall of the bushing;
the bottom plate being of a width to extend close to the interior peripheral wall of the bushing;
a plurality of radially extending grooves defined in the bottom plate;
between the bottom end of the pin and the bottom of the bushing, first ones of the grooves defined in the plate run along and open toward the bottom end of the pin; between the ends of the rollers and the bottom of the bushing, second ones of the grooves in the plate run along and open toward the bottom of the bushing;
a step-like transition defined in the plate between the first and the second ones of the grooves and the transition being generally radially located in the region of the periphery of the pin.

4,553,861

CONTROL SYSTEM FOR THERMAL PRINTING TYPEWRITERS OR LIKE MACHINES

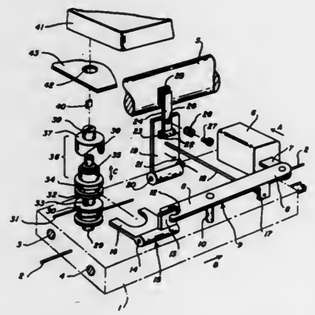
Joseph Lendl, Ottensoos, Fed. Rep. of Germany, assignor to Triumph-Adler Aktiengesellschaft fur Buro-Informationstechnik, Nurnberg, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,379

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307286

Int. Cl.⁴ B41J *3/20*

U.S. Cl. 400—120 **5 Claims**



1. In a typewriter having a platen, a carriage moveable relative to said platen incident to typing commands, and

a thermal print head supported on said carriage for movement into pressure contact with said platen,

said print head support comprising a support plate pivotally mounted on said carriage for movement toward and away from said platen,

a spring normally biasing said support plate in a direction away from said platen,

an arm pivotally mounted on the side of said support plate facing away from the platen,

said arm carrying said thermal print head, and

resilient means connected to normally bias said arm against the side of said support plate facing away from said platen whereby said arm will follow movement of said support plate toward said platen and will yield and separate from said support plate upon encounter of said print read with said platen, and

control means on said carriage responive to printing commands for moving said support plate toward said platen whereby said print head is pressed into resilient contact with said platen.

4,553,862

APPARATUS FOR THE BOUNCE-FREE LANDING OF A PRINT HEAD

Gottfried Goldrian, Boeblingen; Manfred Nitschke, Herrenberg; Volker Rudolph, Aidlingen, and Manfred Wohnsdorf, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,467

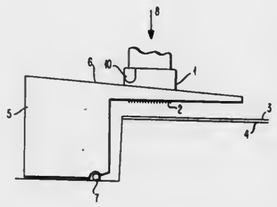
Claims priority, application European Pat. Off., Apr. 4, 1983, 83103292.5

Int. Cl.⁴ B41J *3/04*

U.S. Cl. 400—121 **4 Claims**

1. Apparatus for controlling the landing of a printhead on a record carrier supported by a platen as the printhead moves laterally with respect to the record carrier comprising, in combination,

a landing ramp overlying a portion of said record carrier and defining a guide surface that is inclined toward said record carrier along the direction of lateral printhead movement,



said ramp being pivotally supported for movement toward and away from said record carrier,

a guide shoe connected to said printhead for engaging the guide surface during printhead landing, and

an elastically deformable element for yieldably urging said ramp in the direction away from said record carrier against the force of said printhead landing thereon.

4,553,863

METHOD AND ARRANGEMENT FOR TOLERANCE COMPENSATION IN MATRIX PRINTING DEVICES

Hermann Ullenboom, Deisenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 31, 1984, Ser. No. 666,736

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339776

Int. Cl.⁴ B41J *3/12, 19/30*

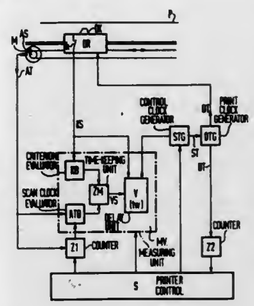
U.S. Cl. 400—121 **6 Claims**

1. In a method for tolerance compensation in a matrix printing device having a printer carriage wherein a start of a print clock generation is initiated by a criterion generated at a line start, and said print clock generation is dependent upon a scan clock generated by sensing motion of the printer carriage, said printer carriage moving before a printing event, wherein the improvement comprises the steps of:

defining and measuring a time duration between a leading edge of a scan clock period of the scan clock and said criterion formed at the line start, said scan clock period being formed after a speed of the printer carriage used for printing events has been reached, and said time duration being defined and measured during a single complete line pass of said printer carriage before the actual printing event;

comparing the measured time duration to a lower and to an upper time threshold;

setting a time delay when the measured time duration is below said lower time threshold or when it exceeds said upper time threshold; and



said time delay delaying evaluation of said criterion formed at the line start at least for a following actual printing event.

4,553,864

MULTICOLOR CROSS-HAMMER PRINTER

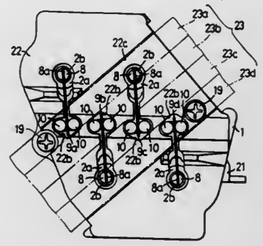
Mikio Hayashi, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,051

Claims priority, application Japan, May 4, 1982, 57-74726

Int. Cl.⁴ B41J *3/10*

U.S. Cl. 400—121 **18 Claims**



1. A multicolor cross-hammer printer comprising: a rotatable drum connected to be rotationally driven by a motor, the drum having a plurality of ridges disposed on an outer peripheral surface thereof, the ridges extending parallel to each other axially on said drum; a print head movable parallel to and axially of said drum in front thereof, said print head having a plurality of actuatable print hammers disposed to extend across selected ones of said ridges in confronting relation thereto during rotation of the drum and being spaced in parallel relation from each other in a direction of movement of said print head; an ink ribbon movable with said print head and having a portion running obliquely across said print head in front thereof, said ink ribbon having a plurality of parallel color strips extending longitudinally thereon and being impregnated respectively with inks of different color, said print hammers being disposed in confronting relation to said color strips, respectively; and actuating means for selectively actuating said print hammers to press the corresponding color strips on said ink ribbon selectively against the drum ridges to effect multicolor printing of dot matrix characters on a recording medium positioned between said drum and said print head while the latter moves in one stroke; adjacent print hammers being spaced from each other by a distance of $P_h \times (N/k)$, or a multiple thereof, wherein P_h is a horizontal pitch of a dot matrix of characters to be p·inted, N is the number of said drum ridges and 1/k is the speed reduction ratio between said motor and said drum.

4,553,865

INK-SUPPLIED WIRE DOT PRINTER

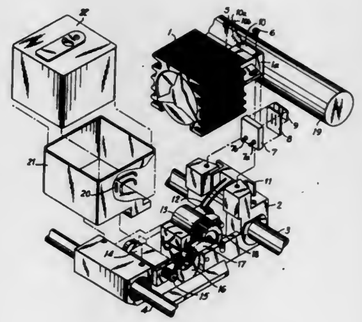
Yoshito Ikeda; Hitoshi Fujiwara; Yoshifumi Gomi; Masanao Matsuzawa, and Yasuhito Hirashima, all of Shiojiri, Japan, assignors to Epson Corporation, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,857

Claims priority, application Japan, Jun. 10, 1982, 57-99548

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **12 Claims**



1. A wire dot printer comprising:

a plurality of wires, each wire having an end for carrying ink thereon and for impacting a print medium for printing thereon;

a plurality of ink applicator mechanisms each containing a separate ink for applying said separate ink respectively to said wire ends, said wires being divided into groups, each of said groups being positioned for receiving a separate ink from one said ink applicator mechanism respectively; and

ink heater means disposed adjacent to said wire ends for heating said ink, said ink heater means including a plurality of independent heaters, each said heater being associated respectively with one of said ink applicator mechanisms, each said heater being separately controlled so that the temperature of each said heater can be independently controlled whereby the viscosity of each separate ink can be separately controlled.

6. A wire dot printer comprising:

at least one wire having an end for carrying flowable ink thereon and for impacting a print medium for printing thereon;

an ink applicator mechanism for applying said ink to said wire end;

an ink tank disposed adjacent to said ink applicator mechanism for containing an ink having a high viscosity therein;

an ink supply member for supplying ink from said ink tank to said ink applicator mechanism, said ink supply member operating by capillary attraction; and

heater means for heating said ink supply member so that the viscosity of said ink is lowered to a state where it is sufficiently flowable to be applied to said wire end by said ink applicator mechanism.

4,553,866

ELECTRONIC TYPEWRITER

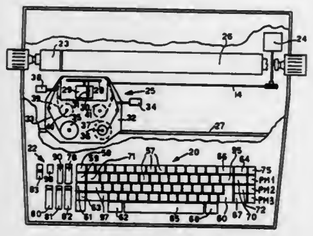
Filippo Demonte, Borgofranco, and Mario Figini, Fraz. Borgata Donna, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 310,964, Oct. 13, 1981, Pat. No. 4,500,216, which is a continuation of Ser. No. 58,202, Jul. 17, 1979, abandoned. This application Aug. 14, 1984, Ser. No. 640,754

Claims priority, application Italy, Jul. 18, 1978, 68695 A/78

Int. Cl.⁴ B41J *19/58, 19/32*

U.S. Cl. 400—144.2 **2 Claims**



1. An electronic typewriter comprising a platen defining a printing line; a rotatable type member carrying a plurality of characters wherein said type member comprises a plurality of flexible fingers, wherein each finger comprises an axis and carries a corresponding character, wherein said characters have minimum, small, medium and large widths and wherein said characters are grouped according to first and second groups wherein the first group includes the characters of minimum and small widths and the second group includes the characters of medium and large widths; a hammer actuatable for selectively striking a selected character of said characters against the platen for its printing; a carriage supporting said type member and said hammer for the movement thereof along the printing line; selecting means for intermittently rotating said type member to position the axis of the finger of the selected character in front of the hammer; a spacing mechanism for spacing the carriage through steps of various length in dependence of the width of said selected character to regularly space the printed characters along the printing line; and alignment means to align an edge of the printed character with respect to a reference point of the printing line, wherein said alignment means comprise means to position the carriage on a predetermined position with respect to said reference point if the character is included on said first group and means to further move the carriage through a fixed stroke, with respect to said predetermined position if the character is included in said second group; wherein the characters of minimum and small widths and the characters of medium and large widths, respectively, have a median axis offset through opposite sides with respect to the axis of the corresponding finger in order to cause said edge to be aligned with respect to the reference point either in the case of the characters of minimum and small widths when the carriage is on said predetermined position and in the case of characters of medium and large widths when the carriage is moved through said fixed stroke with respect to the predetermined position.

4,553,867

DOT PRINTER CONTROL SYSTEM

Toshihiko Nakai, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,193

Claims priority, application Japan, Dec. 20, 1982, 57-222164

Int. Cl.⁴ B41J *19/30, 19/50*

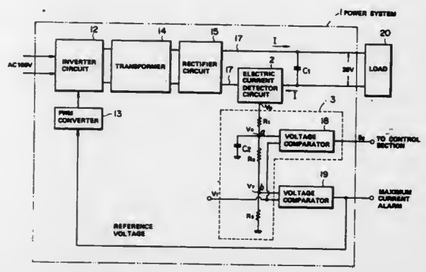
U.S. Cl. 400—323 **3 Claims**

1. A dot printer in which while a print head is reciprocated in a direction substantially perpendicular to a print sheet feed, said print head is powered to cause selectively a printing of characters and patterns on said print sheet, said dot printer comprising:

a power system for supplying power to a load;

setting means for setting a reference voltage level value corresponding to a predetermined intermediate output current value within a range not in excess of maximum rated output current of said power system;

detecting means for detecting a current flowing through output lines of said power system and for providing a voltage value corresponding to said current, said reference voltage level value corresponding to a predetermined intermediate output current value being determined so that said current flowing through output lines of said power system does not usually get to the maximum rated output current even if the current increases; and



control means for comparing the voltage value provided by said detecting means with the reference voltage value of said setting means and for controlling a printing operation to change the reciprocating printing by said print head for a bidirectional printing to a unidirectional printing when the voltage value provided by said detecting means is greater than the reference voltage of said setting means.

4,553,868

DEVICE FOR MOUNTING A DAISYWHEEL ON A TYPEWRITER

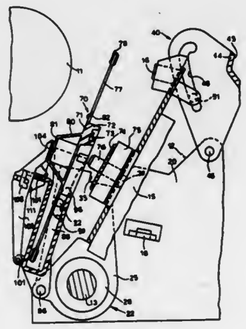
Pasquale Crosio, Strambino, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Mar. 12, 1984, Ser. No. 588,724

Claims priority, application Italy, Mar. 10, 1983, 67270 A/83

Int. Cl.⁴ B41J *11/22, 1/22*

U.S. Cl. 400—356 **6 Claims**



1. A device for mounting a character carrying disc provided with a cylindrical hub portion in a printing machine having a platen, a fixed guide parallel to said platen, a carriage slidable on said guide, a frame pivotally mounted on said carriage, a selecting motor mounted on said frame and having a motor shaft for engaging said disc, a striker hammer mounted on said frame, and a mechanism connected to said carriage and to said frame for swinging said frame with respect to said carriage to move said selecting motor and said striker hammer away from said platen, said device comprising a substantially vertical pocket having two lateral sides perpendicular to said fixed guide and a wall parallel to said fixed guide, said pocket being disposed between said platen and said frame for lodging said character carrying disc, and means for allowing easy insertion of said character carrying disc in said pocket and a simultaneous coaxial coupling of said motor shaft with the introduced character carrying disc, said allowing means comprising a lower portion of said pocket which is pivotally connected to said frame near said fixed guide, a pin and slot coupling between said carriage and at least one of said lateral sides of said pocket so that the swinging of said frame with respect to said carriage causes a corresponding vertical movement of said pocket with respect to said fixed guide, and a semicylindrical recess on said wall of said pocket for carrying said cylindrical hub portion of said disc during the insertion thereof, said semicylindrical recess being substantially coaxial to said motor shaft.

4,553,869

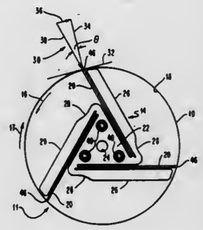
BUCKLING ONE WAY CLUTCH

Douglas E. Alexander; James F. Holland, both of Raleigh; Herbert G. Leonard, Louisburg, and Alvin R. Reed, Raleigh, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 12, 1983, Ser. No. 531,111

Int. Cl.⁴ B41J *19/76*

U.S. Cl. 400—568 **11 Claims**



1. A clutch assembly comprising:

a first means with a smooth engagement surface thereon; and a second means disposed coaxially with said engagement surface and to rotate relative thereto;

said second means including a hub section with at least a first straight and elongated flexural member extending from said hub section to frictionally engage the smooth engagement surface; and at least a second straight and elongated flexural member extending from said hub section to a zone whereat the end surface of said second straight and elongated flexural member is in spaced alignment with the engagement surface whereby the first flexural member is made to buckle in response to forces outside of a predetermined range and causes the second flexural member to be brought into contact with the engagement surface to resist said forces.

4,553,870

IMPACT TYPE COLOR PRINTER

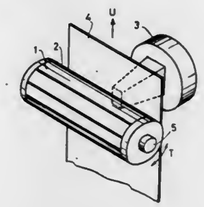
Hideaki Takenoya, Hachioji, and Fumiyuki Mishima, Hino, both of Japan, assignors to Janome Sewing Machine Industry Co. Ltd., Japan

Filed Jun. 22, 1984, Ser. No. 623,684

Claims priority, application Japan, Jun. 22, 1983, 58-110993

Int. Cl.⁴ B41J *27/06, 27/08*

U.S. Cl. 400—662 **4 Claims**



1. A color printer operated with supply of a power source to print a paper, comprising:

a cylindrical platen provided on the periphery thereof with a plurality of members each saturated with a different color ink, each ink saturated member being divided into a number of printing areas each extending in an axial direction of said member and arranged in an angular direction of said platen, said platen being rotatable around an axis thereof as well as movable in the axial direction;

a printing head arranged opposite to said platen so as to cooperate with said platen to apply an ink of a selected one of said ink saturated members to the paper located between said printing head and said platen, said printing head being movable together with said platen with respect to the paper from an initial printing position to a final printing position;

means for rotating said platen with respect to said printing head;

means for producing a random digit signal each time the printer is supplied with the power source; and

control means operated in response to said random digit signal to control said platen drive means to determine the angular position of said platen at random with respect to said printing head to thereby set any one of said areas of a selected one of said ink saturated members to a position opposite to said printing head.

4,553,871

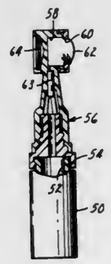
DEVICE FOR CLEANING PHONOGRAPH STYLUS

Gerald J. Niles, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 1, 1984, Ser. No. 585,160

Int. Cl.⁴ A47L *13/16, 13/17*

U.S. Cl. 401—195 **9 Claims**



1. A phonograph stylus cleaning device comprising

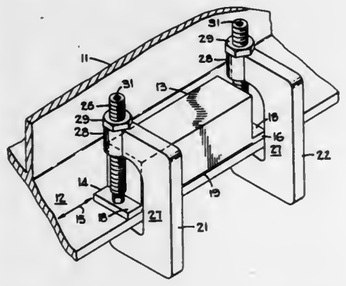
an elongated cylindrical plastic squeeze bottle cleaning-fluid container formed with an orifice,
a cap mounted over the orifice,
a head mounted on the cap, which head includes a small reservoir and is formed with an aperture from the reservoir to the exterior,
the cap and head together forming a valve for allowing cleaning fluid to flow from the container to fill the reservoir,
a porous cleaning pad filling said aperture to allow cleaning fluid in the reservoir to be applied to the phonograph stylus, said cleaning pad comprising a flexible foam core and an exterior cut pile fabric; and
a magnifying mirror mounted on the head for viewing a stylus which has been cleaned.

4,553,872

LOAD CELL CLAMPING APPARATUS

Rangasami S. Chandra, Walnut Creek, and Franklin P. Orlando, Morgan Hill, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 15, 1984, Ser. No. 580,416
Int. Cl.⁴ F16B *1/00*
U.S. Cl. 403—25 **20 Claims**



1. Apparatus for mounting a load cell enclosure securely to one surface of a beam subjected to bending stress to be measured by the load cell, comprising
flanges extending in opposite directions from each side of the cell enclosure,
a mounting surface and an opposing exposed surface on each flange, and
clamping means having opposing jaws adapted to contact said exposed flange surface and the beam surface opposing the one beam surface, whereby pressure is applied between said mounting surface and the one beam surface to fix the load cell enclosure thereon.

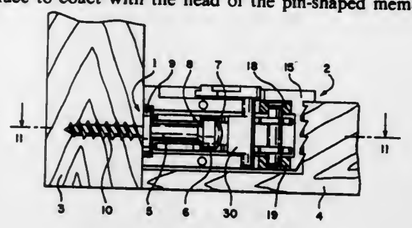
4,553,873

CONNECTING FITTING FOR RELEASABLY CONNECTING TWO PLATELIKE FURNITURE MEMBERS

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed Jun. 9, 1982, Ser. No. 386,572
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3122978
Int. Cl.⁴ F16B *9/02*
U.S. Cl. 403—245 **22 Claims**

1. A connecting device for releasably connecting two platelike furniture members extending preferably at right angles to each other, said connecting device comprising two fitting members, one fitting member being pin-shaped having an enlarged head and a shank and adapted to be mounted on one of the platelike furniture members and the other fitting member having a spring-loaded locking member adapted to be pivotally mounted within the other platelike furniture member, said spring loaded locking element including, a forked, hook-shaped end portion for straddling the shank of the pin-shaped member behind its head to lock the fitting members to each other, the forked, hook-shaped end portion having a tapered surface to coact with the head of the pin-shaped member to



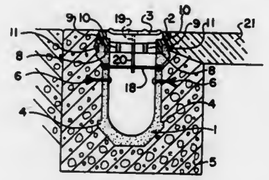
cam the pin-shaped member into a locked position, the other fitting member further including a locking lever being pivotably movable to move the spring-loaded locking element from the locked position to an unlocked position against the bias of the spring-loaded locking element.

4,553,874

SLOTTED DRAINAGE GRATE WITH SUPPORT

Roland Thomann, and Markus Amann, both of Langnau, Switzerland, assignors to Polydrain, Inc., Troutman, N.C.

Continuation of Ser. No. 506,244, Jun. 20, 1983, Pat. No. 4,515,498. This application Dec. 7, 1984, Ser. No. 679,184
Claims priority, application Switzerland, Nov. 23, 1982, 6827/82
Int. Cl.⁴ E01F *5/00*
U.S. Cl. 404—4 **4 Claims**



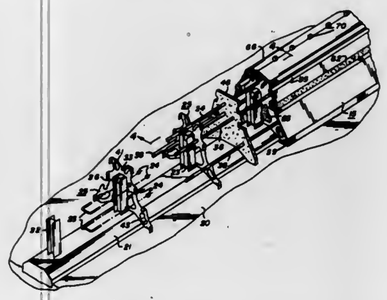
1. A support for a grate of the type comprised of a strip of sheet metal having transverse water drainage slots therein, the edges of said sheet metal being bent twice along its longitudinally extending edges to form two U-shaped side channels whose open sides are mutually opposed, said support comprising:
(a) a U-shaped arch having a midsection intermediate opposing end sections, said arch being open on each end and adapted to be positioned transversely across said grate in contact with opposite sides thereof and intermediate at least some of the slots to provide support to the width of the grate, the midsection of said arch being arcuate and the opposing end sections being planar, said support being adapted to cooperate with a grate having a mating arcuate surface between each slot for receiving the midsection of said support and wherein the side channels of said grate are planar for matingly receiving the planar end sections of said support; and
(b) each end of said arch defining a shoulder having a width and depth sufficient to be positioned in said opposing side channels and provide support to the side of said grate, the opposing end sections of said support being flared apart to each define an arch having a width greater than that of the midsection of said support.

4,553,875

METHOD FOR MAKING BARRIER STRUCTURE

Steven M. Casey, 301 Fanshawe St., Apt. C., Philadelphia, Pa. 19111

Division of Ser. No. 364,411, Apr. 1, 1982, Pat. No. 4,496,264. This application Oct. 31, 1983, Ser. No. 546,964
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 **2 Claims**



1. The method of making cast barrier structures consisting of the steps of,
(a) rigidly securing a plurality of upstanding form plate supports to an underlying supporting surface,
(b) securing a plurality of form plates to said plurality of upstanding form plate supports in a longitudinally spaced array over said supporting surface with the major plane of each form plate oriented substantially vertically and transversely to the length of the array,
(c) projecting reinforcing rods longitudinally through the full length of the array of form plates through the planes of the form plates, and securing the rods to the form plates,
(d) positioning side panels longitudinally alongside the form plates on opposite sides thereof and extending the length of the array, said side panels having upper and lower longitudinally extending edges with the lower edges seated on the underlying supporting surface and having irregularities on the inside surface which faces the form plates,
(e) fixedly securing said side panels to said form plates to form with said form plates and underlying surface an open-topped hollow assembly, and
(f) pouring a solidifiable plastic material downward through the open top of said hollow assembly to completely fill the interior thereof and integrally bond together with said form plate supports, said form plates, said reinforcing rods, said side panels and said plastic material when the latter solidifies.

4,553,876

METHOD AND APPARATUS FOR LAYING DRAINS IN FROST-SUSCEPTIBLE GROUND, AND DRAINS LAID IN SUCH GROUND

Oscar S. Arntyr, Wallingat. 37, 11124 Stockholm, and Thord I. Engström, 95018 Bensbyn, both of Sweden

Filed Oct. 19, 1983, Ser. No. 543,543
Claims priority, application Sweden, Oct. 19, 1982, 8205938
Int. Cl.⁴ E02B *11/00*
U.S. Cl. 405—50 **6 Claims**

1. A method for laying surface-water drains, manholes and like structures, particularly in ground which is susceptible to frost, wherein said structures are formed of a drain cover at the ground surface, a drain-bottom part and one or more drain pipes extending from the cover to the drain-bottom part, said method comprising the steps of:
initially positioning said drain-bottom part within the ground below the frost line,
placing a relatively long, upper drain pipe having an outer form which is slightly conical over the extent of said pipe length within the ground, with the pipe turned with its widest end downwards,
inserting the end of said conical pipe into a socket of said drain-bottom part to form a telescopic joint between the



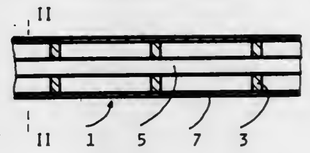
bottom of said pipe and said drain-bottom part socket while providing a joint guard over the joint to accept the relative movement between the pipe and the underlying stationary drain-bottom part,
and wherein the conicity of the pipe is so small that it does not prevent the pipe from accompanying the raising movement of the surrounding ground due to frost, the purpose of the conicity being to facilitate the return of the pipe when the ground thaws.

4,553,877

METHOD OF CONVERTING A CABLE IN THE GROUND INTO A CLOSED GUIDING TRACK FOR INSERTION OF NEW CONDUCTORS

Einar Edvardsen, Idrettsveien, N-1990 Sorum, Norway

PCT No. PCT/NO81/00032, § 371 Date Feb. 26, 1982, § 102(e) Date Feb. 26, 1982, PCT Pub. No. WO82/00388, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 13, 1981, Ser. No. 359,717
Claims priority, application Norway, Jul. 14, 1980, 802117
Int. Cl.⁴ H02G *1/12*
U.S. Cl. 405—154 **11 Claims**



1. A method for converting external casings of existing cables comprising a conductor or a plurality of conductors surrounded by internal insulation material into hollow guiding tracks, which method comprises transforming the internal insulation material over a suitable length of the cable into a form wherein the insulation material occupies less volume between the casing and the conductor or conductors, so as to permit removal of the conductor or conductors from the casing, and thereafter removing the conductor or conductors from the cable.

4,553,878

OFFSHORE TOWER CONSTRUCTIONS AND METHODS OF ERECTION AND INSTALLATION THEREOF

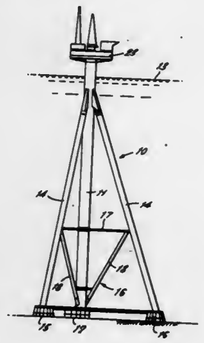
Kees Willemse, Leiden; Jan Meek, Gouda, both of Netherlands, and Finn C. Michelsen, Kailua, Hi., assignors to Heerema Engineering Service, Netherlands

Filed Mar. 2, 1983, Ser. No. 471,490

Claims priority, application United Kingdom, Mar. 5, 1982, 8206509

Int. Cl.⁴ E02D *21/00, 23/02, 25/00*

U.S. Cl. 405—203 **4 Claims**



1. A method of assembling an offshore tower structure having a foundation unit for anchoring in position on the seabed, a central column for securing at its lower end to the foundation unit to extend upwardly therefrom to above the water level in use and support a service platform at its upper end and carry services such as conductors and risers between the seabed and the platform, at least three support legs to be fixed at their upper ends to the column towards the upper end thereof and secured at their lower ends to the foundation unit at points spaced from the lower end of the column to provide support for the column, and a preformed bracing unit to be rigidly connected with the column and legs and between legs, which method comprises:

floating the column on the surface of the water;

securing the bracing unit to the column;

floating each of the legs in turn into position and attaching them to the assembled column and bracing unit one by one, the column being rotated about its longitudinal axis after each leg is attached in readiness for the attachment of the next leg;

anchoring the foundation unit on the seabed; and

lowering the assembled support legs, bracing unit and column onto the foundation unit.

4,553,879

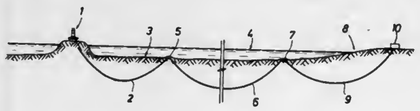
PIPELAYING IN ARTIC OFFSHORE WATERS

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1984, Ser. No. 603,279

Int. Cl.⁴ E02D *21/00;* **F16L** *1/04, 57/00*

U.S. Cl. 405—270 **8 Claims**



1. A method for laying a pipeline in an offshore area wherein the seafloor is subject to ice gouging, comprising determining the depth to which ice gouging is known to historically have occurred in the offshore area, drilling a series of invert arcuate underground paths, each path extending to below the depth to which ice gouging is known historically to have occurred in the offshore area; placing pipeline segments along these underground paths; connecting adjacent ends of the pipeline segments at a location subject to ice gouging; and protecting the connected ends of the pipeline segments from ice gouging by an ice-resistant structure.

4,553,880

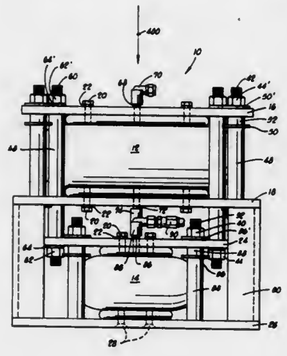
HYDRA-PNEUMATIC LOAD SENSOR AND SIGNAL SYSTEM

James V. Byrd, Jr., Kingston, Tenn., and Danny K. Mints, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 18, 1984, Ser. No. 621,757

Int. Cl.⁴ B65G *53/66;* **G01G** *5/04*

U.S. Cl. 406—23 **18 Claims**



1. A load sensor, comprising:

first bellows means substantially filled with a substantially compressible fluid under a selected pressure having first load plate means associated therewith;

second bellows means filled with a substantially incompressible fluid having second load plate means associated therewith;

signal line means in communication with said second bellows means; and

load transfer means connecting said first and second load plate means wherein said load is supported by said first bellows means when said load sensor is subjected to a said load of less than or equal to the support provided by said first bellows means filled with said compressible fluid at said selected pressure and wherein said load is supported by said second bellows means when said load sensor is subjected to a said load greater than the support provided by said first bellows means filled with said compressible fluid at said selected pressure.

4,553,881

SLURRY PUMP TRAM CONTROL APPARATUS

Richard E. Doerr, Morgantown, W. Va., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 23, 1980, Ser. No. 171,605

Int. Cl.⁴ B65G *53/66, 53/34*

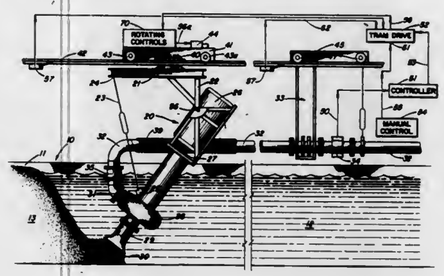
U.S. Cl. 406—115 **4 Claims**

1. In a sump substantially parallel and elongated sidewalls defining a longitudinal axis, said sump having ends and a bottom, and adpated for filling with fluid and solid mixture, said sump including rail means positioned above and along the longitudinal axis of said sump, and carriage means for mounting a pump which extends into said sump and means for moving said carriage means along said rail means, said carriage means characterized by:

(a) turntable means rotatably attached to said carriage means,

(b) support means attached between said turntable means and said pump,

(c) turntable rotating means attached between said carriage means and said turntable means for arcuately rotating said turntable means,



(d) indicator means attached between said carriage and said turntable for generating an indication of the arcuate position of said turntable with respect to the longitudinal axis of said sump, and

(e) tram drive means accepting said generated indication and operating said rotating means to position through rotation of said turntable, said pump means in said sump along a predetermined path parallel to the longitudinal path of said sump.

4,553,882

METHOD AND APPARATUS FOR PNEUMATICALLY CONVEYING FIBER MATERIAL

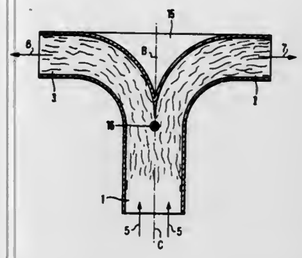
Walter P. Knappertz, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 539,064

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1982, 3239897

Int. Cl.⁴ B65G *53/56*

U.S. Cl. 406—181 **3 Claims**



1. In an apparatus for pneumatically conveying fiber tufts in a duct system of a fiber processing plant preparing fiber material for spinning, including a main duct and at least two branch ducts communicating with said main duct in a branching zone; said material being entrained by a gas stream from said main duct into said branch ducts; said main duct having a longitudinal axis passing through said branching zone; the improvement comprising

(a) means for generating a countercurrent;

(b) a flow distributor element supported in said branching zone and having a symmetry plane; said longitudinal axis of said main duct lying in said symmetry plane; and

(c) a tubular bar supported in said branching zone spaced from said flow distributor element in a direction towards said main conduit; said tubular bar having a plurality of openings oriented toward said main duct and being intersected by said symmetry plane for introducing the countercurrent through said openings in said branching zone solely into said main duct parallel to said longitudinal axis.

4,553,883

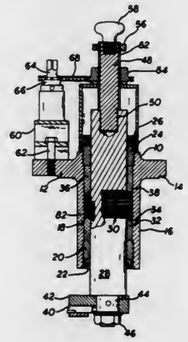
BORING TOOL WITH FLUID FEED

Daryl G. Brooks, Sanger, Calif., assignor to Kent-Moore Corporation, Warren, Mich.

Filed Feb. 23, 1984, Ser. No. 582,847

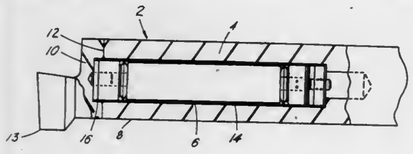
Int. Cl.⁴ B23B *39/10*

U.S. Cl. 408—130 **6 Claims**



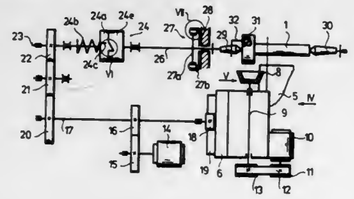
1. In a boring tool for boring out cylinders in engine blocks wherein the tool comprises a housing having a cylindrical bore therethrough, a driveshaft mounted in said housing bore in axial alignment therewith and simultaneously movable with respect to said housing in rotation about and linearly along the axis of said bore, rotary drive means drivingly interconnected with said driveshaft for rotation thereof, mounting means on said housing for mounting said housing on the cylinder of an engine block, a cutting tool mounted upon said driveshaft exteriorly of said housing for machining an engine block cylinder, and linear drive means mounted on said driveshaft for driving said driveshaft linearly along said bore, said linear drive means including a piston mounted on said driveshaft for rotation therewith having a periphery engaging said housing bore and having a spiral groove defined therein, a forward face, and a rear face and a fluid within said bore whereby rotation of said piston transfers fluid from the piston forward face to the piston rear face translating said driveshaft, the improvement comprising, a passage defined in the piston for establishing selective fluid communication between the piston forward and rear faces, a valve means defined in the piston within said passage controlling fluid flow through said passage positionable between open and closed positions, a valve actuator defined on the driveshaft operative to shift said valve means between said open and closed positions, the piston comprising an annular peripheral portion defining the piston periphery and an annular valve portion defining said valve means, said peripheral and valve portions being relatively rotatable about the driveshaft axis and each having a passage defined therein forming, at least, a portion of said piston passage, relative rotational movement of said peripheral and valve portions due to rotation of said driveshaft by said valve actuator aligning and misaligning said passages thereof to produce said open and closed positions, and relative rotation limiting means interposed between said piston peripheral and valve portions limiting relative rotation therebetween.

4,553,884
BORING TOOL AND METHOD OF REDUCING VIBRATIONS THEREIN
Gary W. Fitzgerald, Derry; Robert S. Gulibon, Stahlstown, and Paula M. Penrod, Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed May 10, 1982, Ser. No. 376,613
Int. Cl.⁴ B23B *47/00*
U.S. Cl. 408—143 **11 Claims**



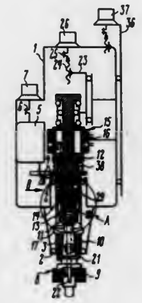
1. A boring tool resistant to vibration comprising: a boring bar having a central bore at one end; a boring bar head with means for attachment to said boring bar at said one end; and a tuned absorber package inserted in said bore for eliminating vibrations in said boring tool, said tuned absorber package having means for being self-contained and transferable between boring bars, said tuned absorber package comprising: an absorber mass; an elastomer support on either end of said absorber mass; a cylindrical canister for receiving said absorber mass and said elastomer supports; an end cap for said cylindrical canister; tuning means interacting with one of said elastomer supports so as to tune the desired vibration frequency of said absorber package; and dampening fluid within the cylindrical canister.

4,553,885
APPARATUS FOR THE INITIAL AND IMPROVEMENT MACHINING OF ACTIVE SURFACE OF STEER CAMS, PARTICULARLY OF BRAKE SPANNERS
Pál Kövári; Tibor Galambos; Ferenc Bogisich, and Imre Téringer, all of Györ, Hungary, assignors to Magyar Vagon-és Gépgyár, Györ, Hungary
Filed May 20, 1982, Ser. No. 380,120
Claims priority, application Hungary, Jul. 6, 1981, 1962/81
Int. Cl.⁴ B23C *3/16*
U.S. Cl. 409—201 **3 Claims**



1. In an apparatus for the machining of the active surfaces of steer cams, having a cutting tool and a basic slide mounting the cutting tool for movement along a line, the improvement comprising: means for rotatably clamping a workpiece perpendicular to said line and including a milling headstock; and a kinematic chain for rotating the workpiece and for transforming angular displacement of the workpiece into rectilinear displacement of the slide and cutting tool comprising a motor, a non-reversing free wheel having an internal part rotatable in one direction and an external part secured to the milling headstock, a unilateral claw clutch having one side coupled with the internal part of the free wheel and wherein the claw clutch is operable in the opposite direction than that of the non-reversing free wheel, a first gear, an intermediate shaft connected to the other side of the unilateral claw clutch and the first gear, a driving gear coupled to a driving shaft driven by said motor and coupled to said first gear and a gear and gear rack driven by the driving shaft and coupled to the basic slide.

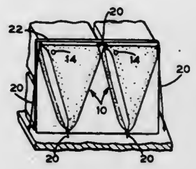
4,553,886
SPINDLE HEADSTOCK
Georgy A. Vasilchenko, ulitsa Khersonskaya, 1, kv. 103, and Leonid I. Alexeev, ulitsa Fridrikha Engelsa, 31/35, kv. 30, both of Moscow, U.S.S.R.
Filed Aug. 16, 1984, Ser. No. 641,195
Int. Cl.⁴ B23B *47/00*
U.S. Cl. 409—233 **2 Claims**



1. A spindle headstock for a boring head of a multiple-operation machine tool, comprising: a housing; a hollow spindle rotatably installed in said housing; a drive to rotate said spindle; a shank of said boring head, accommodated in said spindle; a hollow tie rod installed in said spindle coaxially with the latter, said tie rod being rotatable together with said spindle and axially adjustable in relation to said spindle as it is connected to said shank of said boring head; a means for axial displacement of said tie rod; members for connection to said shank of said boring head, mounted on the end of said tie rod so that they can radially reciprocate for location; said shank of said boring head being adapted for connection to said members mounted on said tie rod; a bar installed in said tie rod coaxially with the latter, rotatable together with said spindle and said tie rod, and axially movable in relation to said tie rod; a means to drive said bar in the axial direction; toothed members mounted on the end of said bar to mesh with toothed members of a slide bar of said boring head, which slide bar serves to convert axial motion of said bar to radial motion of the carriage of said boring head; a bushing mounted on the tie rod; said bushing being stationary in the axial plane and kinematically coupled to said spindle and said bar to turn the bar so as to engage and disengage said toothed members.

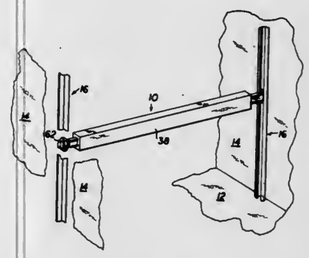
4,553,887
DUNNAGE BAG
Robert L. Reeves, Sheridan, Ark., assignor to St. Regis Corporation, New York, N.Y.
Filed Aug. 4, 1983, Ser. No. 520,175
Int. Cl.⁴ B60P *7/14*
U.S. Cl. 410—119 **12 Claims**

1. An inflatable dunnage bag including an airtight bladder, reinforcing material folded to conform to the shape of and enclosing the bladder, and a valve for inflating the bladder extending through the material and opening into and connected to the bladder, characterized in that the bladder is of tapered form and the reinforcing material is folded along fold lines so that the material is flat between the fold lines when the



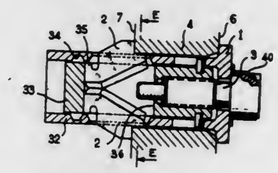
bag is uninflated to form front and back bag walls each of which is tapered in width between the fold lines.

4,553,888
CAPTIVE DUNNAGE FITTING
Charles F. Crissy, and Paul M. Holmes, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Filed Jun. 23, 1983, Ser. No. 507,037
Int. Cl.⁴ B61D *45/00*; B63B *25/24*
U.S. Cl. 410—144 **13 Claims**



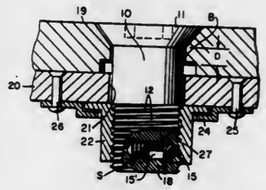
1. A captive dunnage bar system comprising, in combination, a fixed track having spaced, parallel, opposed, elongated first and second sides, said sides including portions defining an elongated slot therebetween of lesser width that the spacing between said sides, first openings defining in said first side and second openings defined in said second side, one of said first openings defining a set with one of said second openings, said openings of a set being longitudinally spaced from each other in the direction of the track length in an unopposed relationship, a fitting extending into said track through said slot having a head located between said track sides, said head having a length and sides defining a width less than the spacing between said track sides permitting said head to be partially rotated within said track about an axis perpendicular to the track length and greater than than the track slot width whereby said head is retained within said track, a first projection extending from one of said head sides and a second projections extending from the other head side, said head projections being offset with respect to each other relative to the head length a distance equal to a track opening set longitudinal spacing and of a length defining a dimension less then the spacing between said track sides when said head is rotated about its axis whereby said projections are received within track openings defining a set at a first head rotative orientation to said track and are removed from said track openings defining a set at a second head rotative orientation to said track permitting longitudinal adjustment of said fitting along said track.

4,553,889
EXPANDING PLUG
Olivier J. Le Dantec, and Charly G. Balage, both of Lyons, France, assignors to Framatome & Cie, Courbevoie, France
Filed Sep. 1, 1983, Ser. No. 528,684
Claims priority, application France, Sep. 3, 1982, 82 15032
Int. Cl.⁴ F16B *13/04*
U.S. Cl. 411—21 **1 Claim**



1. Expanding plug intended for closing an aperture provided in a wall accessible from only one side, comprising
(a) a base which is applied against the front face of said wall;
(b) a tubular member connected to said base and having an internal groove;
(c) a central member mounted for movement in axial translation in said tubular member and having a threaded hole along the axis of said aperture, at least two radial recesses and a radial face at the end part of each recess;
(d) at least two gripping members each mounted for sliding movement in a recess of said central member, permitting their radial displacement through pivoting displacement in the plane of the corresponding recess, said gripping members each having a radial shoulder and a radial projection near its rear part received in said internal groove of said tubular member, said plug being so disposed in said aperture that said gripping members are inserted in said aperture with their radial shoulder and radial projection protruding on the rear side of said wall; and
(e) a screw control member screwing in the threaded hole of said central member to effect the axial displacement of said central member and, when the radial face of the corresponding recess contacts the rear part of a gripping member, the simultaneous axial and radial displacement of said gripping member, said radial displacement being obtained by pivoting of said gripping member the radial projection of which is engaged in the internal groove of said tubular member, until the shoulder of said gripping member is applied against the rear face of said wall.

4,553,890
CAPTIVE PANEL SCREW
Bulent Gulistan, 20568 Pinnacle Way, Malibu, Calif. 90265
Continuation-in-part of Ser. No. 388,459, Jun. 14, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 543,501
Int. Cl.⁴ F16B *21/00, 39/38*
U.S. Cl. 411—318 **2 Claims**



1. A captive panel screw including, in combination:
(a) a shank having a head at one end and threads at its other end, said shank including a side opening at a point a given axial length from said head;

(b) a catch means positioned in said side opening and radially movable from a first position in which the catch means is wholly received in the opening to a second position in which the catch means partially extends from said opening a given distance, said given axial length being greater than the axial length of a bore in a panel to which the screw is to be held captive and said given distance extending beyond the radius of the bore periphery of the bore in the panel whereby said screw is held captive in said bore when said catch means is in said second position, said catch means comprising

a latch member terminating on its forward end in a single lower sloping cam surface oriented such that urging of the screw inwardly through the bore in the panel retracts the latch member into its said first position in said opening, said latch member also having a single upper sloping cam surface on its forward end so that said forward end is V-shaped with said upper surface intercepting said lower cam surface in a line at the nose of said latch tilted at an angle equal to the helix angle of the threads in a nut receiving said screw,; and

spring means in the opening urging said latch member towards its said second position extending from said opening, said side opening having a hole in its floor extending to the end of the screw, said latch member having a channel on its underside; and

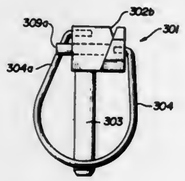
(c) a guide pin received in said hole with its upper end received in said channel for holding said latch member against rotation and limiting its in and out movement between said first and second positions whereby the latch member is prevented from falling out of said opening and whereby should the nut be sufficiently shallow that the screw extends out the exit end of the nut a distance to permit radial outward movement of the latch member, the screw can still be unthreaded from the nut by exerting sufficient upward force and unthreading force such that the latch member sloping upper cam surface and forward end tilt at the helix angle of the nut threads enables the retraction of the latch member into the opening in the screw so that unthreading and removal can take place.

4,553,891

HEADED COTTER PIN WITH SAFETY ANNULAR RETAINING MEANS

Claude Aubrun, Renage 38140 Rives, France

Filed Jan. 7, 1982, Ser. No. 337,874
Claims priority, application France, Jan. 9, 1981, 81 00592
Int. Cl.⁴ F16B *21/00*
U.S. Cl. 411—351 **10 Claims**



1. A cotter pin comprising:

a substantially cylindrical pin body which is adapted to be inserted in a pin-receiving member, a head at one end of said pin body,

a substantially annular device forming an open loop, the ends of which are pivotably mounted on opposite sides of said head on substantially parallel transverse axes, said annular device being movable between a closed position and an open position, said annular device when in said closed position being located to surround the pin-receiving member to prevent any undesired removal of said pin body, and said open position being displaced from said closed position to permit said pin body to be inserted in the pin-receiving member or removed therefrom,

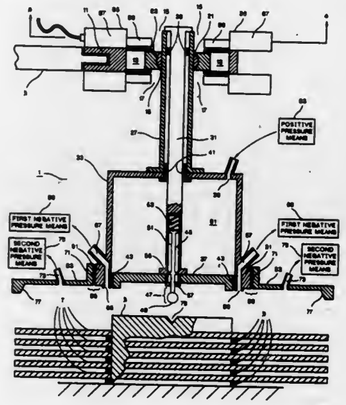
a stop-forming element which is movable independently of any pivotal movement of the annular device, said stop-forming element being formed independently of said head and said annular device, said stop-forming element being mounted transversely on said head on an axis substantially parallel to said transverse pivot axes of the ends of said annular device, said stop-forming element being movable with respect to its axis on said head between a stop position and an inoperative position, said stop-forming element when in its stop position having at least a portion extending in front of said annular device adjacent to a pivoted end thereof so as to maintain said annular device in its closed position, said inoperative position of the stop-forming element being located to permit said annular device to move to its open position so said pin can be mounted on the member or released therefrom.

4,553,892

SELF ALIGNING, LOAD CAPACITY ENHANCING, WORKPIECE HANDLING DEVICE FOR USE WITH A ROBOTIC SYSTEM

James Huffman, Boulder; Kim Brandt, Lafayette, and Alton G. Doutre, Westminster, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Oct. 19, 1982, Ser. No. 435,149
Int. Cl.⁴ B65G *59/04*
U.S. Cl. 414—121 **22 Claims**



1. A robot arm attachment tool for handling a plurality of differently configured workpieces, comprising:

means for attaching said tool to the robot arm, said robot arm attaching means having an opening such that a vertically disposed support member is fully free to tilt within said robot arm attaching means;

means for the powered lifting of a workpiece to be handled;

means for adjustably connecting the powered lifting means to the robot arm attaching means, said means having,

a vertically disposed support member, a lower end of which is attached to the powered lifting means,

a bearing assembly, having an inner bearing member securely fastened to the vertically disposed support member and a disk shaped outer bearing member mounted in the robot arm attaching means, such that the vertically disposed support member is free to pivot about the center point of said inner bearing, and

a disk-shaped cavity disposed within the means for attaching the tool to the robot arm, said cavity having its planar surfaces horizontally oriented, the disk-shaped outer bearing slidably mounted in the disk-shaped cavity such that the bearing assembly is free to translate within the horizontal plane defined by the planar surfaces of the cavity;

means for fixedly engaging a plurality of differently configured workpieces, said means attached to the means for powered lifting;

means for centering said tool over the workpiece to be handled so that means for engaging a workpiece will be properly positioned, and;

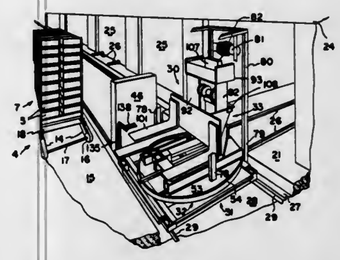
means for rigidly holding and returning the means for adjustably connecting the powered lifting means to the robot arm attaching means to a generally central position.

4,553,893

ARTICLE TRANSFER APPARATUS

William C. Kaschner, Alpena, Mich., and Elroy Bobolts, Jr., Pembroke Pines, Fla., assignors to Besser Company, Alpena, Mich.

Division of Ser. No. 558,379, Dec. 5, 1983, Pat. No. 4,505,630, which is a continuation of Ser. No. 104,237, Dec. 17, 1979, abandoned, which is a continuation of Ser. No. 871,597, Jan. 23, 1978, abandoned. This application Feb. 19, 1985, Ser. No. 702,631
Int. Cl.⁴ F27B *9/02*
U.S. Cl. 414—152 **7 Claims**



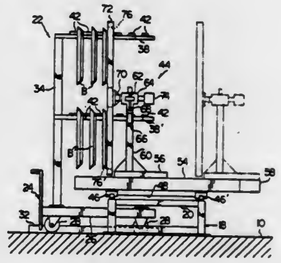
1. In combination with a concrete block curing kiln having a plurality of spaced apart, longitudinally extending compartments extending laterally of a path traversing all of said compartments at corresponding ends thereof, first track means defining said path, longitudinally extending second track means for each of said compartments for transferring a concrete block supporting rack comprising vertically spaced supports mounted on vertically extending legs from one position to another, said apparatus comprising a carriage movable along said path on said first track means; an endless rack conveyor traveling parallel to said path and having spaced apart rack support locators thereon spaced apart a distance corresponding to the spacing between the legs of the racks; rack leg locating means on said carriage movable parallel to said path from a removed position to a position engaging a rack on said carriage; first sensing means carried on said rack leg locating means; locator detecting means positioned adjacent said rack conveyor and past which said rack conveyor moves; said locator detecting means including a support member mounted for movement in line with the path of travel of said rack conveyor to engage a locator thereon, a second sensing means mounted by said support member cooperable with said first sensing means to indicate that said carriage and rack conveyor are in a position in which said rack is transferable between said carriage and rack conveyor; rail means carried by said carriage; a transfer vehicle, incorporating rack lift means for supporting a rack of blocks for transferring a rack between said rack conveyor and carriage, and carrying said rack into or out of any selected one of said kiln compartments; said transfer vehicle being movable on the rail means on said carriage and off it onto the rail means in a selected kiln compartment; drive means for moving said lift means vertically; and driving means powered from said carriage for driving said transfer vehicle off said carriage into any selected one of said compartments and returning it.

4,553,894

METHOD OF AND APPARATUS FOR TRANSFERRING ANNULAR ARTICLES FROM ONE STAGE TO ANOTHER

Makito Mukae, and Tsuginori Oshima, both of Higashimurayama, Japan, assignors to Bridgestone Tire Company Ltd., Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,639
Claims priority, application Japan, Dec. 23, 1982, 57-231115
Int. Cl.⁴ B65G *1/06*
U.S. Cl. 414—331 **7 Claims**



4. An annular article transfer apparatus for transferring articles from one stage to another, each of the annular articles having a ferromagnetic component element, comprising

at least one article carrier assembly comprising (a) at least one hanger bar operable for having a plurality of filler-fitted annular articles suspended therefrom, and (b) a plurality of spacer elements arranged in an array at predetermined spacings from each other, the annular articles suspended from said hanger bar being axially spaced apart substantially in parallel from each other respectively across said spacer elements and having respective center axes substantially aligned with each other in a predetermined direction of the apparatus, and

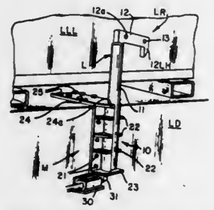
an article transfer assembly comprising (c) a magnetic article carrier member at least partly constructed of permanent magnet and operable for having each of said annular articles transferred from said hanger bar and attached to the article carrier member with said ferromagnetic component element magnetically attracted to said permanent magnet, (d) support means for supporting said magnetic article carrier member, the support means being vertically movable with respect to said hanger bar, (e) first drive means operative to drive said article transfer assembly for movement in said predetermined direction of the apparatus for causing said article carrier member to contact one of said annular articles, and (f) second drive means operative to drive said support means for upward movement with respect to said hanger bar for permitting each of said annular articles to be disengaged from each of said spacer elements, said first drive means being further operative to drive the article transfer assembly for movement in said predetermined direction for causing the annular article contacted by the article carrier member and disengaged from the spacer elements to withdraw from the hanger bar to the article carrier member.

4,553,895

TRUCK LATCH

Lawrence D. Ellis, Monrovia, Calif., assignor to Ellis Industries, Inc., South El Monte, Calif.

Filed Apr. 30, 1984, Ser. No. 605,213
Int. Cl.⁴ B65G *67/02*
U.S. Cl. 414—401 **14 Claims**



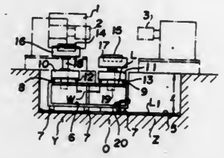
1. A device for restraining a motor vehicle having a predetermined style bumper by releasably coupling the bumper to a loading dock, said device comprising latching means having a restraining member extending outwardly therefrom and adapted for sliding and rotary movement to position the restraining member over said bumper to releasably interlock with said bumper upon engagement therewith and slidably movable out of engagement with said bumper to release same, and means for mounting said latching means to permit the latching means to be bidirectionally axially movable and rotatable relative to the mounting means to permit the latching means to engage and disengage said bumper, said mounting means permitting the latching means to be rotated to a position out of the path of said motor vehicle, said mounting means including means for securing same to a loading dock at a preselected location on a side wall thereof.

4,553,896

TRUCK APPARATUS FOR CONVEYING PARTS

Seiki Yoshida, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 4, 1983, Ser. No. 455,552
Int. Cl.⁴ B60P *1/02*
U.S. Cl. 414—495 **1 Claim**



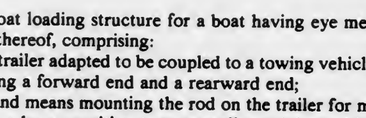
1. A truck apparatus for conveying parts to a holder for receiving the parts, said truck apparatus comprising:
first supply rails laid between an end position and a delivering position for the parts,
second supply rails laid perpendicularly to said first supply rails and downwardly vertically displaced relative to the end position of said supply rails,
a shift car longitudinally movably coupled to said second supply rails so as to be movable alternatively between first and second lateral positions,
said shift car including third and fourth rail sets laid perpendicularly to said second supply rails, said third and fourth rail sets each being parallel to and at the same height as said first supply rails, said third and fourth rail sets being aligned with said first supply rails when said shift car is longitudinally alternatively moved between said first and second lateral positions, respectively,
a pair of trucks movably positioned on respective ones of said third and fourth rail sets so that said pair of trucks is alternately movable onto said first supply rails between said end and delivering positions when said shift car is longitudinally alternately moved between said first and second lateral positions,
each said truck including a bearer for the parts having a cradle roller and lifter means for lifting the cradle between a lowered position to accept the parts thereon and a raised position for transferring the parts to the holders when the truck is in said delivering position,
said apparatus further comprising cable bearer means having one end fixed to said shift car and another end disposed relative to said second supply rails such that said cable bearer means, between said one and other ends, is adjacently parallel to said second supply rails for permitting a drive cable to be moved responsive to movement of said shift car between said first and second lateral positions, said one end of said cable bearer means being vertically spaced above said second supply rails to define a vertical bend portion in said cable bearer means, said cable bearer means, by virtue of said vertical bend, thereby linearly moving adjacently parallel to said second supply rails.

4,553,897

FLOAT MEANS FOR CONNECTING THE WINCH LINE OF A BOAT TRAILER TO A BOAT

Thomas V. Briggs, 1368 Ranier, Canton, Mich. 48187

Filed Jun. 14, 1984, Ser. No. 620,682
Int. Cl.⁴ B60P *1/04*
U.S. Cl. 414—559 **3 Claims**



1. A boat loading structure for a boat having eye means at one end thereof, comprising:
a boat trailer adapted to be coupled to a towing vehicle, and having a forward end and a rearward end;
a rod and means mounting the rod on the trailer for motion from a lower position to a generally upright position;
a float member mounted on the rod to cause it to move from said lower position toward said upright position as the trailer is moved into a body of water for receiving a boat; and
winch means at the forward end of the trailer including a line mounted on the winch means, the line having hook means for engaging the eye of the boat and means on the rod for engaging the hook means so that a user in a boat floating in the water can disengage the hook means from the rod to connect it to the boat eye.

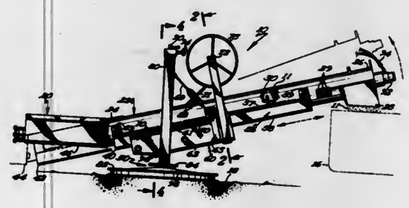
4,553,898

SWINGABLY MOUNTED TRUCK HOPPER

Leon G. Feterl, Salem, S. Dak., assignor to Core Industries, Inc., Bloomfield Hills, Mich.

Filed Oct. 14, 1983, Ser. No. 541,876
Int. Cl.⁴ B65G *65/00*
U.S. Cl. 414—573 **12 Claims**

1. Apparatus for collecting and transporting particulate material from a discharge outlet of a vehicle to receiving means, and adapted to be disposed on a supporting surface comprising:
a collection chamber for receiving particulate material from the vehicle with its configuration permitting it to be positioned directly under the discharge outlet of the vehicle for receiving the particulate material;
an elongated auger chamber having inner and outer ends and being angularly displaced from the supporting surface and including a discharge outlet adjacent said outer end, said inner end being adjacent to said collection chamber, and said discharge outlet being positioned so that the particulate material may discharge directly into the receiving means;
said collection chamber and said auger chamber having a rotatable auger supported and disposed therewithin to transport the particulate material from said collection chamber to said discharge outlet;
extension means for extension of said oollection chamber lengthwise along the longitudinal axis of said auger chamber between a first position, wherein said collection chamber and said auger chamber are in a retracted storage condition, and a second position, wherein said collection chamber is extended for placement directly underneath the discharge outlet of the vehicle so that the particulate material may fall directly into said collection chamber; and
vertical positioning means for pivotally positioning said collection chamber about a horizontal axis between a lower position, wherein said collection chamber may be readily positioned under a vehicle discharge outlet, and an upper position, wherein said collection chamber is placed



directly underneath and closely abutting the discharge outlet of the vehicle so that the particulate material may be received by said collection chamber with minimal loss; and
a swivel means for rotating said collection chamber and said auger chamber about a generally vertical axis between a use portion, wherein said collection chamber is capable of being placed directly underneath the discharge outlet of the vehicle to receive the particulate material exiting the discharge outlet of the vehicle, and a rest position, wherein said collection chamber and said auger chamber are rotated to a position to the side of the vehicle so that the vehicle may depart its unloading position, said swivel means comprising a support stand disposed adjacent to and underneath said uager chamber and a base which rests on the supporting surface and is rotatably mounted to said support stand, said swivel base and said support stand cooperating to permit the rotating movement of said collection chamber and said auger chamber between said use and rest positions, and said extension means is disposed in cooperative association with said auger chamber and is operative to extend and retract said collection chamber lengthwise along the longitudinal axis of said auger chamber relative to said support stand.

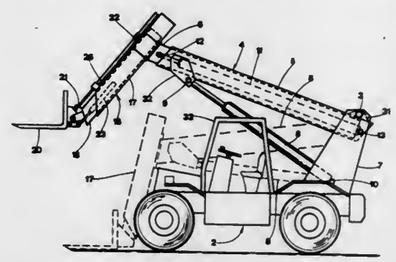
4,553,899

HIGH LIFT TRUCK WITH TELESCOPING BOOM ASSEMBLIES

Riccardo Magni, Via Segantini, 58, Modena, Italy (41100)

Filed Nov. 16, 1983, Ser. No. 552,461
Int. Cl.⁴ E02F *3/72*
U.S. Cl. 414—629 **3 Claims**

1. Self-propelled high lift truck, comprising:
a first telescopic boom-assembly whose bottom end is hinged to mountings at the truck chassis, permitting a rotation about a horizontal axis;
means by which to rotate said first boom-assembly from a lowered, all-but horizontal position, into a fully-raised position, and vice versa;
a second telescopic boom-asssembly whose rear end is immovably fixed to the top end of said first telescopic boom-assembly such that the longitudinal axes of said assemblies create an unvarying angle instrumental in causing said second boom-assembly to lie practically horizontal when said first boom-assembly is in the fully-raised position aforesaid; said second boom-assembly projecting forward in alignment with the longitudinal axis of the truck's prime



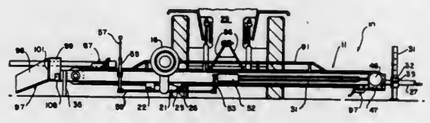
mover with said first boom-assembly in said fully-raised position;
means for telescoping said second boom-assembly;
a lifting attachment pivotally mounted to the forward end of said second boom-assembly; and
means for rotating said lifting attachment relative to the second boom-assembly in such a way as to maintain a constant lie of the lifting attachment relative to the ground as the inclination of the second boom-assembly is caused to vary.

4,553,900

APPARATUS FOR REMOVING SPRINKLER PIPE FROM A FIELD

William D. Miller; Omar L. Stiff, both of Brawley, and Benardo Mercurio, El Centro, all of Calif., assignors to William D. Miller, Inc., Brawley, Calif.

Filed Apr. 14, 1983, Ser. No. 484,884
Int. Cl.⁴ F16L *1/00*
U.S. Cl. 414—745 **12 Claims**



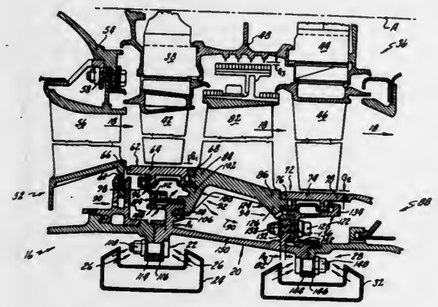
1. An apparatus for removing sprinkler pipe from a field in which the sprinkler pipe is disposed in rows in the field with the sprinkler pipe in each row being formed of serially connected lengths of sprinkler pipe, comprising: an elongate framework, ground engaging means carried by the framework, means on the framework for pulling a length pipe longitudinally of the framework, motive means, control means for connecting and disconnecting said motive means to said pulling means, and at least one attachment carried by said pulling means, said attachment being adapted to engage a leading end of the sprinkler pipe whereby as the pulling means is advanced the serially connected lengths of pipe are withdrawn from the field without the apparatus entering therein and carried onto the elongate framework.

4,553,901

STATOR STRUCTURE FOR A GAS TURBINE ENGINE

Vincent P. Laurello, Guilford, Conn., assignór to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1983, Ser. No. 564,431
Int. Cl.⁴ F01D *25/28*
U.S. Cl. 415—138 **10 Claims**



1. In an axial flow gas turbine engine having an annular flow path for working medium gases and a turbine section through which the working medium gases are passed, the turbine section having a rotor assembly which includes a first rotor disk and a first array of rotor blades extending outwardly from the disk across the working medium flow path, a second rotor disk and a second array of rotor blades extending outwardly from the disk across the working medium flow path, and an inner air seal extending between the disks, the turbine section further having a stator assembly which includes a first outer air seal composed of an array of arcuate segments extending circumferentially about the first array of rotor blades and spaced radially from the first rotor blades leaving a radial gap G_1 therebetween, a second outer air seal composed of an array of arcuate segments extending circumferentially about the second array of rotor blades and spaced radially from the second rotor blades leaving a radial gap G_2 therebetween, an array of stator vanes each of which has an upstream end and a downstream end, the vanes extending axially between the first and second outer air seals and extending radially inwardly across the working medium flow path between the first and second arrays of rotor blades into proximity with the inner seal leaving a radial gap G_3 the rebetween, and means for supporting and positioning the outer air seals and vanes to regulate the gaps G_1, G_2 and G_3 which includes a coolable outer case extending circumferentially about the engine, the improvement which comprises:

stator structure means for supporting and positioning the outer air seals and array of vanes from the outer case at only a first axial location and a second axial location on the outer case which includes

first means for supporting the upstream end of the array of stator vanes and the first array of outer air seal segments which slidably engages each first segment in the circumferential direction and engages each first segment at two axially spaced locations to trap the first segments in the downstream direction and the upstream direction, the first means being attached to the outer case at one axial location, said location being said first axial location,

second means for supporting the downstream end of the array of stator vanes and the second array of outer air seal segments which slidably engages each second segment in the circumferential direction and engages each second segment at two axially spaced locations to trap the second segments in the downstream direction and the upstream direction, the second means being attached to the outer case at one axial location, said location being said second axial location,

first means for flowing cooling air to the coolable outer case to adjust the diameter of the outer case at the first axial location, and

second means for flowing cooling air to the coolable outer case to adjust the diameter of the outer case at the second axial location,

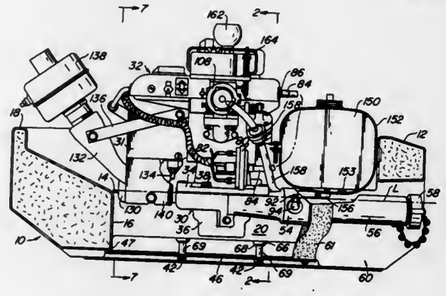
wherein movement of the outer case in the turbine section at the first axial location and the second axial location simultaneously adjusts the clearance gaps G_1, G_2 and G_3 from these two axial locations.

4,553,902

FLOATING PORTABLE PUMP

H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Co., Conshohocken, Pa.

Filed Apr. 18, 1984, Ser. No. 601,582
Int. Cl.⁴ F04B *49/00, 21/00, 17/00*
U.S. Cl. 417—34 **12 Claims**



7. A floating portable pump comprising:

a float adapted to be supported on water in a partially submerged floating condition, said float defining a well for containing water,

a centrifugal pump having an impeller mounted on a rotatable impeller shaft, a suction inlet, and a pump discharge,

means supporting said pump on said float with said impeller shaft extending vertically and with said suction inlet submerged in water in said well when said float is in said partially submerged floating condition,

an internal combustion engine arranged to drive said impeller shaft and having a throttle means for controlling the engine speed,

means securing said pump directly to said engine so that said pump and engine are supported together by said float and in an arrangement such that the engine causes rotation of said impeller to cause said pump to draw water from said well through the suction inlet and discharge water from said pump discharge,

means sensing the pressure of the water in said pump discharge,

throttle actuator means for actuating said engine throttle means to reduce the engine speed to an idle condition in response to the sensing of a low water pressure condition in said pump discharge by said sensing means,

said engine including

an ignition circuit for controlling ignition thereof and having a grounding circuit for shutting off the ignition of said engine, and fan means for blowing air in a fan chamber to produce an air pressure condition which increases as the engine speed increases and vice versa,

means sensing the air pressure condition in said fan chamber,

pressure responsive switch means serially connected in said grounding circuit for controlling the grounding of said ignition circuit, and

conduit means connecting said air pressure switch to said fan chamber,

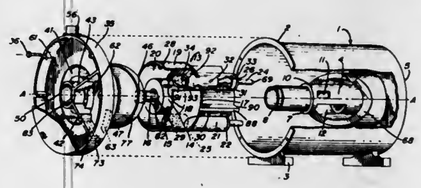
said sensing means being responsive to an air pressure condition corresponding to an overspeed condition of said engine for actuating said air switch means to a control position in which said ignition circuit is grounded to cause a reduction in the engine speed.

4,553,903

TWO-STAGE ROTARY COMPRESSOR

Baruir Ashikian, 505, rue Frechette, Sherbrooke, Quebec, Canada (J1J 2V5)

Continuation-in-part of Ser. No. 460,843, Jan. 25, 1983, Pat. No. 4,460,319. This application Jul. 3, 1984, Ser. No. 627,634
Claims priority, application Canada, Feb. 8, 1982, 395794
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.⁴ F04B *23/10, 1/12;* **F01B** *13/04*
U.S. Cl. 417—204 **31 Claims**



1. A rotary fluid displacement apparatus having first and second stages and comprising:

(a) a first body and a second body, one of which is held stationary;

(b) means defining an axis of relative rotation between said bodies;

(c) a plurality of piston-vanes mounted in said first body for reciprocating movement relative thereto;

(d) the second body having cam means co-acting with said piston-vanes such that the reciprocating movement of said piston-vanes occurs in the course of relative rotation between said bodies about said axis;

(e) one of said stages including a plurality of closed working chambers defined at least in part between adjacent portions of said piston-vanes, said cam means and portions of said first body, and all being arranged such that the volumes of said chambers increase and decrease in cyclical fashion during said relative rotation;

(f) the other stage including a plurality of closed working chambers comprising elongated bores in said first body in each of which a respective one of said piston-vanes is slidably mounted in sealing engagement with the wall of such bore, with the volumes of said last mentioned working chambers varying in cyclical fashion as said piston-vanes reciprocate in said bores during said relative rotation between said bodies;

(g) first and second stage inlet and exit port means for admitting and releasing fluid from the working chambers of the two stages in the course of said relative rotation and means defining a path for transmitting the fluid from the first stage to the second stage of the apparatus.

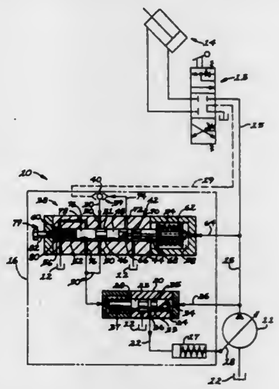
4,553,904

PUMP CONTROL WITH FLUID RESPONSIVE STANDBY PRESSURE

Walter Z. Ruseff, New Lenox, and James E. Schimpf, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01715, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO83/02304, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 21, 1981, Ser. No. 655,289
Int. Cl.⁴ F04B *1/26*
U.S. Cl. 417—218 **11 Claims**

1. In a pump control assembly (16) for changing the displacement of a variable displacement pump (11), the assembly (16) having an actuating means (17) for changing the displacement of the pump (11) and a valve member (23) having first and second ends (24,28), the valve member (23) being movable between a first position at which a pump discharge pressure is in communication with the actuating means (17), an infinitely variable intermediate position at which the pump discharge pressure is controllably modulated to deliver a control pressure to the actuating means (17) and a second position at which the pump discharge pressure is blocked from communication with the actuating means (17) and the actuating means (17) is in communication with a tank (12), the first end (24) of the valve member (23) being in continuous fluid communication with the pump discharge pressure for biasing the valve member (23)



toward one of the first and second positions, a signal representative of a load being in selective fluid communication with the second end (28) for biasing the valve member (23) toward the other of the first and second positions in conjunction with a spring (37), the load signal being received from a control valve (13) being in an actuated position, said control pressure maintaining a constant differential pressure between the discharge pressure and the load pressure, the improvement comprising:

means (38) for controllably delivering a predetermined minimum pressure signal to the second end (28) of the valve member (23) in response to the load signal being below the predetermined minimum pressure signal so that the valve member (23) controllably delivers a predetermined control pressure to the actuating means (17).

4,553,905

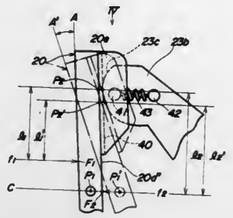
VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR WITH HIGH STABILITY OF CAPACITY CONTROL

James C. Swain, and David L. Thomas, both of Columbus, Ohio, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 9, 1984, Ser. No. 608,514
Int. Cl.⁴ F04B *1/28*
U.S. Cl. 417—222 **5 Claims**

1. A variable capacity wobble plate compressor comprising: a housing defining therein a crankcase, a lower pressure space, and a higher pressure space; a drive shaft rotatably disposed in said housing; a cylinder block arranged in said housing and defining therein a plurality of cylinders circumferentially arranged around said drive shaft and extending substantially parallel to the axis of said drive shaft, each of said cylinders having an interior thereof disposed for communication with said lower pressure space and said higher pressure space; pistons received in respective ones of said cylinders for reciprocating motions therein; a wobble plate arranged in said crankcase and pivotally and slidably fitted on said drive shaft for rotation together therewith, said pistons engaging said wobble plate for reciprocating motions in said respective ones of said cylinders as said wobble plate rotates; a pivot forming a first

fulcrum supporting said wobble plate at a diametrically central location thereof and axially movable along said drive shaft; and an arm member rotatable together with said drive shaft about the axis of said drive shaft, said arm member having one end face disposed in contact with one side surface of said wobble plate to form a second fulcrum supporting said wobble plate at a location radially spaced from said drive shaft, whereby said second fulcrum is rotatable about the axis of said drive shaft together with said arm member; said wobble plate having an angle of axial inclination relative to said drive shaft variable between minimum and maximum values for varying displacement of said pistons in response to the difference between resultant reaction force exerted by said pistons on compression and suction strokes thereof and pressure in said crankcase acting upon said pistons as back pressure; at least one of said one side surface of said wobble plate and said one end face of said arm member having a camming surface on which said second fulcrum is located, said camming surface having a cam profile and said second fulcrum having a radial position such that said second fulcrum is moved toward the axis of said drive shaft through a substantial stroke with an increase in said angle of axial inclination of said wobble plate from said minimum to said maximum value.



4,553,906

POSITIVE DISPLACEMENT ROTARY COMPRESSORS

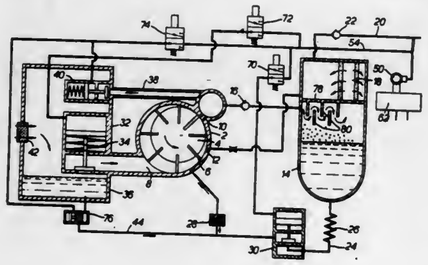
Edward Boller, Halesowen, and Michael R. Williams, Solihull, both of, assignors to Hydrovane Compressor Company Limited, Redditch, England

Filed Sep. 26, 1984, Ser. No. 654,678

Claims priority, application United Kingdom, Sep. 28, 1983, 8326017

Int. Cl.⁴ F04B *49/02, 49/08, 49/10*

U.S. Cl. 417—295 **10 Claims**



1. A positive displacement rotary compressor including a stator, a rotor within said stator, a stator inlet, a first pilot operated valve, said stator inlet communicating with atmosphere via said first pilot operated valve, a stator outlet, a primary lubricant reservoir connected to said stator outlet, a non-return valve disposed between said stator outlet and said primary lubricant reservoir, an auxiliary lubricant reservoir which is always at substantially atmospheric pressure and which is connected to said stator outlet, a second pilot operated valve disposed between said stator outlet and said auxiliary lubricant reservoir, one or more lubricant injection orifices arranged to inject oil into said stator and connected to said primary reservoir and to said secondary reservoir, and a third pilot operated valve disposed between said one or more lubricant injection orifices and said primary reservoir, said compressor further including a pilot control system responsive, in use, to the compressed air load to which said compressor is subjected and arranged to switch said first and said third pilot operated valves from an open position to a closed position, and said second pilot operated valve from a closed position to an open position when said compressed air load falls below a predetermined value.

4,553,907

UNLOADING MECHANISMS FOR AIR COMPRESSORS

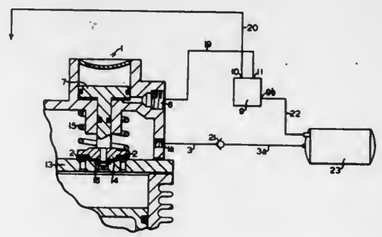
Werner Heger, Lehrte-Kolshorn; Wolfgang Kaltenthaler, and Helmut Wilke, both of Wennigsen, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hannover, Fed. Rep. of Germany

Division of Ser. No. 416,831, Sep. 13, 1982, Pat. No. 4,505,648. This application Nov. 2, 1984, Ser. No. 667,777

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136948

Int. Cl.⁴ F04B *49/02*

U.S. Cl. 417—297 **3 Claims**



1. A mechanism for generation of pressure gas for a compressed air brake system comprising, a compressor having a compression chamber which takes in the gas that is to be compressed and exhibits a pressure gas outlet, the compression chamber of the compressor is connected with the pressure gas outlet via a pressure discharge valve, the pressure gas outlet is connected via a pressure line with a consumer which is designed as a storage tank, a pressure regulating system which switches the compressor from a compression phase to an unloading phase when a certain predetermined pressure is reached, the compressor is equipped with a first pneumatic control connection for opening the pressure discharge valve and for opening means associated with the pressure discharge valve to reduce the pressure head on the compressor during the unloading phase, and the first pneumatic control connection of the compressor is connected with a pneumatic control outlet of the pressure regulating system, an operating piston is provided in the compressor for the opening of the pressure discharge valve, said piston is operated by the pressure which is supplied to the first pneumatic control connection, the pressure discharge valve includes a pressure disk that is arranged between a valve support plate and a valve catcher, the valve catcher serves the purpose of supporting the pressure disk against the forces that are a result of the compressed gas acting upon the pressure disk, the operating piston is connected to the valve catcher so that during the unloading phase the valve catcher can be moved away from the valve support plate against the force of a spring, and the force of the spring is sufficient to prevent movement of the valve catcher by the pressure of the compressed gas during the compression phase, the valve support plate includes a part for supporting the pressure disk and is movable toward the open direction of the pressure disk so that a large opening is formed during the unloading phase, and the operating piston is adapted to move the movable part relative to the valve support plate, the pressure regulating system includes a switch valve which is connected to the pressure line of the pressure gas led to the consumer, said switch valve takes the form of a governor, the governor is connected with the pressure gas system of the consumer via a pneumatic control inlet, the governor is connected with the first pneumatic control connection of the compressor via the first pneumatic control outlet, the governor includes a second pneumatic control for connection to the compressor by way of a second pneumatic control outlet, and a check valve is inserted into the pressure line which originates at the pressure gas outlet of the compressor and leads to the consumer.

4,553,908

HIGH PRESSURE PUMP WITH A FLOW CONTROL VALVE

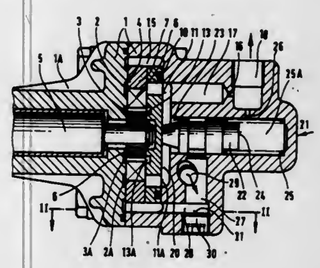
Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,412

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018650

Int. Cl.⁴ F04B *49/00*

U.S. Cl. 417—310 **3 Claims**



1. In a sliding vane rotary pump of the kind having a flow control valve in the pump disposed between an outlet chamber and a radial passage extending as a bore through a wall of the pump body;

said flow control valve operable by outlet pressure responsive to pump speed to bypass high pressure flow to said radial passage;

said pump having a longitudinal passage intersecting said radial passage and having an angular juncture with said radial passage and connecting to the inlet chamber of said pump, including an inlet passage intersecting said radial passage whereby inlet flow is entrained by high pressure bypass flow upon opening of said flow control valve for flow to said inlet chamber;

the improvement which comprises:

a closure member for the bore through the pump body wall comprising a flow guiding transition piece at the juncture of said radial and longitudinal passages having a face flush with a side of said longitudinal passage whereby said radial passage terminates in said longitudinal passage.

4,553,909

MOTOR-PUMP SET FOR BOREHOLES AND A METHOD OF PROTECTION RELATING THERETO

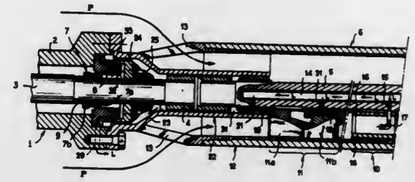
Michel Galais, Angouleme; Christian Sardain, Delle; Jean Fouin, Angouleme; Marcel Arnaudeau, Paris, and Pierre Morin, Levallois-Perret, all of France, assignors to Moteurs Leroy-Somer, Angouleme Cedex, France

Filed Jun. 1, 1983, Ser. No. 500,177

Claims priority, application France, Jun. 4, 1982, 82 09745

Int. Cl.⁴ F04B *17/00*

U.S. Cl. 417—369 **1 Claim**



1. A motor-pump set for boreholes comprising a motor housed within a fluid tight casing (2) and having a motor shaft (3) extending from said casing (2) and coupled axially to a pump housed within a cylindrical body (12) and formed by a plurality of stages mounted on a pump shaft (5) for pumping an external fluid, a packing gland (7) placed on an emergent end of said motor shaft, and a scavenging fluid circuit (4) connected at one end to the inside of said pump and comprising a duct (14) which is bored along an axis of said pump shaft (5) and opens in a radial gap (19*a*) of a bearing (19) which carries said pump shaft (5) and is nearest the motor, said scavenging fluid circuit (L) further comprising an annular portion (31) located around said shafts (3, 5) and limited externally by a tubular section (22) and a conical section (23) which are rigidly fixed to the pump body (12), provision being made within said conical section (23) for a protective member (24) keyed on said motor shaft (3) and located on the pump side with respect to the packing gland (7), the diameter of said protective member (24) being larger than that of said sealing system (7) and said protective member (24) being provided with a peripheral flange (26) which extends to the internal wall of the motor casing (2) at a level corresponding to discharge ducts (29) within said motor casing (2) so that said flange (26) of said protective member (24) forms in conjunction with a packing gland supporting member (8) a flat annular space (28) which is located opposite to said discharge ducts (29).

4,553,910

PULSE DRIVEN HYDRAULIC PUMP

Terry Gosschalk, Gleniffer, Australia, assignor to Nebo Pumps Pty. Ltd., Australia

PCT No. PCT/AU82/00181, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/01658, PCT Pub. Date May 11, 1983

PCT Filed Nov. 4, 1982, Ser. No. 522,382

Claims priority, application Australia, Nov. 4, 1981, PF1417; Mar. 26, 1982, PF3324; Jun. 4, 1982, PF4686; Oct. 5, 1982, PF6197

Int. Cl.⁴ F04B *47/08*

U.S. Cl. 417—378 **4 Claims**

1. A pumping system for pumping fluid, said system comprising:

a pump chamber having a pumping element operable to draw fluid into the pump chamber and to discharge fluid from the pump chamber,

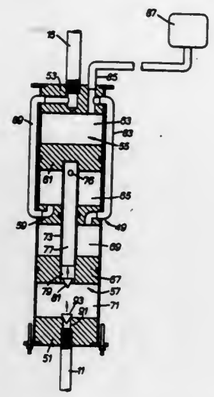
means for storing potential energy operatively associated with said pumping element,

a work chamber connectible to a supply of hydraulic fluid, the work chamber having a work element responsive to changes in hydraulic fluid pressure within said work chamber and

operatively connected to the pumping element and the means for storing potential energy,

whereby in use an increase in hydraulic fluid pressure within said work chamber actuates said work element to cause, simultaneously, an increase in the potential energy in said means for storing potential energy and actuation of said pumping element to draw fluid into the pump chamber, and a subsequent decrease in hydraulic fluid pressure within said work chamber causes said means for storing potential energy to actuate said pumping element to discharge the fluid drawn into the pump chamber,

wherein the means for storing potential energy comprises a



fluid accumulator and first and second potential energy storage chambers; the work element comprises a work piston separating the work chamber from the first potential energy storage chamber, the work piston being movable in response to changes of hydraulic fluid pressure within said work chamber; the pumping element comprises a pump piston separating the pump chamber from the second potential energy storage chamber; an interconnecting rod connecting the work piston and the pump piston together whereby the pump piston is movable in response to movement of the work piston, the interconnecting rod defining a fluid passageway connecting the first and second potential energy chambers.

4,553,911

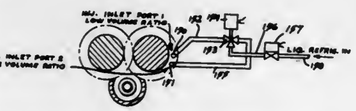
METHOD OF CODING THE OIL IN SCREW COMPRESSORS EQUIPPED WITH AUTOMATIC VARIABLE VOLUME RATIO

Joseph W. Pillis, Hagerstown, Md., assignor to Frick Company, Waynesboro, Pa.

Division of Ser. No. 554,477, Nov. 22, 1983, Pat. No. 4,515,546. This application Feb. 14, 1985, Ser. No. 701,592

Int. Cl.⁴ F01C *21/06, 1/16*

U.S. Cl. 418—1 **2 Claims**



1. In a screw compressor having meshing helical rotors on parallel axes and mounted in a housing having intersecting cylindrical bores, whereby the rotation of the rotors produces a varying interlobe volume from an inlet position to a discharge position, means for varying the internal volume ratio, and means for injecting oil into the interlobe volume at a selected location for sealing and lubricating the rotors and for cooling a working gas within the compressor, the method of cooling the oil comprising, injecting liquid refrigerant into the interlobe volume of the rotors at one of two or more predetermined locations at which the interlobe volume varies and prior to the movement of such interlobe volume to the discharge position, and selecting such location in response to the prevailing internal volume ratio.

4,553,912

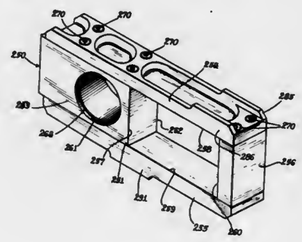
CYLINDER-PISTON OF A ROTARY COMPRESSOR

Marek J. Lassota, 8657 W. Foster Ave., Chicago, Ill. 60656

Continuation-in-part of Ser. No. 318,876, Nov. 6, 1981, Pat. No. 4,431,387, which is a continuation-in-part of Ser. No. 93,599, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 821,729, Aug. 4, 1977, Pat. No. 4,174,195, which is a continuation-in-part of Ser. No. 692,199, Jun. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 659,430, Feb. 19, 1976, abandoned. This application Nov. 19, 1985, Ser. No. 580,102

Int. Cl.⁴ F01C *1/26, 21/08;* **F16J** *1/24*

U.S. Cl. 418—54 **1 Claim**



1. An unsymmetrical cylinder-piston of a rotary compressor comprising:

a body having bearing means for receipt of a rotatable cylinder-piston shaft therein,

two spaced walls extending from said body and having opposing parallel surfaces,

a wall interconnecting said two spaced walls at their ends remote from said body to form an opening in said cylinder-piston for receipt of a rectangular piston in slidable relation therein,

said spaced walls bolted to said body and said connecting wall, and

said body having balancing means capable of making a center of gravity of said unsymmetrical cylinder-piston on or close to the axis of said bearing means.

4,553,913

SCROLL-TYPE HYDRAULIC MACHINE

Etsuo Morishita; Masahiro Sugihara, both of Hyogo; Tsutomu Inaba, Wakayama, and Toshiyuki Nakamura, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,917

Claims priority, application Japan, Jul. 1, 1983, 58-120608

Int. Cl.⁴ F03C *2/02;* **F04C** *2/04, 11/00*

U.S. Cl. 418—55 **18 Claims**

1. A scroll-type hydraulic machine, comprising:

A. a first stationary scroll having a first scroll wrap;

B. a first orbiting scroll having on one surface thereof a second scroll wrap, said second scroll wrap being interleaved with said first scroll wrap so that, when said second scroll wrap orbits with respect to said first scroll wrap, fluid introduced between said scroll wraps is changed in volume;

C. a first orbiting scroll shaft provided on the other surface of said first orbiting scroll;

D. a second stationary scroll having a third scroll wrap;

E. a second orbiting scroll having on one surface thereof a fourth scroll wrap, said fourth scroll wrap being interleaved with said third scroll wrap so that when said fourth scroll wrap orbits with respect to said third scroll wrap, fluid introduced between said third and fourth scroll wraps is changed in volume;

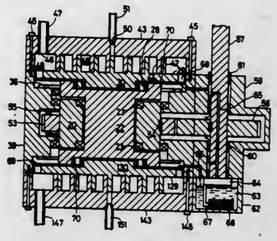
F. a second orbiting scroll shaft provided on the other surface of said second orbiting scroll; and

G. a crank mechanism, said crank mechanism comprising:

(1) a rotatably driven crankshaft having an eccentric through-hole extending lengthwise therethrough,

(2) a plurality of bearings provided in said eccentric through-hole,

(3) an eccentric shaft rotatably supported by said bearings in said eccentric through-hole,



(4) a first eccentric ring mechanism provided at one end of said eccentric shaft and rotatable with respect thereto, said first orbiting scroll shaft being orbitally driven through said first eccentric ring mechanism, and

(5) a second eccentric ring mechanism provided at the other end of said eccentric shaft and rotatable with respect thereto independently of said first eccentric ring mechanism, said second orbiting scroll shaft being orbitally driven through said second eccentric ring mechanism, said first and second eccentric ring mechanisms each comprising a ring having an eccentrically formed opening therein for the respective scroll shaft.

4,553,914

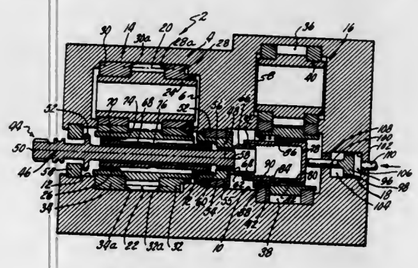
METHOD AND APPARATUS FOR MAIN FUEL PUMPING SYSTEM HAVING BACKUP PUMP

Godwin L. Noell, Winsted, and Jack G. Sundberg, Meriden, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 24, 1984, Ser. No. 583,353

Int. Cl.⁴ F01C *21/00*

U.S. Cl. 418—69 **4 Claims**



1. A pumping system comprising:

a housing;

a main pumping unit mounted in the housing for pumping fluid, the main pumping unit being normally operative;

a backup pumping' unit mounted in the housing for pumping fluid in the event of a seizure or jamming of the main pumping unit, the backup pumping unit being normally inoperative;

a drive member mounted for rotation in the housing for running both the main pumping unit and the backup pumping unit;

a main drive coupling mounted in the housing for drivingly interconnecting the drive member and the main pumping unit such that rotation of the drive member operates the main pumping unit, the main drive coupling including frangible coupling means to insure continued rotation of the drive member in the event of a seizure or jamming of the main pumping unit;

a backup drive coupling for drivingly interconnecting the drive member and the backup pumping unit mounted in the housing adjacent the drive member for axial sliding movement therein, the backup drive coupling being in driving engagement with the backup pumping unit and normally being in disengaged relationship to the drive member;

cooperating means on the drive member and the backup drive coupling to establish driving engagement between the drive member and the backup drive coupling upon axial movement of the backup drive coupling; and

an actuation device mounted in the housing for producing axial movement of the backup drive coupling upon a seizure or jamming of the main pumping unit such that the backup pumping unit may be rendered operative.

4,553,915

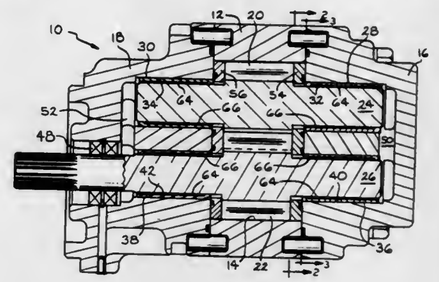
LOW PRESSURE LUBRICATION SYSTEM FOR FLUID DEVICE

James M. Eley, Corinth, Miss., assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 8, 1985, Ser. No. 689,811

Int. Cl.⁴ F04C *29/04*

U.S. Cl. 418—102 **12 Claims**



1. For use in a fluid device having a low pressure port, a shaft, a gear carried by the shaft, and a cylindrical bearing in which said shaft is journaled, a low pressure lubrication system comprising first fluid passage means connecting the end of the bearing remote from the gear with the low pressure port, second fluid passage means connecting the end of the bearing adjacent the gear with the low pressure port, a first groove in the bearing extending partially along the bearing from the remote end thereof and a second groove in the bearing extending partially along the bearing from the adjacent end thereof.

4,553,916

ROTARY FORCE FLUID PUMP

David Wacksman, West Palm Beach, Fla., assignor to Katherine R. Smith, Boynton Beach, Fla.

Filed Aug. 9, 1984, Ser. No. 639,101

Int. Cl.⁴ F04C *2/352*

U.S. Cl. 418—173 **14 Claims**

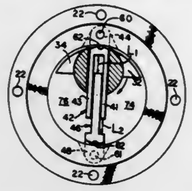
7. A rotary force fluid pump, comprising:

a housing defining a circular cylindrical pumping chamber;

a stacked pair of blade positioning rings mounted for independent rotation around the periphery of the pumping chamber;

a blade assembly pivotally mounted at each end to a different one of the rings and dividing the pumping chamber into two sections which vary in volume as the blade assembly rotates;

eccentrically disposed drive means for slidably engaging and rotating the blade assembly in the pumping chamber, the



blade in turn rotatably driving the rings at different speeds relative to one another, causing the pivotally mounted ends of the blade assembly to move toward and away from one another during rotation;

means in the blade assembly for accomodating the relative movement of the ends of the blade assembly during the eccentric rotation;

means for admitting fluid into the chamber; and,

means for exhausting fluid from the chamber.

4,553,917

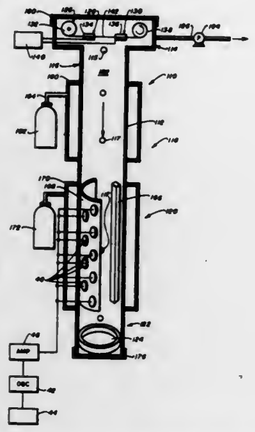
APPARATUS FOR PRODUCTION OF ULTRAPURE AMORPHOUS METALS UTILIZING ACOUSTIC COOLING

Mark C. Lee, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1982, Ser. No. 451,896

Int. Cl.⁴ B22F *9/00*; F16C *32/00*

U.S. Cl. 425—6 **6 Claims**



1. An apparatus for forming amorphous containing spheres comprising in combination:

an elongated tower enclosure defining an elongated, vertical closed chamber, having an upper droplet deployment zone followed by a free-fall zone, a first heat exchange zone and a collection zone;

droplet forming means within the upper zone for heating material to above the melting temperature of the material to form a droplet;

deployment means within the upper zone for deploying the molten droplet into the chamber along a line into the free fall zone for spheroiding the droplet;

a first heat exchange means surrounding said first zone for receiving a flow of a first cryogenic liquid for cooling the droplet to form said solid sphere, an elongated acoustical source disposed within the first zone for generating a converging acoustical wave pattern along a line of focus adjacent the line of deployment to cool and stabilize position of the solid sphere as it falls along the line;

said source including an elongated, curved, semicylindrical plate having opposed sides including a plurality of opposed sets of transducers, each set directed at a common focal point along said focal line, means for oscillating the transducers, and an elongated reflector having a curved semicylindrical surface with a radius of curvature less than that of the plate mounted adjacent the focal line of the plate for creating an intense local acoustic field for stably supporting the droplet; and

recovery means within the collection zone for recovering the solid spheres.

4,553,918

TIRE MOLDING MOLD

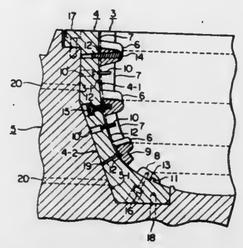
Yasutada Yoda; Seisuke Sueyasu, both of Higashimurayama, and Shoji Futamura, Kawasaki, all of Japan, assignors to Bridgestone Corporation, Tokyo and Institute of Technology & Precision Electrical Discharge Work's, Kanagawa, both of, Japan

Filed May 9, 1984, Ser. No. 608,590

Claims priority, application Japan, May 30, 1983, 58-95302; Sep. 29, 1983, 58-181506; Sep. 29, 1983, 58-181507; Nov. 7, 1983, 58-208467

Int. Cl.⁴ B29H *5/02*

U.S. Cl. 425—46 **7 Claims**



1. A tire molding mold comprising; a profiled ring having an inner circumferential surface corresponding to the outer profile of a tire being molded, including at least the tread surface thereof, wherein an outer profile of a tire being molded is molded at said inner circumferential surface; and a net ring having a faying surface for making contact with said inner circumferential surface of said profile ring, said net ring comprising of a network of ribs and/or lugs for forming the grooves of said tire being molded; wherein said net ring is wholly, or with the part thereof removed, disposed on said profile ring, and is devoid of any surface corresponding to the outer profile of a tire being molded.

4,553,919

APPARATUS FOR PRODUCING POLYACETYLENE FILM

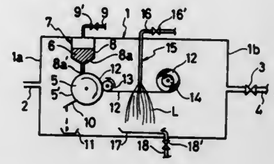
Ichiro Hide, Sapporo, Japan, assignor to Hoxan Corporation, Sapporo, Japan

Filed Aug. 31, 1984, Ser. No. 646,308

Claims priority, application Japan, Aug. 31, 1983, 58-134887[U]

Int. Cl.⁴ B29C *13/00, 23/00*

U.S. Cl. 425—90 **3 Claims**



1. An apparatus for producing a polyacetylene film by polymerizing acetylene gas in contact with Ziegler-Natta catalyst comprising: in a vessel to be introduced with acetylene gas

a rotatably driven film forming drum,

a coating member for coating the Ziegler-Natta catalyst on the outer peripheral surface of the drum,

a feeding roller driven reversely to the drum in rolling contact with the drum for drawing a polyacetylene film polymerized with the catalyst on the drum,

a cleaning member for cleaning the drawn polyacetylene film, and

a winding unit for winding the polyacetylene film.

4,553,920

AUTOMATIC MACHINE FOR THE FETTLING OF THE SYPHON OF SANITARY APPLIANCES

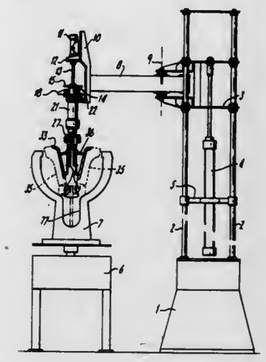
Mario Biadigo, Milan, and Gianfranco Zucchi, Brescia, both of Italy, assignors to Ideal Standard S.p.A., Milan, Italy

Filed Jul. 8, 1983, Ser. No. 511,997

Claims priority, application Italy, Jul. 9, 1982, 46842 A/82

Int. Cl.⁴ B29C *25/00*; B44D *5/10*

U.S. Cl. 425—267 **10 Claims**



1. An automatic fettling apparatus for fettling the walls of a vessel comprising

a slider means mounted for substantially vertical movement;

an operating head supported by said vertical slider;

a downwardly extending, articulated structure connected to said operating head;

frame members attached to said articulated structure, said frame members being laterally deformable to contact the walls of the vessel in which said articulated structure is to be inserted;

strips of a soft weave or mat of slightly abrasive filiform plastic material attached to said frame members;

first means operatively connected to said operating head and to said articulated structure to impart a vertical reciprocating rectilinear motion to said articulted structure; and

second means operatively connected to said articulated structure to impart stepwise rotary motion, simultaneous with said vertical reciprocating rectilinear motion to said articulated structure.

4,553,921

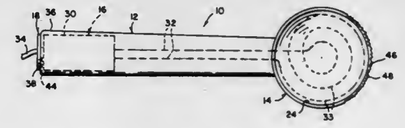
ELECTRICALLY HEATED ICE CREAM SCOOP

Carla A. Lamphere, c/o George Spector, 3615 Woolworth Bldg, 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 29, 1983, Ser. No. 536,845

Int. Cl.⁴ A23G *9/00*; B29C *1/00*

U.S. Cl. 425—279 **2 Claims**



1. An electrical ice cream dipper which comprises:

(a) a handle portion having a finger grip area;

(b) a scoop portion having a semi-spherical bowl therein affixed to the handle portion;

(c) means for heating the scoop portion;

(d) means rotatable in the handle portion for controlling the temperature in the scoop portion;

(e) means mounted in the handle in combination with a deformable portion of said finger grip area for rotating said rotatable means to cause the third said means to coact with the second said means to affect temperature control;

(f) the means for heating the scoop portion comprising an insulated heating wire extending from engagement with the means for controlling the temperature through the handle portion into the scoop portion and disposed in a spiral within the scoop portion to heat the scoop portion.

4,553,922

APPARATUS FOR PROCESSING MATERIAL

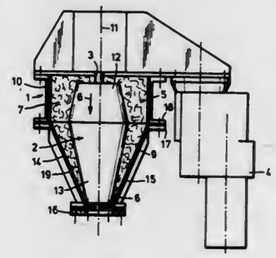
Eduard Winner, Weierstrasse 3, CH-9500 Wil, Switzerland

Filed Sep. 21, 1984, Ser. No. 653,495

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334012

Int. Cl.⁴ B29F *3/02*

U.S. Cl. 425—381.2 **14 Claims**



1. An apparatus for processing material, comprising:

a housing having an outlet, and a working chamber which includes a conveying section and a processing section,

with said conveying section passing into said processing section; said conveying section receives said material and conveys it in a direction of conveyance into said processing section; said conveying section has a cross section which tapers in the direction toward said outlet; said processing section also has a cross section which tapers in the direction toward said outlet, with the taper of said processing section being more marked than the taper of said conveying section; and

a rotatably driven processing tool which is accommodated in said working chamber, and which during processing conveys saiu material to said outlet.

4,553,923

PRODUCING THERMOPLASTIC ARTICLES PARTICULARLY WITH POROUS WALLS

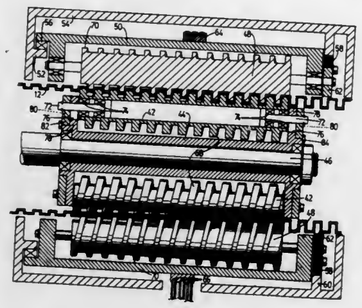
Manfred A. A. Lupke, 10 McLeary Ct., Concord, Ont. L4K 2Z3, Canada

Division of Ser. No. 574,370, Jan. 27, 1984,. This application Nov. 23, 1984, Ser. No. 658,574

Claims priority, application Canada, Feb. 21, 1983, 422058

Int. Cl.⁴ B29C *17/00;* **B29D** *23/03*

U.S. Cl. 425—393 **6 Claims**



1. An expander for enlarging a pipe as it is advanced along a feed path, said expander comprising a plurality of spindles adapted to be located within the pipe with the spindles diverging in a downstream direction and drive means for revolving the spindles about the axis of the pipe.

4,553,924

JACKSHAFT CONTROLLED BOILER COMBUSTION CONTROL SYSTEM

Robert L. Nelson, Orrville, and Donald M. Stough, Jackson Township, Jackson County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 407,677, Aug. 12, 1982, Pat. No. 4,486,166. This application Jun. 4, 1984, Ser. No. 617,060

Int. Cl.⁴ F23N *1/00*

U.S. Cl. 431—12 **1 Claim**

1. A method of programming a programmable combustion control system which controls the air fuel intake ratio of a combustion apparatus supplied with first and second reagents, one of said reagents consisting of fuel and the other of said reagents consisting of a combustive agent including oxygen, said combustion apparatus having a master firing rate demand means responsive to a sensed demand which provides a load index signal output proportional to the sensed demand requirements; a jackshaft means including a master member movably mounted about a first axis, a first actuator responsive to said load index signal output for effecting master member movement, a slave member movably mounted about a second axis having means associated therewith for regulating the amount of one of said reagents supplied, an intermediate linkage strut connected between said master member and said slave member; an intermediate linkage biasing mechanism operably associated with said intermediate linkage strut for effecting the modification of a master slave relationship established by said intermediate linkage strut for regulating the amounts of reagents supplied; means for generating a position control signal, said position control signal generating means producing a predetermined control signal which is a function of the load index signal output; and second actuator means responsive to said positioning control signal and operatively associated with said linkage biasing mechanism for effecting the operation thereof, whereby said master slave relationship is modified prior to the combustion process so that the amount of reagent supplied to said combustion apparatus by said slave member is a function of said master slave relationship as modified by said linkage biasing mechanism; said programmable combustion control system providing a signal to which said linkage biasing mechanism is responsive; said method of programming comprising the steps of:

manually establishing predetermined positions of said jackshaft means and said adjustable linkage biasing means at each of two or more manually established demand requirements as identified by separate load index signals, wherein said predetermined positions optimize the air-fuel ratio at said manually established demand requirement positions; and

storing said predetermined positions of said jackshaft means and said adjustable linkage biasing means for said respective manually established demand requirements in said programmable combustion control system, said system responding to changes in boiler load during boiler operation by adjusting the position of said linkage biasing means in accordance with said stored positional information whereby said programmable combustion control system stores control signals representative of positions of the intermediate linkage biasing mechanism for affecting trim control prior to the combustion process.

4,553,925

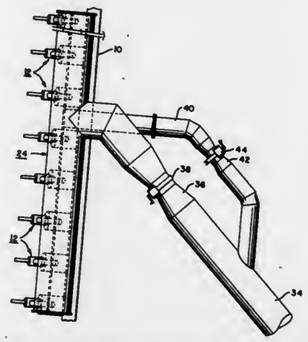
FLOW DISTRIBUTION HEADER SYSTEM

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., McMurray, Pa.

Filed Sep. 24, 1982, Ser. No. 422,531

Int. Cl.⁴ F16K *21/00*

U.S. Cl. 431—178 **8 Claims**



5. A flow distribution header system in combination with a furnace for heating workpieces, the combination including a plurality of burners each having a large diameter burner section operative for heating workpieces at a normal production rate to a desired working temperature, and a small diameter burner section operative for maintaining workpieces at a desired working temperature and for heating workpieces at a production rate below normal production rate, a common inlet duct for a fluid to be distributed, an elongated cylindrical conduit having an interior division wall dividing it into first and second elongated headers connected to the small and large diameter burner sections respectively, the first of said headers being of lesser volume than the second, a first conduit connecting said inlet duct to said first header, a second conduit connecting said inlet duct to said second header, said first conduit being of smaller cross-sectional area than said second conduit, a first throttling valve means in a reduced cross-sectional area portion of said second conduit for controlling a high range of fluid flow from said inlet duct to the large diameter burner section of each of said burners and a second throttling valve means in a reduced cross-sectional area portion of said first conduit for controlling a low range of fluid flow from said inlet duct to the small diameter burner section of each of said burners.

4,553,926

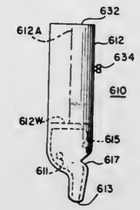
HOLDER COMBINED WITH INSTRUMENT

Serge Crespy, P.O. Box 383, Collingwood, Ontario, Canada (L9Y 3Z7)

Continuation-in-part of Ser. No. 509,606, Jun. 30, 1983, Pat. No. 4,522,584, which is a division of Ser. No. 372,694, Apr. 28, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,497

Int. Cl.⁴ F23Q *2/32;* **A63H** *5/00*

U.S. Cl. 431—253 **8 Claims**



1. A cigarette lighter holder comprising:

(a) a pocket sized housing;

(b) a whistle housed in a lower portion of said housing and having whistle walls, a breath input hole, a sound output hole, and a transforming cavity for transforming a breath input into a sound output, said breath input hole being on a first end of said housing;

(c) a lighter cavity within said housing and having an open top at a second end of said housing, said second end being opposite said first end, said lighter cavity shaped and adapted at least partially to receive a cigarette lighter, said lighter cavity bounded by closed side wall portions and by a bottom wall completely closing off said lighter cavity from said breath input hole, said side wall portions, bottom wall, and whistle walls all being integral portions of said said housing; and

(d) securing means to clampingly secure side walls of a cigarette lighter within said lighter cavity, said securing means operable to resist movement of a cigarette lighter out of said lighter cavity.

4,553,927

IGNITOR PROBE ASSEMBLY AND CERAMIC INSULATOR THEREFOR

Raymond L. Collins, Jr., 373 Atterbury Blvd., Hudson, Ohio 44236

Filed Feb. 13, 1984, Ser. No. 579,278

Int. Cl.⁴ H01T *13/04;* **F23Q** *3/00*

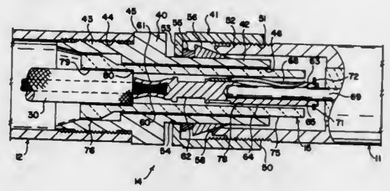
U.S. Cl. 431—264 **7 Claims**

1. An assembly for removably installing an electric ignitor probe within a burner comprising:

pipe means for positioning the ignitor into the burner, said pipe means having a threaded end;

first fitting means having a bore extending axially therethrough, a first end with threads matingly engaging said threaded end of said pipe means, a second and cylindrically configured, nut means interposed between said first and second ends for rotatively manipulating said first fitting means relative to said pipe means;

second fitting means having a mouth providing internal threads engageable with one end of the ignitor probe and a back wall having an aperture therein concentric with said internal threads for receipt of said second end of said first fitting means;



means for rotatably securing said second fitting means to said second end of said first fitting means and positioning said second end substantially concentrically within said mouth of said second fitting means; and

ferrule means affixed to said second end of said first fitting means, positioned within said mouth of said second fitting means and engageable with said end of the ignitor probe when the latter is threadably engaged with said second fitting means.

4,553,928

SWITCHING DEVICE FOR PHOTOFLASH UNIT

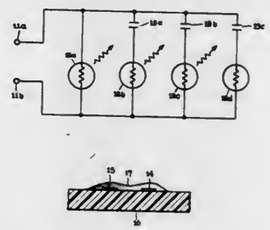
Steven C. Lorenzen, Charleston, and Vaughn C. Sterling, Mattoon, both of Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,551

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.⁴ F21K *5/02;* **H01B** *1/02;* **H01H** *39/00*

U.S. Cl. 431—359 **10 Claims**



1. A radiant energy responsive switch composition suitable for a photoflash lamp unit which employs a low-voltage electrical circuit comprising in weight percent approximately 55–65% silver oxide, approximately 20–30% oxidized copper metal particulates, approximately 1–3% of an organic polymer binder serving as a fuel during conversion of the silver oxide, and approximately 1–3% of a soluble thermoplastic polyhydroxyether polymer binder serving to provide adhesive bonding action for said switch composition after conversion of the silver oxide takes place, the ratio of organic polymer binder serving as a fuel to the silver oxide not exceeding about 5:100.

7. An improved photoflash lamp unit comprising:

(a) a pair of low voltage type flashlamps,

(b) an electrical circuit into which said lamps are arranged to fire individually and in sequence, and

(c) a solid state radiant energy switching device located external of the lamps and forming part of the electrical circuit, said switching device being located adjacent one of said lamps and disposed to receive radiant energy emit-

ted by that lamp, wherein the improvement comprises a switch composition comprising in weight percent approximately 55–65% silver oxide, approximately 20–30% oxidized copper metal particulates, approximately 1–3% of an organic polymer binder serving as a fuel during conversion of the silver oxide, and approximately 1–3% of a soluble thermoplastic polyhydroxyether polymer binder serving to provide adhesive bonding action for said switch composition after conversion of the silver oxide takes place, the ratio of organic polymer binder serving as a fuel to the silver oxide not exceeding about 5:100.

4,553,929

HEATING FURNACE

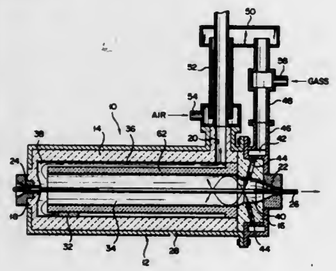
Tadayuki Kanatani, and Yasuo Sakata, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed May 31, 1984, Ser. No. 615,905

Claims priority, application Japan, Dec. 16, 1983, 58-192899[U]

Int. Cl.⁴ F27B *9/28*

U.S. Cl. 432—59 **13 Claims**



5. A heating furnace comprising:

a cylindrical furnace body closed at both ends and defining therebetween an inner peripheral surface, said furnace body including first and second end walls each having a penetrating hole and an exhaust port formed near the first end wall, and into which a material to be heated is inserted through the penetrating holes;

tubular means which is arranged in the furnace body at a prescribed interval from the inner peripheral surface of the furnace body and along the axis of the furnace body, said tubular means defining an interior to establish a heating chamber and an outer peripheral surface which defines, together with said inner peripheral surface of said furnace body, an air-gas passage communicating with the exhaust port, one end of the tubular means in contact with the first end wall of the furnace body, and the other end of the tubular means being positioned near the second end wall of the furnace body and provided with a communication passage effecting communication between the heating chamber and the air-gas passage; and

gas feeding means which is included in the first end wall of the furnace body to conduct combustion gas from the one end of the tubular means to the heating chamber and then to forward the combustion gas to the exhaust port through the communication passage and air-gas passage, wherein

said gas feeding means includes a cylindrical ignition chamber which is formed in the first end wall of the furnace body to be coaxial with the heating chamber and communicates with the heating chamber, and said gas feeding means further includes at least one ejection nozzle formed in the first end wall to open to the peripheral surface of the ignition chamber, the ejection nozzle extending along the tangential direction of the peripheral surface of the ignition chamber and being inclined toward the second end wall of the furnace body, and causing the combustion gas to be ejected in a whirling state toward the second end wall of the furnace body along the inner surface of the tubular means.

4,553,930

METHOD AND APPARATUS FOR THE HEAT TREATMENT OF MATERIALS

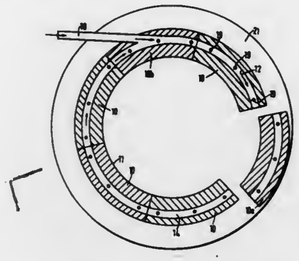
Robert W. Cox; Derek A. Jones, both of Solihull; David L. Walker, Hope Park, and David Hands, Salop, all of England, assignors to British Gas Corporation, London and Rubber and Plastics Research Assoc. of GB, Salop, both of, England

Filed Jul. 12, 1983, Ser. No. 513,142

Claims priority, application United Kingdom, Jul. 17, 1982, 8220782

Int. Cl.⁴ F24J *3/00*; B29D *29/00*; A23P *1/00*

U.S. Cl. 432—120 **12 Claims**



1. In an apparatus for the heat treatment of a product, including a metallic, generally annular heat transfer members for transmitting heat to the product, the latter members comprising a plurality of separate segments joined together in an operationally separable manner, the improvement comprising means defining a respective gas distribution passageway within each said segment, means defining exhaust outlets in said segments, said passageways together defining a closed loop path for receiving and circulating around the heat transfer members hot permanent gas from a hot gas source, and at least one elongate heat transfer passageway formed within each said segment of the heat transfer assembly, one end of each said passageway communicating with said closed loop path defined by the gas distribution passageways and the other end communicating with atmosphere via said exhaust outlet.

4,553,931

HEAT-RESISTING FURNACE ROLL

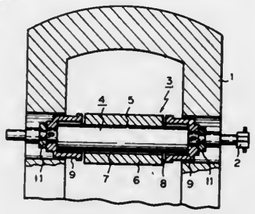
Sadayuki Wachi, Wakayama; Kenichi Ohiwa, Osaka; Yasuo Shimada, Sennan, and Takao Hino, Toyonaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 21, 1984, Ser. No. 591,812

Claims priority, application Japan, Mar. 22, 1983, 58-48376; Jan. 18, 1984, 59-5682

Int. Cl.⁴ F27D *3/00*; B65G *13/06*

U.S. Cl. 432—246 **20 Claims**



1. A heat resisting furnace roll for transporting metal sheets, comprising a support roll and a ceramic sleeve fitted over said support roll to define a radial clearance therebetween wherein said ceramic sleeve is loosely fitted over said support roll even when said support roll exhibits maximum thermal expansion in both radial and longitudinal directions, said radial clearance provided between the outer periphery of the support roll and the inner periphery of the ceramic sleeve, and an axial clearance provided at both axial ends of said ceramic sleeve.

4,553,932

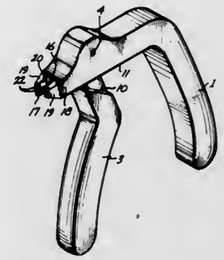
METHOD AND IMPLEMENT FOR PULLING BONDED ORTHODONTIC BRACKETS OFF TEETH

Maclay M. Armstrong, 17001 - 14th NW., Seattle, Wash. 98177; John R. Rogers, Bellevue, Wash., and Steven A. Houser, Everett, Wash., assignors to Maclay M. Armstrong, Seattle, Wash.

Filed Apr. 29, 1983, Ser. No. 490,092

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—4 **21 Claims**



1. A puller for pulling off a tooth an orthodontic bracket bonded to the tooth which bracket has at least one wing, comprising pulling means engageable with a wing of the orthodontic bracket, second-class force-applying lever means for exerting a pulling load force on said pulling means much greater than the power force applied to said lever means while said reaction means is simultaneously applied to the tooth including a lever arm having a fulcrum adjacent to one end, the opposite of said lever arm forming a handle, said pulling means being connected to said lever arm at a location at the same side of said fulcrum as said handle and spaced from said fulcrum a distance which is a small fraction of the length of said lever arm, and reaction means for applying reaction force from said fulcrum to the same tooth simultaneously with the application of pulling force to said pulling means by said force-applying lever means.

4,553,933

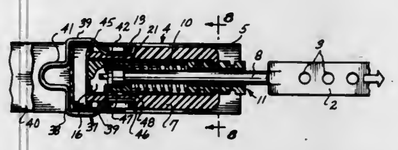
FORCE-ADJUSTABLE AND DISCONNECTIBLE CONNECTOR FOR ORTHODONTIC HEADGEAR

Maclay M. Armstrong, 17001 - 14th Northwest, Seattle, Wash. 98177, and Steven A. Houser, Everett, Wash., assignors to Maclay M. Armstrong, Seattle, Wash.

Filed Jan. 23, 1984, Ser. No. 573,100

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—5 **9 Claims**



1. A force-producing connector for orthodontic headgear including force-reaction means engageable with the head or neck of a wearer, force-applying means for applying force to the wearer's jaw, a helical compression spring, means for applying force produced by the spring to the force-reaction means and the force-applying means, abutment means engageable by the spring and adjusting means for altering the effective spring length and consequently the force produced by the spring on the force-reaction means and the force-applying means by supporting the abutment means in different positions axially of the spring, the improvement comprising latch means including a first component carried by the abutment means and movable therewith axially of the spring and a second component latchingly engageable with said first component by relative turning of said first and second components about the axis of the spring for limiting movement of the abutment means axially of the spring.

4,553,934

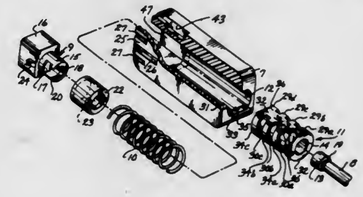
FORCE-ADJUSTABLE AND DISCONNECTIBLE CONNECTOR FOR ORTHODONTIC HEADGEAR

Maclay M. Armstrong, 17001 - 14th Northwest, Seattle, Wash. 98177, and Steven A. Houser, Everett, Wash., assignors to Maclay M. Armstrong, Seattle, Wash.

Continuation-in-part of Ser. No. 573,100, Jan. 23, 1984,. This application May 1, 1984, Ser. No. 606,073

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—5 **16 Claims**



1. A force-producing connector for orthodontic headgear including force-reaction means engageable with the head or neck of a wearer, force-applying means for applying force to the wearer's jaw, a helical compression spring, means for applying force produced by the spring to the force-reaction means and the force-applying means, a casing, abutment means engageable by the spring and carried by the casing and interengageable means for holding the abutment means relative to the casing in different positions axially of the spring to alter the effective spring length and consequently the force produced by the spring on the force-reaction means and the force-applying means, the improvement comprising the interengageable means having spaced projections on the abutment means which form grooves between adjacent projections, said grooves constituting socket means, and projection means engageable in said socket means.

4,553,935

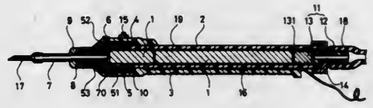
APPARATUS FOR WAXING-UP

Masato Ueno, Hiroshima, Japan, assignor to Kyocera Corporation, Japan

Filed Dec. 20, 1983, Ser. No. 566,174

Int. Cl.⁴ A61C *3/00*

U.S. Cl. 433—32 **16 Claims**

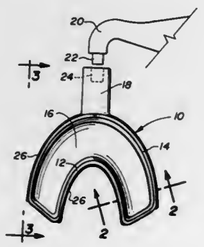


1. An apparatus for melting a bar of wax having a front face and directing a flow of the molten wax, the apparatus comprising:

a casing which accommodates said bar of wax;

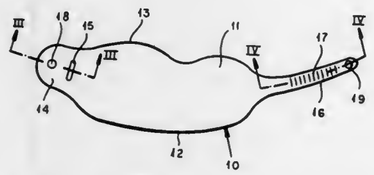
a nozzle associated with the front of said casing and adapted to receive the flow of molten wax;
a substantially flat heating plate disposed at the rear of said nozzle and positioned substantially parallel to said front face of said bar of wax, and;
feed means for feeding said bar of wax against said heating plate,
wherein said heating plate melts the front of said bar of wax so that the molten wax flows through said nozzle.

4,553,936
DENTAL IMPRESSION TRAY AND METHOD OF USE
Wu-Lan Wang, Milford, Del., assignor to Dentsply Research & Development Corp., Milford, Del.
Filed Jul. 31, 1984, Ser. No. 636,175
Int. Cl.[4] A61O *9/00*
U.S. Cl. 433—37 **15 Claims**



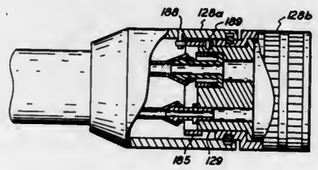
1. For use with dental impression material capable of being polymerized by exposure to actinic light, a dental impression tray curved sufficiently to receive at least a partial arch-shaped group of teeth and is channel-shaped in cross-section and wider than the teeth to be received therein, said tray being formed from relatively rigid material capable of transmitting actinic light and having a recess adapted to hold a predetermined amount of said impression material for forming the impression of opposite surfaces of said teeth thereinto, light-receiving means integral with said tray and adapted to receive and transmit light from said light-receiving means to dental impression material held in said recess to effect polymerization thereof to a degree that it has a permanent elastomeric form.

4,553,937
TOOTH MATRIX BAND
Till Ropers, Alter Marktplatz 4, D-2162 Steinkirchen, Fed. Rep. of Germany
Filed Jun. 27, 1984, Ser. No. 625,072
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323085
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—39 **9 Claims**



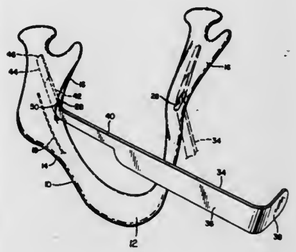
1. A matrix band adapted to encircle a tooth comprising a tooth-encircling central portion formed unitarily with a pair of end portions, one of said end portions being of a width less than that of said central portion and constituting a tab provided with a slot adapted to extend substantially vertical upon said band encircling a tooth, the other of said end portions being of a width less than that of said central portion and of said tab, said other of said end portions forming a tongue adapted to pass through and anchor in said slot whereby upon passage of said tongue through said slot said band can be tightened around a tooth by pulling on said tongue relative to said tab, said end portions having greater thicknesses than said central portion.

4,553,938
LOW TORSIONAL RESTRAINT INSTRUMENT HANDPIECE HOSE
Robert A. Olsen, Palatine, Ill., assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 10, 1983, Ser. No. 550,343
Int. Cl.[4] A61C *1/08*
U.S. Cl. 433—126 **3 Claims**



1. A hose including a plurality of elongated and generally parallel flexible conduits or connection to an instrument handpiece, wherein the improvement comprises:
a plurality of said conduits having portions of their lengths unattached to each other for independent flexing and twisting movement of said unattached portions; and at least two of said conduits each being equipped with individual swivel connecting means permitting separate and independent swivel action of each such conduit; whereby, resistance to twisting of said hose adjacent the handpiece end thereof and the restoring torque of said hose at said handpiece end is reduced by the absence of attachment between corresponding portions of said plurality of conduits, and by the separate and independent swivel action of each of said conduits equipped with said swivel connecting means, as said conduits are twisted and untwisted about each other,
said hose further including a flexible outer tube that extends at least partially along the length of said hose and contains all of said conduits, a coupling for joining said hose to said handpiece comprising a two-section swivel coupling having one section attached to said outer tube and the other adapted to be removably secured to said handpiece; said sections being generally cylindrical with one of said sections partially received by the other of said sections for free rotation with respect to each other; and retaining means for preventing longitudinal separation of said sections,
said two-section swivel coupling including rotation-limiting means for limiting the extent of rotation of one of said sections with respect to the other of said sections; said rotation-limiting means comprising a ring rotatably supported on one of said sections and rotatably received within the other of said sections; said ring having a pair of arms projecting axially in opposite directions therefrom; a stop element projecting radially from one of said sections and engageable with one of said arms for limiting the extent of rotation of said section relative to said ring; the other of said sections also having a stop element engageable with the other of said arms for limiting the extent of rotation of said other section with respect to said ring.

4,553,939
TOOL FOR FORMING A RECESS FOR A DENTAL IMPLANT
Harold D. Roberts, 8115 Adera, Vancouver, B.C., Canada (V6P 5E4)
Filed Jun. 27, 1984, Ser. No. 625,214
Int. Cl.[4] A61C *3/02*
U.S. Cl. 433—144 **4 Claims**



1. A tool for forming a reduced-width secondary recess as an extension of a primary recess in a ramus portion of a mandible for the purpose of installing a reduced-width portion of an implant in the secondary recess, said tool comprising
a gripping handle,
a forwardly extending shank on said handle having an upwardly angled forward portion, said forward portion having a cross sectional dimension of height and thickness capable of being received in a primary recess which has been cut in the ramus portion,
and an extension of reduced thickness on the forward end of said shank arranged to form the reduced width secondary recess by manually forcing said extension into bone area at an end of the primary recess,
said upwardly angled forward portion having a thickness of approximately 2 mm. and said reduced thickness extension having a thickness of approximately 1 mm.

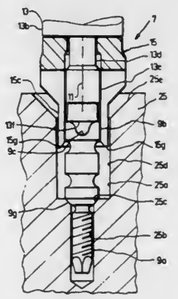
4,553,940
VISIBLE LIGHT CURABLE DENTAL COMPOSITIONS
Francis F. Koblitz, York, Pa., and Roy L. Smith, Milford, Del., assignors to Dentsply Research & Development Corp., Milford, Del.
Division of Ser. No. 550,747, Nov. 10, 1983, Pat. No. 4,491,453, which is a continuation of Ser. No. 406,462, Aug. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 323,313, Nov. 20, 1981, abandoned, which is a continuation of Ser. No. 182,626, Aug. 29, 1980, abandoned. This application Sep. 18, 1984, Ser. No. 652,172
Int. Cl.[4] A61K *6/08*
U.S. Cl. 523—115 **3 Claims**

1. A moldable dental restorative composition hardenable by irradiation with visible light, passes American Dental Association Specification No. 27 for color stability and comprising a blend of:
a major proportion of an inorganic filler, and
a minor proportion of a resin component having a viscosity of between about 5,000 and 70,000 centipoises at 25° C. comprising:
a binder resin comprising bis-GMA reacted with a diisocyanate,
a polymerizable acrylic diluent monomer present in an amount sufficient to dissolve said binder resin, and
a photosensitizing system comprising:
from about 0.05% to about 0.50% by weight of said resin component of a non-aromatic alpha diketone, and
an amine reducing agent in an amount sufficient to improve the photocatalytic activity to visible light of said alpha diketone in said restorative composition,
said inorganic filler and said resin component being present in relative amounts such that said restorative composition has a viscosity suitable for filling teeth.

4,553,941
ACETAL AND HEMIACETAL DENTIN AND ENAMEL ADHESIVE PRIMERS
Steven M. Aasen, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 19, 1984, Ser. No. 662,729
Int. Cl.[4] A61K *6/08*
U.S. Cl. 433—228.1 **8 Claims**

1. A primer-coated dentin surface comprising a layer of a liquid primer composition comprising acetal or hemiacetal adjacent said dentin surface.

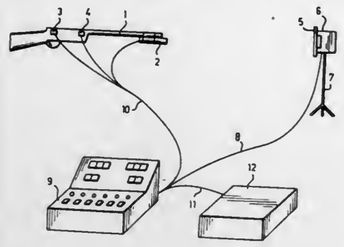
4,553,942
DEVICE INCLUDING A SCREW PIN AND A DRIVEN MEMBER FOR SCREWING THE PIN INTO A TOOTH
Franz Sutter, Niederdorf, Switzerland, assignor to Institute Straumann AG, Waldenberg, Switzerland
Filed Nov. 15, 1984, Ser. No. 671,695
Claims priority, application Switzerland, Nov. 17, 1983, 6183/83
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—225 **24 Claims**



1. An assembly comprising an axially elongated screw pin arranged to be screwed into a tooth and having a first end and a second end spaced apart in the axial direction, said screw pin has an axially extending threaded part extending from the first end toward the second end and an axially extending engagement part extending from the second end toward the threaded part, and a driven member for engaging said engagement part for driving said screw pin about the axis thereof so that said threaded part can be secrewed into a tooth, means for displacing said driven member out of driving engagement with said screw pin when said screw pin is fixed in a tooth, said engagement part has a slot formed axially into and being open at the second end of said screw pin, said driven member comprises an axially extending rod-like member having a first end and a second end, said rod-like member has an axially extending engagement projection at the first end thereof selectively engageable within said slot, an axially extending gripping member having a first end and a second end and said gripping member arranged to laterally enclose an axially extending portion of said rod-like member extending from the first end of said rod-like member, said gripping member has a plurality of axially extending resilient gripping tongues extending from the first end toward the second end thereof for temporarily laterally gripping and holding said engagement part, and said displacing means comprises that at least one of said slot and engagement projection has laterally spaced axially extending surfaces converging inwardly toward one another in the direction toward the respective first end of said screw pin and said rod-like member so that said engagement projection of said

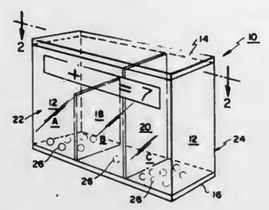
rod-like member moves axially out of said slot when said screw pin is fixed in a tooth.

4,553,943
METHOD FOR SHOOTING PRACTICE
Raimo Ahola; Harri Kopola, and Risto Myllylä , all of Oulu, Finland, assignors to Noptel Ky, Oulu, Finland
Filed Apr. 2, 1984, Ser. No. 595,922
Claims priority, application Finland, Apr. 8, 1983, 831183
Int. Cl.⁴ F41G *3/26*
U.S. Cl. 434—22 **7 Claims**



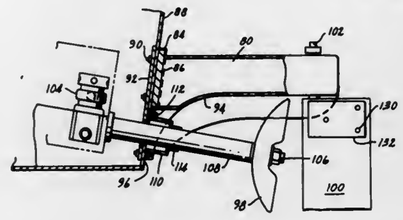
1. A method for analyzing the aiming and firing process in shooting practice, comprising:
a. attaching an optical electromagnetic radiation light transmitter to the gun which is used for shooting process;
b. actuating said light transmitter to produce a light beam at least during the aiming and firing process;
c. converting the trajectory of the hitting point of said light beam on a target surface, with an electro-optical device having a position sensitive detector, to continuous electric signals representing continuously the position of the hitting point of said beam on said target surface;
d. generating a timing signal by a sensor attached to the gun and reacting to the movement of a drive element, as a trigger, parts attached thereto, firing pin and butt, moving when said gun is discharged for determining the discharge instant of said gun;
e. further processing said continuous electric signals representing the position of the hitting point of said beam on said target surface and said timing signal by a control, display and analyze unit connected to said electro-optic device and said sensor generating a timing signal; and
f. displaying the information in the further processed signals.

4,553,944
MATHEMATICAL TEACHING DEVICE
Maureen Flanagan, 49½ Silver St., Middletown, Conn. 06457
Filed Feb. 8, 1985, Ser. No. 699,578
Int. Cl.⁴ G09B *23/02*
U.S. Cl. 434—191 **10 Claims**



1. A mathematical teaching device for aiding young persons in learning the basics of mathematics comprising a closed container formed by a base, a top plate, a front plate, a back plate and endwalls, said container has a first panel forming a sealed first compartment with one endwall, base, top plate, face plate and back plate of said container, and the second panel forming a second compartment adjacent the first panel and a third compartment adjacent the other endwall of the container wherein said latter two compartments communicate with each other thorugh an opening formed in the second panel between said second and third compartments, a number of items sealed in said first compartment and a number of items located in said second and third compartments wherein the total items in the second and third compartments equals the number of items in the first compartment.

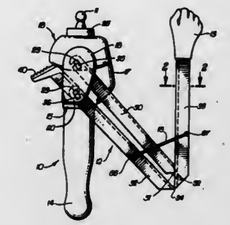
4,553,945
BOAT PROPULSION
Daniel S. Foster, Grosse Pointe Woods, Mich., assignor to Foster Marine Products, Inc., Warren, Mich.
Filed Dec. 16, 1982, Ser. No. 450,287
Int. Cl.⁴ B63H *5/16*
U.S. Cl. 440—51 **4 Claims**



1. A safety shroud for providing a propeller housing, mounting a rudder and controlling flow of water to the propeller, said shroud being adapted for mounting on the rear surface of a boat transom, said shroud comprising inner and outer shaped shells of substantially uniform wall thickness; said outer shell having an outwardly extending flange for attachment to the transom, a longitudinally extending hollow downwardly open reinforcing strut, and outwardly and downwardly curved edge portions; said inner shell having a curved downwardly concave transverse section and extending to the rear of said upper shell, the forward end of said inner shell being longitudinally rearwardly and upwardly curved from a position adjacent the bottom edge of the transom to overlie the propeller zone to cooperate with the transverse curvature to define a water guide channel effective to produce an upward flow of water in which a propeller is positioned for surface running the transverse vertical section of said inner shell at the propeller zone conforming generally to the propeller arc, the portion of the inner shell rearwardly from the propeller zone being of substantially uniform transverse cross-section and the portion of the inner shell between the propeller zone and its forward end having its bottom surface downwardly concave in both longitudinally and transverse vertical cross-section, said inner and outer shells being formed of reinforced plastic and permanently bonded together in zones of substantial area defined by identically shaped curved lateral edge portions.

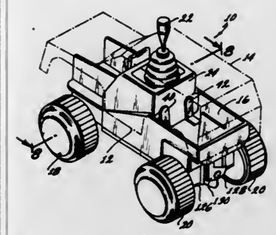
4,553,946
ACTION TOY AND GAME
R. Lee Miller, Grand Rapids, Mich., assignor to Hilco House, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 437,368, Oct. 28, 1982, Pat. No. 4,457,097. This application Apr. 2, 1984, Ser. No. 595,822
Int. Cl.⁴ A63H *3/14*
U.S. Cl. 446—327 **6 Claims**

1. A puppet toy, comprising:
(a) a configured body support;
(b) an integral limb assembly comprising an upper limb element and a forearm element, each comprising a base wall and a pair of integral, perpendicular side walls, said upper limb element being pivotally carried by said body support at a first pivot point, the base wall of said upper limb element depending into said forearm element along the base wall of said forearm element, said forearm element being pivotally carried on said upper limb element at a second pivot point located at the joinder of said base walls, said second pivot point comprising an integral extension of said base walls which is reduced in thickness from that of said base walls whereby said forearm element can pivot with respect to said upper limb element by the flexing movement of said integral extension, said forearm limb element having a free end displaced from said second pivot point, said upper limb element and said forearm limb element having an at-rest position and a striking position;
(c) activation means for activating said upper limb element



and said forearm limb element such that said upper limb pivots about said first pivot point in a first direction of rotation and said depending forearm element simultaneously pivots about said second pivot point in a second direction of rotation opposite to said first direction of rotation, so as to extend said free end of said extendng limb forward to said body support from said at-rest position to said striking position, said activation means including a first triggering means for controlling said activation means, said first triggering means disposed relative to said body support so as to allow an operator to grasp and carry said body support in one hand while controlling said activation means simultaneously with the same hand; and
(d) resilient means for biasing said upper limb and said forearm limb to said at-rest position.

4,553,947
SHIFTING MECHANISM FOR MOTORIZED TOY
Herbert Weiland, San Pedro; Michael Nuttall, So. Pasadena, both of Calif., and Michihiro Kozuka, Tokyo, Japan, assignors to Tomy Kogyo Corporation, Inc., Japan
Filed Apr. 16, 1984, Ser. No. 601,006
Claims priority, application Japan, Apr. 25, 1983, 58-61887[U]
Int. Cl.⁴ A63H *29/00, 29/24*
U.S. Cl. 446—443 **18 Claims**



1. A shift mechanism for a motorized toy which comprises:
a chassis housing;
a shift lever movably mounted on said housing so as to move back and forth along an X axis and a Y axis;
an electric motor fixedly mounted on said housing, said electric motor capable of producing a rotary output in both a clockwise and a counterclockwise direction;
an electric power supply connected to said electric motor to power said motor;
an elongated output shaft having ends, said elongated output shaft rotatably mounted in said chassis housing;
a mechanical linkage means connecting between said motor and said output shaft for transferring the output of said motor to said output shaft;
said mechanical linkage means connected to said elongated shaft intermediate its ends;
a transfer gear located at each of said ends of said shaft;
a first axle located proximal to one of the ends of said shaft, a second axle located proximal to the other of said ends of said shaft, each of said first and said second axles positioned perpendicular to said shaft, each of said axles including an axle gear located thereon, the transfer gear on one of said ends of said shaft mating with the axle gear on said first axle and the transfer gear on the other of the ends of said shaft mating with the axle gear on said second axle;
an electric linkage means operatively associated with said motor for controlling the direction of rotation of said electrical motor;
an X axis control means for transfer of motion of said shift lever about said X axis to said mechanical linkage means for controlling transfer of said output of said motor to said output shaft;
a Y axis control means for transferring motion of said shift lever about said Y axis to said electrical linkage means for controlling at least the direction of rotation of said motor.

4,553,948
OIL PRESSURE TYPE PNEUMATIC TORQUE WRENCH
Koji Tatsuno, Ando, Japan, assignor to Uryu Seisaku, Ltd., Osaka, Japan
Filed Jan. 3, 1984, Ser. No. 567,801
Claims priority, application Japan, Mar. 4, 1983, 58-32101[U]
Int. Cl.⁴ B25D *15/00*
U.S. Cl. 464—25 **1 Claim**



1. An oil pressure type impulse torque generator for an oil pressure type pneumatic torque wrench, comprising:
a housing;
a generally cylindrical liner having a central axis of rotation, mounted in said housing for rotation about said axis of rotation, said liner having an inner circumferential surface having a pressure-transmitting fluid-filled, hermetically sealed cavity therein, said cavity having a generally eliptical cross section perpendicular said axis of rotation, said generally elipical cross section having a minor axis and a major axis larger than said minor axis, said minor axis and said major axis crossing each other perpendicularly on said axis of rotation at a respective mid-point of said major axis and said minor axis, said liner having first and second radially inwardly extending liner seal surfaces at respective opposite ends of said major axis and third and fourth radially inwardly extending liner seal surfaces at opposite ends of a first line parallel to and spaced a small predetermined distance from said minor axis;
a pneumatically driven rotor for rotatively driving said liner;
a main shaft having a main axis coextensive with said axis of

rotation, mounted in said housing for concentric rotation in said cavity about said axis of rotation, having two slots radially extending therein in opposite directions, and first and second radially outwardly projecting shaft seal surfaces located at opposite ends of a second line extending through and perpendicular to said main axis, said second line extending parallel to and spaced a distance equal to said small predetermined distance from a third line through and parallel to said main axis, said third line extending perpendicularly to a diametrical line extending centrally through said two slots, such that said first and second shaft seal surfaces respectively frictionally engage said third and fourth liner seal surfaces only when said liner and said main shaft are in a first relative angular orientation, are spaced in the same direction from said third and fourth liner seal surfaces at a second relative angular orientation of said liner and said shaft displaced 180° from said first orientation, and be spaced from said first and second liner seal surfaces at third relative angular orientations of said liner and said shaft displaced 90° from said first orientation;

only two blades, slidably mounted in respective ones of two slots and biassed radially outwardly therein so as to frictionally engage said first and second liner seal surfaces when said liner and said main shaft are in said first relative angular orientation; and

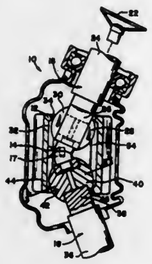
means for applying a rotative impulse force on said first and second blades through said fluid during frictional engagement of said first and second shaft seal surfaces and said first and second blades with said first, second, third and fourth liner seal surfaces, respectively, at only said first relative angular orientation of said liner and said shaft.

4,553,949

UNIVERSAL JOINT WITH CLEARANCE ELIMINATION ELEMENTS

Kevin B. Parks; David D. Jordan, and Alistair G. Taig, all of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Aug. 1, 1983, Ser. No. 519,334
Int. Cl.⁴ F16D *3/20*
U.S. Cl. 464—153 **3 Claims**



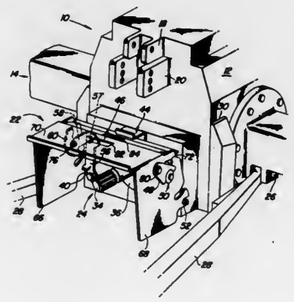
1. A universal joint comprising a housing having a pair of openings leading to a cavity for receiving an input assembly with an input shaft and an output assembly with an output shaft, the input assembly being rotatable to rotate the housing which in turn rotates the output assembly, the input assembly and the output assembly defining variable angular settings relative to the housing as the input assembly, output assembly and housing rotate, the input and output assemblies each including a pair of arcuate bearing shoes rotatable about separate parallel axes, and means cooperating with the bearing shoes, the input and output shafts and the housing to reduce play therebetween, characterized by said means comprising at least one wedge-like element disposed in engagement with said housing and one bearing shoe of each said pair of bearing shoes, each said wedge-like element defining a pair of frusto-conical surfaces engageable with matching frusto-conical surfaces for said input assembly and said output assembly, respectively, a resilient member disposed between said housing and said one wedge-like element to retain said frusto-conical surfaces in engagement with said matching frusto-conical surfaces regardless of any wear of the components of the universal joint.

4,553,950

FLIP-UP SHIELD ASSEMBLY FOR TRACTOR POWER TAKE-OFF

Christian M. Teich, Mannheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jan. 18, 1985, Ser. No. 692,463
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402065
Int. Cl.⁴ F16D *3/84*
U.S. Cl. 464—176 **12 Claims**



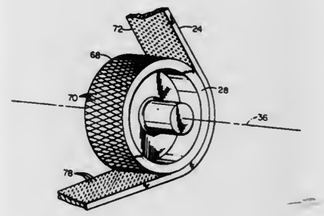
1. In a flip-up PTO shield assembly for a tractor having a PTO shaft protruding from a wall thereof, the shield assembly including an inverted, U-shaped, shield member having a top wall and spaced sidewalls extending above and to the sides, respectively, of the PTO shaft when the shield member is in a shaft guarding position, mounting slots and orientation notches provided in the sidewalls of the shield member, means for mounting tne shield member on the tractor wall including pivots positioned through the mounting slots and forming a horizontal axis for slidably and swingably securing the shield member to the means for mounting for movement radially to and around the horizontal axis, the means for mounting having abutment members extending across the path of movement of the tractor proximate edges of the sidewalls and engageable within the orientation notches to hold the shield member in one of a plurality of positions established by the orientation notches when the shield member is slidably and swingably moved from one of the plurality of positions to another; the improvement comprising: said mounting slots provided in the sidewalls having a generally arcuate shape with first and second portions thereof extending generally horizontally and vertically, respectively, when the shield member is in a position in which the top wall forms a horizontal plane; therebeing at least two vertically spaced orientation notches in the tractor proximate edge of each sidewall, the lower notch in each sidewall being positioned from the first portion of the corresponding mounting slot a distance such that the corresponding abutment member engages therein when the pivots are in the first portions of the mounting slots and the shield member is held in a first shaft guarding position in which the top wall is generally horizontal, and the upper notch in each sidewall is positioned from the upper end of the second portion of the corresponding mounting slot a distance such that the corresponding abutment member engages therein when the pivots are in the upper ends of the second portions of the mounting slots and the shield member is held in a second shaft guarding position below the first shaft guarding position.

4,553,951

NON-SLIP PULLEY AND BELT DRIVE

Robert J. Pavone, South Windsor, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Jun. 2, 1983, Ser. No. 500,383
Int. Cl.⁴ F16H *7/02;* **G01D** *15/16*
U.S. Cl. 474—148 **18 Claims**



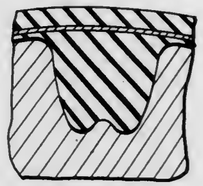
1. A drive for driving a driven member back and forth in one coordinate direction, said drive comprising: a driven member movable back and forth in one coordinate direction between first and second limits, a pair of pulleys spaced from one another in said coordinate direction and each rotatable about an axis perpendicular to said coordinate direction, one of said two pulleys being a drive pulley and the other an idler pulley, an endless metal belt trained about said two pulleys so as to have a first run extending along and parallel to said coordinate direction and a second return run, means for moving said two pulleys toward and away from one another along said coordinate direction so that their displacement from one another may be set to tension said belt and eliminate slack in both of said runs, means connecting said driven member to said belt along said first run, and means driving said drive pulley in either direction about its aforesaid axis to in turn drive said belt and said driven member, said drive of said metal belt as a result of said connection to it of said driven member being such that as said drive pulley is rotated in one direction or the other to move said driven member between said first and second limits of its movement in said one coordinate direction a given point on said belt will never pass over said drive pulley more than once and any part of said belt which passes over said drive pulley will not pass over said idler pulley, said metal belt comprising a main body made of one metal and a soft layer of another metal carried by said main body, said metal of said main body having a yield strength substantially higher than that of said soft layer and said metal of said main body being substantially harder than said metal of said soft layer, said soft layer having a face engaging said drive pulley, said face of said soft layer before said belt is initially trained over said two pulleys having a substantially smooth surface and said drive pulley having a circumferential face engaging said metal belt which drive pulley face has on it an array of small protuberances made of a metal harder than that of said soft layer of said belt so that said proturberances of said drive pulley, when said belt is first trained over said two pulleys and said drive pulley driven in both directions with said belt tensioned by said two pulleys, press into said smooth face of said softer metal of said belt and form therein permanent depressions arranged in an array matching that of said protuberances which mesh with said protuberances to thereafter provide a positive slip-free drive between said drive pulley and said belt with each depression of said belt always receiving the same proturberance of said pulley.

4,553,952

TOOTHED-BELT AND TOOTHED-PULLEY TRANSMISSION

Giorgio Tangorra, Monza; Mario Cicognani, Milan, and Vincenzo Macchiarulo, Chieti, all of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Feb. 18, 1983, Ser. No. 467,793
Claims priority, application Italy, Feb. 26, 1982, 19873 A/82
Int. Cl.⁴ F16G *1/28;* **F16H** *55/30*
U.S. Cl. 474—153 **8 Claims**



1. A toothed-belt and toothed-pulleys transmission, comprising:

a toothed-belt comprising an annular body of elastomeric material having a tension-resistant structure embedded therein;

a plurality of deformable teeth formed from an elastomeric material, said teeth being cantilevered from one side of the annular body and having a body comprising side, top and bottom portions;

a plurality of grooves separating the individual teeth of said plurality of deformable teeth from one another;

a plurality of toothed-pulleys, said toothed-pulleys having a plurality of rigid teeth formed from a rigid material, said toothed-pulleys being further characterized by the presence of a plurality of grooves which separate the individual teeth of said plurality of rigid teeth, said grooves having bottom and side portions;

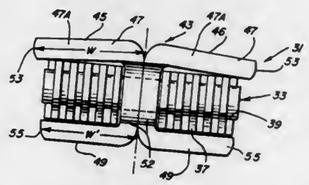
means for widening the bodies of the deformable teeth of the toothed-belt, said means being interposed between the tops of the deformable teeth of the toothed-belt and the bottom portion of the pulley grooves; said means for widening the bodies of the deformable teeth of the toothed-belt comprising at least one slot corresponding to the top of each tooth and at least one protuberance cantilevered from the bottom portion of the grooves of the toothed-pulleys' toothing, said protuberance being wedgeable into said slot.

4,553,953

CHAIN-BELT

Thomas J. Bock, Streamwood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 29, 1984, Ser. No. 645,189
Int. Cl.⁴ F16G *5/16*
U.S. Cl. 474—201 **8 Claims**



1. A power transmission chain-belt especially adapted to drivingly connect the pulleys of a pulley transmission wherein each pulley is constructed of a pair of generally conical flanges, said chain-belt comprising:

a plurality of sets of links, the adjacent sets of which are interleaved with one another;

each set of links defining a pair of sub-sets of links and each pair of sub-sets of links defining a space therebetween; and

pulley-engaging means associated with each pair of sub-sets of links to drivingly engage said pulley flanges as the chain-belt wraps a pulleys, said pulley-engaging means comprising a pair of generally C-shaped members, each member having a pair of spaced arms and a body portion joining the arms, the body portions of each pair abutting one another and each defining an aperture, pivot means extending through said apertures and through adjacent sets of interleaved links to thus permit articulation of the chain-belt; such that each arm of each member traverses a sub-set of links, and each arm has an end for engaging a pulley flange.

4,553,954

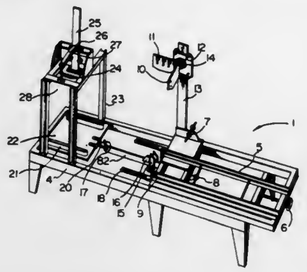
AUTOMATIC CASE ERECTOR AND SEALER

Peter C. Sewell, Vancouver; Gregory E. Rundle, Richmond, and Karl L. Hanson, Abbotsford, all of Canada, assignors to Western Packaging Systems, Ltd., Richmond, Canada

Continuation of Ser. No. 255,095, Apr. 17, 1981, abandoned. This application Sep. 16, 1983, Ser. No. 532,824

Int. Cl.⁴ B31B *5/02*

U.S. Cl. 493—309 **31 Claims**



1. A method of gripping a penetratable case flat on a case erecting apparatus which comprises impaling an edge of the flat with a sharp pin which extends into the flat between and parallel to the two outside surfaces forming the flat, wherein the case flat is constructed of corrugated cardboard and the pin extends into one of the spaces formed by the corrugation of the cardboard.

4,553,955

MULTI-ANGLE ADAPTER FOR FIXED ANGLE CENTRIFUGE ROTOR

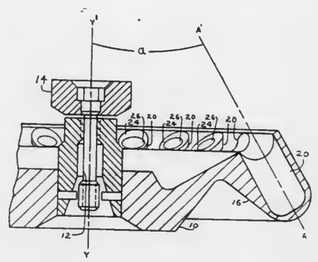
Kin C. Lam, Mountain View, and Ronald K. Williams, Milpitas, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 1, 1984, Ser. No. 616,331

Int. Cl.⁴ B04B *5/02*

U.S. Cl. 494—16 **4 Claims**

1. A rotor (**10**) for a centrifuge having a plurality of cavities (**20**) formed therein symmetrically positioned about the rotational axis of said rotor, and having a fixed angular relationship with the rotational axis of said rotor, said cavities comprising a non-circular cross-section having symmetry about at least one longitudinal plane; and an adapter (**24**) having a body with a cross-section similar to the cross-section of said rotor cavities such that said adapter may be matably inserted into a cavity in a plurality of rotational positions about a longitudinal axis of said cavity, said adapter having formed therein a receiving chamber (**26**) through an end surface of said adapter, said receiving chamber having an oblique angular relationship with a longitudinal axis of said adapter whereby an adapter can be matably inserted into a cavity of said rotor with a selected rotational alignment about said cavity axis to determine a select angular relationship of said receiving chamber with the rotational axis of said rotor.



4,553,956

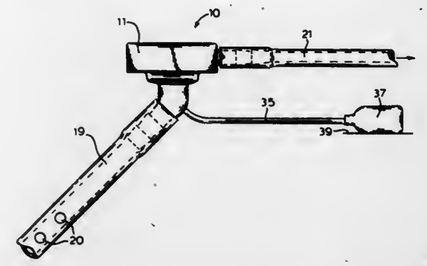
SHUNT VALVE AND METHOD OF USE

A. Bromley Muller, Kinnelon, N.J., assignor to Becton, Dickinson and Co., Paramus, N.J.

Continuation of Ser. No. 414,990, Sep. 3, 1982, Pat. No. 4,475,899. This application Sep. 11, 1984, Ser. No. 635,331

Int. Cl.⁴ A61M *27/00*

U.S. Cl. 604—9 **2 Claims**



1. An operable implantable ascites shunt valve comprising:

a housing containing a valve seat, inlet means for receiving ascites fluid from the peritoneal cavity and outlet means;

normally closed valve means movably positioned in said housing resting against said valve seat and responsive to fluid pressure in said inlet means for allowing fluid flow between said inlet means and said outlet means; and

manually activatable means for controllably contacting and forcing said valve means from said valve seat into an open position to assure fluid flow between said inlet means and said outlet means in the event said valve means is unresponsive to fluid pressure in said inlet means, said manually activatable means allowing manual activation at a location removed from said housing.

4,553,957

IRRIGATION/ASPIRATION HANDPIECE

Rodger W. Williams, and Charles W. Atwood, both of Nashville, Tenn., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed May 3, 1983, Ser. No. 491,222

Int. Cl.⁴ A61M *3/00*

U.S. Cl. 604—43 **20 Claims**

1. An improved apparatus for supplying fluid to and aspirating fluid from a surgical site, said apparatus comprising:

a handle member having first and second closed opposite ends and a hollow intermediate interior means forming a resivoir

inlet means for supplying fluid to the hollow interior portion of said handle member from said second end;

outlet means for conducting fluid out from said second end;

first cannula means extending from said outlet means at said second end of said handle member, through said hollow interior portion and out through said first end for aspirating fluid from said surgical site; and

second cannula means disposed in fixed positional relation to and circumscribedly about a portion of said first cannula means and extending and terminating from within said hollow interior portion out through said first end of said handle member, said second cannula means being radially



spaced from said portion of said first cannula means to define a flow passage between said first and second cannula means, said second cannula means having a first opening in fluid communication with said inlet and said flow passage positioned in fluid communication with said hollow interior means of said handle member and a second opening to said flow passage positioned outside said handle member and a second opening to said first end;

whereby said hollow handle intermediate interior means serves as a reservoir for fluid delivered thereto from said inlet means, and whereby pressurized fluid in said hollow handle interior portion is expelled therefrom through said first opening, said flow passage and said second opening.

4,553,958

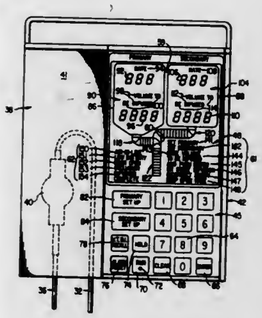
IV DELIVERY CONTROLLER

Andrew D. LeCocq, Columbia, Md., assignor to Quest Medical, Inc., Carrollton, Tex.

Filed Feb. 4, 1983, Ser. No. 463,976

Int. Cl.⁴ A61M *5/16*

U.S. Cl. 604—67 **31 Claims**



1. An apparatus for use in the infusion into a patient of a primary fluid from a primary container and a secondary fluid from a secondary container, the secondary fluid being infused at a first predetermined rate, such rate continuing until a predetermined volume of fluid is infused and the primary fluid sequentially being infused at a second predetermined rate, said apparatus comprising:

container display means providing a visible representation of the primary and secondary containers;

infusion data display means for displaying a first display, in association with the visible representation of the secondary container, of the first predetermined rate and instantaneous infusion data for fluid infused at the first predetermined rate, and for displaying a second display, in association with the visible representation of the primary container, of the second predetermined rate and instantaneous infusion data for fluid infused at the second predetermined rate, said infusion data display means displaying only the first display while fluid is being infused at the first predetermined rate, and only the second display while fluid is being infused at the second predetermined rate; and

flow activation display means for generating a visible indication of the activation of fluid flow from the primary and secondary containers to the patient.

4,553,959

URETHRAL CATHETER

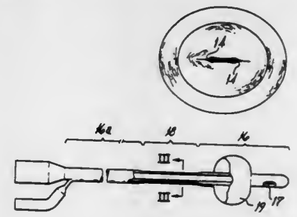
David S. Hickey, Fallowfield, and John C. Brocklehurst, Wilmslow, both of England, assignors to The Victoria University of Manchester, Manchester, England

Filed Jan. 21, 1983, Ser. No. 460,041

Claims priority, application United Kingdom, Jan. 27, 1982, 8202371

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—96 **11 Claims**



1. A urethral catheter comprising a resilient tube open at the proximal and distal ends respectively, the tube wall, throughout at least a portion of that part of the tube to be situated within the urethra, being deformable; having a certain normal cross-sectional area in an open, non-deformed state, to which it returns freely in the absence of external transmural pressure; being sufficiently compliant to conform freely to the internal shape of the urethral lumen thereby substantially preventing the by-pass of urine; and being sufficiently self supporting and flexural to an open configuration such that the maximum transmural pressure required to collapse the tube to half said normal cross-sectional area is 100 cm water gauge.

4,553,960

PERITONEAL FLUID TREATMENT APPARATUS, PACKAGE AND METHOD

Harrison Lazarus, 843 13th Ave., Salt Lake City, Utah 84103, and James A. Nelson, 1708 Forest Hills Dr., Salt Lake City, Utah 84106, assignors to Harrison Lazarus and James A. Nelson, both of Salt Lake City, Utah, a part interest

Division of Ser. No. 423,034, Sep. 24, 1982, Pat. No. 4,479,792, which is a continuation of Ser. No. 181,219, Aug. 22, 1980, Pat. No. 4,351,333, which is a continuation of Ser. No. 945,525, Sep. 25, 1978, abandoned, which is a division of Ser. No. 722,752, Sep. 13, 1976, Pat. No. 4,128,173, which is a continuation of Ser. No. 626,323, Oct. 28, 1975, abandoned. This application Jul. 20, 1984, Ser. No. 632,956

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—158 **6 Claims**

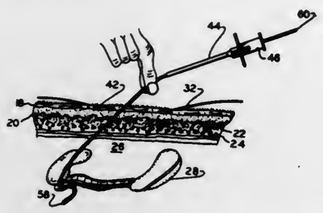
1. Peritoneal fluid treatment apparatus comprising:

intravascular catheter apparatus comprised of a first cannula connected to a hub and a stylet having handle means affixed at its first end and a sharp point at its second end, said stylet being removably positioned within said cannula so that said sharp point extends slightly beyond said cannula at the end opposite said hub, and wherein said stylet is removed from said cannula and hub after said cannula is positioned through the peritoneum;

flexible guide means sized from about 20 to about 50 centi-

meters in length and from about 0.5 millimeters to about 3 millimeters in diameter for insertion into the peritoneal cavity through said first cannula, said guide means being sized in cross-section to fit within said first cannula and in length to be substantially longer than said first cannula, said guide means having a first end which is blunt for insertion into the peritoneal cavity, and said guide means being a stainless steel piano-wire-like wire made of a refractory metal having substantial flexibility from its first end to a point from about one-third to one-half the length of said guide means measured from said first end and thereafter said guide means has less flexibility along its length to its second end;

a second cannula having a first end which remains anterior



the patient and a second end which is tapered and sized in cross-section to fit slidably and snugly about said guide means, said second cannula being a flexible plastic-like tube having a plurality of spaced apart apertures formed in it from its second end to a point about one-third to one-half along its length for insertion into the peritoneal cavity with said apertures substantially therewithin, said second cannula being inserted over said guide means upon removal of said first cannula, said second cannula being sized in length to be substantially longer than said first cannula and in cross-section sufficient to allow said guide means to pass therethrough; and

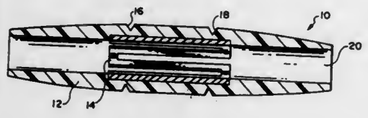
connector means adapted to the first end of said second cannula for connection to peritoneal fluid operation means upon removal of said guide means.

4,553,961

SUTURE SLEEVE WITH STRUCTURE FOR ENHANCING PACING LEAD GRIPPING

Peter J. Pohndorf, Miami Shores, and Walter H. Wesner, Plantation, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Apr. 18, 1984, Ser. No. 601,596
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—175 **26 Claims**



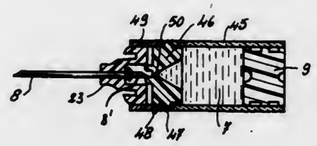
1. A suture sleeve assembly comprising a suture sleeve made of soft elastomeric material and means associated with the suture sleeve for enhancing gripping of a lead body by the suture sleeve, said suture sleeve comprising a tubular sleeve having a throughbore adapted to receive a pacing lead body and two spaced apart outer annular suture receiving grooves each adapted to receive a suture therein to fix said assembly to a pacing lead, said gripping enhancing means being made of a material which is different than the material of the suture sleeve and which is stiff but flexible, and said gripping enhancing means being positioned to extend within and longitudinally of an elongate axis of said suture sleeve in the area of and between said annular grooves thereby to disperse any stress placed upon said suture sleeve when sutures are tied in said annular grooves, and said suture sleeve assembly being radially compressible upon the placement and tying of a suture around said suture sleeve assembly in each annular groove to facilitate generally uniform gripping of the lead body by said suture sleeve assembly along the length of said gripping enhancing means.

4,553,962

MEDICAL SYRINGE

Jean-Louis Brunet, 14, rue Victor Hugo, 69002 Lyon, France

Filed Jan. 16, 1984, Ser. No. 570,772
Claims priority, application France, Jan. 17, 1983, 83 00891
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—198 **2 Claims**



1. A medical syringe comprising:

a barrel having one end adapted to be applied against the skin of a user for injection;

a plunger mounted on an opposite end of said barrel and spring biased so as to be driven toward said one end upon release;

an ampule containing a liquid medicament to be injected beneath the skin of said user, said ampule being slidably received in said barrel and movable toward said one end thereof, said ampule including:

a cylindrical glass body;

a piston received in one end of said body proximal to said plunger and slidable in said body,

a disk fixed in an opposite end of said body proximal to said one end of said barrel, said piston and said disk receiving between them an injection dose of said liquid medicament, said disk having a central thin-walled portion adapted to be perforated and a shoulder extending toward said one end of said barrel of a diameter less than that of said body,

a sleeve fixed on said shoulder of said disk,

a needle support slidably received in said sleeve and having a central boss aligned with said thin-walled portion, and

a hypodermic needle received in said boss and having a sharpened first end juxtaposed with but spaced from said thin-walled portion and a second end reaching toward said one end of said barrel; and

an obturator closing said one end of said barrel and adapted to be pierced by said needle when said ampule is driven toward said one end of said barrel by engagement of said plunger with said piston whereby said first end is then caused to pierce said thin-walled portion so that further displacement of said piston in said body by said plunger drives said medicament beneath the skin of the user.

4,553,963

ROLLER CLAMP CONTROLLER

Harvey T. Young, El Toro, Calif., assignor to American Hospital Supply Corp., Evanston, Ill.

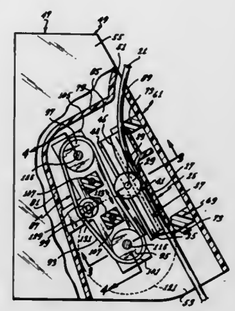
Filed May 16, 1984, Ser. No. 610,681
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—246 **20 Claims**

1. A controller for controlling the flow of fluid through a conduit from a source to a patient wherein the conduit has a flexible wall portion and a roller clamp having a body, a rotary

member which is mounted on the body for rotation and translation, and a ramp receives the flexible wall portion between the rotary member and the ramp and wherein the rotary member is rotatable and translatable to restrict the conduit at said flexible wall portion a selected amount to control the flow of fluid through the conduit, said controller comprising:

a supporting structure;

means for mounting the roller clamp on the supporting structure;



drive means on the supporting structure drivingly engageable with the rotary member of the roller clamp when the roller clamp is mounted on the supporting structure by said mounting means for rotating the rotary member while allowing the rotary member to translate to selectively restrict the conduit at the flexible wall portion; and

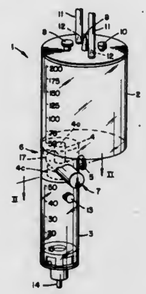
motor means for driving the drive means.

4,553,964

INFUSION APPARATUS

Hideki Sasaki, Hiroshima, Japan, assignor to Japan Medical Supply Co., Ltd., Hiroshima, Japan

Filed Feb. 27, 1984, Ser. No. 584,119
Claims priority, application Japan, Mar. 14, 1983, 58-35532[U]
Int. Cl.⁴ A61M *5/14*
U.S. Cl. 604—248 **12 Claims**



1. An infusion apparatus comprising a first upper burette, a second lower burette and a connector, said burettes communicating in series with each other through said connector, said connector having a first passageway therethrough for establishing communication between said first and second burettes, said connector having a second passageway therein communicating with and adapted to introduce air into said second burette, and directional control valve means positioned across both said first and second passageways and adapted to close said first passageway when said second passageway is opened and to open said first passageway when said second passageway is closed.

4,553,965

FLUID-EXPANSIBLE CONTRACEPTIVE TAMPON AND APPLICATOR

Shepard Conn, 27 Washington Pl., Metuchen, N.J. 08840, and Arnold Kushner, 110-27 Jewel Ave., Forest Hills, Queens, N.Y. 11375

Continuation of Ser. No. 516,665, Jul. 25, 1983, abandoned, which is a continuation of Ser. No. 208,011, Nov. 18, 1980, abandoned, which is a division of Ser. No. 906,984, May 17, 1978, Pat. No. 4,271,835. This application Jul. 6, 1984, Ser. No. 626,607
Int. Cl.⁴ A61F *13/20*
U.S. Cl. 604—286 **7 Claims**



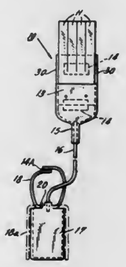
1. As a new use for a known material, the method of using a body of purposefully compressed, compression self-retentive, hydrophilic, fluid expansible material having a high coefficient of expansion and the capability of becoming resilient upon wetting as a barrier contraceptive by wetting said body with a spermicide and inserting said body intravaginally to act as a barrier to the os uteri and to fill the fornices of the upper vault of the vagina, including the steps of storing said body in a container adjacent the stored body of said spermicide and releasing said spermicide upon command to moisten said body prior to intravaginal insertion, wherein the body is shaped during compression from two discs of said material into a pair of folded umbrella configurations each having its apex pointed in the same direction, and joining said two discs; and inserting said compressed folded umbrella configuration into said container.

4,553,966

DEVICE FOR DRAINING BODY FLUIDS AND IRRIGATING SOLUTIONS

Wayne Korteweg, Ledyard, Conn., assignor to Americal Corporation, Mystic, Conn.

Filed Sep. 19, 1983, Ser. No. 533,222
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—317 **9 Claims**



1. A fluid collection and disposal system for utilization in connection with the drawing off of fluids during medical procedures or operations comprising a wicking material having a high capillary absorption capacity capable of being saturated to become a siphoning material when a portion thereof passes the edge of an area from which fluid is to be drawn; and means connected to said wicking material to receive said fluid; the wick material being separated into a plurality of sections or fingers which may be spread over the site of the procedure which is being performed.

4,553,967

WOUND CARE AND DRAINAGE SYSTEM HAVING HAND ACCESS PORT

Keith Ferguson, Scotch Plains, N.J., and Nancy McClees, Worthington, Ohio, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 14, 1983, Ser. No. 541,823
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—317 **18 Claims**



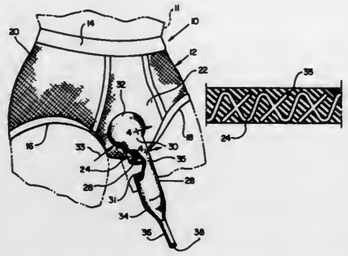
1. A wound care and drainage system comprising a pouch having a bottom wall, top wall, and gusseted side walls, said pouch walls formed from a transparent, moisture proof, odor proof, polymeric film material, a portion of said pouch bottom wall secured to an adhesive layer with the remainder of said pouch bottom wall extending beyond said adhesive layer, said adhesive layer having a thin film of water insoluble polymeric film secured to one surface and said bottom pouch wall secured to said thin polymeric film, bottom wall aperture means in said extended pouch bottom wall that functions as an exit port for material being drained from the wound, the diameter of said bottom wall aperture means of sufficient size so that a hand can be inserted through said bottom wall aperture means into said pouch to aid in locating said pouch on the body and to permit access to the wound area without removing said pouch from the body, and securing means encircling said bottom wall aperture means whereby a cap can be detachably secured to seal said bottom wall aperture means.

4,553,968

EXTERNAL MALE URINARY CATHETER WITH GARMENT

Glenna Komis, P.O. Box 54033, Philadelphia, Pa. 19105

Filed Jun. 9, 1983, Ser. No. 492,145
Int. Cl.⁴ A61F *5/44*
U.S. Cl. 604—349 **7 Claims**



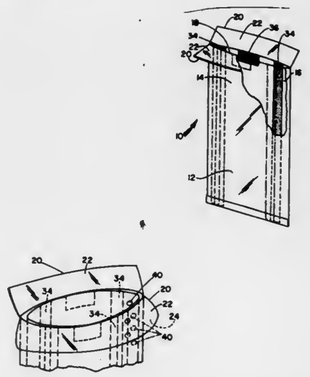
1. An external male urinary catheter assembly comprising a thin, flexible, resilient tubular catheter dimensioned to be positioned in enclosing relation to a substantial portion of the penis, said catheter including a reinforced end portion forming a contoured, open-ended tubular member, drainage tubing communicating at one end with said tubular member and extending to a connection element, said element being in fluid communication with a collection receptacle having means for attachment either to the ambulatory wearer at his calf or to the bedside of the bedridden wearer; said catheter being smoothly and completely united among essential structures, the end of said catheter opposite to said reinforced end portion forming a circular flange; and a supporting garment of the men's brief type, said garment composed of strands of an absorbent material and having a complementary annular outwardly projecting tubular portion on the front thereof, said flanged end portion comprising a vulcanized rubber material engaging said annular portion and integrally united thereto, the rubber material of said flanged end portion being embedded within said strands so as to provide a continuous smooth meshing of the strands of absorbent material and the rubber material.

4,553,969

DISPOSABLE RELIEF CONTAINER WITH SECURAL LINER

Frances H. Taylor, 218-B South St., Eatontown, N.J. 07724

Filed Mar. 14, 1983, Ser. No. 475,220
Int. Cl.⁴ A61F *5/44*
U.S. Cl. 604—355 **5 Claims**



1. A disposable relief container for the collection and disposal of fecal material from the natural excremental passageway of a human body, which comprises:

a gas permeable, fluid impermeable, flexible outer container having an opening and formed with flange members having a bacteria-free adhesive coated thereon for attachment to said human body about said natural excremental passageway; and

a flexible, fluid tight inner container having an opening, said inner container positioned in and mounted to said outer container by means of longitudinal and lateral adhesive strips secured to an interior surface of said outer container whereby said opening of said inner container is coincidental with said opening of said outer container, said inner container provided with vent means for gaseous communication to the atmosphere via said inner and outer containers.

4,553,970

COLLAPSIBLE MOLDED CONTAINER

Dan Lewis, Jr., Lafayette, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 28, 1983, Ser. No. 566,253
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—408 **6 Claims**

1. In a molded collapsible medical solution container of the type intended for delivery of a sterile solution without the introduction of extrernal air, the improvement which comprises:

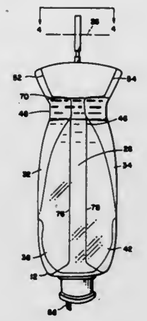
(a) a neck portion comprising means for emptying said solution from said container,

(b) a shoulder portion surrounding said neck portion and having a length and a width,

(c) a pair of opposed, collapsing sidewall portions extending along the length of said shoulder portion and in a generally convergent direction from the shoulder portion to a base portion,

(d) a pair of opposed, generally parallel, substantially planar minor sidewall portions extending in width between and continuous with said collapsing sidewall portions and having a slight outward bowing across their width in response to collapse of the sidewall portions for preventing, adjacent thereto, mutual and total contact between said collapsing sidewall portions, and for assuring two columnar openings adjacent the minor sidewalls during container collapse, and

(e) a rigidifying waist portion extending circumferentially around said collapsing sidewall and minor portions in an area closer to the base portion than the shoulder position for maintaining a generally rectangular configuration during container collapse.

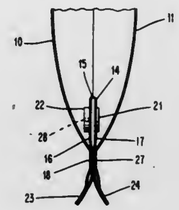


4,553,971

POUCH-LIKE BAGS FOR CONTAINING LIQUIDS

Ashley, Robert J., Faringdon; Bardhan, Nabendu, Abingdon; Peter D. Hardy, Wantage, and Keith D. Jeffs, Malmesbury, all of England, assignors to Metal Box p.l.c., Reading, England

PCT No. PCT/GB83/00086, § 371 Date Nov. 22, 1983, § 102(e) Date Nov. 22, 1983, PCT Pub. No. WO83/03351, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 23, 1983, Ser. No. 568,200
Claims priority, application United Kingdom, Mar. 24, 1982, 8208683
Int. Cl.⁴ A61F *7/00*
U.S. Cl. 604—415 **10 Claims**



1. A pouch-like bag for containing a liquid for medical or surgical use, the bag having two walls formed by respective plies of flexible plastics material sealed together around at least their top and side edges and one or more additional, folded piles of flexible plastics material disposed between the walls of the bag to form a gusset fold having opposed leaves sealed to the adjacent walls of the bag and which carries one or more elements for receiving a needle for making connection with the bag contents and which is closed to form a sealed compartment protecting the or each element which it carries from contamination, characterised in that said one or more additional, folded plies being substantially smaller than the walls of the bag, so that when the sealed compartment is opened said one or more folded plies form a substantially flat bottom portion of the bag extending substantially perpendicular to the walls of the bag and presenting the element or elements for insertion of a needle or needles in a direction substantially parallel to the walls of the bag so as to avoid risk of accidental penetration of the walls.

4,553,972

DISPOSABLE INTRAVAGINAL CONTRACEPTIVE DEVICES RELEASING 1-SUBSTITUTED IMIDAZOLES

Brian H. Vickery, Cupertino, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

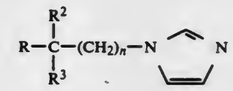
Filed May 20, 1983, Ser. No. 496,729
Int. Cl.⁴ A61M *31/00*
U.S. Cl. 604—892 **15 Claims**



1. A contraceptive device which releases spermicide and a pharmaceutically acceptable chelating agent during intravaginal placement in a female mammal comprising

(a) an inert, flexible polymeric material formed into a configuration suitable for vaginal insertion and long term retention in the vagina and permeable to the release of said spermicide and a pharmaceutically acceptable chelating agent;

(b) an effective amount of a 1-substituted imidazole spermicide or the pharmaceutically acceptable acid addition salts thereof, included within the matrix of said polymeric material, the imidazole having the formula



(I)

wherein:

(i)
R is alkyl of one to twelve carbon atoms, phenyl or phenyl-lower-alkyl of one to four carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo or trifluoromethyl;
R^2 together with R^3 is ethylenedithio or propylenedithio wherein the alkylene chain is optionally substituted by one lower alkyl of one to four carbon atoms; and
n is 1, 2 or 3;

(ii)
R is cycloalkyl of five to seven carbon atoms or cycloalkylalkyl of six to ten carbon atoms;
R^2 is hydrogen or lower alkyl of one to four carbon atoms;
R^3 is alkyl of two to twelve carbon atoms, cycloalkyl of five to seven carbon atoms or cycloalkylalkyl of six to ten carbon atoms; and
n is 1, 2 or 3;

(iii)
R is phenyl or phenyl-lower-alkyl of one to three carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four

carbon atoms, lower alkoxy of one to four carbon atoms, halo or trifluoromethyl;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 is alkyl of one to twelve carbon atoms, phenyl-lower-alkyl of one to three carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo, or trifluoromethyl; and

n is 1, 2 or 3;

(iv)

R is alkyl of one to twelve carbon atoms;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 is hydrogen or alkyl of one to twelve carbon atoms; and

n is 1, 2, 3 or 4; or

(v)

R and R^4 are each alkyl of one to twelve carbon atoms, alkenyl of two to twelve carbon atoms, phenyl, phenyl-lower-alkyl of one to four carbon atoms or phenyl-lower-alkyl of two to four carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo, or trifluoromethyl;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 and X-R^4 wherein X is oxygen or sulfur; and

n is 1, 2 or 3; and

(c) an effective amount of a pharmaceutically acceptable chelating agent.

4,553,973

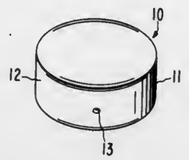
PROCESS FOR PREPARING OSMOTIC DEVICE

David Edgren, El Granada, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 397,517, Jul. 12, 1982, Pat. No. 4,519,801. This application Feb. 1, 1985, Ser. No. 697,598

Int. Cl.⁴ A61K *9/22*

U.S. Cl. 604—892 **5 Claims**



1. A process for making an osmotic delivery system for delivering a beneficial drug to an environment of use, said process comprising:

(a) compressing a drug formulation into a solid mass of drug;

(b) coating the solid mass of drug with a wall-forming composition comprising (1) ethyl cellulose (2) a polyhydroxy polymer member selected from the group consisting of hydroxypropyl cellulose, hydroxypropyl methylcellulose, and hydroxyethyl cellulose, and (3) a carboxypolymer selected from the group consisting of carboxypolymethylene, poly(methylvinylether maleic anhydride), ethylene-acrylic acid copolymer, ethylene maleic acid anhydride copolymer, and methacrylic acid-ethylacrylic acid copolymer;

(c) reacting the polyhydroxy polymer and the carboxypolymer by heating the coated solid mass of drug to a temperature sufficient to cause the polyhydroxy polymer and the carboxypolymer to react and from with the ethyl cellulose a wall surrounding the solid mass of drug;

(d) cooling the wall surrounded solid mass of drug to room temperature; and,

(e) drilling a passageway through the wall for delivering the drug formulation from the delivery system.

4,553,974

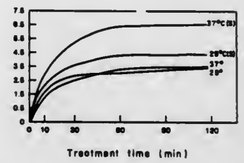
TREATMENT OF COLLAGENOUS TISSUE WITH GLUTARALDEHYDE AND AMINODIPHOSPHONATE CALCIFICATION INHIBITOR

Mrinal K. Dewanjee, Rochester, N. Mex., assignor to Mayo Foundation, Rochester, Minn.

Filed Aug. 14, 1984, Ser. No. 640,725

Int. Cl.⁴ A63B *51/02*

U.S. Cl. 8—94.11 **38 Claims**



1. A process for the treatment of collagenous tissue to adapt it for use in a prosthetic implant and to promote the growth of endothelial cells thereon after implantation, which comprises the steps of:

(a) contacting said tissue with at least one surfactant for a time sufficient to substantially completely remove deleterious material and open up the fibrous structure of the collagenous tissue;

(b) washing the resulting fibrous matrix to remove substantially all surfactant;

(c) fixing the washed tissue with glutaraldehyde;

(d) treating the glutaraldehyde-fixed tissue with a calcification-inhibiting agent, an agent which inhibits infiltration and attack by phagocytic cells upon implantation and/or an agent which inhibits infection; and

(e) treating the resulting agent/matrix tissue with a reducing agent to stabilize the bonding of the glutaraldehyde of step (c) and the agent of step (d) to the tissue.

4,553,975

TINTED CONTACT LENSES AND A METHOD FOR THEIR PREPARATION

Kai C. Su, Roswell, Ga., assignor to Ciba Geigy Corporation, Ardsley, N.Y.

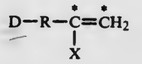
Continuation-in-part of Ser. No. 382,973, Jun. 1, 1982, Pat. No. 4,468,229, which is a continuation-in-part of Ser. No. 292,325, Aug. 12, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,398

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

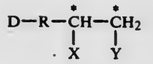
Int. Cl.⁴ D06P *5/00*

U.S. Cl. 8—507 **14 Claims**

1. A contact lens colored over at least a portion of its surface, comprising a copolymeric hydrogel material to which at least one reactive dyestuff of the formula



or



wherein

D is the radical of an organic dyestuff radical;

R is a divalent organic electron attracting group capable of causing electron withdrawal of the C carbon atoms, thus activating the same;

X is hydrogen or halo; and

Y is leaving group; or mixtures thereof, is covalently bonded external to the polymer backbone by reaction at temperatures up to 60° C. with hydroxyl, amino, amido or mercapto groups present in said polymer, over the colored portion of the lens.

4,553,976

PROCESS FOR DYEING OR PRINTING POLYAMIDE FIBRES

Helmut Raisin, Riehen, and Bernard C. Teutelink, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 470,493, Feb. 28, 1983, abandoned. This application Jan. 12, 1984, Ser. No. 570,255

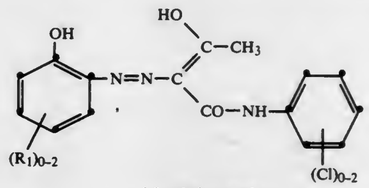
Claims priority, application Switzerland, Jan. 13, 1983, 176/83

Int. Cl.⁴ C09B *1/34;* **D06P** *3/14, 5/20*

U.S. Cl. 8—639 **14 Claims**

1. A process for dyeing or printing synthetic polyamide fibres by a rapid fixation method, which process comprises dyeing or printing synthetic polyamide fibers with a dye or a mixture of dyes selected from the dyes of the formulae

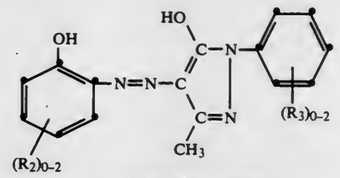
(1)



1:2-cobalt complex

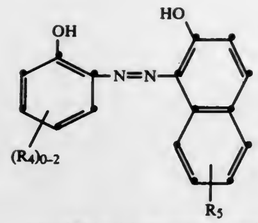
wherein $(R_1)_{0-2}$ represents 0 to 2 substituents R_1 which may each independently be C_1–C_4alkyl, C_1–C_4alkoxy, halogen, nitro, sulfamoyl, N—C_1–C_4alkylsulfamoyl, N—C_1–C_2alkoxy-C_1–C_2alkylsulfamoyl, phenylaminosulfonyl, carboxyphenylamoinosulfonyl, C_1–C_4alkylsulfonyl or acetylamino;

(2)



1:2-chromium complex

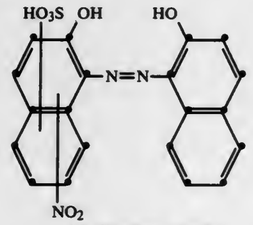
wherein $(R_2)_{0-2}$ represents 0 to 2 substituents R_2 which may each independently be C_1–C_4alkyl, C_1–C_4alkoxy, halogen, nitro, sulfamoyl, N—C_1–C_4alkylsulfamoyl, N—C_1–C_2alkoxy-C_1–C_3alkylsulfamoyl, phenylaminosulfonyl, carboxyphenylaminosulfonyl, C_1–C_4alkylsulfonyl or acetylamino, and $(R_3)_{0-2}$ represents 0 to 2 substituents R_3 which may each independently be halogen, C_1–C_4alkyl, cyano or sulfamoyl; 1:2 cobalt complex of the dyes of the formula (2), wherein R_2 has the same meaning as in the 1:2 chromium complexes and $(R_3)_{0-2}$ represents 0 to 2 substituents R_3 which may each independently be halogen, cyano or sulfamoyl;



1:2-cobalt or 1:2 chromium complex

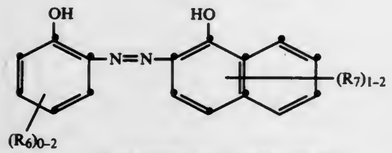
wherein R_4 has the same meaning as R_1 in formula (1), and R_5 is hydrogen, acetylamino, methoxycarbonylamino or methylsulfonylamino;

(4)



1:2 chromium complex

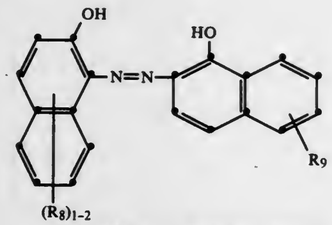
(5)



1:2 chromium or 1:2 cobalt complex

wherein R_6 has the same meaning as R_1 in formula (1), and $(R_7)_{1-2}$ represents 1 to 2 substituents R_7 which may each independently be halogen, methyl, methoxy or sulfo, or wherein 2 adjacent substituents R_7 are able to form a closed bridge member $—SO_2—CH_2—O—$;

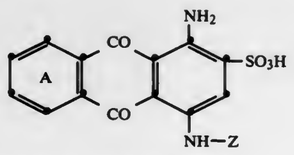
(6)



1:2 cobalt or 1:2 chromium complex

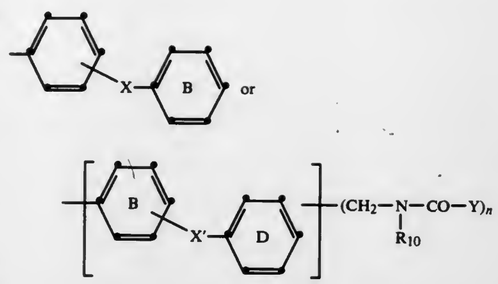
wherein $(R_8)_{1-2}$ represents 1 to 2 substituents R_8 which may each independently be sulfo or nitro and R_9 is hydrogen or hydroxy;

(7)



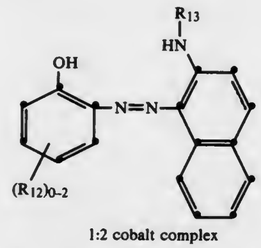
wherein Z is the radical of the formula

(3)



wherein X is the $—O—SO_2—$, $—NH—SO_2$ or $—NH—CO—$ group and X′ is oxygen or sulfur, R_{10} is hydrogen or C_1–C_4alkyl, Y is an unsubstituted or substituted aryl radical, n is 1, 2 or 3, the benzene ring A may be substituted by halogen and the benzene rings B and D may each independently be substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy or by a radical of the formula $—O—CH_2CH_2—O—R_{11}$, wherein R_{11} is hydrogen, methyl or ethyl;

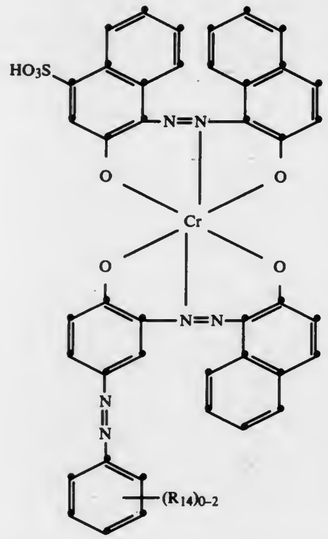
(8)



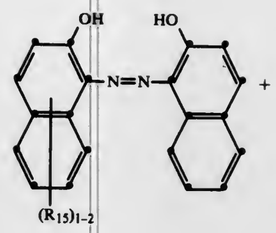
1:2 cobalt complex

wherein R_{12} has the same meaning as R_1 in formula (1), and R_{13} is hydrogen or phenyl;

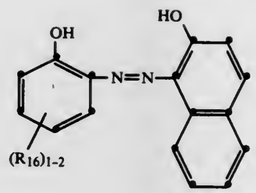
(9)



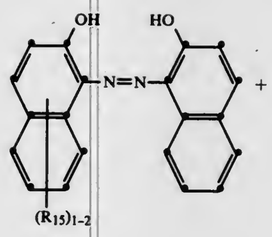
wherein $(R_{14})_{0-2}$ represents 0 to 2 substituents R_{14}, which may each independently be C_1–C_4alkyl, C_1–C_4alkoxy, halogen, carboxy or sulfo; and a mixture of the 1:2-chromium complexes of formula (10), (10a) and (10b)

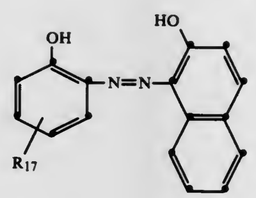


(10)

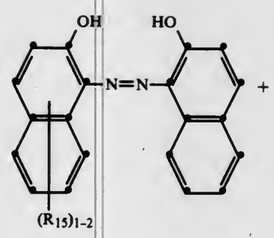


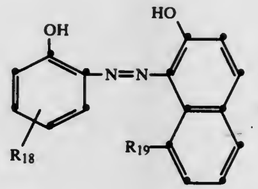
(10a)





(10b)





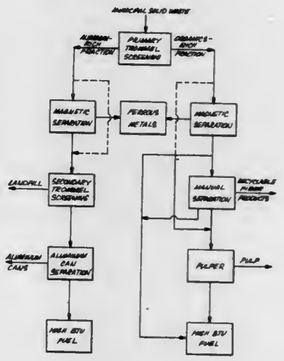
wherein $(R_{15})_{1-2}$ represents 1 to 2 substituents R_{15}, which may each independently be sulfo or nitro, $(R_{16})_{1-2}$ represents 1 to 2 substituents R_{16}, which may each independently be nitro, halogen, methyl or acetylamino, R_{17} has the same meaning as R_{16}, independently thereof, R_{18} has the same meaning as R_{16}, independently thereof, and R_{19} is acetylamino, methoxycarbonylamino, ethoxycarbonylamino, methylsulfonylamino or N,N-dimethylaminosulfonyl; 1:2 cobalt mixed complexes of the dyes of the formulae (2) and (3) or (4) and (8); in a continuous dyeing process or printing method, and fixing the dyeings or prints by steaming for less than 3 minutes, during which time at least 95% fixation of the dyes is achieved.

4,553,977

SOLID WASTE PROCESSING

Thomas H. Fry, 10440 Tuxford, Sun Valley, Calif. 91352

Filed Apr. 19, 1984, Ser. No. 594,567
Int. Cl.⁴ B03B *7/00*
U.S. Cl. 44—1 D **17 Claims**



1. A process for a separation of solid waste into recoverable segments, which comprises:

(a) screening the solid waste in a first screening zone to form:

(i) an aluminum-rich underflow comprising substantially-intact aluminum cans, inorganic fines, and combustible organics, and

(ii) an organics-rich overflow comprising recyclable fiber products;

(b) separating the substantially intact aluminum cans from the inorganic fines contained in the aluminum-rich underflow by a second screening operation;

(c) manually separating the substantially-intact aluminum cans from combustible organics; and

(d) isolating at least a portion of the organics-rich overflow for use as a fuel.

4,553,978

PROCESS FOR CONVERTING LIGNEOUS MATTER OF VEGETABLE ORIGIN BY TORREFACTION, AND PRODUCT OBTAINED THEREBY

Schwob Yvan, Paris, France, assignor to Association pour la Recherche et le Developpement des Methodes et Processus Industriels, Paris, France

Filed Aug. 23, 1982, Ser. No. 410,636
Claims priority, application France, Aug. 28, 1981, 81 16463
Int. Cl.⁴ C10L *5/00*
U.S. Cl. 44—1 E **15 Claims**

1. A process for converting ligneous matter to a torrefied wood product comprising:

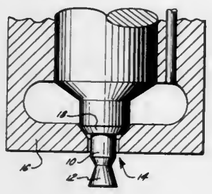
(1) slowing and progressively heating a feed consisting essentially of fragmented ligneous matter in a medium which under the heating conditions is substantially inert to the ligneous matter, and wherein the heating conditions are such that all of the ligneous matter being heated reaches a temperature of at least 200° C. but none of the ligneous matter reaches a temperature which exceeds 280° C.

(2) maintaining the said heating step for a period of 0.5 to 5 hours;

(3) removing pyroligneous gaseous products from the medium during the heating period;

(4) cooling the heated product; and
(5) recovering the resulting torrefied wood product.
13. Torrefied ligneous matter of vegetable origin having a fixed carbon content of between 35 and 40%, a caloric value of at least 5000 kcal/kg A hydroscopicity of less than 3% and not being fermentable.

4,553,979
DIESEL FUEL COMPOSITIONS
J. Vincent Hanlon, Baton Rouge, La.; Denis L. Lenane, St. Louis, Mo., and James B. Retzloff, Pinckney, Mich., assignors to Ethyl Petroleum Additives, Inc., St. Louis, Mo.
Filed Oct. 15, 1984, Ser. No. 661,222
Int. Cl.⁴ C10L *1/22*
U.S. Cl. 44—57 **16 Claims**



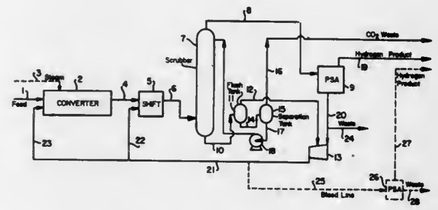
1. Distillate fuel for indirect injection compression ignition engines containing at least the combination of (a) organic nitrate ignition accelerator, and (b) the condensation product of a high molecular weight alkylphenol, an aldehyde and an amine having at least one active hydrogen atom bonded to an amino nitrogen atom, said combination being present in an amount sufficient to minimize coking on the nozzles of indirect injection compression ignition engines operated on such fuel.

4,553,980
ESTER-CONTAINING HALOPOLYALKYLENES
Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, Saint Louis, Mo.
Continuation of Ser. No. 626,830, Jul. 2, 1984, and a continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Apr. 22, 1985, Ser. No. 725,612
Int. Cl.⁴ C10L *1/18*
U.S. Cl. 44—62 **1 Claim**

1. A fuel oil containing a linear halogenated polyalkylene characterized as
(a) being essentially free of cross-linking;
(b) having vinyl unsaturation in the polyalkylene backbone; and
(c) having 0.001 to less than 1 percent of the halogen groups replaced by ester groups.

4,553,981
ENHANCED HYDROGEN RECOVERY FROM EFFLUENT GAS STREAMS
Andrija Fuderer, Antwerpen, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Feb. 7, 1984, Ser. No. 577,802
Int. Cl.⁴ C01C *1/04*
U.S. Cl. 48—62 R **42 Claims**

1. An improved process for the production of a hydrogen-containing product gas consisting essentially of:
(a) generating an effluent gas stream comprising hydrogen, carbon dioxide, carbon monoxide and water vapor;
(b) upon cooling said effluent stream to about 350° C. -400° C., subjecting said effluent stream to at least a high temperature catalytic water gas shift conversion, thereby converting most of the carbon monoxide in said effluent stream to additional hydrogen and carbon dioxide;
(c) scrubbing at least a major portion of the carbon dioxide from said thus-treated effluent stream to produce a carbon dioxide-depleted effluent stream but without essentially complete removal of carbon dioxide therefrom;
(d) passing the thus carbon dioxide-depleted effluent stream to a pressure swing adsorption system capable of discharging a purified, hydrogen-containing product gas therefrom as a less readily adsorbable component of said effluent stream, the more readily adsorbable component thereof comprising residual carbon dioxide and other impurities present in said effluent stream, said more readily adsorbable component being removed from the pressure swing adsorption system during the countercurrent depressurization and/or purge steps of the processing cycle in each adsorbent bed of said system, said cycle comprising higher pressure adsorption with discharge of said less readily adsorbable component from the product end of the bed, cocurrent depressurization with release of void space gas from the product end of the bed, countercurrent depressurization of the bed to lower desorption pressure and/or purge with release of impurities-containing waste gas from the feed end of the bed, and repressurization to higher adsorption pressure;
(e) compressing said waste gas removed from the pressure swing adsorption system during said countercurrent depressurization and/or purge steps;

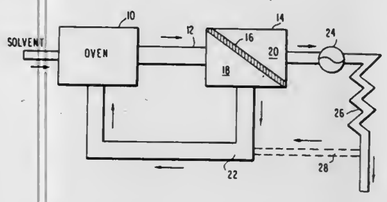


(f) recycling at least about 40% of said compressed waste gas to said shift conversion and/or effluent gas generation steps for additional hydrogen production, whereby said effluent gas stream is advantageously converted to the desired hydrogen-containing product stream and carbon dioxide waste gas at high hydrogen product recovery levels.
31. An improved apparatus for the production of a hydrogen-containing product gas consisting essentially of:
(a) means for generating an effluent gas stream comprising hydrogen, carbon monoxide and carbon dioxide;
(b) cooling and high temperature catalytic water gas shift conversion means for converting carbon monoxide in said effluent gas stream to hydrogen and carbon dioxide;
(c) scrubbing means capable of removing at least a major portion of the carbon dioxide from the thus-water gas shifted effluent gas stream, but without essentially complete removal of carbon dioxide therefrom;
(d) a pressure swing adsorption system capable of discharging a purified, hydrogen-containing gas stream and waste gas comprising residual carbon dioxide and other impurities present in said effluent gas stream;
(e) compression means for compressing said waste gas; and
(f) conduit means for recycling at least about 40% of said compressed waste gas to said shift conversion means and/or to said means for generating an effluent gas stream, whereby said effluent gas stream may advantageously be converted to the desired hydrogen-containing product stream and a carbon dioxide waste gas at high hydrogen product recovery levels.

4,553,982
COATED ABRASIVE CONTAINING EPOXY BINDER AND METHOD OF PRODUCING THE SAME
Gerald E. Korbel, Little Canada; Janis Robins, St. Paul, and Harold E. Rude, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.
Continuation-in-part of Ser. No. 616,438, May 31, 1984, Pat. No. 4,503,211. This application Mar. 5, 1985, Ser. No. 708,242
Int. Cl.⁴ C09K *3/14*
U.S. Cl. 51—298 **14 Claims**

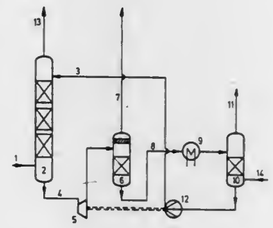
1. In a coated abrasive product including abrasive granules which are supported on and adherently bonded to at least one major surface of a backing sheet by a make coating of a first resinous binder material and a size coating of a second resinous binder material, the improvement comprising at least one of the said resinous materials being epoxy resin, said epoxy resin characterized by comprising cured epoxy resin and residual curing agent derived from substituted pentafluoroantimonic acid and an aromatic amine selected from the group consisting of aniline and hindered amine.
5. In a method of making coated abrasive products having the steps of
(1) uniformly coating a backing sheet with a make coat of a first resinous material in liquid form;
(2) depositing a plurality of abrasive granules uniformly over the surface of said make coat of first resinous material;
(3) curing said first resinous material to adherently bond said granules to said backing sheet surface;
(4) coating over said make coat and said granules with a size coat of a second resinous material; and
(5) curing the resultant coated product until said second resinous material is solid, the improvement comprising employing, as at least one of said first or said second resinous binder materials, a latent room-temperature stable, curable system comprised of
(A) epoxy resin composition having a 1,2-epoxy equivalency greater than one; and
(B) a curing agent in an amount sufficient to cure said composition on heating comprising
(1) substituted pentafluoroantimonic acid having the general formula $H^+SbF_5X^-$ wherein X is halogen, a hydroxy, or an OR group wherein OR is the residue of an aliphatic or aromatic alcohol; and
(2) an aromatic amine selected from the group consisting of aniline; and hindered amine the mole ratio of said substituted pentafluoroantimonic acid to aromatic amine being in the range of 1:05 to 1:4.

4,553,983
PROCESS FOR RECOVERING ORGANIC VAPORS FROM AIR
Richard W. Baker, Mountain View, Calif., assignor to Membrane Technology and Research, Inc., Menlo Park, Calif.
Filed Jul. 31, 1984, Ser. No. 636,474
Int. Cl.⁴ B01D *53/22*
U.S. Cl. 55—16 **16 Claims**



1. A process for recovering and concentrating organic vapor from a feed stream of air having an organic vapor content of no more than 20,000 ppm by volume, comprising:
providing a thin semipermeable membrane having a feed side and a permeate side, a selectivity for organic vapor over air of at least 50, as measured by the ratio of organic vapor permeability to nitrogen permeability, and a permeability of organic vapor of at least 3×10^{-7} cm^3 (STP) cm/cm^2 sec·cm Hg,
passing the feed stream across the feed side of the thin semipermeable membrane while providing a pressure on the permeate side which is lower than the feed side by creating a partial vacuum on the permeate side such that organic vapor passes preferentially through the membrane to form an organic vapor depleted air stream on the feed side and an organic vapor enriched stream on the permeate side, and
compressing and condensing the organic vapor which has passed through the membrane to recover the vapor as a liquid.

4,553,984
REMOVAL OF CO_2 AND/OR H_2S FROM GASES
Klaus Volkamer, Frankenthal; Eckhart Wagner, Ludwigshafen, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 6, 1984, Ser. No. 586,720
The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.
Int. Cl.⁴ B01D *47/00*
U.S. Cl. 55—46 **1 Claim**

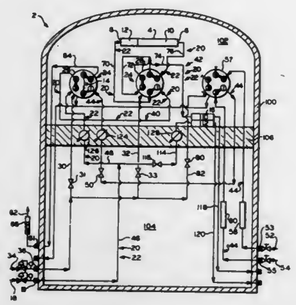


1. A process for removing CO_2 and/or H_2S from a gas containing CO_2 and/or H_2S, which comprises:
(a) treating said gas in an absorption stage at from 40°to 100°C. and at a pressure of from 10 to 110 bar with an aqueous absorption liquid containing from 20 to 70% by weight of methyldiethanolamine by feeding in the gas at the bottom and the aqueous absorption liquid at the top of the absorption stage, CO_2 and/or H_2S being washed out by a countercurrent procedure;
(b) taking off the treated gas at the top of the absorption stage;
(c) taking off the aqueous absorption liquid laden with CO_2 and/or H_2S at the bottom of the absorption stage;
(d) regenerating the laden aqueous absorption liquid by flashing it in one or more flash stages, operating the last stage, or the single flash stage where only one such stage is employed, under a pressure of from about 1 to 3 bar or under reduced pressure, the flash gases being taken off at the top of the flash stage or flash stages;
(e) compensating the losses of water as a result of water present in the gas streams taken off at the top of the absorption stage and of the flash stage or flash stages by feeding in, at the bottom of the last flash stage or, where only one flash stage is used, at the bottom of this flash stage, an amount of steam substantially corresponding to the water loss and
(f) recycling the regenerated absorption liquid to the absorption stage.

4,553,985
GAS CHROMATOGRAPHY

Robert W. Dahlgren, and William H. Dennis, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 24, 1984, Ser. No. 583,469
Int. Cl.[4] B01D *15/08;* **G01N** *31/08*
U.S. Cl. 55—67 **22 Claims**



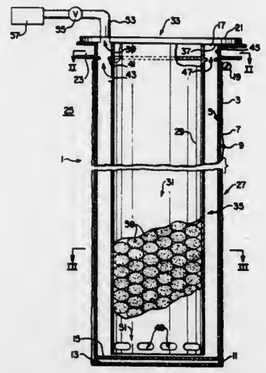
1. A process comprising:
(a) introducing a gaseous sample comprised of a number of components into a first end of a chromatographic separation column having a first end and a second end;
(b) flowing a carrier gas toward the second end of the column to distribute the components of the sample along the length of the column;
(c) eluting a first fraction of the number of components from the second end of the column with the carrier gas;
(d) conveying the first fraction of the number of components to a detector;
(e) flowing the carrier gas from the second end toward the first end of the column to establish a nonlinear flow velocity profile along the column such that gas velocity is faster at the first end of the column that at the second end of the column;
(f) eluting a second fraction of the number of components from the first end of the column; and
(g) conveying the second fraction of the number of components to the detector.

16. Apparatus comprising:
(a) a column suitable for use in high pressure gas chrmatography comprising a first section packed with a supported methyl silicon liquid and a second section packed with a crosslinked polymer of styrene and divinyl benzene, said column having a first end and a second end;
(b) a sample chamber having a predetermined volume;
(c) a detector;
(d) means for connecting a source of carrier gas;
(e) first means for establishing a flow path from the means for connecting the source of carrier gas to the sample chamber, through the sample chamber and to the first end of the column, through the column from first end to second end and to the detector;
(f) second means for establishing a flow path from the means for connecting the source of carrier gas to the second end of the column, through the column from second end to first end, and to the detector; and
(g) means for selectively connecting one of the first means for establishing a flow path and the second means for establishing a flow path and selectively disconnecting the other.

4,553,986
FILTERING SYSTEM AND METHOD OF USING SAME

David F. Ciliberti, Murrysville Boro, and Thomas E. Lippert, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,790
Int. Cl.[4] B01D *53/14*
U.S. Cl. 55—68 **9 Claims**



1. In a filter system having a ceramic bag filter supported about a hollow mandrel, said mandrel having perforations therethrough, such that a particulate-containing gaseous medium to be filtered is passed through the bag into the mandrel, at a flow rate above a predetermined minimum flow rate, to deposite particulate matter on the exterior of said bag, and filtered gas is discharged from an open end of the mandrel, the improvement comprising:
a hollow tubular member coaxially supported within said mandrel, said tubualar member having impervious walls within the mandrel and an open end adjacent the open end of said mandrel to form a chamber thereabout between said tubular member and the perforated wall of the mandrel;
means for sealing said chamber adjacent the open end of said mandrel comprising a flange extending between said tubular member and said mandrel,
a port in said means for sealing said chamber, for injection of a jet pulse of fluid into said chamber;
a distributor plate having a plurality of spaced apertures disposed across said chamber adjacent to and immediately below said means for sealing said chamber; and
a plurality of slots in the impervious wall of said hollow tubular member equally spaced about said tubular member adjacent the end thereof opposite said open end such that filtered gas, after passage through the perforations of the mandrel are directed through said slots into the hollow tubular member and are discharged from the open end thereof, said tubular member being of a size and said slots being of a size arranged to provide a flow of gases through said mandrel at said flow rate.

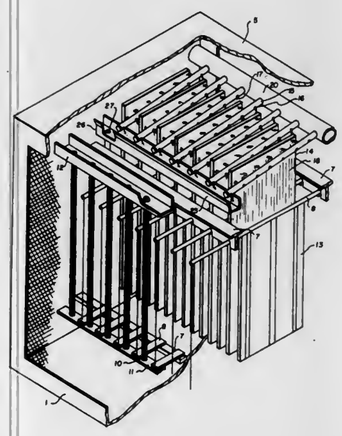
4,553,987
CONTINUOUSLY RINSED ELECTRIC DUST COLLECTOR

Arvi Artama, Tampere, and Uuno Nurmi, Helsinki, both of Finland, assignors to Lastro Ky, Ylojarvi, Finland

Continuation-in-part of Ser. No. 359,720, Mar. 11, 1982, abandoned. This application Jan. 12, 1984, Ser. No. 571,658
Int. Cl.[4] B03C *3/16, 3/53*
U.S. Cl. 55—118 **3 Claims**

1. In an electric dust collector having a case defining a chamber through which a gas to be cleaned flows by a means

of a fan, precipitator apparatus disposed within said case for removing solid particles from said gas comprising:
ionization means for providing a charge on said particles upstream of an electrostatic field, said ionization means including ionization electrodes and counter-electrodes and means for electrically connecting said ionization electrodes to a voltage supply having a polarity the same as that of said charged particles and said counter-electrodes to ground having a polarity opposite to that of said charged particles;
field means for forming said electrostatic field, said field means including field electrodes and collector electrodes, said collector electrodes comprising continuous films of electrically conductive water flowing over opposite sides of at least one plate having an upper edge and substantially vertical surfaces on said opposite sides;
means for electrically connecting said field electrodes to said voltage supply having a polarity the same as that of said charged particles;

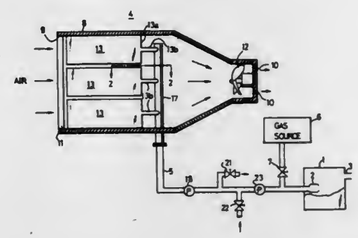


distribution means for causing said films of electrically conductive water to flow over said side surfaces, said distribution means including a water pipe in spaced relation to each side of said at least one plate and extending in the direction of said upper edge and having apertures arranged to direct water currents in the form of sprays toward said side surfaces adjacent to said upper edge, said at least one plate consisting essentially of electrically insulating glass having wetting properties causing said water currents to spread evenly over said side surfaces so as to form said continuous water films and having electrically insulating properties such that said charged particles are not attracted to said at least one plate, and said distribution means comprising electrically conductive parts for causing electricity to be conducted to said water films; and,
means for electrically connecting said conductive parts to ground having a polarity opposite to that of said charged particles so that said charged particles accumulate in said water films and are removed from the gas to be cleaned.

4,553,988
HIGH-TEMPERATURE FURNACE HAVING SELECTIVELY PERMEABLE MEMBRANES FOR OXYGEN ENRICHMENT

Shoji Shimizu, Mukou; Shirow Asakawa, Zama; Yukihiro Saito, Kawasaki, and Yoshimasa Ito, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Limited and Osaka Gas Co., Ltd., both of Osaka, Japan

Filed Nov. 22, 1982, Ser. No. 443,685
Int. Cl.[4] B01D *13/00*
U.S. Cl. 55—158 **17 Claims**



1. A high-temperature furnace comprising:
a combustion chamber having a burner for burning a mixture of air and fuel therein and an exhaust outlet for exhausting emissions therefrom to the outside;
a plurality of longitudinally extending, transversely spaced cells to form air passageways therebetween, each of said cells comprising a pair of transversely spaced-apart oxygen permeable membranes for selectively passing oxygen molecules from air in said air passageways to said cells so that the gaseous mixture in said cells is oxygen-enriched air, said air passageways having upstream ends and downstream ends;
conduit means connected from downstream ends of said cells to said burner;
first means for forcibly generating airstreams in said air passageways in a direction from said upstream ends to said downstream ends;
second means in said conduit means for generating a negative pressure in said cells with respect to said air passageways to cause said oxygen-enriched air to flow forcibly to said burner; and
pressure increasing means connected in said conduit means between said second means and said burner for increasing the pressure of oxygen-enriched air delivered to said burner.

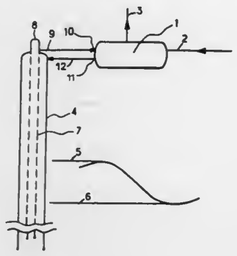
4,553,989
SAFETY SYSTEM FOR REMOVING ANY RISK OF CARRYING LIQUIDS TO THE NOSE OF THE FLARE OR TO THE VENT-HOLE DURING BURNING OR DISPERSION OF THE GASES ASSOCIATED WITH PRODUCTION

Gérard Chaudot, 14 Allée de la Rochefoucauld, Andresy 78570, France

PCT No. PCT/FR83/00050, § 371 Date Nov. 14, 1983, § 102(e) Date Nov. 14, 1983, PCT Pub. No. WO83/03280, PCT Pub. Date Sep. 29, 1983
PCT Filed Mar. 11, 1983, Ser. No. 563,388
Claims priority, application France, Mar. 12, 1982, 82 04246
Int. Cl.[4] B01D *19/00*
U.S. Cl. 55—177 **17 Claims**

1. An improved safety system for preventing the accidental burning of liquids that might become entrained in a hydrocarbon gas stream during burning or dispersion of gases associated with the production or treatment of hydrocarbons, this system comprising, in a gas flow chain, between a liquid entrainment source and a nose of a flare tip, at least one tank (1) having at least one overflow column (4) opening below a liquid level

(5,6), at a predetermined distance from a tapping point (11) to said tank, the improvement comprising: means (7,13,14) for avoiding, in the case of liquid overflowing into the overflow



column (4), the retention and trapping of gases in the overflow column (4), the retention and trapping of gases in the overflow liquid.

4,553,990

DEVICE FOR SEPARATING GASEOUS AND LIQUID COMPONENTS FROM A FOAMY GAS LIQUID MIXTURE

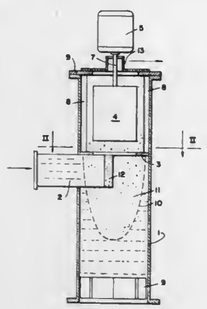
Albert Hoffman, Wolfratshausen, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed May 10, 1984, Ser. No. 608,963

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317260

Int. Cl.⁴ B01D *19/02*

U.S. Cl. 55—178 **7 Claims**



1. Device for separating gaseous and liquid components of a foamy gas liquid mixture formed in a fermentation process in a container into which a feed line for the gas liquid mixture and withdrawal lines terminate, and into whose top portion there is arranged a turbine, characterized in that the container portion below the turbine is a centrifugal separator into which the feed line terminates as a tangential inlet, and characterized in that above the orifice of the feed line, and below the turbine, there is arranged a collar extending into the inner container chamber, along the container inside wall, the collar being arranged directly above the orifice and is arranged essentially horizontally, further characterized in that the rotational axis of the turbine is essentially vertically disposed and that in the area above the orifice there is a wiper, and preferably a minimum of two wipers, arranged at the container inner wall, whereby the wiper or wipers extend into the container inner wall in the direction towards the rotational axis of the turbine, and essentially run parallel to the rotational axis, further characterized in that in the area of the container outlet for the liquid portion, there is a drag brake.

4,553,991

CENTRALIZED SUCTION CLEANING INSTALLATIONS

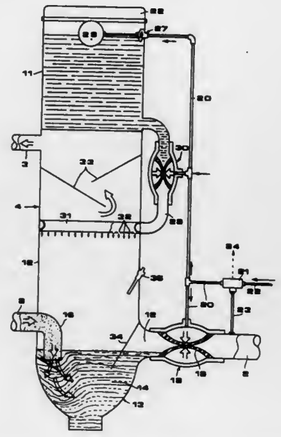
Gabriel Barsacq, Biarritz, France, assignor to S.A.R.L. Aspiramatic, Anglet, France

Filed Jun. 4, 1984, Ser. No. 617,277

Claims priority, application France, Jun. 9, 1983, 83 09710

Int. Cl.⁴ B01D *47/02*

U.S. Cl. 55—218 **5 Claims**



1. Centralized suction cleaning installation comprising suction generating means, a network of fixed pipes connected to said suction generating means, air intakes to which said pipes are connected and which are adapted to have portable cleaning tools coupled to them, means for removing dust from air drawn into the installation, means for evacuating said dust, a closed first chamber, a pipe connecting an upper end of said first chamber to said suction generating means, means connecting a lower end of said first chamber to said fixed pipe network, an evacuation pipe connected to said lower end of said first chamber, a first valve in said evacuation pipe, a first storage tank in said lower end of said first chamber adapted to be filled with water to the level of said evacuation pipe, a bubble arm through which said fixed pipe network is connected to said first chamber and which terminates below the level of said evacuation pipe in said first storage tank, a second water storage tank, a second chamber containing said second water storage tank, a float valve, a pressurized water supply system connected via said float valve to said second chamber, a second valve through which said second chamber is connected to said first chamber, a three-way solenoid valve in said pressurized water supply system connected to said float valve and said first and second valves, and a control switch connected to said solenoid valve.

4,553,992

SCRUBBER APPARATUS FOR PURIFYING FOUL AIR PRODUCED DURING AN EMBALMING, AN AUTOPSY OR THE LIKE

Jean-Guy Boissinot, 146 rue du Golf, Loretteville, (Quebec), Canada (G2A 1G6), and Pierre Begin, 19 rue Bèlair, Apt. 103, Levis, (Quebec), Canada (G6V 6K9)

Filed Oct. 17, 1984, Ser. No. 661,919

Int. Cl.⁴ B01D *39/00*

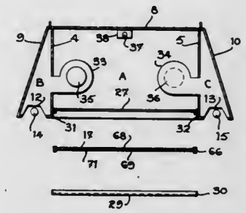
U.S. Cl. 55—279 **19 Claims**

1. An air scrubber apparatus for purifying foul air produced during an embalming, an autopsy or the like carried out on a work table disposed in a room for embalming, autopsy or the like, comprising:

a housing positioned above the work table, said housing defining a first and a second outer compartment disposed

substantially horizontally with respect to each other, said housing also defining a central compartment disposed between said first and second outer compartments, said central compartment being provided with bottom inlet opening means for said foul air, and said first and second outer compartments being each provided with outlets to said room which are located at predetermined positions;

air filter means positioned over said bottom inlet opening means of the central compartment, said filter means comprising a filtering material including aluminium oxide and potassium permanganate and being designed to allow passage of air therethrough, said filtering material which



includes aluminium oxide and potassium permanganate purifying said foul air upon passage thereof through said filter means; and

air pumping means for moving said foul air towards the interior of said central compartment through said filter means for the purpose of purifying said foul air, said pumping means comprising means for transferring the purified air from the central compartment to said first and second outer compartments in order to return the purified air to said room through said outlets, said predetermined positions of said outlets being selected so as to enable a redistribution of the purified air in said room.

4,553,993

MOISTURE ELIMINATOR

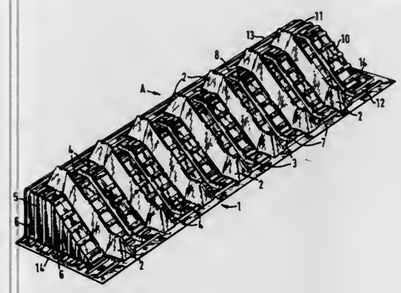
Albert F. Wigley, c/o Visco Ltd., Stafford Rd., Croydon CR9 4DT, England

Filed Feb. 1, 1984, Ser. No. 575,880

Claims priority, application United Kingdom, Feb. 19, 1983, 8304683

Int. Cl.⁴ B01D *45/08*

U.S. Cl. 55—440 **21 Claims**



1. A plate for assembly with similar plates to form at least one duct through which a gaseous stream can be passed to remove liquid droplets from the gaseous stream, the plate being formed from thin sheet material and comprising a first part, a second part and a third part, the first and third parts being disposed in parallel planes, and the second part, which is disposed between the first and third parts, being disposed in a plane which is oblique with respect to the said parallel planes, the plate further comprising a series of parallel mutually spaced ridges which are generally triangular in transverse cross-section, said ridges extending over a major part of the plate and defining the opposite sides of the at least one duct and also forming means for spacing apart adjacent sheets, the reverse sides of the ridges forming depressions which are V-shaped in transverse cross-section, which depressions are formed in their interiors with sharp corners extending longitudinally of the depressions, the ridges being arranged such that each ridge extends into all three parts of the plate, the arrangement being such that on assembly of the plates each said duct is formed with a said depression extending along a substantial part of the length of the duct.

2. Means for removing liquid droplets from a gaseous stream comprising a duct which changes direction at least once along its length, said duct having a transverse cross-sectional shape which is generally trapezoidal, a depression formed in the duct, said depression comprising a pair of mutually inclined walls whereby the depression is generally V-shaped in transverse cross-section, said depression extending longitudinally of the duct over a major part of the length thereof, and a sharp corner extending along the interior of the depression and formed by the junction between the two mutually inclined walls of the depression.

4,553,994

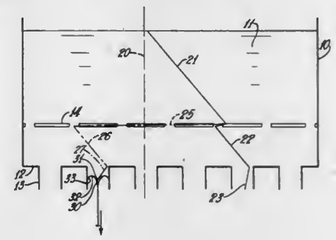
METHOD FOR FORMING GLASS FIBERS

Neil E. Greene, Granville, and Terry J. Hanna, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 9, 1984, Ser. No. 597,578

Int. Cl.⁴ C03B *37/085*

U.S. Cl. 65—2 **18 Claims**



1. In a method of making glass fibers, the steps of:

(1) forming a body of molten glass in a fiber-forming bushing having a plurality of depending tubular tips each communicating with said body;

(2) regulating the pressure of the molten glass body so that the pool of molten glass immediately above the tips and communicating freely with each tip is at less than atmospheric pressure;

(3) maintaining in each tip a body of glass at a pressure no greater than atmospheric pressure;

(4) attenuating a fiber from the glass body in each tip; and

(5) preventing the issuance of molten glass from any one of said tips should fiberization be interrupted at that tip.

4,553,995

PROCESS FOR PRODUCING IMAGE FIBER

Yoshiki Chigusa, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 28, 1984, Ser. No. 655,643

Claims priority, application Japan, Oct. 3, 1983, 58-183122

Int. Cl.⁴ C03B *23/20*

U.S. Cl. 65—4.2 **9 Claims**

1. A process for producing an image fiber comprising drawing an image fiber preform consisting of a bundle of a plurality of optical fibers each of which is drawn from an optical fiber preform and consists of a core and a cladding, in which at least one of the optical fiber preform, the optical fiber, the image

fiber preform and the image fiber is hydrogenated at a temperature higher than a room temperature in a gas containing hydrogen at a partial pressure of at least 0.05 atmosphere.

4,553,996

PROCESS FOR PRODUCING MINERAL WOOL FIBERS WHILE REDUCING THE VELOCITY OF FLOWING MEDIA

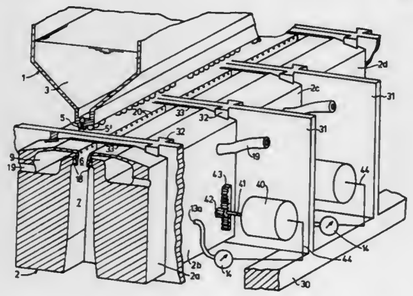
Edgar Muschelknautz, Leverkusen; Norbert Rink, Rommerskirchen, and Georg Chalupka, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,450

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309989

Int. Cl.⁴ C03B *37/06*

U.S. Cl. 65—4.4 **7 Claims**



1. In a process for the production of mineral wool fibers, comprising

(a) issuing melt streams from openings in the base of a melting crucible into a converging-diverging drawing nozzle,

(b) flowing a gaseous blasting medium into the nozzle substantially parallel to the melt stream so as to separate the melt stream into fibers, the blasting medium with the fibers dispersed therein being drawn into the nozzle by suction due to a pressure drop produced between the nozzle inlet and outlet the improvement comprising

(c) dividing the flow of dispersion into a plurality of individual streams,

(d) conveying the streams in parallel through a plurality of diffusers connected downstream of the nozzle to reduce the streaming velocity in each diffuser to subsonic speed,

(e) wherein each diffuser is charged with a dispersion mass-flow M meeting the requirement

$$\dot{M} \cdot \frac{q_2}{q_1} < 10 \text{ kg/s},$$

wherein q_2/q_1 is the ratio of the outlet and inlet cross-sections of each diffuser

(f) and successively collecting the decelerated fiber dispersions discharged from the diffuser outlets on a moving web.

4,553,997

PROCESS FOR MELTING GLASS IN A TOROIDAL VORTEX REACTOR

James G. Hnat, 3774 Lewis Rd., Collegeville, Pa. 19426

Filed Mar. 5, 1984, Ser. No. 585,978

Int. Cl.⁴ C03B *5/14*

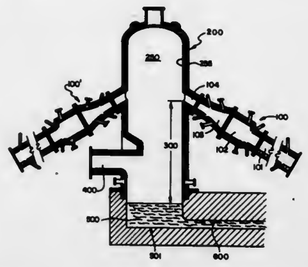
U.S. Cl. 65—27 **23 Claims**

1. A method of melting glass in a toroidal vortex reactor comprising the steps of:

entraining first pulverized glass batch material in an oxidant flow, whereby a first gas-solids suspension is created;

combusting a fuel in the presence of said first gas-solids suspension, whereby said first gas-solids suspension is heated;

mixing second glass forming material with said heated first gas-solids suspension, whereby a second gas-solids suspension is created; and,



injecting said second gas-solids suspension into said toroidal vortex reactor from a plurality of locations about the circumference of said reactor toward a common location within said reactor, whereby the heated second gas-solids suspension particles collide with each other and the wall of said reactor and a glass layer is formed on said reactor walls.

4,553,998

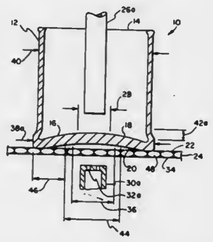
METHOD FOR PRODUCING GLASS CONTAINERS WITH REDUCED STRAIN

William E. Jones, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 22, 1984, Ser. No. 623,691

Int. Cl.⁴ C03B *25/00*

U.S. Cl. 65—69 **37 Claims**



1. A method for producing molded glass containers of the type having a sidewall, having an opening in the top thereof, and having a bottom that is relatively thick with respect to said sidewall and that includes both an inside surface and an outside surface, the method which comprises:

(a) molding said glass container in a glass molding machine;

(b) removing said molded container from said glass molding machine;

(c) exposing said container to air that is cooler than said container, both said bottom and said sidewall initially being in the annealing range of said glass, whereby said difference in thicknesses results in said bottom remaining at a higher temperature and contracting less than said sidewall, and whereby a plastic strain is produced in a transition portion of said sidewall that is proximal to said bottom; and

(d) cooling a substantially centered portion of said bottom below the temperature of said transition portion, both said bottom and said transition portion intially being in the annealing range of said glass, whereby said bottom contracts because of the thermal coefficient of contraction thereof, whereby said contraction of said bottom creates a second plastic strain in said transition portion that is opposite in direction to the first said plastic strain, and whereby said second plastic strain effects a reduction in the first said plastic strain.

4,553,999

METHODS AND APPARATUS FOR BLOW MOLDING GLASS ARTICLES

Michael J. Ziegler, Parma Heights, and F. Richard Simpkins, Newbury, both of Ohio, assignors to AGA, A.B., Cleveland, Ohio

Filed Apr. 16, 1984, Ser. No. 600,410

Int. Cl.⁴ C03B *9/36, 9/40*

U.S. Cl. 65—84 **16 Claims**



1. In a method of making a hollow glass article by shaping a quantity of molten glass in a mold cavity, the improvement comprising the steps of providing a flow of pressurized cooling gas which has a temperature substantially below that of ambient air, and introducing the flow of cooling gas into the mold cavity interiorally with respect to the hollow glass article being formed in the cavity to directly cool interior surface portions of the molten glass therein and hasten its solidification.

4,554,000

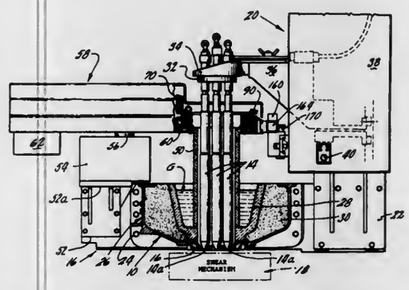
MOLTEN GLASS SPOUT BOWL REFRACTORY TUBE SUPPORT MECHANISM AND METHOD OF CONTROL

John E. Suomala, Weatogue; Kenneth L. Bratton, Windsor, both of Conn.; Sten E. Bergsten, Sundsvall, Sweden; Nicolas M. Savic, Wethersfield, and E. Boyd Gardner, Bloomfield, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 27, 1984, Ser. No. 655,502

Int. Cl.⁴ C03B *5/26*

U.S. Cl. 65—129 **29 Claims**



1. In a molten glass spout bowl mounted on fixed structure and defining one or more orifices through which molten glass is adapted to issue, and said spout bowl also including at least one vertically reciprocating plunger, the lower end of which plunger cooperates with the orifice defining means to aid in the flow of glass through such orifices, the improvement comprising at least one refractory tube surrounding the plunger and having an upper end above the spout bowl, said tube having a lower end adapted to mate with an annular seating surface inside the spout bowl to interrupt the flow of glass to the orifice defining means, a horizontally extending frame for supporting said refractory tube, a vertically extending pivot post for said frame, support structure associated with the fixed structure of the glass forehearth and supporting said frame for at least limited horizontal swinging movement on the axis of said pivot post to and from an active position wherein said tube is so supported inside the spout bowl, clamping means defined in part on fixed structure associated with said glass forehearth and in part on said frame to hold said frame in said active position, means for moving said frame down and up relative to said support structure to move the tube lower end toward and away, respectively, from the seating surface defined inside said spout bowl.

29. A method for operating a feeder mechanism of the type having a refractory tube and adapted to issue glass from orifices in the outlet spout of a feeder bowl, said method comprising the steps of

(a) positioning the refractory tube in the bowl at an elevation such that a desired glass flow is attained,

(b) supporting the tube for movement toward and away from the feeder bowl outlet,

(c) moving the tube down until the lower end of the tube seats inside the feeder bowl to stop the flow of glass,

(d) automatically recording the tube position at the start (step a) and after so closing off the glass flow to provide two digital signals,

(e) algebraically adding said digital signals to provide a third digital signal,

(f) using the added or third digital signal to set up the feeder mechanism during a subsequent period of operation.

4,554,001

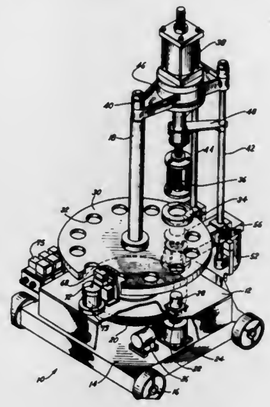
VARIABLE INDEX GLASS WARE PRESS WITH COMPUTER CONTROL

Ronald H. Shields, Alexandria; Michael E. Pollen, Fairmonte, both of Ind., assignor to Lynch Machinery, Anderson, Ind.

Filed Sep. 19, 1983, Ser. No. 533,505

Int. Cl.⁴ C03B *11/02, 11/16*

U.S. Cl. 65—160 **8 Claims**



1. A variable index molding press comprising:

a base;

a mold table rotatably mounted on the base, including a plurality of mold positions for locating from one to a plurality of molds thereon;

molding means on the base for cooperating successively with from one to all of the molds on the mold table, at a molding station;

table drive means operatively connected to the mold table for drivably rotating the mold table; and

electronic index control means electrically operatively connected to the table drive means and the molding means for electronically controlling the table drive means and electronically controlling the molding means in synchronism with the table drive means, including a digital computer being programmable for the number, type and spacing of molds on the mold table, and being programmable for mold parameters such as molding time, and a time signal source adapted to generate time representative signals to the computer, the computer controlling and synchronizing the molding means and the table drive means based on the time representative signals, the control means thereby automatically indexing only programmed ones of the mold positions to the molding station for a variety of numbers and spacings of the molds,

whereby only programmed mold positions with molds may be indexed to the molding station, at will.

4,554,002

BENEFICIATING WASTE SLUDGES FOR AGRICULTURAL USE AND PRODUCT MADE THEREBY

John P. Nicholson, Toledo, Ohio, assignor to N-Viro Energy Systems Ltd., Toledo, Ohio

Filed May 16, 1983, Ser. No. 495,143
Int. Cl.⁴ C05F *3/00*
U.S. Cl. 71—12 **19 Claims**

1. The method of beneficiating waste water sludge to reduce the pathogens which comprises:

mixing weeds sludge and kiln dust to form a mixture,

the mixture comprising from about 10% to about 30% kiln dust by weight and from about 90% to about 70% waste water sludge by weight,

the amount of kiln dust being sufficient to raise the pH of the mixture to at least 12 and to maintain the pH of the mixture to at least 12 for at least two hours, and

permitting the mixture with a pH of at least 12 to interact for at least two hours.

12. The product made in accordance with the method of claim **1**.

4,554,003

FERTILIZER PROCESSES AND COMPOSITIONS USING S-TRIAZINES

Donald E. Freepons, Kennewick, Wash., assignor to Melamine Chemicals, Inc., Donaldsonville, La.

Division of Ser. No. 305,394, Sep. 25, 1981, abandoned. This application Apr. 8, 1983, Ser. No. 483,383
Int. Cl.⁴ C05C *9/00, 11/00*
U.S. Cl. 71—28 **10 Claims**

1. A process for increasing the output of productive units per unit weight of fertilizer nitrogen applied, from a crop that responds to fertilizer nitrogen, comprising inserting and distributing in soil in which said crop is grown, in the root zone of said crop,

a granular fertilizer product that in the soil is a source of nitrogen fertilizer values, the granules being suitable for mechanical dispensing for application to and into the soil, said granules consisting of a mixture comprising:

particles of a material selected from the group consisting of melamine, the mineral acid salts of melamine, and mixtures thereof, said particles having individual particle sizes not above 400 micrometers in largest dimension, in an amount from 10% to 67% by weight of said granules, and

an effective amount by weight of the granules, of a binder that binds said particles in a form which is granular, the amount of said binder being from 33% to 90% by weight of said granules, said binder being urea,

said binder, after distribution of the granules in the soil, being capable of undergoing disintegration with release of said particles thus permitting the action of water and microorganisms on said particles,

said granules being suitable in granule strength and weight for mechanical dispensing and for application to or into the soil, the average crush strength of a sample of said granules, selected to have sizes of 3 mm. to 4 mm., being at least one pound per granule, and said granules having been formed by solidifying said urea binder from the molten state so as to bind said particles in said urea, and

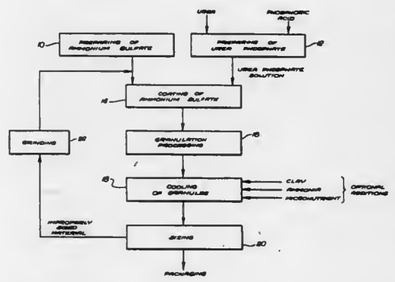
said particles furnishing from about 50% to about 90% of the fertilizer nitrogen thus applied to the soil.

4,554,004

PROCESS FOR GRANULATION OF FERTILIZER MATERIALS

Laurence W. Bierman; Charles R. Edinborough, and David K. Johnson, all of Pocatello, Id., assignors to J. R. Simplot Company, Boise, Id.

Filed Oct. 19, 1983, Ser. No. 543,488
Int. Cl.⁴ B02C *19/12;* C05B *15/00*
U.S. Cl. 71—29 **14 Claims**



1. A process for preparing a granulated product from fine particles of a non-thermoplastic material, comprising the steps of:

providing a liquid solution of urea phosphate;

providing the non-thermoplastic material as finely divided solid particles;

coating the particles with urea phosphate;

granulating the coated particles at a temperature within the thermoplastic range of the urea phosphate, to adhere the finely divided particles together into granules.

4,554,005

TRIAZONE FERTILIZER AND METHOD OF MAKING

Edwin F. Hawkins, Baton Rouge, La., assignor to Arcadian Corporation, Parsippany, N.J.

Filed Aug. 28, 1984, Ser. No. 644,975
Int. Cl.⁴ C05C *9/00*
U.S. Cl. 71—30 **28 Claims**

1. A liquid fertilizer composition consisting essentially of: as calculated on a dry weight basis of 100% solids, triazone composition that is substantially soluble in water, present at at-least about 30% (dry weight), urea present in an amount of at-least about 40% (dry weight) such that a ratio of amount of triazone present relative to amount of urea present is at-least about 0.48, methylene diurea up to about 3% (dry weight), monomethylolurea up to about 6% (dry weight) with total weight (dry weight) of methylene diurea and monomethylolurea up to about 6%, hexamethylenetetramine up to 2% (dry weight), and water in an amount at-least sufficient for solution of said triazone composition, said urea, said methylene diurea, said monomethylolurea and said hexamethylenetetramine being dissolved therein, and said triazone composition on a dry weight basis, relative to said methylene diurea being a ratio of at-least about 11.

4,554,006

PHENYLPROPYLAMMONIUM SALTS, THEIR MANUFACTURE AND AGENTS CONTAINING THESE COMPOUNDS

Ernst Buschmann; Bernd Zeeh, both of Ludwigshafen; Johann Jung, Limburgerhof, and Hubert Sauter, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,789
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952382
Int. Cl.⁴ C07D *207/08;* A01N *33/04*
U.S. Cl. 71—76 **1 Claim**

1. A phenylpropylammonium salt selected from the group consisting of N-allyl-N-[3-(2-fluorophenyl)-2-methylpropyl]-pyrrolidinium bromide, N-ally-N-[3-(2,4-dichlorophenyl)-2-methylpropyl]-pyrrolidinium bromide, N-allyl-N-[3-(2,4-dichlorophenyl)-2-isopropyl-propyl]-pyrrolidinium bromide, N-allyl-N-[3-(2,4-dichlorophenyl)-2-propylpropyl]-pyrrolidinium bromide, N-allyl-N-[2-methyl-3-(o-methylphenyl)-propyl]-pyrrolidinium bromide and N-allyl-N-[3-(4-chlorophenyl)-2-methylpropyl]-pyrrolidinium bromide.

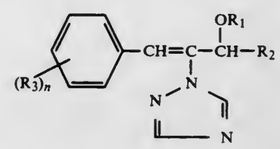
4,554,007

GEOMETRICAL ISOMER OF 1-SUBSTITUTED-1-TRIAZOLYLSTYRENES, AND THEIR PRODUCTION AND USE AS FUNGICIDE, HERBICIDE AND/OR PLANT GROWTH REGULANT

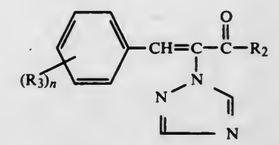
Yuji Funaki; Hirofumi Oshita, both of Toyonaka; Shigeo Yamamoto, Ikeda; Shizuya Tanaka, Minoo, and Toshiro Kato, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 13, 1980, Ser. No. 130,108
Claims priority, application Japan, Mar. 20, 1979, 54-32876; Apr. 5, 1979, 54-41659; Aug. 6, 1979, 54-100547; Sep. 10, 1979, 54-116576; Sep. 21, 1979, 54-122366; Sep. 25, 1979, 54-123485; Sep. 26, 1979, 54-124571; Jan. 30, 1980, 55-10568
Int. Cl.⁴ A01N *43/64;* C07D *249/08*
U.S. Cl. 71—076 **7 Claims**

1. A geometrical isomer of the formula,

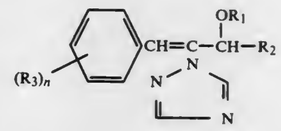


wherein R_1 is a hydrogen atom, a C_1–C_4 alkyl, C_3–C_4 alkenyl or 2-propynyl group, R_2 is a C_1–C_6 alkyl, cyclopropyl or 1-methylcyclopropyl group, R_3, which may be the same or different, is a halogen atom, a C_1–C_4 alkyl, halogen-substituted C_1–C_3 alkyl, C_1–C_4 alkoxy, phenoxy, phenyl, cyano or nitro group, and n is an integer of 0 to 3, obtained by reducing one of the two geometrical isomers of a triazole compound represented by the formula,

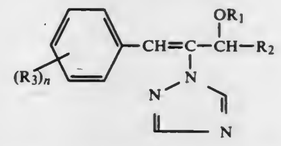


wherein R_2, R_3 and n are as defined above and in which the olefin proton appears at a higher magnetic field on the NMR spectrum in deutero chloroform, or by further etherifying the resulting reduced product, or its salts.

6. A fungicidal, herbicidal and/or plant growth regulating composition for agriculture and horticulture use comprising as an active ingredient a fungicidally, herbicidally, or plant growth regulating effective amount of a geometrical isomer of the formula,



wherein R_1, R_2, R_3 and n are as defined in claim **1**, obtained by reducing one of the two geometrical isomers of a triazole compound represented by the formula,



wherein R_2, R_3 and n are as defined in claim **1** and in which the olefin proton appears at a higher magnetic field on the NMR spectrum in deutero chloroform, or by further etherifying the resulting reduced product, or salts thereof, and an agriculturally or horticulturally acceptable carrier.

4,554,008

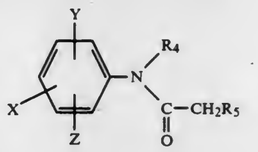
HERBICIDAL ANTIDOTES

Reed A. Gray, Saratoga, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 026,112, Apr. 2, 1979, Pat. No. 4,420,322. This application Sep. 6, 1983, Ser. No. 529,320
Int. Cl.⁴ A01N *25/32*
U.S. Cl. 71—83 **12 Claims**

1. An herbicidal composition consisting essentially of

(a) an acetanilide herbicide of the formula



in which

X, Y and Z are independently selected from the group consisting of hydrogen and 1-4 carbon alkyl;

R_4 is selected from the group consisting of 1-6 carbon alkyl, and 2-10 carbon alkoxyalkyl; and

R_5 is selected from the group consisting of chlorine, bromine, and iodine; whereby the improvement consists of reducing the injury to said crop by employing

(b) a non-phytotoxic antidotally effective amount of an azide salt selected from the group consisting of alkali and alkaline earth elements or ammonium, said azide salt being antidotally active with said acetanilide herbicide.

4,554,009

METHOD OF CONTROLLING UNDESIRED PLANTS WITH THIOSULFENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILES

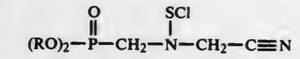
James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 514,403, Jul. 18, 1983, Pat. No. 4,508,663, which is a division of Ser. No. 309,321, Oct. 5, 1981, Pat. No. 4,407,763. This application Aug. 23, 1984, Ser. No. 643,605

Int. Cl.[4] A01N *57/20*

U.S. Cl. 071—087 **4 Claims**

1. A method of controlling undesired plants which comprises applying to said plants or plant growth medium a herbicidally effective amount of a compound of the formula



wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen.

4,554,010

5-DEOXY-3-O-ARYLMETHYL OR SUBSTITUTED ARYLMETHYL-1,2-O-SUBSTITUTED-ALKYLIDENE-ALPHA-D-XYLOFURANOSE HERBICIDE DERIVATIVES

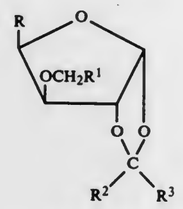
William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 7, 1983, Ser. No. 559,126

Int. Cl.[4] A01N *43/08;* **C07H** *17/04*

U.S. Cl. 71—88 **28 Claims**

1. A compound having the formula:



(I)

wherein R is lower alkyl having 1 through 4 carbon atoms or alkenyl having 2 through 4 carbon atoms;

R^1 is 2-trifluoromethylphenyl, aryl having 6 through 10 carbon atoms or substituted aryl having 1 through 4 substituents independently selected from the group of lower alkyl having 1 through 4 carbon atoms, lower alkoxy having 1 through 4 carbon atoms, cyano and halo;

one of R^2 or R^3 is lower haloalkyl having 1 through 3 halo atoms; aryl having 6 through 10 carbon atoms; substituted aryl having 1 or 2 substituents independently selected from the group of lower alkyl, lower alkoxy, halo and trifluoromethyl; arylalkyl wherein the alkyl moiety has 1 or 2 carbon atoms and the aryl moiety has 6 through 10 carbon atoms or ring substituted arylalkyl wherein the alkyl moiety has 1 or 2 carbon atoms and the aryl moiety is as defined hereinabove for substituted aryl and the other of R^2 or R^3 is hydrogen, lower alkyl, lower halo alkyl having 1 through 3 halo atoms; aryl; substituted aryl; arylalkyl; or ring substituted aryl wherein said aryl, substituted aryl, arylalkyl and substituted arylalkyl are as defined hereinabove, or R^2 and R^3 together with the carbon atom to which they are joined form a cyclopentyl or cyclohexyl group.

23. A method for treating undesired vegetation which comprises supplying a herbicidally effective amount of the compound of claim 1 or mixtures thereof, to the foliage and/or growth medium of said vegetation.

4,554,011

HERBICIDAL 2S-(2β,4β,5β)-5-ARYLMETHOXY-4-SUBSTITUTED 2-ALKYL-1,3-DIOXANE DERIVATIVES

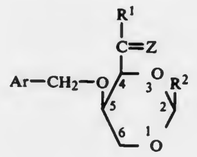
William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 24, 1984, Ser. No. 645,451

Int. Cl.[4] A01N *43/00;* **C07D** *401/00, 319/06*

U.S. Cl. 71—88 **40 Claims**

1. A compound having the formula:



(I)

wherein

R^1 is methyl, ethyl, n-propyl or n-butyl;

R^2 is lower alkyl having 1 through 6 carbon atoms;

Ar is phenyl, thienyl, pyridyl or substituted phenyl having 1 or 2 substituents independently selected from the group of lower alkyl having 1 through 6 carbon atoms; lower alkoxy having 1 through 6 carbon atoms; halo; and haloalkyl having 1 or 2 carbon atoms and 1 through 4 of the same or different halo atoms; and

Z is oxo or the group



wherein the wavy bond line indicates that the carbon atom to which the OR^3 group is attached can be R or S oriented, and R^3 is hydrogen, lower alkanoyl having 2 through 6 carbon atoms, benzoyl, phenoxyacetyl or substituted phenoxyacetyl having one or two substituents on the phenyl ring independently selected from the group of fluoro, chloro, bromo, iodo or trifluoromethyl;

and wherein said compound of Formula I has the stereo configuration 2-S-(2β,4β,5β)-.

33. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1, or mixtures of such compounds, and a compatible carrier.

4,554,012

ARYL N-ALKYL-N-(PYRIDYL OR PYRIMIDYL) CARBAMATE

Tetsuo Takematsu; Konnai, Makoto; Hideo Morinaka, all of Utsunomiya; Yuji Nonaka, Shinnanyo; Akira Nakanishi, Shinnanyo; Kenji Tsuzuki, Shinnanyo; Mitsuyuki Hashihama, Shinnanyo, and Takeshi Uwotani, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

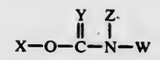
Filed Jun. 8, 1983, Ser. No. 502,170

Claims priority, application Japan, Jun. 10, 1982, 57-98485; Jul. 27, 1982, 57-129651; Sep. 10, 1982, 57-156710; Mar. 4, 1983, 58-34651

Int. Cl.[4] A01N *43/48;* **C07D** *239/72*

U.S. Cl. 71—92 **9 Claims**

1. A carbamate compound of the formula (I)



(I)

wherein

X is 2-naphthyl, 5-indanyl, 5,6,7,8-tetrahydro-2-naphthyl, 1,4-methano-1,2,3,4-tetrahydro-6-naphthyl, 1,4-ethano-1,2,3,4-tetrahydro-6-naphthyl, or phenyl having one or more substituents which may be the same or different, and are selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, lower alkylamino, (hydroxy)-lower alkyl, (lower alkoxy)-lower alkyl, (C_1–C_2) acyl, nitro, cyano, methylenedioxy, and halogenated lower alkyl,

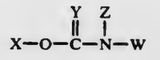
Y is an oxygen atom or a sulfur atom,

Z is lower alkyl,

W is pyridyl substituted by one or two of the same substituents selected from the group consisting of halogen, lower alkyl, and lower alkylamino when X is 2-naphthyl but W is pyridyl which may be substituted by one or two of the same or different substituents selected from the group consisting of halogen, nitro, lower alkyl, lower alkoxy, lower alkylthio, and lower alkylamino when X is other than 2-naphthyl.

7. A herbicide comprising

the carbamate of formula (I)



(I)

as an active ingredient, and

a carrier.

4,554,013

HERBICIDAL IMIDAZOLINYL NAPHTHOIC ACIDS

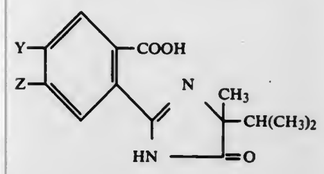
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 519,616, Aug. 2, 1983, abandoned. This application Jul. 16, 1984, Ser. No. 631,283

Int. Cl.[4] A01N *43/50;* **C07D** *233/70*

U.S. Cl. 71—92 **9 Claims**

6. A method for the control of monocotyledonous and dicotyledonous annual, perennial and aquatic plant species comprising: applying to the foliage of the plants or to soil or water containing seeds or other propagating organs thereof, a herbicidally effective amount of a compound having a structure:



wherein Y and Z taken together are —(CH_2)n— where n=2–4 or —CH=CH_2—CH=CH_2.

4,554,014

O-ARYLOXYPHENOXYACYL-α-N,N,-DIALKYLAMINOOXIMES AND HERBICIDAL METHODS OF USE

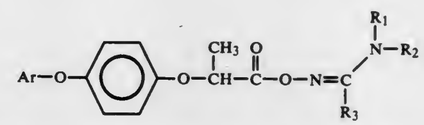
Charles G. Carter, San Francisco, and David L. Lee, Martinez, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 20, 1984, Ser. No. 602,305

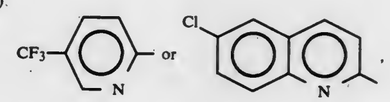
Int. Cl.[4] C07D *213/64;* **A01N** *43/40*

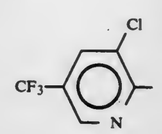
U.S. Cl. 71—94 **13 Claims**

1. O-aryloxphenoxyacyl-α-N,N-dialkylaminooxime having the formula

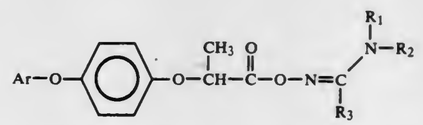


wherein R_1 and R_2 are each the same or different and are selected from alkyl groups having from 1 to 4 carbon atoms, and R_3 is selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, phenyl and halogen substituted phenyl groups; and Ar is selected from the group consisting of

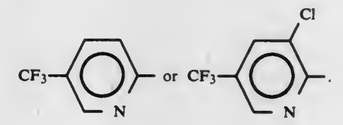




9. A method for controlling undesirable weed pests which comprises appying to the locus where control is desired a herbicidally effective amount of a compound having the formula



wherein R_1 and R_2 are each the same or different and are selected from alkyl groups having from 1 to 4 carbon atoms, R_3 is selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, phenyl and halogen substituted phenyl groups; and Ar is selected from the group consisting of



4,554,015

HERBICIDES

Tetsuo Takematsu; Makoto Konnai; Hideo Morinaka, all of Utsunomiya; Yuji Nonaka, Shinnanyo; Akira Nakanishi, Shinnanyo; Kenji Tsuzuki, Shinnanyo; Mitsuyuki Hashihama, Shinnanyo, and Takeshi Uwotani, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

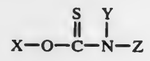
Filed Jun. 22, 1983, Ser. No. 506,892

Claims priority, application Japan, Jun. 23, 1982, 57-106737; Aug. 17, 1982, 57-141712; Feb. 2, 1983, 58-14596; Mar. 1, 1983, 58-31836

Int. Cl.[4] A01N *37/00*

U.S. Cl. 71—100 **5 Claims**

1. A method for the control of weeds, comprising the application of a herbicidal composition containing a thiocarbamate derivative represented by the general formula (I) as an active ingredient incorporated in an inert carrier to the locus to be protected



wherein

X is 5-indanyl, 5,6,7,8-tetrahydro-2-naphthyl, 1,4-methano-1,2,3,4-tetrahydro-6-naphthyl, 1,4-ethano-1,2,3,4-tetrahydro-6-naphthyl, or substituted phenyl having one or two of the same or different substituents selected from the group consisting of halogeno, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, acyl, nitro, cyano, methylenedioxy, and trifluoromethyl,

Y is lower alkyl,

Z is naphthyl which is unsubstituted or phenyl which is unsubstituted or substituted by one or two of the same or different substituents selected from the group consisting of halogeno, lower alkyl, lower alkoxy, lower alkylamino, trifluoromethyl, and fluorinated lower alkoxy.

4,554,016

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

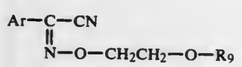
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,170

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.[4] A01N *37/34;* **C07C** *121/52*

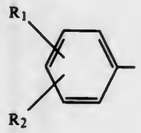
U.S. Cl. 71—105 **6 Claims**

1. A compound of the formula



wherein

Ar is 1-naphthyl or



in which

R_1 is hydrogen, halogen, lower alkyl or lower alkoxy, and

R_2 is hydrogen or halogen, and

R_9 is lower alkenyl.

6. An antidote composition for use in safening plants against the harmful effects of potent herbicides which comprises (1) a compound according to claim 1 and (2) a carrier.

4,554,017

METHOD AND COMPOSITIONS FOR REGULATING PLANT GROWTH USING CYCLOALKANE-CARBOXYLIC ACID COMPOUNDS

Rolf Schröder, Wuppertal, and Klaus Lürssen, Berg.Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

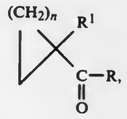
Filed May 11, 1979, Ser. No. 38,153

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824517; Feb. 20, 1979, 2906507

Int. Cl.[4] A01N *53/00, 37/08, 37/18*

U.S. Cl. 71—113 **6 Claims**

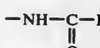
1. Method of regulating the growth of plants which method comprises applying to the plants or their habitat a plant growth regulant composition comprising as an active ingredient at least one cycloalkanecarboxylic acid compound of the formula



(1)

in which

R is hydroxyl, alkoxy of 1 to 10 carbon atoms, benzyloxy, amino, alkylamino or dialkylamino of 1 to 4 carbon atoms in each alkyl or the radical



wherein $M^{\oplus}$ is a sodium or potassium ion, one magnesium or calcium ion equivalent; an ammonium, alkylammonium, dialkylammonium, trialkylammonium or tetraalkylammonium ion with, in each case, 1 to 4 carbon atoms per alkyl radical;

R^1 is amino or the radical

wherein R^2 is hydrogen, alkyl of up to 4 carbon atoms or phenyl, or

R^1 is the radical $-N^{\oplus}H_3X^{\ominus}$, wherein $X^{\ominus}$ is chloride, and n is 1 or 2.

4,554,018

PRODUCTION OF POLYMERIC THICKENERS AND THEIR USE IN PRINTING

Adrian S. Allen, Bradford, England, assignor to Allied Colloids Limited, England

Filed Feb. 1, 1984, Ser. No. 575,735

Int. Cl.[4] C09D *11/02*

U.S. Cl. 106—20 **21 Claims**

1. A process in which a water insoluble, water swellable or swollen polymer is made by reverse phase polymerisation of a water soluble blend of copolymerisable monomers and in which the monomers comprise (a) at least one ethylenically unsaturated acid having free acid groups, (b) at least one ethylenically unsaturated acid having salt groups selected from ammonium, amine and alkali metal salts, (c) at least one ethylenically unsaturated cross-linking agent, and in which the molar proportions of the said free acid groups to the said salt groups during the polymerisation are 80:20 to 10:90.

4,554,019

LETTERPRESS PRINTING INK

John T. Moynihan, Herndon, Va., assignor to American Newspaper Publishers Association, Reston, Va.

Continuation-in-part of Ser. No. 337,220, Jan. 6, 1982, Pat. No. 4,419,132. This application Nov. 30, 1983, Ser. No. 556,493

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] C09D *11/06*

U.S. Cl. 106—27 **5 Claims**

1. A letterpress printing ink composition consisting essentially of:

a. Carbon black pigment in the range 6.0 to 19.8%

b. Gilsonite in the range 16.4 to 26.3%, and

c. Tall oil fatty acid in the range 52.7 to 70.5%.

4,554,020

HYDRAULIC CEMENT ADMIXTURE COMPOSITIONS

David H. Hollenberg, Neenah, Wis., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 29, 1984, Ser. No. 595,066

Int. Cl.[4] C04B *7/35*

U.S. Cl. 106—90 **14 Claims**

1. A hydraulic cement composition comprising a hydraulic cement binder and an amine salt of a borate ester of a polyhydroxy compound.

4,554,021

PREPARATION OF A CATIONIC STARCH PASTE

Richard D. Harvey, Muscatine; E. Daniel Hubbard, West Liberty, and Robert A. Meintrup, Muscatine, all of Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Continuation-in-part of Ser. No. 121,401, Feb. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 893,510, Apr. 4, 1978, abandoned. This application May 28, 1982, Ser. No. 383,253

Claims priority, application Spain, Apr. 2, 1979, 479.185

Int. Cl.[4] C08L *3/02*

U.S. Cl. 106—213 **19 Claims**

1. A process for preparing cationic starch pastes comprising:

a. preparing an aqueous starch paste having a solids level in the range from about 10% to 40% by weight,

b. treating said starch paste with a cationic monomeric halogenated alkyl or alkenyl amine, said cationic monomeric halogenated alkyl or alkenyl amine being used in an amount to provide a starch derivative having a degree of substitution less than about 0.05,

c. reacting said treated starch with an amount of an alkali in the range of 1.5 to 8% based on dry solids weight of starch at a temperature of 120° F. to 200° F., wherein the solids level of the starch paste, the amount of alkali and the temperature and period of reaction are adjusted to achieve a reaction efficiency of at least about 40%.

4,554,022

ADDITIVES FOR HOT MIX ASPHALT

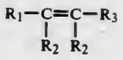
Anthony V. Grossi; Louis T. Hahn, and Alfred Marzocchi, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 7, 1984, Ser. No. 607,859

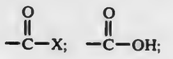
Int. Cl.[4] C08L *95/00;* **C09D** *3/24*

U.S. Cl. 106—273 N **10 Claims**

1. A method of increasing the bonding energy between an asphalt and an aggregate which comprises incorporating into said asphalt a chemically-modified asphalt composition obtained by heating a mixture consisting of a vinyl monomer having the general formula



wherein R_1 is an aromatic group containing 6 to 12 carbon atoms, R_2 is hydrogen or lower alkyl group and R_3 is hydrogen or a lower alkyl or a group selected from the group consisting of $-CH_2OH$; $-CHO$;



and $-CH_2-CN$ wherein X is a halogen;

an alkenyl azabenzene and an asphalt at a temperature of at least 110° C. for at least about 8 hours, wherein said chemically modified asphalt comprises from about 1 to about 10 weight percent based on the total weight of said asphalt and said chemically-modified asphalt.

4,554,023

MODIFIED ASPHALT

Richard T. Janicki, Oak Lawn, Ill., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 29, 1983, Ser. No. 556,201

Int. Cl.[4] C08L *95/00*

U.S. Cl. 106—273 N **5 Claims**

1. A roofing product including a composition comprising an asphalt and bis-stearoylamide, the bis-stearoylamide improving the weatherability of the product and constituting from about 2 to about 6% of the weight of the combination of asphalt and bis-stearoylamide.

4,554,024

METHOD FOR PREPARING AN IMPROVED PITCH IMPREGNANT FOR A CARBON-CARBON COMPOSITE

James E. Zimmer, San Jose, and Linda M. Salvador, Fremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1984, Ser. No. 579,625

Int. Cl.[4] C08L *95/00*

U.S. Cl. 106—284 **4 Claims**



1. In a process for producing a carbon fiber-reinforced carbon-carbon composite comprising the steps of impregnating a multidirectional carbon fiber reinforcing structure with a pitch, carbonizing said pitch and graphitizing the resulting structure, the improvement which comprises solvent extracting said pitch sequentially with cyclohexane and pyridine and impregnating said reinforcing structure with the fraction which is insoluble in cyclohexane and soluble in pyridine.

4,554,025

METHOD OF REMOVING BUILT-UP LAYERS OF ORGANIC COATINGS

Thomas W. Burke, Allentown; Robert A. Welch; Kevin S. Schmoyer, both of Breinigsville, and Bernard D. Bauman, Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 538,258, Oct. 3, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,506

Int. Cl.[4] B08B *7/04*

U.S. Cl. 134—17 **8 Claims**

1. A continuous, on-line process for removing layers of paint from a support device for a product in a paint finishing operation, which comprises:

(a) cryogenically treating said support device having a critical surface tension between about 15 to 25 dynes/cm, after a build-up of paint has occurred on said support device, said cryogenic treatment being sufficient to embrittle the paint; and

(b) subsequently removing the paint from said cryogenically treated support device using a gas or liquid blast free of any solid, abrasive particles.

4,554,026

AQUEOUS HYDROTROPE SOLUTIONS FOR PAINT DETACKIFIERS

David R. Cosper, Downers Grove, Ill., and Gretchen L. McKay, Cincinnati, Ohio, assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 573,089, Jan. 23, 1984, Pat. No. 4,523,932, which is a continuation-in-part of Ser. No. 390,294, Jun. 21, 1982, Pat. No. 4,444,573. This application Nov. 13, 1984, Ser. No. 670,800

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] B08B *7/00*

U.S. Cl. 134—38 **6 Claims**

1. A method for the detackification of oversprayed paint solids which comprises contacting such oversprayed paint solids with an aqueous alkaline hydrotrope solution and then recovering detackified paint solids, said hydrotrope being selected from the group consisting of aliphatic and aromatic hydrotropes and blends thereof wherein when the hydrotrope is aliphatic, it contains from 3–10 carbon atoms and when it is aromatic, it contains from 6–9 carbon atoms, said hydrotrope being further characterized as containing a polar group from the group consisting of carboxylate, phosphate, phosphonate, sulfates, or sulfonates.

4,554,027

SHAPED PART MADE OF A COMPOSITE MATERIAL AND A PROCESS FOR ITS PRODUCTION

Peter Tautzenberger, Niefern-Öschelbronn; Friedrich Schneider, Pforzheim, and Dieter Stoeckel, Birkenfeld, all of Fed. Rep. of Germany, assignors to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

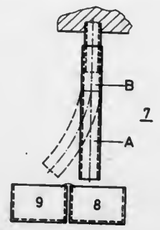
Filed May 17, 1984, Ser. No. 611,164

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319395

Int. Cl.[4] B21D *53/00*

U.S. Cl. 148—11.5 R **9 Claims**

1. Shaped part made of a composite material having shape memory properties, said shaped part comprising a plurality of sections, at least several of which have different shape memory properties capable of achieving two-way and/or one-way effects, said sections being coupled metallurgically together in such a way that results of said shape memory effects which are independent of one another cause temperature-specific changes in the shape of said shaped part, in the course of which said shaped part assumes the same number of permanent and-



/or reversible shapes as the number of said sections having shape memory properties.

4,554,028

LARGE WARM WORKED, ALLOY ARTICLE

Terry A. DeBold, Wyomissing; John H. Magee, Jr., and Norman B. Schmidt, both of Reading, all of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Dec. 13, 1983, Ser. No. 560,932

Int. Cl.[4] C22C *38/58*

U.S. Cl. 148—38 **22 Claims**

1. An austenitic, non-magnetic, stainless steel, alloy article which has a large section size, which has been significantly warm worked between about 1500° F. and 1650° F. but not subsequently annealed, which has a 0.2% yield strength of at least about 90 ksi, and which, when formed into a U-bend, does not undergo stress corrosion cracking within about 700 hours in boiling saturated aqueous sodium chloride containing 2 weight percent (w/o) ammonium bisulfite; the alloy of the article consisting essentially of about:

Elements	w/o
C	0.1 Max.
Mn	1–11
Si	0.6 Max.
Cr	18–23
Ni	14–25
Mo	2.5–6.5
Cu	2 Max.
B	.01 Max.

N ranging from a minimum of about 0.15 w/o to no more than the amount that can be retained in solid solution; C+N being equal to at least about:

$$\frac{Cr + Mo + 1.5Si + 0.87Mn - Ni - 6.1}{30}$$

and the balance being essentially iron.

4,554,029

LOCAL HEAT TREATMENT OF ELECTRICAL STEEL

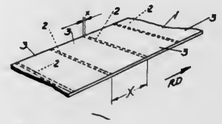
Jerry W. Schoen, Hamilton, and Russel L. Young, Collinsville, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Nov. 8, 1982, Ser. No. 439,884

Int. Cl.[4] H01F *1/04*

U.S. Cl. 148—112 **5 Claims**

1. A process for improving the core loss of magnetic material of the type having a plurality of magnetic domains, said magnetic material being chosen from the class consisting of cube-on-edge regular grain oriented silicon steel strip, cube-on-edge oriented high-permeability grain oriented silicon steel strip and cube-on-face oriented silicon steel strip, said magnetic material having been subjected to a high temperature anneal to develop its grain orientation, said magnetic material having an insulative coating thereon chosen from the class consisting of a mill glass, an applied coating and an applied coating over a mill glass, said process comprising the steps of subjecting said magnetic material, after said high temperature grain orientation developing anneal to a local heat treatment by radio frequency induction heating or radio frequency resistance heating at a frequency of at least about 450 kHz so as to produce in said magnetic material narrow parallel bands of heat treated re-

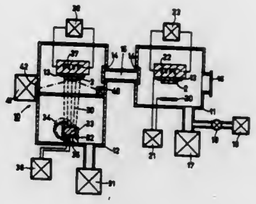


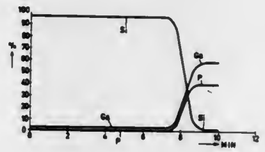
gions with untreated regions therebetween, said heat treated bands having a length (x) of less than 1.5 mm and said treated regions having a length (X) of at least 2 mm, said heat treatment for each of said bands being accomplished in less than 0.5 seconds, and thereafter annealing said locally heat treated magnetic material at a temperature of at least about 800° C. whereby to introduce artificial boundaries to decrease the 180° magnetic domain wall spacing of said magnetic material without degradation of said insulative coating.

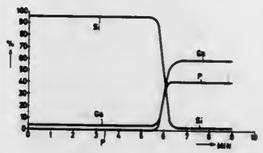
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heating said non-monocrystalline semiconductor layer to a second temperature for converting said non-monocrystal-









line semiconductor layer into a monocrystalline semiconductor layer.

4,554,030

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY MEANS OF A MOLECULAR BEAM TECHNIQUE

Jan Haisma; Poul K. Larsen, both of Groenewoudseweg 1, Eindhoven; Tim De Jong, Gerstweg 2, Nijmegen; Johannes F. Van der Veen, Lothariuslaan 107, Bussum, all of Netherlands; Willem A. S. Douma, Private Bag 0022, Gaborono, Botswana, and Frans W. Saris, Jennerstraat 1, Amsterdam, Netherlands

Filed Mar. 2, 1984, Ser. No. 585,649

Claims priority, application Netherlands, Mar. 3, 1983, 8300780

Int. Cl.[4] H01L *21/203, 21/324*

U.S. Cl. 148—175 **4 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of

providing a first monocrystalline semiconductor layer of a first material having a surface region,

forming a second semiconductor layer of a second material onto said surface region of said first layer by a molecular beam particle deposition technique, said second layer being formed at a first temperature providing a non-monocrystalline semiconductor layer, said molecular beam particle deposition technique forming a particle beam of at least one of atoms and molecules of said second semiconductor layer, and thereafter

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4,554,031

COLD MOLDABLE EXPLOSIVE COMPOSITION

Hildebert Kerviel, Chelles, and Serge Poulard, Saint-Mande, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 27, 1984, Ser. No. 604,937

Claims priority, application France, May 3, 1983, 83 07347

Int. Cl.[4] C06B *45/10*

U.S. Cl. 149—19.3 **3 Claims**

1. A cold-mouldable explosive composition comprising from about 85% to 98% by weight of at least one explosive selected from the group consisting of cyclotetramethylenetetranitramine (octogen), cyclotrimethylenetrinitramine (hexogen), triaminotrinitrobenzene (TATB), pentaerythritoltetranitrate (pentrite) and hexanitrostilbene (HNS), from about 1.5 to 11% by weight of a thermoplastic elastomeric binder comprising a copolymer of trifluorochloroethylene and vinylidene fluoride, and from about 0.5 to 4% of a fluorinated plasticizer comprising a trifluorochloroethylene polymer having a molecular weight of from about 500 to 1000.

4,554,032

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Katsuhide Hattori; Yoshiaki Fukatsu, and Hiroshi Sakai, all of Aichi, Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,080
Claims priority, application Japan, Sep. 5, 1983, 58-161880
Int. Cl.⁴ C06B *45/02*
U.S. Cl. 149—21 **1 Claim**

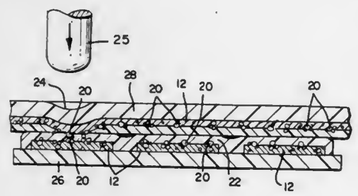
1. A water-in-oil emulsion explosive composition comprising:
a disperse phase consisting of an aqueous solution of inorganic oxidizer salts containing ammonium nitrate;
a continuous phase consisting of a carbonaceous fuel;
an emulsifier; and,
a gas-retaining agent, wherein said gas-retaining agent consists of hollow microspheres obtained by firing volcanic ash, said hollow microspheres having a bulk density of 0.05–0.1 and an average particle size of 10–100 μm.

4,554,033

METHOD OF FORMING AN ELECTRICAL INTERCONNECTION MEANS

Ronald A. Dery, and Warren C. Jones, both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 4, 1984, Ser. No. 657,851
Int. Cl.⁴ H01B *13/06*
U.S. Cl. 156—52 **10 Claims**



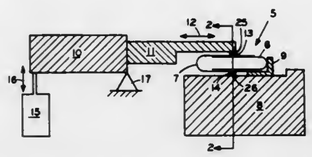
1. A method of connecting at least one conductive path of a first insulating member with at least one conductive means on a second insulating member comprising the steps of:
selecting the first insulating member;
applying at least one conductive path to said first insulating member, said conductive path being in the form of a conductive ink including an insulating medium having a first group of finely divided conductive particles uniformly suspended and dispersed throughout said insulating medium and a second group of large size conductive particles randomly scattered throughout said insulating medium, some of said large size conductive particles projecting outwardly from said insulating member;
applying an insulating thermoplastic adhesive layer secured onto said first insulating member covering said at least one conductive path;
positioning said at least one conductive path in a conducting relationship with said at least one conductive means on said second insulating member such that said thermoplastic adhesive layer is disposed between said at least one conductive path and said at least one conductive means;
applying heat and pressure to the positioned at least one conductive path and at least one conductive means causing said thermoplastic adhesive layer to soften, flow, and become thinner thus causing said large conductive particles on said at least one conductive path to extend through said thermoplastic adhesive layer and make electrical connection with said at least one conductive means.

4,554,034

BONDING CAPSULES

Dale Ensminger, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Nov. 15, 1984, Ser. No. 671,665
Int. Cl.⁴ B29C *27/08*; B65D *83/04*
U.S. Cl. 156—69 **16 Claims**



1. Apparatus for bonding an overlapping portion of the outer cap and inner body of a closed largely cylindrical capsule, comprising
flexible coupling means positioned around and contiguous to at least a part of the outer circumference of the overlapping portion of the cap,
means for compressing the coupling means to provide an inward compressive force on the capsule, and
means for applying ultrasonic energy to the coupling means in a direction substantially parallel to the axis of the capsule to provide a bond between the cap and the body over at least a substantial portion of the part of the capsule in contact with the coupling means.

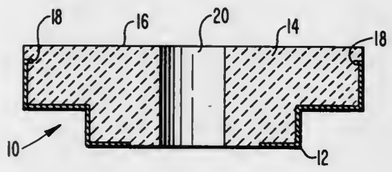
8. A method of bonding an overlapping portion of the outer cap and inner body of a closed largely cylindrical capsule, comprising
placing flexible coupling means around and contiguous to at least a part of the outer circumference of the overlapping portion of the cap,
compressing the coupling means to provide an inward compressive force on the capsule, and
applying ultrasonic energy to the coupling means in a direction substantially parallel to the axis of the capsule to provide a bond between the cap and the body over at least a substantial portion of the part of the capsule in contact with the coupling means.

4,554,035

METHOD OF MANUFACTURING A SLIDE GATE

Joseph L. Stein, Pittsburgh, Pa., and Thomas J. Maskell, Niles, Ohio, assignors to General Refractories Company, Bala Cynwyd, Pa.

Continuation of Ser. No. 461,104, Jan. 26, 1983, abandoned, which is a division of Ser. No. 339,511, Jan. 15, 1982, Pat. No. 4,383,624, which is a continuation of Ser. No. 843,112, Oct. 17, 1977, abandoned. This application Mar. 15, 1984, Ser. No. 589,052
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—89 **11 Claims**



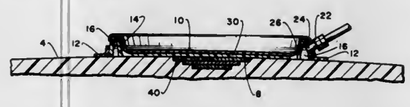
1. A method of forming a slide gate portion of a valve for controlling the flow of molten material, said method comprising the steps of:
(a) providing a metal container disposed to form the metal portion of a slide gate valve, said container including an open portion for containing a refractory therein;
(b) placing a particulate mixture of ceramic material and a binder into said open portion of said refractory containing portion of said container;
(c) shaping said mixture in said container by applying pressure thereto while fully supporting said container; and
(d) heating said mixture in said container to form a chemical bond between the ceramic particles and to form a coherent unfired refractory and also to affix said refractory directly to said container.

4,554,036

PORTABLE VACUUM DEVICE AND METHOD OF USING SAME

Cosby M. Newsom, 15517 S. Seaforth Ave., Norwalk, Calif. 90650

Filed May 7, 1984, Ser. No. 607,779
Int. Cl.⁴ B32B *35/00*
U.S. Cl. 156—94 **12 Claims**



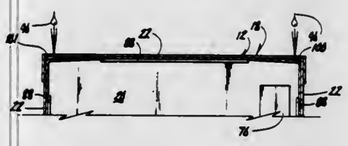
11. The method of repairing a bondable workpiece in situ which comprises the steps of:
a. preparing the workpiece area having the flaw or fissure therein;
b. applying a bondable material patch to said flaw of fissure in sufficient amount to reconstruct the same, said bonding material being curable at or above ambient temperatures;
c. placing a portable vacuum bonding device over said flaw or fissure having bonding material therein and evacuating the ambient atmosphere in the area of said flaw or fissure and causing atmosphereic pressure to act upon the bonding material in said flaw or fissure; and
d. effectuating curing and setting of said bonding material and thereafter removing said device and finishing the workpiece surface in the area of said previous flaw or fissure.

4,554,037

CORN POPPING MACHINE AND METHOD OF ASSEMBLING THE SAME

James M. Goodlaxson, 705 E. 20th St. South, Newton, Iowa 50208

Division of Ser. No. 486,263, Apr. 18, 1983,. This application Jun. 8, 1984, Ser. No. 618,879
Int. Cl.⁴ A23L *1/18*
U.S. Cl. 156—152 **6 Claims**



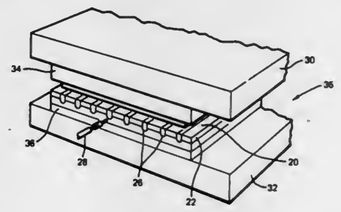
1. A method of assembling a corn popping machine having a vertically standing, three-sided, U-shaped transparent panel member having first, second and third sides with said first and third sides integrally forming corners with opposite edges of said second side, a top chassis plate assembly, a bottom base member and door means across the vertical open side of the panel means, the steps of the method comprising:
(a) attaching said top chassis plate to the top edge of the panel member utilizing securing means which retentively hold and grasp said top chassis plate to said top edge of said panel member;
(b) placing each edge of each side of said lower edge of said panel member into channel members secured to said base member, said channel members being of a length shorter than the width of each side of said panel member;
(c) flexing the outer corners of said second side of said panel member so as to produce a small gap between the outer edges of said second side and said base member outwardly of said channel member;
(d) inserting an adhesive substance between said flexed outer edges and said base member; and
(e) releasing said flexed sides after said adhesive substance has been inserted so that said edges return to an abutting position against said base and are secured by said adhesive substance.

4,554,038

PROCESS FOR FABRICATING LIGHTWEIGHT, RIGID SOLAR ARRAY SUBSTRATE

Ira L. Allard, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 29, 1980, Ser. No. 182,374
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—196 **22 Claims**



1. A process for making a rigid ultralightweight substrate from a thermoset plastic film comprising the steps of:
(a) forming rigidizing members on a first sheet of the film by placing the sheet over a female mold having the desired configuration including indentations therein corresponding to the rigidizing members to be formed in the sheets,
(b) bonding the first sheet and a second sheet together with an adhesive applied to the side of the first sheet opposite the rigidizing members,
(c) curing the adhesive to bond the sheets together so that the rigidizing members will not collapse, and
(d) removing the first sheet with the second sheet bonded thereto from the female mold.

4,554,039

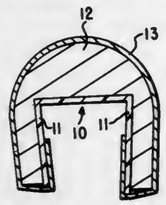
WATERBED RAIL AND METHOD OF MAKING SAME

Max F. James, Tea, S. Dak., assignor to Tea Industries, Inc., Tea, S. Dak.

Filed Apr. 2, 1984, Ser. No. 595,997
Int. Cl.⁴ B29C *24/00*
U.S. Cl. 156—213 **2 Claims**

1. The method of making a padded rail which comprises laying out a precut sheet of cover material, placing preformed padding onto said cover material, said padding being formed in channel shape with a rounded exterior, said placing being such that the centerline of said cover material is aligned with the portion of said padding which is to be the highest part of the finished product, placing a preformed channel member into the

interior of the channel shape of the padding and drawing up the edges of said cover material around said padding and said



channel member and fastening said edges to the interior of said channel member.

4,554,040

METHOD OF FORMING A PRINTING SLEEVE

Hendricus J. van der Velden, Cuyk, Netherlands, assignor to Stork Screens B.V., At Boxmeer, Netherlands

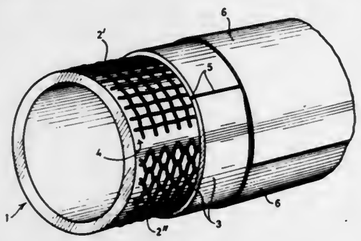
Filed Dec. 8, 1983, Ser. No. 559,214

Claims priority, application Netherlands, Dec. 8, 1982, 8204751

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.⁴ B29C *17/04*; G03F *7/02*

U.S. Cl. 156—215 **11 Claims**



1. A method of forming a cylindrical sleeve for a printing cylinder which comprises the steps of (1) providing a rigid support means which has cylindrical outer surface which is entirely smooth from one lateral side thereof to the other lateral side thereof, (2) placing a knitted fabric made of plastic fiber multifilaments around said cylindrical outer surface so as to be in direct contact therewith, said knitted fabric extending between the lateral sides of said cylindrical outer surface, the total thread thickness of the multifilaments used therein being between 10 to 200 microns and the mesh value thereof being between 2 and 25 meshes/inch, (3) applying a sheet of a thermoplastics, elastromeric material around the outer surface of said knitted fabric, said thermoplastic, elastomeric material being hardenable under the influence of light, and (4) simultaneously applying a vacuum to the sides of the knitted fabric adjacent the opposite lateral sides of said cylindrical outer surface and heating the support means, the knitted fabric and the sheet of thermoplastic, elastomeric material to an elevated temperature which is close to the plasticizing temperature of the sheet of thermoplastic, elastomeric material, resulting in in said sheet of thermoplastic, elastomeric material becoming bonded to said knitted fabric and to the outer surface of said rigid support means, thus forming the cylindrical sleeve.

4,554,041

METHOD OF PRODUCING A THERMALLY INSULATED BODY

Kurt Schreier, Breitenfurt; Karl Bartsch, Vienna; Helmut Knoll, Mürzhofen, and Gerd Tomazic, Mürzzuschlag, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

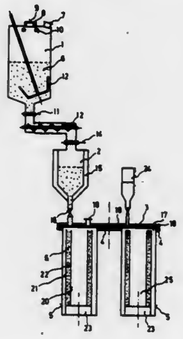
PCT No. PCT/AT83/00025, § 371 Date Apr. 12, 1984, § 102(e) Date Apr. 12, 1984, PCT Pub. No. WO84/00798, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 17, 1983, Ser. No. 604,616

Claims priority, application Austria, Aug. 20, 1982, 3165/82

Int. Cl.⁴ B32B *31/06*

U.S. Cl. 156—276 **34 Claims**



1. A method for fabricating a thermally insulated body, especially a pipe, having an inner shell and an outer shell, especially a metallic inner shell and a metallic outer shell, defining a hermetically sealed intermediate space filled with at least one of a porous particulate insulating material and a porous powdered insulating material under vacuum, comprising the steps of:

evacuating the intermediate space between the outer shell and the inner shell;

maintaining the intermediate space under vacuum;

introducing at least one insulating material of the porous particulate insulating material and the porous powdered insulating material from a reservoir maintained under vacuum into the intermediate space between the outer shell and the inner shell;

electrically grounding the inner shell and the outer shell before performing said step of introducing said at least one insulating material; and

hermetically sealing the intermediate space.

4,554,042

MACHINE FOR SEALING VARIABLE-HEIGHT PARALLELEPIPEDAL CARTONS

Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

Continuation of Ser. No. 268,488, May 29, 1981, abandoned. This application Nov. 13, 1984, Ser. No. 671,001

Claims priority, application Italy, Feb. 13, 1981, 19710 A/81

Int. Cl.⁴ G05G *15/00*

U.S. Cl. 156—350 **15 Claims**

1. Machine for sealing variable-height parallelepipedal cartons, comprising:

a carton support and advancing base;

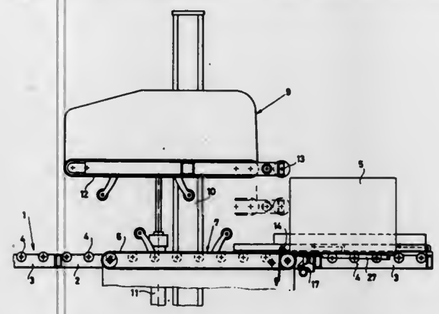
an upper sealing head superimposed to said support base in a vertically displaceable manner from a minimum-height position;

lifting means for lifting said head; and

sensing means engageable by the carton body to actuate said lifting means and cause said sealing head to rise automatically from said minimum-height position to a sufficient height to allow the introduction of the carton between said support base and said sealing head, wherein

said sensing means are mounted on said support base in such a position as to be engageable by the bottom of the carton and wherein

said sensing means are formed in such a way as to include three operative positions comprising an initial rest position



and, first and second sequentially attainable working positions, in which said sensing means cause the ascent of the sealing head up to a sufficient height for the introduction of the carton and, respectively, once the introduction has been effected, allow the same head to descend again on the carton top;

said sensing means returning to said initial rest position upon disengagement of said bottom from said carton.

4,554,043

BELT PRESS WITH MULTIPLE PRESS FRAMES

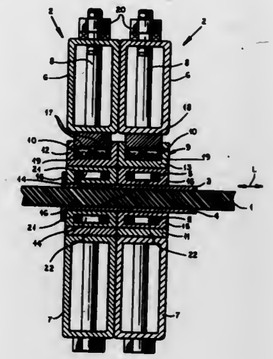
Harald Fudickar, Wuppertal, and Peter Thies, Ennepetal, both of Fed. Rep. of Germany, assignors to Wagener Schwelm GmbH & Co., Schwelm, Fed. Rep. of Germany

Filed Jun. 8, 1984, Ser. No. 618,503

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1983, 3320784

Int. Cl.⁴ B30B *15/06*

U.S. Cl. 156—502 **16 Claims**



1. A press for joining or repairing a wide flat belt, the press being formed of a longitudinal row of upright and abutting press frames each comprising:

upper and lower traverses respectively having lower and upper traverse faces;

two upright tie bolts extending vertically between the upper and lower traverses and securing the lower traverse to the upper traverse;

upper and lower relatively thin press platens carried on and between the traverses and having respective upper and lower platen faces respectively confronting the lower and upper traverse faces, the belt to be joined or repaired being directly engageable between the platens;

respective upper and lower relatively thick and rigid pressure plates operatively engaged between the platen faces and the respective traverse faces;

means including respective upper and lower heaters provided on the pressure plates for heating same; and

hydraulic actuating means engaged between the upper traverse and the upper pressure plate and vertically expansible for displacing the upper pressure plate down and thereby pressing the platens against the belt engaged therebetween.

4,554,044

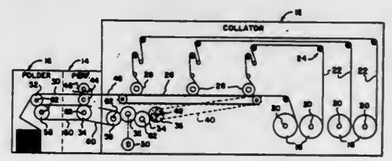
COLLATING APPARATUS WITH ADJUSTABLE GEAR

Richard A. Gaspar; Donald G. Bastian, both of Centerville, and Timothy L. Denlinger, Dayton, all of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Mar. 7, 1984, Ser. No. 587,093

Int. Cl.⁴ B32B *31/18*

U.S. Cl. 156—510 **7 Claims**



1. In a collating apparatus of the type including collating means for unwinding webs from a plurality of rolls mounted on spaced spindles and joining the webs in overlapping relation, perforating means for receiving joined webs from said collating means and forming uniformly spaced cross perforations thereon, and folding means for receiving joined and perforated webs from said perforating means and fan folding the webs at certain cross perforations thereon,

said apparatus including a main drive gear and gear means, meshing with and driven by said main drive gear, and connected to said collating means, said perforating means and said folding means, said gear means having an improved adjustable gear comprising:

a support shaft rotatably mounted on said collating apparatus;

a cylindrical inner hub having a bore therethrough concentric with a periphery thereof and adapted to receive said shaft therethrough in nonrotatable engagement therewith;

a cylindrical intermediate hub having a bore therethrough eccentrically positioned relative to said intermediate hub and shaped to receive said inner hub in rotatable engagement therewith;

a gear ring having a substantially circular periphery and a hole therethrough eccentrically positioned relative to said gear ring periphery and shaped to receive said intermediate hub in rotatable engagement therewith; and

clamp means attached to said gear ring, releasably attached to said shaft, and adjustably attached to said intermediate hub such that

(a) said gear ring may be rotated relative to said intermediate hub by adjustment of said adjustable attachment to displace a geometric center of said gear ring periphery from an axis of rotation of said shaft and thus to impart a predetermined eccentricity to said adjustable gear, and

(b) said intermediate hub may be rotated relative to said inner hub by adjustment of said releasable attachment

to selectively vary a phase orientation of said predetermined eccentricity relative to said main drive gear and the re-

mainder of said gear means, thereby compensating for inherent eccentricities therein.

4,554,045

METHOD FOR PRODUCING METAL SILICIDE-SILICON HETEROSTRUCTURES

John C. Bean, New Providence, N.J.; Kin-Chung R. Chiu, Mountain View, Calif., and John M. Poate, Summit, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 156,649, Jun. 5, 1980, Pat. No. 4,492,971.
This application Nov. 29, 1982, Ser. No. 445,014
Int. Cl.⁴ C30B *25/14*
U.S. Cl. 156—613 **9 Claims**



1. A method for forming a silicon-metal silicide heterostructure comprising essentially monocrystalline silicide grown epitaxially on a single crystal silicon substrate, the method comprising:

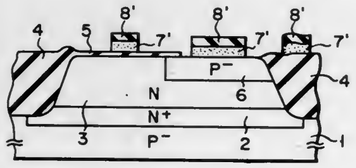
exposing the substrate to a vapor comprising silicon and a silicide forming metal while heating the substrate to a temperature in the range of 550–850 degrees C., thereby reacting in situ the metal as it deposits and silicon to form a metal silicide essentially single crystal layer, leaving at least a portion of the substrate with said essentially single crystal metal silicide layer thereover.

4,554,046

METHOD OF SELECTIVELY ETCHING HIGH IMPURITY CONCENTRATION SEMICONDUCTOR LAYER

Minoru Taguchi, Oomiya, and Gen Sasaki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Sep. 19, 1984, Ser. No. 652,178
Claims priority, application Japan, Sep. 22, 1983, 58-175367
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—637 **8 Claims**



1. A method for selectively etching a high impurity concentration semiconductor layer, comprising the step of:

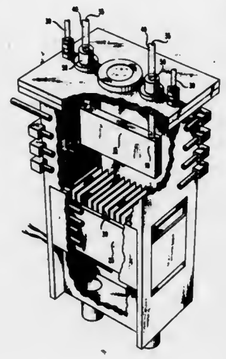
selectively removing a high impurity concentration semiconductor layer which is provided directly or through another layer on a semiconductor substrate by exposing the layer to an aqueous solution of a hydrogen fluoride-nitric acid-acetic acid-based etching solution while the layer is subjected to ultrasonic-vibration.

4,554,047

DOWNSTREAM APPARATUS AND TECHNIQUE

Joel M. Cook, Union Township, Hunterdon County; Daniel L. Flamm, Chatham Township, Morris County, both of N.J.; Edward H. Mayer, North Andover, Mass., and Bernard C. Seiler, Kingston, N.H., assignors to AT&T Bell Laboratories, Murray Hill and AT&T Technologies, Berkeley Heights, both of, N.J.

Filed Oct. 12, 1984, Ser. No. 660,048
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **9 Claims**



1. A process for fabricating a device including the procedure of removing material from a plurality of substrates comprising the steps of producing reactive species in a plasma and directing said species to said substrate and subsequently into an effluent wherein said substrate is disjoint from and not surrounded by said plasma CHARACTERIZED IN THAT the volume of said plasma is at least 200 percent as large as the volume occupied by said substrates, and the concentration of said etchant species measured in said effluent in the absence of said substrates is at least 25 percent of the concentration of said species at the periphery of said plasma.

4,554,048

ANISTROPIC ETCHING

Ajit S. Manocha, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 17, 1984, Ser. No. 661,613
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—643 **5 Claims**



1. A lithographic process comprising,

applying a resist material to a substrate,

patterning the resist by a lithographic patterning step,

placing the substrate in a dry etching apparatus,

exposing the substrate to a reactive gas plasma at an electric power level below the level at which effective etching of the substrate occurs, and continuing that exposure for a period sufficient to harden the patterened resist, and

exposing the substrate, without interruption, to the same plasma adjusted at a power level sufficient to effect etching of the substrate.

4,554,049

SELECTIVE NICKEL STRIPPING COMPOSITIONS AND METHOD OF STRIPPING

Edwin W. Bastenbeck, Plymouth, Conn., assignor to Enthone, Incorporated, West Haven, Conn.

Filed Jun. 7, 1984, Ser. No. 618,159
Int. Cl.⁴ C09K *13/04, 13/06*; C23F *1/00*; C23G *1/08*
U.S. Cl. 156—656 **16 Claims**

1. An aqueous solution for selectively stripping electrolytic nickel and low phosphorous electroless nickel from a ferrous metal substrate comprising, in grams/liter:

(a) Sulfamate ions (calculated as OSO_2NH_2) in an amount about 25 to saturation;

(b) Nitrate ions in an amount about 1 to 25;

(c) Chloride ions in an amount about 0.1 to 8;

(d) Hydrogen peroxide in an amount about 30 to 250; and

(e) An iron complexing agent in an amount about 2 to 60.

13. A method for selectively stripping nickel sulfidation compounds from nickel-base alloy substrates comprising:

(a) contacting the deposit on the alloy substrate with the solution of claim **1**; and

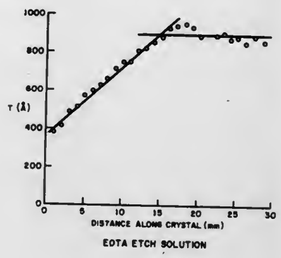
(b) continuing the contacting until the deposit is selectively removed from the substrate surface.

4,554,050

ETCHING OF TITANIUM

William J. Minford, Lehigh Township, Northampton County; Edmond J. Murphy, Bethlehem, and Trudie C. Rice, North Whitehall Township, Lehigh County, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1984, Ser. No. 631,298
Int. Cl.⁴ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—664 **7 Claims**



1. Technique for etching titanium comprising the steps of:

exposing a titanium surface to a solution comprising the ethylenediaminetetraacetic acid radical for a period sufficient to etch said surface.

4,554,051

FIBER LENGTH INDICATING APPARATUS AND METHOD

Donald W. Danforth, Andover, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Continuation of Ser. No. 361,300, Mar. 14, 1982, abandoned.
This application May 16, 1984, Ser. No. 610,680
Int. Cl.⁴ D21D *1/20*; G01N *11/06, 15/02*
U.S. Cl. 162—49 **19 Claims**

9. On line apparatus for periodic testing of the length of fibers in paper stock or pulp flowing in a paper making system while pressurized, undiluted and at paper making consistencies, and of predetermined relative length said apparatus comprising:

an upstanding container having a lower end connected into said paper making system to receive said stock, or pulp, at operating consistency, pressurized, undiluted, and of predetermined relative fiber length the interior of said container being thereby incorporated into said paper making system;

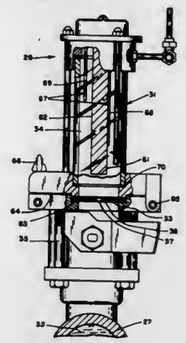
an orifice plate mounted across the interior of said container, intermediate of the height thereof to form a measuring chamber thereabove, said plate being imperforate except for at least one orifice therethrough and up to about five identical said orifices therethrough each with a rim extending therearound, each said orifice being circular in configuration and of predetermined area with a diameter substantially equal to the predetermined relative length of said stock, or pulp, in said system, the diameter of said circular orifice being in the range between 1 mm and 20 mm;

liquid level sensing means in said measurement chamber for sensing liquid level reached therein by said undiluted stock, or pulp, at operating consistency;

automatic control means including a cycle timer operably connected to said measurement chamber for periodically cycling said chamber through intake, measure and exhaust, and establishing a set intake time for said predetermined relative fiber length;

means for periodically and instantaneously generating a signal representing relative fiber length in stock, or pulp, in said paper stock, or pulp system;

said control means including said means for generating a signal for signalling fiber length sensed during each said cycle.



15. The on line method of automatically, periodically testing the length of fibers in refined, or unrefined, paper fiber slurry while in a paper making system and while pressurized, undiluted at operating consistencies and of predetermined relative fiber length, by means of a standpipe connected into said system, the standpipe having an orifice plate extending across the interior thereof with at least one circular orifice therein, and obtaining an instantaneous read out of said fiber length, said method comprising the steps of:

selecting as said plate of imperforate material having at least one circular orifice and up to about five identical said orifices, each of predetermined area and diameter substantially equal to the predetermined relative length of the fibers in said system, said diameter being in the range of 1 mm to 20 mm;

connecting said standpipe on line into said system for an intake, measure and exhaust cycle wherein said slurry must pass from said system through said circular orifice into a measurement chamber;

establishing a set intake time for measurement in said chamber for the said predetermined relative length of fibers;

measuring during each intake cycle, in comparison with said set intake time, whether said slurry passes through said orifice into said measurement chamber, in a predetermined volume or to a predetermined height therein;

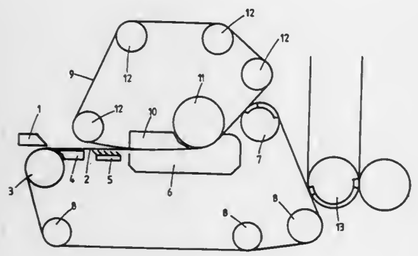
and periodically, instantaneously generating a signal representing the relative fiber length in said slurry.

4,554,052

METHOD AND APPARATUS FOR WEB FORMING

Tapio Waris, Kyminlinna, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Continuation of Ser. No. 415,227, Sep. 7, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,549
Claims priority, application Finland, Sep. 29, 1981, 813027
Int. Cl.⁴ D21F *3/04, 9/02, 11/02*
U.S. Cl. 162—203 **5 Claims**



1. A web forming method which consists of feeding a fiber suspension from a head box on a section of a lower forming wire comprising a first, substantially horizontal dewatering zone, covering the web with an upper wire, leading the lower wire and the upper wire with the web therebetween to a second dewatering zone, which is a twin dewatering zone upwardly over a deflecting member having a large radius of curvature, said deflecting member being impervious to water, removing the water from the web in the first and second dewatering zone through only said lower wire, deflecting the web in a substantially straight path upwardly in a direction which deviates from the horizontal original direction of travel of the web, by an angle less than 90° up to a suction roll, said deflecting member being located in the upper wire, then detaching the upper wire from the web, causing said upper wire to continue to travel beyond the suction roll upwardly in essentially the same direction as it was upstream of said suction roll, and removing the web from the lower wire.

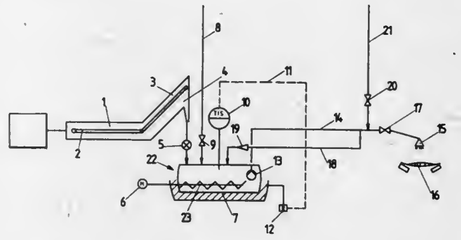
3. An apparatus for forming a web from a fiber suspension comprising a lower wire loop, a head box for feeding the fiber suspension onto said lower wire loop, at least one dewatering member having a curved impervious surface with a large radius of curvature inside the loop, said wire loop having a first horizontal section, an upper wire disposed to cover the web located over the lower wire, guide rolls being located inside the upper wire, means for moving said upper and lower wires with the web therebetween to a deflecting member, said deflecting member being impervious to water and having a large radius of curvature, and being located in the upper wire, wherein the direction of travel of the web and the wires is deflected upwards by an angle smaller than 90° to travel upwardly in a substantially straight path, a suction roll arranged within the lower wire, means for detaching the upper wire from the web downstream of the suction roll, said guide rolls leading said upper wire upwardly essentially in the same direction as it was upstream of the suction roll, the radius of curvature of said deflecting member being equal to or greater than the radius of curvature of said guide rolls, and means for detaching the web from the lower wire.

4,554,053

METHOD AND DEVICE FOR REMOVAL OF HEAVY TAR FROM A COKE-OVEN GAS DURING COOLING

John Rizzon; Günter Adomat, and Peter Diemer, all of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,476
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3247390
Int. Cl.⁴ C10B *55/00*
U.S. Cl. 201—21 **5 Claims**



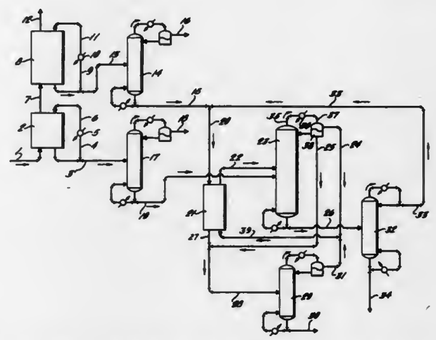
1. A method of removing heavy tar produced in a coke oven during the cooling of a coke oven gas from the coke-oven gas, comprising the steps of crushing coarse pieces of the heavy tar so as to obtain particles having a size of ≦1 mm; rarefying said particles in a mixer by adding to said particles a mixture of tar and water to obtain a heavy tar-tar-water mixture; providing heating means in said mixer and heating the obtained mixture in said mixer and maintaining the temperature of said mixture in said mixer between 55° and 75° C. during the rarefying step to obtain a uniform distribution of the tar particles in said mixture; and then conveying the thus heated heavy tar-tar-water mixture to a raw charge coal disposed on a raw coal conveyor belt.

4,554,054

METHACRYLIC ACID SEPARATION

Robert W. Coyle, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 9, 1983, Ser. No. 560,084
Int. Cl.⁴ B01D *3/36, 11/04*
U.S. Cl. 203—15 **5 Claims**



1. A process for separating methacrylic acid from a methacrylic acid-containing gaseous effluent which comprises:

(a) feeding the gaseous effluent to a first-stage partial condenser wherein the effluent is brought into direct contact with a part of the condensed liquid previously obtained in the condenser, said condenser being at a temperature in the range of from about 16° to 70° C., whereby a portion of the methacrylic acid and water vapor in the effluent are condensed to form a relatively concentrated aqueous methacrylic acid liquid stream and whereby a substantial portion of the methacrylic acid and water vapor leaves the first-stage condenser in the vapor phase along with non-condensible gases and the major portion of methacrolein contained in the effluent;

(b) feeding the vapor phase, leaving the first-stage condenser, to a second-stage condenser where the vapor is brought into direct contact with a part of the condensed liquid obtained in the second-stage condenser, said second stage condenser being at a temperature equal to or less than that of the first-stage condenser whereby most of the methacrylic acid and a large portion of the water contained in the vapor feed are condensed to form an aqueous methacrylic acid liquid stream that is less concentrated in methacrylic acid than is the liquid leaving the first-stage condenser;

(c) feeding a liquid stream from the first-stage condenser to a first distillation column where methacrolein is removed as an overhead product;

(d) feeding a liquid stream from the second-stage condenser to a second distillation column where methacrolein is removed as an overhead product;

(e) extracting the stream from the bottom of the second distillation column, described in step d, with a suitable solvent to form an organic phase;

(f) feeding both the organic phase from the extractor and the liquid from the bottom of the first distillation column described in step c, to a third distillation column wherein solvent and water dizeotrope are removed overhead and methacrylic acid is removed from bottom of the column.

5. A process for separating acrylic acid from an acrylic acid-containing gaseous effluent which comprises:

(a) feeding the gaseous effluent to a first-stage partial condenser wherein the effluent is brought into direct contact with a part of the condensed liquid previously obtained in the condenser, said condenser being at a temperature in the range of from about 16° to 70° C., whereby a portion of the acrylic acid and water vapor in the effluent are condensed to form a relatively concentrated aqueous acrylic acid stream and whereby a substantial portion of the acrylic acid and water vapor leaves the first-stage condenser in the vapor phase along with non-condensible gases and the major portion of acrolein contained in the reactor effluent;

(b) feeding the vapor phase, leaving the first-stage condenser, to a second-stage condenser where the vapor is brought into direct contact with a part of the condensed liquid obtained in the second-stage condenser, said second stage condenser being at a temperature equal to or less than that of the first-stage condenser whereby most of the methacrylic acid and a large portion of the water contained in the vapor feed are condensed to form an aqueous acrylic acid solution that is less concentrated in acrylic acid than is the liquid leaving the first-stage condenser;

(c) feeding a liquid stream from the first-stage condenser to a first distillation column where acrolein is removed as an overhead product;

(d) feeding a liquid stream from the second-stage condenser to a second distillation column where acrolein is removed as an overhead product;

(e) extracting the stream from the bottom of the second distillation column, described in step d, with a suitable solvent to form an organic phase;

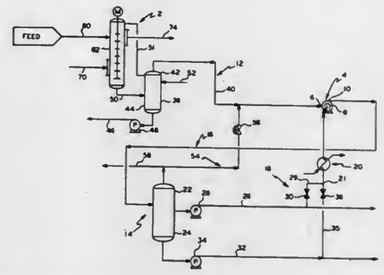
(f) feeding both the organic phase from the extractor and the liquid from the bottom of the first distillation column, described in step c, to a third distillation column wherein solvent and water azeotrope are removed overhead and acrylic acid is removed from bottom of the column.

4,554,055

SOLVENT RECOVERY

Patrick Rooney, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 7, 1983, Ser. No. 472,819
Int. Cl.⁴ B01D *3/10, 3/12;* **C10G** *21/28*
U.S. Cl. 203—89 **14 Claims**



1. A process comprising:

separating a mixture comprising water, a heavy organic component and a solvent for the heavy organic component into a gas phase containing predominantly the solvent for the heavy organic component and water and a liquid phase containing predominantly the heavy organic component by an evaporative process;

compressing the gas phase with liquid medium formed from a cool liquid recycle stream as below defined to liquefy a major portion of said gas phase;

combining the liquefied portion of the gas phase with the liquid medium;

phase separating from the combined liquids a first liquid phase and a second liquid phase; and

withdrawing a portion of one of the first liquid phase and the second liquid phase as the recycle stream.

10. Apparatus comprising:

(a) an evaporator vessel;

(b) a vacuum pump having a first inlet, a second inlet, and an outlet;

(c) a first means for forming a flow path extending between the first inlet of the vacuum pump and the evaporator vessel;

(d) a first settler vessel;

(e) a second means for forming a flow path extending between the outlet of the vacuum pump and the first settler vessel; and

(f) a third means for forming a flow path extending between an upper portion of the first settler vessel and the second inlet of the vacuum pump; and

(g) a means for cooling the contents of the third means.

4,554,056

IMPREGNATION OF NICKEL ELECTRODES USING ELECTRIC PH CONTROL CIRCUITS

James C. Whitford, Webb City, Mo., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Apr. 18, 1985, Ser. No. 724,403
Int. Cl.⁴ C25B *1/16;* **C25D** *9/08*
U.S. Cl. 204—2.1 **19 Claims**

1. A process for impregnating a porous plaque with nickel hydroxide in a bath containing a soluble source of a nickel salt, comprising;

operating two electric circuits in said bath to impregnate at least one such plaque,

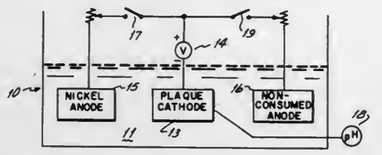
one of said two circuits comprising a consumable nickel anode, a cathode, and a source of current,

the other of said two circuits comprising an inert anode, a cathode, and a source of current,

the plaque to be impregnated being at least one of said cathodes,

at least one of said circuits being operated under conditions to impregnate said plaque,

the operation of said one circuit tending to cause pH in the bath to increase,



the operation of the other of said two circuits tending to cause pH in the bath to decrease,

the two circuits being operated at rates to maintain the pH of said bath within a desired acidic range for said impregnation.

4,554,057

PROCESS FOR MANUFACTURING SUPPORT MATERIALS FOR OFFSET PRINTING PLATES

Dieter Mohr, Roemerberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,083

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206470

Int. Cl.⁴ C25D *11/12;* **B41N** *1/08*

U.S. Cl. 204—29 **7 Claims**

1. A process for manufacturing support materials for offset-printing plates, comprising the step of:

subjecting a support member comprised of aluminum or an alloy thereof, which has been roughened by chemical, mechanical and/or electrochemical treatment, to a two-stage anodic oxidation treatment including a first stage (a) comprising anodic oxidation in an aqueous electrolyte consisting essentially of sulfuric acid and Al^{3+}ion, and thereafter to a second stage (b) comprising anodic oxidation in an aqueous electrolyte consisting esstentially of a salt comprising an alkali metal cation, an alkaline earth metal cation or an ammonium cation, and a phosphoroxo anion, a phosphorofluoro anion or a phosphoroxofluoro anion, at a voltage between about 10 and 100 V, at a temperature of from about 10° to 80° C., and for a duration of from about 1 to 60 seconds.

4,554,058

ELECTROLYTIC PRODUCTION OF PRECIOUS METALS

Kenneth P. V. Lei, Sparks; Judith A. Eisele, Verdi, and Gene E. McClelland, Sparks, all of Nev., assignors to The United States of America as represented by the Secretary of Interior, Washiongton, D.C.

Filed Mar. 11, 1985, Ser. No. 710,759

Int. Cl.⁴ C25C *1/20*

U.S. Cl. 204—110 **15 Claims**

1. A simple one-step economic process for the desorption of a precious metal complex from carbon that has been loaded with the precious metal complex and conversion of the precious metal complex to the precious metal, comprising,

(a) forming an anode with the loaded carbon on which is absorbed the precious metal complex in an electrolytic cell containing an electolyte and a cathode, and

(b) passing an electric current through said cell thereby resulting in the deposition of the precious metal on said cathode.

4,554,059

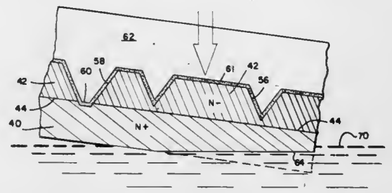
ELECTROCHEMICAL DIELECTRIC ISOLATION TECHNIQUE

John P. Short, Indian Harbour Beach; Craig J. McLachlan, Melbourne Beach; Charles Messmer, Palm Bay, and Paul S. Reinecke, Indialantic, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 548,631, Nov. 4, 1983, abandoned. This application Dec. 4, 1984, Ser. No. 678,075

Int. Cl.⁴ C25F *3/12*

U.S. Cl. 204—129.3 **22 Claims**



1. A method of fabricating dielectrically isolated islands including:

forming a second layer of semiconductor material on a first layer of semiconductor material, said first layer having a lower resistivity than said second layer;

etching said second layer to form first moats extending down from a first surface of said second layer and terminating in said first layer and second moats extending down from said first surface and terminating within said second layer;

forming a dielectric layer on said first surface of said second layer and said moats;

forming a support layer on said dielectric layer resulting in a composite structure;

continuously moving said composite structure into an etchant bath and biasing said first layer and said bath to electrochemically etch said first layer to its interface with said second layer and said dielectric layer of said first moats; and

polishing said second layer and said dielectric layer down to a plane which exposes said support layer in said first and second moats using exposed portions of said first moats as a reference plane.

4,554,060

PHOTOLYTIC SEPARATION OF ISOTOPES IN CRYOGENIC SOLUTION

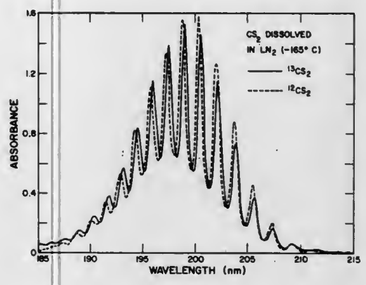
Samuel M. Freund, Santa Fe; William B. Maier, II, Los Alamos; Redus F. Holland, Los Alamos, and Willard H. Beattie, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1979, Ser. No. 69,151

Int. Cl.⁴ B01D *59/00*

U.S. Cl. 204—157.1 R **2 Claims**

1. A process for seperating isotopes, which comprises the steps of: (a) forming a solution of carbon disulfide in a solvent selected from the group consisting of liquefied nitrogen, krypton, argon, and mixtures thereof at a temperature such that the absorption spectrum of said carbon disulfide is sufficiently well-defined that the spectroscopic features corresponding to the different isotopes of the element can be distinguished, and few interfering solvent absorptions occur, (b) irradiating said solution with monochromatic radiation selected from wavelengths included in the visible and ultraviolet regions of the electromagnetic spectrum which selectively, or at least preferentially, dissociates those molecules of said carbon disulfide containing one of the desired isotopes of the element forming at least one dissociation product containing said desired isotope of the element, said monochromatic radiation being supplied from a radiation source emitting near a dissociative spectroscopic feature of said desired isotope containing carbon disulfide molecules in their gaseous for, the requisite coincidence between said monochromatic radiation and said dissociative spectroscopic feature to achieve said preferential dissociation being obtained by choosing the appropriate solvent, said solvent causing a displacement of said dissociative spec-



troscopic feature, and (c) subjecting said at least one dissociation product containing said desired isotope of the element to physical or chemical processes or a combination thereof, whereby said desired isotope contained in said at least one dissociation product is separated from other isotopes of the same element contained in the undissociated molecules of said carbon disulfide in said solution.

4,554,061

ANODIC ELECTRODEPOSITION OF CHARGED AQUEOUS POWDER SLURRY

Robert J. Ritchie, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1982, Ser. No. 435,031

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ C25D *13/06, 13/10;* **B05D** *7/26*

U.S. Cl. 204—181.6 **10 Claims**

1. A process for the preparation of an aqueous coating bath to be used in an electrodeposition process wherein aqueous powder slurry of particles of polymer powder having an average particle size measured optically of not more than about 20 μm is mixed with a solution of metal salt which can convert to amphoteric metal oxide or hydroxide at a pH at which precipitation does not occur, and then the pH is lowered to a level which causes precipitation of such amphoteric metal oxide or hydroxide onto said particles of polymer powder.

2. An electrocoating process for the electrodeposition of paint on an anodic surface wherein an aqueous coating bath prepared by the process of claim **10** containing said paint is provided with a negatively charged cathode and with a positively charged anode which is to be coated with said paint,

the solids content of said paint consisting essentially of particles of a polymer powder having an average particle size measured optically of not more than about 20 μm, said particles being coated with amphoteric metal oxide or hydroxide precipitated or adsorbed thereon in an amount sufficient to cause said particles to migrate toward said anode under the influence of said charge,

the pH of said bath being in a range above the isoelectric point such that the zeta potential of said coated particles is at least about as negative as minus 35 millivolts,

said electrocoating process comprising the steps of applying a voltage between said anode and said cathode to cause said paint to be deposited on the anode, separating the anode from the bath, and drying and curing the paint deposited on the anode.

4,554,062

MACHINE FOR THE CONTINUOUS GOLD-PLATING OF CONTACT TABS

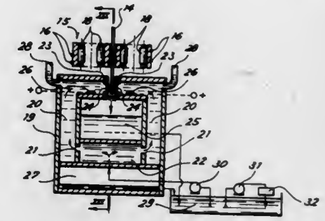
Sala Sergio, Trezzo Sull'Adda, Italy, assignor to Telmec SPA, Milan, Italy

Filed Jun. 22, 1984, Ser. No. 623,427

Claims priority, application Italy, Jun. 23, 1983, 21764 A/83; Feb. 29, 1984, 21052/84[U]

Int. Cl.⁴ C25D *17/02, 17/10, 17/28*

U.S. Cl. 204—206 **12 Claims**



1. A machine for the continuous gold-plating of contact tabs connected to conductor tracks of printed circuit boards and the like, comprising a plurality of chemically and electrochemically acting cells conveniently of modular structure aligned in sequential order, through which the printed circuit to be gold-plated is conveyed by conveyor members in endless configuration which effects the electrical connection of said contact tabs to the negative pole of the circuit, each of said cells being provided with one or more feed chambers for feeding the electrochemical bath, at least one collection tank and at least one liquid-loss recovery chambers, there being a cascade flow area through which the portion of the printed circuit boards bearing said contact tabs passes, said conveyor members consisting of two endless belts constructed of deformable material which are tensioned between two pairs of rotating rollers, two parallel sides of said belts being placed at a distance adapted to receive, with deformation of said belts, said printed circuit boards, supporting its weight by friction, there being present on each of the belts one or more bare wires which are in endless configuration and tensioned between two pairs of rollers, these being kept in contact with the conductor tracks of said printed circuit boards by the pressure brought to bear between the belts and the printed circuit boards, the conductor tracks being connected to the negative pole of the electric circuit of the cell by pressure-brushes or the like.

4,554,063

CATHODIC, GAS- AND LIQUID-PERMEABLE CURRENT COLLECTOR

Moritz Braun, Zollikerberg; Anna Kaufmann, Bülach, and Edwin Müller, Zürich, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 3, 1984, Ser. No. 606,477

Claims priority, application Switzerland, May 6, 1983, 2482/83

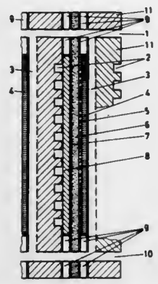
Int. Cl.⁴ C25B *9/00*

U.S. Cl. 204—254 **21 Claims**

1. A cathodic gas and liquid-permeable current collector comprising:

a pulverulent carrier material comprising graphite powder

and carbon fibers wherein the mass ratio of graphite powder:carbon fibers is between 10:1 and 30:1, and



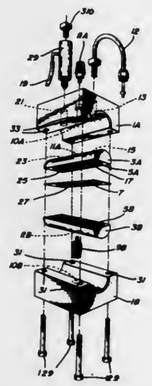
a binder, wherein the mass fraction of the binder relative to the total mass of the current collector is between 4 and 20% the collector having a porosity of 40 to 70%.

4,554,064

DUAL WORKING-ELECTRODE ELECTROCHEMICAL DETECTOR FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Sam A. McClintock, Hudson, and William C. Purdy, Montreal, both of Canada, assignors to Imasco-CDC Research Foundation, Toronto, Canada

Filed Mar. 28, 1984, Ser. No. 594,361
Int. Cl.[4] G01N *27/30, 31/08*
U.S. Cl. 204—411 **6 Claims**



1. A dual working-electrode electrochemical detector for measuring characteristics of a biological fluid, comprising:
a first working electrode;
a second working electrode;
means for holding the two electrodes in close, opposed parallel relationship;
spacer means between said first and second electrodes for maintaining said electrodes in spaced relationship;
means forming a channel for the flow of said fluid between said electrodes;
feed means for feeding fluid to one end of said channel; and
retrieval means for retrieving fluid from the other end of said channel;
potentials applied to said electrodes being separately controllable whereby said electrodes can be held at different potentials;
wherein said means for holding said electrode comprises a first hollow member having an open side, said first electrode covering said open side of said first hollow member;
a first opening extending through said first hollow member to one end of said channel;
a second opening extending through said first hollow member to the other end of said channel;
a first opening in said first electrode being aligned with said first opening in said first hollow member;
a second opening in said electrode being aligned with said second opening in said first hollow member;
feed means being attached to said first opening in said first hollow member and extending to said one end of said channel;
retrieval means being attached to said second opening in said first hollow member and extending to said other end of said channel;
whereby fluid is fed to said one end of said channel and retrieved at the other end thereof;
and including a second hollow member with an open side, said second electrode covering said open side of said second hollow member; and
means for holding said first and second hollow members in fluid-tight engagement with said first and second electrodes facing each other;
wherein said means for holding comprises a first yoke disposed over said first hollow member and a second yoke disposed over said second hollow member;
said first yoke having a first opening aligned with the first opening of said first hollow member and a second opening aligned with the second opening in said first hollow member.

4,554,065

ISOMERIZATION PROCESS TO PRODUCE LOW POUR POINT DISTILLATE FUELS AND LUBRICATING OIL STOCKS

Kenneth R. Albinson, Audubon, and Jonathan E. Child, Sewell, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,499
Int. Cl.[4] C10G *65/10, 65/12*
U.S. Cl. 208—59 **20 Claims**

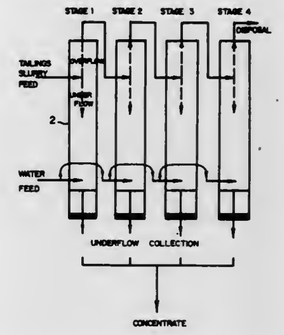
1. A process for dewaxing a hydrocarbon feedstock with a relatively high pour point and containing paraffins selected from the group of normal paraffins and slightly branched paraffins which comprises
(a) subjecting said feedstock to catalytic dewaxing at catalytic dewaxing conditions including a temperature of 200° to 500° C., pressure from atmospheric to 25,000 kPa, the presence of 20 to 4,000 nll^{-1} of hydrogen per volume of liquid feed, and a liquid hourly space velocity of 0.1 to 10 $hr.^{-1}$ by passing said feedstock, along with hydrogen, over a dewaxing catalyst comprising zeolite beta having a noble metal hydrogenation/dehydrogenation component to produce a partially dewaxed product and
(b) subjecting said partially dewaxed product to catalytic dewaxing at catalytic dewaxing conditions including a temperature of 200° to 500° C., and pressure from atmospheric to 25,000 kPa, the presence of 20 to 4,000 nll^{-1} of hydrogen per volume of liquid feed, and a liquid hourly space velocity of 0.1 to 10 $hr.^{-1}$ by passing said partially dewaxed product over catalyst comprising zeolite beta having a base metal hydrogenation/dehydrogenation component comprising at least one non-noble metal of Group VIA or VIIIA to recover a substantially dewaxed product as a product of the process.

4,554,066

DENSITY CLASSIFICATION OF PARTICULATE MATERIALS BY ELUTRIATION METHODS AND APPARATUS

David M. Turbitt, Apt. #3, 141 King St., East, and James F. Archibald, 12 Glenwood Ct., both of Kingston, Ontario, Canada

Filed Jan. 4, 1984, Ser. No. 568,093
Int. Cl.[4] B03B *7/00*
U.S. Cl. 209—3 **9 Claims**



1. A process for separating desired particulate high density materials from associated particulate lower density materials, comprising passing the particulate high and lower density materials through a series of elutriation columns through which an appropriate medium flows to produce underflow and overflow, with the overflow from each column being introduced to the next elutriation column in the series, the flow rate of the medium in each column being substantially plug flow and a decrease from that of the previous column and selected to have desired materials of decreasing size being contained in the underflow from each column.

4,554,067

SEED TREATING MACHINE

Yoshiro Arimitsu, Lompoc, Calif., assignor to John Bodger & Sons Co., El Monte, Calif.

Continuation of Ser. No. 560,127, Dec. 12, 1983, abandoned. This application Feb. 19, 1985, Ser. No. 703,084
Int. Cl.[4] B07B *4/00*
U.S. Cl. 209—136 **3 Claims**



1. A seed treating machine for separating seeds from the lighter ingredients of a mixture of plant matter that includes said seeds, said machine comprising:
a horizontally pivotable table centrally formed with an opening, and provided with a peripheral wall, with a discharge chute for the seeds beig formed in said wall at one end of the table;
a screen over said opening;
power-operated fan means for directing an air blast upwardly through said opening;
an open-sided cover over said opening, the bottom of said cover being spaced above said table; and
whereby when said plant matter is deposited on said table over said screen and the table is rocked, the cover contains the ingredients of the mixture as they are lifted by said air blast through the opening in said table, the seeds falling onto the table for removal therefrom as the lighter ingredients are blown into the atmosphere out of the open side of the cover.

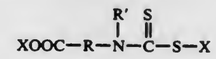
4,554,068

ORE FLOTATION AND FLOTATION AGENTS FOR USE THEREIN

Kenneth B. Kimble; Harold W. Mark, and Clarence R. Bresson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 517,297, Jul. 26, 1983,. This application Dec. 13, 1984, Ser. No. 681,404
Int. Cl.[4] B03D *1/14*
U.S. Cl. 209—167 **4 Claims**

1. A process for recovering minerals comprising:
(a) mixing crushed ore containing said minerals, water, and a dithiocarbamate having the formula



wherein R is selected from the group consisting of alkylene radicals, wherein R' is selected from the group consisting of hydrogen and methyl and ethyl radicals, wherein X is selected from the group consisting of alkali metal atoms, to establish a pulp;
(b) aerating said thus established pulp to produce a froth containing a first portion of said minerals while allowing a second portion of said minerals comprising metal minerals to be suppressed in said pulp; and
(c) recovering said first portion of said minerals from said thus produced froth and recovering said thus suppressed minerals from said pulp.

4,554,069

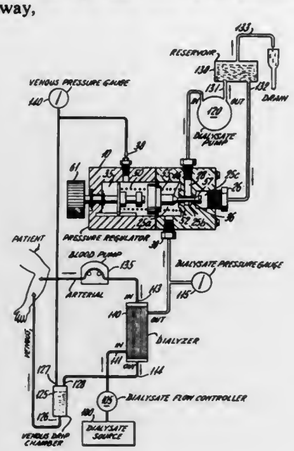
PRESSURE REGULATOR

James D. Aid, St. Petersburg, and Edward R. Lindsay, Clearwater, both of Fla., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 30, 1980, Ser. No. 202,390
Int. Cl.[4] B01D *31/00*
U.S. Cl. 210—101 **7 Claims**

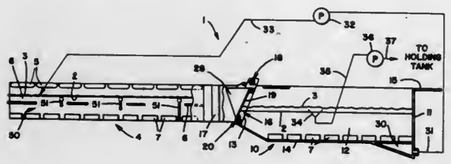
1. A transmembrane pressure regulator comprising an upper housing portion and a lower housing portion separated from each other by a rolling diaphragm,
said upper housing portion having a first interiorly located cavity connected by first, second, and third separate passageways to the outside of said regulator,
said lower housing portion having a second interiorly located cavity connected by a fourth separate passageway to the outside of said regulator, said diaphragm being secured to said regulator so as to separate said housing portions and to prevent fluid communication between the respective cavities of said housing portions,
means associated with said upper housing portion for biasing said diaphragm in the direction of said lower housing portion, first means associated with said upper housing for regulating the amount of fluid flowing from said first passageway through said first cavity and into said second passageway, second means associated with said upper housing for regulating the amount of liquid flowing from said third

passageway through said first cavity and into said second passageway,



and means associated with said lower housing portion for adjustably biasing said diaphragm in the direction of said upper housing portion.

4,554,070
WEIR-TYPE SKIMMER EMPLOYING A WAVE DIFFUSER
Roland H. Jordan, Redondo Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Sep. 29, 1983, Ser. No. 537,462
Int. Cl.⁴ E02B *15/04*
U.S. Cl. 210—109 **5 Claims**



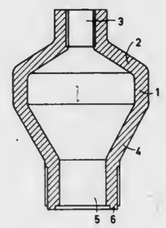
1. A wave diffusing apparatus for collecting oil from the surface of a body of water when used in combination with a skimming apparatus that moves through the body of water, comprising:

a plurality of submerged, serially disposed spaced apart parallel weirs of different height located substantially perpendicular to the line of fluid flow, said series of weirs increasing in height from the point at which a floating layer is first encountered along the direction of the relative fluid flow to form partial barriers to the fluid flow;

means for positioning said weirs in front of a liquid inlet for a skimmer at a predetermined distance below the surface of the body of water; and

means for adjusting the position, both vertically and angularly, of said weirs in the liquid body.

4,554,071
PRE-COLUMN FOR PRECONCENTRATING SUBSTANCES TO BE CHROMATOGRAPHED AS WELL AS DEVICE FOR A LIQUID CHROMATOGRAPHY SYSTEM AND COUPLING MEMBER FOR SAID DEVICE
Henri M. Ruijten; Hans De Bree; Peter H. Van Amsterdam, and Elbert Wiegers, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands
Continuation of Ser. No. 488,167, Apr. 25, 1983, abandoned. This application Sep. 7, 1984, Ser. No. 648,358
Claims priority, application Netherlands, Apr. 28, 1982, 8201757
Int. Cl.⁴ B01D *15/08*
U.S. Cl. 210—198.2 **9 Claims**



1. A pre-column of pressure-resistant material, to be used in connection with a separation column, for preconcentrating at elevated pressure substances to be chromatographed, which pre-column comprises a vessel-shaped body, having at its ends means for sealing connections, upstream with respect to an inlet tube for the liquid to be preconcentrated and downstream with respect to the separation column, and further having internally an upstream section converging towards the inlet tube for distributing the liquid to be preconcentrated over the internal cross-section of the body, and a preconcentration section, adapted to include a carrier material suited for preconcentration purposes, characterized in that said preconcentration section for the greater part converges toward the downstream end.

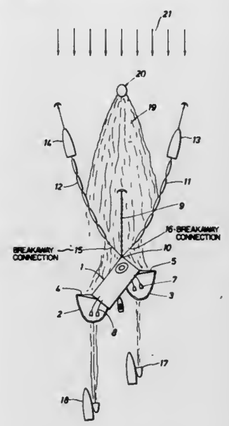
4,554,072
BARGE-BASED OIL BARRIER
Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Sep. 27, 1984, Ser. No. 655,394
Int. Cl.⁴ B01D *21/24*
U.S. Cl. 210—242.3 **4 Claims**

1. An offshore oil spill cleanup system comprising:

a barge arranged downstream of the oil spill to split the flow of the oil spill to either side of the barge;

at least one diversionary boom arranged upstream of the barge and functionable to channel the flow of oil toward the barge;

two containment booms arranged trailing an upstream part of the barge, each boom arranged on an opposite side of the barge to catch the diverted oil, with both booms at least partially sheltered by the barge from direct weather forces, the barge being anchored to have one corner forward of the other corner in relation to the direction of flow of the oil spill, with one containment boom attached to the other front corner of the barge, and the other containment boom attached to the forward-most rear corner of the barge; and



means associated with the containment booms to remove oil from the booms to the barge.

4,554,073
DEVICE FOR UPTAKE, TRANSPORTATION, AND RECOVERY OF CELL MATERIAL, AND FOR TRANSFER OF THE RECOVERED MATERIAL TO MICROSCOPE SLIDES
Gert Schlüter, and Matthias Zimmermann, both of Gundelfingen, Fed. Rep. of Germany, assignors to Rhodia Aktiengesellschaft, Freiburg, Fed. Rep. of Germany
Filed Mar. 8, 1984, Ser. No. 587,633
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1983, 3310205
Int. Cl.⁴ B01D *27/02*
U.S. Cl. 210—450 **5 Claims**



1. A device for takeup, transportation and recovery of cell material present in body fluids, cell-fixing liquids and mixtures of body fluids and cell-fixing liquids, and also for transfer of recovered cell material onto microscope slides, comprising a vessel with an inlet and an outlet in which

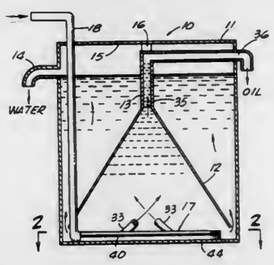
(a) the inlet being adapted to be closed gas-tightly and liquid-tightly with a removable stopper or a removable cap;

(b) a removable fiber element being arranged flush with the wall of the vessel, in the outlet, comprising fibers insoluble in body fluids and cell-fixing liquids, the fibers being arranged lengthwise in the direction of the longitudinal axis of the vessel with the formation of capillaries, the diameter of the capillaries being smaller than the diameter of cells of the cell material, the fiber element being arranged, for a portion of its length, in the outlet;

(c) the fiber element, in the other portion of its length, projecting into a sleeve which, on the side on which the fiber element projects into it, has the same cross-sectional area and the same cross-section as that of the outlet, the fiber element being liquid-tightly and gas-tightly sealed to the sleeve;

(d) the sleeve being adapted to be closed, liquid-tightly and gas-tightly, on the side opposite the fiber element, with a removable stopper or a removable cap.

4,554,074
SEPARATOR FOR IMMISCIBLE FLUID MIXTURE
Amos W. Broughton, P.O. Box 505, Temple City, Calif. 91780
Filed Jul. 20, 1984, Ser. No. 633,049
The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.
Int. Cl.⁴ C02F *1/40*
U.S. Cl. 210—519 **4 Claims**



1. The separator for immiscible fluid mixtures in combination in a separator tank, comprising:

a unitary fluid flat, shallow separator having required width and length dimensions and a single formed plenum chamber having a flat affixed cover with a single inlet channel having a selected channel cross section area, said single inlet channel branching into the first two branch channels having at least aforesaid channel cross section area, said first two branch channels each multiple branching into paired branch channels having at least aforesaid channel cross section area, said multiple branch channels each multiple branching into further outlet channels having at least aforesaid channel cross section area, providing transition of the turbulent inlet fluid flow to substantially laminar fluid flow in said final outlet channels, aforesaid separator disposed on the separator tank base,

a baffle disposed above and encompassing said unitary fluid flat separator, all said final outlet channels disposed underneath said baffle, said baffle having a narrow outlet aperture providing an outlet for an immiscible fluid less dense than water,

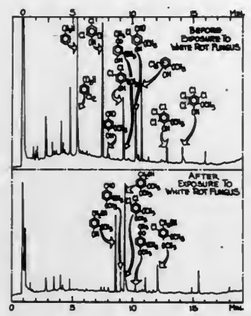
aforesaid tank combination having an immiscible fluid mixture inlet means secured to said inlet channel, an outlet means for a separated water phase, and an outlet means for a separate immiscible less dense than water phase.

4,554,075

PROCESS OF DEGRADING CHLORO-ORGANICS BY WHITE-ROT FUNGI

Hou-min Chang; Thomas W. Joyce, both of Raleigh, N.C.; Thomas K. Kirk, Madison, Wis., and Van-Ba Huynh, Navarre, Minn., assignors to North Carolina State University, Raleigh, N.C.

Filed May 29, 1984, Ser. No. 614,980
Int. Cl.[4] C02F 3/34
U.S. Cl. 210—611 12 Claims



1. A process of degrading chloro-organics contained in certain liquids to improve the environmental character thereof comprising the steps of:

(a) providing a white-rot fungus which is in a secondary metabolic state, and

(b) degrading the chloro-organics in the liquid by immersing the white-rot fungus in the liquid for a sufficient time period, while at least periodically

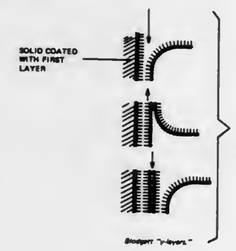
(c) exposing the fungus to oxygen.

4,554,076

METHOD OF MODIFYING MEMBRANE SURFACE WITH ORIENTED MONOLAYERS OF AMPHIPHILIC COMPOUNDS

Lois M. Speaker, Birmingham, Ala., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Aug. 18, 1982, Ser. No. 409,097
Int. Cl.[4] B01D 31/00
U.S. Cl. 210—639 25 Claims



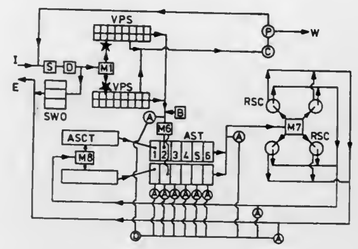
24. A method of preventing the fouling of a semipermeable membrane used for separating dissolved materials from liquids, comprising the step of depositing on the surface of said membrane an oriented monololecular layer of fluorinated pyridinium bromide prior to the use of said surface in said separating.

4,554,077

METHOD AND APPARATUS FOR MONITORING SEWAGE TREATMENT EFFICIENCY AND DETERMINING SEWAGE SOURCES

Leslie Brown; James Braven, and Michael M. Rhead, all of Plymouth, England, assignors to Devon County Council, England, a part interest

Filed Aug. 31, 1983, Ser. No. 528,105
Claims priority, application United Kingdom, Jul. 1, 1983, 8317933
Int. Cl.[4] C02C 1/00
U.S. Cl. 210—656 20 Claims



1. A method of monitoring operational efficiency of a sewage treatment plant having a biodegradation stage, including the steps of:

sampling flow of sewage at least after outlet from said biodegradation stage;

filtering each sample taken;

selecting a single soluble biodegradable compound in the sewage for analysis;

analyzing respective filtered samples to obtain information relating to the concentration of said selected single biodegradable compound therein; and

further determining the effectiveness of the biodegradation stage in reducing the concentration to a desired value of all biodegradable compounds in the sewage based upon the information relating to said selected single biodegradable compound.

4,554,078

METHODS OF AND APPARATUS FOR EFFLUENT DISPOSAL

Ronald G. Huggins, Lawrenceville; William D. O'Brien, Jr., Lilburn, and Fred P. Partus, Marietta, all of Ga., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 21, 1984, Ser. No. 612,501
Int. Cl.[4] B01J 14/00
U.S. Cl. 210—749 13 Claims

1. A method of treating a liquid effluent which comprises an air reactive material to provide a disposable material, said method comprising the steps of:

supplying a suitable amount of a solution comprising a treating material which is capable of reacting with the liquid effluent to provide a disposable reaction product;

providing a pressurized gas which is non-reactive with the effluent and the treating material;

subjecting the liquid effluent to a pressure which is at least equal to the pressure of the pressurized gas to cause the effluent to be moved through a tube and to be discharged in a direction along a path from an end of the tube to contact the treating material and react therewith to provide the reaction product; and

causing the effluent to contact the treating material at a predetermined distance from the end of the tube in order to prevent the reaction product from contacting the end of the tube by providing an envelope comprising the pressurized gas along the predetermined distance about the effluent being discharged and by shielding the gas envelope

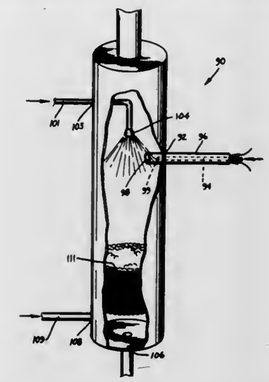
from the treating material, the pressure of the gas being sufficient to maintain the treating material spaced from the end of the tube to avoid the evolution of undesirable vapors.

9. An apparatus for treating a liquid effluent which comprises an air reactive material to provide a disposable product, said apparatus including:

means for supplying a suitable amount of a solution comprising a treating material which is capable of reacting with the liquid effluent to provide a disposable reaction product;

a tube through which the effluent is capable of being moved;

means for providing a pressurized gas which is non-reactive with the effluent and with the treating material;



means for subjecting the liquid effluent to a pressure which is at least equal to the pressure of the pressurized gas to cause the effluent to be moved through the tube and to be discharged along a path from an end of the tube to contact the treating material and react therewith to provide the disposable reaction product; and

means for causing the effluent to contact the treating material at a predetermined distance from the end of said tube to prevent the reaction product from contacting the end of said tube, said causing means including means for causing the gas to envelop the effluent being discharged along the path for the predetermined distance and for shielding the gas envelope from the treating material, the pressure of the gas being sufficient to maintain the treating material spaced from the end of the tube to avoid the evolution of undesirable vapors.

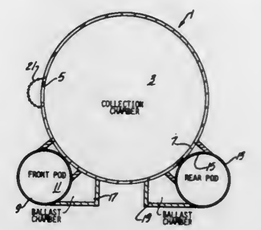
4,554,079

IMMISCIBLE LIQUID COLLECTOR AND METHOD OF OPERATION

Michael G. Wingard, and John F. D. Peterson, both of Baton Rouge, La., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 3, 1983, Ser. No. 548,327
Int. Cl.[4] E02B 15/04
U.S. Cl. 210—776 11 Claims

1. An apparatus for removing floating and suspended immiscible liquids from a flowing stream comprising an elongated interceptor having a chamber defined therein, provided with an upper inlet and a lower outlet, a plurality of additional elongated structures having chambers defined therein comprising: a first pod enclosing an air chamber joined to said interceptor in side by side relationship below said inlet, a second pod joined to said interceptor in side by side relationship adjacent said outlet, and having an opening defined therein in communication with said outlet; the interceptor inlet, outlet, and pods being so positioned relative to one another that when in skimming position said apparatus floats in said stream with the lower boundary of said inlet below the surface of said stream, and the upper boundary, of said inlet being above the surface of said stream, with said interceptor remaining in said position while liquid from the surface of said stream flows into said interceptor through said inlet into said chamber and whereby when the liquid level in said chamber reaches the level of the lower boundary of said outlet, said liquid flows into said second pod which sinks to a lower level as it fills, thereby rotating said interceptor whereby said lower boundary of said inlet is rotated to a position above the surface of said stream thereby



stopping liquid flow into said interceptor, intermittantly operable means for removing said liquid from said second pod, said intermittantly operable means being operative only upon rotation of the interceptor to a position where the lower boundary of said inlet is above the surface of said stream whereby said pod and said interceptor return to their original positions with the lower boundary of said inlet below the surface of said stream and the upper boundary of said inlet above the surface of said stream and wherein all said additional structures having chambers defined therein are below the surface of said stream.

4,554,080

AQUEOUS DRILLING FLUIDS CONTAINING ALKENYL SUCCINIC ANHYDRIDES

James A. Headley, Missouri City, Tex., assignor to Texaco Inc., White Plains, N.Y.

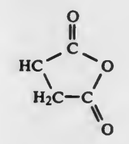
Filed May 2, 1984, Ser. No. 606,111
Int. Cl.[4] C09K 7/02
U.S. Cl. 252—8.5 A 11 Claims

1. An aqueous drilling fluid having a pH greater than about 8, comprising:

water

clay solids; and

about 0.2% to about 3% by volume of a lubrication additive comprising a polyolefin having a molecular weight of about 500 to about 2100 and having one or more substituent groups of the formula:



4,554,081

HIGH DENSITY WELL DRILLING, COMPLETION AND WORKOVER BRINES, FLUID LOSS REDUCING ADDITIVES THEREFOR AND METHODS OF USE

John K. Borchardt, Duncan, Okla., and S. Prabhakara Rao, Parma, Ohio, assignors to Halliburton Company, Duncan, Okla.

Filed May 21, 1984, Ser. No. 612,203
Int. Cl.[4] C09K 7/00
U.S. Cl. 252—8.5 A 12 Claims

1. A method of contacting a subterranean formation with a

high density well drilling, completion or workover brine having a density of from about 9.0 to about 21.5 pounds per gallon while minimizing the loss of such brine into said formation comprising:

combining an additive for reducing fluid loss with said brine in an amount in the range of from about 0.01 percent to about 1.0 percent by weight of said brine prior to contacting the formation therewith, said additive comprising a water-soluble binary copolymer comprising dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 25 to about 95 mole percent of said copolymer and a methyl chloride salt of dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 75 mole percent of the copolymer wherein the total number of repeating monomer units in the copolymer increases the viscosity of deionized water to within the range of from about 400 centipoises to about 40,000 centipoises said viscosity of said copolymer being measured by adding 10.0 grams of the copolymer to 90.0 grams of deionized water to form a solution and measuring said viscosity of said solution with a Brookfield LVT Viscometer, No. 2 spindle, 6 r.p.m. at 7620 F.; and,

contacting said formation with said drilling, completion or workover brine containing said additive.

7. A method of contacting a subterranean formation with a high density well drilling, completion or workover brine having a density of from about 9.0 to about 21.5 pounds per gallon while minimizing the loss of such brine into said formation comprising:

combining an additive for reducing fluid loss with said brine in an amount in the range of from about 0.01 percent to about 1.0 percent by weight of said brine prior to contacting said formation therewith, said additive comprising a water-soluble ternary copolymer selected from the group consisting of:

(a) a ternary copolymer comprising dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N,N-dimethylacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(b) a ternary copolymer comprising a methyl chloride salt of dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of copolymer, and methacrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(c) a copolymer comprising diethylaminomethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N,N-dimethylacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(d) a copolymer comprising dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N-methacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(e) a copolymer comprising 2-acrylamido-2-methylpropane sulfonic acid repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N-hydroxymethyl acrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(f) a copolymer comprising 2-acrylamido-2-methylpropane sulfonic acid repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N,N-dimethylacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer; and

(g) mixtures thereof;

wherein the total number of monomer units in the copolymer is sufficient to increase the viscosity of deionized water to within the range of from about 400 centipoises to about 40,000 centipoises said viscosity of said copolymer being measured by adding 10.0 grams of the copolymer to 90.0 grams of deionized water to form a solution and measuring said viscosity of said solution with a Brookfield Model LVT Viscometer, No. 2 spindle, 6 r.p.m. at 76° F.;

contacting said formation with said drilling, completion or workover brine containing said additive.

4,554,082

FRACTURING METHOD FOR STIMULATION OF WELLS UTILIZING CARBON DIOXIDE BASED FLUIDS

Marlin D. Holtmyer; Phillip C. Harris, and Charles V. Hunt, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 572,732, Jan. 20, 1984, Pat. No. 4,519,455. This application Feb. 19, 1985, Ser. No. 702,986

Int. Cl.⁴ E21B *43/26*

U.S. Cl. 252—8.55 R **5 Claims**

1. A substantially anhydrous, stabilized emulsion fluid composition comprising:

ethylene glycol present in an amount of from about 1 percent to about 50 percent by weight of the liquid constituents of said composition;

a hydrocarbon selected from the group consisting of kerosene, diesel fuel, jet fuel and refined or light crude oil present in an amount of from about 1 percent to about 55 percent by weight of the liquid constituents of said composition;

a surfactant present in an amount sufficient to stabilize said composition;

an aqueous fluid present in an amount of from about 0 to about 10 percent by weight of said composition; and

liquid carbon dioxide present in an amount of from about 30 to about 95 percent by volume of said composition.

4,554,083

LIQUID LEATHER CARE COMPOSITIONS

Heinz-Dieter Soldanski, Essen, and Bernd-Dieter Holdt, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,541

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323939

Int. Cl.⁴ C09G *1/04, 1/10;* C14C *11/00*

U.S. Cl. 252—8.57 **14 Claims**

1. A liquid leather-care composition in the form of an aqueous dispersion having a pH in the range of from about 7 to about 8, comprising the following non-aqueous constituents:

(a) from about 15 to about 45% of at least one wax from the group consisting of carnauba wax, candelilla wax, and montanic acid ester wax;

(b) from about 10 to about 30% lanolin;

(c) from about 20 to about 45% of at least one dispersible, film-forming aliphatic polyurethane resin which is an addition reaction product of an aliphatic diisocyanate and an aliphatic diol, and, optionally, a relatively small quantity of an aliphatic diamine, wherein the molar ratio of diisocyanate to the sum of the diol and the diamine is between about 1.0 and about 0.8;

(d) from about 1 to about 4% of at least one water-soluble polymeric polycarboxylic acid;

(e) from about 6 to about 24% of at least one nonionic emulsifier which is a reaction product of ethylene oxide and either a long-chain alcohol, an alkyl phenol, or a fatty acid amide;

(f) from 0 to about 2% of at least one water-soluble hydroxyalkylamine containing from 2 to 12 carbon atoms;

(g) from 0 to about 5% of at least one of perfume oils, preservatives, foam inhibitors, emulsifying aids, and dyes; and

(h) from 0 to 25% of at least one liquid high-boiling organic solvent flow promoter; wherein the above percentages are percentages by weight based on the total weight of the nonaqueous constituents and the sum of the nonaqueous constituents is from about 3 to about 20% by weight of the aqueous dispersion.

4,554,084

SEALING RING

Klaus Lonne, and Klaus-Peter Majewski, both of Burscheid, Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,514

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244505

Int. Cl.⁴ C10M *7/02*

U.S. Cl. 252—12.4 **9 Claims**

1. Sealing ring having at least one jacket face which serves as slide face, the ring comprising pressed together fibers and slide material, with the fibers being pressed together with the slide material, and containing at least one additive which reacts chemically with the fibers under the pressure and/or the development of heat resulting from friction stresses, said additive being selected from the group of compounds consisting of chlorides, sulfates, carbonates, borates and phosphates of alkali metals; silicate and phosphate glasses; thio compounds; organic complexes of chlorine, sulfur, phosphorus and arsenic; boron carbide; potassium borofluoride; and other boron containing substances, whereby said additives form surface coatings or chemically polish said fibers; said additives and slide materials being evenly distributed throughout the fibers.

4,554,085

NON-METALLIC, ANTIOXIDANT, ANTIWEAR LUBRICANT ADDITIVE SYSTEM

Mikio Zinbo, Canton; Ronald K. Jensen, Trenton, and Milton D. Johnson, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 23, 1984, Ser. No. 573,276

Int. Cl.⁴ C10M *1/48*

U.S. Cl. 252—46.6 **7 Claims**

1. A lubricating oil composition comprising a major proportion of a lubricating base oil and an additive system which comprises, in equilibrium:

I. a mixture of:

(A) organic disulfide compounds selected from the group of compounds having the chemical formula: $[(RO)_2PS]_2S_2$,

wherein R is organic group; and

(B) trivalent organophorphorous compounds

(i) having a boiling point above about 150° C. and

(ii) being selected from the group of compounds having the chemical formula Y_3P,

wherein Y is R'—or R'O—, and wherein each R' is the same or different organic group,

said R and R' being individually selected from substituted or non-substituted organic groups comprising aliphatic, aromatic or aliphatic aromatic radicals, and

II. an ionic complex consisting of 1:1 molar reaction product of A and B, which decomposes to acidic species having antiwear and antioxidant properties, wherein said disulfide compounds are present in said composition in a concentration of at least about 0.01 molar, and the molar ratio of (B):(A) in said composition is from about 0.1-1.5:1.

4,554,086

BORATE ESTERS OF HYDROCARBYL-SUBSTITUTED MONO- AND BIS-SUCCINIMIDES CONTAINING POLYAMINE CHAIN LINKED HYDROXYACYL GROUPS AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

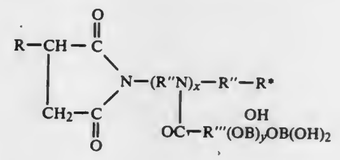
Thomas J. Karol, Wappingers Falls, and Harold S. Magaha, Poughkeepsie, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,188

Int. Cl.⁴ C10M *1/54, 3/48;* C09D *5/04*

U.S. Cl. 252—49.6 **27 Claims**

1. A hydrocarbyl-substituted mono-or bis-succinimide containing polyamine chain-linked hydroxyacyl radicals characterized by the formula



wherein

R is a hydrocarbyl group containing about 8–400 carbon atoms;

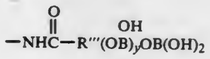
R'' is a divalent hydrocarbon group;

x is 1–6;

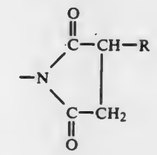
y is 0–3;

R''' is a divalent hydrocarbon group;

R* is $—NH_2$, —N(H)R''H



or a hydrocarbyl-substituted succinyl group



4,554,087

METAL PROCESSING COMPOSITION

Iwane Chiba, Saitama; Junji Fujiwara, Hiroshima; Hiroshi Kuwamoto, Hiroshima; Tomoya izushi, Hiroshima; Toshimi Muto, and Haruji Toyama, both of Kanagawa, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo and Yushiro Chemical Industry Co., Ltd., Osaka, both of, Japan

PCT No. PCT/JP84/00290, § 371 Date Jan. 25, 1985, § 102(e) Date Jan. 25, 1985, PCT Pub. No. WO84/04928, PCT Pub. Date Dec. 20, 1984

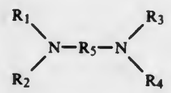
PCT Filed Jun. 5, 0984, Ser. No. 695,867

Claims priority, application Japan, Jun. 7, 1983, 58-100148; May 9, 1984, 59-91082

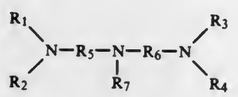
Int. Cl.⁴ C10M *3/04, 3/38*

U.S. Cl. 252—49.9 **1 Claim**

1. A metal processing composition which comprises a water-soluble cationic compound obtained by neutralizing a condensation product having an average molecular weight of 500 to 1000, which is obtained by reacting an aliphatic dicarboxylic acid having 6 to 16 carbon atoms or a dicarboxylic acid mixture comprising (A1) an aliphatic dicarboxylic acid having 6 to 16 carbon atoms and (A2) an aliphatic dicarboxylic acid having 17 to 22 carbon atoms at an (A1)/(A2) molar ratio of ⅛ to 3/1 with at least one compound having at least two basic nitrogen atoms, which is selected from the group consisting of (a) compounds represented by the following general formula:



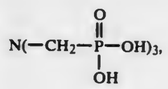
wherein R_1 through R_4 stand for H or an alkyl group having 1 to 3 carbon atoms, at least one of R_1 through R_4 stands for H, and R_5 stands for an alkylene group having 1 to 4 carbon atoms, (b) compounds represented by the following general formula:



wherein R_1 through R_4 and R_7 stand for H or an alkyl group having 1 to 3 carbon atoms, at least one of R_1 through R_4 and R_7 stands for H, and R_5 and R_6 stand for an alkylene group having 1 to 4 carbon atoms, (c) compounds represented by the following general formula:

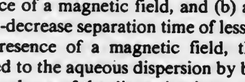


wherein n is an integer of from 3 to 5, and (d) hydroxyl group-containing basic nitrogen compounds selected from ethylaminoethanolamine, 1,2-bis(hydroxyethylamino)ethane, 1,3-diamino-2-propanol, 2-hydroxyethylaminopropylamine, N,N'-bis(hydroxyethyl)diethylenetriamine, 2-hydroxypropyltrimethylenetetramine and N-2-hydroxypfopyltriethylenetetramine, with at least one phosphorus oxy acid selected from the group consisting of (1) phosphoric acid, phosphorous acid, hypophosphorous acid and perphosphoric acid, (2) a condensed phosphorus oxy acid selected from pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, pyrophosphorous acid, polymetaphosphorous acid and diperphosphoric acid and (3) a compound selected from compounds represented by the following formulae (i) through (iii):

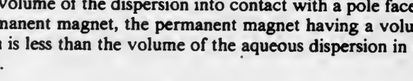


(i)

-continued



(ii)



(iii)

4,554,088

MAGNETIC PARTICLES FOR USE IN SEPARATIONS

Roy A. Whitehead, Hingham; Mark S. Chagnon, Lowell; Ernest V. Groman, Brookline, and Lee Josephson, Arlington, all of Mass., assignors to Advanced Magnetics Inc., Cambridge, Mass.

Filed May 12, 1983, Ser. No. 493,991

Int. Cl.⁴ C04B *35/04;* H01F *1/26*

U.S. Cl. 252—62.54 **11 Claims**



1. A coupled magnetically-responsive particle comprising a magnetic metal oxide core generally surrounded by a coat of polymeric silane to which molecules of at least one type of bioaffinity adsorbent are covalently coupled, a mass of the uncoupled particles being dispersable in aqueous media to form an aqueous dispersion having (a) a fifty-percent-turbidity-decrease settling time of greater than about 1.5 hours in the absence of a magnetic field, and (b) a ninety-five-percent-turbidity-decrease separation time of less than about 10 minutes in the presence of a magnetic field, the magnetic field being applied to the aqueous dispersion by bringing a vessel containing a volume of the dispersion into contact with a pole face of a permanent magnet, the permanent magnet having a volume which is less than the volume of the aqueous dispersion in the vessel.

4,554,089

FERROMAGNETIC PARTICLES WITH STABLE MAGNETIC CHARACTERISTICS AND METHOD OF PREPARING SAME

Shizuo Umemura, and Tatsuji Kitamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 25, 1983, Ser. No. 545,289

Claims priority, application Japan, Oct. 25, 1982, 57-186036

Int. Cl.⁴ C01G *49/08;* C04B *35/26*

U.S. Cl. 252—62.56 **7 Claims**

1. Cobalt-free ferromagnetic particles comprising a ferromagnetic metal inner core and an oxidized outer layer containing paramagnetic Fe^{3+}, wherein the particles have a saturation magnetization of 60 to 100 emu/g and a coercive force of 500 Oe or more, and wherein the outer layer provides a means for stabilizing the magnetic characteristics of the particles at a temperature not higher than 80° C. in air.

4,554,090

COMBINATION CORROSION/SCALE INHIBITOR

Loyd W. Jones, P.O. Box 9917, Tulsa, Okla. 74107

Filed Mar. 9, 1984, Ser. No. 587,494

Int. Cl.⁴ C02C *5/02*

U.S. Cl. 252—181 **10 Claims**

1. A combination corrosion and scale inhibitor composition comprising the reaction product of:

(a) a heterocyclic nitrogen containing compound selected from the group consisting of alkyl substituted pyridine, alkyl substituted pyrimidine, alkyl substituted imidazole, alkyl substituted imidazoline, quinoline, quinaldine and mixtures thereof, wherein the alkyl substitution comprises at least one alkyl group of one to about six carbon atoms;

(b) an aldehyde selected from the group consisting of formaldehyde, benzaldehyde, furfural and mixtures thereof; and

(c) a phosphorus acid constituent selected from the group consisting of phosphoric acid, polyphosphoric acid, P_2O_5, phosphonic acid, acidic phosphate esters of amino alcohols, ethoxylated amines, and alkanol amines and mixtures thereof.

4,554,091

COLORED BLEACHING COMPOSITIONS

Robert A. Jones, Meols, England; Frank Jones, Dielheim, Fed. Rep. of Germany, and Graham Taylor, Eastham, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 4, 1984, Ser. No. 617,202

Claims priority, application United Kingdom, Jun. 9, 1983, 8315838

Int. Cl.⁴ C09B *69/10;* C11D *3/395*

U.S. Cl. 252—187.25 **7 Claims**

1. A coloured aqueous bleaching agent comprising an oxygen or chlorine bleaching agent and a colouring agent in an aqueous medium, wherein the composition comprises from 0.0005–10% by weight of a colouring agent which is a coloured polymer latex consisting of a copolymer of a hydrophobic olefinic monomer with a copolymerisable olefinic monomer containing a chromophore.

6. A composition according to claim 1, wherein the composition contains an alkali metal hypochlorite.

4,554,092

PRESERVATIVE SYSTEM COMPOSITION FOR NON-POROUS SURFACES AND WOODEN SURFACES

Richard J. Guglielmo, Sr., Cresskill, N.J., assignor to EMA Company, Cresskill, N.J.

Continuation-in-part of Ser. No. 888,373, Mar. 20, 1978, Pat. No. 4,393,102, and a continuation-in-part of Ser. No. 341,275, Jan. 21, 1982,. This application Jun. 27, 1983, Ser. No. 508,519

Int. Cl.⁴ C09K *15/32*

U.S. Cl. 252—400 R **8 Claims**

1. A preservative composition for non-porous and wooden surfaces comprised of a tri-n-butyl tin ester selected from the group consisting of tri-n-butyl tin linoleate, bis(tri-n-butyl) tin succinate, tri-n-butyl tin benzoate, tri-n-butyl tin salicylate and mixtures thereof in an amount of from 2 to 10 percent by weight in a solvent system.

4,554,093

ELECTRICALLY CONDUCTIVE DOPED BLOCK COPOLYMER OF POLYACETYLENE AND POLYISOPRENE

Mahmoud Aldissi, Los Alamos, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,323

Int. Cl.⁴ H01B *1/00*

U.S. Cl. 252—500 **4 Claims**

1. An electrically conductive composition of matter comprising a block copolymer of polyisoprene having a molecular weight of between approximately 7,000 and 10,075, and polyacetylene having a molecular weight of approximately 1500 and 1910, said block copolymer being doped with iodine.

2. A method of making an electrically conductive block copolymer of polyisoprene having a molecular weight of between approximately 7,000 and 10,075, and polyacetylene having a molecular weight of between approximately 1500 and 1910 comprising:

a. polymerizing monomeric isoprene in a solution containing n-butyllithium in toluene, thereby forming active polyisoprenyllithium in said solution:

b. adding an amount of tetrabutoxytitanium which is substantially equimolar in amount to the amount of said polyisoprenyllithium, thereby forming an isoprenyl-butoxytitanium (III) catalyst in said solution;

c. introducing gaseous acetylene into said solution to form by a spontaneous catalytic reaction a block copolymer of polyisoprene and polyacetylene;

d. separating said block copolymer from solution; and

e. doping said block copolymer with I_2 to render said copolymer electrically conductive.

4,554,094

ELECTRICALLY CONDUCTIVE FILLERS

Fridolin Bäbler, Marly, Switzerland, and Kurt Munk, Grenzach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,508

Claims priority, application Switzerland, Jul. 8, 1983, 3766/83; Sep. 22, 1983, 5153/83; Feb. 9, 1984, 617/84

Int. Cl.⁴ A01B *1/06*

U.S. Cl. 252—518 **12 Claims**

1. An electrically conductive filler which is obtained by prolysis of a mixture of at least one metal phthalocyanine and at least one inorganic filler, wherein the mixture contains 5 to 99 parts by weight of metal phthalocyanine per 100 parts by weight of total mixture, and the pyrolysis is carried out at a temperature from 650° to 2,500° C. under a pressure of 0.5 to 20 bar in air, in an inert gas, in air with an increased oxygen content or in hydrogen gas.

4,554,095

ORGANOLEPTIC USES OF ESTERS OF 1-HYDROXYMETHYL-2-ACYL CYLOPROPANE

Richard M. Boden, Ocean; Marie R. Hanna, Hazlet, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

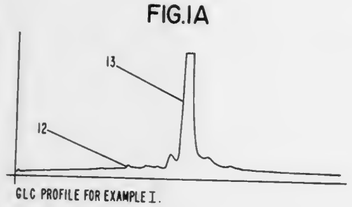
Division of Ser. No. 541,275, Oct. 12, 1983, Pat. No. 4,500,448, which is a division of Ser. No. 422,486, Sep. 23, 1983, Pat. No. 4,435,428. This application Jul. 13, 1984, Ser. No. 630,693

Int. Cl.⁴ A61K *7/46*

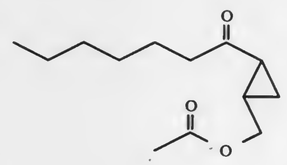
U.S. Cl. 252—522 R **3 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material, an aroma augmenting or enhancing quantity of at least one ester selected from the group consisting of:

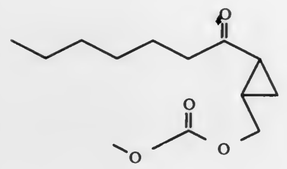
FIG.1A



GLC PROFILE FOR EXAMPLE I.



and



4,554,096

PERFUMERY USES OF PHENYL ALKANOLS

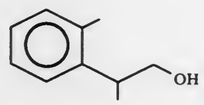
Wilhelmus J. Wiegers, Red Bank, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 482,823, Apr. 7, 1983, Pat. No. 4,512,918. This application Oct. 1, 1984, Ser. No. 656,652

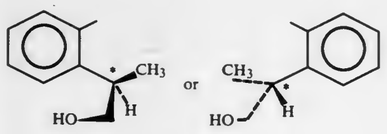
Int. Cl.⁴ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of a compound defined according to the structure:



or a stereo-isomer thereof defined according to one of the structures:



4,554,097

ELASTIC DETERGENT PRODUCT CONTAINING ANIONIC AND AMPHOTERIC SYNTHETIC ORGANIC DETERGENTS

Frank Schebece, Edison, and John C. Carson, Jr., Manasquan Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 326,582, Dec. 2, 1981, abandoned, which is a continuation of Ser. No. 746,995, Dec. 2, 1976, abandoned. This application Apr. 19, 1984, Ser. No. 594,971

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.⁴ C11D *1/50, 17/00*

U.S. Cl. 252—542 **15 Claims**

1. An elastic detergent product comprising about 10 to 80% of a mixture of an anionic synthetic organic detergent selected from the group consisting of alkali metal monoglyceride sulfate, ammonium monoglyceride sulfate, triethanolammonium higher fatty alcohol sulfate and mixtures thereof, and an amphoteric synthetic organic detergent, in a proportion between about 1:5 and 5:1, about 5 to 30% of gelatin and about 5 to 60% of water.

4,554,098

MILD LIQUID DETERGENT COMPOSITIONS

Stephen C. Klisch, Somerset; Kuo-Yann Lai, Kendall Park, and Clarence R. Robbins, Piscataway, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,497

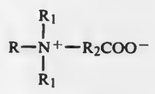
Int. Cl.⁴ C11D *1/84, 1/14*

U.S. Cl. 252—547 **10 Claims**

1. A high foaming, liquid detergent composition having reduced skin-irritation properties which consists essentially of, by weight, 12% to 24% of alkyl ether sulfate having the structural formula

R(OC(2)H(4))nOSO(3)M

wherein R is an alkyl of 10 to 16 carbon atoms, n has an average value of 5 to 12 and M is a cation; a supplementary, water-soluble, non-soap, anionic detergent having in its molecular structure a C(7)—C(22) alkyl, alkenyl or acyl group and a sulfonate, sulfate or carboxylate group, the weight ratio of said alkyl ether sulfate to said supplementary detergent being in the range of 1.5:1 to 6:1; 2% to 6% of a zwitterionic detergent having the structural formula



wherein R is C(8)—C(18) alkyl or C(8)—C(18) alkanamido C(2)—C(3) alkyl group, R1 is a C(1)—C(4) alkylene or hydroxylene group; 2% to 6% of an N-C(12)—C(14) alkanoic acid C(2)—C(3) alkanolamide, the weight ratio of said alkanolamide to said zwitterionic detergent being in the range of 1:2 to 2:1; and the balance being an aqueous medium containing 2% to 20% of a solubilizer.

4,554,099

OPAQUE GENERAL-PURPOSE CLEANING COMPOSITION COMPRISING ALCOHOL ESTERIFIED RESIN COPOLYMERS

David E. Clarke, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 18, 1984, Ser. No. 601,526

Claims priority, application United Kingdom, Apr. 19, 1983, 8310529

Int. Cl.⁴ C11D *1/831, 1/08*

U.S. Cl. 252—551 **11 Claims**

1. An opaque liquid general-purpose cleaning composition having non-streak cleaning properties comprising

(a) from 0.01–98% by weight of a nonionic detergent surfactant or mixture of nonionic surfactants having an HLB-value of between 3 to 10,

(b) 0.005–20% by weight of an at least 5% alcohol esterified copolymer formed from an unsaturated monomer and an unsaturated dicarboxylic acid or -anhydride,

(c) from 0.5–10% by weight of a magnesium salt of an anionic synthetic detergent, the balance being a compatible liquid medium consisting of water or mixtures of water and one or more water-miscible organic solvents.

3. A composition according to claim 1, wherein the magnesium salt is a magnesium salt of a C_{10}–C_{18} alkyl sulphate or C_{10}–C_{18} alkylether sulphate with 1–10 moles of ethylene oxide.

4,554,100

ALKYLAMIDES OF CARBOXYALKANOYL PEPTIDES AND METHOD FOR PREPARATION THEREOF

Evzen Kasafirek; Premysl Fric; Jan Slaby, and Alena Roubalova, all of Prague, Czechoslovakia, assignors to Spofa, Spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

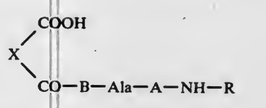
Filed Aug. 9, 1982, Ser. No. 406,168

Claims priority, application Czechoslovakia, Aug. 7, 1981, 5977-81

Int. Cl.⁴ C07C *103/52*

U.S. Cl. 260—112.5 R **2 Claims**

1. Alkylamide of carboxyalkanoykl peptide of the formula



wherein

(a) R is selected from the group consisting of straight and branched chain alkyl groups of 1–5 carbon atoms, and a lower aralkyl group,

(b) A is a residue selected from the group consisting of peptidically bound proline and peptidically bound alanine,

(c) B is selected from the group consisting of a peptide bond, a peptidically bound proline residue and a peptidically bound alanine residue, and

(d) X is selected from the group consisting of $(CH_2)_n$ and CH=CH groups wherein n is an integer of 1–3.

4,554,101

IDENTIFICATION AND PREPARATION OF EPITOPES ON ANTIGENS AND ALLERGENS ON THE BASIS OF HYDROPHILICITY

Thomas P. Hopp, Seattle, Wash., assignor to New York Blood Center, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 223,558, Jan. 9, 1981, , and a continuation-in-part of Ser. No. 272,855, Jun. 12, 1981, , and a continuation-in-part of Ser. No. 358,150, Mar. 15, 1982,. This application Jan. 28, 1983, Ser. No. 461,802

Int. Cl.⁴ C07C *103/52;* **C07G** *7/00;* **G01N** *33/54;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **6 Claims**

1. A method of synthesizing a peptide comprising a sequence of at least six amino acid residues corresponding to the antigenic or allergenic determinant on an antigenic or allergenic protein on the basis of hydrophilicity which method comprises:

(a) determining the amino acid sequence of said antigen or allergen;

(b) assigning relative hydrophilicity values to each sequenced amino acid on a basis selected as follows: arginine, 3.0; aspartic acid, 3.0±1.0; glutamic acid; 3.0±1.0; lysine, 3.0; serine, 0.3; asparagine, 0.2; glutamine 0.2; glycine, 0.0; proline −0.5±1.0; threonine, −0.4; alanine, −0.5; histidine, −0.5; cysteine −1.0; methionine, −1.3; valine, −1.5; isoleucine, −1.8; leucine, −1.8; tyrosine, −2.3; phenylalanine, −2.5; and tryptophan, −3.4;

(c) determining the repetitive local average of hydrophilicity values on the basis of said assigned values of each residue of at least six amino acids sequentially along said antigen or allergen;

(d) comparing said repetitive local averages and selecting the peptide of at least six amino acid residues corresponding to the greatest local average hydrophilicity;

(e) synthesizing a peptide comprising said selected peptide of at least six amino acid residues.

4,554,102

CYANOHYDRINATION CATALYST COMPRISING NON-CRYSTALLINE OR AMORPHOUS DIPEPTIDE

Walter Dong, and Walter L. Petty, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 26, 1983, Ser. No. 535,500

Int. Cl.⁴ C07C *102/52, 121/75, 120/02;* **B01J** *31/02*

U.S. Cl. 260—112.5 R **3 Claims**

1. A catalyst for cyanohydrination which comprises a solid cyclo(D-phenylalanyl-D-histidine) dipeptide having a substantially non-crystalline or amorphous component of the dipeptide.

4,554,103

PREPARATION OF 4-ACYLOXYAZETIDINONES FROM ACYL NITRATES AND PENAMS

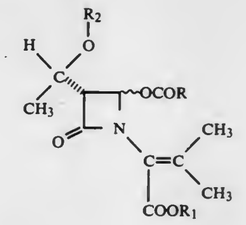
Martin Steinman, Livingston, and Yee-Shing Wong, Belleville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jul. 14, 1983, Ser. No. 513,887

Int. Cl.⁴ C07D *205/08*

U.S. Cl. 260—239 A **2 Claims**

1. A process for preparing a compound represented by the formula



I

wherein

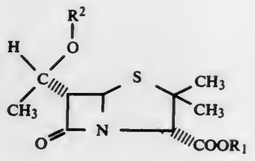
R is lower alkyl, phenyl or phenyl substituted with up to three substitutents independently selected from nitro, halo or lower alkyl;

R_1 is lower alkyl, allyl, or a metabolizable ester group;

R_2 is a readily removable hydroxy protecting group; and

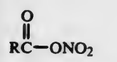
the wavy line means either the R stereochemical configuration, the S stereochemical configuration or a mixture thereof,

which comprises treating a compound represented by the formula



II

wherein R_1 and R_2 are as defined for formula II with a compound represented by the formula



III

wherein R is as defined for formula I in an inert organic solvent at temperatures between about 5° and 20 ° C., followed by treatment with triethyl amine and recovery of the compound of formula I.

4,554,104

DEHALOGENATION PROCESS OF A PENICILLANIC ACID DERIVATIVE

Jagdish C. Kapur, and Herman P. Fasel, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Oct. 10, 1984, Ser. No. 659,088

Claims priority, application European Pat. Off., Oct. 18, 1983, 83201500.2

Int. Cl.⁴ C07D *499/00*; A61K *31/425*

U.S. Cl. 260—245.2 R **9 Claims**

1. A process for the preparation of penicillanic acid-1,1-dioxide comprising subjecting 6,6-dibromo-penicillanic acid-1,1-dioxide to dehalogenation with magnesium in association with an acid.

4,554,105

PROCESS FOR THE PREPARATION OF 1-HYDROXYLATED VITAMIN D COMPOUNDS

Robert H. Hesse, Cambridge, Mass., assignor to Research Institute For Medicine and Chemistry Inc., Cambridge, Mass.

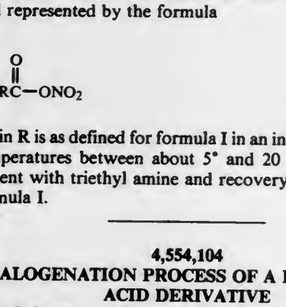
Continuation of Ser. No. 568,620, Jan. 6, 1984, abandoned, which is a continuation of Ser. No. 438,604, Nov. 2, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,309

Claims priority, application United Kingdom, Nov. 2, 1981, 8133019; Nov. 2, 1981, 8133021

Int. Cl.⁴ C07J *9/00*

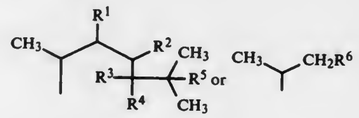
U.S. Cl. 260—397.2 **10 Claims**

1. A process for the 1α-hydroxylation of vitamin D compounds by SE^{IV} oxidation which comprises the oxidation of a 1-unsubstituted 5,6-trans vitamin D compound of formula I:



(I)

wherein Y represents a hydrogen atom, a hydroxyl group, an alkanoyloxy group having 1 to 6 carbon atoms, an aroyloxy group having 7 to 15 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms which may be interrupted by an oxygen atom, a tetrahydropyranyloxy group or a trihydrocarbylsilyloxy group and R represents a group of the formula:-



wherein R^1, R^2, R^3, and R^5 which may be the same or different, each represents a hydrogen or halogen atom, a hydroxy group, an alkanoyloxy group having 1 to 6 carbon atoms, an aroyloxy group having 7 to 15 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms which may be interrupted by an oxygen atom, a tetrahydropyranyloxy group or a trihydrocarbylsilyloxy group, or R^1 and R^2 may together form a carbon-carbon bond or an epoxy group; R^4 represents a hydrogen or halogen atom or a methyl or ethyl group, or R^3 and R^4 together represent a keto or protected keto group; and R^6 represents a hydroxy or hydrocarbylsulphonyloxy group in the presence of a selenous acid at a pH in the range 3–9.

2. A process as claimed in claim 1 wherein the selenous acid is generated in situ by the use of selenium dioxide in the presence of water.

4,554,106

METHOD FOR PREPARING 1α-HYDROXYVITAMIN D COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes; Seok H. Lee, all of Madison, and Mary E. Phelps, Stoughton, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 1, 1984, Ser. No. 667,295

Int. Cl.⁴ C07J *9/00*

U.S. Cl. 260—397.2 **10 Claims**

1. A method for preparing 1α-hydroxyvitamin D compounds which comprises treating a mixture containing said compounds and their corresponding 1α-hydroxy-5,6-trans-vitamin D isomers, with a dienophile, whereby a mixture containing the dienophile-adduct of the 1α-hydroxy-5,6-trans-vitamin D isomer and the unreacted 1α-hydroxyvitamin D compound is obtained, and separating said mixture.

4,554,107

REFINED FISH OILS AND THE PROCESS FOR PRODUCTION THEREOF

Masayasu Takao, Chiba, Japan, assignor to Q.P. Corporation and Nitto Hogei Co., Ltd., both of, Japan, a part interest

Filed Jun. 29, 1984, Ser. No. 626,114

Claims priority, application Japan, Jul. 18, 1983, 58-130602

Int. Cl.⁴ C11B *3/00, 3/02, 3/12*

U.S. Cl. 260—421 **12 Claims**

1. A process for producing refined fish oil, which comprises subjecting a mixture of a polyhydric alcohol, a monoglyceride and a fish oil to a preliminary molecular distillation to remove volatile components and deodorize the fish oil, subjecting the deodorized fish oil thus obtained to further molecular distillation and recovering the vaporized constituents as the refined fish oil.

4,554,108

ALKALI CARBOXYALKYL DITHIOCARBAMATES AND USE AS ORE FLOTATION REAGENTS

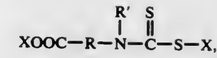
Kenneth B. Kimble; Harold W. Mark, and Clarence R. Bresson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 26, 1983, Ser. No. 517,297

Int. Cl.⁴ C07C *155/08*

U.S. Cl. 260—455 A **8 Claims**

1. The composition represented by the formula



(I)

having from 3 to 8 carbon atoms; wherein R is selected from the group consisting of alkylene radicals; wherein R′ is selected from the group consisting of hydrogen and methyl and ethyl radicals; and wherein X is selected from the group consisting of alkali metal atoms.

4,554,109

ESTERS OF 1,5-DIMETHYL BICYCLO [3.2.1] OCTAN-8-OL

Pieter A. Verbrugge, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

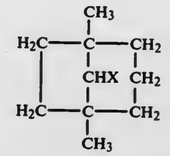
Division of Ser. No. 365,694, Apr. 5, 1982, abandoned. This application Dec. 15, 1983, Ser. No. 561,754

Claims priority, application United Kingdom, Jul. 30, 1981, 8123326

Int. Cl.⁴ C07C *141/12, 137/00*

U.S. Cl. 260—457 **2 Claims**

1. Monoester derivative of 1,5-dimethylbicyclo[3.2.1]octane with the general formula



(I)

wherein X represents an anion of an inorganic polybasic acid selected from the group consisting of sulfuric acid, and sulfurous acid, and the corresponding sodium salt and diester.

4,554,110

PROCESS FOR THE PREPARATION OF AROMATIC CARBONATES

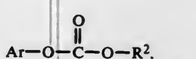
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1983, Ser. No. 565,888

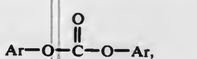
Int. Cl.⁴ C07C *68/06*

U.S. Cl. 260—463 **12 Claims**

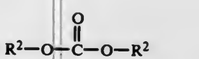
1. An improved process for the preparation of an aromatic carbonate selected from aliphatic aromatic carbonates represented by the formula



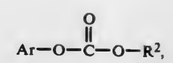
diaromatic carbonates represented by the formula



and mixtures thereof which comprises reacting a phenolic compound with a dialiphatic carbonate represented by the formula



or an aliphatic aromatic carbonate represented by the formula



wherein R^2 is independently selected from monovalent aliphatic radicals having from 1 to about 12 carbon atoms and Ar is independently selected from aromatic radicals having from 6 to 12 ring carbon atoms, in the presence of a catalytic amount of a catalyst, the improvement comprising utilizing as the catalyst a polymeric tin compound containing recurring structural units represented by the formula



wherein:

R is selected from monovalent hydrocarbon radicals having from 1 to about 18 carbon atoms; and

R^1 is selected from monovalent hydrocarbon radicals having from 1 to about 18 carbon atoms.

4,554,111

α-HYDROXYETHYLPHOSPHINATES, AND THEIR PRODUCTION AND USE

Mitsuru Sasaki, Osaka, and Yukio Ishiguri, Hyogo, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

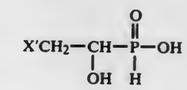
Division of Ser. No. 487,670, Apr. 22, 1983,. This application Aug. 21, 1984, Ser. No. 642,771

Claims priority, application Japan, Apr. 26, 1982, 57-71072; Jun. 8, 1982, 57-98982; Dec. 1, 1982, 57-211815

Int. Cl.⁴ C07F *9/48*

U.S. Cl. 260—502.4 R **1 Claim**

1. A compound of the formula:



wherein X′ is a chlorine atom or a bromine atom.

4,554,112

METHOD FOR THE PREPARATION OF VINYL COMPOUNDS

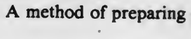
Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 197,420, Oct. 16, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,137

Int. Cl.⁴ C07C *143/70*

U.S. Cl. 260—543 F **9 Claims**

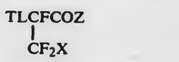
1. A method of preparing a compound having the formula:



(I)

comprising:

reacting a compound having the general formula:



(II)

for a time and at a temperature sufficient to convert at least a portion of compound (II) directly into compound (I);

where
X=Cl, Br or I;
Z=F, Cl, Br, OH, NRR', OA, or SA;
R and R' are independently selected from the group consisting of hydrogen, an alkyl having one or more than one carbon atom, and aryl;
A=alkali metal, alkali earth metal, quaternary nitrogen, or R;
L=oxygen, or sulfur; and
T=an alkyl or aryl radical which does not interfere with the reaction.

4,554,113

LINEAR POLYCHLOROPHOSPHAZENES POSSESSING A DICHLOROTHIOPHOSPHORYL TERMINAL GROUP, PROCESS FOR PREPARATION OF SAID COMPOUNDS AND UTILIZATION THEREOF

Taher Abou Chakra, Villeneuve D'Ascq, and Roger De Jaeger, Chereng, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jul. 6, 1984, Ser. No. 628,403
Claims priority, application France, Jul. 6, 1983, 83 11264
Int. Cl.[4] C01B *25/10*
U.S. Cl. 260—927 N **28 Claims**

1. Linear polychlorophosphazenes having a dichlorothiophosphoryl terminal group, represented by the formula

$$Cl_2(S)P—NPCl_2—_nCl$$

wherein n is a number of at least 4.

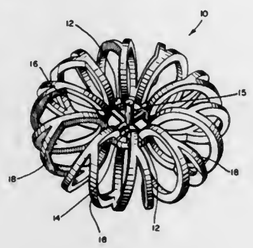
3. A process for the preparation of linear polychlorophosphazenes having a dichlorothiophosphoryl terminal group, which comprises polycondensing P_2NSCl_5 by heating under pressure and temperature conditions adequate for releasing $PSCl_3$, with control of the amount of $PSCl_3$ released so as to obtain a dichlorothiophosphoryl polychlorophosphazene having a number average molecular weight ($\overline{Mn}$) greater than about 630.

4,554,114

PACKING ELEMENT AND METHOD USING SAME

John D. Glen, and Rose-Mary M. Glen, both of Boston, Mass., assignors to Telpac Company Limited, Boston, Mass.

Filed Sep. 18, 1981, Ser. No. 303,485
Int. Cl.[4] B01D *3/04*
U.S. Cl. 261—95 **7 Claims**



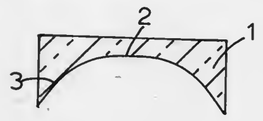
1. In a packaging element of the filamentous toroidal helix type utilized in gas/liquid contact process comprising a series of loop members mounted about the circumference of a hub in an array that is generally perpendicular to said hub and wherein said loop members are connected to at least one adjacent loop member by at least one interloop barrier means which extends from a position near the top of one said loop member to a position near the bottom of said adjacent loop member, the improvement wherein said packing element comprises, axially positioned within said hub, a post-like member which extends upwardly and downwardly to terminate in planes near the upper and lower dimensions of said loops, said post-like members forming means to substantially reduce vertical nesting of a plurality of said packing elements.

4,554,115

METHOD OF CONTROLLING THE CONVEX CURVE OF SOFT LENSES

Charles W. Neefe, P.O. Box 429, 811 Scurry St., Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 527,757, Aug. 30, 1983, abandoned. This application Jul. 5, 1984, Ser. No. 628,157
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—1.1 **11 Claims**



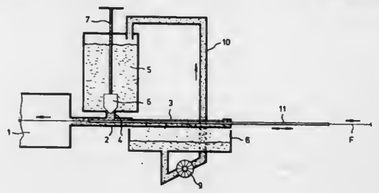
1. A method of providing a soft contact lens having a preselected aspheric convex surface having a shorter radius of curvature at the center and a progressively longer radii toward the edge when in place on the cornea of the eye and having an aspheric concave surface having a longer radius at the center and progressively shorter radii toward the edge when removed from the eye.

4,554,116

OPTICAL CABLE ELEMENT MANUFACTURE

Edward I. Cooke, Addington, England, assignor to BICC Public Limited Company, London, England

Continuation of Ser. No. 307,072, Sep. 30, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,360
Claims priority, application United Kingdom, Oct. 1, 1980, 8031693
Int. Cl.[4] G02B *5/14*
U.S. Cl. 264—1.5 **19 Claims**



1. A method of manufacturing an optical cable element comprising a tube of plastics material loosely housing at least one optical fibre, the space in the tube not occupied by the optical fibre or fibres being filled with a water-impermeable medium of a jelly-like nature, which method comprises initially causing at least one optical fibre to travel in a rectilinear direction in the direction of its length under a controlled tension through a substantially rigid capillary tube which extends through a chamber connected to the upstream end of extrusion apparatus and into said extrusion apparatus; introducing water-impermeable medium in a liquid state into said chamber at a substantially constant pressure head; gradually withdrawing the capillary tube from the extrusion apparatus and chamber in an upstream direction so that water-impermeable medium is applied directly to the optical fibre being withdrawn through the chamber and that the advancing optical fibre with water-impermeable medium therearound passes directly from the chamber into the extrusion apparatus; extruding a tube of polymeric material around the advancing optical fibre and the surrounding water-impermeable medium in such a way that the internal diameter of the tube is substantially greater than the overall diameter of the optical fibre; drawing down the extruded tube of polymeric material to reduce its internal diameter to such an extent that the tube loosely envelopes the optical fibre with the space within the tube not occupied by the optical fibre substantially filled with water-impermeable medium of jelly-like nature and heating the extruded tube as it is being drawn down; and annealing the drawn-down tube to reduce the risk of subsequent substantial shrinkage of the tube.

14. Apparatus for use in the manufacture of an optical cable element, which apparatus comprises apparatus for extruding a tube of polymeric material; a chamber which is connected to the upstream end of the extrusion apparatus and which contains water-impermeable medium in a liquid state and at a substantially constant pressure head; a substantially rigid capillary tube which extends through the chamber and into the extrusion apparatus and which is longitudinally moveable with respect to the chamber and extrusion apparatus; means for causing at least one optical fibre to travel in a rectilinear direction in the direction of its length under a controlled tension through said capillary tube and into said extrusion apparatus; means for withdrawing the capillary tube in an upstream direction so that the advancing optical fibre with water-impermeable medium therearound will pass directly from said chamber into the extrusion apparatus; means, downstream of the extrusion apparatus, for drawing down an extruded tube of polymeric material to reduce its internal diameter to such an extent that the tube will loosely envelop an optical fibre with the space within the tube not occupied by the optical fibre substantially filled with water-impermeable medium of a jelly-like nature and means for heating the extruded tube; and means for annealing the drawn-down tube to reduce the risk of subsequent substantial shrinkage of the tube.

4,554,117

METHOD OF FORMING DENSE CERAMIC BODIES

Andre Ezis, Grosse Ile, and Warren B. Copple, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 444,901
Int. Cl.[4] B28B *11/00*
U.S. Cl. 264—67 **17 Claims**



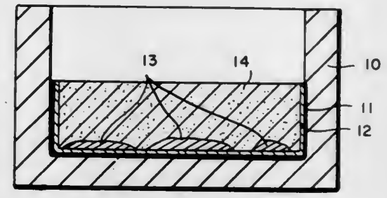
1. A method of simultaneously and uniformly densifying a plurality of semidense ceramic particulate bodies, comprising:
(a) hinging said bodies together with a uniform space therebetween to form a cluster of said bodies;
(b) filling the spaces between said bodies within said cluster with an isostatic pressure medium which is viscous and inert at hot pressing conditions;
(c) hot pressing one or more of said clusters, arranged in contiguous stacked relation, with sufficient pressure and temperature to densify each of said bodies to at least 96% of full theoretical density; and
(d) freeing said bodies from said cluster by rupturing said hinges, leaving each body in a substantially usable condition as a cutting tool.

4,554,118

PROCESS OF INLAYING A DESIGN IN MOLDED SIMULATED MARBLE

Janice P. Seifert, 35 Brentwood Rd., Chelmsford, Mass. 01824

Filed Nov. 10, 1983, Ser. No. 550,383
Int. Cl.[4] B29C *9/00*
U.S. Cl. 264—73 **2 Claims**



1. A process of decorating a cultured marble molding produced from a marble mix comprising:
(a) applying a hardenable transparent acrylic gel coat to the inner bottom surface of a mold treated with a release agent;
(b) hardening said gel coat;
(c) applying, with an acrylic paint, a painted design on the top surface of said hardened gel coat;
(d) casting a hardenable marble mix in the mold in such a manner as to cover said gel coat and said painted design; and
(e) allowing the marble mix to harden before removing the resultant decorated cultured marble molding from said mold.

4,554,119

PROCESS FOR HEAT TREATING SHAPED ARTICLES OF POLY {[BENZO(1,2-D:4,5-D')BISTHIAZOLE-2,6-DIYL]-1,4-PHENYLENE}, ITS CIS ISOMER OR MIXTURES THEREOF

Edward C. Chenevey, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,799
Int. Cl.[4] B29C *25/00*
U.S. Cl. 264—85 **12 Claims**

1. A process for heat treating a shaped article of poly{[benzo(1,2-d:4,5-d')bisthiazole-2,6-diyl]-1,4-phenylene}, its cis isomer or mixtures thereof on a continuous basis comprising:
(a) heating the article to a temperature in the range of from about 375° to about 650° C.;
(b) stretching the article to obtain a stretch of from about 0.5 to about 4%; and
(c) maintaining the article under the conditions of (a) and (b) for from about 5 to about 300 seconds.

4,554,120

PROCESS FOR ELIMINATING SURFACE MELT FRACTURE DURING EXTRUSION OF THERMOPLASTIC POLYMERS

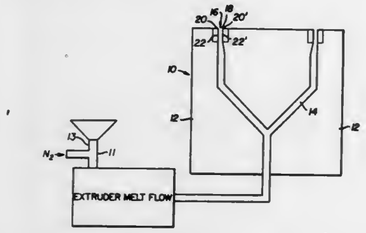
Arakalgud V. Ramamurthy, Somerset, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 508,667, Jun. 28, 1983, abandoned. This application Jul. 3, 1984, Ser. No. 627,517
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.[4] B29F *3/04*
U.S. Cl. 264—85 **32 Claims**

1. A process for substantially eliminating surface melt fracture during extrusion of a thermoplastic polymer under conditions of flow rate and melt temperature which would otherwise produce such surface melt fracture which comprises

extruding said polymer through a die having a die land region defining opposing surfaces, and wherein at least one of said opposing surface is fabricated from an alloy containing 5 to 95 parts by weight zinc and 95 to 5 parts by weight of copper whereby surface melt fracture is substantially eliminated on the surface of the polymer adjacent to said zinc/copper containing alloy surface.

25. A die for extruding thermoplastic polymers prone to melt fracture which comprises a die block having inlet means



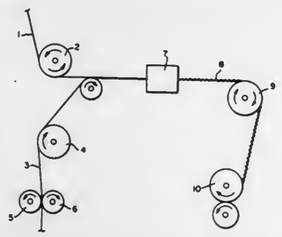
for introducing an extruder melt into said die block and outlet means for discharging molten polymer from said die block, conduit means for passing molten material from said inlet means to said outlet means, said outlet means including a land entry section and a die land, said die land having surfaces in contact with said molten polymer, at least one of said surfaces being fabricated from an alloy containing 5 to 95 parts by weight zinc and 95 to 5 parts by weight of copper whereby melt fracture is substantially eliminated on the surface of the polymer adjacent to said zinc/copper containing alloy surface.

4,554,121

METHOD OF FORMING LATENT-CONTRACTABLE ELASTOMERIC COMPOSITE YARNS

Aloysius A. J. Kramers, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 313,929, Oct. 22, 1981, abandoned, which is a continuation-in-part of Ser. No. 178,661, Aug. 18, 1980, abandoned. This application Oct. 6, 1983, Ser. No. 532,339
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.⁴ D02G *3/02*
U.S. Cl. 264—103 **8 Claims**



1. A process for producing a latent-contractable elastomeric composite yarn, comprising:

(a) an elastomer component consisting of at least one essentially undrawn latent contractable polymer filament which, upon heat treatment, contracts at least 15% of its original length to provide an elastomeric filament, and

(b) at least one relatively inelastic companion filament,

said process comprising feeding said filaments (a) and (b) into an air jet adapted to intermingle said filaments to provide a unitary composite yarn, said filament (a) being fed to said air jet in at least a taut, essentially non-elastically tension-elongated condition, but at less than 100% elastically tension-elongated, while said filament (b) is fed at a rate about equal to the feed rate of (a) or greater than the feed rate of (a) to provide an intermingled unitary composite yarn which, when heat treated, is an elastic yarn wherein the filament (b) becomes load bearing at less than about 95% of the break elongation of said filament (a).

4,554,122

METHOD FOR AIR BLADDER RELEASE DURING TIRE PRODUCTION

John M. Allardice, Allison Park, Pa., assignor to Releasomers, Inc., Bradfordwoods, Pa.

Continuation of Ser. No. 362,559, Mar. 26, 1982, abandoned, which is a division of Ser. No. 319,098, Nov. 6, 1981, , which is a continuation of Ser. No. 133,689, Mar. 25, 1980, abandoned. This application Aug. 13, 1984, Ser. No. 639,869
Int. Cl.⁴ B29H *21/04*
U.S. Cl. 264—130 **7 Claims**

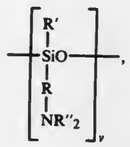
1. A method for the releasable placement of an uncured tire carcass in a tire mold having an expandable air bladder therewithin, comprising the steps of:

applying a fluid blend having release properties enduring multiple repetitions of expansion and contraction of the expandable item to the surface of the air bladder of the tire mold;

curing said fluid blend on said air bladder to create an expandable release film for repeated tire curing production;

wherein said fluid blend consists essentially of from about 20 to 80 parts of an adhesion agent, from about 4 to about 25 parts of a curing agent, from about 5 to about 80 parts of a slip agent, and from about 20 to about 80 parts of a release agent;

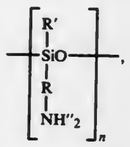
wherein said adhesion agent is an aminofunctional diorganopolysiloxane resin having the following formula:



where v is a number up to 20,000; where R represents a divalent radical selected from the group consisting of a divalent hydrocarbon radical having from 1 to 10 carbon atoms, $(OC_2H_4)_r$, $(OHC_2)_r$, $(OC_3H_6)_r$, where r is a number from 1 to 50 and an unsaturated divalent hydrocarbon radical having from 2 to 10 carbon atoms;

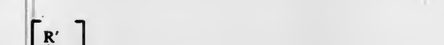
where R′ represents a monovalent radical having from 1 to 18 carbon atoms and selected from the group consisting of hydrocarbons and halogenated hydrocarbons, wherein R″ is selected from the group consisting of hydrogen and a monovalent hydrocarbon radical having from 1 to 12 carbon atoms; R″ being the same or different in bonding to N;

said curing agent having the following formula:



wherein n is a number up to 30, where R represents the same divalent radicals as described in said formula for said adhesion agent, and where R′ represents the same monovalent radicals as described in said formula for said adhesion agent;

said slip agent selected from the group consisting of polyalkylene glycols and di-organopolysiloxane fluids, and combinations thereof, said polyalkylene glycols having the following formula:



where R‴ is an alkylene radical or an alkoxy-substituted alkylene radical having from 1 to 8 carbon atoms, and combinations thereof, and where t is a number from 2 to 80;

said di-organopolysiloxane fluids having the following formula:



where w is a number greater than 5 and where R′ represents he same monovalent radicals as described in said formula for said adhesion agent;

wherein said di-organopolysiloxane fluids have a viscosity range of from about 100,000 to about 2,500,000 centipoise, and

said release agent selected from the group consisting of silazane fluids, mono-organopolysiloxane fluids and combinations thereof, said silazane fluids having the following formula:



where s is a number from 1 to 30, where R′ represents the same monovalent radicals as described in said formula for said adhesion agent, and where R″ represent hydrogen and the same monovalent radicals as described in said formula for said adhesion agent;

said mono-organopolysiloxane fluids having the following formula:



where w is a number greater than 5 and where R′ represents the same monovalent radicals as described in said formula for said adhesion agent.

4,554,123

PROCESS AND APPARATUS FOR DIRECT EXTRUSION OF THERMAL BARRIER PROFILES

Laurence C. Smyth, Beaconsfield, Canada, assignor to Norandex Inc., Cleveland, Ohio

Filed May 10, 1984, Ser. No. 609,110
Int. Cl.⁴ B29F *3/10*; E04B *1/62*
U.S. Cl. 264—166 **19 Claims**

1. A process for constructing a thermal barrier profile, said process comprising the steps of:

(a) providing an elongated structural member having a lineal cavity therein with an open portion;

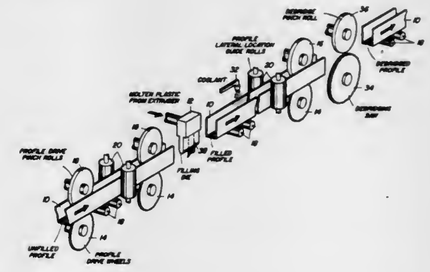
(b) driving the elongated member past a filling die while simultaneously guiding the elongated member so as to positively locate the open portion of the lineal cavity with respect to the filling die in order to completely close the cavity and so form a composite mould with the filling die and the cavity at the location of the filling die;

(c) continuously extruding thermoplastic material under pressure into the composite mould through a fluid flow passage in said filling die; and

(d) removing a lineal portion of the structural member opposite to the open portion of the lineal cavity to form the thermal barrier profile.

5. An apparatus for constructing a thermal barrier profile from an elongated structural member having a lineal cavity with an open portion, comprising:

(a) a filling die adapted to be inserted in the open portion of said lineal cavity;



(b) means for driving the elongated member past the filling die;

(c) guide means to positively locate the open portion of said lineal cavity with respect to the filling die so as to completely close the cavity and so form a composite mould with the filling die and the cavity at the location of the filling die;

(d) means for extruding thermoplastic material under pressure into the composite mould through a fluid flow passage in said filling die; and

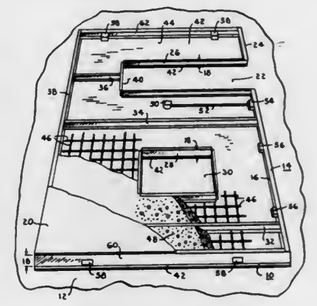
(e) means for removing a lineal portion of the structural member opposite the open portion of the lineal cavity to form the thermal barrier profile.

4,554,124

HORIZONTALLY POURED FIBRESTONE BUILDING CONSTRUCTION

David A. Sudrabin, Delray Beach, Fla., assignor to Fibrestone Incorporated, LaBelle, Fla.

Continuation-in-part of Ser. No. 472,657, Mar. 7, 1983, abandoned. This application Jun. 22, 1983, Ser. No. 506,526
Int. Cl.⁴ E04B *5/04*
U.S. Cl. 264—263 **4 Claims**



1. The method of forming a composite wall for a building structure, said wall having a relatively thin outer shell formed of fiber reinforced concrete and having an outer surface defin-

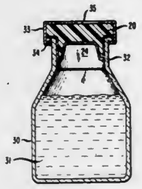
ing the outside surface of the wall and adapted to be exposed to the atmosphere and having an inside surface, comprising the steps of positioning a preformed fiber reinforced shell horizontally with its outer surface in a face down position in contact with a substantially flat surface, securing a load bearing structure including a frame aligned with the inside surface of the fiber reinforced shell while the shell is in a horizontal position with the frame extending above the inside surface of the shell and having a substantially uniform thickness throughout and having an upper substantially flat surface, placing concrete in the space within the frame to increase the load bearing capacity of the load bearing frame, striking off the concrete in alignment with the upper surface of the frame after the concrete has attained an initial set and prior to its hardening, and thereafter elevating the wall to the vertical position thereby providing a composite wall having the fiber reinforced outer surface of the shell exposed to the atmosphere and the inner load bearing structure consisting of the frame and the concrete placed in the frame and extending parallel with and coextensive with the fiber reinforced shell.

4,554,125

METHOD OF MAKING A STOPPER FOR A STERILE FLUID CONTAINER

Julius Z. Knapp, Somerset, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Mar. 17, 1983, Ser. No. 476,075
Int. Cl.⁴ B29H *9/00*; B29C *11/00*
U.S. Cl. 264—266 **4 Claims**



1. A method for making a stopper to hold fluid in a container, said stopper having a thin layer of thermoplastic laminated without adhesive to form a surface intended to contact the fluid comprising:

(a) providing a first mold half having a concavity and a second mold half opposite the concavity,

(b) disposing a sheet of thermoplastic between the mold halves and vulcanizable elastomer between the thermoplastic and the second mold half, the thermoplastic having an elongation of at least 450% and a crystalline melting point higher than the minimum vulcanizing temperature of the elastomer,

(c) heating the mold halves to a temperature that is within the softening range and below the crystalline melting point of the thermoplastic and above the minimum vulcanizing temperature of the elastomer,

(d) pressing the heated mold halves toward each other with pressure sufficient to force elastomer into the concavity while simultaneously forming thermoplastic against the surface of the concavity, and

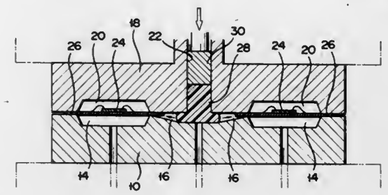
(e) holding the mold halves in pressed position for a time sufficient to vulcanize the elastomer.

4,554,126

METHOD FOR ENCAPSULATING SEMICONDUCTOR DEVICES

Michitoshi Sera, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 1, 1983, Ser. No. 510,226
Claims priority, application Japan, Jul. 3, 1982, 57-114799
Int. Cl.⁴ B29C *6/04*; B29B *1/03*
U.S. Cl. 264—272.17 **4 Claims**



1. A method for resin encapsulation of a semiconductor device, comprising the steps of:

providing a lower mold die having a flat portion and a cavity;

providing an upper mold die having a flat portion and a cavity corresponding to the flat portion and the cavity of the lower mold die respectively;

fixing the semiconductor device between the cavities of the upper and lower mold dies;

plasticizing a high-density tablet of a thermosetting resin having a compressibility of not less than 95%;

injecting the plasticized resin into a space defined between the cavities of the upper and lower mold dies to cover the semiconductor device; and

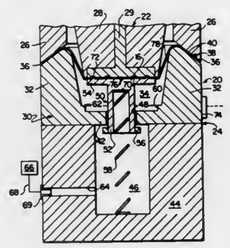
curing the injected resin.

4,554,127

METHOD FOR FORMING A PAPERBOARD RECEPTACLE

Paul O. Hain, Hamilton, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 16, 1980, Ser. No. 217,092
Int. Cl.⁴ B29C *11/00*; B29D *31/00*
U.S. Cl. 264—324 **9 Claims**



1. A method of forming a paperboard receptacle having a bottom and side walls, which comprises

locating a paperboard blank between mating first and second dies;

moving said first die toward said second die to draw said blank into a receptacle; and

injecting steam into at least one of said dies and against a surface of said blank during drawing of said blank.

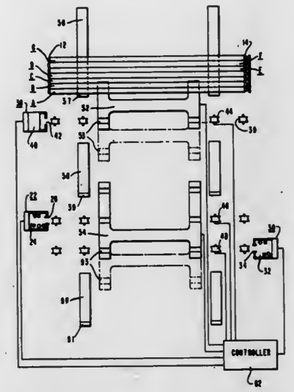
7. A method according to claim 1, wherein said steam is injected into said second die, and said second die is heated to a temperature between about 300° F. and 400° F.

4,554,128

NUCLEAR FUEL ROD END PLUG WELD INSPECTION

Merle A. Parker; George F. Rice, and Stanley S. Patrick, all of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1983, Ser. No. 470,906
Int. Cl.⁴ G21C *17/00*
U.S. Cl. 376—252 **8 Claims**



1. Apparatus for determining the integrity and composition of TIG welds of an end plug on a sealed nuclear reactor fuel rod, comprising:

(a) an ultrasonic weld inspection system for void detection with multiple transducers and having an immersion tank stuffing box with a seal for receiving said end plug on said fuel rod, said transducers disposed in said stuffing box to interrogate said welds of said end plug;

(b) means for longitudinally moving said end plug into and out from said stuffing box;

(c) an X-ray fluorescent spectrograph calibrated to detect tungsten and having a shielded counting chamber with an orifice for receiving said end plug on said fuel rod;

(d) means for axially moving said end plug into and out from said counting chamber;

(e) means for transporting said fuel rod between said stuffing box and said counting chamber; and

(f) means for controlling, in a predetermined manner, said end plug axial moving means, said X-ray fluorescent spectrograph, said fuel rod transporting means, said end plug longitudinal moving means, and said ultrasonic weld inspection system.

4,554,129

GAS-COOLED NUCLEAR REACTOR

Charles O. Peinado, La Jolla, and Stanley L. Koutz, San Diego, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 359,161
Int. Cl.⁴ G21C *15/18, 15/02*
U.S. Cl. 376—298 **8 Claims**

1. A gas-cooled nuclear reactor comprising

a concrete pressure vessel having a generally vertical cylindrical sidewall, an upper end wall and a lower end wall defining an internal compartment,

a tubular metal liner disposed adjacent to the interior wall of said concrete pressure vessel sidewall,

a nuclear fission reactor core located in a lower portion of said compartment having passageways therein for the flow of gas coolant from the bottom to the top thereof,

said core having a horizontal dimension less than the interior diameter of said concrete pressure vessel sidewall and being disposed therewithin to provide a generally annular region between said core and said sidewall,

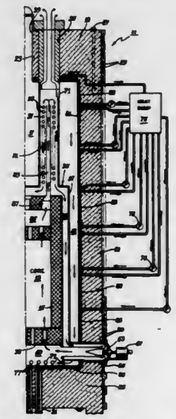
a tubular shroud located in said generally annular region spaced outward from said core to create both an inner passageway between said core and said shroud and an outer passageway between said shroud and said metal liner, said inner and outer passageways normally communicating with each other at the bottom of said compartment,

heat-exchange mean located vertically above said core for transferring heat from a primary gas coolant flowing upward through said core to a secondary fluid coolant circulated therethrough, said heat-exchange means having a normal exit means near the bottom thereof and being constructed so that said gas coolant enters at the bottom and normally travels first upward and then downward therein,

conduit means for directing high temperature gas coolant from the top of said core to said heat-exchange means,

said exit means from the bottom of said heat-exchange means normally communicating said heat exchange means to said inner passageway,

circulator means normally taking suction from said inner passageway for drawing gas coolant from said normal exit from said heat-exchange means through said inner passageway and delivering said gas coolant to the bottom of



said core for another pass upward therethrough, the coolant gas thereby being recirculated through a flow path entirely within said cylindrical internal compartment,

cooling tubes disposed in contact with the exterior surface of said metal liner,

said heat-exchange means also having emergency exit means near the top thereof, said emergency exit means being designed to open to a region above the core in direct contact with said metal liner and in communication with said outer passageway upon a predetermined rise in the temperature of said gas coolant,

said reactor being designed so that upon a rise in the exit temperature of said gas coolant from said core as a consequence of the failure in performance of said circulator means and resulting opening of said emergency exit means, there results a natural convection flow of gas coolant upward through said core, then to the top of said heat-exchange means and through said emergency exit means, then downward through said outer passageway along and in direct contact with the interior surface of said metal liner to the bottom of said core and then upward therethrough, and

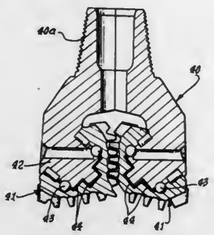
means for circulating coolant liquid through said cooling tubes at a sufficient rate to withdraw enough heat to prevent said core and said concrete pressure vessel from overheating.

4,554,130

CONSOLIDATION OF A PART FROM SEPARATE METALLIC COMPONENTS

Gunes M. Ecer, Irvine, Calif., assignor to CDP, Ltd., Newport Beach, Calif.

Filed Oct. 1, 1984, Ser. No. 656,641
Int. Cl.⁴ B22F 3/14
U.S. Cl. 419—8 **32 Claims**



1. A method of consolidating metallic body means which includes:
(a) applying to the body means surface a mixture of:
(i) metallic powder,
(ii) fugitive organic binder, and
(iii) volatile solvent,
(b) drying the mixture,
(c) burning out the binder and solvent at elevated temperature,
(d) immersing the heated body means in a heated granular bed of refractory material within a metal die, and
(e) applying a pressure to the granular bed, which transmits the pressure to the body means, until the said metal powder is consolidated and bonded to the said body means.

4,554,131

ALUMINUM BATTERY ALLOYS

David S. Thompson, Richmond, and Darwin H. Scott, Mechanicsville, both of Va., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 28, 1984, Ser. No. 655,486
Int. Cl.⁴ C22C 21/08
U.S. Cl. 420—546 **11 Claims**

1. An aluminum alloy consisting essentially of about 0.02 to about 0.15 weight percent of iron, about 0.02 to about 0.30 weight percent of manganese, about 0.01 to about 0.07 weight percent of gallium, the balance being made of aluminum with its inherent impurities, wherein said iron and said aluminum are provided from a base aluminum material produced in a production aluminum reduction cell.

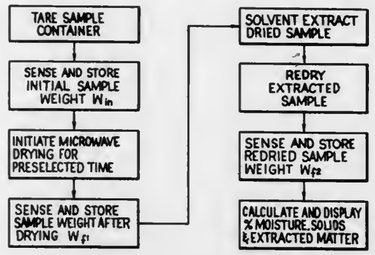
4,554,132

ANALYTICAL APPARATUS FOR DETERMINING VOLATILES, SOLIDS, AND SOLVENT EXTRACTABLES IN A SAMPLE

Michael J. Collins, Matthews, N.C., assignor to CEM Corporation, Indian Trail, N.C.

Continuation of Ser. No. 21,986, Mar. 19, 1979, abandoned. This application Nov. 29, 1982, Ser. No. 445,199
Int. Cl.⁴ G01N 5/04, 22/00, 22/04, 25/14
U.S. Cl. 422—68 **9 Claims**

1. An apparatus for quantitatively determining volatiles, solids and solvent extractables in a sample comprising in combination, automatic weighing means, sample holding means, microwave heating means, sample solvent extracting means, sample recovery means, recording and calculation means, said microwave heating means communicating with said sample holding means, said recording means being electrically connected to said weighing means to sense and record weights, said sample solvent extracting means communicating with said sample holding means and having means therewith to grind said sample holding means and means to recover the residue of ground sample holding means, and means for sequentially



activating said weighing, recording, microwave heating, sample solvent extraction and calculating means in a predetermined sequence to determine the proportion of volatiles, solids and solvent extractables in a sample.

4,554,133

GAS MEASURING TESTING TUBE

Kurt Leichnitz, Gross Gronau, Fed. Rep. of Germany, assignor to Drägerwerk A.G., Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,515
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3236792
Int. Cl.⁴ G01N 21/29
U.S. Cl. 422—87 **5 Claims**



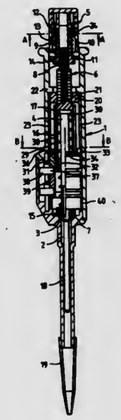
1. An indicator tube for detecting gaseous contaminants in air comprising:
a transparent indicator tube having an inner surface;
two longitudinally spaced gas permeable holders positioned within said tube;
granular fill material located within said tube between the gas permeable holders;
a reagent impregnated strip extending between said gas permeable holders, said strip further being positioned between the granular fill material and a portion of the inner surface of said tube whereby the granular fill material holds said strip tightly against the portion of the inner surface of said tube.

4,554,134

PIPETTE WITH ADJUSTABLE VOLUME

Jukka Tervamäki; Mikael Fagerstedt; Aarre Kukka, all of Helsinki, and Erkki Kaski, Luvia, all of Finland, assignors to Labsystems Oy, Helsinki, Finland

PCT No. PCT/FI83/00051, § 371 Date Feb. 2, 1984, § 102(e) Date Feb. 2, 1984, PCT Pub. No. WO84/00119, PCT Pub. Date Jan. 19, 1984
PCT Filed Jun. 21, 1983, Ser. No. 579,885
Claims priority, application Finland, Jun. 29, 1982, 822307
Int. Cl.⁴ G01N 1/14
U.S. Cl. 422—100 **2 Claims**



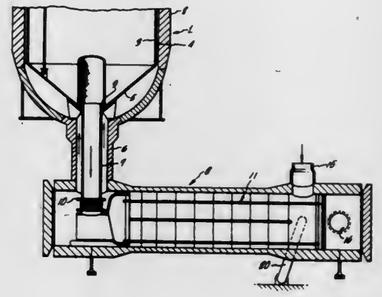
1. An improved pipette with adjustable dispensing volume comprising:
(a) a hollow frame portion forming a handle;
(b) a cylinder formed within said frame portion;
(c) a piston displaceably and sealably fitted within said cylinder;
(d) a piston rod coupled to said piston for displacing same;
(e) a threaded shaft disposed within said frame including an upper portion and a lower portion, the lower portion of said shaft engaging said piston rod to displace same;
(f) a calibration sleeve threaded to the upper portion of said threaded shaft to permit the total length of said sleeve and said threaded shaft to be adjusted by relative rotation thereof to thereby determine a lower limit of displacement of said piston;
(g) at least first and second coacting disc means coupled to said threaded shaft by a non-threaded sleeve attached thereto for reciprocal rotation between said disc means upon said relative rotation of said sleeve and said threaded shaft, said disc means having an upper, lower and peripheral surface, numerical indicia means disposed on the peripheral surface of said disc means for indicating calibrated dispensing volumes of said pipette and notches disposed on said upper surface of an uppermost one of said first and second disc means; and
(h) an annular spring disposed adjacent said uppermost of said disc means, said spring being non-rotatably fitted to said frame portion, said spring including globular projections for releaseable engagement with said notches on said upper surface of said uppermost disc means so as to releaseably lock said disc means at various radial positions.

4,554,135

AMMONIA CONVERTER

Bernard J. Grotz, Pasadena; Fiske O. Parnkopf, Arcadia, and G. Robert Prescott, Newport Beach, all of Calif., assignors to C F Braun & Co., Alhambra, Calif.

Filed Nov. 26, 1982, Ser. No. 444,749
Int. Cl.⁴ C01C 1/04
U.S. Cl. 422—148 **1 Claim**



1. An apparatus for synthesizing ammonia comprising:
a vertical synthesis converter comprising a shell and a catalyst holder positioned within and spaced slightly from the shell to provide an annular passageway;
a channel fabricated of a material selected from the group consisting of 2¼-Cr-1-Mo and 3-Cr-1-Mo provided at the lower end of the shell adjacent the bottom of the catalyst holder;
a conduit approximately 1 to about 6 feet in length fabricated of a nickel alloy or stainless steel extending through the channel and connected to the catalyst holder through a gas collector pipe;
a horizontally disposed shell and tube heat exchanger with a tube bundle anchored within the heat exchange shell at the end nearest the converter so as to prevent lateral movement of the tube bundle within the heat exchange shell, the heat exchange shell being close coupled through the channel to the converter, the conduit being connected to a tube side of the heat exchanger through an expansion means which will take up thermal expansion resulting from the difference in the coefficient of expansion between the conduit and the channel;
a spring-loaded rocker arm supporting the end of the heat exchanger opposite the converter, said rocker arm being provided to allow for longitudinal movement of the heat exchanger shell due to thermal expansion from the anchored end of said heat exchanger, whereby ammonia synthesis feed gas may pass through the heat exchanger and the channel about the conduit and into the synthesis converter at a temperature between approximately 700° F. to about 750° F. and the synthesis effluent passes through said conduit to the tube side of said heat exchanger at a temperature between approximately 950° F. to about 1000° F.

4,554,136

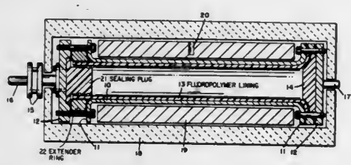
HYDROTHERMAL APPARATUS FOR SYNTHESIZING CRYSTALLINE POWDERS

Bruce H. Chai, Bridgewater; Ernest Buehler, Chatham, and John J. Flynn, Millington, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 315,778, Oct. 28, 1981, abandoned, which is a division of Ser. No. 230,077, Jan. 30, 1981, Pat. No. 4,324,773. This application Apr. 1, 1983, Ser. No. 481,208

Int. Cl.⁴ C30B *71/10*

U.S. Cl. 422—209 **3 Claims**



1. An apparatus for preparing crystalline powders of alpha-aluminum orthophosphate or alpha-gallium orthophosphate comprising in combination

(a) a pressure vessel comprising a substantially cylindrical tubular element having a shrinkable and reusable fluoropolymer lining that is initially longer than the tubular element,

(b) means for supporting the vessel with its cylinder axis in a substantially horizontal orientation,

(c) means for rotating the vessel about its cylinder axis,

(d) means for controlling temperatures in the vessel, and

(e) means for compensating for shrinkage in the flouropolymer liner, the compensating means comprising a sealing plug and a removable annular ring at one end of the vessel that sealingly support the liner, while permitting the liner to thermally expand and contract at the seal.

4,554,137

ENRICHMENT OF MINERALS BY FLOTATION AND COLLECTOR AGENTS EMPLOYED FOR THIS PURPOSE

Jacques Maurice; Patrice Guesnet, both of Pau; Pierre Tozzolino, Morlaas, and Guy Muller, Monein, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Oct. 13, 1983, Ser. No. 541,776

Claims priority, application France, Oct. 13, 1982, 8217128

Int. Cl.⁴ B03D *1/02*

U.S. Cl. 423—26 **7 Claims**

1. Process of enrichment of minerals by flotation with the aid of a collector consisting essentially of a polysulphide having two aliphatic hydrocarbon groups, wherein these groups are alkyl or alkenyl, one group having 2 to 12 carbon atoms and the other having 6 to 12 carbon atoms, and wherein the polysulphide is in the form of a solution in a solvent selected from the group consisting of alcohol, carbon disulphide, dimethyl sulphoxide, benzene and kerosene.

4,554,138

LEACHING METALS FROM SPENT HYDROPROCESSING CATALYSTS WITH AMMONIUM SULFATE

Paul J. Marcantonio, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1984, Ser. No. 666,519

Int. Cl.⁴ C01G *31/00, 39/00, 41/00, 51/00*

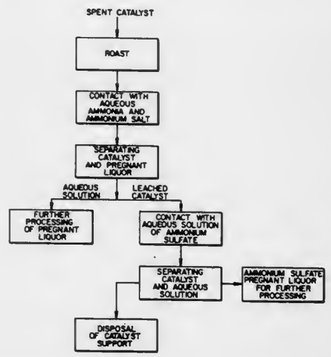
U.S. Cl. 423—53 **7 Claims**

1. A process to extract metals from spent hydroprocessing catalyst particles comprising:

(a) roasting said catalyst particles at a temperature in the range of between 400° C. and 600° C.;

(b) contacting said roasted catalyst particles with a first aqueous solution of ammonia and ammonium salt;

(c) separating said catalyst particles from said first aqueous solution;



(d) contacting said catalyst particles with a second aqueous solution of ammonium sulfate at a pH in the range of from about 1 to 4; and

(e) separating said catalyst particles from said second solution.

4,554,139

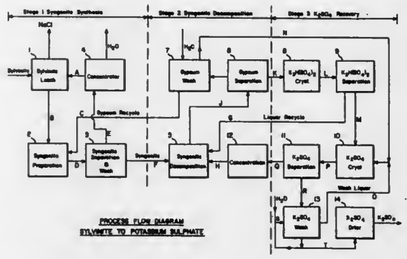
PROCESS FOR PRODUCING AND DECOMPOSING SYNGENITE

Ralph E. Worthington, Winter Haven, and Alex Magdics, Lakeland, both of Fla., assignors to Prodeco, Inc., Mulberry, Fla.

Division of Ser. No. 536,379, Sep. 27, 1983, abandoned. This application Jun. 7, 1984, Ser. No. 618,142

Int. Cl.⁴ C01D *5/02, 5/12*

U.S. Cl. 423—166 **10 Claims**



1. A process for decomposing syngenite comprising reacting said syngenite with an acid, said acid selected from the group consisting of those acids having a dissociation constant of at least 1.2×10^{-2} at a temperature and for sufficient time such that the syngenite decomposes to $CaSO_4$ and $KHSO_4$.

4,554,140

OFF-GAS DESULFURIZATION PROCESS

Yoshihiko Kudo, Iwaki, Japan, assignor to Kureha Chemical Industry Co., Ltd., Japan

Filed Aug. 28, 1984, Ser. No. 644,977

Claims priority, application Japan, Oct. 25, 1983, 58-199440

Int. Cl.⁴ C01B *17/00*

U.S. Cl. 423—243 **4 Claims**

1. In an off-gas desulfurization process which comprises contacting an off-gas containing sulfur dioxide with an absorbing solution containing an organic carboxylate, and oxidizing the resulting absorbed solution with an oxygen-containing gas while neutralizing the absorbed solution with limestone to convert the sulfur dioxide in the off-gas into gypsum for removal, the improvement which comprises adding a thiocyanate at a concentration of from 50 to 1000 mg/kg as SCN^- to said absorbing solution containing the organic carboxylate.

4,554,141

GAS STREAM PURIFICATION

Herbert M. Scull, Baton Rouge, and Sebastian M. Laurent, Greenwell Springs, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 14, 1984, Ser. No. 609,812

Int. Cl.⁴ C10H *23/00;* **B01J** *8/00;* **C01B** *33/04*

U.S. Cl. 423—245 **19 Claims**

1. A process for the purification of silane, said process comprising contacting silane contaminated with ethylene with a zeolite which has a pore structure that selectively removes ethylene and recovering the purified silane.

4,554,142

PROCESS FOR THE PREPARATION OF BOROSILICATE ZEOLITES

Wolfgang Höelderich; Wolf D. Mross, both of Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,899

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 3140895

Int. Cl.⁴ C01B *35/10*

U.S. Cl. 423—277 **8 Claims**

1. A process for the preparation of crystalline ZBH borosilicate zeolites of the pentasil type which comprises: adding silicon dioxide, boric acid and an alkali metal salt to a liquid ether or ether-water solvent wherein the ether is selected from the group consisting of monoethylene, diethylene, triethylene and tetraethylene glycol dimethyl ether, diethyl ether, a mixture of triethylene to decaethylene glycol methyl isopropyl ethers, diethylene glycol methyl isopropyl ether, a mixture of polyethylene glycol methyl isopropyl ethers, a mixture of oxyethylated oxoalcohols having a mean molecular weight of 200, 600 or 6,000, and dimethoxymethane, the molar ratio of SiO_2 to B_2O_3 being from 3 to 300, the molar ratio of alkali metal salt to B_2O_3 being from 1 to 3 and the molar ratio of ether to B_2O_3 being from 18 to 390, and thereafter heating the resultant solution to a temperature of from 80° to 140° C. in a closed vessel under autogenous pressure to form said ZBH borosilicate zeolites, wherein the zeolites have the formula

$$M_{2/n}O{:}B_2O_3{:}x\ SiO_2{:}y\ H_2O$$

where N is one or more cations of valency n, x is $\geqq 10$ and y is from 0 to 80.

4,554,143

CRYSTALLINE FERROALUMINOPHOSPHATES

Celeste A. Messina, Ossining; Brent M. Lok, New City, and Edith M. Flanigen, White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 15, 1983, Ser. No. 514,335

Int. Cl.⁴ C01B *25/45;* **B01J** *27/18*

U.S. Cl. 423—306 **19 Claims**

1. Crystalline ferroaluminophosphate having a three-dimensional microporous framework structure of FeO_2, AlO_2 and PO_2 tetrahedral units and having an empirical chemical composition on an anhydrous basis expressed by the formula

$$mR{:}(Fe_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(Fe_xAl_yP_z)O_2$ and has a value of from zero to 0.3, "x", "y and "z" represent the mole fraction of the iron, aluminum and phosphorus respectively present as tetrahedral oxides, said mole fractions being such that they are within the tetragonal compositional area defined by points A, B, C and D of the ternary diagram which is FIG. 1 of the drawings.

11. Process for preparing a crystalline ferroaluminophosphate of claim 1 which comprises providing a reaction mixture composition expressed in terms of molar oxide ratios as follows:

$$aR_2O{:}(Fe_xAl_yP_z)O_2{:}bH_2O$$

wherein "R" is an organic templating agent; "a" has a value great enough to constitute an effective concentration of "R" and is within the range of greater than zero to 3; "b" has a value of from zero to 500, preferably 2 to 80; "x", "y" and "z" represent the mole fractions, respectively, of iron, aluminum and phosphorus in the $(Fe_xAl_yP_z)O_2$ constituent, and each has a value of at least 0.01, and being within the hexagonal compositional area defined by points E, F, G, H, I, and J which is FIG. 3 of the drawings and maintaining said reaction mixture under conditions whereby crystals of said ferroaluminophosphate are formed.

4,554,144

REMOVAL OF MAGNESIUM AND/OR ALUMINUM VALUES FROM IMPURE AQUEOUS PHOSPHORIC ACID

Fernando Ore', Whittier, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 476,691, Mar. 18, 1983, abandoned. This application Jan. 6, 1984, Ser. No. 568,707

Int. Cl.⁴ C01B *25/16*

U.S. Cl. 423—321 R **14 Claims**

1. A process for removing dissolved aluminum and magnesium from impure aqueous phosphoric acid containing dissolved aluminum, iron, silicon, fluorine and magnesium values, said process comprising

(a) adding a fluorine-containing compound selected from the group consisting of calcium fluoride, synspar, and sodium fluoride and a sodium-containing compound selected from the group consisting of sodium fluoride, sodium carbonate, sodium hydroxide and sodium sulfate to said impure aqueous phosphoric acid in amounts effective to cause the formation of a solid compound comprising sodium, aluminum, magnesium and fluorine; and

(b) separating said solid compound from said impure aqueous phosphoric acid to obtain an aqueous phosphoric acid containing less aluminum and magnesium than did said impure aqueous phosphoric acid.

4,554,145

PREPARATION OF CRYSTALLINE SILICATE ZEOLITE BETA

Mae K. Rubin, Bala Cynwyd, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,681

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—328 **12 Claims**

1. A method for synthesizing a crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$$(1\text{ to }25)R_2O{:}(0\text{ to }0.8)M_{2/n}O{:}Al_2O_3{:}(x)SiO_2$$

wherein M is at least one alkali metal cation having the valence n, R is dibenzyl-1,4-diazabicyclo[2.2.2]octane and x is from about 5 to greater than about 200, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises preparing a mixture containing

sources of alkali metal oxide, an oxide of aluminum, an organic nitrogen-containing cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	5–250
H_2O/SiO_2	10–100
OH^-/SiO_2	0.09–0.8
$R/(R + M)$	0.1–0.8

wherein M and R are as above defined, and maintaining the mixture at a temperature of from about 80° C. to about 150° C. until crystals of the crystalline silicate are formed.

6. A synthetic crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$$(1 \text{ to } 25)R_2O:(0 \text{ to } 0.8)M_{2/n}O:Al_2O_3:(x)SiO_2$$

wherein M is at least one alkali metal cation having the valence n, R is dibenzyl-1,4-diazabicyclo[2.2.2]octane and x is from about 5 to greater than about 200, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification.

4,554,146

PROCESS FOR PREPARING A ZEOLITE OF THE L TYPE USING ORGANIC TEMPLATES

David E. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1983, Ser. No. 550,895
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—329 **15 Claims**

1. A process for synthesizing a crystalline, potassium-containing zeolite having a $(Si,Ge)O_2$ to $(Al,Ga)_2O_3$ ratio of from 3 to 7 and an X-ray powder diffraction pattern which is essentially that given in Table I which comprises:

(a) preparing a reaction mixture comprising water, potassium silicate, optionally a source of germania, a source of alumina or gallia, a tetraalkylammonium salt wherein the cation is a tetraethylammonium, tetrapropylammonium, tetrabutylammonium, or bis-(2-hydroxyethyl)dimethylammonium cation, a source of potassium, and up to about 40% by mole fraction of a source of sodium based on total sources of potassium and sodium, said reaction mixtures having a composition, in terms of mole ratios of oxides, within the following ranges:

$(M,R)_2O:(Al,Ga)_2O_3$: 1.4 to 4
$(Si,Ge)_2O:(Al,Ga)_2O_3$: 2.5 to 15
$H_2O:(Al,Ga)_2O_3$: 90 to 200
$R_2O:M_2O$: 0.05 to 0.5

where M is K or a mixture of K and Na, and R is the tetraalkylammonium cation; and

(b) maintaining the reaction mixture, while it is substantially homogeneous, at between about 70° and 260° C. for between about 1 and 10 days until substantially pure crystals of said zeolite are formed.

4,554,147

METHOD FOR TREATING FUMED SILICA

Robert W. Stoll, Schenectady, and Michael R. MacLaury, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1984, Ser. No. 595,766
Int. Cl.⁴ C01B *33/18*
U.S. Cl. 423—335 **1 Claim**

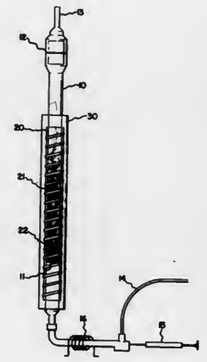
1. A method for treating silanol-containing fumed silica having up to about 5.3 silanol radicals/nm^2 to substantially reduce its silanol level which comprises

(1) contacting the silanol-containing fumed silica, while in a fluidized state, at a temperature in the range of from about 300° C. to about 600° C. with a mixture of

(a) dimethyldichlorosilane

(b) hydrochloric acid having a concentration of about 7.4% of HCl, and

(c) surfactant having the formula,



$$C_{8\text{-}10}F_{17\text{-}21}SO_3^-K^+,$$

where there is used from 1 to 10 moles hydrochloric acid and 10^{-5} to 10^{-3} moles of surfactant, per mole of dimethyldichlorosilane.

4,554,148

PROCESS FOR THE PREPARATION OF CARBON FIBERS

Shimpei Gomi, Tokyo; Tomio Arai, Zushi; Fumio Mogi, Tokyo; Kunio Miura, Chiba, and Sugio Otani, Kiryu, all of Japan, assignors to Fuji Standard Research, Inc., Japan

Filed May 17, 1984, Ser. No. 611,152
Claims priority, application Japan, May 20, 1983, 58-88775
Int. Cl.⁴ D01F *9/12*
U.S. Cl. 423—447.1 **4 Claims**

1. A process for the preparation of carbon fibers, comprising the steps of:

subjecting a raw material oil to thermal cracking conditions at a temperature of between 400° and 500° C. while removing cracked, light hydrocarbon components to obtain a pitch product containing 5–40 weight % of mesophase and not more than 10 weight % of light hydrocarbon components with a boiling point at 60 mmHg (absolute) of 300° C. or less and having a softening point of between 140° and 220° C., the raw material oil having a boiling point of at least 500° C. and containing at least 30 weight % of a residual oil which has a boiling point of at least 50° C. and a metal content of at least 200 weight ppm and which is obtained from fractionation of naphthene base and/or intermediate base petroleum crude;

removing the mesophase having a particle size of more than 10 μm from the pitch product to obtain a substantially mesophase-free carbonaceous pitch;

spinning the substantially mesophase-free pitch into fibers;

rendering the spun fibers infusible; and

carbonizing the infusible fibers.

4,554,149

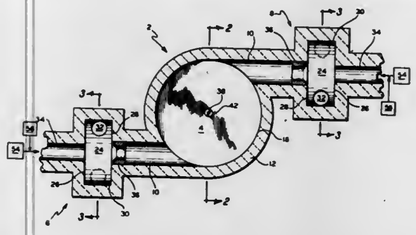
METHOD FOR PRODUCING CARBON BLACK

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 29, 1983, Ser. No. 518,704
Int. Cl.⁴ C01B *31/02*; C09C *1/48*
U.S. Cl. 423—450 **4 Claims**

1. A method for changing the tint residual of a carbon black product having a selected CTAB surface area in the range of

50 to about 150 m^2/g and a tint residual in the range of −10 to about +10, said carbon black being produced by a reactor by charging oxygen and air to provide oxygen-enriched air having a molecular oxygen content in the range of 25 to 35 volume percent and gaseous fuel having a heating value in the range of 60–125 BTU/SCF for combustion to form the combustion



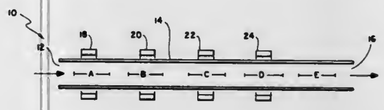
gases and carbonaceous feedstock for pyrolysis by the combustion gases to form carbon black comprising changing in a first direction the oxygen rate, the fuel rate and the carbonaceous feedstock rate and changing in a second direction the air rate so that the carbon black being produced exhibits about the selected surface area, whereby the tint residual of the carbon black product is changed in the second direction.

4,554,150

DETECTOR GRADE MERCURIC IODIDE

James M. Whelan, La Canada, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Oct. 14, 1983, Ser. No. 542,250
Int. Cl.⁴ C01B *9/00*
U.S. Cl. 423—491 **13 Claims**



1. A method for the purification of mercuric iodide containing metallic impurities, organic residues and oxygen containing mercury compounds, comprising vaporizing the impure mercuric iodide in an inert gas stream and oxidizing metallic impurities and organic residues by providing, in the inert gas stream, oxygen sufficient to form an oxygen partial pressure sufficient to oxidize the metallic and organic impurities and inhibiting the oxidation of mercuric iodide to mercury oxide, and converting oxygen containing mercury compounds to mercuric iodide, by adding to the gas stream an iodine vapor concentration greater than that of the oxygen, and separating the purified mercuric iodide from the impurities by gradient crystallization.

4,554,151

PROCESS FOR PRODUCING $K_3H(SO_4)_2$ CRYSTALS AND POTASSIUM SULFATE CRYSTALS

Ralph E. Worthington, Winter Haven; Alex Magdics, and Donald B. Stain, both of Lakeland, all of Fla., assignors to Prodeco, Inc., Mulberry, Fla.

Filed Sep. 27, 1983, Ser. No. 536,378
Int. Cl.⁴ C01D *5/02, 5/12*
U.S. Cl. 423—551 **6 Claims**

1. A process for producing K_2SO_4, comprising:

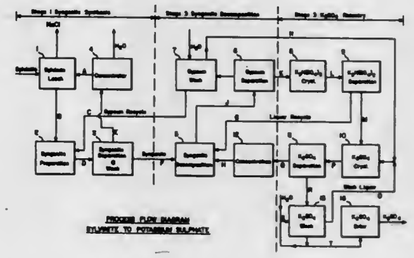
(a) forming syngenite;

(b) decomposing the syngenite formed in step (a) with sulfuric acid to produce a solution of K^+, H^+, and sulfate and bisulfate ions expressed as $SO_4^=$ in a molar ratio of 1:1:1 and solid calcium sulfate or the penta salt;

(c) separating the solution produced in step (b) at the reaction temperature from the solid calcium sulfate or penta salt;

(d) controlling the concentration of said solution as produced in step (b) such that when the solution is cooled to a first temperature of about 0° to 45° C. a double salt $K_3H(SO_4)_2$ crystallizes;

(e) cooling the $KHSO_4$ solution produced in step (d) to the first predetermined temperature and separating the $K_3H(SO_4)_2$ crystals thus produced;



(f) forming K_2SO_4 by contacting the separated $K_3H(SO_4)_2$ crystals separated in step (d) with water or a recycled aqueous wash liquor containing water and low concentrations of K^+, H^+ and sulfate and bisulfate ions at a second temperature in the range of about 0° to 100° C. but above that of step (d) such that the crystalline phase in equilibrium is K_2SO_4; and

(g) recovering K_2SO_4.

4,554,152

METHOD OF PREPARING ACTIVE MAGNESIUM-HYDRIDE OR MAGNESIUM HYDROGEN-STORER SYSTEMS

Borislav Bogdanovic, Mülheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mülheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 433,078, Oct. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,907, Sep. 17, 1980, abandoned, which is a continuation of Ser. No. 8,739, Feb. 2, 1979, abandoned. This application Jun. 1, 1983, Ser. No. 500,070
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247360
Int. Cl.⁴ C01B *6/04*
U.S. Cl. 423—647 **19 Claims**

1. A method of preparing an active magnesium hydride which can reversibly give off and take up H_2, comprising contacting finely divided magnesium hydride with a solution of a transition metal organic compound, said transition metal being of Subgroups IV–VIII of the Periodic Table, and then removing the solution.

11. A method of preparing an active magnesium-hydride, comprising contacting finely divided metallic magnesium with a solution of a transition metal-organic compound, said transition metal being of Subgroups IV–VIII of the Period Table, removing the solvent, and then contacting the magnesium with hydrogen.

4,554,153

PROCESS FOR THE PRODUCTION OF MAGNESIUM HYDRIDES

Borislav Bogdanovic, Mülheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 433,078, Oct. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,907, Sep. 17, 1980, abandoned, which is a continuation of Ser. No. 8,739, Feb. 2, 1979, abandoned. This application Jul. 2, 1984, Ser. No. 626,819

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804445

Int. Cl.[4] C01B *6/04*

U.S. Cl. 423—647 **9 Claims**

1. A process for the production of magnesium hydride which comprises reacting magnesium with hydrogen in an organic solvent in the presence of anthracene and a halide of a transition metal of the IVth to VIIIth sub group of the periodic system.

4,554,154

DENTAL PRODUCT AND METHOD OF DENTAL TREATMENT

Maurice J. E. White, 87 Lewis Rd., Wantirna South 3152, Victoria, Australia

Filed Mar. 12, 1984, Ser. No. 588,920

Claims priority, application Australia, Mar. 15, 1983, PF8450

Int. Cl.[4] A61C *15/00*

U.S. Cl. 424—16 **8 Claims**

1. A method of dental treatment comprising flossing between the teeth with a dental product that comprises chewable plastics tape carrying a biologically acceptable adhesive containing one or more of remineralizing, immunological and anti-bacterial agents, chewing the tape to allow the adhesive to control release into saliva of the agent or agents, and rubbing the gum margins of tooth surfaces with the masticated fibres of the tape, the chewing and rubbing steps causing adhesive to coat the teeth and gum margins to inhibit the attachment of plaque.

4,554,155

CONTROLLED RELEASE COMPOSITIONS

George G. Allan, Seattle, Wash., and Amar N. Neogi, Greenville, N.C., assignors to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 434,083, Jan. 17, 1975, abandoned. This application Dec. 15, 1975, Ser. No. 640,428

Int. Cl.[4] A01N *25/08, 25/34*

U.S. Cl. 424—22 **15 Claims**

1. A solid, controlled release, biologically active pesticide material delivery composition for release of the biologically active pesticide material over an extended period of time into the surrounding environment by molecular diffusion of the biologically active pesticide material through the matrix of the composition from the surfaces of the composition exposed to the environment, the composition consisting essentially of:

a solid solution of kraft lignin and a biodegradable water-insoluble organic polymer which is soluble in the biologically active pesticide material in a diffusible component which includes a biologically active pesticide material non-reactive with the organic polymer, the diffusible component present at least a 15 wt.% concentration in the composition that when the outer surfaces of the composition are exposed to the environment, the diffusible component, including the biologically active pesticide material, escapes from the composition, resulting in loss of the structural integrity and disintegration of the outer surfaces only of the composition to expose new, undisintegrated surfaces of the composition containing the diffusible component for further release thereof.

4,554,156

WOUND TREATING AGENT

Herbert Fischer, Burg; Botho Kickhöfen, Freiburg, and Ekkehard Vaubel, West Berlin, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur, Fed. Rep. of Germany

Continuation of Ser. No. 561,126, Dec. 13, 1983, abandoned, which is a continuation of Ser. No. 304,479, Sep. 22, 1981, abandoned. This application Nov. 26, 1984, Ser. No. 674,366

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3036033

Int. Cl.[4] A61K *31/78*

U.S. Cl. 424—81 **21 Claims**

1. Wound treating agent in powder form, comprising (a) 50 to 90 percent by weight of a cross-linked polymer of a hydrophilic acrylic or methacrylic acid derivative, and (b) 10 to 50 percent by weight of at least one gellable material selected from the group consisting of polysaccharides, proteins and polypeptides, wherein said polymer is obtained by polymerizing said hydrophilic acrylic or methacrylic acid derivative in the presence of an aqueous solution of component (b) and about 0.5 to about 5 mol percent of a cross-linking agent per mole of monomer employed.

4,554,157

HEPATITIS B VACCINE

Jacinta Skelly, Cardiff, Wales; Colin R. Howard, Tring, and Arie J. Zuckerman, London, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 341,142, Jan. 20, 1982, abandoned. This application May 29, 1984, Ser. No. 614,714

Claims priority, application United Kingdom, Jan. 29, 1981, 8102739

Int. Cl.[4] A61K *39/29*

U.S. Cl. 424—89 **11 Claims**

1. In a process for the production of a protein fraction, suitable for use in the formulation of a vaccine against hepatitis B virus infection, which comprises treating serum originating particles of diameter 20–25 nm bearing hepatitis B surface antigen with a non-ionic detergent followed by affinity chromatography to produce a preparation comprising an immunogenic glycopolypeptide of molecular weight about 28,000 (gp 28) and an immunogenic polypeptide of molecular weight about 23,000 (p 23), the improvement which comprises introducing the preparation comprising gp 28 and p 23 and detergent to form a layer on top of an aqueous solution buffered to a pH which avoids denaturation of gp 28 and p 23, said aqueous buffer containing sucrose in a concentration gradient of at least 20% to not more than 65% weight/volume, centrifuging the layered buffer and recovering from the buffer an immunogenic aqueous fraction substantially free from detergent and containing micelles of gp 28 and p 23.

4,554,158

MODIFIED LIVE SENDAI VIRUS VACCINE FOR ADMINISTERING THROUGH AN AEROSOL AND METHOD OF PRODUCING THE SAME

James D. Russell, Gilroy, Calif., assignor to Simonsen Laboratories, Inc., Gilroy, Calif.

Filed Apr. 7, 1983, Ser. No. 482,899

Int. Cl.[4] A61K *39/12;* **C12N** *7/08*

U.S. Cl. 424—89 **11 Claims**

1. A vaccine for immunization against Sendai disease comprising live Sendai viruses modified and diluted by a first plurality of passages through incubated culture medium for providing a cold strain of live modified Sendai virus fluid, said incubated culture medium being maintained at an incubation temperature in the range between 25° C. and 35° C. to provide a cold strain of live modified Sendai virus fluid, the incubation period for each of said first plurality of passages being in the range between 48 and 96 hours.

2. A vaccine for immunization against Sendai disease according to claim 1 wherein said cold strain of modified Sendai viruses are further modified by a second plurality of passages through incubated culture medium for harvesting, said last mentioned culture medium being maintained at an incubation temperature in the range between 38° C. and 40° C., the incubation period for each of said last mentioned passages being in the range between 48 and 96 hours.

7. A method of administering a vaccine for the immunization against Sendai disease comprising the steps of:

(a) providing a vaccine comprising cold strains of modified live Sendai viruses; and

(b) administering said vaccine through an aerosol.

4,554,159

VACCINE AND METHOD OF IMMUNIZING AGAINST HERPES SIMPLEX VIRUS (TYPES 1 AND 2)

Bernard Roizman, Chicago, Ill., and M. Robert Lang, Caluire et Cuire, France, assignors to Institute Merieux, Lyons, France

Filed Nov. 12, 1981, Ser. No. 320,760

Int. Cl.[4] A61K *39/245*

U.S. Cl. 424—89 **31 Claims**

1. A live viral vaccine which is effective against wild-type HSV-1 and HSV-2, said vaccine comprising an immunity-including dose of at least one vaccinal intertypic (HSV-1×HSV-2) recombinant virus strain, said strain being prepared by the method comprising the steps of:

(a) crossing two prototypical HSV-1 and HSV-2 parental virus strains to obtain recombinant progeny, said parental strains having distinguishing genetic markers such that said recombinant progeny can be distinguished from said parental strains on the basis of said markers, at least one of said parental strains being distinguished by a temperature sensitive phenotype;

(b) identifying recombinant progeny distinguished by a temperature resistant phenotype;

(c) isolating said recombinant progeny of (b) from said parental strains and from recombinant progeny having a temperature sensitive phenotype; and,

(d) selecting from said temperature resistant progeny those strains which exhibit vaccinal characteristics with respect to wild-type HSV-1 and HSV-2.

4,554,160

PENICILLIN ESTERS, SALTS THEREOF AND METHODS FOR THEIR PREPARATION

Wagn O. Godtfredsen, Vaerlose, Denmark, assignor to Lovens Kemiske Fabrik Produktionsaktieselskab, Denmark

Division of Ser. No. 243,855, Apr. 13, 1972, Pat. No. 3,869,449. This application Mar. 3, 1975, Ser. No. 554,423

Int. Cl.[4] A61K *35/00*

U.S. Cl. 424—114 **1 Claim**

1. A method of treating bacterial infection in a warm blooded animal which comprises providing a 1:1 mixture of mecillinam and benzylpenicillin to the warm blooded animal.

4,554,161

DERMATIC MEDICAMENT

Shinei Kashiwayama, No. 558 Iwasak, Kamitonda-machi, Nishimuro-gun, Japan

Division of Ser. No. 261,167, Apr. 27, 1981, Pat. No. 4,503,041. This application Feb. 9, 1984, Ser. No. 578,308

Claims priority, application Japan, Sep. 1, 1979, 54-112294

Int. Cl.[4] A61K *35/72*

U.S. Cl. 424—115 **2 Claims**

1. A dermatic medicament consisting solely of or comprising as a main ingredient a culture product or culture liquid of a novel strain, Trichosporon Kashiwayama strain (deposited at FRI with deposition No. 4821), which is a strain belonging to the genus Geotricum or Endomycopsis, a cell-removed sterile liquid, sterile filtrate or sterile supernatant of said culture product or liquid, or a concentrate or dry product thereof.

4,554,162

CL-1724 ANTIBIOTIC COMPOUNDS, THEIR PRODUCTION AND USE

Cynthia A. Young; John P. Schaumberg, both of Ypsilanti; Gerard C. Hokanson; James C. French, both of Ann Arbor, and Josefino B. Tunac, Troy, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 4, 1984, Ser. No. 607,056

Int. Cl.[4] A61K *35/74;* **C12P** *1/06*

U.S. Cl. 424—117 **4 Claims**

1. The compound designated CL-1724B-2 possessing antimicrobial activity; compound CL-1724B-2 characterized by:

a molecular weight of 1374 atomic mass units; an elemental analysis corresponding to 52.4% C, 6.26% H, 4.08% N, 9.32% S, 27.94% O;

an ultraviolet absorption spectrum in methanol showing absorption maxima at 318 nm (a=8.12), 280 nm (a=11.16), 251 nm (a=18.64), and 204 nm (a=29.84);

an infrared absorption peaks at 3520, 2940, 1760, 1720, 1685, 1600, 1580, 1520, 1450, 1385, 1375, 1310, 1250, 1155, 1075, 1015, 1000, 955, 900, 875, and 850 reciprocal centimeters;

a 300 MHz proton magnetic resonance spectrum in deuterochloroform exhibiting principal signals at 0.90 (multiplet), 1.25 (singlet), 1.40 (multiplet), 1.45–2.20 (multiplet), 2.30 (multiplet), 2.40–2.90 (multiplet), 3.30–4.30 (multiplet), 4.50 (multiplet), 4.70 (doublet of doublets), 4.95 (doublet), 5.35 (singlet), 5.45 (doublet), 5.70 (multiplet), 5.80 (doublet), 5.90 (doublet), 6.25 (singlet), 6.55 (multiplet), 7.75 (singlet), 8.65 (singlet), 12.95 (singlet), all signals measured in parts per million downfield from tetramethylsilane.

4,554,163

METHOD OF CONTINUOUS EXTRACTION OF PARTICULATE SOLID MATERIAL

Klaus Weber, Hamburg, Fed. Rep. of Germany, assignor to Extraktionstechnik Gesellschaft Für Anlagenbau mbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 520,443

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228927

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 **6 Claims**

1. A method of continuous extraction of particulate solid material, particularly vegetable raw material, with a highly compressed gas as a solvent selected from the group consisting of health-acceptable non-explosive gases, ethylene, propane, butane and isobutane, the method comprising the steps of

forming a suspension by mixing a solid material with a liquified gas selected from the group consisting of health-acceptable non-explosive gases, ethylene, propane, butane and isobutane in a suspension container under pressure which is lower than an extraction pressure;

compressing the suspension to an extraction pressure greater than 10 bar and bringing to an extraction temperture;

supplying the suspension into an extraction container in which fresh solvent is supplied in a counterstream to the solid material and from which an oil solution is withdrawn and thereafter the extracted solid material suspended in the liquified gas is withdrawn from the extraction container; and

continuously separating from the gas the withdrawn extract-poor solid material and discharging the latter.

4,554,164

PARENTERAL FORMULATION

Joyce L. DeYoung, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Sep. 28, 1984, Ser. No. 656,062

Int. Cl.[4] A61K *31/135*

U.S. Cl. 514—649 **5 Claims**

1. A parenterally acceptable, aqueous composition compris-

ing from 0.05 to about 0.5 percent weight/volume of an antioxidant selected from the group consisting of monothioglycerol (NF), sodium bisulfite, sodium bisulfite and disodium ethylenediamine-tetraacetic acid, and disodium ethylenediamine-tetraacetic acid and monothioglycerol (NF); from 0.5 to about 2.0 percent weight/volume of a buffer selected from the group consisting of lactate, tartrate, citrate and acetate buffer systems, to afford a pH of from about 3 to about 4.5; from 0 to about 0.01 percent weight/volume of benzethonium chloride; from about 20 to about 40 percent weight/volume of propylene glycol (USP); and from about 1.0 to about 10.0 percent weight/volume of a pharmaceutically acceptable acid addition salt of 1-cis-2(α-dimethylamino-m-hydroxybenzyl)-cyclohexanol.

4,554,165

METHOD OF MAKING CHEESE WITH PROTEINASE NEGATIVE LACTIC BACTERIA

Gary H. Richardson, Logan, Utah, assignor to Utah State University Foundation, Logan, Utah

Filed Jul. 22, 1982, Ser. No. 400,653
Int. Cl.⁴ A23C *19/02*; C12N *1/20*
U.S. Cl. 426—36 **35 Claims**

1. A method for making Cheddar cheese using proteinase negative lactic bacteria, comprising the steps of:

preparing a culture of proteinase negative lactic bacteria of sufficient population to serve as an inoculant for making Cheddar cheese, said population comprising from about 5×10^9 to about 5×10^{10} cells per milliliter and essentially all of the lactic bacteria in the culture being proteinase negative lactic bacteria, said method being carried out with essentially no addition of proteinase positive lactic bacteria before formation of cheese curd;

introducing the culture of proteinase negative lactic bacteria and a Cheddar cheese making enzyme into a vessel containing a quantity of milk, further growth of the proteinase negative lactic bacteria being substantially inhibited by introduction of the proteinase negative lactic bacteria culture into the milk within the vessel; and

allowing the enzyme to act on the milk to produce a Cheddar cheese curd.

19. A method for making cottage cheese using proteinase negative lactic bacteria, comprising the steps of:

preparing a culture of proteinase negative lactic bacteria of sufficient population to serve as an inoculant for making cottage cheese, said population comprising from about 5×10^9 to about 5×10^{10} cells per milliliter and essentially all of the lactic bacteria in the culture being proteinase negative lactic bacteria, said method being carried out with essentially no addition of proteinase positive lactic bacteria before formation of cheese curd;

introducing the culture of proteinase negative lactic bacteria and a cottage cheese making enzyme into a vessel containing a quantity of milk, further growth of the proteinase negative lactic bacteria being substantially inhibited by introduction of the proteinase negative lactic bacteria culture into the milk within the vessel; and

allowing the enzyme to act on the milk to produce a cottage cheese curd.

4,554,166

EXTRUSION PROCESS FOR SHRIMP OR CRABMEAT ANALOG PRODUCTS IN A SERIES OF NON-BOILING GELLING BATHS

Keisuke Morimoto, Congers, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,828
Int. Cl.⁴ A23J *3/00*
U.S. Cl. 426—276 **22 Claims**

1. In a process for the formation of a fibrous material useful in the formation of shrimp or crabmeat analog therefrom which is subject to freeze-thaw cycling by extruding an aqueous solution of protein and alginate into a gelling bath, the improvement which comprises:

(a) using only protein which has a solubility of less than about 10% in a gelling bath;

(b) extruding said solution into a first gelling bath having a high gelling agent cation concentration, in the range from about 0.18 to about 0.36 weight %, adapted to readily form a stable surface film on the extrudate;

(c) transferring said extrudate into a second gelling bath having a gelling agent cation concentration in the range from about 0.036 to about 0.108 weight % and for a period of time sufficient to permit diffusion of said cation throughout said extrudate; and

(d) recovering, freezing and thawing said extrudate.

4,554,167

METHOD FOR AGGLOMERATING ASPARTAME AND ACID-CONTAINING MIXES

Richard M. Sorge, Lakewood; Ronald W. Ponzoni, Nutley, and Myron D. Shoaf, Cranbury, all of N.J., assignors to General Foods Corp., White Plains, N.Y.

Filed Jun. 14, 1984, Ser. No. 620,414
Int. Cl.⁴ A23L *1/236, 2/00*
U.S. Cl. 426—285 **12 Claims**

1. A method for producing a stable, freeflowing agglomerate of aspartame and a food acid comprising the steps of:

(a) blending at least about 0.5% by weight aspartame and at least 30% by weight of a food acid selected from the group consisting of anhydrous citric acid, malic acid and combinations thereof, said blend being free of ingredients which melt at or below 200° F. and said blend having an available moisture content of below 8% by weight;

(b) applying heat to the blend to raise the blend temperature to between 140° and 200° F. and maintaining the blend temperature within said range for a period of time effective to agglomerate the blend without the addition of added moisture; and

(c) cooling the agglomerated blend.

4,554,168

METHOD FOR PRODUCTION OF SEMI-FLUID FRUIT COMPOSITION

Robert E. Gunnerson, Manteca, Calif., assignor to Sun-Diamond Growers of California, Stockton, Calif.

Continuation of Ser. No. 465,398, Feb. 10, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,770
Int. Cl.⁴ A23B *7/00*; A23N *4/04*
U.S. Cl. 426—473 **5 Claims**

1. A process for the formation of a semi-fluid fruit composition from drupaceous fruits other than plums, consisting essentially of:

exposing said fruits to air containing at least about 2000 ppm sulfur dioxide by weight under atmospheric conditions for at least about four hours,

dehydrating said fruits whole with stones and skins intact to reduce the water activity thereof to about 1.0 or less,

passing said whole dehydrated fruits through a perforated conduit by a conveyor screw disposed therein, said conveyor screw having progressively decreasing conveying capacity in the direction of flow, to force said fruits forward while compressing said fruits radially against the wall of said conduit to force therethrough a fruit mixture substantially free of solids, and

recovering said fruit mixture.

4,554,169

PROCESS FOR PREPARED, GELATIN-CONTAINING FOOD PRODUCTS

Noel E. Anderson, Portage, Mich.; Donald E. Fletcher, Equing; Michael S. Smagula, Plainsboro, all of N.J., and Darrell S. Parker, Avon, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 13, 1985, Ser. No. 711,420
Int. Cl.⁴ A23L *1/04*
U.S. Cl. 426—576 **5 Claims**

1. A process for preparing gelatin-containing, ready-to-eat food product comprising the steps of:

(a) combining particles of crystalline gelatin and water to form a uniform suspension of partially-hydrated gelatin particles, said water having a temperature of from 32° to 90° F., said gelatin being present at a level of from 0.01 to 20% by weight of the water, and said uniform suspension being effected by means of high shear mixing;

(b) maintaining the suspension at a temperature between 32° and 90° F. and continuously agitating the suspension to maintain uniformity until such time as the suspension is desired for use in the manufacture of a ready-to-eat food product;

(c) heating the suspension to a temperature in excess of 120° F. for a period of time sufficient to solubilize the gelatin; and then

(d) passing the gelatin-containing solution into a plurality of containers.

4,554,170

EXTRACTION OF PLANT MATERIAL BY USING CARBON DIOXIDE

Frank Panzner, and Brian R. Evans, both of Tenbury Wells, England, assignors to Hop Developments Limited, Worcestershire, England

Filed May 2, 1983, Ser. No. 490,676
Claims priority, application United Kingdom, May 6, 1982, 8213136; Jun. 22, 1982, 8217980
Int. Cl.⁴ A23L *1/222*; A61K *35/78*
U.S. Cl. 426—651 **9 Claims**

1. A method of extracting hops in order to obtain at least fractions of its essential oil and resin components, said method comprising the following steps, namely,

(a) admixing carbon dioxide in either the liquid or the supercritical state thereof with hops in a pressure vessel at a temperature and pressure such as to maintain said carbon dioxide in the liquid or supercritical state for a period of time in order to effect said extraction;

(b) displacing said carbon dioxide with an inert gas which remains in the gas phase under the extraction conditions; and

(c) venting said inert gas from said pressure vessel.

4,554,171

PROCESS FOR COATING RICE SEED WITH CALCIUM PEROXIDE BY CHEMICAL REACTION ON THE SEED

Clarence C. Bowling, 1750 Wooten Rd., Beaumont, Tex. 77707

Filed May 23, 1983, Ser. No. 497,112
Int. Cl.⁴ A01C *1/06*
U.S. Cl. 427—4 **3 Claims**

1. A process wherein a coating of calcium peroxide is formed on seed surfaces by chemical reaction of successive applications of hydrogen peroxide with calcium hydroxide.

4,554,172

METHOD OF REPAIRING ELECTRODE SURFACES

Charles H. Harrison, Cleveland, Tenn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 5, 1984, Ser. No. 628,087
Int. Cl.⁴ B32B *35/00*; B29H *19/00*
U.S. Cl. 427—12 **10 Claims**

1. A method of repairing physically damaged electrode surfaces of an electrolytic cell electrode having a membrane separator in contact with the electrode surface which comprises coating the damaged area with a polyhaloolefin and curing said coating, said cured coating bonding a repaired damaged area to the surrounding electrode surface.

2. The method of claim 1 in which the polyhaloolefin is selected from the group consisting of polymers of olefins having 2 to 3 carbon atoms which are substituted by at least one fluorine or chlorine atom.

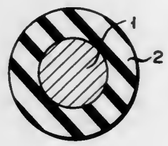
4. The method of claim 2 in which said curing is accomplished by the application of radiation.

4,554,173

METHOD FOR MANUFACTURING FLAME-RETARDANT INSULATED WIRE AND CABLE FOR NUCLEAR POWER STATIONS

Syunichi Fujimura, Chigasaki; Eisuke Oda, Yokohama; Miyuki Hagiwara, Maebashi, and Youske Morita, Takasaki, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,115
Claims priority, application Japan, Aug. 13, 1982, 57-139680
Int. Cl.⁴ B05D *5/12*
U.S. Cl. 427—120 **18 Claims**



1. A method for manufacturing a flame-retardant insulated wire and cable for nuclear power stations, comprising the steps of extruding on a conductor or cable core to a predetermined thickness a composition consisting essentially of 100 parts by weight of a base polymer selected from the group consisting of a thermoplastic resin or a rubber which can be crosslinked by an organic peroxide-based crosslinking agent, at least 10 parts by weight of a brominated acenaphthylene or a condensate thereof, and 0.5 to 10 parts by weight of an organic peroxide, and heating the resultant wire or cable for crosslinking in the absence of water, said heating being carried out by passing the wire or cable through a molten salt bath under a pressurized nitrogen gas at a temperature higher than the decomposition temperature of the organic peroxide.

4,554,174

PROCESS FOR PRODUCING RADIATION CURABLE ADHESIVE TAPE

Tomohisa Ohta; Akihiko Dobashi; Hisashige Kanbara, all of Shimodate, and Yasuyuki Seki, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Tokyo, Japan

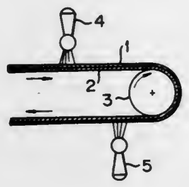
Filed Dec. 4, 1984, Ser. No. 678,046
Claims priority, application Japan, Dec. 9, 1983, 58-233373
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—44 **6 Claims**

1. In a process for producing a radiation curable adhesive tape by coating a pressure sensitive adhesive composition comprising a liquid oligomer having one or more radically crosslinkable unsaturated double bonds in its molecule and a thiol compound on a surface of substrate and exposing said composition to radiation, the improvement which comprises coating as an undercoating a quaternary ammonium salt on a surface of substrate before the coating of the pressure sensitive adhesive composition.

4,554,175
METHOD OF PRODUCING SUPPORT FOR PHOTOGRAPHIC PAPER

Toshiaki Shibue, and Koichi Nagayasu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 589,876
Claims priority, application Japan, Mar. 28, 1983, 58-53042; Mar. 29, 1983, 58-54948
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—44 **17 Claims**



1. A method of producing a support for a photographic paper, which comprises applying primary irradiation of electron beams to at least one coated layer formed on one side or both sides of a substrate and curable by irradiation of electron beams thereafter, bringing the surface of said at least one coated layer into contact with a form member having shapes on the surface thereof and peeling off said coated layer from the form member, followed by applying secondary irradiation of electron beams to the coated layer; said primary irradiation being carried out so that the surface of the coated layer may hold shapes substantially corresponding to said shapes on the surface of the form member at the stage where the coated layer has been peeled off from the form member.

4,554,176
DURABLE ELECTRODE FOR ELECTROLYSIS AND PROCESS FOR PRODUCTION THEREOF

Hiroshi Asano, Chiba; Takayuki Shimamune, Tokyo; Kazuhiro Hirao, and Ryuta Hirayama, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

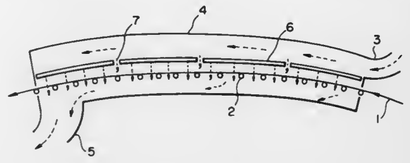
Division of Ser. No. 575,602, Jan. 31, 1984, Pat. No. 4,481,097. This application Apr. 23, 1984, Ser. No. 602,861
Claims priority, application Japan, Jan. 31, 1983, 58-12919
The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.
Int. Cl.[4] C25B *11/10*
U.S. Cl. 427—125 **10 Claims**

1. A method for the production of an electrolytic electrode, comprising the steps of preparing a substrate of a conducting metal, depositing a solution containing salts of Ti and/or Sn, Ta and Pt on said substrate to provide a coated substrate, heating the coated substrate with the solution under an oxidizing atmosphere thereby forming an intermediate layer comprising metallic Pt dispersed in a conducting metal mixed oxide of at least one metal selected from the group consisting of Ti and Sn and an oxide of Ta on said substrate, and subsequently coating said intermediate layer with a layer of an electrode active substance.

4,554,177
DRYING METHOD

Hiroshi Chikamasa, and Shinji Noda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 429,398, Sep. 30, 1982, abandoned. This application Jul. 11, 1984, Ser. No. 629,746
Claims priority, application Japan, Oct. 3, 1981, 56-158035
Int. Cl.[4] B05D *3/02, 3/04, 5/12*
U.S. Cl. 427—130 **15 Claims**

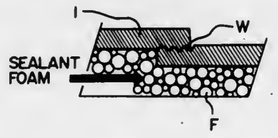


1. A method for drying a running web or belt-like support with an organic solvent-containing coating solution coated thereon for the preparation of a magnetic recording material, comprising the steps of; introducing the support into a drying room, drying said support by hot air introduced into the drying room parallel to the running direction of the support in such a manner that said hot air does not strike directly on the coated surface of the support, and continuously conveying the support in an arch-like or straight form through said drying room on rolls provided therein.

4,554,178
METHOD OF INTERNALLY COATING PIPELINE

Mitsuo Yamamoto; Namio Kinumoto; Toshinori Tsuji, all of Osaka, and Tutomu Hiraoka, Uji, all of Japan, assignors to Osaka Gas Company, Osaka, Japan

Continuation-in-part of Ser. No. 416,188, Sep. 9, 1982, abandoned, which is a division of Ser. No. 304,439, Sep. 21, 1981, abandoned. This application Aug. 27, 1984, Ser. No. 644,415
Int. Cl.[4] B05D *7/22*
U.S. Cl. 427—140 **3 Claims**

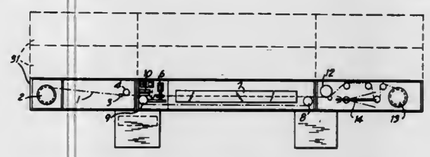


1. A method of internally coating the inner surface of a pipeline and filling leaking cracks from inside of the pipeline comprising the steps of:
- disconnecting the pipeline at two different locations,
- closing both ends of the pipeline,
- discharging any gases remaining in the pipeline,
- filling said closed end pipeline with a soluble emulsion type sealant in a foam state by use of inert gas or air,
- applying a predetermined pressure to the foam-filled pipeline for a predetermined period of time thereby forcing some of said sealant foam into leaking cracks,
- directing an inert gas or air flow into said foam-filled pipe to drain any excess amount of said sealant from said pipeline thereby forming a tubular form of said sealant adhering to said pipe along its inner wall surface and extending along its length, and
- allowing said tubular form adhering to the inner surface of said pipeline to cure
- wherein the sealant contains fine particles of inorganic oxide weakly adhering to one another into aggregations.

4,554,179
METHOD FOR THE COLOR CODING OF OPTICAL FIBERS

Harald Roderburg, Langenhagen, Fed. Rep. of Germany, assignor to Gesellschaft mit beschränkter Haftung Kabelmetal Electro, Hanover, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,867
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323547; Mar. 1, 1984, 3407520
Int. Cl.[4] B05D *1/02;* **G02B** *5/14*
U.S. Cl. 427—163 **8 Claims**

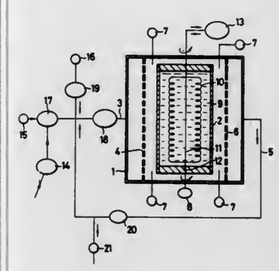


1. A method for the color coding of at least one optical fiber which is arranged together with at least one other optical fiber in the core of a cable, comprising the steps of
- first pulling off the optical fiber from a pay-off reel by a pull-off means and then pulling the optical fiber through a color chamber containing color for continuous coloring of the surface of the optical fiber,
- thereupon, selectively spraying ring-shaped markings which are limited in axial direction onto the colored surface of the optical fiber by jets of another color which emerge under pressure from a nozzle swinging continuously around a pivot axis, the markings comprising said another color which is clearly distinct from the color in the color chamber,
- thereupon conducting the optical fiber through a drying path, and
- then winding the optical fiber up on a take-up reel.

4,554,180
PROCESS FOR PRODUCING SILICON-CONTAINING DEPOSIT FILM

Masaaki Hirooka, Toride, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,569
Claims priority, application Japan, Jul. 22, 1983, 58-1341622
Int. Cl.[4] C23C *11/00, 13/00*
U.S. Cl. 427—248.1 **3 Claims**



1. A process for producing silicon-containing deposit films which comprises introducing a cyclic silane represented by the general formula $(SiH_2)_n$, wherein n is 4, 5, or 6, in the gaseous state together with a carrier gas into a deposition chamber and applying heat to the introduced gases at ordinary pressure to decompose the cyclic silane and form a silicon-containing deposit film on a substrate placed in the deposition chamber.

4,554,181
INK JET RECORDING SHEET HAVING A BICOMPONENT CATIONIC RECORDING SURFACE

Michael J. Cousin, Ashville; Larry O. Hill, Frankfort, and Rhonda G. Justice, Waverly, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed May 7, 1984, Ser. No. 607,890
Int. Cl.[4] B41M *5/00*
U.S. Cl. 427—261 **30 Claims**

1. A recording sheet useful in ink jet recording comprising a substrate having a recording surface containing a cationic polymer and a water soluble polyvalent metal salt, said polymer providing said surface with cationic groups for ionically interacting with an anionic dye and insolubilizing it; wherein at least 3 mol % of the monomeric units making up said polymer are derived from cationic monomers and said salt is a salt of a metal from Group II, Group III, or the Transition Metals of the Periodic Table of Elements.

4,554,182
METHOD FOR CONDITIONING A SURFACE OF A DIELECTRIC SUBSTRATE FOR ELECTROLESS PLATING

James R. Bupp; Gary K. Lemon; Voya Markovich, all of Endwell; Carlos J. Sambucetti, Croton-on-Hudson; Stephen L. Tisdale, and Donna J. Trevitt, both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 540,962, Oct. 11, 1983, abandoned. This application Jan. 31, 1985, Ser. No. 696,879
Int. Cl.[4] C23C *3/02*
U.S. Cl. 427—304 **46 Claims**

1. Method for conditioning at least one surface of a dielectric substrate for eliminating resist blistering from subsequently applied photoresist and for electrolessly plating of a conductive metal thereon comprising:
- bringing said at least one surface into contact with a composition containing H_2SO_4 and a multifunctional cationic polymer containing at least two available cationic moieites and wherein said composition has a pH value of between about 0 and about 3, and then activating the surface by treating it with a colloidal solution containing palladium chloride, stannous chloride and HCl.

4,554,183
PROCESS FOR PRETREATING POLYAMIDE SUBSTRATES FOR ELECTROLESS METALLIZATION

Kirkor Sirinyan, Bergisch Gladbach; Gerhard D. Wolf, Dormagen; Rudolf Merten, and Ulrich von Gizycki, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,799
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339857
Int. Cl.[4] B05D *3/10*
U.S. Cl. 427—306 **10 Claims**

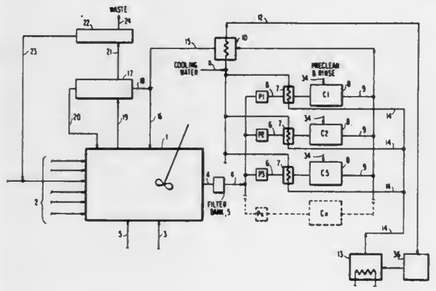
1. Process for pretreating substrate surfaces of polyamide mouldings for the electroless metallisation, characterised in that the substrates are treated, in any desired sequence, with
- (a) a solution of a mixture of halides of elements of the 1st and 2nd main groups of the Periodic Table with salts of weak inorganic bases and strong inorganic acids in a non-etching organic swelling agent or solvent for polyamides and
- (b) a metal-organic complex compound of elements of the 1st and/or 8th sub-group of the Periodic Table.

4,554,184

METHOD FOR PLATING FROM AN ELECTROLESS PLATING BATH

Michael J. Canestaro, Endicott; Ronald A. Kaschak, Vestal; Donald G. McBride, Binghamton, and Donald P. Seraphim, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1984, Ser. No. 626,961
Int. Cl.⁴ C23C *3/02*
U.S. Cl. 427—345 **19 Claims**



1. A process for plating copper metal from an electroless copper plating bath on a substrate wherein the formation of nodules during plating is at least significantly reduced which comprises:

(A) providing a source of an electroless plating bath maintained at a non-plating temperature in a master mixing tank;

(B) transferring at least a portion of the plating bath to at least one plating cell wherein the amount of plating bath transferred to any one plating cell is less than the total of plating bath in said master mixing tank;

(C) changing the temperature of said bath from a non-plating temperature to a plating temperature, while maintaining substantially constant the concentration of components except for dissolved gases in said bath; and

(D) contacting a substrate to be plated with the bath at a plating temperature in the plating cell.

4,554,185

ANTI-FOULING COATING COMPOSITION, PROCESS FOR APPLYING SAME AND COATING THEREBY OBTAINED

Thomas Lane, Lutz, and Murray Rosen, Seminole, both of Fla., assignors to Marine Shield Corporation, St. Petersburg, Fla.

Filed May 15, 1984, Ser. No. 640,973
Int. Cl.⁴ B05D *5/00*; C09D *5/14*
U.S. Cl. 427—385.5 **37 Claims**

1. An anti-fouling, film-forming composition comprising:

(a) a hydrophilic component selected from the group consisting of (1) castor oil; (2) partially dehydrated castor oil having a hydroxyl equivalent weight of 600–800, (3) a partially hydrolyzed polyvinylester having a hydroxyl equivalent weight of 300–600; (4) a polymer of a hydroxyalkyl acrylate or of a hydroxyalkyl alpha-alkyl-acrylate having no more than 4 carbon atoms in said hydroxylalkyl or in said alpha-alkyl group and said polymer having a molecular weight in the range of 80,000–120,000 and a hydroxyl equivalent weight in the range of 100–900; (5) a partially hydrolyzed copolymer of vinyl chloride and vinyl ester having a hydroxyl equivalent weight of 300–600; and (6) a polymer of a monovinyl or monoalphamethylvinyl or monoalphaethylvinyl ether of an alkylene glycol having 2–6 carbon atoms, said polymer having a hydroxyl equivalent weight of 300–600;

(b) a hydrophobic component having no more than 35 carbon atoms therein and having 1–3 urethane groups per molecule;

(c) a solvent component having one or more compounds selected from the group consisting of a hydroxyl-containing compound having the formula $R''(OH)_{n'}$ wherein R'' represents an aliphatic, arylaliphatic or cycloaliphatic hydrocarbon group having 2–10 carbon atoms and n' is an integer having a value of 1–3, R'' may also have 1 carbon atom when n' is 1, a monoether or monoester of an alkylene glycol having no more than 10 carbon atoms, an aromatic hydrocarbon having a kauri butanol value of 73–105, and a ketone having no more than 10 carbon atoms; and

(d) an organic tin polymer derived by the reaction of a COOH-containing polymer with R_3SnOH or $(R_3Sn)_2O$ wherein R is a lower alkyl, cycloalkyl or aryl radical

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4,554,186

ORGANOALUMINOSILOXANE COATING COMPOSITIONS AND COATED SUBSTRATE

Arlene G. Williams, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 625,412, Jun. 28, 1984, Pat. No. 4,528,038. This application Apr. 4, 1985, Ser. No. 719,831
Int. Cl.⁴ B05D *3/02*; B32B *9/00*; C09K *3/00*
U.S. Cl. 427—387 **3 Claims**

1. A method for applying an aluminosilicate coating having a predictable Al/Si ratio onto a substrate thermally insensitive to temperatures up to 1500° C. which comprises

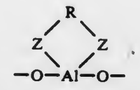
(1) contacting the substrate with an organic solvent solution of an organoaluminosiloxane and thereafter effecting the separation of organic solvent from the treated substrate,

(2) heating the treated substrate to a temperature of 450° to 700° C. until an aluminosilicate coating is obtained,

where the organic solvent solution of an organoaluminosiloxane is a composition comprising an organoaluminosiloxane coating compositions comprising by weight

(A) 100 parts of an inert organic solvent, and

(B) 10 to 30 parts of an organoalumoinosiloxane oligomer having an Al/Si ratio having a value of 5 to 1 and consisting essentially of



units chemically combined with $(R^1)_aSiO_{(4-a)/2}$ units where R is a polyvalent organic radical, R^1 is selected from a $C_{(1-13)}$ monovalent hydrocarbon radical and substituted $C_{(1-13)}$ monovalent hydrocarbon radical, Z is selected from —O—, —S— and —N═, and a has a value of 2.5 to 3.

4,554,187

STABLE SILICONE EMULSIONS

Wolfgang Grape; Franz Saykowski, both of Cologne; Ottfried Schlak, and Thomas Würminghausen, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1984, Ser. No. 622,936
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323909
Int. Cl.⁴ B05D *3/02*
U.S. Cl. 427—387 **10 Claims**

1. A silicone emulsion which can be converted into an elastomeric product under ambient conditions by eliminating and evaporating water and alcohol or carboxylic acid, comprising by weight approximately

(A) 100 parts of a hydroxyl-terminated polydiorganosiloxane having a molecular weight of at least about 50,000,

(B) 1–400 parts of a low molecular weight, reactive acyloxy- or alkoxyfunctional silicone resin,

(C) 0.1 to 20 parts of a catalytic compound,

(D) 0 to 200 parts of a thixotropic filler and

(E) 0 to 200 parts by weight of a non-thixotropic filler, the silicone emulsion having a solid content of about 20 to 85% by weight.

4,554,188

CHAIN-EXTENDABLE CROSSLINKABLE URETHANE MODIFIED POLYHYDROXY OLIGOMERS AND COATING COMPOSITION COMPRISING SAME

Joseph W. Holubka, Livonia, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 334,798, Dec. 28, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,699
Int. Cl.⁴ B05D *3/02*; C08L *75/08*
U.S. Cl. 427—393.5 **19 Claims**

1. A solvent-based resin composition comprising:

A. chain-extendable crosslinkable urethane modified polyhydroxy oligomer containing no ester linkages and bearing three or more hydroxyl groups and a single blocked isocyanate group, comprising the reaction product of a polyol with a half-blocked diisocyanate, wherein said polyol comprises the reaction product of a diepoxide with a diol and bears four or more hydroxyl groups, and said half-blocked diisocyanate comprises the reaction product of an organic diisocyanate with monofunctional blocking agent;

B. crosslinking agent reactive with hydroxy functionality and substantially unreactive with isocyanate functionality; and

C. organic solvent.

4,554,189

ARTICLES FOR COOLING BEVERAGES

Randall S. Marshall, 8149 E. Branch Dr., Washington, D.C. 20012

Filed Dec. 20, 1983, Ser. No. 563,598
Int. Cl.⁴ A63H *3/00*; F25D *3/08*
U.S. Cl. 428—11 **4 Claims**



1. An article for cooling beverages and the like, the article comprising:

a container having a wall of plastic material completely enclosing a space, the wall defining a hollow main body portion and a plurality of hollow projecting portions communicating with the main body portions which hollow projecting portions increase the surface area of the container;

a phase-change medium confined within the hollow main body portion and plurality of hollow projecting portions, the phase-change material changing phase from a solid state to a liquid state at approximately the point at which ice melts to water and the presence of the phase-change material in the hollow pojecting portions promoting rapid cooling of the beverage;

a plurality of metallic elements projecting inwardly from those portions of the wall defining the hollow projecting portions of the container to further increase the heat transfer rate from the wall and projections to the bulk of the phase-change medium, and

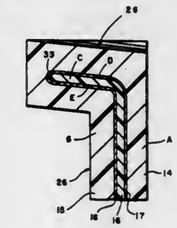
weight means within the container to compensate for positive buoyancy thereof, whereby the container does not float at the top of the beverage being cooled thereby.

4,554,190

PLASTIC CONTAINERS WITH FOLDED-OVER INTERNAL LAYERS AND METHODS FOR MAKING SAME

Robert J. McHenry, St. Charles, Ill.; Henry Pfutzenreuter, III, Alta Loma, Calif.; Thomas T. Tung, Hoffman Estates, and John Vella, Jr., Aurora, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,548
Int. Cl.⁴ B65D *23/00*; B29D *5/04*
U.S. Cl. 428—35 **58 Claims**



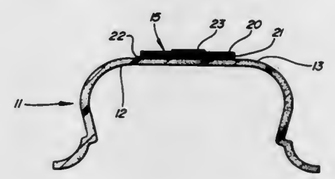
53. An injection-molded, multi-layer plastic article having a multi-layer integral wall which has an internal layer, a portion of which is folded over within the wall.

4,554,191

ETHYLENE-CONTAINING POLYMER FOAM/ADHESIVE SYSTEM

Ralf Korpman, Bridgewater, N.J., assignor to Personal Products Company, Milltown, N.J.

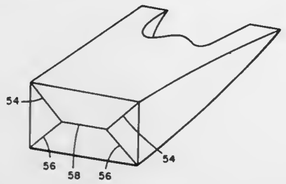
Continuation-in-part of Ser. No. 637,450, Aug. 3, 1984, abandoned. This application Feb. 13, 1985, Ser. No. 701,061
Int. Cl.⁴ B32B *1/00, 3/14*
U.S. Cl. 428—35 **18 Claims**



2. A liquid-impermeable ethylene-containing polymer foam backing for an absorbent product adapted to be removably attached to a nether garment, said backing having top and bottom surfaces, there being adhesive attachment means positioned on the bottom surface of said backing, for temporarily, but securely, adhering said backing to the crotch portion of a nether garment, said attachment means comprising (a) a double-faced, pressure-sensitive adhesive tape, said tape having a first face permanently adhered to said backing, and an opposite second face adapted to be temporarily attached to a nether garment, said first face of said tape having an adhesion to steel exceeding 120 oz/inch width, with said second face of said tape having an adhesion to steel exceeding 75 oz/inch width, said tape being reinforced with an inner substrate having a non-recoverable extensibility of less than 100%, said backing being thermoformed in the form of a substantially flexible shell having a depth of at least about ¼ inch, said shell having an inner inside surface and an outside bottom surface, said shell

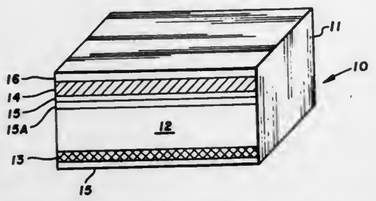
being adapted to contain within it an absorbent structure, said adhesive attachment means being positioned on said outside bottom surface of said shell.

4,554,192
THERMOPLASTIC BAG AND THERMOPLASTIC BAG PACK
Gordon L. Benoit, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 2, 1984, Ser. No. 606,120
Int. Cl.⁴ B65D *1/34, 6/04*
U.S. Cl. 428—35 **21 Claims**



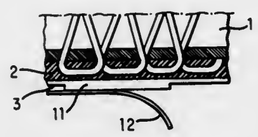
1. A bag structure of a thermoplastic film material comprising front and rear bag walls connected by gusseted side walls and having an open mouth top portion, said open mouth portion being characterized by having handles located at opposite end regions thereof, said handles each being of two films as a result of being integral extensions of said front, rear and gusseted side walls; said bag having a bottom wall planarly extensible so as to form an at least generally flat rectangle, said bottom being of integral extensions of said front, rear and side walls, said bottom having all two-film seals, with no substantial excess film outside of the bulk volumetric capacity of the bottom region of said bag.

4,554,193
SUBSTRATE WITH DIFFERENTIAL ADHESION
Nancy D. Erickson, North Oaks, Minn., assignor to Ende Company, North Oaks, Minn.
Filed May 21, 1984, Ser. No. 612,381
Int. Cl.⁴ A61F *13/02*
U.S. Cl. 428—40 **3 Claims**



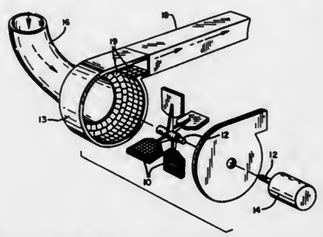
1. In a means for adhesively adjustably securing an article to a surface and including an adherent intermediary body with first and second coherent adhesive layers arranged on first and second opposed surfaces thereof, the improvement comprising:
(a) said adherent intermediary body comprising a core member fabricated of a polyolefin synthetic resinous layer;
(b) said first adhesive layer being a pressure sensitive adhesive material and being applied directly to said first surface and being characterized in that the adherent properties thereof produce a peel strength having a first value, and wherein;
(c) said second adhesive layer being a pressure sensitive adhesive applied to the polyester outwardly disposed surface of a co-extruded polyolefin/polyester composite film, the inwardly disposed polyolefin surface of said co-extruded composite film being thermally bonded directly to the surface of said polyolefin core member.

4,554,194
SELF-ADHESIVE FLOOR COVERING
Heinz Haas, Neumünster, and Klaus-Dieter Struve, Aukrug, both of Fed. Rep. of Germany, assignors to Teppichwerk Neumünster GmbH, Neumünster, Fed. Rep. of Germany
Filed Sep. 26, 1983, Ser. No. 536,103
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235382; Aug. 4, 1983, 3328165
Int. Cl.⁴ A61F *13/02*
U.S. Cl. 428—40 **2 Claims**



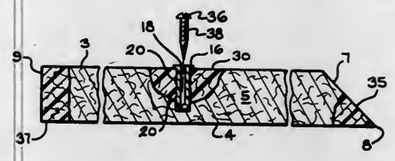
1. A deformable covering, comprising
(a) a first layer having a first side arranged to face toward and a second side arranged to face away from a floor, a wall, a ceiling, a roof or another support to which the covering is to be applied;
(b) an adhesive layer overlying at least in part the first side of said first layer and constituting a hotmelt which adheres to the support at room temperature in response to the application of pressure thereto by way of said first layer but is repeatedly separable from the support; and
(c) a protective layer having a first side in contact with but being peelable off said adhesive layer and a second side designed to inhibit sliding movements between said protective layer and said first layer when the covering is rolled up so that the second side of the protective layer contacts the second side of the first layer.

4,554,195
CERAMIC COATED ABRASION RESISTANT MEMBER AND PROCESS FOR MAKING
Thomas J. Ormiston, and Dean A. Rulis, both of Hillsboro, Oreg., assignors to Wilbanks International, Inc., Hillsboro, Oreg.
Division of Ser. No. 387,039, Jun. 10, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,498
Int. Cl.⁴ B32B *3/14;* F03B *3/12*
U.S. Cl. 428—49 **26 Claims**



1. An abrasion resistant member, comprising:
a substrate base member;
a plurality of thin ceramic plates of polycrystalline ceramic material of greater hardness and less thickness than said base member, each having a thickness many times less than its length;
bonding means for bonding said ceramic plates to a surface of said base member so that said plates are positioned in abutting relationship to form a substantially continuous ceramic coating on said surface;
said bonding means including bonds of adhesive bonding material between said ceramic plates and said base member; and
said bonding material including a thermosetting organic plastic adhesive bonded to a layer of silane coupling agent on said base member and said ceramic plates which forms chemical bonds with the organic plastic adhesive, said base member and said ceramic plates.

4,554,196
HARDENED PORTION OF A FIBROUS PRODUCT AND A METHOD FOR PRODUCING THE SAME
Brian L. Meeker, 738 Kumler, Maumee, Ohio 43537
Filed Oct. 24, 1983, Ser. No. 544,477
Int. Cl.⁴ B32B *31/00;* F16B *37/12*
U.S. Cl. 428—67 **11 Claims**



1. A method for hardening a portion of a fibrous product comprising the steps of:
creating an aperture in said portion of said fibrous product, said aperture extending into the interior of said fibrous product, applying a heated thermoplastic resinous material to said portion of said fibrous product after the formation of said aperture, said thermoplastic resinous material having a viscosity that allows said resinous material to permeate said portion of said fibrous product, said resinous material permeating partially through the thickness of said fibrous product whereby said heated resinous material permeates said portion of said fibrous product that is to be hardened, positioning an insert in said aperture after said application of said heated resinous material, cooling said heated resinous material whereby said resinous material substantially acts to bond said insert to said fibrous product when said resinous material cools.
11. A fibrous product comprising:
a panel of fibrous material having a first surface and a second surface, said first and second surfaces being in substantially opposed relationship, said panel having an edge that extends around the outer periphery of said panel between said first and second surfaces, a hardened portion located on a portion of said panel, said hardened portion being permeated with a resinous thermoplastic material, an aperture positioned in said hardened portion of said panel, said aperture extending from said first surface into said fibrous material in a direction towards said second surface and a plastic insert positioned in said aperture in said panel, said insert defining an opening, said opening being disposed for removably receiving a screw whereby said screw can be secured to said insert, said insert being secured to said aperture in said panel by said resinous material.

4,554,197
FIBER REINFORCED GLASS/GLASS-CERAMIC MIRROR BLANKS
Kenneth Chyung; Peter C. Schultz, and Mark P. Taylor, all of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jun. 18, 1984, Ser. No. 621,932
Int. Cl.⁴ B32B *5/12*
U.S. Cl. 428—113 **29 Claims**

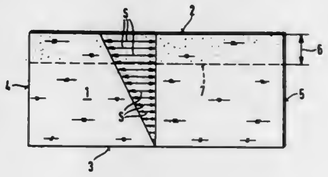
1. A mirror blank comprising a laminate consisting of a low expansion graphite or SiC fiber/glass-ceramic composite substrate and a mirror surface facing of a glass or glass-ceramic bonded thereto having an expansion closely matching that of said substrate.

4,554,198
WATERPROOF AND AIR-TIGHT, MOISTURE-CONDUCTING TEXTILE MATERIAL
Hubert von Blücher, Freytagstrasse 45; Hasso von Blücher, Sohnstrasse 58, both of D-4000 Düsseldorf, and Ernest de Ruiter, Hohenstrasse 57a, D-5000 Leverkusen all of Fed. Rep. of Germany
Continuation-in-part of Ser. No. 454,389, Dec. 29, 1982, abandoned. This application Mar. 28, 1985, Ser. No. 716,900
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200942
Int. Cl.⁴ A41D *13/00;* A62B *17/00;* B05D *5/00;* B32B *5/24*
U.S. Cl. 428—143 **6 Claims**

1. A textile material produced by coating a textile fabric with a dispersion in a solvent of a pre-coagulated polyurethane, removing the solvent to complete coagulation of the polyurethane, and drying to form a coating having a large number of micropores, the textile material having a water vapor permeability of 5,000 to 20,000 g/m².24 h.

5. A textile material according to claim 1, in the form of an article of protective clothing.

4,554,199
INNER LAMINA, AND PROCESS FOR MANUFACTURE, FOR VEHICLE WINDSHIELD
Paul Roentgen, Roetgen/Rott; Helmut Krumm; Gunter Lenzen, both of Aachen, and Heinz Schilde, Wuerselen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers Cedex, France
Filed Mar. 5, 1982, Ser. No. 355,250
Claims priority, application France, Mar. 6, 1981, 81 04499
Int. Cl.⁴ B32B *3/02, 27/30*
U.S. Cl. 428—194 **9 Claims**



1. A sheet of plastic material in extending rectilinear disposition and rectangular in outline for use in fabricating inner lamina of a laminated windshield, said sheet in the rectilinear direction being subjected to internal tensile stress which varies in intensity crosswise of said sheet, said internal tensile stress being frozen in said sheet whereby when the temperature of said sheet is raised to a temperature above a transformation temperature and there is a relaxation in said internal tensile stress said sheet deforms from said extending rectilinear disposition into a simple curved sheet.

7. A process of forming a sheet for use in fabricating inner lamina of a laminated windshield comprising elevating the temperature of the sheet in extending rectilinear disposition and rectangular outline crosswise in a manner that the temperature profile increases from one edge of the sheet toward the other edge, substantially simultaneously subjecting the sheet in extending rectilinear disposition to drawing whereby said sheet undergoes elongation up to about 40%, and, while the sheet is subject to induced tensile stress in an area of elastic deformation, rapidly cooling the sheet to a temperature below a transformation temperature to maintain the sheet in said extending rectilinear disposition and freeze the induced tensile stress in place.

4,554,200

POLYESTER FILM PRIMED WITH ORGANIC ACID SALTS

R. Scott Caines, Greer, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 512,254, Jul. 11, 1983, Pat. No. 4,486,483. This application Sep. 24, 1984, Ser. No. 653,428

The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.

Int. Cl.⁴ B32B *3/14, 27/06, 27/36*

U.S. Cl. 428—207 **3 Claims**

1. An oriented self-supporting polyester film having a thin continuous primer coating on one or both sides thereof, said coating consisting essentially of a salt selected from the group consisting of:

(a) a water soluble alkali metal salt of an unsaturated fatty acid having from 10 to 18 carbon atoms and mixtures of such salts; or

(b) a water soluble alkali metal salt of an alkyl sulfate having from 8 to 18 carbon atoms, and mixtures of such salts,

said primer coating being present at a weight effective to improve the adhesion of printing inks to said film and wherein said film is prepared by melt extruding a substantially amorphous polyester film and thereafter orienting said film by stretching in one or two directions and heat setting said film, said primer coating being applied to said film as an aqueous solution prior to stretching in one direction, or subsequent to stretching in one direction but prior to stretching in a mutually perpendicular direction, or subsequent to stretching but prior to winding the oriented film, said film being subjected to a corona discharge treatment prior to the application of said primer coating, and wherein said film has a printing ink composition applied directly to said primer coating.

4,554,201

MULTILAYER COATINGS OF METAL-CUTTING TOOLS

Anatoly A. Andreev; Igor V. Gavrilko, both of Kharkov; Alexei G. Gavrilov, Moskovskaya; Anatoly S. Vereschaka; Viktor P. Zhed, both of Moscow; Valentin G. Padalka, Kharkov; Andrei K. Sinelschikov, Moscow, and Vladimir T. Tolok, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Instrumentalny Institut, Moscow, U.S.S.R.

Continuation of Ser. No. 438,867, Oct. 18, 1982, abandoned.

This application May 1, 1984, Ser. No. 605,862

Int. Cl.⁴ B23P *15/28;* **B32B** *15/04, 33/00*

U.S. Cl. 428—215 **2 Claims**

1. A multilayer coating of metal-cutting tools composed by alternating layers of two components, one being a nitride or carbide of a metal of group IV, and the other being a nitride, carbide, boride or silicide of a metal of group VI.

4,554,202

PACKAGING CLOTH

Ryosuke Kamei, Yokohama; Keiitsu Kobayashi, Ayase; Akira Nakamura, Chigasaki; Toshikazu Shimamura, Ibaraki; Masamitsu Tsukada, Ibaraki, and Hisashi Ono, Ibaraki, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,379

Claims priority, application Japan, Jul. 8, 1983, 58-123199; Jul. 15, 1983, 58-127990; Aug. 12, 1983, 58-146610

Int. Cl.⁴ D03D *3/00*

U.S. Cl. 428—225 **9 Claims**

1. A packaging cloth comprising a woven or knitted fabric obtained by using, as at least a portion of either or both of warp and weft for a woven fabric or at least a portion of either or both of wales and courses for a knitted fabric, thread or tape obtained by melt extrusion of linear low-density ethylene polymer having a density of less than 0.945 g/cm^3 and having a branched short chain, followed by stretching at a temperature of less than 120° C.

4,554,203

METHOD FOR MANUFACTURING LARGE SURFACE SILICON CRYSTAL BODIES FOR SOLAR CELLS, AND BODIES SO PRODUCED

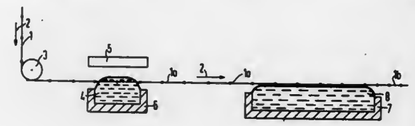
Josef Grabmaier, Starnberg, and Richard Falckenberg, Wald, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,713

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413369

Int. Cl.⁴ H01L *21/84, 27/14*

U.S. Cl. 428—229 **7 Claims**



1. A method for the manufacture of large surface, quasi-monocrystalline silicon bodies of the type used in solar cells which comprises:

reacting at least the surface of a carbon fiber fabric with a first metallic silicon bath under conditions sufficient to form silicon carbide, and

immediately thereafter coating the thus reacted fabric with silicon from a second molten silicon bath.

6. A large surface, quasi-monocrystalline silicon body having a core composed of a carbon fiber fabric whose surface includes an integral skin of silicon carbide, said skin being covered by an outer coating of metallic silicon.

4,554,204

FIBER REINFORCED RESIN MOLDED ARTICLES FOR ELECTROMAGNETIC WAVES AND METHOD FOR PRODUCTION THEREOF

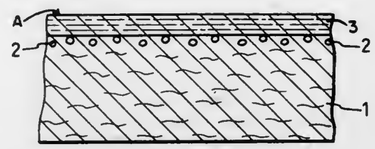
Nobuhiro Ono, and Eiji Miwa, both of Ueno, Japan, assignors to INAX Corporation, Tokoname, Japan

Filed Nov. 3, 1983, Ser. No. 548,236

Claims priority, application Japan, Nov. 6, 1982, 57-194899

Int. Cl.⁴ B32B *7/00;* **B29D** *3/02*

U.S. Cl. 428—246 **22 Claims**



1. A fiber reinforced resin molded article for electromagnetic waves having the properties of uniformly reflecting and shielding electromagnetic waves in the range of VHF to EHF, which comprises a compression-molded crosslink-cured laminated structure, having a plane or curved reflective surface, consisting essentially of a surface layer, an intermediate layer adjacent to said surface layer and a substrate layer; said surface layer being an electroconductive nonwoven fabric-cured resin composite layer having an effective layer thickness of at least about 0.005 mm; said intermediate layer being a woven fabric-cured resin composite layer having an effective layer thickness of at least about 0.005 mm, said woven fabric having a mesh size of not larger than about 5 mesh; and said substrate layer being a fiber material reinforced resin layer.

4,554,205

LAMINATED SAILCLOTH

Peter Mahr, 32 Fleming La., Fairfield, Conn. 06430

Filed Mar. 7, 1985, Ser. No. 709,222

Int. Cl.⁴ B32B *7/00*

U.S. Cl. 428—253 **7 Claims**

1. An improved sailcloth comprising first and second fabric plies laminated together with an adhesive, said first ply being a tightly woven, resinated cloth having a combined relative cover factor in the warp and weft directions of at least 1800, said second fabric ply having a relative cover factor of less than 1000 in the warp direction and less than 700 in the weft direction.

4,554,206

POLYESTER HOT-MELT ADHESIVES

Samuel D. Hilbert, Jonesborough, and Richard L. McConnell, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,933

Int. Cl.⁴ C08G *63/68*

U.S. Cl. 428—261 **8 Claims**

1. A linear, thermoplastic, crystalline copolyester adhesive, said copolyester adhesive having a melting point of about 60°–180° C., an I.V. of about 0.4–1.2, and a heat of fusion of less than 12 calories per gram, and said copolyester adhesive having repeat units from (a) an alicyclic or aliphatic glycol having 2 to 12 carbon atoms and at least one halogen substituent, (b) an aliphatic, alicyclic or aromatic dibasic acid having 4 to 12 carbon atoms and at least one halogen substituent, or (c) a combination of (a) and (b), wherein (a), (b) or (c) accounts for about 2–50 mole percent based on 100 mole percent glycol and 100 mole percent dibasic acid, said copolyester containing sufficient mole percent of at least one other aliphatic or alicyclic glycol having 2 to 12 carbon atoms to bring the total to 100 mole percent glycol and sufficient mole percent of at least one other aliphatic, alicyclic or aromatic acid having 4 to 12 carbon atoms to bring the total to 100 mole percent dibasic acid.

4,554,207

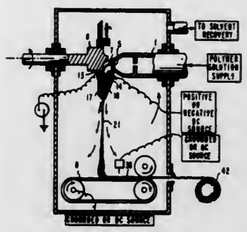
STRETCHED-AND-BONDED POLYETHYLENE PLEXIFILAMENTARY NONWOVEN SHEET

Chi C. Lee, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 10, 1984, Ser. No. 679,799

Int. Cl.⁴ B32B *17/02*

U.S. Cl. 428—288 **9 Claims**



1. In a wide, lightweight, bonded, non-woven sheet of polyethylene plexifilamentary film-fibril strands having a unit weight of no greater than 60 g/m2, the improvement comprising in combination, an opacity of at least 75% and a pattern of long wavelength X-ray scattering which is characterized by a Guinier plot of the logarithm of the intensity of the scattered X-rays versus the square of the scattering angle, said plot exhibiting a ratio of the slope at 0.005 square radians to the slope at 0.010 square radians that is no greater than 0.85.

4,554,208

METAL BEARING SURFACE HAVING AN ADHERENT SCORE-RESISTANT COATING

Bernard A. MacIver, Lathrup Village; James C. Erskine, Jr., Birmingham, and John C. Bierlein, Washington, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 565,395, Dec. 27, 1983, Pat. No. 4,540,636.

This application Nov. 23, 1984, Ser. No. 674,239

Int. Cl.⁴ B32B *9/00;* **B05D** *3/06*

U.S. Cl. 428—332 **1 Claim**

1. An article of manufacture comprising a metal bearing surface, a sliding contact layer on the bearing surface that is less than about 1.0 micrometer thick and consists essentially of a sulfur-free organic resin that has been carbonized by ion implantation, which carbonized layer includes graphite-like and diamond-like crystalline microstructures, and a chemical bond between the carbonized layer and the metal bearing surface, that is attributable to chemical reactions induced by implanted ions targeted to provide maximum layer damage between the carbonized layer and the metal bearing surface, effective to provide an adherent, hard and score-resistant sliding contact coating on the metal bearing surface.

4,554,209

CORROSION INHIBITING COATING COMPRISING LAYER OF ORGANIC CORROSION INHIBITOR AND LAYER OF FLUORIDIZED ACRYLATE

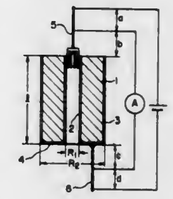
Osamu Kanoh, and Atsuo Senda, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,123

Claims priority, application Japan, Jun. 8, 1983, 58-103271

Int. Cl.⁴ B32B *27/00*

U.S. Cl. 428—334 **7 Claims**



1. A corrision inhibiting coating for a metal surface, said coating comprising: a layer of an organic corrosion inhibitor on said surface and a layer of a material comprised of fluoridized acrylate on said organic layer.

4,554,210

LAMINATED ANTI-STATIC SKIN-PACKAGING MATERIAL

Stuart G. Long, South Laguna, and Michael J. Maciocia, Ontario, both of Calif., assignors to General Dynamics Pomona Division, Pomona, Calif.

Filed Apr. 9, 1984, Ser. No. 597,975

Int. Cl.⁴ B32B *15/08, 27/08*

U.S. Cl. 428—349 **2 Claims**

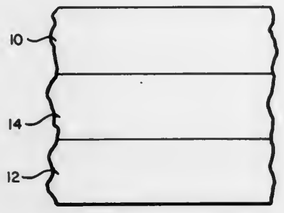
1. A laminated, anti-static, heat sealable packaging material for packaging and preventing contamination of an electrostatically sensitive item packed in said packaging material, comprising:

a first outer layer of heat-sealable, semi-conductive polyethylene having a surface resistivity at least 1×10^{16} ohms per square;

a second outer layer of heat-sealable, semi-conductive polyethylene having a surface resistivity at least 1×10^{16} ohms per square; and

a middle layer of heat-sealable polyethylene impregnated with a sloughable, electrically-conductive material providing said middle layer with a volume resistivity no more

than 1×10^3 ohms per centimeter, said middle layer bondedly sandwiched between said first and second layers to prevent said electrically-conductive material sloughing



from said middle layer to contaminate an electrostatically sensitive item when said item is heat-sealably packaged in said packaging material.

4,554,211

SPHERICAL MICRO-POROUS SILICA GEL AND A PRODUCTION PROCESS THEREOF

Junji Arika, Tokuyama; Eiji Shiota, Shin-nanyo, and Kazuaki Yamamoto, Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Yamaguchi, Japan

Filed Aug. 2, 1983, Ser. No. 519,496
Claims priority, application Japan, Aug. 4, 1982, 57-135210
Int. Cl.⁴ C01B *33/16*
U.S. Cl. 428—402 **7 Claims**

1. A spherical micro-porous silica gel, which is characterized by having a mean diameter of 3–20 μm, a bulk density of 0.28–0.41 g/cm³, a pore size of 18,000–100,000, and a specific surface area of 1,000–1,400 m²/g.

3. In a process for producing silica gels through gelation of aqueous solution containing SiO_2 which is dispersed in an oil phase as aqueous droplets, the improvement for the production of a spherical micro-porous silica gel having a mean diameter of 3–20 μm, a bulk density of 0.28–0.41 g/cm³, a pore size of 18,000–100,000, and a specific surface area of 1,000–1,400 m²/g, which comprises employing (a) an aqueous solution containing SiO_2 in which the primary particle diameter is not larger than 6 nm and the molar ratio of SiO_2/Na_2O is not larger than 5.5, (b) either stearic acid or a mixture of stearic acid and a non-ionic surface active agent of which HLB ranges from 3.5 to 6.0 as an emulsifier and (c) an organic acid as a gelling agent.

4,554,212

BINDERS FOR CATHODICALLY DEPOSITABLE COATING COMPOSITIONS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Horst Diefenbach, Nottuln; Arnold Dobbelstein, Münster, and Hans-Dieter Hille, Berg.-Gladbach, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 385,933, Jun. 7, 1982,. This application Aug. 1, 1984, Ser. No. 636,082
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123536
Int. Cl.⁴ B23B *27/38*
U.S. Cl. 428—413 **28 Claims**

1. A method of electrocoating a substrate comprising cathodically depositing on said substrate a coating composition consisting essentially of a cationic synthetic resin binder which is the emulsion polymerization product of:

(A) 5 to 95% by weight of ethylenically unsaturated polymerizable monomers with

(B) 95 to 5% by weight of a cationic synthetic resin,

the total amount of components (A) and (B) being 100%,

wherein component (A) is an ester selected from the group consisting of an alkyl ester of acrylic acid, an alkyl ester of methacrylic acid or a mixture thereof, said esters having an alkyl group containing 1 to 4 carbon atoms or component (A) is a mixture of

(a_1) 10 to 99% by weight of an alkyl ester of acrylic acid, an alkyl ester of methacrylic acid or a mixture thereof said esters having an alkyl group containing 1 to 4 carbon atoms; and

(a_2) 1 to 30% by weight of ethylenically unsaturated compounds having functional groups selected from the group consisting of derivates of esters of methacrylic acid containing hydroxyl groups, esters of methacrylic acid having epoxide groups, esters of methacrylic acid having tertiary amino groups, esters of acrylic acid containing hydroxyl groups, esters of acrylic acid having epoxide groups, esters of acrylic acid having tertiary amino groups and mixtures thereof;

the total amount of the components (a_1) and (a_2) being 100%,

and component (B) is a resin selected from the group consisting of epoxide resins having ammonium groups, epoxide resins having sulfonium groups, epoxide resins having phosphonium groups, acrylate resins having ammonium groups, acrylate resins having sulfonium groups, acrylate resins having phosphonium groups, polyester resins having ammonium groups, polyester resins having sulfonium groups, polyester resins having phosphonium groups, polyurethane resins having ammonium groups, polyurethane resins having sulfonium groups, polyurethane resins having phosphonium groups, polyether resins having ammonium groups, polyether resins having sulfonium groups, polyether resins having phosphonium groups, polyamide resins having ammonium groups, polyamide resins having sulfonium groups, polyamide resins having phosphonium groups, polyurea resins having ammonium groups, polyurea resins having sulfonium groups, polyurea resins having phosphonium groups and mixtures thereof;

and stoving said cathodically deposited binder.

4,554,213

HIGH PUNCHABILITY HEAT RESISTANT COATING FOR SHEET METAL

Paolo Marini, Rome, and Marcello Candiotti, Terni, both of Italy, assignors to Centro Sperimentale Metallurgico SpA and Terni - Societa per l'Industria e l'Elettricita SpA, both of Rome, Italy

Filed Nov. 29, 1984, Ser. No. 676,300
Claims priority, application Italy, Jan. 4, 1984, 47511 A/84
Int. Cl.⁴ B32B *15/08, 27/42;* **C08K** *5/05;* **C08L** *63/00*
U.S. Cl. 428—418 **4 Claims**

1. High punchability sheet steel, coated with a complex mixture consisting essentially of phosphates and resins compatible with acid phosphate ions, containing between 60 and 95% by weight of the phosphates and between 5 and 40% by weight of the resins.

4,554,214

CASTING COATING

Toshio Ichinomiya; Ryosaburo Seiki, and Tatsuo Imai, all of Kobe, Japan, assignors to Seikoh Chemicals Co., Ltd., Kobe, Japan

Filed Dec. 30, 1982, Ser. No. 454,555
Claims priority, application Japan, Jan. 8, 1982, 57-1931; Jan. 8, 1982, 57-1932; Jan. 18, 1982, 57-6517
Int. Cl.⁴ B32B *27/40, 27/32*
U.S. Cl. 428—423.1 **19 Claims**

1. A transparent casting coating prepared by spreading on a releasable substrate a resin composition consisting essentially of an organic solvent, 95 to 15 parts by weight of a non-yellowing polyurethane-polyurea resin, based on 100 parts by weight of non-volatile matter in the composition, 5 to 60 parts by weight, based on 100 parts of non-volatile matter in the composition of an acrylic copolymer containing a quaternary ammonium salt and having cross-linkable groups in its molecular structure, the said copolymer being compatible with said polyurea resin, and a cross linking agent selected from the group consisting of a blocked isocyanate and an aminoplast used in an amount of 1 to 25 parts by weight, based on the weight of non-volatile matter in the composition and then heating the solution to cross-link the coating on the releasable substrate.

4,554,215

COATING OF CELLULOSIC BASE STOCKS AND THE PRODUCT THEREOF

Edward Robbart, 15 Emerson Pl., Boston, Mass. 02115

Filed Nov. 16, 1983, Ser. No. 552,316
Int. Cl.⁴ B32B *9/04, 9/06, 13/12, 15/04*
U.S. Cl. 428—447 **19 Claims**

1. In a method of coating webs of cellulosic base stocks wherein a coating material is applied to the web of the base stock so as to improve the properties thereof, the improvement comprising, prior to said coating, treating said web with dry vapors of a lower alkylhalogeno silane which react with hydroxyl groups in the cellulosic base stock to form a deposit of siloxane and polymers thereof on and integral with said web of cellulosic base stock, and forming a deposit of said coating material on said deposit of siloxane and polymers thereof.

10. In an article of manufacture wherein at least one side of a cellulosic substrate has applied thereto a layer of a coating material to improve the properties thereof, the improvement comprising a base layer for said coating material, said base layer being obtained by treating the cellulosic substrate with dry vapors of a lower alkylhalogeno silane which react with hydroxyl groups in the cellulosic substrate to form a deposit of siloxane and polymers thereof on and integral with said cellulosic substrate, and forming a deposit of said coating material on said deposit of siloxane and polymers thereof.

4,554,216

PROCESS FOR MANUFACTURING SUPPORT MATERIALS FOR OFFSET PRINTING PLATES

Dieter Mohr, Roemerberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,087
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206469
Int. Cl.⁴ C25D *11/12;* **B41N** *1/08*
U.S. Cl. 428—469 **5 Claims**

1. A process for manufacturing support materials for offset-printing plates, comprising the step of:

subjecting a support member comprised of aluminum or an alloy thereof, which has been roughened by chemical, mechanical and/or electrochemical treatment, to a two-stage anodic oxidation treatment including a first stage (a) comprising anodic oxidation in an aqueous electrolyte consisting essentially of water sulfuric acid and Al^{3+} ion, so that at least one layer comprising aluminum oxide is deposited on said support member to a layer thickness of about 0.3 to 2.5 microns, and thereafter to a second stage (b) comprising anodic oxidation in an aqueous electrolyte which is different from that in stage (a) and which consists essentially of water and (i) at least one acid comprising an oxoanion of boron, vanadium, molybdenum, or tungsten or (ii) at least one salt having an alkali metal cation, an alkaline earth metal cation or an ammonium cation, and one of said oxoanions at a voltage between about 10 and 100 V, at a temperature of from about 10° to 60° C., and for a duration of from about 1 to 60 seconds.

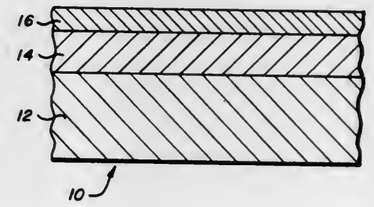
5. A support for offset-printing plates produced according to the process of claim 1.

4,554,217

PROCESS FOR CREATING WEAR AND CORROSION RESISTANT FILM FOR MAGNETIC RECORDING MEDIA

M. Andreas Grimm, Cupertino, and George W. Brock, Los Altos Hills, both of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Sep. 20, 1984, Ser. No. 652,278
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—469 **11 Claims**



1. A wear and corrosion resistant magnetic recording member comprising:

a substrate;

a ferromagnetic recording layer; and

a protective layer composed of a ferromagnetic carbide film.

5. The method of producing a wear and corrosion resistant magnetic recording film in the steps of:

depositing a thin ferromagnetic metal recording film on the substrate by means of DC or RF sputtering and electron beam vacuum deposition, done in the presence of an inert gas at partial pressure; and

injecting high purity carbon monoxide gas into the sputter chamber during the final minutes of the sputter process sufficient to form a protective carbide layer on the recording film.

4,554,218

INFILTRATED POWERED METAL COMPOSITE ARTICLE

Richard N. Gardner, Grant Township, Washington County, and Kenneth R. Dillon, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 318,671, Nov. 5, 1981, abandoned. This application May 18, 1984, Ser. No. 611,924
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.⁴ B22F *3/00, 1/00*
U.S. Cl. 428—567 **34 Claims**

1. A metal composite article comprising:

(a) granules of a first metal or alloy of about 1 to about 100 micrometers mean diameter;

(b) a monolithic skeleton comprising a solid second metal or alloy having a higher Rockwell hardness than said first metal or alloy, said second metal or alloy fully enveloping the majority of said granules of first metal or alloy, the latter being uniformly dispersed in said skeleton; and

(c) a continuous metallic phase occupying the connected porosity in said skeleton, said continuous phase comprising a solid third metal or alloy which wets said skeleton, has a Rockwell hardness less than or equal to the Rockwell hardness of said second metal or alloy, and has a melting point below the melting point of said second metal or alloy;

said article thereby comprising two intermeshed matrices and being substantially free of voids.

18. A precision molded die cavity comprising:

(a) less than about 15 volume percent granules of tungsten of about 1 to about 44 micrometers mean diameter;

(b) about 35 to about 70 volume percent of a monolithic

ferroalloy skeleton, said ferroalloy fully enveloping the majority of said tungsten granules, all of the latter being uniformly dispersed in said skeleton; and

(c) about 15 to about 50 volume percent of a continuous metallic phase comprising copper, said continuous metallic phase occupying the connected porosity in said skeleton:

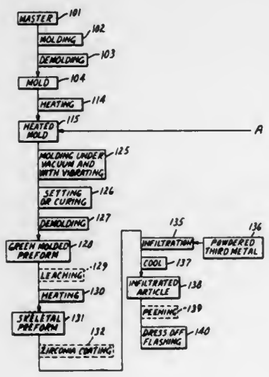
said article thereby comprising two intermeshed matrices and being substantially free of voids.

24. A process for forming a precision molded composite article, comprising the steps of:

(a) blending granules of a first metal or alloy having about 1 to about 100 micrometers mean diameter with granules of a second metal or alloy having about 1 to about 100 micrometers mean diameter, said second metal or alloy having a higher Rockwell hardness than said first metal or alloy, thereby forming a uniform mixture;

(b) mixing said uniform mixture with up to 50 volume percent of a heat fugitive, organic binder;

(c) molding the resulting mixture in a heated flexible mold, cooling said mold and its contents to room temperature,



and demolding said contents by applying a vacuum to the outside of said mold thereby forming an essentially void-free green molded preform having the size and shape of said mold;

(d) heating said green molded preform to thermally remove said binder and form a rigid, handleable skeletal preform;

(e) placing said skeletal preform in contact with a third metal or alloy which will wet said skeleton and which has a Rockwell hardness less than or equal to the Rockwell hardness of said second metal or alloy;

(f) infiltrating said skeletal preform with said third metal or alloy by heating said skeletal preform and said third metal or alloy above the melting point of said third metal, but below the melting point of said second metal or alloy, whereby said third metal or alloy melts and wicks into the connected porosity of said prerorm by capillary action and said second metal or alloy fully envelopes the majority of said granules of first metal or alloy, with the proviso that said granules of first metal or alloy do not completely dissolve in said second metal or alloy; and

(g) cooling the infiltrated part to room temperature to form a substantially void-free precision molded article.

4,554,219

SYNERGISTIC BRIGHTENER COMBINATION FOR AMORPHOUS NICKEL PHOSPHORUS ELECTROPLATINGS

Rodger L. Gamblin, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 30, 1984, Ser. No. 615,271
Int. Cl.⁴ C25D *5/12*
U.S. Cl. 428—667 **19 Claims**

1. A method producing a leveled electroplated coating comprising the steps of:

(a) adding to an electroplating bath including nickel and phosphorus ions as the primary constituents thereof, at least one compound selected from the group consisting of unsaturated organic compounds that are class II brightening agents, and at least one organic acid in an amount between one part in 60 and one part in 10, based on the volumes of the organic acid and the bath, respectively selected from the group having the formula

R—COOH

wherein R is alkyl having 1-5 carbon atoms, hydrogen, NH_2CH_2—, CH_3CHOH—, $HOCH_2$—, or $ClCH_2$—; the amount and type of unsaturated organic compound class II brightening agent being selected so as to cooperate with said organic acid to enhance leveling;

(b) immersing an object to be electroplated, and removing the object once electroplated, so that it has at least one surface thereof with leveled amorphous nickel-phosphorus electroplated thereon, and

(c) overplating the leveled amorphous nickel-phosphorus coating with chromium.

15. A coated object comprising:

a base surface of electrically conductive material;

a level coating of amorphous nickel-phosphorus on said surface; and

a bright overplating of chromium on said level amorphous nickel-phosphorus coating.

4,554,220

MAGNETIC RECORDING MEDIA

Nobuyuki Yamamoto; Katsumi Ryoke; Nobuo Tsuji, all of Kanagawa; Yuzo Higaki, and Toshihisa Okamura, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan and Nisshin Oil Mills, Ltd., Japan

Filed Aug. 2, 1983, Ser. No. 519,645
Claims priority, application Japan, Aug. 2, 1982, 57-133805
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—694 **12 Claims**

1. A magnetic recording medium, comprising a non-magnetic support base having positioned thereon, a magnetic layer containing a ferromagnetic powder and an ester derived from a polyhydric alcohol selected from the group consisting of pentaerythritol and pentaerythritol condensates and a mixture of fatty acids and resin acids.

4,554,221

RECHARGEABLE BATTERY PACK

Hartmut Schmid, North Vancouver, Canada, assignor to DSL Dynamic Sciences Limited, St. Laurent, Canada

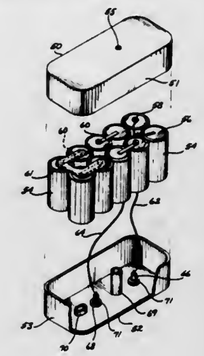
Filed Jan. 23, 1985, Ser. No. 693,983
Int. Cl.⁴ H01M *2/00*
U.S. Cl. 429—1 **20 Claims**

1. A rechargeable battery pack constructed so as to be releasably connected to an electrical coupling of a device to be powered, said electrical coupling having a pair of male connectors and a pair of locating pins, said battery pack comprising:

a plurality of rechargeable batteries positioned in side-by-side relationship with the ends thereof arranged in two opposed groups;

a top cover positioned on one of said groups of ends, said top cover having peripheral edges that fit over the sides of said batteries, said top cover having a locating hole; and

a bottom cover positioned on the other one of said groups of ends, said bottom cover having peripheral edges that fit over the sides of said batteries, said bottom cover having a pair of female connectors and a pair of locating holes, said female connectors being connected to said batteries to



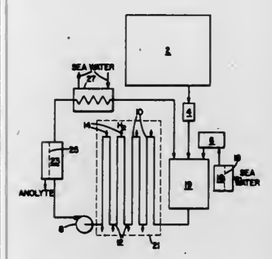
provide terminals of opposite polarity, said female connectors and locating holes being arranged for complementary mating engagement with the male connectors and locating pins, respectively, of said electrical coupling, one of said locating holes being cooperatively aligned with the locating hole in the top cover to receive one of said locating pins.

4,554,222

METAL-CONSUMING POWER GENERATION APPARATUS AND METHODS

Solomon Zaromb, 9S 706 William Dr., Hinsdale, Ill. 60521

Continuation-in-part of Ser. No. 179,274, Aug. 18, 1980, Pat. No. 4,416,954, which is a continuation-in-part of Ser. No. 704,452, Jul. 12, 1976, Pat. No. 4,305,999, and a continuation-in-part of Ser. No. 20,967, Mar. 16, 1979, Pat. No. 4,218,520, and a continuation-in-part of Ser. No. 80,185, Oct. 1, 1979, Pat. No. 4,254,190, and a continuation-in-part of Ser. No. 238,626, Feb. 26, 1981, Pat. No. 4,369,234, which is a division of Ser. No. 80,185, Oct. 1, 1979, Pat. No. 4,254,190. This application Sep. 29, 1982, Ser. No. 428,472
Int. Cl.⁴ H01M *12/06, 8/06*
U.S. Cl. 429—19 **8 Claims**



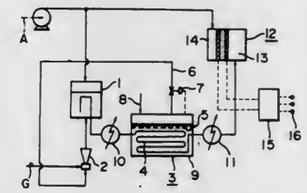
1. In an electric power source comprising an electrochemically consumable reactive metal anode and a hydrogen-evolving water-consuming cathode, the improvements wherein said anode comprises a slurry of reactive metal particles suspended in an electrolyte solution and impinging upon a substantially inert current collector, wherein said reactive particles appertain to the family of metals or alloys containing aluminum, lithium, sodium, magnesium or calcium, and wherein said power source comprises a supply of said reactive particles which are not in contact with said electrolyte solution, and means for feeding these particles from said supply to said slurry upon demand.

4,554,223

FUEL CELL APPARATUS

Eiji Yokoyama, Kashiwa; Tadao Kaneko, Inagi; Yoshiaki Amano, Ibaraki, and Shigeo Sugimoto, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,099
Claims priority, application Japan, Aug. 17, 1983, 58-149189
Int. Cl.⁴ H01M *8/06*
U.S. Cl. 429—20 **9 Claims**



1. A fuel cell apparatus comprising a reformer for reforming a fuel such as natural gas, etc. into a gas containing much hydrogen, a shift converter for catalytically converting most of carbon monoxide contained in the gas leaving the reformer to carbon dioxide, and a fuel cell for generating an electric current from the gas leaving the shift converter and air, wherein the shift converter comprises:

(a) a reaction tube filled with at least one catalyst, one end of the reactor tube being connected to the outlet of the reformer and the other end being connected to the inlet of an anode of the fuel cell,

(b) a vessel encasing the reaction tube and also containing a liquid for cooling the reactor tube,

(c) a vapor discharge means provided at the vessel for discharging vapor of the liquid generated by the heat of reaction from the reaction tube,

(d) a means for leading the liquid to the vessel only in an amount corresponding to at least an amount of the vaporized liquid, provided at the vessel, and

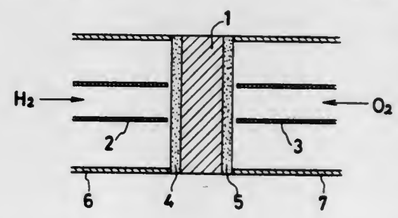
(e) a means for keeping a constant pressure in the vessel.

4,554,224

HYDROGEN-OXYGEN SOLID ELECTROLYTE FUEL CELL

Osamu Nakamura, Ikeda; Isao Ogino, Minoo, and Masakazu Adachi, Takarazuka, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,215
Int. Cl.⁴ H01M *8/10, 4/86*
U.S. Cl. 429—30 **4 Claims**



1. A hydrogen-oxygen solid electrolyte fuel cell comprising an oxidizing agent electrode formed of an oxidizing agent

electrode catalyst and a conducting agent, a fuel electrode, a solid electrolyte disposed between said two electrodes, and housings for supplying oxygen to said oxidizing agent electrode and hydrogen to said fuel electrode, which fuel cell is characterized by said solid electrolyte being one member selected from the group consisting of 12-molybdophosphoric acid and 12-tungstophosphoric acid, and said oxidizing agent electrode catalyst being Cu_2O.

4,554,225

MOLTEN CARBONATE FUEL CELL

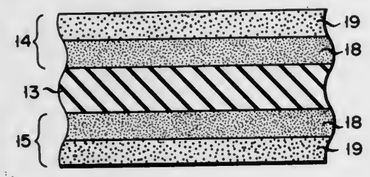
Atuo Sounai, Yokohama, and Kenji Murata, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,980

Claims priority, application Japan, Mar. 31, 1983, 58-55998; May 24, 1983, 58-91013

Int. Cl.⁴ H01M *8/14*

U.S. Cl. 429—34 **6 Claims**



1. A molten carbonate fuel cell comprising unit cells each having an electrolyte layer in a plate-like form which contains a carbonate melted at an operating temperature, a cathode and an anode which are formed in tight contact to sandwich the electrolyte layer and which respectively comprise plates of porous material, an element for supplying fuel gas to the interface between the cathode and the electrolyte layer through pores in the cathode, and another element for supplying an oxidant gas to the interface between the anode and the electrolyte layer through pores of the anode,

characterized in that

each of said cathode and said anode comprises a bilayered structure having a first porous layer which is in contact with said electrolyte layer and a second porous layer which is located at the side of said element for supplying said fuel or oxidant gas and which comprises a sintered layer of a fibrous material, pores in at least a portion of said first porous layer, which is adjacent to said electrolyte layer, have a size capable of capillary action of the molten carbonate and pores of said second porous layer have a size not capable of capillary action of the molten carbonate.

4,554,226

FLAT CELL BATTERY CONNECTOR SEAL

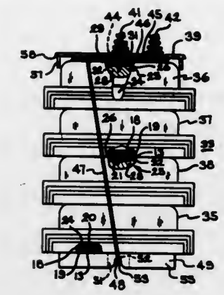
Robert D. Simonton, 1900 Hampton Rd., Fremont, Ohio 43420

Continuation of Ser. No. 540,021, Oct. 7, 1983, abandoned. This application Mar. 26, 1985, Ser. No. 715,779

Int. Cl.⁴ H01M *6/46*

U.S. Cl. 429—153 **10 Claims**

1. An alkaline cell comprising a sealed, flexible, sheet plastic, non-conductive evelope, having spaced, generally parallel, major walls; alkaline electrolyte within said evelope; a rigid conductive plate within said envelope having a major face adjacent an inner face of one of said major walls of said envelope of a lateral extent generally conforming to and slightly less than said face of said one major wall; a connector conductively joined to said conductive plate and extending from the central region of said major face through said one major wall of said envelope at a central region thereof, said one major wall engaging said connector portion passing therethrough; an adhesive bond between said major face of said plate and said adjacent inner face of said one major wall of said envelope surrounding said extending connector and substantially coextensive with said major face of said plate; a continuously compressed resilient pad on the exterior of said one major wall of said envelope, said pad being substantially coextensive with



said adhesive bond and surrounding said extended connector; and means to maintain said resilient pad compressed to apply generally uniform pressure through said resilient pad over the coextensive areas of said one major wall of said envelope, said adhesive bond and said conductive plate.

4,554,227

ALKALINE BATTERY

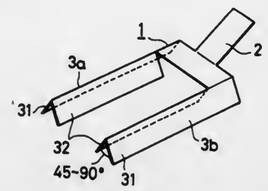
Tokujiro Takagaki; Tetsuo Sasaki, and Haruo Seike, all of Kyoto, Japan, assignors to Japan Storage Battery Company Limited, Japan

Filed Feb. 24, 1984, Ser. No. 583,479

Claims priority, application Japan, Jul. 18, 1983, 58-131739; Jul. 25, 1983, 58-136345

Int. Cl.⁴ H01M *2/02*

U.S. Cl. 429—178 **9 Claims**



1. A connecting piece for a battery having positive and negative terminals and having a plate assembly formed by winding or laminating positive and negative plates with a separator interposed therebetween so that the edges of said positive and negative plates partially protrude from opposite end faces of said plate assembly, said connecting piece comprising:

at least one current collector disposed across a plurality of said protruding edges, and forming an elongated V-shaped channel having an upper ridge and two lower edges joined by slanting surfaces which together define said V-shape, said two lower edges being welded to said protruding edges so that said lower edges are crosswise engaged with plural protruding edge portions, each said current collector having a free end and a base end, said base ends being joined by a bridging portion; and

a lead formed at one end of said at least one current collector for connecting said at least one current collector to one of said positive or negative terminals.

4,554,228

NEGATIVE ELECTRODE FOR LEAD ACCUMULATORS

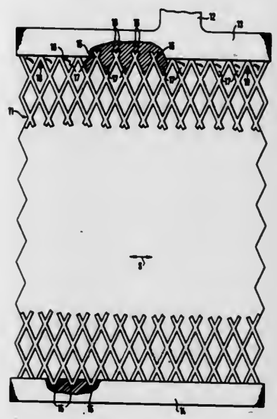
Reiner Kiessling, Anröchte, Fed. Rep. of Germany, assignor to Hagen Batterie AG, Soest, Fed. Rep. of Germany

Filed Apr. 6, 1984, Ser. No. 597,668

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312550

Int. Cl.⁴ H01M *4/74*

U.S. Cl. 429—242 **21 Claims**



1. In a negative electrode for lead accumulators in the form of a rectangular expanded metal grid plate of copper having upper and lower ends forming upper and lower crossing points of said grid which serves as a carrier for an active mass and for current supply and extraction, the direction of stretching of the expanded metal extending parallel to an end of the rectangular grid plate at which a connection lug is provided, and wherein a lead strip, unitary with a connection lug, is conductively secured to one end of said grid plate over the whole length thereof, improvement wherein the lead strip is cast onto the grid plate and said copper grid is covered by a lead or lead-tin alloy layer.

4,554,229

MULTILAYER HYBRID INTEGRATED CIRCUIT

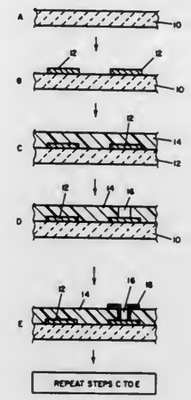
Richard D. Small, Jr., Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Apr. 6, 1984, Ser. No. 597,626

Int. Cl.⁴ G03C *3/00*; H05K *1/00*

U.S. Cl. 430—17 **9 Claims**

1. A multilayer circuit device comprising a substrate having a metallized pattern thereon and a plurality of polymeric dielectric film layers each having a metallized circuit pattern thereon with metallized microvias interconnecting the metallized patterns of one layer with that of at least one other metallized layer thereunder, said polymeric dielectric layer being formed from a photodefinable triazine base mixture including a



photosensitive acrylate moiety wherein the triazine comprises from 40–65 weight percent of the mixture.

4,554,230

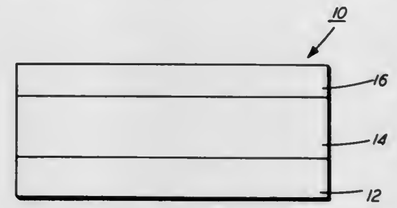
ELECTROPHOTOGRAPHIC IMAGING MEMBER WITH INTERFACE LAYER

Geoffrey M. T. Foley, Fairport, and Rudolph C. Enck, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1984, Ser. No. 619,247

Int. Cl.⁴ G03G *5/082, 5/14*

U.S. Cl. 430—58 **16 Claims**



1. An electrophotographic imaging member comprising a substrate, a charge transport layer comprising selenium, said charge transport layer containing less than about 20 parts per million by weight halogen, a thin continuous interface layer of halogen doped selenium overlying said charge transport layer, said interface layer of halogen doped selenium consisting essentially of selenium and about 35 parts per million to about 600 parts per million by weight halogen, and at least one selenium-tellurium alloy photoconductive charge generating layer overlying said thin continuous interface layer.

4,554,231

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Shozo Ishikawa, Sayama; Kiyoshi Sakai, Mitaka; Minoru Mabuchi, Tokyo; Katsunori Watanabe, Yamato, and Makoto Kitahara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha and Copyer Kabushiki Kaisha, both of Tokyo, Japan

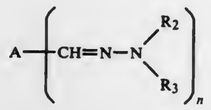
Continuation of Ser. No. 299,575, Sep. 4, 1981, abandoned. This application Dec. 9, 1983, Ser. No. 560,255

Claims priority, application Japan, Sep. 26, 1980, 55-132966; Sep. 26, 1980, 55-132967; Sep. 26, 1980, 55-132969; Oct. 6, 1980, 55-138714; Oct. 6, 1980, 55-138715

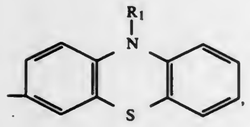
Int. Cl.⁴ G03G *5/06, 5/14*

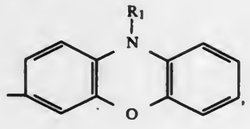
U.S. Cl. 430—59 **18 Claims**

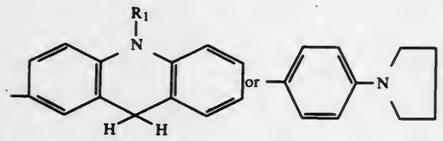
1. An electrophotographic photosensitive member which comprises a conductive support, a charge generation layer, and a charge transport layer which contains a hydrazone compound represented by the formula



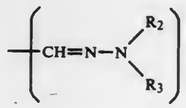
wherein R_2 and R_3 are each unsubstituted alkyl or substituted alkyl, unsubstituted aralkyl or substituted aralkyl, or unsubstituted aryl or substituted aryl, with the proviso that R_2 and R_3 are not alkyls at the same time, n is 1 or 2, when n is 1, A is







wherein R_1 is C_1–C_5 alkyl, unsubstituted aralkyl, or substituted aralkyl, and when n is 2, A represents a direct single bond between two



radicals and a binder.

4,554,232

MAGNETIC TONER

Kazunori Tabaru; Takafumi Aoyama, and Toshio Kumakura, all of c/o Hitachi Metals, Ltd., 1-2, 2-chome, Marunouchi, Chiyoda-Ku, Tokyo, Japan

Continuation of Ser. No. 944,353, Sep. 21, 1978, abandoned. This application Sep. 23, 1980, Ser. No. 190,035

Claims priority, application Japan, Sep. 22, 1977, 52-113337; Sep. 22, 1977, 52-113338

Int. Cl.⁴ G03G *9/14*

U.S. Cl. 430—106.6 **8 Claims**

1. A magnetic toner of the single component type comprising magnetic particles and a resin, wherein said resin comprises at least 5% by weight based on the total weight of resin, of epoxy resin cross-linked with about 0.2 to 7.2% by weight, based on the weight of the epoxy resin, of a primary or secondary aminosilane.

4,554,233

ELECTROPHOTOGRAPHIC TONER CONTAINING TRIAZOLIUM COMPOUND AS CHARGE CONTROLLING AGENT

Mitsuru Hashimoto, Numazu; Toshiyasu Kawabata, Shizuoka; Toshiki Nanya, and Hisao Murayama, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

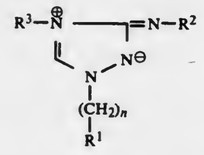
Filed Oct. 5, 1983, Ser. No. 539,348

Claims priority, application Japan, Oct. 28, 1982, 57-188251

Int. Cl.⁴ G03G *9/14*

U.S. Cl. 430—106.6 **15 Claims**

1. A toner for developing latent electrostatic images comprising particles composed of a mixture of a colorant, a binder agent and a charge controlling agent of the formula



wherein R^1, R^2 and R^3 independently represent an unsubstituted or substituted aromatic ring; and n is 0 or 1.

4,554,234

TONER APPLICATION METHOD AND COMPOSITION THEREFOR

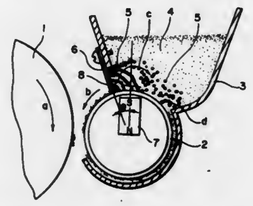
Eiichi Imai, Narashino; Masanori Takenouchi, Urawa; Masaki Uchiyama, Nakamachi, and Koshi Suematsu, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,788

Claims priority, application Japan, Oct. 19, 1983, 58-195606

Int. Cl.³ G03G *13/09, 13/08*

U.S. Cl. 430—122 **9 Claims**



1. A method for applying a toner comprising:

forming, in a container containing a toner and magnetic particles for application of the toner, a magnetic brush of the magnetic particles;

circulating the magnetic particles in the container; and

forming a thin layer of the toner electrically charged on the toner carrying member, wherein the magnetic particles have such shape characteristics that, where each magnetic particle is assumed to be circumscribed with the rectangular parallelepiped having edge lengths of a, b and c satisfying $a \geqq b \geqq c$ with the proviso that all of a, b and c are not the same, the average of b/a is from 0.4 to 1.0 and the average of c/a is from 0.4 to 0.95.

4,554,235

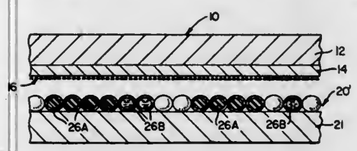
MICROENCAPSULATED TRANSFER IMAGING SYSTEM EMPLOYING DEVELOPER SHEET AND DISCONTINUOUS LAYER OF THERMOPLASTIC PIGMENT

Paul C. Adair, Chillicothe, and George D. Metz, Columbus, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed May 17, 1984, Ser. No. 611,284

Int. Cl.⁴ G03C *1/71, 1/495, 1/68, 1/96*

U.S. Cl. 430—138 **20 Claims**



8. A microencapsulated imaging system comprising an imaging sheet including a support having a layer of photosensitive microcapsules on the surface thereof, said microcapsules containing a photohardenable or photosoftenable photosensitive composition as the internal phase and having a chromogenic material associated therewith; said system further comprising a developer sheet including a support, a developer layer containing a material which reacts with said chromogenic material to produce a color image, and a discontinuous layer of a thermoplastic polymeric pigment overlying said developer layer, said pigment forming an essentially transparent film upon application of heat or pressure.

4,554,236

AMINO ACID STABILIZERS FOR WATER SOLUBLE DIAZONIUM COMPOUND CONDENSATION PRODUCTS

Trisha Bentley, Somerville; John E. Walls, Hampton, and Major S. Dhillon, Somerville, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 359,456, Mar. 18, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 543,566

Int. Cl.⁴ G03C *1/60, 1/94*

U.S. Cl. 430—157 **14 Claims**

1. A composition suitable for producing a light sensitive reproduction material, said reproduction material comprising a support and a reproduction layer thereon, which reproduction layer consists of said composition; said composition consisting of a light sensitive water soluble diazonium compound condensation product in admixture with an amino acid, said amino acid being present in an amount sufficient to substantially improve the heat stability of said diazonium compound condensation product, said amino acid imparts at least a 2½ fold increase in the time in which degradation of the diazonium compound occurs at 100° C.

11. A light sensitive reproduction material comprising a support and a reproduction layer thereon, said support comprising aluminum, and said reproduction layer comprising a light sensitive water soluble diazonium compound condensation product in admixture with an amino acid, said amino acid being present in an amount sufficient to substantially improve the heat stability of said diazonium compound condensation product, said amino acid imparts at least a 2½ fold increase in the time in which degradation of the diazonium compound occurs at 100° C.

4,554,237

PHOTOSENSITIVE RESIN COMPOSITION AND METHOD FOR FORMING FINE PATTERNS WITH SAID COMPOSITION

Fumio Kataoka; Fusaji Shoji, both of Yokohama; Hitoshi Yokono, Katsuta; Daisuke Makino, Mito; Shigeru Koibuchi, and Asao Isobe, both of Hitachi, all of Japan, assignors to Hitach, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

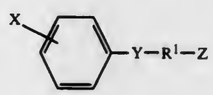
Filed Dec. 22, 1982, Ser. No. 452,198

Claims priority, application Japan, Dec. 25, 1981, 56-209424; Dec. 25, 1981, 56-209425

Int. Cl.⁴ G03C *1/52, 1/60, 5/16*

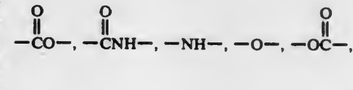
U.S. Cl. 430—197 **17 Claims**

1. A photosensitive resin composition which has a maximum absorption region of 290 nm or less and which comprises (a) at least one polymer compound selected from the group consisting of a novolak resin and a polyhydroxystyrene resin and (b) an azide compound represented by the general formula (1):

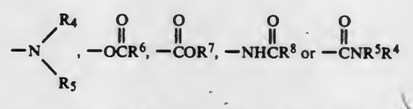


(1)

wherein X is $-N_3$ or $-SO_2N_3$, Y is



R^1 is a lower alkylene, a hydroxyalkylene or an aminoalkylene and Z is $-R^2$, $-OR^3$,



(wherein R^2 and R^6–R^8 are lower alkyl groups, R^4 and R^5 are lower alkyl or hydrogen, R^3 is hydrogen, a lower alkyl group or $-CH_2CH_2O)_n R^9$ wherein n is an integer of 3 or less and R^9 is hydrogen or a lower alkyl group) and wherein the amount of the azide compound represented by the general formula (1) is 0.5 to 150 parts by weight per 100 parts by weight of the polymer compound.

11. A method for forming fine patterns which comprises coating on a substrate the photosensitive resin composition according to claim 3, drying the coated composition to form a coating film, exposing imagewise this film and developing the film with an alkaline aqueous solution to dissolve and remove the unexposed portions.

4,554,238

SPECTRALLY-SENSITIZED IMAGING SYSTEM

Stanley C. Bushman, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 20, 1984, Ser. No. 591,419

Int. Cl.⁴ G03C *1/90*

U.S. Cl. 430—258 **26 Claims**

1. A photosensitive layer comprising a blend of:

(a) a light-transmissive film-forming polymeric material,

(b) at least one covalently-bonded, electron-accepting photolabile blocked surfactant when in said blend being

capable upon exposure to at least one wavelength of near UV, visible, or near IR radiation in the wavelength range 300 to 900 nm of releasing a detectable amount of surfactant in the exposed areas, and

(c) at least one electron-donating spectral sensitizing compound capable of conferring sensitivity to said surfactant to radiation within the wavelength range 300 to 900 nm.

16. A process of forming an image chosen from Processes I and II wherein

Process I comprises the steps of:

a. providing a support having bonded to one surface thereof a negative-acting imageable member comprising in sequence

(1) a frangible, thin layer,

(2) a photosensitive layer comprising a blend of:

(a) light-transmissive film-forming polymeric material;

(b) at least one covalently-bonded, electron-accepting, photolabile blocked surfactant when in said blend being capable upon exposure to radiation in the wavelength range of 300 to 900 nm of releasing a detectable amount of surfactant in the exposed areas, and

(c) at least one electron-donating spectral sensitizing compound capable of conferring sensitivity to said surfactant to radiation within the wavelength range of 300 to 900 nm, and

wherein the peel strength of the unexposed photosensitive layer to said frangible layer is greater than the peel strength of said frangible layer to said support,

b. exposing said photosensitive layer to radiation to which it is sensitive in an image-wise pattern at an intensity and for a time sufficient to release an image-wise pattern of released surfactant in the exposed area, wherein the peel strength of the exposed photosensitive layer to said frangible layer respectively becomes less than the peel strength of said frangible layer to said support, and

c. applying to the surface of the resulting imaged photosensitive layer an adherent layer,

d. separating the adherent and photosensitive layers from said support whereby in the exposed areas the frangible layer remains on said support whereas in the unexposed areas the frangible layer is removed from said support; and

Process II comprises the steps of:

a. providing a support having bonded to one surface thereof a positive-acting imageable member comprising in sequence

(1) a photosensitive layer comprising a blend of:

(a) light-transmissive film-forming polymeric material;

(b) at least one covalently-bonded, electron-accepting, photolabile blocked surfactant when in said blend being capable upon exposure to radiation in the wavelength range of 300 to 900 nm of releasing a detectable amount of surfactant in the exposed areas, and

(c) at least one electron-donating spectral sensitizing compound capable of conferring sensitivity to said surfactant to radiation within the wavelength range of 300 to 900 nm, and

(2) a frangible, thin layer,

b. exposing said photosensitive layer to radiation to which it is sensitive in an image-wise pattern at an intensity and for a time sufficient to release an image-wise pattern of released surfactant in the exposed area, wherein the peel strength of the unexposed photosensitive layer to said frangible layer is greater than the peel strength of said frangible layer to said adherent layer, and the peel strength of the exposed photosensitive layer to said frangible layer is less than the peel strength of said adherent layer to said frangible layer,

c. applying to the surface of the imaged photosensitive layer an adherent layer optionally on at least one surface of a second support,

d. separating the adherent layer from said actinic light sensitive area whereby the frangible layer in exposed areas is removed from the photosensitive layer and the frangible layer in unexposed areas remains on the photosensitive layer.

4,554,239

RECORDING MATERIAL CONTAINING A DYED THERMALLY COAGULATABLE PROTEINACEOUS COMPOUND

Takashi Kashiwagi, Tokyo, Japan, assignor to Process Shizai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 449,291, Dec. 13, 1982, abandoned, which is a continuation of Ser. No. 242,759, Mar. 11, 1981, abandoned, which is a division of Ser. No. 59,369, Jul. 20, 1979, Pat. No. 4,288,509. This application Feb. 11, 1985, Ser. No. 700,072

Claims priority, application Japan, Jul. 21, 1978, 53-88276

Int. Cl.⁴ G03C *1/76*; B32B *3/10*

U.S. Cl. 430—270 **8 Claims**

1. A thermal recording material for flash exposure and reflection printing comprising a transparent support having formed thereon a recording layer containing a thermally coagulatable proteinaceous compound, wherein a coloring material is present in said recording layer in an amount such that said recording layer has an average optical density in the wavelength region of 350 nm to 450 nm of at least about 1.5 and does not have an optical density greater than 1.5 at wavelength of about 560 nm or greater.

4,554,240

PHOTOSENSITIVE RECORDING MATERIAL WHICH CAN BE DEVELOPED WITH WATER, FOR THE PRODUCTION OF PRINTING PLATES, RELIEF PLATES OR RESIST IMAGES

Guenther Schulz, Ludwigshafen, and Manfred Zuerger, Sinsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,283

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322994

Int. Cl.⁴ G03C *1/68*

U.S. Cl. 430—285 **10 Claims**

1. A photosensitive water-developable recording material for the production of printing plates, relief plates or resist images, which comprises a photocurable relief-forming layer (RL) which is applied onto a dimensionally stable base, which layer (RL) includes

(a) as the sole photopolymerizable or photocrosslinkable component, a water-soluble or water-dispersible polyvinyl alcohol derivative which contains not less than 65 mole % of free hydroxyl groups, from 1 to 12 mole % of side groups possessing olefinic photocrosslinkable double bonds, and from 0 to 30 mole % of hydroxyl groups which are esterified and/or etherified with other, non-olefinic radicals and

(b) one or more photopolymerization initiators.

5. A photosensitive recording material as set forth in claim 1, wherein the olefinically unsaturated photopolymerizable or photocrosslinkable groups present in the polyvinyl alcohol derivative are radicals or derivatives of α,β-olefinically unsaturated carboxylic acids of 3 to 10 carbon atoms.

4,554,241

COLOR REPRODUCTION PROCESS

Wallace Edwards, P.O. Box 1265, Station B, Weston, Ontario, Canada (M9G 2R9)

Continuation-in-part of Ser. No. 595,815, Apr. 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 485,668, Apr. 18, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,659

Int. Cl.⁴ G03F *7/00*

U.S. Cl. 430—301 **11 Claims**

1. A method of printing on a sheet member a realistic reproduction of a colored original, utilizing a minimum of two different superimposed impressions, each with a different coloring medium, comprising:

(a) providing a colored original,

(b) creating a first printing plate intended to print a non-process red color, by

(1) making a green filter exposure of the original on a first means for recording a first optical image,

(2) making a blue filter exposure of the original on said first means,

steps (1) and (2) being carried out sequentially in any order,

(c) creating a second printing plate intended to print a second color different from that printed by said first plate, by

(3) making a red filter exposure of the original on a second means for recording a second optical image,

(4) making a blue filter exposure of the original on said second means,

steps (3) and (4) being carried out sequentially in any order,

(steps (b) and (c) being carried out in any order,

(d) providing a sheet member to receive two superimposed impressions, and

(e) using said first and second printing plates to print said red color and said different color, respectively, as the said superimposed impressions on said sheet member.

4,554,242

METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shigeru Ohno; Shinzo Kishimoto, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

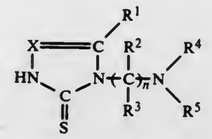
Filed Jan. 9, 1985, Ser. No. 690,068

Claims priority, application Japan, Jan. 12, 1984, 59-4018

Int. Cl.⁴ G03C *7/00*

U.S. Cl. 430—393 **20 Claims**

1. A method for processing a color photographic light-sensitive material by subjecting an exposed silver halide color photographic light-sensitive material to color development, then to bleaching and fixing or then to bleach-fixing, which method comprises using a ferric ion complex salt as a bleaching agent in the bleaching or bleach-fixing and incorporating at least one compound represented by general formula (I) described below or a tautomer thereof:



(I)

wherein X represents N or C—R; R, R^1, R^2 and R^3, which may be the same or different, each represents a hydrogen atom, a halogen atom, an amino group, a hydroxyl group, a carboxyl group, a sulfo group or an alkyl group; R^4 and R^5, which may be the same or different, each represents a hydrogen atom, an alkyl group or an acyl group or R^4 and R^5 may be bonded to each other to form a ring, provided that both R^4 and R^5 do not represent a hydrogen atom at the same time; and n represents an integer of 0 to 5, in a bleaching bath, bleach-fixing bath or in a prebath of the bleach-fixing bath.

4,554,243

SILVER HALIDE MATERIAL WITH PHOTOGRAPHIC AGENT BLOCKED BY NUCLEOPHILIC ATTACK REMOVABLE GROUP

Mitsunori Ono, and Isamu Itoh, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

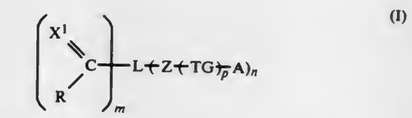
Filed May 25, 1984, Ser. No. 613,986

Claims priority, application Japan, May 25, 1983, 58-92083

Int. Cl.⁴ G03C *1/40, 1/34, 1/42, 1/10*

U.S. Cl. 430—543 **36 Claims**

1. A silver halide photographic light-sensitive material which comprises a support having thereon a light-sensitive silver halide emulsion layer, wherein the photographic light-sensitive material therein contains a blocked photographic agent capable of releasing a photographically useful agent, wherein the blocked photographic agent is a compound represented by formula (I):



(I)

wherein X^1 represents an oxygen atom or a sulfur atom; Z represents an electrophilic group; A represents a photographically useful agent moiety; TG represents a timing group; L represents a linking group which is bonded to



through a carbon atom thereof and L is capable of forming a 5-membered to 7-membered ring upon a nucleophilic attack of the oxygen atom or sulfur atom represented by X^1 on the electrophilic group represented by Z, said linking group being selected from the group consisting of an alkylene group, an alkyloxyalkylene group, an alkylaminoalkylene group, an alkenylene group, an arylene group, a cyclocyclene group, a heterocyclene group, an alkyleneamino group, an alkenyleneamino group, an aryleneamino group, a cyclocycleneamino group, a heterocycleneamino group and combinations thereof; R represents a hydrogen atom or a substituent which is bonded through a carbon atom thereof; m and n each is an integer of from 1 to 3; and p is 0 or 1.

3. A silver halide photographic light-sensitive material as in claim 1, wherein the photographic material is a silver halide color photographic light-sensitive material containing a color forming coupler.

4,554,244

SILVER HALIDE PHOTOSENSITIVE MATERIALS FOR COLOR PHOTOGRAPHY

Ryosuke Sato; Katsunori Kato; Takashi Sasaki, and Hiroshi Sugita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 540,719, Oct. 11, 1983, Pat. No. 4,465,766, which is a division of Ser. No. 522,818, Aug. 12, 1983, Pat. No. 4,451,559, which is a continuation of Ser. No. 385,096, Jun. 4, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 616,652

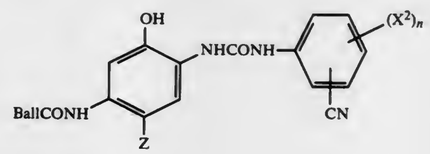
Claims priority, application Japan, Jun. 11, 1981, 56-90334; Jun. 11, 1981, 56-90335; Jun. 11, 1981, 56-90336

The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.⁴ G03C *7/26*

U.S. Cl. 430—552 **10 Claims**

1. A silver halide photosensitive material for color photography which comprises a phenol type cyan coupler having the formula



wherein

X^2 is a hydrogen atom, a halogen atom, a hydroxy group, a nitro group or a monovalent organic group;

Z is a hydrogen atom or a removable group upon coupling reaction of an oxidized product of a color developing agent;

Ball is a ballast group;

the CN group is positioned ortho or meta to the —NH-CONH— group; and n is an integer of 0 to 4 inclusive; provided that, when n is 2 or more, each X^2 group may be the same or different.

4,554,245

COLOR REVERSAL LIGHT-SENSITIVE MATERIALS

Yasuhiro Hayashi; Naoyasu Deguchi; Hiroyuki Yamagami; Kensuke Goda, and Kazunori Hasebe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1984, Ser. No. 575,376

Claims priority, application Japan, Jan. 28, 1983, 58-12276

Int. Cl.⁴ G03C *1/76*

U.S. Cl. 430—567 **16 Claims**

1. A color reversal photographic light-sensitive material, comprising:

a support base having thereon:

a silver halide emulsion layer comprised of a mixture of fine grain silver halide latent image forming particles having a particle size of 0.3μ or less, the fine grain particles being present in the emulsion in an amount in the range of about 30% to about 95% based on the total number of silver grains in the emulsion layer, and coarse grain silver halide latent image forming particles having a particle size of more than 0.3μ;

an organic compound present in the emulsion layer, the compound being an additive for improving tone reproduction and having a solubility product constant of 10^{-14} or less when forming a salt with a silver ion; and

colloid grains of an ingredient selected from the group consisting of metal, a metal sulfide and silver halide grains the surface of which is previously fogged, the colloid grains being present in a layer selected from the group consisting of the silver halide emulsion layer and a hydrophilic colloid layer, wherein said organic compound is a heterocyclic mercapto compound.

4,554,246

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Kiyohiko Yamamuro; Yasuo Iwasa, and Isamu Itoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

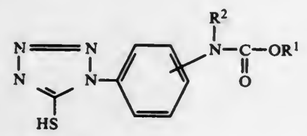
Filed Oct. 13, 1983, Ser. No. 541,649

Claims priority, application Japan, Oct. 13, 1982, 57-179378; Dec. 29, 1982, 57-230912

Int. Cl.⁴ G03C *1/06, 7/26, 1/84*

U.S. Cl. 430—611 **11 Claims**

1. A photographic silver halide light-sensitive material containing at least one of the compounds represented by general formula (I) as described below, their salts, and their precursors releasing the compounds of general formula (I) on cleavage under alkali conditions



(I)

wherein R^1 is a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group, and R^2 is a hydrogen atom, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group; R^1 and R^2 are the same or are different and can combine together to form a ring.

4,554,247

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kiyotoshi Yamashita, Hachioji; Minoru Ishikawa, Fussa; Hideo Ohta, and Kenji Kumashiro, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Feb. 13, 1984, Ser. No. 579,765

Claims priority, application Japan, Feb. 15, 1983, 58-23609

Int. Cl.⁴ G03C *1/30*

U.S. Cl. 430—622 **13 Claims**

1. A silver halide photographic material having as essential photographic layers at least one photosensitive silver halide emulsion layer and at least one nonsensitive hydrophilic colloidal layer on a support, at least one of said photographic layers containing fine oil globules at a density in the range of 1 to 100, and a hardener having at least three functional groups being incorporated in at least one photographic layer containing said fine oil globules and/or at least one photographic layer which is farther from said support than the photographic layer containing said fine oil globules, wherein the combination of said hardener and said density of 1 to 100 is effective to provide said silver halide photographic material with improved image sharpness and reduced bleeding.

4,554,248

COMPOSITION AND METHOD FOR DETECTING ANTISTREPTOLYSIN O

Lorrence H. Green, Westbury, and John W. Roberts, Commack, both of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,049

Int. Cl.⁴ G01N *33/54;* C12Q *3/00, 1/00, 1/04, 1/06;* C12N *9/99, 1/36;* A61K *39/02*

U.S. Cl. 435—7 **17 Claims**

6. A method for preparing a dry reversibly hemolytically inactive Streptolysin O (SO) reagent comprising mixing SO with a member selected from the group consisting of an acid, base or buffer in amount sufficient to maintain the pH greater than about 9 or less than about 5; drying the mixture, and isolating the dried reversibly hemolytically inactive SO which is suitable for analytical use for the detection of Antistreptolysin O(ASO) in a sample.

4,554,249

METHOD FOR THE QUANTITATIVE DETERMINATION OF PHYSIOLOGICAL COMPONENTS IN BIOLOGICAL FLUIDS

Akira Kosaka, Seto; Sawao Murao, Sakai; Kenichi Hirano, Iwakura; Noriaki Tanaka, Sakai, and Kuniyoshi Matsunaga, Ichinomiya, all of Japan, assignors to Amano Pharmaceutical Company Limited, Japan

Filed Oct. 25, 1982, Ser. No. 436,385

Claims priority, application Japan, Feb. 18, 1982, 57-25613; Jul. 23, 1982, 57-127632; Jul. 23, 1982, 57-127633

Int. Cl.⁴ C12Q *1/60, 1/54, 1/62, 1/26, 1/25;* C12N *9/02;* C07G *17/00, 7/00*

U.S. Cl. 435—10 **19 Claims**

1. In the method for the quantitative determination of an unknown concentration of a physiological component selected from the group consisting of glucose, cholesterol, neutral fats, free fatty acids, phospholipids and uric acid present in a biological fluid which comprises:

(a) reacting said component with an oxidizing enzyme in the presence of a color producing reagent, wherein the improvement comprises:

(b) pretreating or treating said biological fluid at an alkaline pH without the formation of H_2O_2, under conditions and for a sufficient amount of time to remove bilirubin with a second enzyme selected from the group consisting of Myrothecium sp. bilirubin oxidase, Coprinus sp. bilirubin oxidase, lacquer plant laccase and basidiomycete laccase, together with

(c) at least one additive agent selected from the group consisting of surface active agents, aromatic carboxylic acids, sulfa drugs, and proteases.

4,554,250

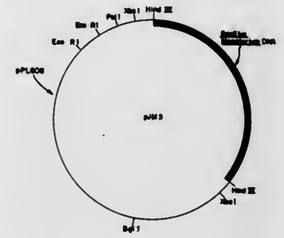
METHOD OF INCREASED PRODUCTION OF PENICILLIN ACYLASE AND PLASMID EMPLOYED THEREIN

John E. McCullough, Whitehouse Station, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 30, 1983, Ser. No. 509,501

Int. Cl.⁴ C12N *15/00, 1/20, 9/86, 1/00*

U.S. Cl. 435—172.3 **5 Claims**



1. Plasmid PJM3 characterized in that it has the entire nucleotide sequence of *Bacillus subtilis* plasmid pPL608 and an insert which is a 2.7 kb chromosomal DNA fragment of *Bacillus megaterium* ATCC 14945 containing the gene for penicillin acylase production which is inserted at the Hind III site of pPL608.

4,554,251

PROCESS AND MEDIUM FOR CULTURING ANT VENOM GLAND CELLS

Walter F. Hink, Jr., Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Filed Nov. 7, 1983, Ser. No. 549,170

Int. Cl.⁴ C12N *5/00;* C12P *1/00;* C12R *1/91;* A01N *63/02;* A61K *35/58*

U.S. Cl. 435—240 **39 Claims**

1. A process for culturing cells of the venom gland of the ant, *Pseudomyrmex triplarinus,* which process comprises:

removing venom gland tissue from a member of the species *Pseudomyrmex triplarinus;*

subjecting said removed venom gland tissue to the action of a protease and separating the individual cells in said venom gland tissue from one another;

culturing said separated cells in a cell culture medium substantially isotonic with said cells, said medium having a pH of about 7 and comprising at least about 5 g/l of carbohydrate, at least about 4 g/l of amino acids, at least about 4 g/l of adenosine 3',5'-cyclic monophosphoric acid, at least about 0.01 mg/l of isoproterenol, at least about 0.1 mg/l of guanosine 3',5'-cyclic monophosphate, at least about 10^{-7} g/l of hydrocortisone, at least about 10^{-7} g/l of epidermal growth factor, at least about 0.01 mg/l of fibroblast growth factor, at least about 10 mg/l of insulin, at least about 1 mg/l of transferrin and a source of at least about 1 mg/l of selenium, at least part of said medium having been conditioned, prior to contact with said cells, with *Spodoptera frugiperda* cells.

4,554,252

PLANT TISSUE CULTIVATION PROCESS

Tibor Farkas; László Vigh; Ibolya Horváth; Anikó Nagy née Vanicsek; Ferenc Föglein, all of Szeged; Annamária Mészáros, Budapest, and István Tóth, Sajóbábony, all of Hungary, assignors to Északmagyarországi Vegyimüvek, Sajóbábony, Hungary

Filed Dec. 13, 1982, Ser. No. 449,071

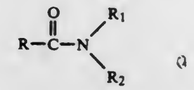
Claims priority, application Hungary, Dec. 18, 1981, 3840/81

Int. Cl.⁴ C12N *5/00*

U.S. Cl. 435—240 **5 Claims**

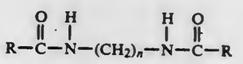
1. A process for improving the efficiency of in vitro propagation and tissue cultivation by tissue culture of cultivated plants, which comprises the step of:

treating the seeds or the roots of seedlings during micropropagation and subsequent planting or during micropropagation or subsequent planting, with an aqueous solution of 1–100 milligrams per liter of a compound of the formula



(I)

or mixtures thereof, or a compound of the formula



or mixtures thereof; wherein

R is methyl, chloromethyl, dichloromethyl or trichloromethyl;

R_1 and R_2 are each independently hydrogen, alkyl containing between 1 and 10 carbon atoms, alkenyl containing between 2 and 10 carbon atoms, cycloalkyl containing between 3 and 9 carbon atoms, phenyl, or benzyl, with the proviso that at least one of R_1 and R_2 is other than hydrogen; and

n is an integer from 1 to 8.

4,554,253

APPARATUS FOR SYNTHESIZING ADENOSINE-5'-TRIPHOSPHATE

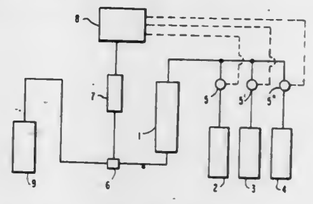
Kazutomo Imahori, No. 2-25-23, Kakinokisaka, Meguro-ku, Tokyo; Tatsuo Iwasaki, Kyoto; Hiroshi Nakajima, Kyoto; Hitoshi Kondo, Kyoto; Isao Tomioka, Kyoto; Masaru Kashima, Osaka, and Toshihiko Tsukamoto, Kyoto, all of Japan, assignors to Kazutomo Imahori; Rikagaku Kenkyusho and Unitika Ltd., all of, Japan

Filed Jan. 26, 1983, Ser. No. 461,309

Claims priority, application Japan, Jan. 26, 1982, 57-10338

Int. Cl.⁴ C12M *1/40*

U.S. Cl. 435—288 **8 Claims**



1. An apparatus for converting AMP into ATP comprising:

(a) an enzyme reactor having outlet conduit means and inlet conduit means, wherein said enzyme reactor contains:

(1) an enzyme which converts AMP into ADP, wherein said enzyme has been produced from microorganisms

having an optimum growth temperature of 50° C. to 85° C., and also contains

(2) an enzyme which converts ADP into ATP, wherein said enzyme has been produced from microorganisms having an optimum growth temperature of 50° C. to 85° C.;

(b) a source of AMP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(c) a source of phosphoric acid donator for converting AMP into ADP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(d) a source of phosphoric acid donator for converting ADP into ATP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(e) at least one variable fluid sending apparatus connected between each of said sources (b), (c) and (d), and said enzyme reactor, wherein at least one of said variable fluid sending apparatus controls the flow of AMP from said source of AMP (b), the flow of phosphoric acid donator from said source of phosphoric acid donator (c) and the flow of phosphoric acid donator from said source of phosphoric acid donator (d), into said enzyme reactor;

(f) a recovery apparatus connected to said enzyme reactor outlet conduit means through;

(g) an automatic sampling apparatus;

(h) an analyzing apparatus which analyzes the concentrations of ATP, ADP and AMP in the reaction solution flowing from said enzyme reactor, wherein said analyzing apparatus provides signals indicative of said concentrations to;

(i) an arithmetical control apparatus which on the basis of signals received from said analyzing apparatus (h) and signals of previously prescribed values stored therein, provides signals to at least one of said variable fluid sending apparatus (e) to control the amount of flow from said sources (b), (c) and (d) to said enzyme reactor so as to maintain the ATP conversion in said enzyme reactor or the ATP concentration in said enzyme reactor outlet conduit means at previously prescribed values.

5. An apparatus for converting ADP into ATP comprising:

(a) an enzyme reactor having outlet conduit means and inlet conduit means, wherein said enzyme reactor contains:

(1) an enzyme which converts ADP into ATP, wherein said enzyme has been produced from microorganisms having an optimum growth temperature of 50° C. to 85° C.;

(b) a source of ADP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(c) a source of phosphoric acid donator for converting ADP into ATP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(d) at least one variable fluid sending apparatus connected between each of said sources (b) and (c) and said enzyme reactor, wherein at least one of said variable fluid sending apparatus controls the flow of ADP from said source of ADP (b) and the flow of phosphoric acid donator from said source of phosphoric acid donator (c) into said enzyme reactor;

(e) a recovery apparatus connected to said enzyme reactor outlet conduit means through;

(f) an automatic sampling apparatus;

(g) an analyzing apparatus which analyzes the concentrations of ATP, ADP and AMP in the reaction solution flowing from said enzyme reactor, wherein said analyzing apparatus provides signals indicative of said concentrations to;

(h) an arithmetical control apparatus which on the basis of signals received from said analyzing apparatus (g) and signals of previously prescribed values stored therein, provides signals to at least one of said variable fluid sending apparatus (d) to control the amount of flow from said sources (b) and (c) to said enzyme reactor so as to maintain the ATP conversion in said enzyme reactor or the ATP concentration in said enzyme reactor outlet conduit means at previously prescribed values.

4,554,254

PROTEIN ASSAY BY SILVER BINDING

Gerald Krystal, 1153 E. 19th Ave., Vancouver, B.C., Canada (V6V 1K9)

Filed Dec. 17, 1984, Ser. No. 682,338
Claims priority, application Canada, Dec. 4, 1984, 469261
Int. Cl.[4] G01N *21/78, 33/68*
U.S. Cl. 436—86 **19 Claims**

1. A method of measuring the concentration of protein in solution comprising:

(a) treating a protein containing sample solution with a silver-on-protein deposition enhancement agent;

(b) exposing the treated protein containing sample solution of step (a) above to a silver compound to develop a protein specific colour with the protein in the sample solution by protein-silver binding;

(c) terminating the exposure reaction of step (b) above after sufficient protein specific colour development and a minimum of non-specific darkening has occurred; and

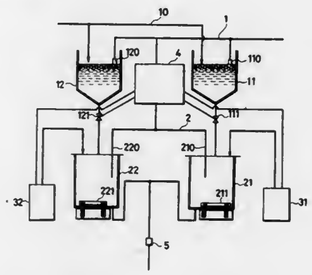
(d) measuring the optical density of the exposure terminated protein containing sample solution of step (c) above as a measure of the protein concentration above.

4,554,255

DETERMINATION OF SULFUROUS ACID IN LIQUIDS AND AN APPARATUS THEREFOR

Katsuyoshi Ishii; Michio Kobori, and Selichi Morimoto, all of Nara, Japan, assignors to Sanwa Shoji Co., Ltd., Nara, Japan

Filed Jul. 6, 1983, Ser. No. 511,147
Claims priority, application Japan, Jul. 9, 1982, 57-120379
Int. Cl.[4] G01N *33/00, 33/16*
U.S. Cl. 436—102 **4 Claims**



1. A method for the determination of sulfurous acid in a liquid, comprising:

(a) measuring the pH value of a first sample of a liquid containing sulfurous acid,

(b) adding to said first sample of liquid an excess of hydrogen peroxide to convert said sulfurous acid to sulfuric acid, and measuring the pH value of said first sample of liquid containing hydrogen peroxide,

(c) adding a predetermined amount of an acid or a lower pH buffer solution to a second sample of said liquid containing sulfurous acid and measuring the pH value of said second sample of said liquid containing the acid or the lower pH buffer solution, and

(d) calculating the concentration of sulfurous acid in said liquid based on the above-measured pH values and an equation derived from the functional relationship:

$$c=f(\Delta pH_A, \Delta pH_B)$$

wherein c is the concentration of sulfurous acid contained in said sample liquid, ΔpH_A is the difference in pH value between the pre- and the post-addition of hydrogen peroxide to said first sample of said liquid, and ΔpH_B is the difference in pH value between the pre- and the post-addition of an acid or a lower pH buffer solution to said second sample of said liquid.

2. An apparatus for determining the concentration of sulfurous acid in a liquid comprising:

(a) first and second measuring means for collecting predetermined amounts of a liquid containing sulfurous acid and generating first and second signals, respectively, when said first and second measuring means contain said predetermined amounts,

(b) first and second normally closed control valves operatively connected to said first and second measuring means, respectively, for dispensing liquid from said first and second measuring means,

(c) first and second pH-measuring means operatively connected to said first and second control valves, respectively, for receiving liquid from said first and second measuring means, respectively,

(d) first and second automatic burette means operatively connected to said first and second pH-measuring means, respectively,

(e) control means operatively connected to said first and second measuring means, said first and second control valves, said first and second pH-measuring means and said first and second automatic burette means, said control means having an operative mode wherein it receives said first and second signals and in response thereto generates third and fourth signals to open said first and second control valves, respectively, and dispense predetermined amounts of a liquid containing sulfurous acid from said first and second measuring means to said first and second pH-measuring means, respectively, to obtain first and second samples therein, said control means then generates fifth and sixth signals to activate said first and second pH-measuring means, respectively, to measure the pH of said first and second samples and generate seventh and eighth respective signals representative thereof, said control means receives and records said seventh and eighth signals and then generates a ninth signal to activate said first automatic burette means to add a predetermined amount of hydrogen peroxide to said first sample in said first measuring means, a tenth signal to activate said second automatic burette means to add a predetermined amount of an acid or low pH buffer solution to the second sample in said second pH-measuring means, and an eleventh and twelfth signal to activate said first and second pH measuring means after the addition of hydrogen peroxide, acid or low pH buffer solution to measure the pH of said first and second samples and generate thirteenth and fourteenth respective signals representative thereof, said control means receives and records said thirteenth and fourteenth signals and then calculates and displays the concentration of sulfurous acid in said liquid by an equation based on the functional relationship:

$$c=f(\Delta pH_A, \Delta pH_B)$$

wherein c is the concentration of sulfurous acid in said liquid, ΔpH_A is a value corresponding to a difference between said seventh and thirteenth signals, and ΔpH_B is a value corresponding to a difference between said eighth and fourteenth signals.

4,554,256

ANTIGEN ASSOCIATED WITH EARLY DETECTION OF MAMMALIAN PREGNANCY

R. Garth Sasser, Moscow, and William C. Hamilton, Emmett, both of Id., assignors to The Idaho Research Foundation, Inc., Moscow, Id.

Filed Jul. 21, 1983, Ser. No. 516,173
Int. Cl.[4] G01N *33/54, 33/56, 33/68*
U.S. Cl. 436—510 **6 Claims**

1. A method for detecting pregnancy of a bovine or ovine host, said method comprising:

combining serum or blood from said host with antibody which specifically binds to Protein B, said Protein B being characterized by having a molecular weight in the range of about 47–53 kD, an isoelectric point in the range of about 4.0–4.4 and isolatable from bovine placental membrane homogenates, and detecting complex formation between said antibody and an antigen present in said blood or serum, wherein complex formation is indicative of pregnancy of said host.

4,554,257

ASSAYING IMMUNOREACTIVE AND LIKE SUBSTANCES BY MEASUREMENT OF AGGREGATE CLASSES

Frederick J. Aladjem, and Padmasini K. Ayengar, both of 845 Las Palmas Rd., Pasadena, Calif. 91102

Filed Apr. 29, 1983, Ser. No. 489,734
Int. Cl.[4] G01N *33/54, 35/00*
U.S. Cl. 436—519 **53 Claims**

1. The method for assaying the extent of particle agglutination due to reaction of a first substance present on insoluble carrier particles and a complementary second substnace, comprising

identifying, for particle aggregate due to reaction of said substances, at least one limited class of aggregate for which the aggregate count or counts reflect espacially sensitively the overall extent of agglutination,

measuring individual particle aggregates due to the reaction to be assayed to develop for each measured aggregate electrical class signals distinctive of said class or classes,

processing the signals to derive the number of aggregate of each identified class,

and using the resulting number or numbers as a measure of the extent of agglutination.

4,554,258

CHEMICAL RESISTANT LEAD-FREE GLASS FRIT COMPOSITIONS

Josef Francel, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 28, 1984, Ser. No. 625,385
Int. Cl.[4] C03C *3/08*
U.S. Cl. 501—21 **12 Claims**

1. A glass frit composition that is free of lead, cadmium and arsenic, the composition having a fiber softening point of at least about 535° C., the composition having good chemical resistance and consisting essentially of the following components in parts by weight per 100:

COMPONENT	PARTS
Bi_2O_3	48–57
SiO_2	29–38
B_2O_3	3–8
R_2O	2–8
TiO_2	0–2
ZrO_2	0–8
Al_2O_3	0–2
BaO	0–4
ZnO	0–3
CaO	0–9

wherein RO is 0-about 9, R_2O_3 is about 57–64, and RO_2 is about 32–39, the alkali resistance in weight % loss being below about 0.9, measured using 9% sodium pyrophosphate at 60° C. for 8 hours, and the acid resistance in weight % loss being below about 0.9, measured using 4% by weight acetic acid for 24 hours at room temperature, RO being at least one of BaO, CaO or ZnO, and R_2O being an alkali metal oxide.

4,554,259

LOW EXPANSION, ALKALI-FREE BOROSILICATE GLASS SUITABLE FOR PHOTOMASK APPLICATIONS

Brian Franklin, Kingston, Pa., and Karl-Heinz Mader, Delligsen, Fed. Rep. of Germany, assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed May 8, 1984, Ser. No. 608,304
Int. Cl.⁴ C03C *3/08*
U.S. Cl. 501—67 **17 Claims**

1. An alkali-free glass having a refractive index of at least 1.50, an Abbe number of at least 55, a density of not more than 3.0, and a thermal expansion coefficient of not more than 40.5×10^{-7}/°C. over 20°–300° C., and consisting essentially of, in weight percent:

SiO_2	50–60%
B_2O_3	1–6%
Al_2O_3	12–15%
MgO	0–2.5%
CaO	0–5.1%
BaO	9–10%
ZnO	12–18%
CeO_2	0–5%
As_2O_3 + Sb_2O_3	0–1.5%
PbO	0–1%

Sum MgO×CaO×BaO ×ZnO=21–33.5.

4,554,260

TWO STAGE PROCESS FOR IMPROVING THE CATALYST LIFE OF ZEOLITES IN THE SYNTHESIS OF LOWER OLEFINS FROM ALCOHOLS AND THEIR ETHER DERIVATIVES

Wim J. M. Pieters, Morristown, N.J., and Yoshiharu Okumura, Tokyo, Japan, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1984, Ser. No. 630,636
Int. Cl.⁴ B01J *29/28*
U.S. Cl. 502—61 **4 Claims**

1. A process for modifying a crystalline shape selective acidic metalosilicate zeolite free of coke deposits thereon, wherein said metal of the metalosilicate is selected from the group consisting of aluminum, gallium and mixtures thereof to improve the catalyst life thereof when said modified zeolite is used to convert a hydrocarbon feed comprising at least one member selected from the group consisting of monohydric alcohols having from 1 to about 4 carbon atoms, ethers derived from said alcohols, and mixtures thereof, to an olefin containing product at a conversion reaction temperature of from about 300° to about 350° C., which zeolite, prior to said modification, is:

(a) capable of catalyzing said hydrocarbon conversion reaction;

(b) has a channel size and structure such as to permit (i) entry of the hydrocarbon feed into the zeolite and diffusion to the active acid sites within the zeolite, and (ii) formation of olefin products within said zeolite and diffusion of said products out of the zeolite; and

(c) hydrothermally stable at temperatures of at least about 290° C.; which process comprises:

(A) contacting said zeolite with coke precursor forming hydrocarbon feed from a period of from about 0.5 to about 4 hours, said coke precursor forming hydrocarbon feed being (i) comprised of at least one member selected from the group consisting of monohydric alcohols having from 1 to about 4 carbon atoms, ethers derived from said alcohols, olefins having from about 1 to about 5 carbon atoms, and mixtures thereof; and (ii) heated to a temperature of from about 320° to about 350° C.; and

(B) contacting the zeolite, treated in accordance with Step (A), with an inert gas heated to a temperature of from about 350° to about 425° C. for a period of at least 1 hour, the inert gas being selected from the group consisting of nitrogen, helium, argon, methane and mixtures thereof.

4,554,261

COMPOSITION AND METHOD FOR REMOVING CHLORAMINE FROM WATER CONTAINING SAME

Anthony J. Gergely, Converse, and Ralph A. Nichols, Kerrville, both of Tex., assignors to Jungle Laboratories Corporation, Cibolo, Tex.

Filed Jul. 23, 1984, Ser. No. 633,027
Int. Cl.⁴ B01J *20/16*
U.S. Cl. 502—62 **8 Claims**

1. A composition for the removal of chloramine from water comprising a zeolite having a coating of sodium thiosulfate thereon.

8. A composition for the removal of chloramine from water comprising clinoptilolite resin having a coating thereon of a mixture of sodium thiosulfate, ascorbic acid and methylene blue.

4,554,262

CHIRAL HYDROGENATING CATALYSTS

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1984, Ser. No. 655,816
Int. Cl.⁴ B01J *29/10, 29/30*
U.S. Cl. 502—62 **11 Claims**

1. A process for preparing an asymmetric hydrogenation catalyst which comprises contacting a Group VIII metal-containing acidic zeolite with an optically active amine.

5. The process of claim 1 wherein said optically active amine is selected from the group consisting of (S)-(−)-alpha-methylbenzylamine and (S)-(−)-2-methylbutylamine.

6. The process of claim 1 wherein said optically active amine is selected from the group consisting of (S)-(+)-alanine, (S)-(+)-valine and (R)-(−)-valine.

4,554,263

CATALYSTS FOR HYDROTREATING HEAVY OILS

Jun Fuchikami, Koga, and Takemithu Yano, Kitakyushu, both of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,795
Claims priority, application Japan, May 10, 1983, 58-81568
Int. Cl.⁴ B01J *29/14, 29/16*
U.S. Cl. 502—66 **9 Claims**

4. A catalyst for hydrotreating heavy oils, which comprises: a hydrogenation, metal catalyst deposited on a catalyst carrier, said hydrogenation, metal catalyst comprising a first metal selected from the group consisting of nickel, cobalt, and mixture thereof, and a second metal selected from the group consisting of molybdenum, tungsten and mixture thereof, said catalyst carrier comprising a mixture of Y-faujasite, alumina and sulfate anions ($SO_4^=$), said catalyst containing incorporated therein from 1 to 15 wt. % of said sulfate anions.

4,554,264

PROCESS FOR PRODUCING α-OLEFIN POLYMERS USING NOVEL CATALYST SYSTEM

Akinobu Shiga, Koganei; Toshio Sasaki, Ichihara; Junpei Kojima, Ichihara, and Akira Nunose, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 16, 1984, Ser. No. 631,177
Claims priority, application Japan, Jul. 27, 1983, 58-138471
Int. Cl.⁴ C08F *4/64*
U.S. Cl. 502—112 **8 Claims**

1. A solid catalyst component for polymerization of α-olefins obtained by steps of

(i) reducing titanium tetrachloride with an organoaluminum compound represented by the general formula $R^1_nAlY_{3-n}$, wherein R^1 represents a C_1–C_{18} hydrocarbon group, Y represents a halogen, and n represents a number satisfying $1<n<3$,

(ii) heat-treating the reduction product at a temperature range of 70° to 130° C., wherein the period of the heat treatment is between 15 minutes and 6 hours,

(iii) treating the thus obtained solid product containing γ-titanium trichloride by preliminary polymerization of an α-olefin in the presence thereof, wherein the amount of α-olefin preliminary polymerized is 0.01 to 5 g per 1 g of the solid product,

(IV) reacting the resulting solid product with a halogen represented by the general formula X_2, wherein X represents Cl, Br, or I, and/or an interhalogen compound represented by the general formula X′X″a, wherein X′ and X″ represent each Cl, Br, or I and a represents 1 or 3, and with an ether compound represented by the general formula R^2—O—R^3, wherein R^2 and R^3 are the same or different and represent each a C_1–C_{10} alkyl group, in a hydrocarbon solvent at a temperature of 50° to 100° C.

4,554,265

POLYMERIZATION CATALYST

Victoria Graves, Crosby, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1984, Ser. No. 626,172
Int. Cl.⁴ C08F *4/64*
U.S. Cl. 502—113 **20 Claims**

1. A supported olefin polymerization catalyst prepared under anhydrous conditions by the steps of:

(1) sequentially

(a) preparing a slurry of inert particulate support material;

(b) adding to said slurry a solution of an organomagnesium compound,

(c) adding to said slurry and reacting a solution of zirconium compound, and

(2) thereafter

(d) adding to said slurry and reacting a halogenator,

(e) adding to said slurry and reacting a tetravalent titanium compound, and

(f) recovering solid catalyst.

4,554,266

COPPER-MAGNESIUM CATALYST AND METHOD FOR ALKYLATION OF HYDROXYAROMATIC COMPOUNDS THEREWITH

James G. Bennett, Glenmont, and Gregory R. Chambers, Delmar, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,683
Int. Cl.⁴ B01J *23/00;* C07C *37/16*
U.S. Cl. 502—344 **29 Claims**

1. A method for preparing a solid composition which comprises initially blending (1) a magnesium reagent which yields magnesium oxide upon calcination with (2) copper in elemental or chemically combined form and calcining the resulting blend at a temperature within the range of about 350°–550° C., the amounts of said basic magnesium reagent and copper being such that the calcined product contains about 0.25–2% copper by weight based on magnesium oxide.

13. A catalyst composition comprising an intimate blend of magnesium oxide and copper in elemental or chemically combined form, the amount of said copper being about 0.25–2% by weight based on said magnesium oxide.

4,554,267

CATALYST AND METHOD FOR ORTHO-ALKYLATION OF HYDROXYAROMATIC COMPOUNDS

Gregory R. Chambers, Rexford, and James G. Bennett, Jr., Glenmont, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,684
Int. Cl.⁴ B01J *23/76;* C07C *37/16*
U.S. Cl. 502—340 **29 Claims**

1. A method for preparing a solid catalyst composition which comprises preparing, at a temperature within the range of about 50°–100° C., a slurry of (1) a substantially water-insoluble magnesium reagent which yields magnesium oxide upon calcination in (2) an aqueous solution of at least one copper salt, the copper content of said slurry being about 0.02–0.1% by weight of the magnesium reagent content thereof, thereby producing a magnesium-containing solid phase with a copper-containing coating of submicroscopic thickness thereon; removing and drying said solid phase; and calcining the same at a temperature within the range of about 350°–550° C.

15. In a method for alkylating at least one hydroxyaromatic compound having a free ortho-position by the catalytic reaction of the same with at least one primary or secondary alkanol containing up to 7 carbon atoms, the improvement which comprises carrying out said reaction at a temperature up to about 475° C. in the presence of a solid catalyst composition prepared by a method which comprises preparing, at a temperature within the range of about 50°–100° C., a slurry of (1) a substantially water-insoluble magnesium reagent which yields magnesium oxide upon calcination of (2) an aqueous solution of at least one copper salt, the copper content of said slurry being about 0.02–0.1% by weight of the magnesium reagent content thereof, thereby producing a magnesium-containing solid phase with a copper-containing coating of submicroscopic thickness thereon; removing and drying said phase; and calcining the same at a temperature within the range of about 350°–500° C.

4,554,268

PROCESS FOR THE PREPARATION OF MODIFIED REFRACTORY OXIDES

Emmanuel E. A. Neel; Jacques A. Levavasseur, both of Grand-Couronne, France, and Donald Reinalda, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 17, 1984, Ser. No. 650,745
Claims priority, application France, Oct. 14, 1983, 83 16373
Int. Cl.⁴ B01J *21/04, 21/08*
U.S. Cl. 502—439 **18 Claims**

1. A process for the preparation of modified refractory oxides which comprises: (1) impregnating, via an impregnation solution, a refractory oxide or mixtures thereof, said impregnation solution comprising:

(i) a solution of a hydrocarbyl ammonium metallate; or

(ii) two solutions, said first of said two solutions containing a hydrocarbyl ammonium hydroxide and said second of said two solutions containing a compound of a metal selected from the group consisting of a metal of Group IIA, IIIA, IVA, and IVB of the Periodic Table of Elements; and after said impregnation; (2) drying said modified refractory oxide at a temperature of from 50°–250° C.; (3) calcining said dried modified refractory oxide at a temperature of from 250°–1000° C.; and (4) recovering the resultant calcined modified refractory oxide.

4,554,269

KASUGAMYCIN DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Takao Takaya, Kawanishi; Nobuyoshi Yasuda, Nishinomiya; Hideo Tsutsumi, Toyonaka, and Keiji Matsuda, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

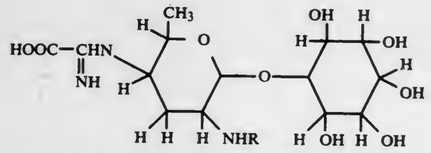
Filed Jan. 24, 1984, Ser. No. 573,377

Claims priority, application United Kingdom, Jan. 28, 1983, 8302439; Jun. 20, 1983, 8316699

Int. Cl.[4] A61K *31/71;* **C07H** *15/20*

U.S. Cl. 514—35 **13 Claims**

1. Aminoglycoside derivatives of the formula:



wherein R is higher alkanoyl or higher alkenoyl having 7 to 24 C atoms, and pharmaceutically acceptable salts thereof.

5. A method of treating a viral infection comprising administering to a patient subjected to such infection an effective amount of the compound of claim 1 or pharmaceutically acceptable salts thereof.

4,554,270

PESTICIDAL COMPOSITION CONTAINING A SYNERGISTIC COMBINATION OF 3-HYDROXYMETHYLACRYLIC ACID METHYL ESTER DIMETHYLTHIONOPHOSPHATE AND CYPERMETHRIN

Volker Dittrich, Zeiningen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 500,491, Jun. 2, 1983, Pat. No. 4,500,521. This application Nov. 16, 1984, Ser. No. 672,049

Claims priority, application Switzerland, Jun. 7, 1982, 3505/82

Int. Cl.[4] A01N *57/00*

U.S. Cl. 514—120 **2 Claims**

1. A composition for control of insects and acarids which comprises at least an insecticidally and acaricidally effective amount of a mixture of (i) methyl 3-hydroxymethacrylate-O,O-dimethylthionophosphate and (ii) alpha-cyano-3-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate in a weight ratio of from about 3500:1 to about 10:1 in a carrier therefor.

4,554,271

USE OF HIGH DOSES OF DERIVATIVES OF 6α-METHYLPREDNISOLONE FOR THE ACUTE TREATMENT OF STROKE SYNDROME

J. Mark Braughler, Kalamazoo, and Edward D. Hall, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 24, 1984, Ser. No. 582,987

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—179 **5 Claims**

1. A method of treating stroke syndrome which comprises administering intravenously to a human in need of such treatment, an amount of a compound selected from the group consisting of a water soluble 21-dibasic ester of 1-dehydro-6α-methylhydrocortisone and their salts, molar equivalent to from about 60 mg/kg/day to about 100 mg/kg/day of 1-dehydro-6α-methylhydrocortisone, in a pharmaceutically acceptable carrier.

4,554,272

SUBSTITUTED QUINAZOLINO-1,4-BENZODIAZEPIN-6,9-DIONES AND THEIR PREPARATION

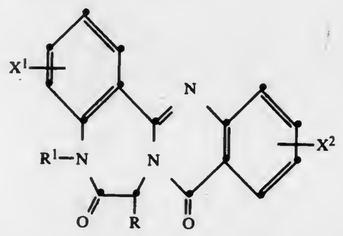
Mark G. Bock, and Roger M. Freidinger, both of Hatfield,, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 25, 1985, Ser. No. 695,119

Int. Cl.[4] A61K *31/55;* **C07D** *403/14*

U.S. Cl. 514—219 **11 Claims**

1. A compund of the formula:



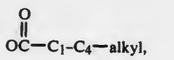
(I)

wherein:

X^1 and X^2 are independently selected from H, Br, Cl, F, OH,

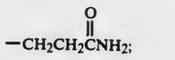
and O-C_1-C_4-alkyl;

R is H; C_1-C_5-alkyl; hydroxy-C_1-C_4alkyl; C_3-C_7-cycloalkyl; C_1-C_5-aralkyl, wherein the aryl moiety is phenyl or naphthyl, which is unsubstituted or monosubstituted on the aromatic ring by Br, Cl, F, OH, O-C_1-C_4-alkyl, O-CH_2-phenyl,



NO_2, CN, CF_3, or OSO_3H; CH_2-imidazole; CH_2-thiophene; CH_2-2-indole; CH_2-3-indole; CH_2-2-indoline; CH_2-3-indoline;

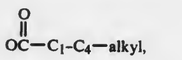




$CH_2CH_2SCH_3$; or



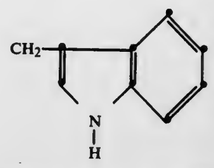
where R^2 is C_1-C_4-alkyl; C_3-C_7-cycloalkyl; C_1-C_4-aralkyl, wherein the aryl moiety is phenyl or naphthyl, which is unsubstituted or monosubstituted on the ariomatic ring by Br, Cl, F, OH, O-C_1-C_4-alkyl,



C_1-C_4-alkyl, CF_2, NO_2, NH_2, $N(CH_3)_2$, CN or S-C_1-C_4-alkyl; 2-indole or 3-indole, which is unsubstituted or monosubstituted by F, Cl, Br, OH, NO_2 or O-C_1-C_4-alkyl;

thiophene; imidazole; benzofuran; benzothiophene; or benzimidazole; and

R^1 is H, or C_1-C_4-alkyl, or $(CH_2)_nCO_2H$, where n is 1 to 3; (excluding compounds where X^1 and X^2 are H, R is



and R^1 is H) and pharmaceutically-acceptable salts thereof.

7. A method of effecting cholesystokinin inhibition in mammals which comprises administering an effective amount of a compound according to claim 1.

4,554,273

2-AMINO-5-PHENYL-1,3-BENZODIAZEPINES

Michel Bayssat, Charbonnieres; Gerard Ferrand, and Jean-Claude Depin, both of Lyons, all of France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Paris, France

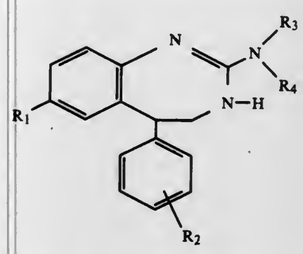
Filed Feb. 7, 1984, Ser. No. 578,046

Claims priority, application France, Feb. 16, 1983, 83 02475

Int. Cl.[4] A61K *31/55;* **C07D** *243/04, 403/12, 403/04*

U.S. Cl. 514—221 **12 Claims**

1. A 2-amino-5-phenyl-1,3-benzodiazepine, of the formula I



I

wherein R_1 and R_2 are hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, with R_2 capable of occupying any vacant position on the aromatic ring; R_3 is hydrogen or C_1-C_4 alkyl; R_4 is hydrogen; C_1-C_4-alkyl; C_4-C_7 cycloalkyl; arylalkyl or heteroarylalkyl of the formula Ar-Alk wherein Ar is pyridyl, 2-furyl, unsubstituted phenyl or phenyl mono- or poly-substituted with halogen, C_1-C_4-alkyl, C_1-C_4 alkoxy, nitro, or amino, and Alk is methylene or ethylene substituted or unsubstituted with hydroxy; di(c_1-C_4-alkyl)aminoethyl; di(C_1-C_4-alkyl)amino; C_1-C_4-alkoxycarbonyl; or cyano with the proviso that when R_4 is cyano, R_3 is hydrogen; or R_3 and R_4 form, with the adjacent nitrogen atom, methyl piperazinyl;

or a pharmaceutically acceptable salt thereof.

10. A method for treating depression in mammals comprising administering a compound of claim 1 to said mammal in an amount sufficient to alleviate depression.

4,554,274

N_bQUATERNARY DERIVATIVES OF AJMALINE AND ISOAJMALINE, METHODS AND INTERMEDIATE PRODUCTS IN THE MANUFACTURE OF THEIR DERIVATIVES AND METHOD OF USING SAME AND PHARMACEUTICAL COMPOSITIONS THEREOF

Wolfgang Kehrbach, Hanover; Joachim Wegener, Algermissen; Ulrich Kuehi, Hanover; Renke Budden, Hanover, and Gerd Buschmann, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

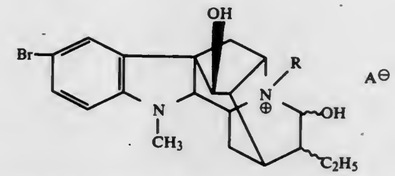
Continuation of Ser. No. 391,822, Jun. 24, 1982, abandoned, which is a continuation of Ser. No. 195,487, Oct. 9, 1980, abandoned. This application May 31, 1984, Ser. No. 615,757

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941529

Int. Cl.[4] A61K *31/435;* **C07D** *455/00, 471/08*

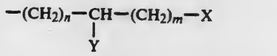
U.S. Cl. 514—239 **8 Claims**

1. A N_b-quaternary 10-bromoajmaline and 10-bromoisoajmaline compound of the formula I



(I)

wherein R is a carbon-attached organic residue containing 1 to 10 carbon atoms and having the formula II



(II)

wherein n is 0 or 1; m is 0 or 1; x is hydrogen, hydroxy straight or branched alkyl which is unsubstituted or is substituted by hydroxy, alkoxy, halogen or dialkylamine, phenyl which is unsubstituted or is substituted by alkyl alkoxy or halogen, dialkylamine, pyrrolidine, piperidine or morpholine; and y is hydrogen, hydroxy or methyl or x and y together form a bond with the proviso that when y is hydroxy n is 1 and that when x and y together form a bond n and m each are 1 and $A^{\ominus}$ is an anion of a pharmacologically acceptable organic or inorganic acid.

7. A pharmaceutical composition comprising a cardiac rhythm regulative effective amount of a compound as defined in claim 1 and an inert pharmaceutical carrier.

8. A method of treating heart rhythm disorders in larger mammals which comprises administering to a larger mammal an effective amount of a compound as defined in claim 1.

4,554,275

TRIAZINE DERIVATIVES

Kenji Sempuku, Suita; Yoshihisa Shibata, Kameoka, and Tadaaki Ohgi, Nagaokakyo, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

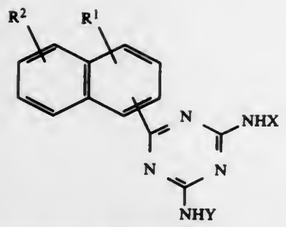
Filed Dec. 12, 1983, Ser. No. 560,445

Claims priority, application Japan, Dec. 10, 1982, 57-217529

Int. Cl.[4] C07D *251/18, 401/12;* **A61K** *31/455, 31/53*

U.S. Cl. 514—245 **18 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein R^1 and R^2 are the same or different and each is halo, alkoxy of 1 to 4 carbon atoms or aralkyloxy of 1 to 4 carbon atoms in the alkyl moiety; or R^1 and R^2 are each hydroxy, wherein the aryl moiety is phenyl; and X and Y are each hydrogen or nicotinoyl or at least one of X and Y is nicotinoyl and R^1 and R^2 are the same or different and each is hydrogen, hydroxy, halo, alkoxy of 1 to 4 carbon atoms or aralkyloxy of 1 to 4 carbon atoms in the alkyl moiety wherein the aryl moiety is phenyl.

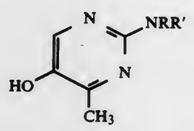
4,554,276

2-AMINO-5-HYDROXY-4-METHYLPYRIMIDINE DERIVATIVES

John L. LaMattina, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

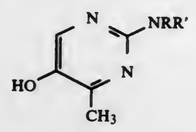
Filed Oct. 3, 1983, Ser. No. 538,233
Int. Cl.[4] A61K *31/505*; C07D *239/47*
U.S. Cl. 514—272 **13 Claims**

1. A pharmacologically - active substituted pyrimidine having the formula:



wherein R is hydrogen or methyl and R′ is hydrogen, $(C_3–C_8)$ alkenyl, phenyl, furyl, thienyl, or phenylhexyl, or R and R′ together with the nitrogen atom to which they are attached form a substituted piperidyl group wherein the substituent is $(C_7–C_{12})$ phenylalkyl, or a pharmceutically-acceptable acid addition salt thereof.

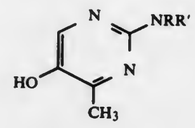
6. A pharmaceutical composition for the treatment of inflammation conditions or gastrointestinal disorders comprising an anti-inflammatory or gastric anti-secretory effective amount of a substituted pyrimidine having the formula:



(I)

wherein R is hydrogen or $(C_1–C_{15})$ alkyl and R′ is hydrogen, $(C_1–C_{15})$ alkyl, $(C_5–C_8)$ cycloalkyl, $(C_3–C_{15})$ alkenyl, phenyl, furyl, thienyl, $(C_7–C_{20})$ aralkyl or substituted aralkyl wherein the substitutent is halo, $(C_1–C_3)$ alkyl, $(C_1–C_3)$ alkoxy or trifluoromethyl; or R and R′ together with the nitrogen atom to which they are attached form a piperidyl group, a substituted piperidyl group wherein the substituent is $(C_1–C_{15})$ alkyl or $(C_7–C_{20})$ aralkyl, or a pyrrolidinyl group, or a pharmaceutically-acceptable acid addition salt thereof, in admixture with a pharmaceutically-acceptable dilent or carrier.

11. A method for the treatment of inflammation conditions in a patient, which comprises administering to the patient an anti-inflammatory effective amount of a substituted pyrimidine having the formula:



(I)

wherein R is hydrogen or $(C_1–C_{15})$ alkyl and R′ is hydrogen, $(C_1–C_{15})$ alkyl, $(C_5–C_8)$ cycloalkyl, $(C_3–C_{15})$ alkenyl, phenyl, furyl, thienyl, $(C_7–C_{20})$ aralkyl or substituted aralkyl wherein the substitutent is halo, $(C_1–C_3)$ alkyl, $(C_1–C_3)$ alkoxy or trifluoromethyl; or R and R′ together with the nitrogen atom to which they are attached form a piperidyl group, a substituted piperidyl group wherein the substituent is $(C_1–C_{15})$ alkyl or $(C_7–C_{20})$ aralkyl, or a pyrrolidinyl group, or a pharmaceutically-acceptable acid addition salt thereof.

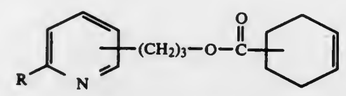
4,554,277

PYRIDYLPROPYL CYCLOHEXENE CARBOXYLATES AS INSECT REPELLENTS

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Feb. 25, 1985, Ser. No. 705,172
Int. Cl.[4] C07D *213/55*; A61K *31/44*
U.S. Cl. 514—277 **9 Claims**

1. A compound having the formula



in which R is hydrogen or $C_1–C_4$ alkyl.

7. A method for repelling insects comprising applying to a locus to be protected from insects an amount of a compound according to claim 1, effective to repel insects from said locus.

9. An insect repelling composition containing an amount of a compound according to claim 1 effective to repel insects from lighting or feeding, and an inert diluent or carrier suitable for insect repellent compositions.

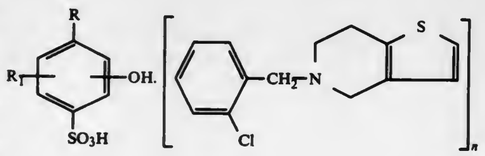
4,554,278

HYDROXYBENZENESULFONIC ACID SALTS OF 5-(O-CHLOROBENZYL)-4,5,6,7-TETRAHYDROTHIENE [3,2-C] PYRIDINE USEFUL IN INHIBITING BLOOD-PLATELET AGGREGATION

Pietro T. Tessitore, Via Dante Alighieri, 71, 18038 Sanremo, Italy

Filed Jul. 28, 1983, Ser. No. 517,916
Claims priority, application Italy, Jul. 28, 1982, 22600 A/82
Int. Cl.[4] A61K *31/44*; C07D *471/04*
U.S. Cl. 514—301 **4 Claims**

1. A hydroxybenzenesulfonic acid salt of 5-(o-chlorobenzyl)-4,5,6,7-tetrahydrothieno[3,2-c]pyridine endowed with platelet aggregation inhibiting activity, with angioprotective activity and with normalizing activity of the blood lipids balance, of the formula (I)



wherein R is H or OH or SO_3H; R_1 is H or OH, provided that when R=OH, R_1 is always H; and n is 1 or 2.

4. A pharmaceutical composition having platelet aggregation inhibiting activity, angioprotective activity, and normalizing activity of the blood lipids balance, said composition having as active ingredient for the stated purposes an effective amount of a compound of the formula (I) as defined in claim 1, together with at least one pharmaceutically acceptable carrier and/or excipient.

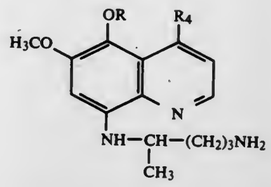
4,554,279

5-(STRAIGHT CHAIN 3–12 CARBON ALKOXY)-8-QUINOLINAMINES AND THEIR USE FOR TREATMENT OF MALARIA

Andrew J. Saggiomo, and Edward A. Nodiff, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

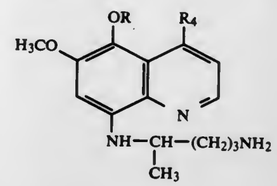
Continuation of Ser. No. 229,487, Jan. 29, 1981, abandoned. This application Mar. 31, 1983, Ser. No. 478,816
Int. Cl.[4] A61K *31/47*; C07D *215/20*
U.S. Cl. 514—311 **28 Claims**

1. A compound of the formula,



wherein R_4 represents hydrogen or methyl; R represents a straight-chain alkyl group having 3 to 12 carbon atoms; and pharmaceutically acceptable acid addition salts thereof wherein the salt forming acid is selected from the group consisting of hydrochloric acid, phosphoric acid, nitric acid, sulfamic acid, sulfuric acid, maleic acid, fumaric acid, citric acid, beta-resorcylic acid and pamoic acid.

26. A method for treating malaria caused by the presence of malaria parasites in the blood, formed tissues, or blood and formed tissues which comprises the step of administering orally to an infected animal an antimalarial effective amount of a compound having the formula:



wherein R_4 represents hydrogen or methyl; R represents a straight-chain alkyl group having 3 to 12 carbon atoms; and pharmaceutically acceptable salts thereof wherein the salt forming acid is selected from the group consisting of hydrochloric acid, phosphoric acid, nitric acid, sulfamic acid, sulfuric acid, maleic acid, fumaric acid, citric acid, beta-resorcylic acid and pamoic acid which has been admixed with an excipient selected from the group consisting of lactose, precipitated chalk, dibasic calcium phosphate, microcrystalline cellulose derivatives, maize starch, talc and calcium stearate.

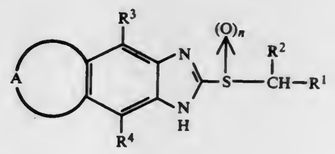
4,554,280

PYRIDYL METHYL THIO OR SULFINYL INDENO(5,6-D)IMIDAZOLES

Anna Krassó , Basel, and Henri Ramuz, Birsfelden, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 290,032, Aug. 5, 1981, Pat. No. 4,435,406. This application Dec. 12, 1983, Ser. No. 560,698
Claims priority, application Switzerland, Aug. 21, 1980, 6321/80
Int. Cl.[4] C07D *401/12*; A61K *31/44*
U.S. Cl. 514—338 **20 Claims**

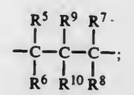
1. A tricyclic imidazole of the formula



I

wherein

R^1 is 2-pyridyl optionally substituted by lower alkyl or lower alkoxy, n is the integer 0 or 1, R^2 is hydrogen or lower alkyl, R^3 and R^4, independently, are hydrogen or lower alkyl, A is a group of the formula



(c)

R^5, R^6, R^7 and R^8, independently, are hydrogen or lower alkyl and R^9 is hydrogen and R^{10} is hydrogen or lower alkyl or R^9 and R^{10} taken together are oxo,

or pharmaceutically acceptable acid addition salt thereof.

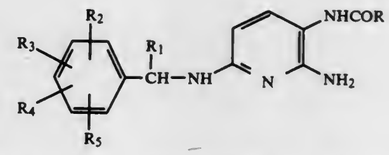
4,554,281

2-AMINO-3-ACYLAMINO-6-BENZYLAMINO-PYRIDINE-DERIVATIVE HAVING ANTIEPILEPTIC ACTION

Walter vonBebenburg, deceased, late of Dreieich (by Marie vonBebenburg, executrix); Joachim Heese, Hanau; Jurgen Engel, Alzenau, all of Fed. Rep. of Germany, and Kurt Thiele, Zofingen, Switzerland, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 545,930
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239790
Int. Cl.[4] A61K *31/44*; C07D *213/74*
U.S. Cl. 514—353 **11 Claims**

1. A method of combatting epilepsy comprising administering to a mammal in need thereof an effective amount for the treatment of epilepsy of a compound of the formula



I

where R is a $C_1–C_4$ alkyl group, a $C_1–C_4$ alkoxy group, a phenoxy group, or a phenyl $C_1–C_2$-alkoxy group, R_1 is hydrogen or a $C_1–C_4$ alkyl group and R_5 is hydrogen or a $C_1–C_4$ alkyl group and the groups R_2, R_3 and R_4 each is hydrogen trifluoromethyl, halogen, a $C_1–C_4$ alkyl group, a $C_1–C_4$-alkyl-carbonylamino group, an aminosulfonyl group, a $C_1–C_4$-alkyl-

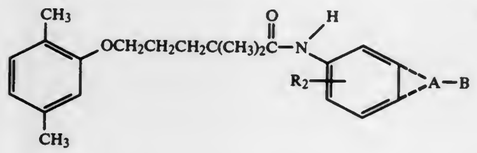
carbonyl group, or its pharmaceutically acceptable acid addition.

4,554,282
SUBSTITUTED 2,2-DIMETHYL-5-PHENOXYPENTANOIC ACID BENZAMIDES AS ANTI-ARTERIOSCLEROTIC AGENTS AND METHOD

Ila Sircar, Ann Arbor, and Ann Holmes, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 238,398, Feb. 26, 1981, Pat. No. 4,413,011. This application Aug. 5, 1983, Ser. No. 520,874
Int. Cl.⁴ C07C *143/80;* C07D *213/34;* A61K *31/18, 31/44*
U.S. Cl. 514—357 **8 Claims**

1. A compound having the structural formula

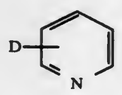


wherein the dotted lines indicate the presence of only one substituent which must be located at one of the specified positions, and

(a) A is $—CR_4=CR_5—$, where R_4 and R_5 are are trans to each other and are hydrogen or alkyl of from 1 to 6 carbon atoms, R_2 is hydrogen, hydroxy, halogen, alkyl of from 1 to 6 carbon atoms or alkoxy of from 1 to 6 carbon atoms, and B is SO_2NHR_6 where R_6 is hydrogen or alkyl of from 1 to 6 carbon atoms; or

(b) wherein A is a direct bond, R_2 is alkoxy of from 1 to 6 carbon atoms, and B is SO_2NHR_6 where R_6 is hydrogen or alkyl of from 1 to 6 carbon atoms; or

(c) wherein A is a direct bond, R_2 is hydrogen, and B is SO_2NHR_6 where R_6 is



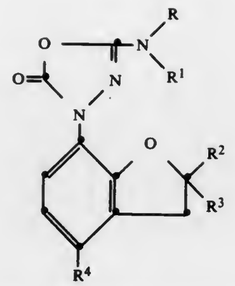
where D is an alkylene group of from 1 to 6 carbon atoms.

4,554,283
APHICIDAL 3-(2-ALKYL-2,3-DIHYDROBENZOFURAN-7-YL)-5-(R,R¹-AMINO)-1,3,4-OXADIAZOL-2(3H)-ONES

Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1984, Ser. No. 643,331
Int. Cl.⁴ A01N *43/82;* C07D *413/10*
U.S. Cl. 514—364 **2 Claims**

1. A compound of the formula:



(I)

wherein R is alkyl of one to three carbon atoms; R^1 is hydrogen or alkoxy of one to three carbon atoms; R^2 is alkyl of one to three carbon atoms; R^3 and R^4 each is hydrogen or alkyl of one to three carbon atoms.

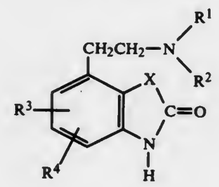
2. A method for protecting a plant from aphids which comprises applying to the plant an aphicidally effective dosage of a compound of claim 1.

4,554,284
7-(2-AMINOETHYL)-1,3-BENZTHIA- OR OXA-ZOL-2(3H)-ONES

Orum D. Stringer, Philadelphia, and Joseph Weinstock, Phoenixville, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 12, 1984, Ser. No. 649,466
Int. Cl.⁴ C07D *277/68, 263/58;* A61K *31/42, 13/425*
U.S. Cl. 514—367 **14 Claims**

1. A chemical compound of the formula:



in which:

X is —S—or —O—;

R^1 and R^2 are, each, hydrogen, C_{1-6}-alkyl, allyl, benzyl, phenethyl, methoxyphenethyl or hydroxyphenethyl; and

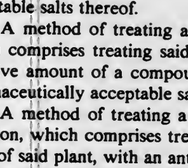
R^3 and R^4 are, each, hydroxy, hydrogen, halo, C_{1-3}-alkyl or C_{1-3}-alkoxy, a pharmaceutically acceptable, acid addition salt thereof or an O-C_{2-6} -alkanoyl derivative thereof.

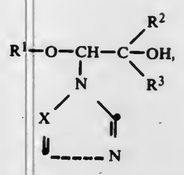
4,554,285
FUNGICIDAL ALPHA-AZOLYLGLYCOLS

Bernd Zeeh; Eberhard Ammermann; Ernst Buschmann, all of Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,316
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150204
Int. Cl.⁴ A01N *43/50, 43/64;* C07D *233/60, 249/08*
U.S. Cl. 514—383 **2 Claims**

1. An alpha-azolylglycol of the formula





(I)

where R^1 is n-butyl, R^2 is 2,4-dichlorophenyl, R^3 is methyl and X is N and is the compound 1-(1,2,4-triazol-1-yl-1-n-butyloxy-2-(2,4-dichlorophenyl)-propan-2-ol, or a plant-tolerated salt or metal complex thereof.

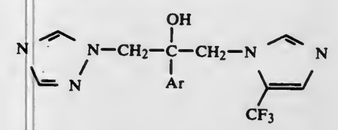
2. A process for combating fungi, wherein a fungicidally effective amount of the compound 1-(1,2,4-triazol-1-yl)-1-n-butyloxy-2-(2,4-dichlorophenyl)-propan-2-ol, or a plant-tolerated salt or metal complex thereof, is allowed to act on areas, plants or seed threatened by fungus attack, or on the fungi themselves.

4,554,286
ANTIFUNGAL 1-TRIAZOLYL-2-ARYL-3-(5-TRIFLUOROMETHYLIMIDAZOL-1-YL)PROPAN-2-OL DERIVATIVES

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

Filed May 3, 1984, Ser. No. 606,510
Claims priority, application United Kingdom, May 13, 1983, 8313235
Int. Cl.⁴ A01N *43/64;* A61K *31/44;* C07D *401/14, 403/06*
U.S. Cl. 514—383 **13 Claims**

1. A compound of the formula



(I)

and its O-C_1-C_6 alkyl, (C_2-C_4 alkenyl)methyl, (C_2-C_4 alkynyl)methyl, phenyl and benzyl ethers and O-C_2-C_4 alkanoyl and benzoyl esters, where Ar is 5-chloropyrid-2-yl or phenyl optionally substituted by 1 to 2 substituents each independently selected from F, Cl or trifluoromethyl; and pharmaceutically acceptable salts thereof.

10. A method of treating a fungal infection in a mammal which comprises treating said mammal with an antifungally effective amount of a compound according to claim 1, or a pharmaceutically acceptable salt thereof.

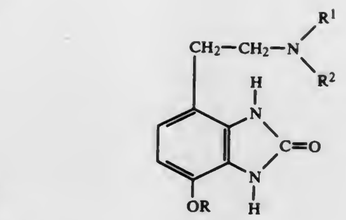
13. A method of treating a plant or seed having a fungal infection, which comprises treating said plant or seed, or the locus of said plant, with an antifungally effective amount of a compound according to claim 1, or with an agriculturally acceptable salt thereof.

4,554,287
ANTIHYPERTENSIVE 7-[2-(DIALKYLAMINO)ETHYL]-4-HYDROXY-1,3-BENZIMIDAZOL-2-ONES

Orum D. Stringer, Philadelphia, and Joseph Weinstock, Phoenixville, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 12, 1984, Ser. No. 649,465
Int. Cl.⁴ A61K *31/415;* C07D *235/26*
U.S. Cl. 514—387 **10 Claims**

1. A chemical compound of the formula:



(I)

in which:

R is hydrogen or methyl; and

R^1 and R^2 are, each, C_{1-6}-alkyl, benzyl, phenethyl, methoxyphenethyl or hydroxyphenethyl, or a pharmaceutically acceptable, acid addition salt thereof.

9. The method of inducing D_2-agonistic activity in a patient in need thereof comprising administering internally to said patient a D_2-agonistic, nontoxic quantity of a compound of claim 1.

4,554,288
USE OF BENDAZAC AND ITS SALTS IN THE TREATMENT OF RETINITIS PIGMENTOSA

Bruno Silvestrini, Rome, Italy, assignor to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Apr. 6, 1984, Ser. No. 597,504
Claims priority, application Italy, Apr. 18, 1983, 20649 A/83
Int. Cl.⁴ A61K *31/40*
U.S. Cl. 514—418 **10 Claims**

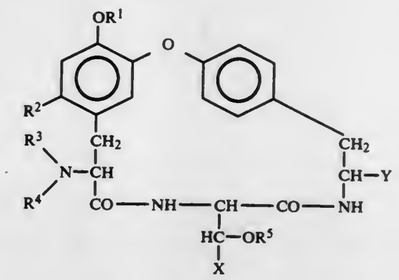
1. A method for the treatment of *retinitis pigmentosa* in a human which comprises administering to said human a therapeutically effective amount of bendazac.

4,554,289
OF4949

Susumu Sano; Katsushige Ikai, both of Muko; Hiroyuki Kuroda, Shiga; Teruya Nakamura, Kusatsu; Hiroshi Enomoto, Nagaokakyo, and Yoji Ezure, Otsu, all of Japan, assignors to Takara Shuzo Co., Ltd. and Nippon Shinyaku Co., Ltd., both of, Japan

Filed Dec. 23, 1983, Ser. No. 564,923
Claims priority, application Japan, Dec. 25, 1982, 57-234640; Nov. 2, 1983, 58-206169; Nov. 11, 1983, 58-212926
Int. Cl.⁴ A61K *31/395;* C07D *273/08;* C12P *17/14*
U.S. Cl. 514—450 **21 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen, alkyl of 1 to 10 carbon atoms or acyl of 1 to 6 carbon atoms; R^2 is hydrogen or halo; R^3 is hydrogen, alkyl of 1 to 6 carbon atoms or acyl of 1 to 6 carbon atoms; R^4 is hydrogen or alkyl of 1 to 6 carbon atoms; R^5 is hydrogen or acyl of 1 to 6 carbon atoms; X is $CONH_2$, hydroxyalkyl of 1 to 4 carbon atoms or $COOR^6$ wherein R^6 is hydrogen or alkyl of 1 to 4

carbon atoms; and Y is $CONH_2$, hydroxyalkyl of 1 to 4 carbon atoms or $COOR^7$ wherein R^7 is hydrogen, alkyl of 1 to 10 carbon atoms or benzyl.

4,554,290

OXAMIC ACID DERIVATIVES

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

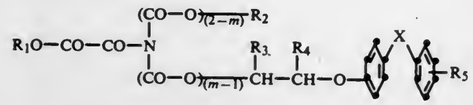
Filed Jun. 7, 1984, Ser. No. 618,155

Claims priority, application Switzerland, Jun. 17, 1983, 3332/83

Int. Cl.⁴ C07C *125/065;* A01N *47/10*

U.S. Cl. 514—487 **11 Claims**

1. A compound of the formula



wherein

R_1 is C_1–C_{10}-alkyl,

R_2 is C_1–C_4-alkyl,

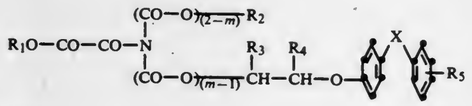
R_3 and R_4 are each hydrogen or methyl,

R_5 is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy C_1–C_4-alkylthio or C_1–C_4-haloalkyl,

X is oxygen or sulfur, and

m is 1 or 2.

8. An arthropodicidal composition containing an arthropodicidally effective amount of a compound of the formula



wherein

R_1 is C_1–C_{10}-alkyl,

R_2 is C_1–C_4-alkyl,

R_3 and R_4 are each hydrogen or methyl,

R_5 is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkyl,

X is oxygen or sulfur, and

m is 1 or 2,

together with a suiable carrier.

4,554,291

IRON/SILICON-BASED CATALYST EXHIBITING HIGH SELECTIVITY TO C_2-C_6 ALKENES IN CO/H_2 FISCHER-TROPSCH REACTIONS

Arunava Gupta, Madison, and James T. Yardley, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, N.J.

Division of Ser. No. 494,754, May 16, 1983, Pat. No. 4,468,474. This application Jun. 1, 1984, Ser. No. 616,099

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—700 **6 Claims**

1. A process for conversion of CO/H_2 into low molecular weight olefins which comprises contacting a gaseous mixture comprising CO and H_2 in the ratio of about 3:1 to 1:5 (v/v) with an effective amount of a finely divided, hydrogen-activated catalyst composition comprising about 5–15 atom percent Fe, about 65–68 atom percent Si, and about 2–30 atom percent C in a reaction zone at a temperature in the range of about 150° C. to about 450° C. and a pressure in the range of about 10 to about 2000 kPa for a time sufficient to produce a reaction mixture comprising C_2–C_6 alkenes, said hydrogen-activated catalyst having been prepared by a process which comprises contacting effective amounts, in the gaseous phase, of a silicon compound, a hydrocarbon and an organo-iron compound under conditions to produce a product and thereafter contacting the product with H_2 gas at a temperature between about 450° C. and about 550° C. for a time sufficient to produce the hydrogen activated catalyst composition.

4,554,292

PROCESS FOR THE PRODUCTION OF HYDROCARBONS

Jean C. Lambert; Guy Barré; Pierre Dejaifve, and Gérard Bidan, all of Grand-Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 6, 1985, Ser. No. 708,831

Claims priority, application France, Mar. 22, 1984, 84 04455

Int. Cl.⁴ C07L *1/04*

U.S. Cl. 518—728 **9 Claims**

1. A process for the production of hydrocarbons from synthesis gas, which process comprises contacting the synthesis gas at elevated pressure and temperature with a catalyst comprising thorium oxide and zinc oxide promoted with at least one alkali metal compound.

4,554,293

LIGHTLY CROSSLINKED LINEAR OLEFINIC POLYMER FOAM BLENDS AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 19, 1985, Ser. No. 725,036

Int. Cl.⁴ C08J *9/14*

U.S. Cl. 521—81 **5 Claims**

1. A process for the preparation of a polymeric foam comprising the steps of:

(a) melt processing a blend of a linear olefin polymer and a crosslinkable polymer having one or more carboxylic acid, amide, amine, or hydroxyl functional groups, together with a volatile blowing agent and a sufficient amount of a crosslinking agent selected from the group consisting of epoxy-functional silanes, amino-functional silanes, organofunctional alkoxy silanes, multiepoxyfunctional silanes, amines, and titanates, to form a flowable admixture; and

(b) extruding said admixture through a die to a zone of lower pressure and activating said blowing agent to expand the polymer blend to a cellular crosslinked structure.

4,554,294

NITRO UREA BASED BLOWING AGENTS

Byron A. Hunter, Alpine, Utah; Donald G. Rowland, and Warren J. Peascoe, both of Woodbridge, Conn., assignors to Uniroyal, Inc., Middlebury, Conn.

Filed Dec. 5, 1984, Ser. No. 678,311

Int. Cl.⁴ C08J *9/10*

U.S. Cl. 521—93 **2 Claims**

1. A gas expandable composition comprising a gas expandable polymer and an effective amount of the blowing agent composition selected from the group consisting of the zinc salt of nitro-urea and a mixture of azodicarbonamide and the zinc salt of nitro-urea.

4,554,295

METHOD FOR PREPARING FLEXIBLE POLYURETHANE FOAMS FROM POLYMER/POLYOLS AND IMPROVED POLYURETHANE FOAM PRODUCT

Charles A. Ridge, Jr., Cookeville, Tenn., assignor to Eastern Foam Products, Inc., Cookeville, Tenn.

Filed Jul. 13, 1983, Ser. No. 513,431

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—110 **23 Claims**

1. An improved process for preparing flexible polyurethane foams by the one-shot technique comprising co-reacting a fluid high-solids polymer/polyol and an organic polyisocyanate in the presence of an organo-tin catalyst, a tertiary amine catalyst, a blowing agent, a silicone-oxyalkylene surfactant and an amount of a filled diorganosilicone oil anti-foaming agent necessary to produce a predominately closed cell foam having an improved loas bearing resiliency.

4,554,296

POLYORGANOSILOXANE COMPOSITIONS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 26, 1984, Ser. No. 664,898

Int. Cl.⁴ C08G *77/00*

U.S. Cl. 521—154 **35 Claims**

1. A polyorganosiloxane comprising $[F(CF_2)_m(CH_2)_nO]Si-O_{(4-p)/2}$, $R_3SiO_{1/2}$ and $SiO_{4/2}$ units, silicon-bonded hydroxyl groups, and from 0 to 10 percent, based on the weight of said polyorganosiloxane, of $GSiO_{3/2}$ units, where R represents a monovalent hydrocarbon radical containing from 1 to 20 carbon atoms, m is an integer having an average value of from 1 to 20, inclusive, n is 1 or 2, p is an integer from 1 to 3, inclusive, and G represents the residue obtained by removing the hydrogen atom from a hydroxyl group of a linear organic polymer selected from the group consisting of homopolymers of ethylenically unsaturated alcohols, copolymers of these alcohols with ethylenically unsaturated hydrocarbons, polyethers and polyoxyalkylene glycols, wherein said organic polymer contains an average of at least one terminal hydroxyl group per molecule.

4,554,297

RESILIENT CELLULAR POLYMERS FROM AMINE TERMINATED POLY(OXYALKYLENE) AND POLYFUNCTIONAL EPOXIDES

Shmuel Dabi, Highland Park, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Apr. 18, 1983, Ser. No. 485,782

Int. Cl.⁴ C08J *9/08*

U.S. Cl. 521—178 **18 Claims**

1. A product for absorbing body fluids comprising as an absorbent element therein, a cellular hydrophilic polymeric material, said polymeric material comprising the reaction product of at least one epoxy resin and amine terminated poly(alkylene oxide) selected from the group consisting of amine terminated poly(propylene oxide), amine terminated poly(ethylene oxide), amine terminated copolymers of ethylene oxide and propylene oxide, and mixtures thereof wherein the ratio of ethylene oxide groups to propylene oxide groups in the reaction mixture ranges from about 1 to about 15.

4,554,298

WATER SOLUBLE POLYMERS

David Farrar, Bradford, and Malcolm Hawe, Huddersfield, both of England, assignors to Allied Colloids Limited, England

Continuation-in-part of Ser. No. 612,185, May 21, 1984, Pat. No. 4,503,172. This application Nov. 16, 1984, Ser. No. 672,312

Claims priority, application United Kingdom, May 20, 1983, 8313976; Aug. 12, 1983, 8321731

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ C08F *6/04, 6/10*

U.S. Cl. 523—336 **18 Claims**

1. A process in which a solution is formed of a water soluble polymer containing acid groups in a blend of a polar solvent, water and base in an amount sufficient to neutralise at least 10% but not more than 90% molar of the said acid groups and in which the solvent, the base and the amount of at least one of the base and the solvent are selected to cause phase separation of the solution into an aqueous phase containing a higher molecular weight fraction and an organic phase containing a lower molecular weight fraction.

4,554,299

CONTROLLING THE RATE OF DIAMINE CURING AGENTS IN POLYURETHANE CEMENTS

Paul E. Liggett, Wooster, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 12, 1985, Ser. No. 722,629

Int. Cl.⁴ C08L *75/06*

U.S. Cl. 523—466 **14 Claims**

1. A process for preparing a urethane formulation comprising the steps of:

separately preparing a polymer component, said polymer component comprising a urethane prepolymer and a urethane solvent;

the amount of said urethane prepolymer in said urethane component is about 100 parts by weight, wherein said urethane prepolymer is the reaction product (1) an aliphatic polyisocyanate having from 5 to 25 atoms, and (2) a mixed polyester, said mixed polyester being (a) a copolymerization condensation product of, or (b) a separate physical blend of an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and an aromatic dicarboxylic acid having from 8 to 12 carbon atoms with a polyol having a molecular weight of 500 or less, the amount of said aliphatic dicarboxylic acid ranging from about 90 percent to about 10 percent by weight, this molecular weight of said polyester made from said acid and said polyol ranging from about 500 to about 4,000, and wherein the equivalent ratio of said isocyanate to the OH end groups in said polyester ranges from about 1.5 to about 3.0;

separately preparing a curing component, said curing component consisting essentially of a mixture of an aromatic diamine, the ketimine of an aliphatic diamine and a curing agent solvent, the equivalent ratio of said curing agent to said isocyanate being from about 0.8 to about 1.2;

separately preparing a cement component, said cement component comprising about 3 to about 7 parts by weight per 100 parts by weight of said urethane prepolymer of an epoxy having leaching resistance and a solvent;

a thixotropic compound, said thixotropic compound located in said cement component, the amount of said thixotropic agent being from about 2 parts by weight to about 8 parts by weight per 100 parts by weight of said urethane prepolymer;

maintaining said cement component separate from said polymer component and said curing agent, and maintaining said polymer component separate from said curing component, thereby maintaining stability of each of said components;

the total amount of solids in said overall formulation ranging from about 20 percent to about 50 percent by weight

based upon the total amount of said solvents and said solvents in said overall formulation.

4,554,300

REDUCING THE SPEED OF ALIPHATIC DIAMINE CURING AGENTS IN POLYURETHANE CEMENTS

Paul E. Liggett, Wooster, and Daniel A. Chung, North Canton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 12, 1985, Ser. No. 722,630
Int. Cl.[4] C08L *75/06*
U.S. Cl. 523—466 **12 Claims**

1. A process for preparing a urethane formulation, comprising the steps of:

separately preparing a polymer component, said polymer component comprising a urethane prepolymer and a urethane solvent;

the amount of said urethane prepolymer in said urethane component is about 100 parts by weight, wherein said urethane prepolymer is the reaction product of (1) an aliphatic polyisocyanate having from 5 to 25 carbon atoms, and (2) a mixed polyester, said mixed polyester being (a) a copolymerization condensation product of, or (b) a separate physical blend of, an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and an aromatic dicarboxylic acid having from 8 to 12 carbon atoms, with a polyol having a molecular weight of 500 or less, the amount of said aliphatic dicarboxylic acid ranging from about 90 percent to about 10 percent by weight, the molecular weight of said polyester made from said acid and said polyol ranging from about 500 to about 4,000, and wherein the equivalent ratio of said isocyanate to the OH end groups in said polyester ranges from about 1.5 to about 3.0;

separately preparing a curing component, said curing component consisting essentially of the ketimine derivative of an aliphatic diamine as curing agent and a curing agent solvent, the equivalent ratio of said curing agent ot said isocyanate being from about 0.8 to about 1.2;

separately preparing a cement component, said cement component comprising about 3 to about 7 parts by weight per 100 parts by weight of said urethane prepolymer, of an epoxy having solvent leaching resistance, and a solvent;

a thixotropic agent, said thixotropic agent located in said cement component, the amount of said thixotropic agent being from about 2 parts by weight to about 8 parts by weight per 100 parts by weight of said urethane prepolymer;

maintaining said cement component separate from said polymer component and said curing agent, and maintaining said polymer component separate from said curing component thereby maintaining stability of each of said components;

the total amount of solids in said overall formulation ranging from about 20 percent to about 60 percent by weight based upon the total amount of said solvents and said solvents in said overall formulation.

4,554,301

MODIFIED TWO-PART TYPE ADHESIVE COMPOSITION

Hidemi Dohi, and Hideaki Matsuda, both of Kagawa, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Mar. 19, 1984, Ser. No. 591,261
Claims priority, application Japan, Mar. 22, 1983, 58-45945
Int. Cl.[4] C08K *5/20*
U.S. Cl. 524—210 **13 Claims**

1. A modified two-part type adhesive composition, which comprises liquid I comprising an acrylic monomer, an organic peroxide, and a gelation stabilizer and liquid II comprising of an acrylic monomer, a curing accelerator, and a gelation stabilizer, at least one of said liquids containing a modified nitrile rubber in an amount of 2 to 50% by weight; said modified nitrile rubber containing carboxyl groups prior to being modified, said modified nitrile rubber having after modification:

(1) a portion of said carboxyl groups addition condensed with a diisocyanate and a (meth)acrylic group-containing acid phosphate, whereby said (meth)acrylic group-containing acid phosphate is covalently bonded to said modified nitrile rubber, and

(2) remaining carboxyl groups neutralized with a neutralizing agent selected from the group consisting of a divalent metal compound and a polyamine in the presence of a (meth)acrylic group-containing acid phosphate, whereby said (meth)acrylic group-containing acid phosphate is ionically bonded to said modified nitrile rubber.

4,554,302

AROMATIC POLYCARBONATE CONTAINING N,N-DIALKYL AMIDE MOLD RELEASE AGENT

Kenneth F. Miller, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 2, 1985, Ser. No. 688,245
Int. Cl.[4] C08L *69/00*
U.S. Cl. 524—233 **6 Claims**

1. A composition comprising an aromatic carbonate polymer in admixture with a mold release effective amount of a compound of the formula

$$R_1CNR_2R_3$$
$$\|$$
$$O$$

wherein R_1, R_2 and R_3 are the same or different and are alkyl of one to twenty-five carbon atoms, inclusive with the proviso that the amide is essentially nonvolatizable under polymer processing conditions.

4,554,303

COPOLYESTER COMPOSITIONS

Frederick D. Petke, Kingsport; Charles W. Ramsey, Blountville, and Richard L. McConnell, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1984, Ser. No. 681,452
Int. Cl.[4] C08L *91/06, 91/08*
U.S. Cl. 524—277 **9 Claims**

1. Composition comprising

(a) a copolyester derived from 100 mole % of a dibasic acid component comprising about 40–100 mol % terephthalic acid and 100 mol % of a glycol component comprising about 40–100 mol % ethylene glycol, 1,4-butanediol or 1,6-hexanediol, wherein about 20–120 mol %, based on 200 mol % polymer, is derived from about

(1) 0 to about 60 mol % of a second acid selected from the group consisting of isophthalic acid, dimer acid and aliphatic dicarboxylic acids having 3–12 carbon atoms,

(2) 0 to about 60 mole % of a second glycol having 2–10 carbon atoms, or

(3) about 20–120 mole % of a combination of said second acid and second glycol,

said copolyester characterized by having a melting temperature of about 80°–190° C. and a ΔH_f of less than about 6 cal/gm, and

(b) about 0.02 to about 2 wt % of at least one natural or synthetic wax with said natural wax being animal, vegetable, or mineral waxes with melting points in the range of about 40° to about 90° C. and melt viscosities in the range of about 5 to about 100 cp at 125° C.; said synthetic waxes being based on polyethylene, polypropylene, poly-1-butene, ethylene or propylene copolymers with each other, or with α-olefins containing 3–6 carbon atoms, or Fischer Tropsch waxes, with melting points in the range of about 95° C. to 160° C., densities of about 0.90 to about 0.965 and melt viscosities ranging from about 5 cp. to about 30,000 cp. at 190° C.

4,554,304

HOT MELT BUTYLENE/ETHYLENE ADHESIVES

David R. Hansen, and William H. Korcz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 31, 1984, Ser. No. 615,850
Int. Cl.[4] C08K *5/13;* **C08L** *51/06, 53/02, 71/08*
U.S. Cl. 524—291 **4 Claims**

1. A hot melt adhesive with long open time comprising a blend of:

from about 15% by weight to about 85% by weight of a maleic anhydride functionalized copolymer of butene-1 and ethylene, where the ethylene content is from about 5.5% by weight to about 10.0% by weight of said copolymer; and where said copolymer contains from about 0.05% by weight to about 5% by weight grafted maleic anhydride;

from about 20% by weight to about 60% by weight of an aliphatic, substantially non-polar resin selected from the group consisting of C_5 stream resins, polyterpenes and partially hydrogenated C_9 hydrocarbon resins with softening points in a range of 70° C. to 125° C.;

from about 0.1% by weight to about 0.5% by weight of a hindered phenolic antioxidant;

from about 0% by weight to about 20% by weight of a microcrystalline wax;

optionally, from about 0% by weight to about 35% by weight of a block copolymer which comprises at least one monalkenyl arene polymer end block and at least one substantially complete hydrogenated conjugated diene second block sufficient to give said blend flexibility and strength desired; and

optionally, from about 0% by weight to about 40% by weight of atactic polypropylene sufficient to yield a good T-peel lower limit value.

4,554,305

HYDROGEN PEROXIDE-FREE AND HYDROFLUORIC ACID-FREE AUTODEPOSITION BATHS

Wilbur S. Hall, Springvale, Me., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 28, 1985, Ser. No. 717,047
Int. Cl.[4] C08K *3/16*
U.S. Cl. 524—321 **24 Claims**

1. An aqueous acidic autodeposition composition for depositing a resinous coating on an iron- and/or zinc-containing metal substrate, comprising a resinous latex, an acid, and an oxidizer, all present in amounts effective to deposit said coating, wherein: said latex polymer is a copolymer; said acid is at least one of acetic, acrylic, adipic, chloroacetic, citric, dichloroacetic, diglycolic, fumaric, gallic, itaconic, lactic, malic, malonic, succinic, or tartaric and said oxidizer is elemental iodine complexed with a water soluble iodide, an iodate salt or free acid, a periodate salt or free acid, or any mixture of the foregoing.

4,554,306

POLYMER-MODIFIED POLYOLS

William G. Carroll, Vossem, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 7, 1984, Ser. No. 618,347
Claims priority, application United Kingdom, Jun. 27, 1983, 8317354
Int. Cl.[4] C08G *83/00;* **C08K** *5/06;* **C08L** *75/08, 75/12*
U.S. Cl. 524—377 **8 Claims**

1. A polymer-modified polyol comprising a dispersion in a polyol having a molecular weight of at least 1000, of from 1 to 80% by weight based on said polymerpolyol of the in-situ reaction product of an organic polyisocyanate and a compound having a molecular weight of up to 600 and containing at least one hydroxyl group, in an NCO:OH ratio of from 0.33:1 to 1.5:1, said reaction product being obtained in a reaction between said organic polyisocyanate and said compound in the presence of from 0.5 to 5% of a dispersant which is the product obtained by reacting

(1) a copolymer comprising units derived from the following ethylenically unsaturated monomers in the stated proportions by weight based on the total weight of the copolymer:

(a) 0–50% of a hydroxy group-containing monomer,

(b) 0–20% of a carboxamide group-containing monomer, provided that there is always present at least 5% of (a) or at least 5% of (b);

(c) 20–80% of an alkene, alkyl acrylate or alkyl methacrylate free from carboxyl groups and containing a straight or branched chain alkyl group of from 7 to 22 carbon atoms, and

(d) 0–50% of one or more monomers free from the hydroxy, carboxamide and C_{7-22} groups present in (a), (b) or (c), and also, as an essential constituent,

(e) up to 20% of a monomer containing an epoxide group, the total of monomers (a), (b), (c), (d) and (e) being 100%, with

(2) a compound of structure $Ar—(CH=CH)_n—CO_2H$ where Ar is an aromatic group and n is 1 or 0, in the presence of a tertiary amine.

2. A polymer-modified polyol according to claim 1 in which the polyol is a polyether polyol and the compound having a molecular weight of up to 600 is an olamine.

3. A polymer-modified polyol according to claim 1 in which the polyol is a polyether polyol and the compound having a molecular weight of up to 600 is a polyethylene glycol.

4,554,307

WATER SOLUBLE POLYMERS AND DISPERSIONS CONTAINING THEM

David Farrar, and Malcolm Hawe, both of West Yorkshire, England, assignors to Allied Colloids Limited, England

Continuation-in-part of Ser. No. 612,516, May 21, 1984, Pat. No. 4,507,422. This application Nov. 16, 1984, Ser. No. 672,308
Claims priority, application United Kingdom, May 20, 1983, 8313976; Aug. 12, 1983, 8321731
The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.
Int. Cl.[4] C09D *3/74, 3/80*
U.S. Cl. 524—425 **12 Claims**

1. A water soluble polymer formed from one or more unsaturated monomers and containing acid groups selected from carboxylic, sulphuric and sulphonic acid groups, or a water soluble salt thereof, and which has PD below 1.4 and Mw, measured on the full sodium salt, of from 1,000 to 50,000.

4,554,308

CROSSLINKED POLYURETHANE DISPERSIONS

Andrea Russiello, Kelton, Pa., assignor to Wilmington Chemical Corporation, Wilmington, Del.

Filed Oct. 2, 1978, Ser. No. 947,544
Int. Cl.[4] C08L *75/04*
U.S. Cl. 524—591 **25 Claims**

1. A stable aqueous polyurethane ionic dispersion comprised of crosslinked polyurethane polymer particles dispersed by the incorporation of a polyfunctional active hydrogen compound having a solubilizing group therein incorporated into the polymer chain, said crosslinked particles being crosslinked beyond the point of gelation and being capable of coalescing to form a continuous film upon drying of the dispersion at a temperature of 65° to 75° F. and atmospheric pressure.

4,554,309

POLYCARBONATE FROM CYCLOALKYLIDENE TETRA ALKYL SUBSTITUTED DIPHENOL

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 453,105, Dec. 27, 1982, abandoned. This application Jun. 14, 1984, Ser. No. 620,712

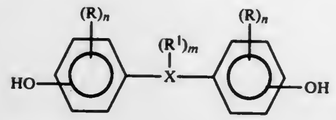
Int. Cl.⁴ C08G *63/62*

U.S. Cl. 524—611 **50 Claims**

1. Thermoplastic polymeric composition exhibiting improved heat resistance comprised of (i) at least one thermoplastic high molecular weight carbonate polymer comprised of the reaction products of:

(a) a carbonate precursor; and

(b) at least one dihydric phenol represented by the general formula



wherein

R is independently selected from alkyl radicals,

each n is two,

R^1 is independently selected from monovalent hydrocarbon radicals,

X represents a cycloalkylidene radical containing from 10 to about 16 ring carbon atoms, and

m represents a whole number having a value of from 0 up to the number of replaceable hydrogen atoms present on X.

4,554,310

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Jeffrey H. Wengrovius, Scotia, and Leonard W. Niedrach, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,892

Int. Cl.⁴ C08K *5/23*

U.S. Cl. 524—715 **12 Claims**

1. Room temperature vulcanizable organopolysiloxane compositions comprising by weight,

(A) 100 parts of organopolysiloxane consisting essentially of chemically combined diorganosiloxy units and terminated with polyalkoxysiloxy units,

(B) up to 10 parts of a polyalkoxysilane,

(C) up to 5 parts of amine accelerator selected from the class consisting of primary amines, secondary amines and silylated secondary amines,

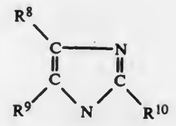
(D) an effective amount of a tin condensation catalyst of the formula,

$(R)_2Sn[Y']$, and

(E) 0.001 to 5 parts of a copper corrosion inhibitor selected from the class consisting of organic triazoles having the formula,



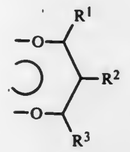
imidazoles having the formula,



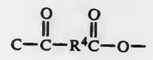
and mercaptoarylthiazoles,

where R is selected from $C_{(1-18)}$ monovalent hydrocarbon radicals and substituted $C_{(1-18)}$ monovalent hydrocarbon radicals, and Y' is a divalent radical selected from

(i) a chelate group having the formula



(ii) and a dicarboxylate group having the formula,



R^1, R^2 and R^3 are the same or different monovalent radials selected from the class consisting of hydrogen, R, $—Si(R)_3$, acyl and nitrile, R^4 is selected from divalent $C_{(1-18)}$ hydrocarbon radicals and substituted divalent $C_{(1-18)}$ hydrocarbon radicals, R^8, R^9 and R^{10} are monovalent radicals selected from hydrogen and $C_{(1-18)}$ monovalent hydrocarbon radicals and substituted $C_{(1-18)}$ monovalent hydrocarbon radicals and X is a C_1–C_{50} divalent organic radical.

4,554,311

METHOD OF PREPARING AN AQUEOUS SOLUTION COMPRISING VINYLPYRROLIDONE/VINYL ACETATE COPOLYMERS OF VARIOUS MOLECULAR WEIGHTS USING A SINGLE INITIATOR SYSTEM CONSISTING ESSENTIALLY OF T-BUTYLPEROXYPIVALATE

Eugene S. Barabas, Watchung, N.J., and James R. Cho, Oakland, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Division of Ser. No. 419,869, Sep. 20, 1982, Pat. No. 4,520,179. This application Feb. 11, 1985, Ser. No. 699,982

Int. Cl.⁴ C08F *126/08;* **C08L** *39/06*

U.S. Cl. 524—808 **1 Claim**

1. Process for preparing an aqueous solution of vinylpyrrolidone/vinyl acetate copolymer which comprises:

(a) polymerizing a monomer mixture consisting essentially of N-vinylpyrrolidone and vinyl acetate monomers in a reaction zone in the presence of free radical initiator consisting essentially of t-Butylperoxypivalate and solvent consisting essentially of water or a mixture of water with isopropyl alcohol or sec. butyl alcohol or both to form vinylpyrrolidone/vinyl acetate copolymer; and

(b) removing product from the reaction zone in the form of an aqueous solution containing between about 20 and about 60 wt. % vinylpyrrolidone/vinyl acetate copolymer.

4,554,312

METHOD OF PREPARING AQUEOUS SOLUTIONS OF POLYVINYL-PYRROLIDONE HOMOPOLYMER OF VARIOUS MOLECULAR WEIGHTS USING A SINGLE INITIATOR SYSTEM CONSISTING ESSENTIALLY OF T-BUTYLPEROXYPIVALATE

Eugene S. Barabas, Watchung, and James R. Cho, Oakland, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Division of Ser. No. 419,870, Sep. 20, 1982, Pat. No. 4,520,180. This application Feb. 11, 1985, Ser. No. 699,983

Int. Cl.⁴ C08F *126/08;* **C08L** *39/06*

U.S. Cl. 524—808 **1 Claim**

1. Process for making an aqueous solution of polyvinylpyrrolidone homopolymer which comprises:

(a) polymerizing N-vinylpyrrolidone monomer in a reaction zone in the presence of free radical initiator consisting essentially of t-Butylperoxypivalate and solvent consisting essentially of water or a mixture of water with isopropyl alcohol or sec. butyl alcohol or both, and

(b) removing product from the reaction zone in the form of an aqueous solution containing between about 20 and about 60 wt. % polyvinylpyrrolidone.

4,554,313

PROCESS FOR PREPARING BITUMEN-POLYMER COMPOSITIONS, APPLICATION OF THESE COMPOSITIONS OF THE OBTENTION OF COVERINGS AND MOTHER SOLUTION OF POLYMER USABLE FOR THE OBTENTION OF THE SAID COMPOSITIONS

Germain Hagenbach, Vernaison; Paul Maldonado, St Symphorien d'Ozon, and Jacques Maurice, Pau, all of France, assignors to Societe Anonyme dite: Elf France, Paris, France

Filed Jun. 9, 1983, Ser. No. 502,827

Claims priority, application France, Jun. 10, 1982, 82 10095

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—54.5 **40 Claims**

1. A process for the preparation of a bitumen-polymer composition which comprises:

(a) forming a mixture of a bitumen, from about 0.5 to 15% by weight of the bitumen of a styrene-conjugated diene copolymer and from about 0.005 to 15% by weight of the bitumen of a polysulfide of the formula:

$$R_1—(S)_m(R—(S)_m)_xR_2$$

wherein R_1 and R_2 are each independently a C_1 to C_{20} saturated monovalent hydrocarbon radical or a C_1 to C_{20} unsaturated monovalent hydrocarbon radical, or R_1 and R_2 can be linked to form a C_1 to C_{20} saturated divalent hydrocarbon radical or a C_1 to C_{20} unsaturated divalent hydrocarbon radical; R is a C_1 to C_{20} saturated divalent hydrocarbon radical or a C_1 to C_{20} unsaturated divalent hydrocarbon radical; $(S)_m$ is a divalent group of m sulfur atoms wherein m can be different for each group and represents a whole number of from 1 to about 6 with at least m in one group being at least 2; and x is a whole number ranging from 0 to 10; and

(b) heating the mixture at a temperature of from about 130° C. to about 230° C. for at least 15 minutes to form the bitumen-polymer composition.

4,554,314

THERMOPLASTIC MOLDING COMPOSITIONS

James Y. J. Chung, Wexford; Dieter Neuray, and Mark W. Witman, both of Pittsburgh, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 494,826, May 16, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 673,057

Int. Cl.⁴ C08L *67/02*

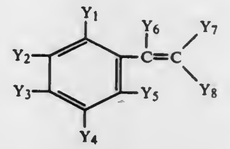
U.S. Cl. 525—67 **3 Claims**

1. A thermoplastic molding composition comprising:

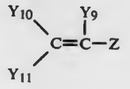
(i) a polyethylene terephthalate resin characterized in that its intrinsic viscosity as measured in a 1% solution of phenol and tetrachloroethane (60:40) at 25° C. is at least 0.4 deciliters per gram,

(ii) an aromatic polycarbonate resin, and about 5 to 25% relative to the total weight of said (i), (ii) and (iii) of

(iii) a graft elastomer having a rubbery core to graft phase ratio of 70/30 to 80/20 characterized in that its core consists of polybutadiene and that its graft phase consists of the polymerization product of (a) at least one member selected from the group consisting of monovinyl aromatic hydrocarbons described by the formula



wherein Y_1–Y_8 independently denote a hydrogen, chlorine or bromine atom or a C_1–C_5 alkyl radical and (b) at least one acrylonitrile type compound conforming to



wherein Y_9–Y_{11} independently denote a hydrogen, chlorine or bromine atom or a C_1–C_5 alkyl radical and Z denotes a cyano radical, said (a) relating to said (b) by weight as 74/26 to 66/34, said composition being further characterized in that said (i) relates to said (ii) by weight as 1:1 to 4:1.

4,554,315

THERMOPLASTIC RESINOUS BLEND AND A METHOD FOR ITS PREPARATION

James Y. J. Chung, Wexford, Pa.; Russell P. Carter, Jr., New Martinsville, W. Va., and Dieter Neuray, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1984, Ser. No. 651,145

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—67 **10 Claims**

1. A thermoplastic molding composition comprising

I. a blend of

(i) about 10–80% of a thermoplastic polyester resin,

(ii) about 15–85% of a polycarbonate resin,

(iii) about 5–30% of a graft polymer which is characterized in that its core is substantially of a conjugated diene or of a C_1–C_{15} acrylate, said core having a glass transition temperature below about 0° C. and which is further characterized in that its grafted phase comprises any of acrylic or methacrylic esters of saturated aliphatic alcohols, vinyl acetate, acrylonitrile, styrene and alkyl styrene and

II. about 0.1 to 15 parts per hundred weight of said blend of a polymer modifier comprising at least one derivative of an olefinically unsaturated monomer carrying at least one epoxide group.

4,554,316

THERMOPLASTIC RESIN COMPOSITION

Hajime Sakano, Osaka; Akitoshi Ito, Mie; Motoichi Yano; Yasuhiro Honda, both of Osaka, and Takayoshi Fujiwara, Hyogo, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Nov. 7, 1983, Ser. No. 549,381

Claims priority, application Japan, Nov. 12, 1982, 57-199583

Int. Cl.⁴ C08L *51/04, 37/00*

U.S. Cl. 525—71 **4 Claims**

1. A thermoplastic resin molding composition affording a

delustered shaped article which comprises (A) a rubber-modified copolymer obtained by polymerizing two or three kinds of monomers selected from the group consisting of aromatic vinyl compounds, vinyl cyanides and alkyl unsaturated carboxylates in the presence of at least one of rubbers and (B) an epoxy group-containing olefin polymer comprising units of at least one of unsaturated epoxy compounds and units of at least one of olefins, said monomers consisting of 50 to 80% by weight aromatic vinyl compounds and 50 to 20% by weight vinyl cyanides and/or alkyl unsaturated carboxylates, said aromatic vinyl compounds being selected from the group consisting of styrene, α-methylstyrene, methyl-α-methylstyrene vinyltoluene and monochlorostyrene, said vinyl cyanides being selected from the group consisting of acrylonitrile and methacrylonitrile, said alkyl unsaturated carboxylates being selected from the group consisting of alkyl acrylates, alkyl methacrylates, hydroxyalkyl acrylates and hydroxyalkyl methacrylates, said rubbers being selected from the group consisting of polybutadiene, styrene/butadiene copolymer, acrylonitrile/butadiene copolymer, ethylene/propylene copolymer, ethylene/propylene/non-conjugated diene copolymer, ethylene/vinyl acetate copolymer, chlorinated polyethylene, and polyalkyl acrylate, wherein the weight proportion of the rubber-modified copolymer (A) and the epoxy group-containing olefin polymer (B) is 100:0.1–40.

4,554,317

SYNTHETIC WOUND COVERING

David Behar, 4 Habanai St., Jerussalem 96264, Israel; Arie L. Rajbenbach, 11 Herzog St., Givatayim 53600, Israel; Marta Juszynski, 43/9 Epstein St., Rehovot, Israel, and Nahum Ben-Hur, 8 Bialik St., Jerusalem 96221, Israel

Continuation-in-part of Ser. No. 481,899, Apr. 4, 1983, abandoned. This application Oct. 6, 1983, Ser. No. 539,586
Claims priority, application Israel, Apr. 6, 1982, 65438
Int. Cl.⁴ C08G *18/67*; A61L *15/01*
U.S. Cl. 525—28 **21 Claims**

1. A synthetic wound covering comprising a hydrophilic membrane which is a graft polymer formed from a polyester polyurethane substrate having a modulus of elasticity below 1500 PSI and a hydrophilic acrylamide monomer wherein the monomer is present at at least 50% by weight and is substantially uniformly dispersed through the substrate, whereby the graft polymer has a water permeability in the range from 1000 to 8000 g/m²/24 hr and a modulus of elasticity below about 600 PSI when wet.

8. A method for treating a wound, said method employing a wound covering material comprising a graft polymer formed from a polyester polyurethane substrate having a modulus of elasticity below about 1500 PSI and a hydrophilic acrylamide monomer present at at least 50% by weight, said material having a water permeability in the range from 1000 to 8,000 g/m²/24 hr and modulus of elasticity below 600 PSI when wet, said method comprising:

applying the covering material to the wound such that the covering conforms to the surface of the wound.

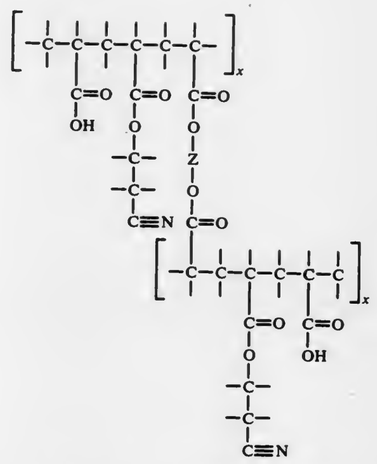
4,554,318

CYANOETHYLACRYLATE/ACRYLIC ACID COPOLYMER

Thomas G. Rukavina, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1984, Ser. No. 615,191
Int. Cl.⁴ C08L *63/00*; C08F *8/00*
U.S. Cl. 525—118 **6 Claims**

1. A composition of matter comprising the polymerization reaction product of a cyanoethylacrylate and acrylic acid further reacted with a crosslinking agent to form a crosslinked polymer having the structural formula



wherein Z represents the crosslinking agent and x is ≧1.

4,554,319

PROCESS FOR LOW TEMPERATURE CURABLE COATING COMPOSITION

John F. Heaps, Springfield, and Dennis E. Erickson, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 12, 1984, Ser. No. 630,035
Int. Cl.⁴ C08L *67/00, 61/32, 29/08*
U.S. Cl. 525—155 **16 Claims**

1. A process for preparing a coating composition which comprises:

(1) forming a solution of an aminoplast selected from the group consisting of alkoxymethyl derivatives of urea, melamine and methyl-, ethyl- and benzoguanamines and a styrene-(meth)allyl alcohol copolymer in a polar solvent; and

(2) admixing the solution with a non-aqueous solution of a hydroxy-containing resin to obtain a uniform solution;

wherein the styrene-(meth)allyl alcohol copolymer has a molecular weight in the range of about 800 to about 2500 and a hydroxy content in the range of about 4.0 to about 10.0 weight percent and wherein the hydroxy-containing resin is selected from the group consisting of acrylic and polyester hydroxyl-containing resins, and has hydroxy content of from about 1.3 weight percent to about 10 weight percent.

4,554,320

NYLON MOLDING MATERIALS HAVING HIGH IMPACT STRENGTH

Horst Reimann, Worms; Walter Ziegler, Edingen-Neckarhausen; Franz Brandstetter, Neustadt; Rainer Theysohn, Frankenthal, and Richard Pflueger, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 498,756, May 27, 1983, abandoned. This application Feb. 13, 1985, Ser. No. 701,449
Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220380
Int. Cl.⁴ C08F *8/30*; C08L *31/00*
U.S. Cl. 525—183 **4 Claims**

1. A nylon molding material which has high impact strength and contains

(A) a thermoplastic nylon having a relative viscosity of from 2.5 to 5, and

(B) from 5 to 65% by weight, based on (A), of a non-cross-linked copolymer which contains three or more components and is characterized by a melting range of from 40° to 100° C., a glass transition temperature of below −20° C. and a shear modulus of less than 100 (Nmm^{-2}) at −20° C., less than 50 (Nmm^{-2}) at 0° C. and less than 20 (Nmm^{-2}) at +20° C.; said copolymer comprising:

(a) from 55 to 75% by weight of ethylene,

(b) from 20 to 40% by weight of one or more primary or secondary C_2–C_8-alkyl acrylates or methacrylates and

(c) from 0.5 to 8% by weight of a monomer selected from the group consisting of maleic anhydride, acrylic acid and methacrylic acid,

the sum of components (a)–(c) being 100% by weight, with or without

(C) effective amounts of conventional additives.

4,554,321

FILM COMPOSITIONS OF BUTENE POLYMERS

Charles C. Hwo, Sugarland; George B. Klingensmith, and John A. Martone, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 407,375, Aug. 12, 1982, abandoned. This application Feb. 15, 1984, Ser. No. 580,318
Int. Cl.⁴ C08L *23/20*
U.S. Cl. 525—240 **10 Claims**

1. A film or sheet forming composition consisting essentially of a blend of about 50 to 95% by weight of an isotactic copolymer of butene-1 and ethylene containing from about 0.5 to 10 mole percent ethylene and from 50 to 5% by weight of a stereoregular elastomeric polymer of butene-1 which has by the following properties:

Solubility in refluxing ethyl ether (ether solubles): 2–6%
Crystallinity: 25–40%
Melting point, Form I: 110°–118° C.
Melting point, Form II: 98°–110° C.
Tensile strength at break, psi: 3,000–4,500
isotacticity: 71–80%
block lengths: <25

4,554,322

ROOM TEMPERATURE CURABLE POLYBUTADIENE RESINS WITH COPPER ETHYLACETOACETATE CATALYST

James R. Kwiecinski, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1984, Ser. No. 591,358
Int. Cl.⁴ C08F *279/02, 4/10*
U.S. Cl. 525—245 **14 Claims**

1. A two-part polybutadiene containing resin system curable at room temperature in air comprising:

I. copper ethylacetoacetate; and

II. a blend which comprises

(A) about 5 to about 25% polybutadiene that is soluble in said blend;

(B) about 55 to about 90% dicyclopentadiene acrylate;

(C) about 5 to about 20% of a polyfunctional monomer having 2 to 4 unsaturated groups selected from vinylic, acrylic, and mixtures thereof;

(D) about 0.25 to about 3% free radical initiator; and

(E) about 0.1 to about 0.8% of a coaccelerator.

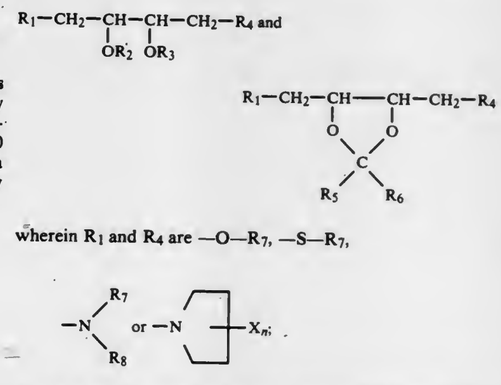
4,554,323

POLYMERIZABLE, OPTICALLY ACTIVE POLYMER AND PROCESS FOR PREPARING POLYMERIZABLE POLYMER

Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed May 10, 1983, Ser. No. 493,173
Claims priority, application Japan, May 21, 1982, 57-86206
Int. Cl.⁴ C08F *2/06, 8/00*
U.S. Cl. 525—272 **5 Claims**

1. A process for producing a polymerizable, optically active polymer, which comprises: polymerizing at least one anionically polymerizable monomer selected from the group consisting of optically active monomers capable of forming an optically active polymer having asymmetric carbon atoms, and monomers capable of being polymerized to form a polymer having molecular asymmetry effective to make said polymer optically active, in the presence of an anionic polymerization initiator obtained from an amine containing one or more primary amino groups or two or more secondary amino groups, to obtain a polymer having a terminal amino group and then reacting said terminal amino group with a reactive vinyl compound to provide a vinyl group at the terminal of the molecule of said polymerizable, optically active polymer, wherein said initiator is an optically active initiator prepared by combining an alkali metal amide, an alkaline earth metal amide or an aluminum amide with an asymmetric ligand compound selected from the group consisting of (−)-sparteine, (+)-sparteine, (−)-6-ethylsparteine, (+)-6-benzylsparteine, (−)-dihydrosparteine,



wherein R_1 and R_4 are —O—R_7, —S—R_7,



R_2, R_3, R_5, R_6, R_7 and R_8 each are alkyl having 1 to 10 carbon atoms; X is hydrogen, alkyl having 1 to 10 carbon atoms or halogen; and n is a number of from 1 to 4.

4,554,324

ACRYLATE COPOLYMER PRESSURE-SENSITIVE ADHESIVE COMPOSITION AND SHEET MATERIALS COATED THEREWITH

James R. Husman, South St. Paul; James N. Kellen, Oakdale; Rebecca E. McCluney, Maplewood, and Michael L. Tumey, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Division of Ser. No. 419,025, Sep. 16, 1982,. This application Apr. 4, 1985, Ser. No. 719,974
Int. Cl.⁴ C08F *259/04*
U.S. Cl. 525—301 **8 Claims**

1. A normally tacky and pressure-sensitive adhesive composition comprising copolymer having an inherent viscosity greater than 0.2 and consisting essentially of copolymerized repeating A and C monomers and optionally B monomers, wherein

A is a monomeric acrylic or methacrylic acid ester of a non-tertiary alcohol, said alcohol having from 1 to 14 carbon atoms with the average number of carbon atoms being about 4–12;

when used, B is at least one polar monomer copolymerizable with said monomeric acrylic acid ester, the amount by weight of B monomer being up to 12% of the total weight of all monomers; and

C is a monomer having the general formula X—$(Y)_n$—Z wherein

X is a vinyl group copolymerizable with said A and B monomers;

Y is a divalent linking group; where n can be zero or 1;

Z is a monovalent polymeric moiety having a T_g greater than 20° C. and a molecular weight in the range of about 2,000 to 30,000 and being essentially unreactive under copolymerization conditions;

wherein said vinyl group and said A and B monomers are copolymerized to form a soft polymeric backbone having pendant therefrom said polymeric moieties and wherein the weight of said C monomer is within the range of about 1 to 30% of the total weight of all monomers in said copolymer and the total weight of said B and C monomers in said copolymer is within the range of about 4 to 30% of the total weight of all monomers in said copolymer, the amount of said C monomer in said polymer is such as to provide said adhesive composition with a shear holding value of at least 50 minutes.

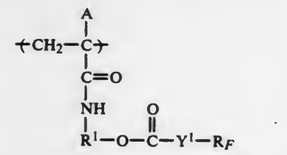
4,554,325

PERFLUOROCARBON BASED POLYMERIC COATINGS HAVING LOW CRITICAL SURFACE TENSIONS

Donald L. Schmidt, and Robert F. Harris, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 11, 1984, Ser. No. 609,264
Int. Cl.[4] C08F 8/18
U.S. Cl. 525—326.8 **9 Claims**

1. A polymer composition comprising pendant rearranged oxazoline and/or oxizane portions linked through an amide-ester linkage to a perfluorocarbon moiety having a perfluoroalkyl group and having a recurring unit of the formula:



wherein, A is hydrogen or methyl, R_F is a saturated perfluoroaliphatic moiety, Y^1 is a hydrocarbon moiety containing at least 2 carbon atoms, and R^1 is the remaining portion of a rearranged oxazoline or oxazine moiety.

4,554,326

PROCESS FOR THE MANUFACTURE OF HALOGENATED POLYMERS

Ronald C. Kowalski, New Providence; William M. Davis; Neil F. Newman, both of Edison; Z. Andrew Foroulis, Mendham, all of N.J., and Francis P. Baldwin, Coupeville, Wash., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 1, 1983, Ser. No. 481,320
Int. Cl.[4] C08F 8/22
U.S. Cl. 525—354 **82 Claims**

1. A process for the continuous production of halogenated polymer the process comprising contacting a cohesive polymer mass and halogenating agent in a continuous flow device comprising means for conveying said polymer through said device wherein said polymer and said halogenating agent are subjected to deformation and means for disengaging by-product of the halogenation reaction and unreacted halogenating agent from said halogenated polymer comprising injecting inert gas into said continuous flow device downstream of said contact between said polymer and said halogenating agent in order to neutralize said halogenated polymer.

4,554,327

ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 626,831, Jul. 2, 1984, Pat. No. 4,536,191, which is a continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Apr. 22, 1985, Ser. No. 725,874
Int. Cl.[4] C08F 8/22
U.S. Cl. 525—356 **2 Claims**

1. An ester-containing halogenated polyalkylene characterized by internal olefinic unsaturation, by being essentially free of cross-linking, by having a branch index of from about 2 to about 20 and by having at least 1 percent of the halogen groups replaced by ester groups.

4,554,328

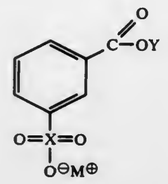
MODIFIED PET POLYMERS AND COPOLYMERS SUITABLE FOR EXTRUSION BLOW MOLDING

Stephen M. Sinker, Lebanon; Joseph J. Baron, Jr., Morris Plains, both of N.J.; Raymond W. Rupp, Corpus Christi, Tex.; Marvin L. Doerr, Pineville, N.C., and Charles E. McChesney, Monmouth Junction, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 30, 1985, Ser. No. 696,570
Int. Cl.[4] C08G 63/76
U.S. Cl. 525—437 **7 Claims**

1. An improved modified polyethylene terephthalate polymer or copolymer of the type having high zero shear rate melt viscosity and shear sensitivity, comprising end-capped and branched polyethylene terephthalate polymer or copolymer molecules comprising terephthalic acid structual units and isophthalic acid structural units, of high molecular weight, formed by reacting end-capping agents and branch agents with low molecular weight polyethylene terephthalate polymer or copolymer molecules and thereafter polycondensing the end-capped and branched low molecular weight molecules to form high molecular weight molecules, wherein the improvement comprises:

the end-cap consists of the reacted component of a difunctional acid or alkali metal salt of a difunctional acid having the formula:



wherein:

X has a valency of 6 and is selected from sulfur, selenium, and tellurium;

M is an alkali metal or hydrogen; and,

Y is hydrogen or an aliphatic group containing from 1 to 18 carbon atoms.

4,554,329

MODIFIED PET POLYMERS AND COPOLYMERS SUITABLE FOR EXTRUSION BLOW MOLDING

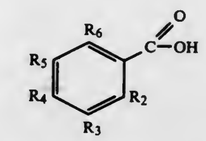
Stephen M. Sinker, Lebanon, and Charles E. McChesney, Monmouth Junction, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 30, 1985, Ser. No. 696,606
Int. Cl.[4] C08G 63/76
U.S. Cl. 525—437 **7 Claims**

1. An improved modified polyethylene terephthalate polymer or copolymer of the type having high zero shear rate melt viscosity and shear sensitivity, comprising end-capped and branched polyethylene terephthalate polymer or copolymer molecules comprising terephthalic acid structural units and isophthalic acid structural units, wherein the improvement comprises the combination of:

(a) the end-cap comprises the reacted component of a monofunctional acid having a normal boiling point or sublimation point less than above about 200° C.; and

(b) the monofunctional acid is an aromatic monocarboxylic acid having the formula:



wherein: R_3 and/or R_5 is an alkoxy group containing from 1 to 10 carbon atoms; and, the remaining R's are hydrogen.

4,554,330

POLYESTERCARBONATES EXHIBITING IMPROVED HEAT RESISTANCE FROM CYCLOALKYLIDENE DIPHENOL

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

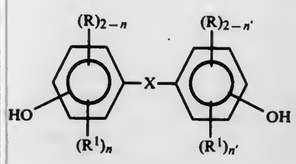
Continuation-in-part of Ser. No. 453,105, Dec. 17, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,472
Int. Cl.[4] C08G 63/64; C08L 67/02, 69/00
U.S. Cl. 525—462 **14 Claims**

9. A copolyester-carbonate composition exhibiting improved heat resistance comprising:

(i) an amount effective to improve the heat resistance of said composition of at least one high molecular weight, aromatic, thermoplastic, linear copolyester-carbonate resin which comprises the polymeric reaction products of

(a) a carbonate precursor,

(b) at least one dihydric phenol represented by the general formula



wherein

R is independently selected from hydrogen or lower alkyl radicals,

R^1 is independently selected from halogen radicals,

X is selected from monocyclic cycloalkylidene radicals containing from 12 to about 16 ring carbon atoms, and n and n' are independently selected from whole numbers having a value of from 0 to 2 inclusive, with the proviso that the sum of n plus n' is at least one, and

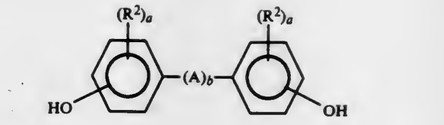
(c) at least one difunctional carboxylic acid or an ester forming reactive derivative thereof; and

(ii) at least one copolyester-carbonate resin which comprises the polymeric reaction products of

(d) a carbonate precursor,

(e) at least one difunctional carboxylic acid or an ester forming reactive derivative thereof, and

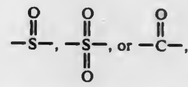
(f) at least one dihydric phenol represented by the general formula



wherein

R^2 is independently selected from halogen radicals, monovalent hydrocarbon radicals, or monovalent hydrocarbonoxy radicals,

A is selected from alkylene radicals, alkylidene radicals, cycloalkylene or cycloalkylidene radicals containing from 4 to 6 ring carbon atoms, —S—, —S—S—, —O—,



a is independently selected from whole numbers having a value of from 0 to 4 inclusive, and

b is either zero or one.

4,554,331

LIQUID COPOLYMERIC ORGANOSILOXANES

Kenneth C. Fey, Midland, and Harold V. Lefler, III, Sanford, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 2, 1984, Ser. No. 627,124
Int. Cl.[4] C08F 283/00
U.S. Cl. 525—478 **11 Claims**

1. A composition comprising the product obtained by reacting:

(A) 100 parts by weight of the reaction product of

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units, wherein R represents a monovalent hydrocarbon radical, and the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1 and

(ii) a polyorganohydrogensiloxane; with

(B) 1 to 50 parts by weight of a compound selected from the group consisting of acyloxysilanes, alkoxysilanes, oximosilanes, and acyl halides, said reacting being done at a temperature and for a period of time sufficient to by-produce a volatile compound selected from the group consisting of alcohols, acids and ketoximes.

4,554,332

THERMOSETTING COATING COMPOSITION USEFUL AS CHIP RESISTANT PRIMER II

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Fraser, and Dennis J. Grebur, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1983, Ser. No. 510,796
Int. Cl.[4] C08G 59/16
U.S. Cl. 525—532 **17 Claims**

1. A novel, epoxy-polyester graft copolymer adapted for use in a thermosetting composition, which copolymer has a number average molecular weight ($\overline{M}n$) of between about 2,000 and about 20,000, said copolymer being prepared by polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor which has a number average molecular weight ($\overline{M}n$) of between about 1,000 and about 4,000 and which has been prepared by reacting chain extended diepoxide with hydroxy functional secondary amine in chain terminating reaction in approximately 1 to 1 equivalent ratio, said chain extended diepoxide being prepared by reacting diepoxide substantially simultaneously with diphenol and dicarboxylic acid in amounts sufficient to give a weight per epoxide

(WPE) of between about 500 and about 2,500, and wherein said polymerization of said lactone monomers is carried out at a temperature between about 130° C. and about 200° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 20 and about 90 weight percent said lactone monomers.

4,554,333

POLYMERIZATION OF OLEFINS EMPLOYING A CATALYST CONTAINING A TITANIUM COMPONENT DERIVED FROM ALICYCLIC HYDROXY COMPOUNDS

William M. Coleman, III, Lake Jackson, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 566,107, Dec. 27, 1983, Pat. No. 4,528,339. This application Nov. 13, 1984, Ser. No. 670,448

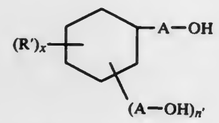
Int. Cl.⁴ C08F *4/44*

U.S. Cl. 526—127 **24 Claims**

1. In a process for polymerizing at least one α-olefin or a mixture of at least one α-olefin and at least one polymerizable ethylenically unsaturated monomer in the presence of a supported Ziegler-Natta catalyst; the improvement which comprises employing as the transition metal component of such catalyst that which results from reacting

(A) at least one titanium compound represented by the formula $Ti(OR)_xX_{4-x}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen and x has a value from zero to 4; with

(B) at least one compound containing at least one aliphatic hydroxyl group represented by the formula



wherein each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; R′ is independently hydrogen, a halogen atom, a hydrocarbyl group, a hydrocarbyloxy group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyl group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyloxy group, each such hydrocarbyl or hydrocarbyloxy groups having from 1 to about 20 carbon atoms; n′ has a value of from 1 to 5, and x independently has a value of from zero to 4; and wherein components (A) and (B) are employed in quantities which provide a molar ratio of (B):(A) of 0.1:1 to about 10:1.

4,554,334

PROCESS FOR PREPARING OPTICALLY ACTIVE POLYMER

Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

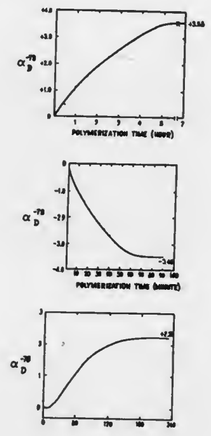
Division of Ser. No. 471,584, Mar. 3, 1983, Pat. No. 4,478,953. This application Aug. 10, 1984, Ser. No. 639,967

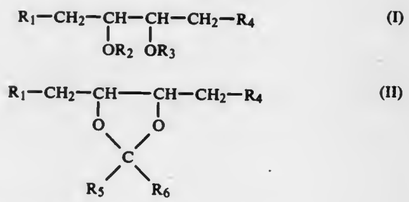
Claims priority, application Japan, Mar. 9, 1982, 57-36909

Int. Cl.⁴ C08F *4/46, 4/50, 4/52*

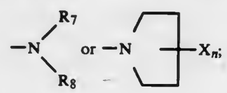
U.S. Cl. 526—177 **10 Claims**

1. A process for preparing an optically active polymer, which comprises polymerizing an anionically polymerizable monomer containing a vinyl group, in the presence of an anionic polymerization catalyst comprising a complex of (A) an asymmetric ligand compound of the formula (I) or formula (II):





in which R_1 and R_4 each is —O—R_7, —S—R_7,



R_2, R_3, R_5, R_6, R_7 and R_8 each is alkyl having 1 to 10 carbon atoms; X is hydrogen, alkyl having 1 to 10 carbon atoms or halogen; and n is a number of 1 to 4; and (B) an anionic polymerization initiator capable of forming a complex with said ligand compound and effective for initiating anionic polymerization of anionically polymerizable monomers containing a vinyl group, said anionic initiator containing a carbanion or a nitrogen anion derived from a secondary amine.

4,554,335

DIELECTRIC POLYMER MATERIALS

Teruo Sakagami; Noriyuki Arakawa; Yoshikichi Teramoto, and Kenichi Nakamura, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,192, Jul. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 256,839, Apr. 23, 1981, abandoned. This application Feb. 29, 1984, Ser. No. 584,600

Claims priority, application Japan, Apr. 28, 1980, 55-56817

Int. Cl.⁴ C08F *214/22;* H01G *4/22*

U.S. Cl. 526—249 **5 Claims**

1. A dielectric polymer material consisting essentially of approximately 25 to approximately 90 mol% of vinylidene fluoride, approximately 5 to approximately 70 mol% of ethylene trifluoride, approximately 3 to approximately 10 mol% of ethylene chloride trifluoride, and up to about 3 mol% of another fluorine-containing monomer said material having a dielectric constant of at least about 20 over at least a fifty

celcius degree temperature range between room temperature and 100° C., said material having a difference between maximum and minimum dielectric constant values less than about 13 over said fifty degree range.

4,554,336

URETHANE MODIFIED ORTHODONTIC ADHESIVE

Patrick D. Kidd, San Dimas, and Terry L. Sterrett, Long Beach, both of Calif., assignors to Sybron Corporation, Rochester, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,472

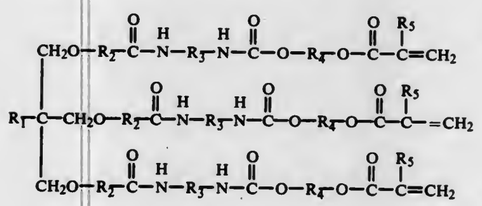
Int. Cl.⁴ C08F *26/02, 126/02, 226/02*

U.S. Cl. 526—301 **3 Claims**

1. A two-paste dental adhesive composition which comprises in weight percent:

Part A:

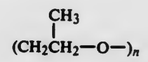
at least 5% of a trifunctional methacrylate or acrylic terminated urethane resin of the following chemical structure:



Where:

R_1 is —H, —CH_3, —CH_2CH_3 or —$CH_2CH_2CH_3$,

R_2 is $(—CH_2CH_2—O—)_n$ or



where: n=2 to 10,

R_3 is a divalent organic radical obtained by removal of two isocyanato groups from an organic diisocyanate,

R_4 is methylene, ethylene or propylene, and

R_5 is —H, or —CH_3,

blended with up to 95% of at least one polymerizable acrylate or methacrylate monomer, a catalyst, and a filler material; and

Part B:

at least 5% of said trifunctional methacrylate or acrylic terminated urethane resin blended with up to 95% of at least one polymerizable acrylate or methacrylate monomer, a polymerization activator, and a filler material.

4,554,337

MODIFIED PROTEIN ADHESIVE BINDER AND PROCESS FOR PRODUCING

Thomas L. Krinski, Granite City, and Alan L. Steinmetz, Belleville, both of Ill., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jan. 18, 1985, Ser. No. 692,732

Int. Cl.⁴ C08J *7/16;* C08L *89/00;* C09J *3/18*

U.S. Cl. 527—201 **43 Claims**

1. A process for the production of a modified vegetable protein adhesive binder comprising:

(a) forming an alkaline dispersion of a vegetable protein material;

(b) treating said dispersion with an alkyl acrylamidoglycolate alkyl ether in an amount sufficient to modify the protein material.

4,554,338

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Jeffrey H. Wengrovius, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,893

Int. Cl.⁴ C08G *77/06*

U.S. Cl. 528—18 **7 Claims**

1. A room temperature vulcanizable organopolysiloxane composition comprising by weight

(A) 100 parts of alkoxy terminated organopolysiloxane;

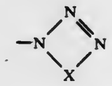
(B) up to 10 parts of polyalkoxy silane;

(C) up to 5 parts of amine accelerator selected from the class consisting of primary amines, secondary amines, and silylated secondary amines and

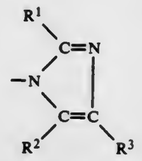
(D) an effective amount of a tin condensation catalyst of the formula

$(R_2)Sn(Q)_2$

where Q is a monovalent radical selected from a triazole having the formula,



and an imidazole having the formula,



R is selected from $C_{(1-18)}$ monovalent hydrocarbon radicals and substituted $C_{(1-18)}$ monovalent hydrocarbon radicals, R^1, R^2 and R^3 are selected from the same or different monovalent radicals selected from hydrogen and R radicals and X is divalent $C_{(1-50)}$ organic radical selected from hydrocarbon radicals and substituted hydrocarbon radicals.

4,554,339

ORGANOPOLYSILOXANES CONTAINING BOTH ACRYLOXYALKYL GROUPS AND SI-BONDED HYDROGEN ATOMS IN THE SAME MOLECULE

Friedrich Hockemeyer, Emmerting, and Gerhard Preiner, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,500

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222839

Int. Cl.⁴ C08G *77/04*

U.S. Cl. 528—26 **5 Claims**

1. An organopolysiloxane having a viscosity of at least 100 mPa.s at 25° C., and having SiC-bonded acryloxyalkyl groups and Si-bonded hydrogen in the same molecule.

4,554,340

HOMOGENEOUS, STORAGE-STABLE POLYOL COMPOSITIONS OF HIGH ETHYLENE GLYCOL CONTENT AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Rudolf Heusch, Leverkusen; Werner Rasshofer, Cologne; Wolfgang Reichmann, Hilden, and Adolf Richartz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 497,626, May 24, 1983, Pat. No. 4,518,521. This application Feb. 19, 1985, Ser. No. 703,059

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219759

Int. Cl.⁴ C08G *18/32*

U.S. Cl. 528—77 **4 Claims**

1. A process for the production of polyurethanes comprising reacting isocyanates with a homogeneous, storage-stable, emulsifier-free polyol mixture having a high mixed OH-number and a high ethylene glycol content comprising 100 parts of a relatively high molecular weight polyalkylene oxide polyol having an OH-number of from 20 to 210, which contains at least 5%, and less than 80%, by weight of terminal ethylene oxide blocks and from 0.1 to 30 parts of a low molecular weight diol mixture having an OH-number of 1200 to 1650 in the form of a reaction product of 1 mole of ethylene glycol with 0.1 to 0.5 moles of propylene oxide.

4,554,341

FIRE RETARDANT, FAST REACTING EPOXY RESIN

Robert C. Allen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 27, 1985, Ser. No. 706,365

Int. Cl.⁴ C08G *59/42, 59/68*

U.S. Cl. 528—89 **19 Claims**

1. A heat-curable composition comprising:

(1) from about 50 to about 99 parts by weight of a polyepoxide possessing more than one vic-epoxy group,

(2) from about 1 to about 50 parts by weight of an unsaturated aromatic monomer,

(3) from about 0.25 to about 2.0 stoichiometric equivalents based on the polyepoxide of a carboxyl-containing compound,

(4) from about 0.1 to about 1.0 stoichiometric equivalents based on the polyepoxide of a halogenated acid anhydride compound,

(5) an epoxy curing accelerator composition comprising from about 0.001 to about 10 parts by weight per 100 parts by weight of the polyepoxide of an onium compound, and

(6) a curing amount of a free-radical curing agent.

4,554,342

HEAT-CURABLE COMPOSITIONS COMPRISING AN EPOXY RESIN, AN AMINE AND A SULFONIUM SALT

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 30, 1984, Ser. No. 635,984

Int. Cl.⁴ C08G *59/56, 59/68*

U.S. Cl. 528—90 **19 Claims**

1. A curable composition consisting essentially of (a) a polyepoxide, (b) at least one aromatic or aliphatic amine present in an amount effective to cure the polyepoxide under curing conditions, and (c) a catalytic amount of a trihydrocarbyl sulfonium salt comprising substituted or unsubstituted alkyl or aryl radicals.

4,554,343

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTER

Winston J. Jackson, Jr., and Joseph J. Watkins, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,118

Int. Cl.⁴ C08G *63/22*

U.S. Cl. 528—274 **7 Claims**

1. Process for the preparation of high molecular weight polyesters comprising reacting substantially equimolar amounts of an acid component comprising at least 50 mole % of at least one alicyclic or aromatic dicarboxylic anhydride or corresponding dicarboxylic acid having 6 to 30 carbon atoms with 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol or mixtures thereof, at a temperature between about 110° C. and about 180° C. in a solvent comprising benzene having 1 to 2 chlorine or alkyl substituents having 1 to 4 carbon atoms, azeotropically removing water from the reaction mixture while condensing solvent vapor and returning it to the reaction mixture, and recovering the polyester after an inherent viscosity of at least 0.4 has been attained.

4,554,344

PROCESS FOR PREPARATION OF POLYESTERS WITH IMPROVED MOLECULAR WEIGHT FROM GLYCOLS CONTAINING A VICINAL SECONDARY HYDROXYL GROUP

Winston J. Jackson, Jr., and Joseph J. Watkins, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,583

Int. Cl.⁴ C08G *63/34*

U.S. Cl. 528—283 **2 Claims**

1. Process for the preparation of a polyester which comprises reacting and polycondensing an aromatic dicarboxylic acid or a polyester-forming derivative thereof with a diol containing vicinal hydroxyl groups wherein at least one hydroxyl group is secondary under polyester-forming conditions of temperature, pressure and time in the presence of at least 800 ppm tin.

4,554,345

PREPARATION OF LIQUID POLYAMIDE FROM DINITRILE AND DIAMINE

Janice L. Greene, Chagrin Falls, and Roman Loza, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 250,797, Apr. 3, 1981, Pat. No. 4,380,623. This application May 2, 1983, Ser. No. 490,284

Int. Cl.⁴ C08G *69/00*

U.S. Cl. 528—336 **6 Claims**

1. A process for preparing a liquid polyamide comprising contacting a diamine with water and a dinitrile in the presence of carbon dioxide.

4,554,346

PREPARATION OF CURABLE RESIN FROM CYANATE ESTER COMPOUND

Morio Gaku, Saitama; Hidenori Kimbara, and Jun Yokoi, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 18, 1984, Ser. No. 633,035

Claims priority, application Japan, Jul. 22, 1983, 58-134025

Int. Cl.⁴ C08G *83/00*

U.S. Cl. 528—363 **7 Claims**

1. A process for producing a curable resin which comprises reacting

(a) at least one cyanate ester component selected from the group consisting of

(i) a polyfunctional cyanate ester monomer having the formula:

$$R^1\text{—}O\text{—}C{\equiv}N)_m$$

wherein m is an integer of 2 to 10 and R^1 is an aromatic organic group, the cyanate groups being directly bonded to the aromatic nucleus of said aromatic group,

(ii) a prepolymer of (i), and

(iii) a coprepolymer of (i) and an amine

with (b) at least one compound having (1) at least one hydroxy group and (2) at least one radical polymerizable unsaturated double bond in its molecule

in contact with (c) a radical polymerization inhibitor at a temperature of about 80°–about 140° C., wherein the ratio of the cyanate group to the hydroxy group is in the range of from about 1:0.1 to about 1:2.

4,554,347

MICROWAVE CURING OF LATEX-BASED COMPOSITIONS

J. Barry Hawkes, Jr., Watertown, Mass., assignor to W. R. Grace & Co., Lexington, Mass.

Division of Ser. No. 632,682, Jul. 20, 1984, , which is a continuation of Ser. No. 419,376, Sep. 20, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,781

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 528—503 **12 Claims**

1. A process of forming a cured latex based composition comprising the steps of heating a fluid rubber latex containing a curing agent and a gelling agent to effect gelling thereof and removal of a major proportion of the water initially contained therein and subjecting the resultant gelled composition to microwave radiation to effect curing thereof, said microwave radiation being modulated to provide substantially uniform and complete curing of said gelled composition.

4,554,348

2-AMINO-CINNAMOYLTHIOPHENE ACID AZO DYE COMPOUNDS HAVING AN ANILINE, TETRAHYDROQUINOLINE, OR BENZOMORPHOLINE COUPLER

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

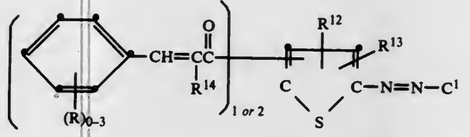
Filed Jan. 23, 1984, Ser. No. 573,237

Claims priority, application United Kingdom, Oct. 7, 1983, 8326870

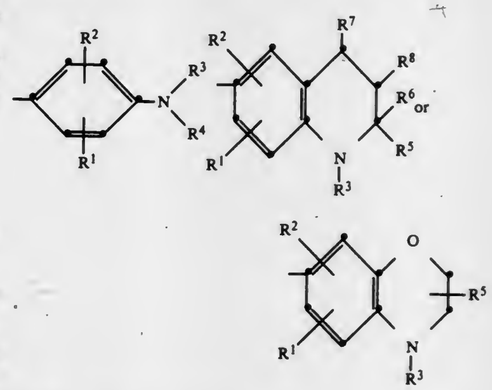
Int. Cl.⁴ C09B *29/033, 29/09, 29/36, 29/44*

U.S. Cl. 534—768 **14 Claims**

1. A dye compound having the formula



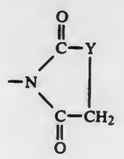
wherein each R^{14} is H or alkyl; each R is a substituent independently selected from alkyl, hydroxy, alkoxy, carboxy, halogen, nitro, alkoxycarbonyl, alkanoyloxy, alkanoyl, alkylamino, cyano, dialkylamino, and alkyl substituted with 1–3 of halogen, alkoxy, alkanoyl, alkanoyloxy, alkoxycarbonyl, alkanoylamino, cyano, nitro, carbamoyl, alkylcarbamoyl, sulfamoyl, or alkylsulfamoyl; R^{12} and R^{13} are each selected from H, alkyl, alkoxy, alkanoyl, halogen, alkylsulfonyl, alkanoyloxy, SO_2NH_2, $SO_2NHalkyl$, $SO_2N(alkyl)_2$, $CONH_2$, CONHalkyl, —COOH, $CON(alkyl)_2$, arylsulfonyl, alkanoyl, alkanoylamido, aroyl, aryl, alkylthio, arylthio, alkenylthio, alkoxycarbonyl, hydroxyalkylcarbamoyl, cyclohexylthio, $SO_3C_6H_5$, cyano, thiocyano, cyclohexylsulfonyl, cyclohexyl, and alkyl substituted with 1–3 of alkoxy, cyano, halogen, SO_2alkyl, CONHalkyl, alkanoyloxy, or $SO_2NHalkyl$; C^1 is an aniline, tetrahydroquinoline, or benzomorpholine type azo type dye coupler which is unsubstituted or substituted; wherein at least one —SO_3M, or —OSO_3M group is present in said dye compound where M is selected from H^+, NH_4^+, Na^+, K^+, and the colorless cations of sulfuric acid or sulfonic acid salts of trimethylamine, triethylamine, and N,N-dimethylaniline; and wherein the coupler is selected from



wherein:

R^1 and R^2 are each selected from hydrogen, fluorine, chlorine, bromine, alkyl, aryl, cycloalkyl, —COOH, alkoxy, phenoxy, alkylthio, arylthio, and radicals having the formula —NH—X—R^9 in which X is —CO—, —COO—, or —SO_2— and R^9 is selected from alkyl and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, and alkoxy, and when X is —CO— in the formula —NH—X—R^9, R^9 also can be hydrogen, amino, alkenyl, alkylamino, dialkylamino, arylamino, aryl, or furyl;

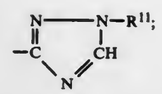
R^3 and R^4 are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two groups selected from alkyl, —OH, alkoxy, halogen, —COOH, and hydroxy substituted alkyl; phenyl or phenyl substituted with alkyl, —COOH, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; straight or branched alkenyl; straight or branched alkyl and such alkyl substituted with 1–3 of the following: hydroxy; —COOH; halogen; cyano; amino; alkoxy; hydroxyalkoxy; succinimido; glutarimido; phenylcarbamoyloxy; phthalimido; phthalimidino; 2-pyrrolidono; cyclohexyl; phenoxy; phenyl or phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; alkanoylamino; sulfamoyl; alkylsulfamoyl; vinylsulfonyl; acrylamido; benzoylsulfonicimido; alkylsulfonamido; phenylsulfonamido; alkoxycarbonylamino; alkylcarbamoyloxy; alkoxycarbonyl; alkoxycarbonyloxy; alkenylcarbonylamino; a group of the formula



wherein Y is

—NH—, —N(alkyl)—, —O—, —S—, or —CH_2—O—; —S—R^{10}

wherein R^{10} is alkyl, phenyl, phenyl substituted with halogen, alkyl, alkoxy, alkanoylamino, cyano, or alkoxycarbonyl, pyridyl, pyrimidinyl, benzoxazolyl, benzimidazolyl, benzothiazolyl, or



$-OXR^9$; $-NH-X-R^9$; $-X-R^9$; $-CONR^{11}R^{11}$; $-SO_2NR^{11}R^{11}$; wherein R^9 and X are as defined above and each R^{11} is selected from H, alkyl, and alkyl substituted with 1–3 of halogen, hydroxy, phenoxy, alkoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyl, and alkanoyloxy; alkoxy substituted with hydroxy, cyano, alkanoyloxy, or alkoxy; phenoxy substituted with one or more of alkyl, alkoxy or halogen; and R^3 and R^4 combined as pentamethylene, ethyleneoxyethylene or ethylenesulfonylethylene which, with the nitrogen atom to which it is attached, forms a ring;

R^5, R^6, R^7 and R^8 are each selected from hydrogen and alkyl; and wherein at least one of R, R^1, R^2, R^3, R^4, R^{12} and R^{13} is $-SO_3M$ or $-OSO_3M$, or wherein an alkyl, cycloalkyl or aryl moiety thereof is substituted with 1–3 of $-SO_3M$ or $-OSO_3M$.

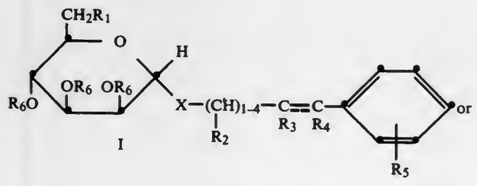
4,554,349

ARALKYL AND ARALKENYL GLYCOSIDES AS INHIBITORS OF ANTIGEN-SPECIFIC T-CELL PROLIFERATION

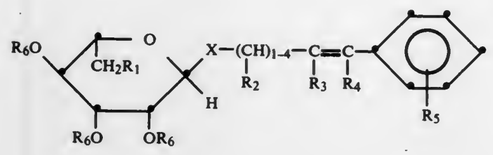
Mitree M. Ponpipom, Branchburg; Tsung-Ying Shen, Westfield, and Robert L. Bugianesi, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 11, 1983, Ser. No. 540,594
Int. Cl.⁴ C07H *5/06*
U.S. Cl. 536—55 **9 Claims**

1. Glycosides of the formulas:



I

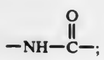


II

wherein the dotted line represents a carbon-carbon bond or an additional hydrogen attached to each of the carbons connected thereto;

R_1 is H, OH, OCH_3, α-D-mannopyranosyloxy, N_3, NH_2, NH-alkanoyl of 1–5 carbons, NH-oleiyl, or NH-lipoyl;

X is —S—, —O—, or



R_2, R_3 and R_4 are each hydrogen or lower alkyl of 1–4 carbon atoms;

R_5 is H, Cl, F, OH, O-alkyl of 1–4 carbons, S-alkyl of 1–4 carbons and their sulfoxide and sulfone, NRR^1 where R and R^1=H, or R=H, R^1=alkyl of 1–4 carbons, or R=R^1=alkyl of 1–4 carbons; and

R_6 is hydrogen or lower alkanoyl of from 1–4 carbon atoms.

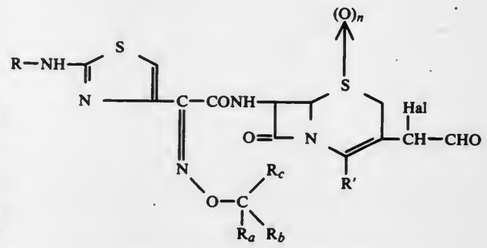
4,554,350

3-(1-HALO-2-OXOETHYL)CEPHALOSPORIN INTERMEDIATES

Pierre Le Roy; Daniel Farge, both of Thiais; Claude Moutonnier, Le Plessis Robinson; Jean-Francois Peyronel, Palaiseau, and Bernard Plau, Creteil, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Aug. 11, 1983, Ser. No. 522,261
Claims priority, application France, Aug. 13, 1982, 82 14093
Int. Cl.⁴ C07D *501/24*
U.S. Cl. 544—22 **6 Claims**

1. A cephalosporin compound of the formula:



in which R represents an amino-protecting radical, R′ represents a protected carboxyl radical, Hal represents a chlorine, bromine or iodine atom, and either R_a, R_b and R_c each represent a hydrogen atom, or R_a represents a protected carboxyl radical and R_b and R_c, which are identical or different, represents hydrogen atoms or alkyl radicals having 1 to 4 carbon atoms, or together form an alkylene radical having 2 to 5 carbon atoms, and n is equal to 0 or 1, the group $-OCR_aR_bR_c$ being in the syn position; and, when R_b and R_c are different, diastereoisomers of the said cephalosporin compound.

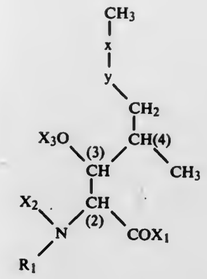
4,554,351

METHOD FOR THE TOTAL SYNTHESIS OF CYCLOSPORINS, NOVEL CYCLOSPORINS AND NOVEL INTERMEDIATES AND METHODS FOR THEIR PRODUCTION

Roland Wenger, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 299,103, Sep. 3, 1981, Pat. No. 4,396,542, which is a continuation-in-part of Ser. No. 233,713, Feb. 12, 1981, abandoned. This application May 5, 1983, Ser. No. 491,991
Claims priority, application Switzerland, Feb. 14, 1980, 1223/80
Int. Cl.⁴ C07C *101/30;* **C07D** *87/36, 27/08, 29/24*
U.S. Cl. 544—177 **8 Claims**

1. A compound of formula III



(III)

wherein —x—y— is $-CH_2-CH_2-$ or $-CH=CH-$,

R_1 is hydrogen or methyl,

X_1 is hydroxy or a carboxy protecting group suitable for peptide synthesis or a carboxy activating group suitable for peptide synthesis,

X_2 is hydrogen or an N-protecting group suitable for peptide synthesis, and

X_3 is hydrogen or an O-protecting group suitable for peptide synthesis or

(X_2+X_3) is a protecting group suitable for peptide synthesis bridging the 2-N and 3-O functions or

(X_2+R_1) is a divalent N-protecting group suitable for peptide synthesis,

and wherein the positions 2, 3 and 4 have the configuration S,R and R or R,S and S respectively.

4,554,352

PREPARATION OF 1-ALKYL-1,4-DIHYDRO-4-OXO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLIC ACID

Paul F. Ranken, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 29, 1983, Ser. No. 537,078
Int. Cl.⁴ C07D *215/16, 211/72, 211/70*
U.S. Cl. 546—156 **4 Claims**

1. A process which comprises:

(a) reacting a 4-phenylpyridine with bromine in the presence of excess Lewis acid catalyst to form a 4-(4-bromophenyl)pyridine,

(b) nitrating the 4-(4-bromophenyl)pyridine to a 4-(4-bromo-3-nitrophenyl)pyridine,

(c) reducing the 4-(4-bromo-3-nitrophenyl)pyridine to a 4-(3-aminophenyl)pyridine,

(d) reacting the 4-(3-aminophenyl)pyridine with a dialkyl ethoxymethylenemalonate to form a dialkyl 3-(4-pyridinyl)-anilinomethylenemalonate,

(e) cyclizing the dialkyl 3-(4-pyridinyl)anilinomethylenemalonate to an alkyl 1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate,

(f) N-alkylating the alkyl 1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate to an alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate, and

(g) hydrolyzing the alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate to a 1-alkyl-1,4-dihyro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylic acid.

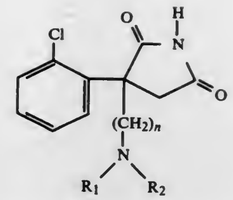
4,554,353

2,5-PYRROLIDINEDIONE DERIVATIVES USEFUL AS ANTIARRHYTHMIC AGENTS

Robert J. Chorvat, Arlington Heights, and Bipinchandra N. Desai, Vernon Hills, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Aug. 3, 1984, Ser. No. 637,633
Int. Cl.⁴ C07D *403/06, 207/40*
U.S. Cl. 546—208 **4 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof wherein n is 2 or 3;

and R_1 and R_2 are n-propyl or isopropyl or R_1 and R_2 together with the nitrogen form a 2,6 dimethyl-1-piperidinyl group.

3. A compound according to claim 1 which is 3-(2-chlorophenyl)-3-[2-(2,6-dimethyl-1-piperidinyl)ethyl]-2,5-pyrrolidinedione and the pharmaceutically acceptable acid addition salts thereof.

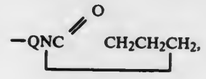
4,554,354

TINTABLE, DYEABLE, CURABLE COATINGS AND COATED ARTICLES

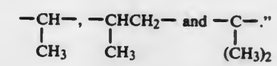
Loren A. Haluska, and Marcelle G. Molzahn, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 484,772, Apr. 14, 1983, abandoned, which is a division of Ser. No. 340,160, Jan. 18, 1982, Pat. No. 4,421,893. This application Dec. 14, 1984, Ser. No. 681,470
Int. Cl.⁴ C07F *7/10*
U.S. Cl. 548—110 **6 Claims**

1. A composition of matter which is a silane having the general formula $(XO)_2SiRSR'$ wherein X is an alkyl radical of 1–4 carbon atoms, R is a divalent aliphatic hydrocarbon radical containing less than five carbon atoms and R′ is



wherein Q is a radical selected from a group consisting of $-CH_2CH_2-$, $-CH_2CH_2CH_2-$,



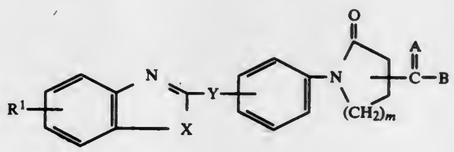
4,554,355

HETEROCYCLIC COMPOUNDS AS ANTIALLERGIC AGENTS

John H. Musser, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,573
Int. Cl.⁴ C07D *277/64, 263/32;* **C07P** *235/16*
U.S. Cl. 548—180 **4 Claims**

1. A compound having the formula

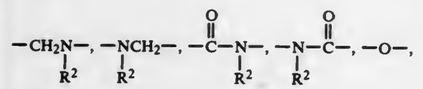


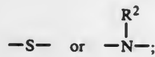
wherein

X is —O—, —S— or



Y is —CH_2O—, —OCH_2—, —CH_2S—, —SCH_2—,





m is 1–3;
A is O or NR^2;
B is OR^2, SR^2 or $N(R^2)_2$;
R^1 is hydrogen, loweralkyl, loweralkoxy or halo;
R^2 is hydrogen or loweralkyl;
and the pharmaceutically acceptable salts thereof.

4,554,356

METHOD FOR PRODUCTION OF IMIDAZOLYL VINYL ETHERS

Ludwig Zirngibl, and Kurt Thiele, both of Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

PCT No. PCT/EP82/00010, § 371 Date May 24, 1982, § 102(e) Date May 24, 1982, PCT Pub. No. WO82/02552, PCT Pub. Date Aug. 5, 1982

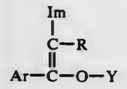
Continuation of Ser. No. 566,776, Dec. 29, 1983, abandoned, which is a continuation of Ser. No. 385,403, May 24, 1982, abandoned. This PCT application Jan. 21, 1982, Ser. No. 692,324

Claims priority, application Switzerland, Jan. 23, 1981, 430/81

Int. Cl.[4] C07D *233/60*

U.S. Cl. 548—341 **17 Claims**

1. Process for the production of an imidazolyl-vinyl ether of the formula



(I)

or an acid addition salt thereof, wherein in formula (I)

Ar represents a phenyl, napthyl, thienyl or pyridyl ring, wherein said ring optionally is mono- or multi-substituted and the substituents, independently from each other, represent a halogen, a lower alkyl group or a cycloalkyl group with up to 6 carbon atoms, a trifluoromethyl, a lower alkoxy or a lower alkylthio group with 1 to 6 carbon atoms in the alkyl portion thereof, a phenyl, benzyl, cyano, nitro, amino or loweralkyl amino group,

R represents hydrogen, an unbranched or branched alkyl group with up to 6 carbon atoms, phenyl, or a phenyl-substituted alkyl group with up to 6 carbon atoms in the alkyl portion, wherein said phenyl group optionally is substituted by halogen, alkyl or alkoxy with up to 6 carbon atoms in the alkyl portion thereof,

Im represents the 1-H-imidazol-1-yl group, which may be mono-substituted by the nitro group or mono-, di- or tri-substituted by halogen or an alkyl or alkoxy group with 1 to 4 alkyl carbon atoms, and

Y represents an unbranched, branched or cyclic, saturated or doble bond containing unsaturated alkyl with up to 6 carbon atoms, phenyl, naphthyl, thienyl or pyridyl or an alkyl substituted with a phenyl, naphthyl, pyridyl or thienyl group having 1 to 6 carbon atoms in the alkyl portion, wherein all the preceding groups, including the alkyl groups, may, in each case, be substituted as stated above for the Ar group, and wherein any alkyl group directly bonded to the ether oxygen or any alkylene group bonded directly to the ether oxygen may contain the bivalent groups —O—, —S—, —SO—, or —SO_2— once or twice in the chain, or may terminally carry one of these groups in the ω-position in relation to the ether oxygen, said group being then saturated with one of the groups mentioned for Ar,

through the reaction of a corresponding ketone of the formula

Ar—CO—CHR—Im (II),

in which Ar, R and Im have the aforementioned meanings, in an alkaline medium with a compound of the formula

Z—Y (III),

in which Y is as above-defined, Z is an alkaline splittable group and separation of the reaction product, wherein said reaction is carried out in an aqueous solution of a strong inorganic base.

4,554,357

BIS-QUATERNARY SALTS AS PHASE TRANSFER CATALYSTS FOR AROMATIC ETHER IMIDE PREPARATION

John W. Verbicky, Jr., Scotia, and Elbridge A. O'Neil, Jr., Port Henry, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 527,617, Aug. 29, 1983, abandoned. This application Oct. 14, 1983, Ser. No. 542,242

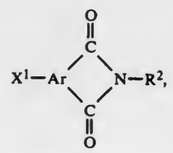
Int. Cl.[4] C07D *209/48, 403/10, 403/12*

U.S. Cl. 548—461 **12 Claims**

1. In a method for preparing an aromatic ether imide by the reaction, in a non-polar organic solvent in the presence of a phase transfer catalyst, of (A) at least one hydroxyaromatic alkali metal salt having the formula

$R^1(OM)_a$, (I)

where R^1 is an aromatic radical having about 6–30 carbon atoms, M is an alkali metal and a is 1 or 2, with (B) at least one substituted imide having the formula



(II)

wherein Ar is an aromatic radical, R^2 is hydrogen or a hydrocarbon-based radical having about 1–13 carbon atoms and X^1 is halo or nitro;

the improvement which comprises using as said phase transfer catalyst (C) at least one bis-quaternary salt having the formula

$(R^4)_k{\oplus}Q(R^3)_m{\oplus}Q(R^4)_k(X^{2\ominus})_2$, (III)

wherein each R^3 is independently a divalent hydrocarbon-based radical and all R^3 radicals taken together have about 4–12 carbon atoms, each R^4 is independently an n-alkyl radical having 4–6 carbon atoms, Q is nitrogen or phosphorus, X^2 is an anion-forming atom or radical, k is an integer from 1 to 3, and m is 4-k; at least three of the R^3 and R^4 radicals attached to each Q atom being aliphatic or alicyclic.

4,554,358

4-CHLORO-4-METHYL-5-METHYLENE-1,3-DIOXOLANE-2-ONE

Yasushi Takebe, Tondabayashi; Koji Iuchi, Nara, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

PCT No. PCT/JP84/00304, § 371 Date Nov. 16, 1984, § 102(e) Date Nov. 16, 1984, PCT Pub. No. WO85/00037, PCT Pub. Date Jan. 3, 1985

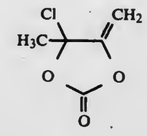
PCT Filed Jun. 11, 1984, Ser. No. 675,922

Claims priority, application Japan, Jun. 14, 1983, 58-107336

Int. Cl.[4] C07D *317/36*

U.S. Cl. 549—229 **1 Claim**

1. 4-chloro-4-methyl-5-methylene-1,3-dioxolane-2-one of the formula:



4,554,359

3-SUBSTITUTED PENTANEDIOIC ACIDS AND DERIVATIVES THEREOF

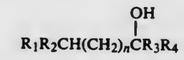
Harman S. Lowrie, Northbrook, and John S. Baran, Winnetka, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jan. 9, 1984, Ser. No. 569,007

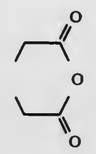
Int. Cl.[4] C07D *309/10;* **C07C** *59/01, 69/675*

U.S. Cl. 549—231 **7 Claims**

1. A compound of the formula:



wherein R_1 is t-butyl; wherein R_2 is hydrogen; wherein R_3 is $CH_2CO_2R_5$ and wherein R_4 is CH_2CO_2H, or wherein R_3 and R_4 are taken together to form a group as follows:



wherein R_5 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive; and

wherein n is an integer such that the total number of carbon atoms in $R_1R_2CH(CH_2)_n$ totals 18 to 22.

4,554,360

PROCESS FOR CONVERTING AROMATIC COMPOUNDS

Yasuo Yamazaki, Machida; Takehiko Suzuki, Tokyo; Isoo Shimizu, and Yasuo Matsumura, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Mar. 29, 1984, Ser. No. 594,678

Claims priority, application Japan, Mar. 29, 1983, 58-51584

Int. Cl.[4] C07D *307/32*

U.S. Cl. 549—261 **8 Claims**

1. A process for converting an aromatic compound to prepare an iodoarene, Ar—I, and an aryl compound which is a compound wherein an unsaturated compound is bonded directly to an aryl group, Ar, which process comprises reacting a diaryliodonium salt represented by general formula (I)

$[Ar—I^{\oplus}—Ar]X^{\ominus}$ (I)

wherein Ar is an aryl group which may be substituted and two Ar's are identical and $X^{\ominus}$ is a counter ion inert to the reaction with the unsaturated compound in a solvent in the presence of a transition metal catalyst and a base or a reducing metal, said reaction being carried out at a temperature not higher than 80° C. and/or by using at least one of the base, the reducing metal and the unsaturated compound in an amount not more than 1.5 times the stoichiometric amount, then separating the iodoarene thus formed, Ar—I, from the reaction mixture, subsequently coupling said iodoarene thus separated with an aromatic compound, ArH, in an oxidizing atmosphere in the presence of $X^{\ominus}$ or an anion ion-exchangeable with $X^{\ominus}$, if needed ion-exchanging the anion with $X^{\ominus}$, to form the diaryl iodonium salt of the above general formula (I), and recycling said diaryl iodonium salt thus formed in said reaction.

4,554,361

PROCESS FOR THE PREPARATION OF A BICYCLIC LACTONE THROUGH A SULFONATED DERIVATIVE

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

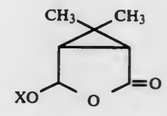
Continuation of Ser. No. 359,294, Mar. 18, 1982, abandoned, Continuation-in-part of Ser. No. 173,402, Jul. 29, 1980, Pat. No. 4,331,605. This application Jul. 27, 1983, Ser. No. 517,794

Claims priority, application France, Aug. 10, 1979, 79 20477

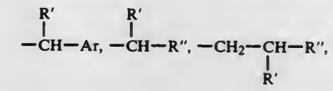
Int. Cl.[4] C07D *307/77*

U.S. Cl. 549—302 **11 Claims**

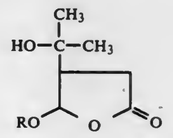
1. A process for the preparation of a compound of the configuration (1R,4RS,5SR) or (1S,4S,5R) or (1R,4R,5S) having the formula



wherein X is selected from the group consisting of hydrogen and R, R is the residue of an alcohol of the formula —R—OH wherein R is selected from the group consisting of chiral



unsymmetrical cycloalkyl of 4 to 10 carbon atoms and unsymmetrical aralkyl groups of 8 to 15 carbon atoms, achiral alkyl of 1 to 5 carbon atoms, achiral alkyl of 1 to 5 carbon atoms interrupted with at least one heteroatom selected from the group consisting of —O—, —S— and —N— and achiral alkyl of 1 to 5 carbon atoms substituted with at least one member of the group consisting of fluorine, chlorine, bromine and —NO_2, aralkyl and aralkyl substituted by alkoxy or aryloxy containing 7 to 15 carbon atoms, R' and R" are alkyl of 1 to 8 carbon atoms, Ar is an aryl of 6 to 8 carbon atoms comprising (a) reacting a compound with the trans form in the 4- and 5-positions of the formula



II

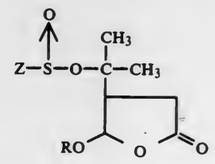
wherein R has the above definition and when R is a residue of

an achiral alcohol ROH as defined above, it has a (4SR,5RS) configuration and when R is a residue of a chiral alcohol R—OH as defined above, it has a (4S,5R) or (4R,5S) configuration, with a compound of the formula



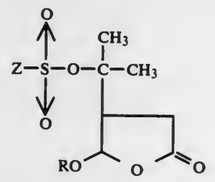
III

wherein Z is selected from the group consisting of alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms and monocyclic aryl and alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms and monocyclic aryl, all substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and nitro, n is 1 or 2 and the wavy line represents one or 2 semipolar bonds attaching the oxygen and sulfur atoms depending on whether n is 1 or 2, to obtain when n is 1, a compound with a trans form in the 4- and 5-positions of the formula



IV

and reacting the latter with an oxidizing agent capable of oxidizing sulfoxide to sulfone to obtain the corresponding compound of the formula



V

with the trans form in the 4- and 5-positions and the (4SR,5RS) configuration if R is a residue of an achiral alcohol ROH or the (4S,5R) or (4R,5S) configuration if R is a residue of a chiral alcohol R—OH or to obtain, when n is 2, the above compound of formula I, (b) reacting the compound of formula I with an alkali metal hydroxide to effect cyclization with retention of the configuration of the 4- and 5-carbon atoms, to obtain a compound of formula V with (1RS,4RS,5SR) configuration when the compound of formula I has (4SR, 55RS) configuration, or a compound of formula V with (1S,4S,5R) configuration, when the compound of formula I has (4R,5S) configuration or a compound of formula V with (1R,4R,5S) configuration when the compound of formula I has (4S,5R) configuration and (c), if desired, hydrolyzing the compound of formula I wherein when X is R, in an acid media, to obtain the compound of formula V with the same configuration wherein X is hydrogen.

4,554,362

BIS-CROWN-ETHER DERIVATIVES AND THEIR USE

Toshiyuki Shono, Suita; Keiichi Kimura, Osaka, and Takumi Maeda, Nishinomiya, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

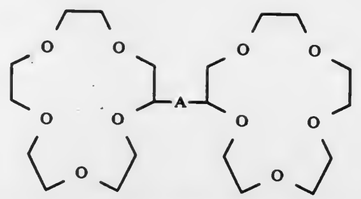
Division of Ser. No. 508,578, Jun. 28, 1983, Pat. No. 4,523,994. This application Mar. 4, 1985, Ser. No. 707,691

Claims priority, application Japan, Jun. 30, 1982, 57-114934

Int. Cl.⁴ C07D *323/00*

U.S. Cl. 549—352 **9 Claims**

1. A bis-crown-ether derivative of the general formula:



in which A represents a divalent organic group which is able to assume a configuration such that the two crown rings can overlap spatially and hold a monovalent metal ion having an ionic radius of 1.3–2.1 Å between them.

4,554,363

PROCESS FOR THE PREPARATION OF CARBACYCLIN INTERMEDIATES

Helmut Vorbrueggen, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE 82/00205, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. W083/01449, PCT Pub. Date Apr. 28, 1983

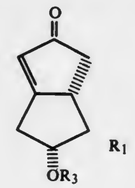
PCT Filed Jun. 23, 1983, Ser. No. 516,602

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142733

Int. Cl.⁴ C07D *309/12*; C07C *45/48*

U.S. Cl. 549—415 **8 Claims**

1. A process for the preparation of a bicyclic ketone containing blocked hydroxy groups of the formula

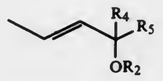


wherein

R_1 is

(a)—CH_2OR_2 wherein R_2 is benzyl, dimethyl-tert-butylsilyl, diphenyl-tert-butylsilyl, dimethylphenylsilyl, tribenzylsilyl, or tetrahydropyranyl;

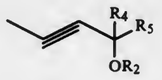
(b)



wherein R_2 is as defined above, R_4 is hydrogen or methyl, and R_5 is alkyl, alkenyl or alkynyl, each optionally substituted by fluorine, chlorine, 1,2-methylene, 1,1-trimethylene, or methoxy, or R_5 is benzyl or p-chlorobenzyl;

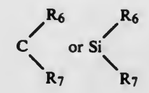
(c) —CH_2—X-Aryl wherein X is CH_2 or O and Aryl is phenyl or an aromatic heterocyclic ring of 5 or 6 ring atoms one of which is a hetero atom which is O, N or S bound to X via a 2-, 3- or 4-position of the heterocyclic ring, each of which aryl groups optionally is substituted by methyl, methoxy, fluorine, chlorine, bromine, or trifluoromethyl; or

(d)



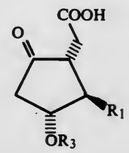
wherein R_2, R_4, and R_5 are as defined above; and

R_3 has one of the meanings given for R_2, it being possible for R_3 to be identical to R_2 or different from R_2 or to represent, jointly with R_2, the grouping



wherein R_6 and R_7 are the same or different and each is hydrogen, alkyl, or cycloalkyl,

comprising reacting a keto acid containing blocked hydroxy groups of the formula



with triphenyl(phenyliminovinylidene)phosphorane in an aprotic solvent with the exclusion of moisture and then reacting the resultant product with an alcohol in an absolute, aprotic solvent.

4,554,364

PRODUCTION OF 2-HYDROXYALKYL-1,3-DIOXOLANES

John R. Sanderson; Ernest L. Yeakey, both of Austin, and Jiang-Jen Lin, Round Rock, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 19, 1984, Ser. No. 683,547

Int. Cl.⁴ C07D *317/00*

U.S. Cl. 549—453 **6 Claims**

1. A method for the preparation of 2-hydroxyalkyl-1,3-dioxolanes which comprises reacting 1,3-dioxolane with formaldehyde and a cobalt compound in the presence of tert-butyl hydroperoxide.

4,554,365

PROCESS FOR PREPARING OXABICYCLOALKANE COMPOUNDS

Albertus J. Mulder, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

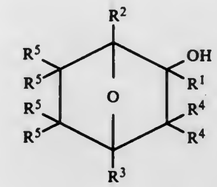
Filed Jul. 30, 1984, Ser. No. 635,784

Claims priority, application United Kingdom, Aug. 12, 1983, 8321713

Int. Cl.⁴ C07D *493/08*

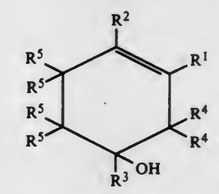
U.S. Cl. 549—463 **15 Claims**

1. A process for preparing an oxabicycloalkane compound of formula



(I)

wherein R^1 is a hydrogen atom or C_{1-6} alkyl group optionally substituted by up to 3 fluorine, chlorine and/or bromine atoms; R^2 is a hydrogen atom or a C_{1-6} straight-chain alkyl group; R^3 is a hydrogen atom; or C_{1-10} alkyl group; a cyano group; an alkyl group substituted by one or more halogen atoms or by a hydroxy group, a cyano group, a C_{1-6} alkoxy group, an aryloxy group, a C_{1-6} alkylsuulphonyl group, an arylsulphonyl group an aralkylsulphonyl group, an azido group, a C_{1-6} alkoxycarbonyl group, an aralkoxy carbonyl group, a hydroxycarbonyl group, a phosphoryl group, a phosphoryloxy group, or an amine oxide, carbamoyl or thiocarbamoyl group in which each nitrogen is substituted by hydrogen or by 1 or 2 C_{1-4} alkyl groups; a C_{2-4} alkenyl or alkynyl group; an aryl or aralkyl group, each containing from 6 to 11 carbon atoms including 1 to 4 carbom atoms in the alkyl portion and optionally ring substituted by one or more fluorine, chlorine and/or bromine atoms or by a C_{1-2} alkyl or alkoxy group, each optionally substituted by one or more fluorine and/or chlorine atoms; a group —$CSNH_2$; a group —CO_2R^6 or —$CON(R^6)_2$ in which R^6 is a hydrogen atom or a C_{1-6} alkyl group; or a C_{1-6} acyl group or an oxime or an acetal derivative of said acyl group; each R^4 is independently a hydrogen atom; an alkyl group optionally substituted by up to 3 halogen atoms; a hydroxy group; or a C_{1-4} alkoxy group; and each R^5 independently is a hydrogen atom, a C_{1-4} alkyl group optionally substituted by up to 3 halogen atoms; or a chlorine or bromine atom; which process comprises treating a liquid-phase mixture of a compound of formula



(II)

wherein R^1, R^2, R^3, R^4 and R^5 are as defined above, an aldehyde containing at least two carbon atoms and a suitable solvent, with oxygen in the presence of a catalyst which is soluble in the reaction mixture and which comprises a praseodymium compound and at least one compound selected from compounds of molybdenum, niobium, tantalum, tungsten, uranium and vanadium.

4,554,366

CERTAIN SUBSTITUTED, 7-OXABICYCLO[2.2.1]HEPTAN-2-OLS AND -2-ONES AS INTERMEDIATES

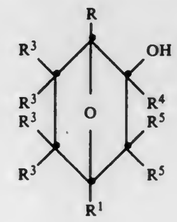
George B. Payne; Samuel B. Soloway, both of Modesto; James E. Powell, Ripon, all of Calif.; Steven A. Roman, Fulshear, Tex., and Willy D. Kollmeyer, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 416,572, Sep. 13, 1982, , which is a continuation-in-part of Ser. No. 331,094, Dec. 16, 1981, abandoned. This application Jun. 25, 1984, Ser. No. 624,550

Int. Cl.⁴ C07D *307/00*

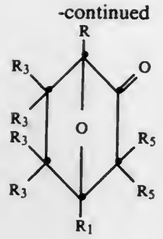
U.S. Cl. 549—463 **12 Claims**

1. A compound of the formula Id or Ie



Id

-continued



wherein

R is a hydrogen atom; or a straight-chain alkyl group containing from 1 to 6 carbon atoms;

R^1 is a hydrogen atom; or is an alkyl group containing from 1 to 10 carbon atoms optionally substituted by up to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive, or by a hydroxy group, a cyano group, an alkoxy group containing from 1 to 4 carbon atoms, a C_{1-6} alkylsulfonyl group, a C_{6-10} arylsulfonyl group, a C_{7-11} aralkylsulfonyl group, an azido group, a C_{1-6} alkoxycarbonyl group, a hydroxycarbonyl group, a dialkoxyphosphonyl group, a dialkylamine oxide group, a carbamoyl group or a thiocarbamoyl group substituted by hydrogen or 1 or 2 alkyl groups containing from 1 to 4 carbon atoms; or R^1 is an alkenyl or alkynyl group containing from 2 to 4 carbon atoms; or is an aryl or aralkyl group, each containing from 6 to 10 carbon atoms, and 1 to 4 carbons in the alkyl portion, each optionally ring-substituted by one or more substituents independently selected from a halogen atom, each having an atomic number of from 9 to 35, inclusive, or by an alkyl or alkoxy group containing from 1 to 2 carbon atoms, each optionally substituted by one or more halogen atoms, each having an atomic number of 9 or 17, or R^1 is a group $—CO_2R^6$ or $—CON(R^6)$ in which R^6 is a hydrogen atom, or an alkyl group containing from 1 to 6 carbon atoms;

each R^3 is independently selected from a hydrogen atom, a chlorine atom, a bromine atom, or an alkyl group containing from 1 to 4 carbon atoms optionally substituted by up to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive, or two of R^3 when located on adjacent carbon atoms together form an epoxide ring or a carbon-carbon bond;

R^4 is a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms optionally substituted by up to 3 halogen atoms having an atomic number of from 9 to 35, inclusive;

each R^5 is independently selected from a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms optionally substituted by up to 3 halogen atoms having an atomic number of from 9 to 35, inclusive; or a hydroxy group;

with the proviso that R and R^1 are not both hydrogen atoms and in formula Id, when R is methyl and R^3, R^4 and R^5 all are hydrogen atoms, then R^1 is other than isopropyl;

and stereoisomeric forms or mixtures thereof.

4,554,367

PHOSPHONIUM ORGANOHALOGENOSTANNATES-IV

Wolfgang Wehner, Zwingenberg, and Reinhardt Grade, Bensheim, both of Fed. Rep. of Germany, assignors to Ciga-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,528

Claims priority, application Switzerland, Oct. 6, 1982, 5875/82

Int. Cl.⁴ C07F *7/22*

U.S. Cl. 556—20 **5 Claims**

1. A phosphonium stannate of the formula I

$$[(R^1)_a(R^2)_bP]_n{}^{\oplus}[R_q{}^3SnX_rY_t]_w{}^{n\ominus} \quad (I),$$

Ie

in which R^1 and R^3 are n-butyl, R^2 is C_{12}–C_{16}-alkyl, X and Y independently of one another are fluorine or chlorine, n is 1 or 2, q is 1, 2 or 3, a is 3 or 4, the value 4 only being permitted if X and/or Y are fluorine, b is 1 or 4, the value 4 only appearing if X and/or Y are fluorine, the sum (a+b) must always be 4, r and t are integers from 0 to 5, the sum (r+t) being 2 to 5 and the sum (q+r+t) corresponding to the value (n+4) and w is 1.

4,554,368

CONTINUOUS PROCESS FOR THE PREPARATION OF ALKYLTIN THIOCARBOXYLIC ACID ESTERS

Rudolf Maul, Lorsch; Hans Stephan, Bensheim, and Walter Wolf, Lautertal, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 1, 1982, Ser. No. 445,812

Int. Cl.⁴ C07F *7/22*

U.S. Cl. 556—91 **13 Claims**

1. A process for the production of alkyltin thiocarboxylic acid esters from alkyltin halides and thiocarboxylic acid esters in the presence of an acid acceptor, which process comprises carrying out the reaction continuously in a reaction system comprising 2 to 5 agitator vessels with an average dwell time of 1 to 60 minutes, at a constant pH value in the range from 3 to 8, and in a temperature range from 40° to 80° C.

4,554,369

ORGANOSILICON COMPOUNDS AND PREPARATION AND USE THEREOF

Michael P. Hill, Saint Lythans, Wales, and Gilbert H. Pittet, Coppet, Switzerland, assignors to Dow Corning Ltd., Barry, Wales

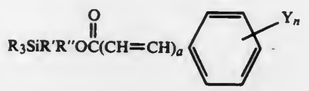
Filed Aug. 16, 1984, Ser. No. 641,523

Int. Cl.⁴ C07F *7/08, 7/10, 7/18*

U.S. Cl. 556—418 **9 Claims**

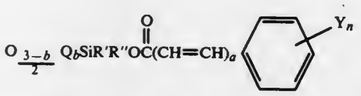
1. Organosilicon compounds which are

(1) silanes represented by the general formula



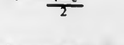
or

(2) organosiloxanes having at least one unit represented by the general formula



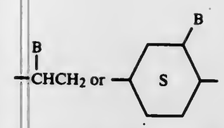
(i)

any other units present in the said organosiloxanes being those represented by the general formula

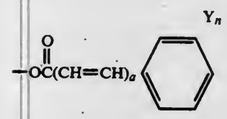


(ii)

wherein each R represents an alkoxy group or an alkoxyalkoxy group having less than 8 carbon atoms, an alkyl group having from 1 to 4 inclusive carbon atoms, a vinyl group or a phenyl group, R′ represents a divalent hydrocarbon group composed of carbon, hydrogen and, optionally, oxygen present in the form of ether linkages, R″ represents the group



in which B represents —OH or, except when Y is —OH or NH_2, is Cl or the group



a and n are each 0 or 1, Y when present being —OH or an alkoxy group having from 1 to 4 carbon atoms when a is 1 and —OH or NX_2, wherein X represents hydrogen or an alkyl group having from 1 to 4 carbon atoms, when a is zero, Q represents a hydroxyl group, an alkoxy or alkoxyalkoxy group having less than 8 carbon atoms, a methyl group or a phenyl group, Z represents a hydrogen atom, a monovalent hydrocarbon group or a monovalent halogenated hydrocarbon group, b is 0, 1 or 2 and c is 0, 1 or 3.

4,554,370

METHOD FOR MAKING ALKYLHALOSILANES

William J. Ward, III, Schenectady; Alan Ritzer, Sand Lake, and Heine Lapidot, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,878

Int. Cl.⁴ C07F *7/16*

U.S. Cl. 556—472 **3 Claims**

1. A method for making alkylhalosilanes in a fluid bed reactor which comprises, effecting contact between alkylhalide and powdered silicon in the presence of a copper-silicon contact mass which is generated in situ in the reactor by introducing into the fluid bed reactor, under continuous conditions, a mixture comprising 100 parts of powdered silicon, 0.001 to 0.2 part of fumed silica, and 0.1 to 20 parts of cuprous chloride.

4,554,371

PHENOXYALKYLCARBOXYLIC ACIDS

Bernard Majoie, Dijon, France, assignor to Societe de Recherches Industrielles S.O.R.I., Paris, France

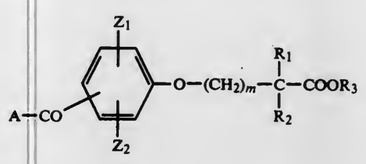
Continuation of Ser. No. 415,181, Sep. 7, 1982, which is a continuation of Ser. No. 151,769, May 21, 1980, which is a division of Ser. No. 42,156, May 24, 1979, Pat. No. 4,238,492. This application Aug. 2, 1984, Ser. No. 637,062

Claims priority, application United Kingdom, May 31, 1978, 25621/78

Int. Cl.⁴ C07L *69/76*

U.S. Cl. 560—52 **17 Claims**

1. A compound selected from the group consisting of those of formula I



I

wherein

A is selected from the group consisting of phenyl and phenyl substituted by 1, 2, or 3 substituents independently selected from the group consisting of fluorine, chlorine, bromine, trifluoromethyl, nitro, hydroxy, C_{1-4}alkyl and C_{1-4}alkoxy;

R_1 and R_2 are each methyl;

R_3 is selected from the group consisting of hydrogen and C_{1-4} alkyl; m is 3 or 4;

Z_1 and Z_2 are the same or different and are each selected from the group consisting of hydrogen, chlorine, and methyl; and

the A—CO— and —O—$(CH_2)_m$—CR_1R_2—$COOR_3$ groups are in the relative meta or para positions;

and non-toxic salts thereof.

4,554,372

PREPARATION OF CARBAMATES

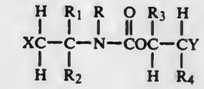
James M. Renga, Walnut Creek; Roy A. Periana-Pillai, Berkeley, both of Calif., and Kevin A. Frazier, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 498,223, May 26, 1983, abandoned. This application Aug. 21, 1984, Ser. No. 642,860

Int. Cl.⁴ C07C *125/065*

U.S. Cl. 560—161 **6 Claims**

1. A process for the preparation of 2-substituted alkyl (2-substituted alkyl)-carbamates corresponding to the formula:

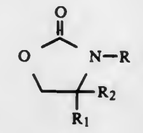


wherein

X and Y are halo, providing that if X and Y are not the same halo the V is the more electronegative halo,

R, R_1 and R_2 are independently hydrogen or C_{1-10} alkyl or alkoxyalkyl; and

R_3 and R_4 are independently hydrogen or C_{1-4} alkyl or haloalkyl and together may form a C_{3-4} alkylene group, comprising contacting an oxazolidone corresponding to the formula:



wherein R, R_1 and R_2 are as previously defined, with an olefin corresponding to the formula:



where R_3 and R_4 are as previously defined and an electrophile XY where X and Y are as previously defined at a temperature from about 25° C. to about 100° C.

4,554,373

METHOD OF PREPARING TELOMERS WHICH CAN BE CROSS-LINKED BY LIGHT

Bernard Boutevin, Montpellier; Willy-Jean Deiss, Grenoble; Marc Maliszewicz, Montpellier, and Yves Pietrasanta, Meze, all of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 474,672, filed as PCT FR 82/00122, on Jul. 20, 1982, published as WO 83/00336, Feb. 3, 1983, § 102(e) date Mar. 7, 1983, Pat. No. 4,518,794.

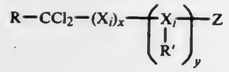
This application Nov. 5, 1984, Ser. No. 668,147

Claims priority, application France, Jul. 22, 1982, 82 14789

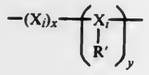
Int. Cl.⁴ C07C *69/533*

U.S. Cl. 560—192 **10 Claims**

1. A method of preparing telomers of the general formula



wherein the sequence of

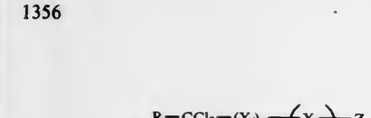


links emanates from identical taxogen X_i with a free function, selected from the group consisting of primary alcohol, acid and secondary alcohol functions, and where the



links correspond to the esterified form of X_i, R′ being the radical of the group used for esterification, $RCCl_2$— and —Z being the parts of the telogen $RCCl_2Z$ where —Z is selected from the group consisting of —H, —Cl and —Br radicals, wherein X_i belongs to the group made up of sub-groups X_1, X_2, X_3, X_4 in which X_1 is selected from the group consisting of 2-hydroxy ethyl acrylate and 2-hydroxy ethyl methacrylate, X_2 is selected from the group consisting of acrylic acid and methacrylic acid, X_3 is vinyl alcohol, X_4 is allyl alcohol, $0<x\leqq500$, $1<y\leqq500$, $1<x+y\leqq1000$, wherein the group used for esterification has at least one double bond which can be cross-linked by light and is selected from the group consisting of acids and acid chlorides in the case of X_1, X_3 and X_4 and is an alcohol in the case of X_2 and

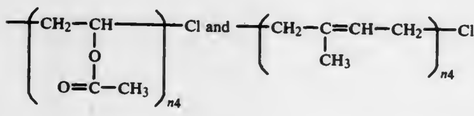
when X_i is X_1, R is selected from the group consisting of Cl, CH_3OCO, CF_3 $(CF_2—CFCl)_{n1}—Cl$ where $1\leqq n_1\leqq10$,



where $1\leqq n_2\leqq500$;

when X_i is X_2, R is selected from the group consisting of Cl, CF_3 and $(CF_2—CFCl—)_{n3}Cl$ where $1\leqq n_3\leqq10$;

when X_i is X_3, R is selected from the group consisting of Cl, $(C_2H_5O—)_2PO$,



where $1\leqq n_4<500$; and

when X_i is X_4, R is selected from the group consisting of $CCl_2—CO_2H$, $CCl_2—CO_2CH_3$, CCl_3 and $(C_2H_5O—)_2—PO$-comprising telomerizing said taxogens X_i with said telogen $RCCl_2Z$ in the presence of a catalyst, then esterifying said telomer product so as to graft an unsaturated group onto the links of the sequence of the telomer obtained.

4,554,374

PROCESS FOR DICARBONYLATION OF SIMPLE OLEFINS

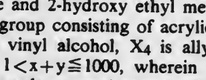
Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,416
Int. Cl.⁴ C07C *67/38*
U.S. Cl. 560—204 **6 Claims**

1. A process for oxidative carbonylation of 1-olefins containing 2 to 12 carbon atoms per molecule of the formula:



wherein R is a hydrogen or hydrocarbon radicals, by reaction with carbon monoxide and oxygen in the presence of an alkanol coreactant containing 1 to 20 carbon atoms per molecule, to form an aliphatic dicarboxylic acid ester having the formula:



wherein R′ is a alkyl group from an alkanol coreactant, said process being conducted in the presence of a hetergeneous supported palladium catalyst, a copper-containing cocatalyst, a lithium-containing cocatalyst and 2,2-dimethoxypropane, at a temperature of 80° to 150° C. and a pressure of 500 psi to 1800 psi, in order to effect the desired carbonylation reaction, and wherein the carbon monixide to oxygen ratio is from 5:1 to 20:1, the palladium catalyst is deposited on said support in a concentration range of 0.1 to 20 wt. %, the concentration of copper-containing cocatalyst is between 0.1% wt% and 50 wt. % and the concentration of lithium-containing cocatalyst is between 0.0001 wt. % and 1.0 wt. %.

4,554,375

CO-PREPARATION OF 2,7-OCTADIENYL FORMATE, 1,6-OCTADIENE AND 4 VINYLCYCLOHEXENE FROM BUTADIENE USING A PLATINUM CATALYST

Jiang-Jen Lin, Round Rock, and David C. Alexander, Austin both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,804
Int. Cl.⁴ C07C *67/04*
U.S. Cl. 560—244 **2 Claims**

1. A method for the preparation of 2,7-octadienyl formate, 1,6-octadiene and 4-vinylcyclohexene comprising

reacting 1,3-butadiene with formic acid at a mole ratio of butadiene to formic acid of from 5:1 to 1:5 in the presence of a platinum (II) acetyl acetonate catalyst optionally in the presence of a solvent from the group consisting of oxygenated solvents and aromatic solvents at a temperature in the range between 50° to 150° C. and at a CO_2 partial pressure between about 50 and 500 psi where the mole ratio of butadiene to platinum catalyst ranges from 10,000:1 to 1,000:1.

4,554,376

METHOD FOR SEPARATING AND PURIFYING AMINO ACID

Teruo Fujimoto; Yoshinobu Isono, both of Nagaoka, and Yoshiyuki Miyaki, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Continuation of Ser. No. 371,312, Apr. 23, 1982, abandoned. This application Oct. 11, 1984, Ser. No. 659,861
Claims priority, application Japan, May 7, 1981, 56-67612
Int. Cl.⁴ C07C *99/12*
U.S. Cl. 562—554 **8 Claims**

1. A method for purifying an amino acid comprising performing piezo-dialysis of a mixture containing said amino acid and a substance other than said amino acid to produce the purified amino acid, said piezo-dialysis being carried out using an amphoteric ion exchange membrane composed of a ternary block copolymer having a molecular structure in which a macromolecule having a cation exchange group, a macromolecule having an anion exchange group and a macromolecule having no ion exchange group are linked together to form a straight chain and in which the macromolecule having the cation exchange group are separated from each other by the macromolecule having no ion exchange group with the segments of the macromolecules having one of the following sequences, poly A-poly C-poly B; poly C-poly A-poly C-poly B-poly C; poly A-poly C-poly B-poly C and poly C-poly A-poly C-poly B wherein the segment having the cation exchange group is poly A, the segment having the anion exchange group poly B and the neutral segment is poly C.

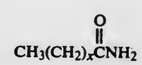
4,554,377

PRODUCTION OF N-VINYL CARBOXYLIC ACID AMIDES

Robert W. Stackman, Morristown, N.J.; Richard H. Summerville, deceased, late of W. Orange, N.J., and James E. Summerville, Jr., heir, Signal Mountain, Tenn., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,047
Int. Cl.⁴ C07C *103/133, 102/00*
U.S. Cl. 564—205 **13 Claims**

1. A process for the preparation of N-α-alkoxy-ethyl-carboxylic acid amides which comprises reacting dimethyl acetal in the presence of an acid catalyst with a carboxylic acid amide having the formula:



wherein x is 0 or an integer up to and including 9 and wherein the molar ratio of dimethyl acetal to carboxylic acid amide is from about 2 to 60:1 to produce an N-α-alkoxy-carboxylic acid amide.

4,554,378

PROCESS FOR PREPARING POLYAMINES WITH ION EXCHANGE RESIN CATALYSTS

John L. Nafziger, Lake Jackson; Laura A. Rader, Clute, and Irwin J. Seward, Jr., Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1983, Ser. No. 468,217
Int. Cl.⁴ C07C *87/50*
U.S. Cl. 564—332 **8 Claims**

1. A process for continuously preparing aromatic polyamines which process comprises

(A) preparing a precondensate by reacting

(1) distilled oxygen-free aromatic amine with

(2) aliphatic aldehyde, aldehyde releasing material or ketone;

(B) removing a sufficient amount of water from the precondensate produced in step (A) such that there remains a single phase containing a sufficient quantity of water to maintain moisture in the ion exchange resin catalyst;

(C) passing said liquid single phase precondensate first through a "guard column" and then through at least one plug flow reactor containing at least one strong acid cation exchange resin selected from

(1) gelatinous ion exchange resins based on styrene-divinylbenzene copolymers containing not more than 2 weight percent divinylbenzene in said copolymer and

(2) macroporous ion exchange resins based on styrene-divinylbenzene copolymers containing at least 10 weight percent divinylbenzene in said copolymer; and

(D) thereafter recovering the resultant aromatic polyamines from the reaction mixture by suitable means; and

wherein

(a) in step (A), the mole ratio of 1 to 2 is from about 2:1 to about 10:1;

(b) the temperature in step (A) is from about 0° C. to about 120° C.;

(c) the temperature employed in step (C) is from about 35° C. to about 135° C.;

(d) steps (A), (B) and (C) are conducted in an essentially oxygen-free atmosphere;

(e) said ion exchange resin employed in step (C) has been preconditioned by flowing therethrough several volumes of a suitable organic solvent or aqueous mixtures of such solvent to condition the ion exchange resin bed so as to prevent channeling during operation of the process; and

(f) said "guard column" contains activated charcoal or an ion exchange resin in an amount of about 1% to about 10% of the volume of ion exchange resin employed in step (C).

6. A process for continuously preparing aromatic polyamines which process comprises

(A) preparing a precondensate by reacting

(1) distilled oxygen-free aromatic amine with

(2) aliphatic aldehyde, aldehyde releasing material or ketone;

(B) removing a sufficient amount of water from the precondensate produced in step (A) such that there remains a single phase containing a sufficient quantity of water to maintain moisture in the ion exchange resin catalyst;

(C) passing said liquid single phase precondensate through at least one plug flow reactor containing at least one strong acid cation exchange resin selected from

(1) gelatinous ion exchange resins based on styrene-divinylbenzene copolymers containing not more than 2 weight percent divinylbenzene in said copolymer and

(2) macroporous ion exchange resins based on styrene-divinylbenzene copolymers containing at least 10 weight percent divinylbenzene in said copolymer; and

(D) thereafter recovering the resultant aromatic polyamines from the reaction mixture by suitable means; and

wherein

(a) in step (A), the mole ratio of 1 to 2 is from about 2:1 to about 10:1;

(b) the temperature in step (A) is from about 0° C. to about 120° C.;

(c) the temperature employed in step (C) is from about 35° C. to about 135° C.;

(d) steps (A), (B) and (C) are conducted in an essentially oxygen-free atmosphere; and

(e) said ion exchange resin employed in step (C) has been preconditioned by flowing there-through several volumes of a suitable organic solvent or aqueous mixtures of such solvent to condition the ion exchange resin bed so as to prevent channeling during operation of the process.

4,554,379

AMINOALKYL AROMATIC COMPOUNDS AND THEIR PRODUCTION

Frederick H. Howell, Atherton, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 663,263, Oct. 22, 1984, abandoned, which is a continuation of Ser. No. 609,517, May 11, 1984, abandoned, which is a continuation of Ser. No. 388,365, Jun. 14, 1982, abandoned. This application Apr. 18, 1985, Ser. No. 724,494

Claims priority, application United Kingdom, Jun. 19, 1981, 8119008

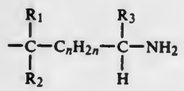
Int. Cl.⁴ C07C *91/16*; C08G *69/26*

U.S. Cl. 564—374 **5 Claims**

1. A compound having the formula I

$$R_4(QNH_2)_x \quad (I)$$

wherein x is 2 and the residues QNH_2 are the same or different and each is:



wherein n is an integer from 1 to 15, R_1 is C_1–C_8 alkyl, R_2 is C_1–C_4 alkyl or R_1 and R_2, together with the carbon atom to which they are attached, form a C_5–C_8 cycloalkylene residue, R_3 is C_1–C_6 alkyl, C_3–C_8 cycloalkyl or C_6–C_{10} aryl and R_4 is a polyvalent mononuclear C_6–C_{20} aromatic residue; as well as the corresponding salts of organic or inorganic acids.

4,554,380

PROCESS FOR THE MANUFACTURE OF O-TOLUIDINE AND/OR M-TOLUIDINE AND/OR P-TOLUIDINE

Hans-Jürgen Arpe, Frankfurt am Main, and Heinz Litterer, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 484,179, Apr. 12, 1983,. This application Aug. 27, 1984, Ser. No. 644,866

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213876

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C07C *85/00*

U.S. Cl. 564—424 **3 Claims**

1. A method for making at least one member selected from the group consisting of o-toluidine, m-toluidine, and p-toluidine, which comprises contacting at least one toluidine isomer other than a toluidine isomer sought to be isolated with an isomerization catalyst selected from the group of synthetic zeolites of the pentasil type, the ions of which are exchanged, at a temperature from 250° C. to 500° C.

4,554,381

PROCESS FOR SULFONYLATION OF HALOBENZENES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 28, 1982, Ser. No. 392,885

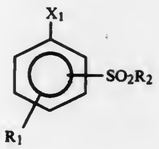
Claims priority, application France, Jan. 21, 1982, 82 00879

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

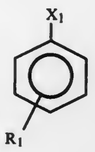
Int. Cl.⁴ C07C *147/06*

U.S. Cl. 568—34 **7 Claims**

1. A process for the preparation of phenyl sulfones having the formula:



said process comprising reacting a halobenzene having the formula:



(I)

in a reaction vessel with a sulfonic acid, a precursor or a derivative thereof having the formula:

$$R_2SO_2X_2 \quad (II)$$

in the presence of boron trifluoride in an amount such that the absolute pressure of boron trifluoride within the reaction vessel exceeds 1 bar and in the presence of hydrofluoric acid as a solvent; wherein

X_1 is Cl, Br, I, or F;

R_1 is at least one element or moiety selected from the group consisting of hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than X_1;

X_2 is a halogen, OH, OR_3, NH_2, NHR_4, or NR_5R_6, wherein each of R_3, R_4, R_5, and R_6 is an aromatic or aliphatic radical; and

R_2 is an aliphatic or aromatic radical.

4,554,382

DEHYDRATING DECOMPOSITION PROCESS FOR PREPARING CARBONYL COMPOUND

Yoshihiro Tasaka; Toshihiro Nakamichi, both of Kamifukuoka, and Yutaka Katsuhara, Kawagoe, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

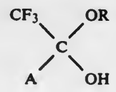
Filed Mar. 29, 1984, Ser. No. 595,038

Claims priority, application Japan, Mar. 30, 1983, 58-52668

Int. Cl.⁴ C07C *45/52*

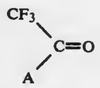
U.S. Cl. 568—404 **5 Claims**

1. A process of preparing a carbonyl compound, which is expressed by the general formula (II) and has a boiling point below room temperature under the atmospheric pressure, by dehydrating decomposition of a gem-diol, hemi-acetal or hemi-ketal expressed by the general formula (I),



(I)

where A represents H or CF_3, and R represents H, CH_3 or C_2H_5,



(II)

where A represents H or CF_3, the process being a two-stage process comprising:

(a) as the first stage, making said gem-diol, hemi-acetal or hemi-ketal contact with sulfuric acid at a temperature in the range from 90° to 140° C. so as to partly decompose and dehydrate said gem-diol, hemi-acetal or hemi-ketal, permitting the concentration of said sulfuric acid to become lower than 93% by weight but not lower than 65% by weight; and

(b) as the second stage, making the product of the reaction at step (a) contact with concentrated sulfuric acid at a temperature not higher than 60° C., preventing the concentration of said concentrated sulfuric acid from becoming lower than 93% by weight.

4,554,383

PROCESS FOR PRODUCING P-TOLUALDEHYDE FROM TOLUENE USING AN ALUMINUM HALIDE ALKYL PYRIDINIUM HALIDE 'MELT' CATALYST

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1984, Ser. No. 644,118

Int. Cl.⁴ C07C *45/49*

U.S. Cl. 568—428 **6 Claims**

1. A process for the selective carbonylation of toluene to p-tolualdehyde which comprises mixing an N-alkylpyridinium halide and an anhydrous aluminum halide melt catalyst with toluene and carbon monoxide at an ambient temperature of about 0° C. to 200° C. and at a pressure of about 1 atm to about 300 atm until the desired tolualdehyde is formed, and separating the desired product.

4,554,384

BICYCLO TERTIARY HYDROXYL CARBOXALDEHYDE

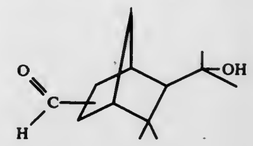
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Oct. 1, 1984, Ser. No. 656,661

Int. Cl.⁴ C07C *47/347*

U.S. Cl. 568—445 **1 Claim**

1. A compound defined according to the structure:



4,554,385

TERTIARY HYDROXYL CARBOXALDEHYDES, ORGANOLEPTIC USES THEREOF, AND PROCESSES FOR PRODUCING SAME

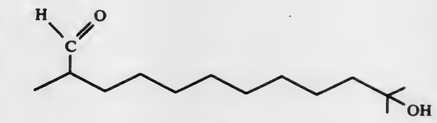
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,661, Oct. 1, 1984, , which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Mar. 8, 1985, Ser. No. 709,916

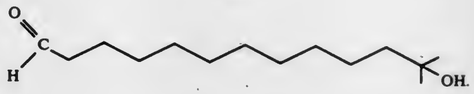
Int. Cl.⁴ C07C *47/19*

U.S. Cl. 568—496 **2 Claims**

1. A mixture of compounds defined according to the structures:



and



4,554,386

PROCESS FOR THE PREPARATION OF METHYL TERTIARY BUTYL ETHER

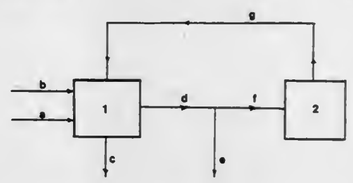
Christiaan Groeneveld, Ransdaal; Dirk Knol, Beek; Johannes D. M. Verstegen, Sittard, and Jacobus Jansen, Geleen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Mar. 30, 1984, Ser. No. 595,165

Claims priority, application Netherlands, Apr. 1, 1983, 8301180; Apr. 28, 1983, 8301496

Int. Cl.⁴ C07C *41/06*

U.S. Cl. 568—697 **5 Claims**



1. In a process for the preparation of methyl tertiary butyl ether by contacting an isobutene-containing hydrocarbon feed, predominantly consisting of hydrocarbons with four carbon atoms, with methanol in a reaction zone in the presence of a catalyst and separating the methyl tertiary butyl ether thus formed from the reaction mixture, the improvement essentially comprising the combination of steps of:

carrying out a first reaction between isobutene contained in said hydrocarbon feed and methanol in a first reaction zone in the presence of a catalyst, and separating methyl tertiary butyl ether thus formed from a first residual hydrocarbon stream containing normal-butene;

introducing at least a portion of said residual hydrocarbon stream into an isomerization zone wherein at least a portion of the normal-butene introduced therein is converted to form a second residual hydrocarbon stream containing isobutene; and

introducing said second residual hydrocarbon stream, together with a further amount of methanol, into a second reaction zone, separate from said first reaction zone, wherein isobutene contained in said second residual hydrocarbon stream is reacted with said further amount of methanol in the presence of a catalyst to form a further amount of methyl tertiary butyl ether.

4,554,387

RING OPENING OF CYCLIC NITRO KETONES

Paul D. Seemuth, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 27, 1984, Ser. No. 604,891

Int. Cl.⁴ C07C *79/18*

U.S. Cl. 568—704 **28 Claims**

1. A process for ring opening a cyclic compound having a

ring structure of 7-30 ring members including a carbonyl group between a carbon atom and a nitro-substituted carbon atom, said process comprising contacting said cyclic compound with an anionic reactant that provides a hydride species whereby said carbonyl group is reduced to a carbinol group, and opening said ring structure between the carbonyl group and the nitro-substituted carbon atom.

21. A process for ring opening a cyclic compound of 7-30 ring members including in the ring a ketonic α carbon atom adjacent a nitro-substituted ω carbon atom; and also adjacent a β carbon atom, said process comprising reacting, in an innocuous liquid reaction medium, said cyclic compound with a quantity of metal hydride to provide sufficient hydride ions to reduce said carbonyl group to a carbinol group and cleave the ring between said carbonyl group and said nitro-substituted carbon atom.

4,554,388

PROCESS FOR ISOMERIZATION AND TRANSALKYLATION OF ALKYLPHENOLS

Karl-Heinz Keim, Heimerzheim, and Joachim Korff, Bornheim-Merten, both of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 7, 1984, Ser. No. 577,849

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304663

Int. Cl.⁴ C07C *39/07*

U.S. Cl. 568—716 **10 Claims**

1. A process for the isomerization and transalkylation by catalytically reacting methylated or ethylated phenols and/or phenolderivatives in the presence of phenol at temperature of 200° to 550° C., pressures of 1 to 300 bar (at reaction temperature) and residence times of 0,1 to 10 hours in the presence of metal oxides as catalyst, characterized in that the process is carried out in the presence of a catalyst comprising

(a) iron oxide (s)

(b) at least one oxide selected from at least one of the groups

1. B, Al, Ce
2. Si, Ge, Sn, Ti, Zr
3. Cr, V
4. Li, Na, K, Rb, Cs, Be, Mg, Ca. Sr, Ba, Mn, La

4,554,389

UNSYMMETRICAL DIPHENOLIC COMPOUNDS

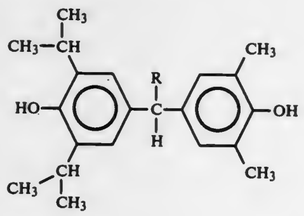
Kju Hi Shin, and Edward F. Tatum, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 9, 1984, Ser. No. 598,058

Int. Cl.⁴ C07C *39/12*

U.S. Cl. 568—722 **4 Claims**

1. A compound of structure I:



(I)

wherein R is H, alkyl or alkenyl of 1 to 7 carbon atoms, cycloaliphatic of 3 to 7 carbon atoms, aromatic of 6 to 10 carbon atoms, a 5 to 7 member heterocyclic ring, or a heteroatomic radical of 1 to 7 atoms other than H.

4,554,390

METHOD FOR HARVESTING ALGAE

Cyril C. Curtain, Williamstown, and Harvey Snook, Aspendale, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Betatene Limited, both of, Australia

PCT No. PCT/AU82/00165, § 371 Date Jun. 7, 1983, § 102(e) Date Jun. 7, 1983, PCT Pub. No. WO83/01257, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 7, 1982, Ser. No. 511,135

Claims priority, application Australia, Oct. 7, 1981, PF1093

Int. Cl.⁴ C07C *29/76;* C12N *1/02;* A01D *44/00;* B01D *15/08*

U.S. Cl. 568—870 **19 Claims**

1. A method for harvesting algae of the genus Dunaliella from a suspension thereof in brine containing sodium chloride at a concentration of about 3M or above, characterized in that the algal suspension is contacted with an adsorbent having a hydrophobic surface so as to adsorb the algae thereon, and the adsorbent with the algae adsorbed thereon is separated from the brine, characterized in that the adsorbent is a finely divided material which has a high surface area and has a hydrophobic surface or has been treated to produce a hydrophobic surface.

4,554,391

PREPARATION OF 2-HALO-1-ALKENES FROM HYDROCARBON STREAMS

Robert T. Klun; Craig B. Murchison, and Dennis A. Hucul, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 411,726, Aug. 26, 1982, Pat. No. 4,480,121. This application Aug. 22, 1984, Ser. No. 642,989

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C07C *17/08*

U.S. Cl. 570—231 **10 Claims**

1. A process for preparing a 2-halo-1-alkene comprising contacting a hydrocarbon stream with a hydrogen halide, in the presence of water and an effective amount of a catalyst, at a temperature between about 100° C. and about 400° C., wherein; the hydrocarbon stream comprises a 1,2-diene, a terminal acetylene or mixtures thereof, represented by the formulas $CH_2{=}C{=}CH{-}R$ or $CH{\equiv}C{-}CH_2{-}R$ wherein R is hydrogen, alkyl, cycloalkyl or aryl and may be substituted or unsubstituted; the water is present in an amount of between about 1,000 and 100,000 parts per million by weight; and the catalyst comprises carbon, silica alumina, aluminosilicates, silica gel, silica, silica magnesia, silicalite, group IIIA, IIIB, IVA, IVB or V metal oxides or rare earth oxides.

4,554,392

METHOD OF PREPARING 1,2-DICHLOROETHANE FROM ETHYLENE AND CHLORINE GAS

Hans Leuck, and Hans-Jörg Westermann, both of Troisdorf, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Nov. 6, 1984, Ser. No. 668,649

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340624

Int. Cl.⁴ C07C *17/02*

U.S. Cl. 570—254 **7 Claims**

1. A process for the preparation of 1,2-dichloroethane from ethylene and chlorine gas in an approximately equimolar ratio, at reaction pressures between 2 and 20 bar and boiling temperatures of the formed ethylene dichloride between 105° and 225° C. in the presence of catalysts acting as Lewis acids, containing the steps of removing catalyst-free vapors consisting essentially of ethylene dichloride and catalyst-containing liquid ethylene dichloride from a reactor and condensing and cooling the vapors to form a condensed and cooled stream of ethylene dichloride; comprising:

introducing gaseous chlorine, which has a purity of about 90 to 100 vol.-%, into the condensed and cooled stream of ethylene dichloride to absorb chlorine therein;

pressurizing the chlorine-containing ethylene dichloride stream to reaction pressure and then admixing the catalyst-containing ethylene dichloride;

heating the chlorine-containing and catalyst-containing ethylene dichloride stream;

feeding into a downward stream of the reactor an ethylene partial stream; and

contacting the downward stream with a main ethylene input quantity introduced at the bottom of the reactor at a mass rate between 30 and 200 kg/sec·m² of this ethylene quantity whereby said downward stream is reversed into an upward stream forming a highly disperse gas-liquid phase.

4,554,393

TWO-STAGE PROCESS FOR CONVERTING PROPANE TO AROMATICS

Sandra Liberts, Springvale South; Jack G. Creer, Upwey, and Thomas Mole, Kew, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne and Commonwealth Scientific and Industrial Research Organisation, Campbell, both of, Australia

Continuation of Ser. No. 330,659, Dec. 14, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 485,379

Claims priority, application Australia, Dec. 19, 1980, PE7041

Int. Cl.⁴ C07C *2/08, 5/32*

U.S. Cl. 585—322 **16 Claims**

1. A process for the production of aromatic compounds from propane feedstock which comprises contacting the feedstock in a first reactor with a promoted chromia alumina dehydrogenation catalyst at a temperature between 380° and less than 550° C. to produce a first reaction product containing propylene; contacting said first reaction product in a second reactor with a crystalline aluminosilicate catalyst to produce a second reaction product comprising aromatics and C_{3+} hydrocarbons, and separating an aromatic-rich fraction therefrom; and recycling a gaseous fraction of the second reaction product to the first reactor, said recycled gaseous fraction consisting essentially of one or more C_{3+} hydrocarbons.

4,554,394

ORGANOPHOSPHORUS-TREATED ZEOLITE CATALYSTS FOR PARA-SELECTIVE AROMATICS CONVERSION

Nancy P. Forbus, Newtown, Pa., and Warren W. Kaeding, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 614,195, May 25, 1984, Pat. No. 4,504,690, which is a division of Ser. No. 489,424, Apr. 28, 1983, Pat. No. 4,469,806, which is a continuation-in-part of Ser. No. 359,560, Mar. 18, 1982, Pat. No. 4,409,132. This application Nov. 7, 1984, Ser. No. 669,156

Int. Cl.⁴ C07C *5/22*

U.S. Cl. 585—474 **7 Claims**

1. A process for disproportionation of aromatic compounds to a dialkyl benzene compound mixture enriched in the para-dialkylbenzene isomer, said process comprising contacting said aromatic compounds under conversion conditions with a catalyst comprising both a crystalline zeolite material having a constraint index within the approximate range of 1 to 12 and a silica/alumina mole ratio of at least 12 and a minor proportion of one or more difficultly reducible oxides, said catalyst being prepared by a method comprising contacting said catalyst with a vapor phase organophosphorus reagent selected from C_{1-4} alkyl phosphite esters, C_{1-4} alkyl phosphate esters and dimethyl-methylphosphonate, at a temperature of 100° C. to 300° C. and for a period of time and under conditions sufficient to either enhance para-selectivity of said catalyst or to reduce the susceptibility of said catalyst to deselectivation by contact with moisture or halogen.

4,554,395

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,649, Aug. 30, 1982, abandoned. This application Aug. 12, 1983, Ser. No. 522,935

Int. Cl.⁴ C07C *2/00*

U.S. Cl. 585—500 **38 Claims**

1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane at synthesizing conditions with at least one reducible oxide of at least one metal which oxides when contacted with methane at synthesizing conditions are reduced and produce higher hydrocarbon products and water, the improvement which comprises conducting said contacting at a pressure greater than atmospheric pressure.

4,554,396

OLEFIN UPGRADING WITH FERROSILICATE ZEOLITE CATALYST

Clarence D. Chang, Princeton, and Cynthia T. W. Chu, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 18, 1984, Ser. No. 651,748

Int. Cl.⁴ C07C *2/02*

U.S. Cl. 585—531 **8 Claims**

1. A process for upgrading lower olefin to produce heavier hydrocarbons having a substantially linear molecular conformation comprising:

contacting olefinic feedstock under oligomerization conditions at reaction temperature and pressure favorable to formation of higher molecular weight aliphatic hydrocarbons with a shape selective medium pore acidic crystalline ferrosilicate zeolite catalyst having a major portion of zeolitic iron in tetrahedral coordination therein.

4,554,397

PROCESS FOR MANUFACTURING A LINEAR OLEFIN FROM A SATURATED FATTY ACID OR FATTY ACID ESTER

Robert Stern, Paris, and Gérard Hillion, Herblay, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 24, 1984, Ser. No. 643,936

Claims priority, application France, Aug. 25, 1983, 83 13822

Int. Cl.⁴ C07C *1/00*

U.S. Cl. 585—638 **14 Claims**

1. A process for manufacturing olefins, comprising contacting a carboxylic acid or a carboxylic ester with a catalyst at a temperature from 200° to 400° C., wherein the catalyst simultaneously contains nickel and at least one metal from the group consisting of tin, germanium and lead.

4,554,398

PROCESS FOR THE SEPARATION OF C_9 AROMATIC ISOMERS

Denise M. Barthomeuf, Lyons, France, and Daniel D. Rosenfeld, Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 29, 1984, Ser. No. 665,466

Int. Cl.⁴ C07C *7/13;* C10G *25/03*

U.S. Cl. 585—828 **31 Claims**

1. An adsorptive separation process for separating paraethyltoluene from a hydrocarbon feed stream containing a mixture of C_9 aromatic isomers comprising:

(a) contacting said hydrocarbon feed stream with a bed of an adsorbent of zeolite beta;

(b) withdrawing from said bed of adsorbent a raffinate stream containing less of the selectively adsorbed C_9 aromatic isomer of the feed stream;

(c) desorbing the adsorbed paraethyltoluene to effect displacement thereof; and

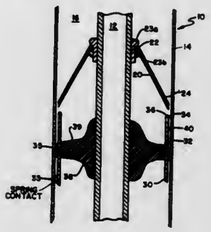
(d) withdrawing from the adsorbent bed an extract stream containing the adsorbed paraethyltoluene.

4,554,399

PARTICLE TRAP FOR COMPRESSED GAS INSULATED TRANSMISSION SYSTEMS

Alan H. Cookson, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1984, Ser. No. 604,352
Int. Cl.[4] H01B 9/06, 9/04; H02G 5/06
U.S. Cl. 174—14 R
19 Claims



1. In a compressed gas insulated transmission system having an inner high voltage conductor supported within an outer conductive sheath by a dielectric support member, an improved means for trapping at least partially conductive particles traveling in a predetermined direction within a cavity formed between said high voltage inner conductor and said sheath, comprising:

a dielectric particle deflector supported from said inner conductor, and opening radially outwardly along said predetermined direction;

conductive shielding means disposed immediately adjacent said sheath for creating a reduced-electric field region between said shielding means and said sheath;

connection means for electrically connecting said conductive shielding means to said sheath;

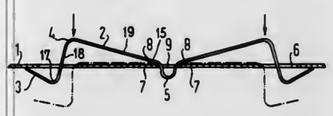
said particle deflector arranged to deflect traveling particles between said shielding means and said sheath so as to be positioned in said reduced-electric field region, such that further travel of said particles within said cavity is prevented and said particles are prevented from impinging upon said dielectric support member.

4,554,400

RADIO-FREQUENCY-TIGHT SHIELDING WITH PLANAR PARTS

Dieter Schmalzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,191
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1983, 3328395
Int. Cl.[4] H05K 9/00
U.S. Cl. 174—35 GC
13 Claims



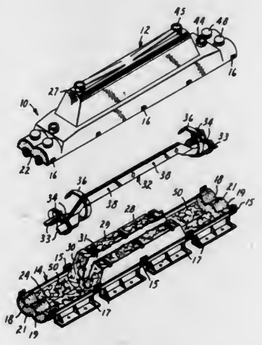
1. In a radio-frequency-tight shield for an electronic device, said shield having a frame and sheet metal structure with planar parts, the improvements comprising each of the planar parts having at least one spring being securable thereto, said spring having two end tabs connected by bent portions to a center portion extending between the bent portions, each of the bent portions having at least two bends extending in opposite directions to form a hump shape, said planar part for each spring having a pair of spaced-apart apertures with an abutment disposed therebetween on one side, said spring being assembled on the planar part with the two tabs extending through the spaced-apart apertures to engage the other side of the planar part as the center portion presses against the abutment and the bent portions extend above the one side.

4,554,401

BURIED CABLE SPLICE CLOSURE

James H. Ball, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1984, Ser. No. 618,485
Int. Cl.[4] H02G 9/00, 15/113
U.S. Cl. 174—37
13 Claims



1. A buried cable splice closure comprising:

a rigid plastic outer shell having an opening at least at one end through which cables may extend into the closure,

a lower chamber within said outer shell adjacent each said end opening in said outer shell for support of portions of cables extending into the closure,

an upper chamber within said outer shell spaced longitudinally of the closure from each said end opening so as to have a lower chamber between each said end opening and said upper chamber, said upper chamber having a cable splice support area spaced a distance above each said lower chamber when said splice closure is in an upright position,

a cable passageway within said outer shell from each said lower chamber to the cable splice support area in said upper chamber, and

at least one cable end entering a said end opening in said outer shell extending through a said cable passageway and being spliced in said upper chamber to another cable end similarly entering said outer shell, the outer jacket and any shield material on each said cable end terminating in a said lower chamber,

means for permitting introduction of an encapsulant through said outer shell into said upper chamber and each said lower chamber and passageway having a cable end therein, and

encapsulant filling said upper chamber and each said lower chamber and passageway having a cable end therein.

4,554,402

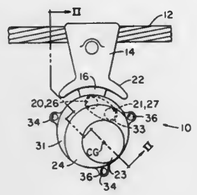
VIBRATION DAMPER FOR OVERHEAD CONDUCTOR

Ronald G. Hawkins, Massena, and Robert M. Hooker, Brushton, both of N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 565,180, Dec. 23, 1983, Pat. No. 4,527,008. This application Apr. 1, 1985, Ser. No. 718,549

Int. Cl.⁴ H02G *7/14*

U.S. Cl. 174—42 **3 Claims**





1. A device for damping vibrations of an overhead conductor, comprising:

a member for clamping on the conductor,

a weight member attached to said clamping member,

opposed depressions provided in the clamping and weight members, with the depressions in at least said weight member each comprising a relatively small spherical socket that intersects a larger spherical socket at a location intermediate the inner and the outermost portions of the larger socket,

spherical damping elements made of elastomer material located in the depressions and secured between the weight and clamping members, with a pair of said elements being joined together by a rib structure integrally formed with said pair of elements.

4,554,403

ARTICULATED SPACER-DAMPER

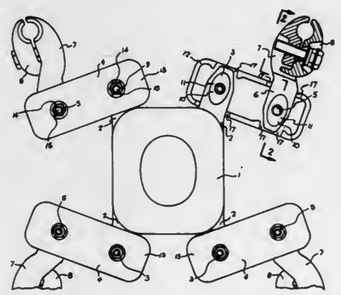
David Hearnshaw, Lutterworth, England, assignor to Dulmison Pty. Limited, Australia

Filed Oct. 5, 1984, Ser. No. 658,234

Claims priority, application Australia, Oct. 7, 1983, PG1738

Int. Cl.⁴ H02G *7/14, 7/12*

U.S. Cl. 174—42 **9 Claims**



1. An articulated spacer damper for electrical transmission lines comprising a frame member; a plurality of intermediate arm members; a plurality of first connection means, each one of said first connection means resiliently pivotally connecting a first end of an associated one of said intermediate arm members to said frame member; a plurality of clamping arm members, each having a proximal end and a distal end; a plurality of second connection means, each one of said second connection means resiliently pivotally connecting the second end of an associated one of said intermediate arm members to the proximal end of an associated one of said clamping arm members; a plurality of clamping means; means adjustably attaching each one of said clamping means to the distal end of an associated one of said clamping arm members; each of said first connection means and said second connection means including a pair of non-circular, resilient energy absorbing elements lockingly positioned within recesses formed in said frame member, in said associated one of said intermediate arm members, and in said proximal end of said associated one of said clamping arm members and a locking bolt extending through the associated pair of resilient energy absorbing elements, the associated intermediate arm member, and the frame member or the associated clamping arm member to define an axis for hinged pivoting while holding said resilient energy absorbing elements in compression.

4,554,404

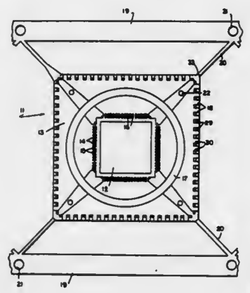
SUPPORT FOR LEAD FRAME FOR IC CHIP CARRIER

Thomas G. Gilder, Jr., York, and Raymond D. O'Dean, Dover, both of Pa., assignors to Gte Products Corporation, Stamford, Conn.

Filed Mar. 26, 1984, Ser. No. 593,458

Int. Cl.⁴ H01L *23/28, 23/50*

U.S. Cl. 174—52 FP **6 Claims**



1. A lead frame support comprising a support made of an electrically insulative, thermoplastic material, a pad area at the center of said support in which an IC chip can be disposed, said pad area being square or rectangular, and first raised spaced-apart projections proximate the periphery of said pad area, on all four sides thereof, the spaces between the projections defining slots in which the leads of a lead frame can be disposed.

4,554,405

HIGH DENSITY ENCAPSULATED WIRE CIRCUIT BOARD

Kenneth J. Varker, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 392,996, Jun. 28, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,485

Int. Cl.⁴ H05K *1/03*

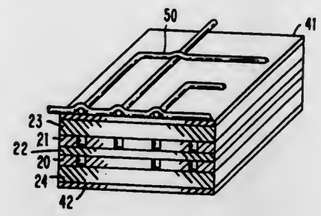
U.S. Cl. 174—68.5 **6 Claims**

1. A circuit board comprising:

a rigid base plane comprising a metallic layer which returns to a constant shape after being thermally cycled,

a layer of epoxy glass cloth pre-preg covering said base plane, the thickness of said layer being such that its lateral movement during thermal cycling is controlled by said rigid base plane,

a layer of curable adhesive covering said epoxy, said adhesive being other than polyester and having a viscosity curve which at first decreases due to the application of thermal energy and which later rises rapidly as the material cures,



wires encapsulated in said adhesive which has been cured, whereby said wires are rigidly fixed to said rigid base plane and the movement of said wires during thermal cycling is controlled by said rigid base plane preventing unpredictable variations in the location of said wires due to non rigidity of said epoxy glass cloth pre-preg, and

plated through holes making connections to said wires.

4,554,406

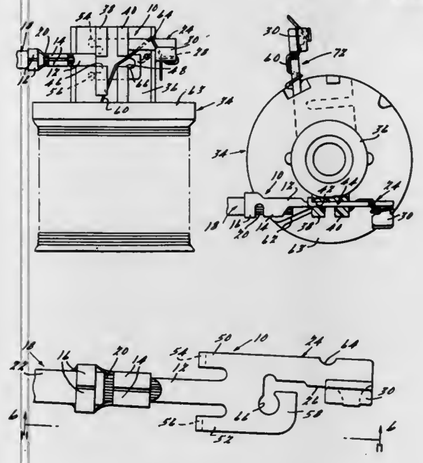
ELECTRIC WIRING TERMINAL AND METHOD OF MAKING SAME

Michael Slavin, Troy, and Ellsworth S. Miller, Mt. Clemens, both of Mich., assignors to Lectron Products, Inc., Rochester, Mich.

Continuation of Ser. No. 375,764, May 6, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,184

Int. Cl.⁴ H01R *4/10*

U.S. Cl. 174—94 R **18 Claims**



1. An electrical connection comprising an electrical terminal and a current carrying wire coated with a resin-type of high temperature insulation and suitable for use particularly in situations that subject the wire to vibrations or other conditions likely to result in a high incidence of wire breakage at the terminal,

said terminal being of a metallic material and having a pair of relatively large clamping portions having a relatively low resistance to flow of electrical current therethrough and being interconnected therebetween by a deformable, relatively narrow neck portion having a relatively high resistance to flow of electrical current therethrough and having a first portion of said coated wire wrapped thereabout,

said clamping portions having relatively large, flat wire engaging clamping faces extending between the respective relatively thin side edges thereof and having a second portion of said coated wire disposed therebetween, said clamping faces being disposed in close proximate face-to-face clamping relationship with said second portion of said coated wire as a result of at least one of said clamping portions being engaged by a current carrying element with sufficient force to cause bending of said neck portion, said second wire portion having been subjected to a clamping force applied in a direction generally perpendicular to the respective clamping faces so that said second wire portion is fixedly secured to said terminal by being physically clamped between said relatively large flat clamping faces and not between the relatively thin edges of the clamping portions,

said first portion of said wire wrapped around said neck portion of said terminal having the insulation exploded therefrom as a result of electrical current from said element flowing through said high-resistant neck portion to assure a good electrical connection between said wire and said terminal, the relatively low resistance characteristic of said clamping portions preventing said clamping portions from being heated sufficiently to blow the insulation from the clamped portion of said wire and thus maintaining the resistance thereof to breakage due to vibrations and other adverse conditions occurring in use.

4,554,407

SUPERCONDUCTING CONDUCTORS HAVING A STABILIZING SHEATH BRAZED TO ITS MATRIX AND A PROCESS FOR MAKING THE SAME

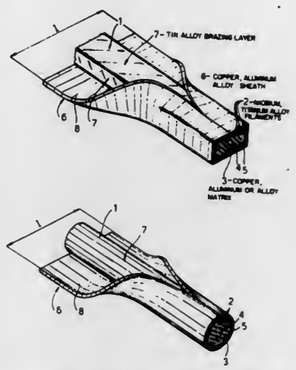
Sergio Ceresara, Lucca, and Mario Brogi, Piano di Coreglia, both of Italy, assignors to La Metalli Industriale S.p.A., Italy

Filed Jun. 28, 1984, Ser. No. 625,556

Claims priority, application Italy, Dec. 23, 1983, 68346 A/83

Int. Cl.⁴ H01B *12/00, 13/00*

U.S. Cl. 174—128 S **8 Claims**



1. A process for the production of superconducting conductors of the type comprising a plurality of filaments of an alloy containing niobium and titanium as base material and a composite matrix of copper, aluminum or alloys of these elements in which the filaments are embedded and which serves to stabilize the superconductor, the ratio between the volume of the material of the said matrix and the volume of the said filaments being greater than one, characterized by the fact that it comprises at least a first phase of preparing a first superconducting conductor including the said filaments and a first matrix of copper, aluminum or alloys of these elements;

(a) a second phase of preparing a strip of copper, aluminum

or alloys or these elements, of width substantially equal to the perimeter of the cross section of the said first superconducting conductor;

(b) a third phase of depositing a layer of brazing material on the outer surface of the said first superconducting conductor and at least on one of the faces of the said strip;

(c) a fourth phase of connecting the said first superconducting conductor to the said strip and of shaping the strip itself by plastic deformation around the conductor in such a way that this latter is completely enclosed by the strip;

(d) a fifth phase of heat treating the assembled said first superconducting conductor and said strip in the preceding phases for producing a brazed connection between the said first superconducting conductor and the said strip enclosing it.

5. A superconducting conductor of the type comprising a plurality of filaments of an alloy containing niobium and titanium and a composite matrix of copper, aluminum or alloys of these elements, in which these filaments are disposed and which serves to stabilize the superconductor, characterized by the fact that the superconductor comprises a first superconducting conductor which is provided with said filaments and a first matrix of copper, aluminum or alloys of these elements, and a sheath having a uniform thickness made of copper, aluminum or alloys of these elements which is disposed about the said first superconducting conductor in such a way as completely to enclose it, the said sheath having a pair of longitudinal continuous edges substantially in contact with one another and disposed between the inner surface of the said sheath and the outer surface of the said first superconducting conductor a layer of brazing material operable to form a composite matrix.

4,554,408

CABLE OUTLET ADAPTORS

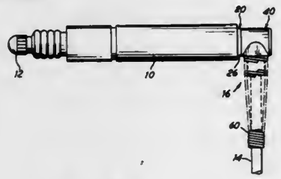
Roger J. Pullen, Bogner Regis, England, assignor to Schlumberger Electronics (U.K.) Limited, Farnborough, England

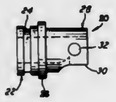
Filed Jan. 23, 1984, Ser. No. 573,183

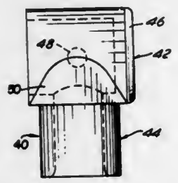
Claims priority, application United Kingdom, Jan. 28, 1983, 8302404

Int. Cl.⁴ H01R *13/56, 13/58*

U.S. Cl. 174—135 **8 Claims**







1. A cable outlet adaptor comprising: (i) a hollow bush through which a cable can extend longitudinally and having an end portion with a cut-out in one side, and (ii) a separate hollow hood having a cap portion arranged to be positioned around said end portion of said bush, and a sleeve portion extending from the cap portion at an angle thereto, the hood being separable into two sections along a common median plane of the cap and sleeve portions, whereby the hood can be installed with the cable in situ in the bush by displaceing the cable to extend through the cut-out in the bush and placing the two sections of the hood around the cable and the bush, so that said end portion of the bush lies in said cap portion and the cable extending from said cut-out lies in said sleeve portion.

4,554,409

METHOD OF ELECTROMAGNETICALLY READING COORDINATE DATA

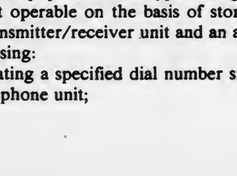
Kenji Mitsui, and Akira Suzuki, both of Osaka, Japan, assignors to Photoron Incorporated, Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,701

Claims priority, application Japan, Oct. 28, 1982, 57-190344

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—19 **7 Claims**



1. A method of reading coordinate data using an electromagnetic digitizer system including a tablet in which two mutually perpendicular sets of parallel conductors are arrayed so as to substantially define a rectangular Cartesian coordinate system, and a cursor coil which is movable along the surface of said tablet comprising: for each axial direction of said coordinate system, supplying an alternating current to said cursor coil so that plotting electromotive forces induced in said conductors by said cursor coil against a relative position between said cursor coil and said conductors will give a substantially symmetrical distribution curve with respect to an axis of symmetry passing the center of said cursor coil, measuring said electromotive forces, and determining a position of said axis of symmetry of the basis of said distribution curve; wherein said conductors have one ends thereof connected together so that respective adjacent conductors form loops and wherein a pair of loops are selected on each side of said axis of symmetry of said distribution curve so that two straight lines connecting respective two points thereon corresponding to the selected respective pairs of loops have an equal gradient in absolute value, and a position of said axis of symmetry is determined as an intersection of said two straight lines.

4,554,410

SYSTEM FOR MAINTENANCE AND DIAGNOSIS OF MOBILE TELEPHONE EQUIPMENT

Takayuki Furumoto, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,588

Claims priority, application Japan, Nov. 12, 1982, 57-197733

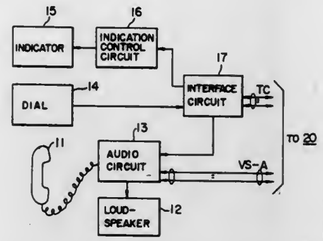
Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 179—2 E **3 Claims**

1. A system for maintenance and diagnosis which is adapted for mobile telephone equipment of the type having a telephone unit, a control unit operable on the basis of stored program control, a radio transmitter/receiver unit and an antenna unit, said system comprising:

means for generating a specified dial number signal from a dial of the telephone unit;

means included in said control unit for reading the specified dial number signal and selecting a desired program previ-



ously stored in said control unit to perform diagnosis of said mobile telephone equipment; and

means for indicating a result of the diagnosis on an indicator.

4,554,411

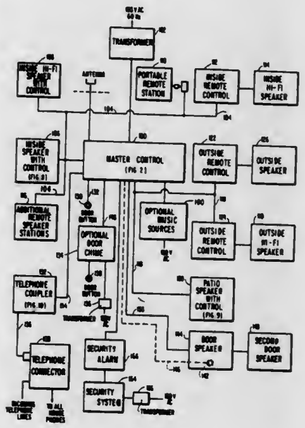
INTERCOM SYSTEM

William E. Armstrong, Cincinnati, Ohio, assignor to Scovill Inc., Waterbury, Conn.

Filed Jan. 24, 1983, Ser. No. 460,615

Int. Cl.⁴ H04M *9/08*

U.S. Cl. 179—37 **14 Claims**



1. A communication system comprising

a plurality of common lines including an audio line, a control line and a talk-listen line;

a plurality of station units connected to the common lines and each including microphone and speaker means, a talk switch for producing a talk signal on the control line, latch means for being set when each respective talk switch is operated, means for operating each respective microphone and speaker means as speaker means responding to audio signals on the audio line except when each respective talk switch is operated or when a listen signal is present on the talk-listen line while each respective latch means is reset, means for operating the microphone and speaker means as microphone means generating audio signals on the audio line when each respective talk switch is operated or when a listen signal is present on the talk-listen line while each respective latch means is reset, and means for selectively resetting each respective latch means; and

a master control unit connected to the common lines and including means responsive to termination of operation of the talk signal on the control line for producing a listen signal on the talk-listen line.

4,554,412

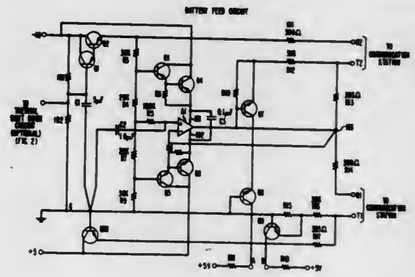
RESISTIVE LINE CIRCUIT

Douglas C. Smith, Rumson, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jul. 23, 1984, Ser. No. 633,478

Int. Cl.⁴ H04M *19/00*

U.S. Cl. 179—78 R **12 Claims**



1. A battery feed system for supplying power to a pair of communication circuits, each circuit having a pair of output conductors, said system comprising

means for placing two 24-volt inductorless battery feed circuits in series between a −48 v power supply input and ground so that current is supplied to said communication circuits over said output conductors through resistive elements in each said battery feed circuit,

means, common for both battery feed circuits, for eliminating differential interference signals on said output conductor pairs due to interference signals on said ground,

means, common to both battery feed circuits, for eliminating both differential and common mode interference signals on said output conductor pairs due to interference signals on said −48 v power supply input, and

means including both said ground interference signal eliminating means and said −48 v power supply input interference signal eliminating means and including a low impedance node between certain of said resistive elements of each said battery feed circuit for eliminating crosstalk between said conductor pairs.

4,554,413

KEY TELEPHONE SYSTEM

Edouard Pinede, Norwalk; Serge Faublas, Monroe, and Peter F. Stevens, Trumbull, all of Conn., assignors to PKS/Communications, Inc., Milford, Conn.

Filed May 31, 1984, Ser. No. 616,566

Int. Cl.⁴ H04M *9/06, 9/08*

U.S. Cl. 179—99 M **17 Claims**

1. A key telephone system comprising:

A plurality of telephone stations each having a two wire audio input port, a separate two wire audio output port, and a data port;

centralized station interface means coupled to each of said telephone stations for providing a station receive signal path for each two wire audio input port and a station transmit signal path for each two wire audio output port;

local loop interface means for dividing each of a plurality of telephone trunk lines into separate trunk transmit and trunk receive signal paths; and

crosspoint matrix means coupled between said centralized station interface means and said local loop interface means for interconnecting station transmit signal paths to station receive signal paths, station transmit signal paths to trunk

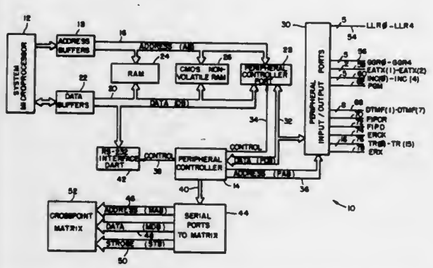
receive signal paths, and trunk transmit signal paths to station receive signal paths;

said crosspoint matrix means including:

a first group of addressable crosspoint switches for coupling selected transmit signal paths to selected first link points;

a second group of addressable crosspoint switches for coupling selected receive signal paths to selected second link points;

a third group of addressable crosspoint switches for coupling selected first link points to selected second link points; and



control means for completing a duplex communication channel by addressing and actuating a first set of crosspoint switches from said first, second, and third groups to effect a connection from a transmit signal path to a receive signal path across first and second link points, and a second set of crosspoint switches from said first, second and third groups to effect a connection from the reciprocal transmit signal path to the reciprocal receive signal path across first and second link points.

4,554,414

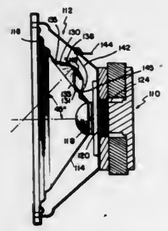
MULTI-DRIVER LOUDSPEAKER

William N. House, Bloomington, Ind., assignor to Harman International Industries Incorporated, Northridge, Calif.

Continuation-in-part of Ser. No. 489,322, Apr. 28, 1983, , which is a continuation-in-part of Ser. No. 383,603, Jun. 1, 1982,. This application Dec. 27, 1983, Ser. No. 565,464

Int. Cl.⁴ H04R *1/24, 9/06, 17/00*

U.S. Cl. 179—115.5 PS **10 Claims**



1. A multi-driver loudspeaker combination comprising

a first transducer of the dynamic radiator type designed to reproduce sound in the lower portion of the audio frequency range, the radiator of the first transducer including a diaphragm,

a second transducer designed to reproduce sound in the upper portion of the audio frequency range, said second transducer being positioned within the periphery of the said diaphragm,

and means for mounting the second transducer, the mounting means consisting essentially of a base support, means for mounting the base support from the first transducer radiator to extend away from the first transducer, the base support terminating at an edge, the second transducer including a diaphragm having an edge joined to the first-mentioned edge to support the second transducer from the base support.

4,554,415

BILATERAL AMPLIFIER

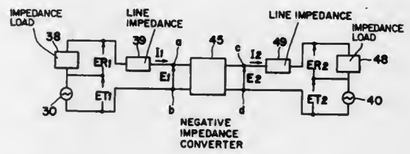
Nakamichi Sasano, Tokyo, Japan, assignor to Comnix Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,725

Claims priority, application Japan, Oct. 22, 1982, 57-185818

Int. Cl.⁴ H04B *3/36*

U.S. Cl. 179—170 G **2 Claims**



1. A system for bilateral amplification comprising

a single negative impedance converter having first and second terminal sides;

a first signal source having an impedance load;

a first connecting means having line impedance, to connect said first signal source to said first terminal side;

a second signal source having an impedance load;

a second connecting means having line impedance, to connect said second signal source to said second terminal side;

said first signal source with its impedance load being utilized as a load for negative impedance conversion with respect to said second signal source;

said second signal source with its impedance load being utilized as a load for negative conversion with respect to said first signal source;

said first and second signal sources and their respective impedance loads being of similar forms of impedances and loads.

4,554,416

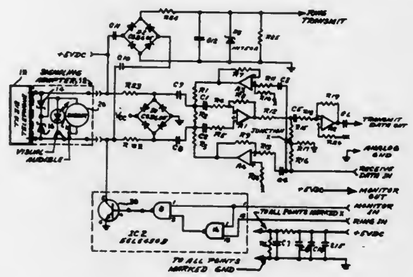
LOW VOLTAGE TWO WIRE TO FOUR WIRE TELEPHONE CIRCUIT CONVERTER APPARATUS

Dino J. Pacini, Utica; Edward C. Miceli, Verona, and Norman J. Sturdevant, Jr., Rome, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,384

Int. Cl.⁴ H04B *1/58*

U.S. Cl. 179—170 NC **4 Claims**



1. A low voltage two wire to four wire telephone circuit converter apparatus comprising in combination

a telephone means utilizing two wires to receive input signals and to transmit output signals; said telephone means having a transmit button to send voice frequency singals;

a first and second means for amplifying connected in series, said first amplifying means receiving said voice frequency signals from said telephone means by means of said two wires therefrom, said first amplifying means amplifying said voice frequency signals and applying them to said second amplifying means said second amplifying means further amplifying said voice frequency signal to provide a transmit data out signal, said transmit data out signal being referenced to analog ground;

a third and fourth means for amplifying arranged in parallel, said third and fourth amplifying means both receiving a receive data in signal, said third and fourth amplifying means each amplifying said receive data in signal and applying it to said telephone means by means of said two wire of said telephone means, and;

a low voltage source to supply a low voltage DC signal to said second, third and fourth amplifying means respectively; and further including a signal adapted means connected to said telephone means to receive an alternating ring signal therefrom, and a signal converting means converting said ring signal to a ring transmit signal which is a constant logic one level, said signal adapter means receiving a ring in signal which activates said signal adapter means to indicate a telehphone call is incoming.

4,554,417

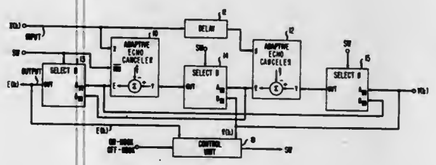
TANDEM ADAPTIVE ECHO CANCELER ARRANGEMENT

Kim L. Boyer, Walkersville, Md., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 4, 1983, Ser. No. 464,054

Int. Cl.⁴ H04B *3/20*

U.S. Cl. 179—170.2 **11 Claims**



1. Apparatus including,

a first adaptive echo canceler having a receive input, a transmit input and a transmit output, and

at least a second adaptive echo canceler having a receive input, a transmit input and a transmit output,

said apparatus characterized by,

means for switchably connecting said transmit inputs and transmit outputs of said adaptive echo cancelers in a tandem connection, and

means for controlling switching of the relative positions of said transmit inputs and transmit outputs of said adaptive echo cancelers in said tandem connection, wherein an extended impulse response is obtained.

4,554,418

INFORMATION MONITORING AND NOTIFICATION METHOD AND APPARATUS

Frank C. Toy, 211 Chelsea Cir., Lake Villa, Ill. 60046

Filed May 16, 1983, Ser. No. 495,070

Int. Cl.⁴ H04M *11/00, 1/274*

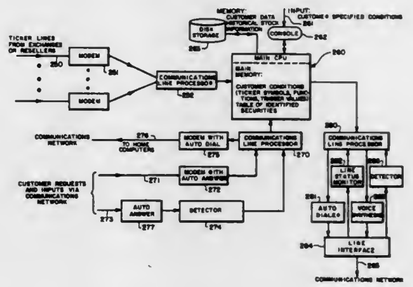
U.S. Cl. 179—2 DP **45 Claims**

7. A system for monitoring financial market information in near real time and for notifying selected users upon occurrences of specific selected events of interest, said system comprising:

a data processing system including a central processing unit and a memory system;

first information input systems for receiving first input information comprising data pertaining to the various financial markets of interest;

second information input systems for receiving second input information comprising data described said specific events of interest, and describing a desired notification sequence;



information output systems for remotely contacting said users via telecommunications networks and thereafter transmitting desired information pertaining to said events of interest;

wherein said data processing system monitors said first input information and detects the occurrence of said events of interest described by said second input data, and activates said information output system in accordance with said described desired contact sequence to initiate said remote user contact when said occurrence has been detected.

4,554,419

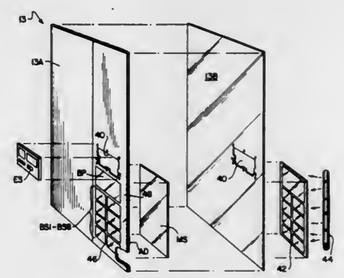
TOUCH SELECTION PANEL FOR A VENDING MACHINE

Eddie W. King, Marietta; Herman K. Duke, Atlanta, and Don S. Summerville, Decatur, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 2, 1983, Ser. No. 557,320

Int. Cl.⁴ H01H *13/70*

U.S. Cl. 200—5 A **14 Claims**



1. A touch-sensitive selection panel structure for a vending machine for initiating the vend of related products comprising:

(a) a first sheet member having transparent areas thereon defining touch-sensitive product selection windows, said first sheet member defining the obverse face of said selection panel;

(b) pressure-sensitive switch means disposed directly behind and contiguous to said first sheet member, said switch means being responsive to pressure applied to said product selection windows to generate electrical signals for initiat-

ing the vend of related products, said switch means being transparent to visible light;

(c) a second sheet member secured to said first sheet member by an adhesive coating and having transparent areas thereon disposed behind and contiguous to said switch means; and

(d) pocket means between said first and second sheet members for removably containing said pressure-sensitive switch means, said adhesive coating being relieved in area behind said product selection windows to define said pocket means.

4,554,420

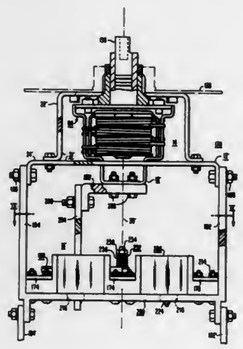
ELECTRICAL SWITCH

Gregory J. Golub, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1984, Ser. No. 606,072

Int. Cl.[4] H01H *9/30, 21/50*

U.S. Cl. 200—11 TC **21 Claims**



1. A rotary, snap-action electrical switch suitable for immersion in the liquid dielectric of an electrical transformer and operatable externally thereto, comprising:

a switch frame,

and rotor means,

said switch frame including stop members, one for each position of the switch, and stationary electrical contacts,

said rotor means being mounted for rotation on a longitudinal center line within said switch frame,

said rotor means including a switch rotor and an operating mechanism,

said switch rotor including electrical contacts engageable with said stationary electrical contacts at predetermined switch positions,

said operating mechanism including first and second nested portions each independently rotatable about said center line, spring means which translates rotation of the second nested portion to a bias on the first nested portion, and means linking the first nested portion with said switch rotor,

said first nested portion including latch means for latching the first nested portion at a stop member, said latch means comprising first and second latch members, with one latch member stopping the first nested portion at a stop member, and the other preventing rebound,

said second nested portion including an actuation shaft for loading the spring means against the resistance of the latched first nested portion,

said second nested portion further including latch release means which releases the latch means from a stop member during the loading of the spring means, with the loaded spring means causing the unlatched first nested portion to advance to an adjacent stop member with a snap action, while simultaneously advancing the switch rotor to an adjacent switch position.

4,554,421

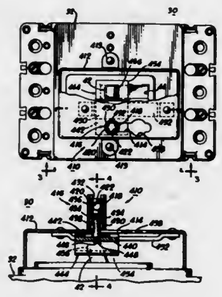
MOLDED CASE CIRCUIT BREAKER WITH HANDLE LOCK

Kurt A. Grunert, Beaver, and Joseph F. Changle, Scott, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 569,056, Jan. 9, 1984, abandoned. This application Apr. 3, 1985, Ser. No. 719,036

Int. Cl.[4] H01H *9/28*

U.S. Cl. 200—43.15 **14 Claims**



1. An electrical circuit breaker comprising:

a first electrical contact,

a second electrical contact,

said first and second contacts being movable into a CLOSED position and into an OPEN position,

a case for housing the internal components of said circuit breaker including said first and second contacts,

a manually engagable handle extending exteriorly of said case and capable of moving said first and second contacts alternately into said CLOSED position or into said OPEN position, and

means for locking said handle against substantial movement relative to said case when said first and second contacts are in said OPEN position, said locking means comprising a first member with an elongated slot having an integrally formed enlarged opening locking portion and spring biased means of a size larger than said slot mechanically interconnected with said handle and movable along said slot, said spring biased means being so configured as to be capable of being depressedly disposed in said locking portion when said first and second contacts are in said OPEN position, said spring biased means, when depressed into said locking portion, preventing substantial movement of said handle relative to said case.

4,554,422

GEARBOX INDICATOR SWITCH

Derek M. Embrey, Lisvane, Wales; Stuart F. Webb, Wokingham, England; Ian J. Bickford, Burpham, England, and Argus F. Caxton Doss-Desouza, Camberley, England, assignors to AB Electronic Components Limited, Glamorgan, Wales

Filed Sep. 27, 1983, Ser. No. 536,406

Claims priority, application United Kingdom, Sep. 29, 1982, 8227822

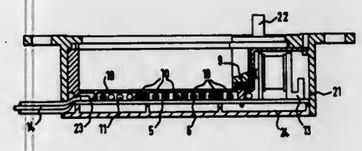
Int. Cl.[4] H01H *3/16;* **B60Q** *9/00;* **G05G** *25/00*

U.S. Cl. 200—61.91 **6 Claims**

1. In a vehicle having a gear selecting mechanism operated to select a gear position, an improved gear box indicator switch for signaling the identity of a selected gear comprising:

a magnet coupled to move to one of a plurality of positions in response to a change in position of a gear selector mechanism;

a plurality of reed switches adjacent said plurality of positions, each of said reed switches being operated when said magnet assumes a respective position, the change in state of a respective reed switch identifying a selected gear; and



a plurality of flux concentrators which separate said reed switches to provide substantial magnetic shielding between adjacent switches.

4,554,423

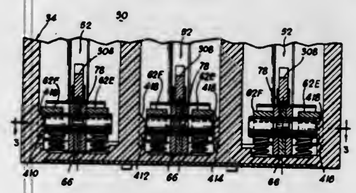
MOLDED CASE CIRCUIT BREAKER WITH ADJACENT POLE MECHANISMS SPACED CLOSER THAN ADJACENT TERMINALS

Robert H. Flick, Brighton Township, Beaver County, and Lawrence D. Dennis, Henry Clay Township, Fayette County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,057

Int. Cl.[4] H01H *9/00*

U.S. Cl. 200—293 **29 Claims**



1. A polyphase electrical circuit breaker comprising:

a first electrical contact,

a second electrical contact,

a third electrical contact,

a fourth electrical contact,

said first and second electrical contacts being disposed in a first pole of said circuit breaker and being movable into a CLOSED position and into an OPEN position,

said third and fourth electrical contacts being disposed in a second pole of said circuit breaker and being movable into a CLOSED position and into an OPEN POSITION,

a first externally extending terminal of said circuit breaker electrically connected in said first pole of said circuit breaker,

a second externally extending electrical terminal of said circuit breaker electrically connected in said second pole of said circuit breaker,

a molded case for housing said circuit breaker, and

positioning means for locating said first and third contacts spaced apart by a distance less than the spacing between said first and second terminals, said positioning means comprising molded means for physically engaging said first contact, said molded means comprising an integrally formed portion of said case,

said first contact including first and second components movable relative to each other in the direction of said third and fourth contacts, said first component being configured for movement relative to said second component in the direction of said third and fourth contacts as the result of the physical engagement of said first component by said integrally formed portion of said case.

4,554,424

ELECTRICAL SWITCH

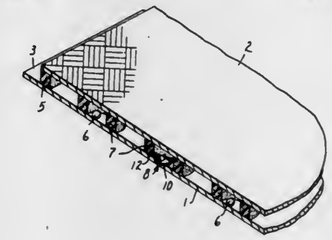
Ronald G. Tye, Bishops Stortford, England, assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

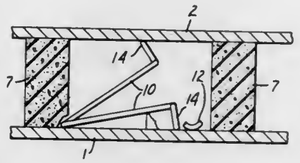
Filed May 25, 1984, Ser. No. 614,284

Claims priority, application United Kingdom, May 27, 1983, 8314801

Int. Cl.[4] H01H *3/02, 9/02*

U.S. Cl. 200—86 R **14 Claims**





1. An improved pressure actuatable switchmat comprising first and second electrically conductive members separated by non-conductive material, said conductive members being positioned with respect to each other to make electrical contact therebetween when said switchmat is subjected to an actuation load, the improvement comprising including in the switchmat an overload switch comprising an electrically conductive bridging member having a first end and a second end connected by a spring member held under compression by a frangible restraining means capable of releasing said spring member to its relaxed state upon being subjected to a predetermined overload which breaks said frangible means and causes at least one of said ends to move to provide a completed electrically conductive path between said conductive members.

4,554,425

CONTACT OF VACUUM INTERRUPTER AND MANUFACTURING PROCESS THEREFOR

Yoshiyuki Kashiwagi; Yasushi Noda, both of Tokyo, and Kaoru Kitakizaki, Higashimine, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,362

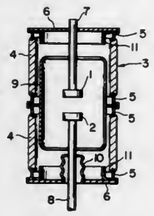
Claims priority, application Japan, Sep. 24, 1983, 58-176764

Int. Cl.[4] H01H *33/66*

U.S. Cl. 200—144 B **6 Claims**

1. A contact of a vacuum interrupter, wherein a material of

the contact consists essentially of between 29 and 74% by weight copper, between 15 and 60% by weight chromium,



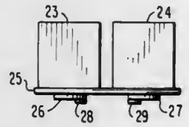
between 10 and 35% by weight iron, between 0.5 and 15% by weight carbon, and between 0.5 and 15% by weight silicon.

4,554,426

MULTIPLE KEY WITH INVISIBLE HINGE

Thomas K. Caste, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Mar. 5, 1984, Ser. No. 586,383
Int. Cl.[4] H01H *3/12*
U.S. Cl. 200—159 B **7 Claims**



1. A printed circuit keyboard comprising:
a face plate having a plurality of apertures;
a plurality of keys projecting through said apertures of said face plate;
a resilient pad having convex dimples which engage the bases of said plurality of keys, each of said convex dimples having an electrically conductive concave inner surface;
a printed circuit board having a plurality of key pads in registry with said plurality of keys, each of said key pads being arranged to be bridged by said electrically conductive concave inner surface of an adjacent dimple of said resilient pad when a corresponding key is depressed; and
at least two of said keys being joined to a common base and formed as a unitary structure therewith so that depression of one key of said unitary structure will cause it to move in an arucate path about a hinge area located along said common base outside of the area of juncture of the depressed key with said common base, said unitary structure providing lateral support to said at least two keys independent of the thickness of said face plate thereby allowing said printed circuit keyboard to be manufactured with a thin face plate.

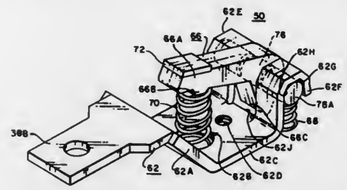
4,554,427

MOLDED CASE CIRCUIT BREAKER WITH MOVABLE LOWER ELECTRICAL CONTACT

Robert H. Flick, Brighton Township, Beaver County, and Walter K. Huffman, Towamencin Township, Montgomery County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 19, 1983, Ser. No. 562,602
Int. Cl.[4] H01H *1/24*
U.S. Cl. 200—250 **14 Claims**

1. An electrical circuit breaker comprising
a first electrical contact and
a second movable electrical contact,
said first and second electrical contacts being movable into a CLOSED position and into an OPEN position,
said second electrical contact comprising a stationary member having a first longitudinal end forming an external electrical terminal of said circuit breaker and a second longitudinal end configured as a pair of upstanding spaced-apart curved contacting portions having an opening therebetween,
said second electrical contact further comprising an elongated movable contact arm having contact means for engaging said first electrical contact fixedly secured at one longitudinal end thereof and pin means fixedly secured to said movable contact arm and remotely disposed from said contact means for rotatably engaging said curved contacting portions, said pin means comprising a cylindrical portion extending outwardly from each side of said contact arm in a direction perpendicular to the direction of elongation of said contact arm and being disposed



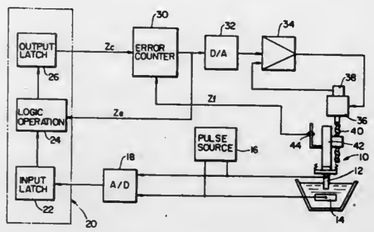
within said stationary member curved contacting portions, said contact arm being disposed within, and rotatable within, the opening between said spaced-apart curved contacting portions,
said second electrical contact further comprising a compression spring physically engaging each of said pin means cylindrical portions and maintaining said pin means in engagement with said curved contacting portions to enable effective current transfer between said stationary member and said movable contact arm,
said second electrical contact further comprising biasing means physically engaging said movable contact arm for yieldably biasing said movable contact arm towards said CLOSED position.

4,554,428

ELECTROSPARK MACHINING CONTROL DEVICE

Tamio Takawashi; Toshimitsu Sakakibara, and Shigeo Yamada, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 352,433, Feb. 25, 1982, abandoned.
This application Aug. 2, 1984, Ser. No. 636,087
Claims priority, application Japan, Feb. 28, 1981, 56-28958
Int. Cl.[4] B23P *1/14*
U.S. Cl. 219—69 G **7 Claims**



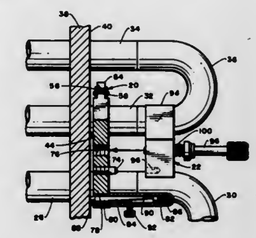
1. A control device for an electrospark machining device in which a pulse voltage, which is subjected to current control, is applied to an inter-electrode gap between an electrode and a workpiece to be machined so that electric discharge takes place in said inter-electrode gap, and a position control servo system having sample, logic operation and hold functions controls the inter-electrode gap according to the voltage applied to the inter-electrode gap, said position control servo system comprising:
a zero-order hold circuit for issuing a position control instruction;
an error counter for presetting an output of said hold circuit, as parallel data therein and for outputting a difference between said output thus preset and an electrode position signal; and
means for applying an output of said error counter, as a speed signal, to a servo system provided for driving said electrode; and to logic means provided in said position control servo system to provide a zero-order hold output for said zero-order hold circuit.

4,554,429

CYLINDRICAL TUBE WELDING ASSEMBLY

Gasparas Kazlauskas, 10219 Briarwood Dr., Los Angeles, Calif. 90024

Filed Sep. 2, 1983, Ser. No. 529,091
Int. Cl.[4] B23K *9/225*
U.S. Cl. 219—60.2 **19 Claims**



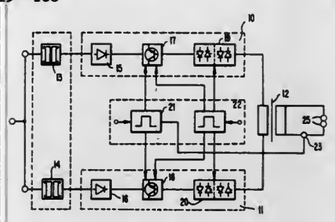
11. A welding head assembly for welding a first section of cylindrical tubing to a second section of cylindrical tubing, the first section protrudes from a tube sheet, said welding head assembly comprising:
a locator plate assembly to be fixedly mounted by fixing means on the exterior surface of the first section, said locator plate assembly being removable; and
a welding head removably connected by connection means to said locator plate assembly, said welding head to be operable to weld the first section to the second section.

4,554,430

ELECTRICAL POWER SOURCE FOR RESISTANCE WELDING APPARATUS

Zelimir Belamaric, Pully, Switzerland, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,628
Claims priority, application Fed. Rep. of Germany, May 13, 1981, PCT/DE82/00097
Int. Cl.[4] B23K *11/24*
U.S. Cl. 219—108 **9 Claims**



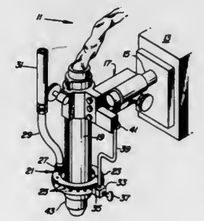
1. For a resistance welding machine, an electric energy source having
a static inverter comprising
a first static frequency converter means producing a first sequence of voltage impulses,
at least a second static frequency converter means producing a second sequence of voltage impulses, the second sequence alternating in time with and opposite in polarity to the first sequence,
each of the first and the at least second frequency converter means comprising a direct-current bridge stage, and a thyristor output stage means, each thyristor output stage means, on the input side, connected to an output of a frequency regulator and an output of a welding current regulator,
plural welding electrodes,
welding transformer means comprising a secondary circuit means and a primary circuit means receiving said fist and second sequences of voltage impulses
whereby the last impulse of a sequence of one polarity and the first impulse of the immediately succeeding sequence of another polarity are combined in order to produce steep leading edges of half-wave current impulses passing through the secondary circuit means to the plural welding electrodes.

4,554,431

WATER SHIELD RING FOR PLASMA ARC CUTTING TORCH

David L. Koeller, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 4, 1984, Ser. No. 617,211
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121 PP **2 Claims**



1. In combination with a plasma arc cutting machine having a mounting cylinder, a torch support member mounted to said mounting cylinder, a cutting torch having a lower tip portion, said torch being mounted to said torch support member, and a water shield ring; wherein the improvement comprises:
a rod fixably mounted at one end to said torch support member;
said water shield ring being fixably mounted to said rod at said rod's other end to maintain said water shield ring in close spaced apart radial relationship to said torch and in close vertical relationship with said lower tip portions of said torch.

4,554,432

COMPONENTS FOR GAS METAL ARC WELDING GUN

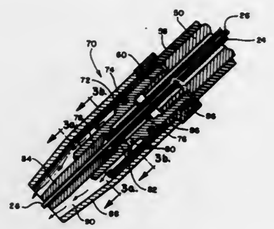
Valgene E. Raloff, Grant Park, Ill., assignor to Dover Corporation, New York, N.Y.

Filed Oct. 5, 1984, Ser. No. 658,121
Int. Cl.[4] B23K *9/16*
U.S. Cl. 219—137.43 **6 Claims**

1. In a gas metal arc welding gun of the type comprising a contact tip, a gas nozzle around the contact tip, and an electrode liner positioned to direct an electrode to the contact tip, the improvement comprising:
a head member which defines a first recess sized to receive the contact tip, a second recess sized to receive the electrode liner, an internal, annular ridge which defines a restricted diameter passageway between the first and second recesses, and at least one gas port through the head member intersecting the second recess to direct a gas from

the second recess to a region between the gas nozzle and the contact tip;

said passageway sized to pass the electrode liner therethrough to allow the electrode liner to contact the contact tip directly;



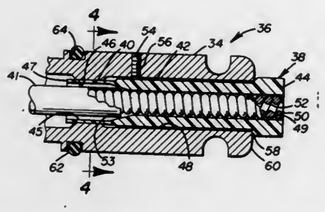
said annular ridge operating simultaneously to provide a stop for the contact tip, to center the electrode liner, and to protect the electrode from welding spatter.

4,554,433

WELDING CONDUIT STOP

David L. Toothaker, Wichita, Kans., assignor to Tweco Products, Inc., Wichita, Kans.

Filed Aug. 3, 1984, Ser. No. 637,427
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—137.63 5 Claims



1. In a welding gun apparatus for supplying welding wire, electrical power, and shielding gas to a working area, including:

a. a connector block assembly adapted to be releasably connected to a supply adapter assembly to receive a shielding gas, welding wire, and electrical power therefrom,

b. a cable assembly having one end connected to said connector block assembly for conveying shielding gas, welding wire, and electrical power,

c. a welding gun assembly connected to an end of said cable assembly,

d. said connector block assembly having a generally elongated connector plug extending from an end thereof,

e. said connector plug having an axial bore therethrough,

f. a generally elongated conduit stop fitted within said axial bore and extending from one end thereof,

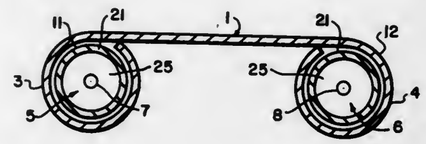
g. wherein the improvement comprises said conduit stop being of resilient plastic material and unitary one-piece construction.

4,554,434

HEATING PLATE FOR PRINTING APPARATUS

Gilles Bailleul, Montesson, and Patrick Coville, Le Chesnay, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,909
Claims priority, application France, Apr. 15, 1983, 83 06226
Int. Cl.[4] F27B *9/28;* H05B *1/00*
U.S. Cl. 219—216 5 Claims



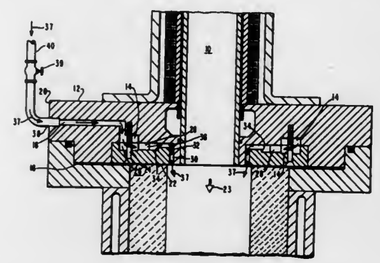
1. A heating plate for drying inked paper in a printing apparatus, comprising two elongated heating elements, having a powdered metal therein and a metal sheet having first and second faces, the first face comprising a rectangular central portion which serves to receive the inked paper, said central portion having a largest dimension, the metal sheet having two end portions which extend parallel to this dimension, said two end portions being folded towards the second face so as to form two holders which each serve to accommodate and retain one of said longated heating elements, said holders each having a cross-section whose shape and internal dimensions are substantially the same as the shape and external dimensions of said heating elements and having intimate thermal contact therebetween.

4,554,435

ELECTRIC ARC HEATER HAVING OUTLET GAS ADMISSION

Charles B. Wolf, Irwin, and Joseph W. George, Blairsville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 18, 1983, Ser. No. 553,340
Int. Cl.[4] H05B *7/18*
U.S. Cl. 219—383 13 Claims



1. An electric arc heater apparatus, comprising:

means defining an arc chamber having an outlet therefrom and including a pair of axially spaced, substantially cylindrical hollow electrodes forming a narrow gap therebetween and adapted to be connected to a source of electrical potential to produce an electric arc therebetween;

insulating means for spacing and electrically insulating the electrodes from each other and including a ring having means for channeling a gas to be heated at a high velocity into the gap between the electrodes with the gas being heated by the electric arc formed in the arc chamber when the electrical potential is applied to the cylindrical electrodes;

mounting means disposed about the outlet of the arc chamber for attaching the electric arc heater to a reaction vessel having an opening such that substantially all the arc-heated gas is transferred into the reaction vessel therethrough, the mounting means including a flange having a mating face adjacent the reaction vessel and circumscribing the outlet with the mating face of the flange having a channel circumferentially extending about a substantial portion thereof, the flange having means therein for conducting into the channel a material to be added to the arc heated gas; and

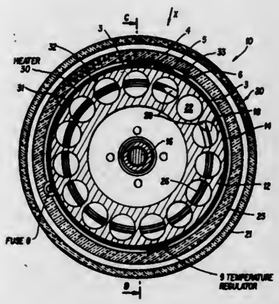
plate means detachably fastened to the flange such that the channel and plate means form a manifold for distributing the material about the outlet of the electric arc heater, the plate means including means for conducting the material from the manifold into the arc-heated gas exiting the outlet of the electric arc heater thereby minimizing thermal and erosive damage to the opening of the reaction vessel caused by passage of the arc-heated gas therethrough and providing for addition of the material to the arc-heated gas.

4,554,436

ELECTRIC HEATER FOR A ROTATING SAMPLE VESSEL CONTAINER IN A SAMPLING DEVICE FOR GAS CHROMATOGRAPHY

Wolfgang Chlosta, Uberlingen, and Wolfgang Riegger, Salem, both of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,821
Int. Cl.[4] H05B *3/58*
U.S. Cl. 219—385 4 Claims



1. A sampling device comprising: a rotatable sample vessel container for accommodating a plurality of sample vessels, means for selectively moving each of said sample vessels to a sample feeding position;

an electric heater for heating said container;

a housing, said container being positioned in said housing;

a heating jacket positioned between said container and said housing, said jacket surrounding said container; said jacket including an electric heating coil enclosed between two silicone mats;

means for maintaining said jacket in material contact with said container whereby a thermal transfer relation is maintained therebetween and;

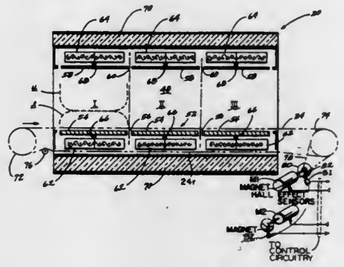
means between said jacket and said housing for preventing rotation of said jacket.

4,554,437

TUNNEL OVEN

Dennis L. Wagner, and Harold D. Wells, both of St. Louis County, Mo., assignors to Pet Incorporated, St. Louis, Mo.

Filed May 17, 1984, Ser. No. 611,108
Int. Cl.[4] F27B *9/06;* F27D *11/00;* H05B *1/02*
U.S. Cl. 219—388 15 Claims



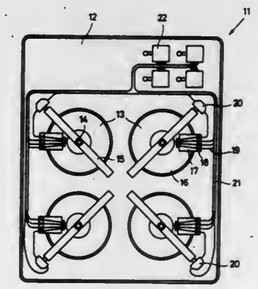
1. In an infrared tunnel oven for cooking of food products by infrared radiant energy, including at least one tunnel over tier having a tunnel-form cooking chamber having an entrance and exit at opposite ends, the chamber having a roof and a hearth, a plurality of infrared heating means extending above the roof and beneath the hearth for respective heating of roof and hearth to predetermined temperatures for direct emission from the roof and hearth of infrared radiant energy for absorption by food products conveyed through the chamber, a speed-controllable conveyor for carrying food products through the chamber, the chamber being longitudinally divided into a plurality of different heating zones, the improvement comprising electronic control circuit means including temperature sensing means and conveyor speed sensing means and a single microprocessor, responsive both to the temperature sensing means and the speed sensing means, for simultaneously controlling the heating means and the conveyor for causing the food products to be heated according to a preselected cooking profile while carried by the conveyor through the chamber.

4,554,438

ELECTRIC COOKER WITH THERMOSTATS FOR PROTECTING AGAINST LOCALIZED OVERHEATING

Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Apr. 24, 1984, Ser. No. 603,329
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315333
Int. Cl.[4] H05B *3/68*
U.S. Cl. 219—449 19 Claims



1. A cooker, comprising:

a mounting plate having openings therein for receiving a plurality of electric hotplates;

a plurality of electric hotplates mounted one each in the openings, each of the hotplates having a hotplate body and electrical heating conductor means in the hotplate body, the hotplates being so disposed in the mounting plate that at least part of the hotplate body projects into a bounded space below the mounting plate;

electrical leads connecting the heating conductor means of each hotplate to a source of electrical energy; and,

a thermostat connected to at least one of the electrical leads for switching off electrical energy to at least one, but not all of the heating conductor means, the thermostat being disposed in the space, outside of and separately from the hotplate, in a position between the hotplate and an outer boundary of the space, the thermostat switching in response to ambient temperature at the position, whereby an area surrounding the cooker and close to the thermostat position can be protected from localized overheating conditions in the cooker, apart from the hotplates themselves, without entirely disabling the cooker.

4,554,439

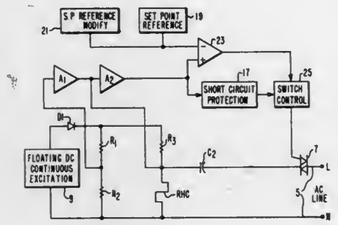
TWO WIRE HEATER REGULATOR CONTROL CIRCUIT HAVING CONTINUOUS TEMPERATURE SENSING EXCITATION INDEPENDENT OF THE APPLICATION OF HEATER VOLTAGE

Michael Cross, Turtle Creek, and John T. Gordon, Ambridge, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 432,604, Oct. 4, 1982, abandoned. This application Nov. 23, 1984, Ser. No. 674,706

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—497 **6 Claims**



1. A two wire heater regulator control system having continuous temperature sensing excitation independent of the application of heater voltage for controlling the temperature of a heater element; for use in combination with a heater element having only a first and second terminal thereon for the interconnection of said two wire heater regulator control system thereto, the electrical resistance of said element being a function of the temperature of said heater element, said two wire heater regulator control system comprising:

means for selectively providing a heater voltage for connection to said first and second heater element terminals, said heater voltage being an AC line voltage which supplies heating power;

means for providing a continuous sensing excitation voltage for connection to said first and second heater element terminals, said continuous sensing excitation being simultaneously present with said heater voltage and the means by which the resistance of the heater element is determined and wherein said sensing excitation is a continuous DC excitation voltage floating with respect to said AC line voltage;

means for isolating said continuous sensing excitation voltage from said heater voltage when said heater voltage is being selectively provided to said first and second heater element terminals;

a four-leg bridge circuit means including said heater element as one leg thereof, responsive to said continuous sensing excitation voltage for providing a continuous reference voltage;

means for comparing said sensing excitation voltage at said heater element with said reference voltage for producing a continuous output representing the difference therebetween, and said comparing means rejecting said AC line voltage during the application of said heater voltage to said heater element and wherein said comparing means includes a first amplifier responsive to the reference voltage and a second amplifier responsive to the first amplifier output and the voltage at said heater element, said first and second amplifiers forming a high common mode range instrumentation amplifier; and

control means responsive to at least the output from said comparing means for the selective application of said heater voltage to said first and second heater element terminals and wherein the control means includes switch means for the selective application of the heater voltage to the heater element.

4,554,440

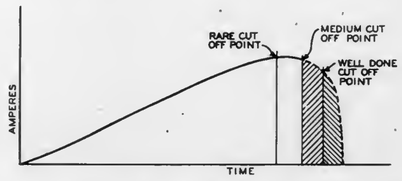
AUTOMATIC CIRCUIT CONTROL FOR ELECTRICAL RESISTANCE COOKING APPARATUS

Maurice W. Lee, Jr., P.O. Box 25, Boley, Okla. 74829

Continuation-in-part of Ser. No. 290,993, Aug. 7, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,768

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—501 **11 Claims**



1. A food cooking control for an electric resistance cooker in which the magnitude of the RMS value of electrode current generated from an AC source passing through food interposed between electrodes increases until the food is substantially cooked, the improvement comprising: an electric supply circuit;

thyristor means arranged in series in the electric supply circuit for uninterruptedly supplying continuous cycle current to said electrodes while the food is cooking, said thyristor means including a gate control element having an electric gate voltage supply circuit;

switch means in said gate voltage supply circuit for selectively closing and opening the gate voltage circuit and respectively rendering said thyristor means conductive and nonconductive;

current detection means including a differentiating amplifier/comparator circuit connected with the electric supply circuit through a current transformer for sensing the rate of change of the RMS value of current through the food as a function of its cooked condition; and,

electric switch operator means including an electric circuit interposed between said current detection means and said switch means for opening the gate of the voltage supply circuit in response to a predetermined rate of change of the RMS value of the current through the food indicating the end of the cooking process and a selected cooking doneness of of the food.

4,554,441

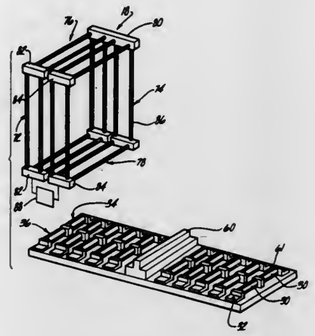
ELECTRIC HEATING COIL

Roy C. Lueth, St. Clair, Mich., assignor to Ultra-Temp Corporation, Mt. Clemens, Mich.

Division of Ser. No. 567,769, Jan. 3, 1984, Pat. No. 4,512,558. This application Feb. 19, 1985, Ser. No. 703,182

Int. Cl.⁴ H05B *3/10*

U.S. Cl. 219—552 **1 Claim**



1. A heating coil for a metallurgical furnace comprising:

three sets of bus bar parts, each set comprising two aligned bus bar parts,

a unitary bus bar having a length substantially equal to the length of one set,

said sets and said unitary bus bar being spaced apart and parallel to each other and forming a parallelogram,

a pair of heating rods extending between each bus bar part and its aligned bus bar parts or unitary bus on its adjacent corners, and means for connecting a source of electrical power to the bus bar parts on the set diagonal from the unitary bus.

4,554,442

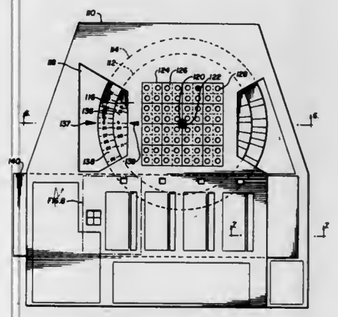
ALIQUOT PART LOCATOR

William L. Lest, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 24, 1985, Ser. No. 694,554

Int. Cl.⁴ G06C *3/00*

U.S. Cl. 235—88 R **4 Claims**



1. A device for locating aliquot parts of a parcel of land, said device comprising

a first rotatable disc

a second rotatable disc of a different size than said first disc said first and second discs being mounted between front and back layers of sheet material, said first and second discs being rotatable relative to said sheet means about an axis passing through the geometric center of each disc;

said first disc having a pattern thereon formed by a plurality of holes therethrough;

said second disc having a pattern thereon formed by a plurality of holes therethrough;

said first and second discs each having a plurality of reference numbers located about the outer peripheral edge of each disc, each reference number corresponding to an aliquot part of a parcel of land, said aliquot parts being of equal area;

said front layer having a drawing corresponding to said parcel of land, said drawing having a pattern of lines drawn thereon representing lines dividing said parcel of land into said aliquot parts of equal area, each section of said drawing representing an aliquot part of said parcel of land having means defining a hole extending therethrough;

means on said sheet material for allowing the alignment of said reference numerals located about the outer peripheral edges of said sheets, in a predetermined position relative to a point on said sheet material;

said back layer of said sheet material having reference numerals corresponding to said reference numerals on said front and back disc located on a front side thereof;

means for assigning a reference numeral to each aliquot part of said parcel;

said front and back layers of sheet material and said discs being arranged so that, when said discs are rotated, at least one reference numeral on said outer peripheral edge of said first disc is aligned along the radius defined by said at least one reference numeral on said outer peripheral edge of said first disc and said geometric center with the corresponding reference numeral of same value on said second disc to form matching reference numerals and further said matching reference numerals are in said predetermined position relative to said sheet means, said patterns of holes on said first and second discs align so that one and only one of said reference numerals on the front of said back layer is visible through said holes in said front layer, said visible reference numeral being of the same value as said matching reference numerals, and the position of said hole in said front layer through which said one reference on the front of said back layer is visible corresponds to the location on said drawing of said aliquot assigned said reference numeral.

4,554,443

TAPE CASSETTES

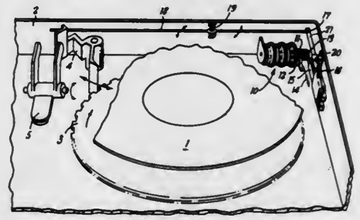
Harry Lambert, and Margaret C. Lambert, both of Carriage Pl. 77500 Interstate 10, Indio, Calif. 92201

Filed May 17, 1983, Ser. No. 495,472

Claims priority, application United Kingdom, May 25, 1982, 8215181

Int. Cl.⁴ G04B *37/00*

U.S. Cl. 235—103 **4 Claims**



1. A magnetic tape cassette including a casing, a tape storage spool and a tape take-up spool, means in the casing for interacting with a cassette player, said interacting means including

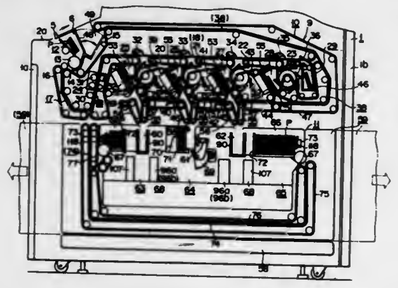
means for undergoing mechanical motion when said cassette is inserted into or withdrawn from said cassette player, means for locking at least one of said spools in position when said cassette is not inserted in said cassette player and means located within said casing and mechanically linked to said interacting means and to said locking means for counting each time said cassette is subjected to a predetermined sequence of operations, said counting means including a set of cyclometer wheels for displaying a count, said casing including a window through which said counting on said wheels is visible, said counting means further including spring means set by movement of said locking means when said cassette is inserted into reproduction equipment and released to move a cyclometer wheel corresponding to the last significant digit by one unit when said cassette is removed from said cassette player.

4,554,444

AUTOMATIC BANK NOTE TRANSACTION APPARATUS

Minoru Hirose, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 337,244, Jan. 5, 1982, Pat. No. 4,479,049. This application Feb. 16, 1984, Ser. No. 580,731
Claims priority, application Japan, Jan. 22, 1981, 56-8514; Jan. 22, 1981, 56-8525; Apr. 6, 1981, 56-51538
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.⁴ G06F *15/30*
U.S. Cl. 235—379 **12 Claims**



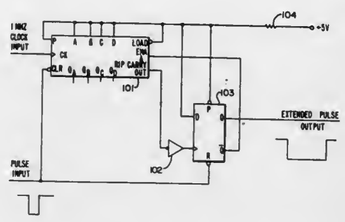
1. An automatic bank note transaction apparatus comprising:
a housing including means for defining a cash inlet/outlet port;
conveyance means for successively conveying bank notes received in said cash inlet/outlet port;
first temporary collecting means for temporarily collecting the deposited bank notes conveyed by said conveyance means;
a return path for returning the bank notes collected in said first temporary collecting means to said cash inlet/outlet port;
a storage means for storing bank notes for withdrawl;
control means manipulable by a user for selectively alternately producing indicia of deposit approval, deposit disapproval and request for withdrawl;
distributing means for guiding the bank notes temporarily collected in the first temporary collecting means into said storage means when said control means produces indicia of deposit approval and, alternately, into said return path when said control means produces indicia of deposit disapproval; and
a withdrawl path for feeding the bank notes stored in said storage means to said cash inlet/outlet port when said control means produces said indicia of request for withdrawal,
whereby the bank notes temporarily collected in said first temporary collecting means are returned to said cash inlet/outlet port via said return path in response to said indicia of deposit disapproval, and transferred to said storage means to be used as bank notes for withdrawal in response to said indicia of deposit approval, and
the bank notes stored in the storage means are conveyed to said cash inlet/outlet port via said withdrawal path in response to said indicia of request for withdrawal.

4,554,445

DIGITAL PULSE STRETCHER

Dennis W. Chasse, Nashua, N.H., and Vincent M. Clark, Kingsboro, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 7, 1984, Ser. No. 607,836
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—472 **17 Claims**



1. A digital pulse stretch circuit for adding a predetermined amount of time to the duration of the input pulse of a wand type or magnetic card reader, the input pulse having a rising edge and a trailing edge, said digital pulse stretcher comprising:
(a) a system clock for generating clock pulses;
(b) first means coupled to said wand type or magnetic card reader and to said system clock for counting the clock pulses applied to it and generating a first output signal after a predetermined number of counts;
(c) second means coupled to said first means and to said wand type or magnetic card reader and responsive to the trailing edge of the input pulse to activate said second means, and further responsive to the first output signal to deactivate said second means,
whereby the input pulse has been extended by the predetermined number of counts.

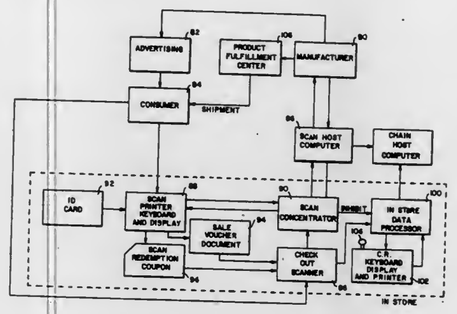
4,554,446

SUPERMARKET INVENTORY CONTROL SYSTEM AND METHOD

Arthur J. Murphy, 18337 Superior St., Northridge, Calif. 91325, and Joseph F. Stratton, 33 Broad Rd., Greenwich, Conn. 06830

Filed Nov. 18, 1983, Ser. No. 552,916
Int. Cl.⁴ G06K *19/00*
U.S. Cl. 235—487 **15 Claims**

1. An inventory control system for use in a supermarket comprising:
a sales voucher printer located at each store for printing coded sale vouchers having machine readable codes,
a plurality of point of sale terminals each consisting of a cash register, keyboard, display and printer, and code reading machine scanning equipment capable of reading said coded sale vouchers,
a single scan coupon concentrator at each store communicating with each code reading machine scanning equipment and in real time for continuously comparing coded sale voucher information at each sale terminal and for each sale transaction to determine compliance of all coded voucher conditions,
an in-store data processor controlling said cash register, keyboard, display and printer, and communicating with each code reading machine scanning equipment for continuously identifying, accumulating and processing all sales information from each point of sale terminal,
said scan coupon concentrator processing and accumulating all coupon redemption information and sale voucher information for every complete transaction at each point of sale terminal to determine compliance with coded conditions, transmitting coupon information, voucher information and, in the absence of compliance, an inhibit signal to said in-store data processor for crediting customer, collecting money, or indicating non-compliance,
a scan host computer located remotely from said supermarket periodically communicating with each scan coupon



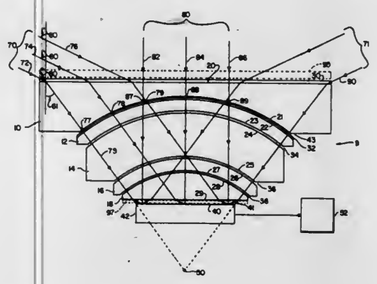
concentrator in each store to receive accumulated sales voucher information for transmission to the manufacturer for processing, and
a chain host computer located remotely from said supermarket periodically communicating with each in-store data processor to receive accumulated total sales information including voucher sales information for that store and in which said scan host computer feeds accumulated voucher sales information received from all stores to said chain host computer thereby providing the central chain host computer with complete information as to voucher sales for reconciliation with information from all stores.

4,554,447

MULTI-ELEMENT SPECTRAL FILTER WITH CURVED INTERIOR SURFACES

James W. Howard, Natick, and David M. Reilly, Acton, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1983, Ser. No. 470,691
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—216 **16 Claims**



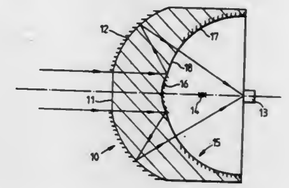
1. Apparatus for optical spectral filtration of incident radiation from a desired field of view, which provides substantially uniform angular response over a desired spectral waveband ("in-band"), said apparatus comprising:
A. a first optical element having substantially low in-band absorption and having a substantially plano-concave shape which includes a first planar surface and a first concave surface and wherein said first concave surface has a given center of curvature, wherein such substantially low in-band absorption is substantially the same as that available by use of the material nickel sulfate hexahydrate;
B. one or more interior optical elements positioned between said first optical element and said given center of curvature, said interior element(s) having substantially concavo-convex shape(s) which includes a convex surface and a concave surface, and wherein the outer convex surface(s) and inner concave surface(s) of said interior element(s) are substantially concentric about said given center of curvature; and
C. a second optical element having substantially low in-band absorption and having a substantially plano-convex shape, which includes a second planar surface and a second convex surface, said second optical element positioned between said interior optical element(s) and said given center of curvature, wherein said second convex surface of said second element is substantially concentric about said given center of curvature and wherein said second planar surface is substantially parallel to said first planar surface of said first element.

4,554,448

OPTICAL ELEMENTS

Hillary G. Sillitto, Edinburgh, Scotland, assignor to Ferranti, plc, London, England

Filed Apr. 25, 1983, Ser. No. 487,991
Claims priority, application United Kingdom, Apr. 27, 1982, 8211818
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—216 **9 Claims**



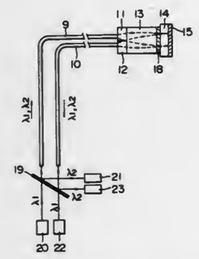
1. An optical element for location between a source of radiation and a detector thereof and arranged to focus radiation passing through an aperture therein on to the detector and to provide a reflective shield for the detector outside said aperture, which includes a first optical surface having a central area transparent to radiation incident thereon and a surrounding area reflective to radiation incident upon it from the direction of the detector, and a second optical surface spaced from the first optical surface towards the detector and having a first central area arranged to reflect radiation passing through the central area of the first surface towards the reflective area of the first surface, a second area surrounding the first area and through which said radiation reflected from the reflective area of the first surface may pass towards the detector, and an outer area reflective towards and concentric with the detector to provide a reflective shield for the detector.

4,554,449

FIBER OPTIC MAGNETIC FIELD SENSOR

Tetsuo Taniuchi, Katano, and Yoshinobu Tsujimoto, Kashiwara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 28, 1983, Ser. No. 490,136
Claims priority, application Japan, Apr. 30, 1982, 57-73603
Int. Cl.⁴ G02B *5/14*
U.S. Cl. 250—227 **9 Claims**



1. A fiber optic magnetic field sensor comprising:
a light emitting optical fiber, having a light emitting end, for guiding an input light beam;
a light receiving optical fiber, having a light receiving end, for guiding an output light beam;
A first rutile plate having a first polarization axis, said first rutile plate having one side surface attached to the light emitting end of said light emitting optical fiber, and a second side surface;
a second rutile plate, having a second polarization axis making an angle with respect to said first polarization axis, juxtaposed to said first rutile plate, said second rutile plate having one side surface attached to the light receiving end of said light receiving optical fiber, and a second side surface, said one side surfaces of said first and second rutile plates each facing the same direction;
a rod lens having one end attached to the second side surfaces of both said first and second rutile plates, and a second end;
a Faraday material member having one end surface attached to the second end of said rod lens, and a second end surface; and
a reflecting means, attached to the second end surface of said Faraday material member, for reflecting the input light beam toward said light receiving end of said light receiving optical fiber as the output light beam.

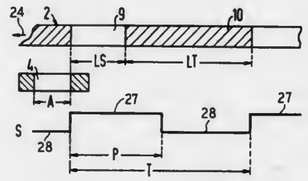
4,554,450

DEVICE FOR ANGLE OF ROTATION DETERMINATION

Ernst Goepel, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,624
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201163
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **5 Claims**

1. A light beam interrupting system for use in a device for determining an angle of rotation of a rotating member, comprising:
means for emitting a continuous beam of light:
means for receiving said beam of light having a light accepting aperture; and
light interrupting means, moving in conjunction with said rotating member, disposed in a plane perpendicular to said beam of light and between said means for receiving and means for emitting and having a plurality of regularly spaced light transmitting areas disposed in the path of said beam of light and which define light permeable areas and light impermeable areas, a width of said light permeable areas being less than a width of said light impermeable areas, and the width of said light permeable areas being at



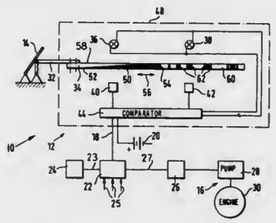
least substantially the same or slightly larger than a width of said light accepting aperture in a running direction of the light interrupting means.

4,554,451

OPTOELECTRONIC POSITION INDICATOR FOR A DRIVE SYSTEM

Gerhard Kirstein, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 497,820
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1982, 3221621
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—237 G **9 Claims**



1. A position indicator system for monitoring an operator settable speed control element of a drive system, the drive system further including an engine, means for supplying fuel to the engine, and means operatively interconnecting the fuel supply means with the engine, the position indicator system including a light source, an electro-optical detector, the detector including means for generating an electrical signal as a function of the luminous intensity received from the light source along an optical path, an optical carrier, the optical carrier being positioned within the optical path, the optical carrier including means forming a position indicator range, the means forming a position indicator range including means providing a continuously variable light responsive gradient, the light responsive gradient having a minimum value at one end of the range and a maximum value at the other end of the range, the optical carrier including an additional information range, the additional information range including a continuously variable light responsive gradient, the position indicator system further including a second light source and a second electro-optical detector associated with the additional information range, the additional information range being positioned within an optical path from the second light source to the second detector and means interconnecting the speed control element and the carrier for providing translational movement of the carrier as a function of movement of the speed control element, the translational movement being in a direction coincident with the light responsive gradients, each detector generating a signal indicative of a measure of the light responsiveness of a zone of its respective range in registry with its optical path, the position indicator system further including a process-

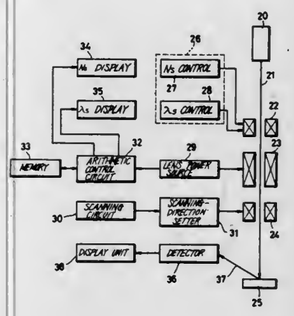
ing circuit, means operably interconnecting each of the detectors to the processing circuit, the processing circuit including a comparator, the comparator receiving signals from each of the detectors and generating an output signal corresponding to the position of the speed control element, the drive system further including a microprocessor and means operably interconnecting the comparator with the microprocessor, the microprocessor receiving the output signal from the comparator and in response thereto generating a signal for controlling the fuel supply means, whereby fuel supply to the engine is controlled in response to the detected instantaneous position of the speed control.

4,554,452

METHOD AND APPARATUS FOR HANDLING CHARGED PARTICLE BEAM

Tadao Suganuma, Hachiouji, Japan, assignor to Elionix, Inc., Hachiouji, Japan

Filed Jul. 18, 1983, Ser. No. 514,632
Claims priority, application Japan, Jul. 22, 1982, 57-128136
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—310 **6 Claims**



1. A method for handling a charged particle beam, comprising the steps of:
(a) effecting a relative movement of an object and the charged particle beam repeatedly in at least three directions within a plane transverse to the axis of the charged particle beam;
(b) adjusting the focus of the charged particle beam on the object to obtain signal particles derived from the object;
(c) detecting, on the basis of said signal particles, the focus adjusting values that minimize the cross-sectional component of the charged particle beam in the individual direction of the movement thereof on the object; and
(d) computing, on the basis of the differences between the said values thus detected, at least one of a signal representing the astigmatism of the charged particle beam and a signal for correction of the astigmatism.

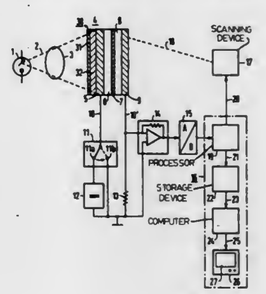
4,554,453

APPARATUS FOR RECORDING X-RAY IMAGES

Ingmar Feigt, Langensendelbach; Hans Heinrich, Erlangen, and Karl Kempter, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,090
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1983, 3312264
Int. Cl.⁴ G01T *1/20, 1/24*
U.S. Cl. 250—327.2 **12 Claims**

1. An improvement to a solid image recording system of the type which contains first and second radiation-transmitting electrodes, first and second photoconducting layers each contacting a corresponding one of the electrodes, and a central charge-storing layer which is disposed between the photoconducting layers and which contacts both of them, wherein the first photoconducting layer is impinged by image rays and the second photoconducting layer is impinged by an optical ray moved in a scanning raster, the improvement comprising a luminophor which is associated with the first photoconductive



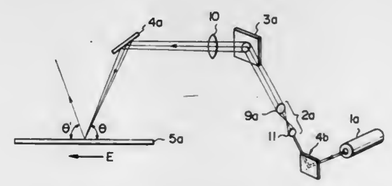
layer and transforms the image rays into light which is preferentially absorbed in the first photoconductive layer, the luminophor being located outside any electric field existing between the electrodes.

4,554,454

OPTICAL SYSTEM FOR SCANNING WITH LASER BEAM

Yutaka Taniguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 10, 1984, Ser. No. 569,559
Claims priority, application Japan, Jan. 10, 1983, 58-1951
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **4 Claims**



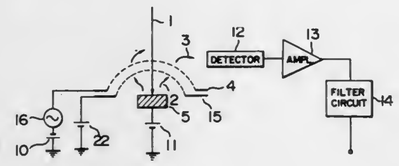
1. An optical system for scanning with a laser beam in a radiation image read-out system, comprising: a stimulable phosphor sheet carrying a radiation image stored therein, a gas laser beam source for emitting a gas laser beam which stimulates said stimulable phosphor sheet to release the radiation energy stored therein as light emission, scanning optical members for scanning the surface of said stimulable phosphor sheet with said laser beam emitted from said gas laser beam source, and a beam expander positioned between said scanning optical members and said gas laser beam source for adjusting the beam diameter of said laser beam, wherein the angle of the incident laser beam, which is directed by said scanning optical members onto the surface of said stimulable phosphor sheet, is set with respect to the surface of said stimulable phosphor sheet to an appropriate angle so that the direction of said incident laser beam is always different from the direction normal to the surface of said stimulable phosphor sheet, whereby the laser reflected by the surface of said stimulable phosphor sheet is prevented from being fed back along the same optical path as the optical path of said incident laser beam.

4,554,455

POTENTIAL ANALYZER

Hideo Todokoro, Tokyo, and Satoru Fukuhara, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,112
Claims priority, application Japan, Aug. 16, 1982, 57-141119
Int. Cl.⁴ H01J *37/26*
U.S. Cl. 250—305 **8 Claims**



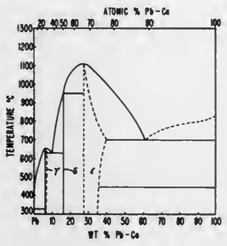
1. A potential analyzer comprising:
detector means for detecting secondary electrons emitted from a specimen irradiated with a primary electron beam;
grid means disposed between said specimen and said detector means, said grid means including at least a grid electrode for determining a lower limit of the energy of the secondary electrons to be detected by said detector means;
voltage source means for applying a voltage to said grid electrode which voltage varies within a predetermined range during the measurement of the potential of said specimen; and
circuit means for producing an average value of the output of said detector means during a period of time in which the voltage applied to said grid electrode varies.

4,554,456

SELF-POWERED GAMMA RESPONSES DETECTOR

M. Weston Hagadorn, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 13, 1982, Ser. No. 408,319
Int. Cl.⁴ G01T *1/24*
U.S. Cl. 250—370 **1 Claim**



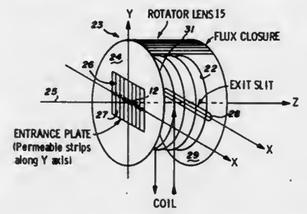
1. A self-powered nuclear radiation detector comprising an elongated center wire emitter which exhibits substantially solely gamma radiation response, insulating means disposed about the emitter wire, and a collector electrode coaxial about the emitter and insulating means, which emitter wire consists of an alloy of lead and calcium containing calcium in an amount of between 25 and 50 atom percent, which alloy has a maximized gamma phase and a minimized delta phase whereby the substantially solely gamma-response characteristic is retained, with the alloy exhibiting ductility and a melting point of at least 630° C.

4,554,457

MAGNETIC LENS TO ROTATE TRANSVERSE PARTICLE MOMENTA

Michael A. Kelly, Portola Valley, Calif., assignor to Surface Science Laboratories, Inc., Mountain View, Calif.

Filed Jul. 8, 1983, Ser. No. 512,418
Int. Cl.⁴ H01J *37/26*
U.S. Cl. 250—396 ML **6 Claims**



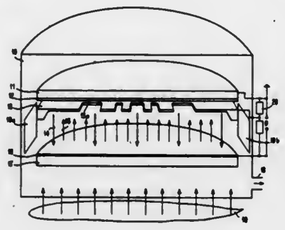
1. A magnetic lens for rotating the transverse particle momenta of a beam of charged particles passing therethrough while preserving the cross-sectional shape of the beam including:
magnet means for generating a magnetic field component axially directed of and within the beam of charged particles;
flux return means of a magnetically permeable material disposed surrounding said magnetic means for intercepting said axially directed components of said magnetic field and for returning same around said magnet means;
said flux return means including beam entrance and beam exit pole structures axially spaced apart along the beam path at opposite ends of said magnet means, and
said beam entrance pole structure including a beam permeable portion of magnetic permeable material for shaping the axial magnetic field so as to minimize transverse magnetic components thereof and through which said beam of charged particles enters the lens.

4,554,458

ELECTRON BEAM PROJECTION LITHOGRAPHY

Uwe Behringer, Ammerbuch; Harald Bohlen; Werner Kulcke, both of Boeblingen, and Peter Nehmiz, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1984, Ser. No. 632,997
Claims priority, application European Pat. Off., Aug. 11, 1983, 83107926.4
Int. Cl.⁴ H01J *37/317, 40/16*
U.S. Cl. 250—492.2 **7 Claims**



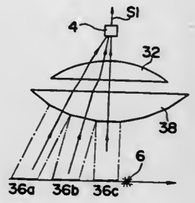
1. Apparatus for exposing a resist-coated wafer to a predetermined pattern of electrons, comprising;
a. A source of ultraviolet radiation;
b. A photoemissive cathode having a substrate transparent to U.V. radiation and a homogeneaus photoemissive coating on the substrate surface facing away from said source, and illuminated thereby, wherein the surface of said wafer coated with resist faces said cathode; and
c. An apertured mask having an aperture with a pattern of electron transparent and opaque regions corresponding to said predetermined pattern, the said mask being positioned spaced apart from the photemissive cathode and closely adjacent to said resist surface;
whereby the patterned beam of electrons passed by said mask will selectively alter the state of said resist to replicate said predetermined pattern.

4,554,459

MONITORING SYSTEM FOR A PREDETERMINED FIELD OF VIEW

Suteo Tsutsumi, and Hiroshi Koh, both of Kyoto, Japan, assignors to Fujitec Co., Ltd., Japan

Filed Dec. 15, 1981, Ser. No. 331,089
Claims priority, application Japan, Jan. 27, 1981, 56-10997
Int. Cl.⁴ G02B *13/18;* **G08B** *13/18*
U.S. Cl. 250—550 **8 Claims**



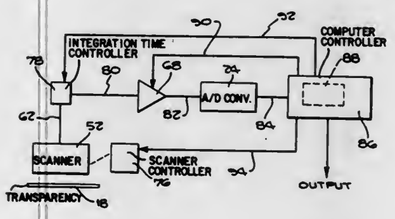
1. A condition detecting device for detecting various conditions within a predetermined field angle, said condition detecting device comprising:
(a) a spatial filter element including a solid poly-facet prism member having a convex face on the side of the fields of view with a plurality of plano facts cut into said convex face for permitting trasmittal of rays therethrough from an object to define respective separate fields of view for each facet;
(b) a single converging lens element for converging the rays which have passed through the spatial filter element;
(c) sensor means for sensing said rays converged by said converging lens element and for producing a signal having various features depending on the condition of said object; and
(d) descriminating means for discriminating one or more features of said signal.

4,554,460

PHOTODETECTOR AUTOMATIC ADAPTIVE SENSITIVITY SYSTEM

Raymond Klein, Cardiff, Calif., assignor to Kollmorgen Technologies Corp., Melville, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,868
Int. Cl.⁴ H04N *1/04, 5/14*
U.S. Cl. 250—578 **18 Claims**



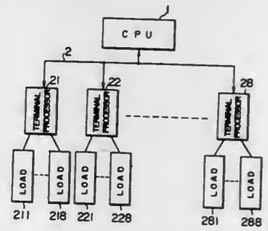
1. A system for generating a digital signal reflecting the intensity of light from a source comprising:
(a) photodetector means for receiving the light on an input surface thereof and for generating an analog signal at an output in proportion to the amount of incident light;
(b) light control means operably connected to said photodetector means for controlling the amount of time the light incident on said input surface is used for measurement purposes;
(c) amplification means operably connected to receive said analog signal at an input thereof for producing an adjustably amplified analog signal at an output thereof;
(d) analog to digital conversion means operably connected to receive said amplified analog signal at an input thereof for producing a digital value at an output thereof which reflects the value of said amplified analog signal; and
(e) logic control means operably connected to said light control means, said amplification means, and said analog to digital conversion means for receiving said digital signal, and for adjusting said amount of time light incident on said input surface is used for measurement purposes and for adjusting the gain of said amplification means necessary to have said analog to digital conversion means operate within a preselected portion of its range.

4,554,461

INFORMATION TRANSMITTING APPARATUS

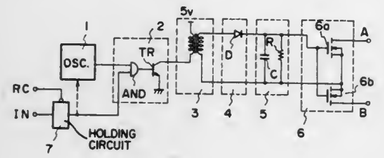
Shigeru Oho, Hitachi; Fumio Hamano, Katsuta, and Takeshi Hirayama, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,492
Claims priority, application Japan, Dec. 24, 1982, 57-225899
Int. Cl.⁴ H02G *3/00*
U.S. Cl. 307—40 **8 Claims**



1. Information transmitting system comprising:
a transmitting apparatus for transmitting information;
a receiving apparatus for receiving said transmission information;
a transmission line provided between said transmitting apparatus and said receiving apparatus; and
a load which operates in response to the output of said receiving apparatus;
said transmitting apparatus including means for transmitting said information through the transmission line to said receiving apparatus in a predetermined time period and said receiving apparatus including means for allowing said load to operate on the basis of the transmission information received;
whereby said receiving apparatus further includes means for detecting the reception interval of the transmission information from the transmission line, including pulse generator means for generating pulses at a given time period and timer means for counting said pulses and for returning the count value thereof to an initial value in response to the reception of said transmission information, and means for generating an abnormality signal when said timer means has reached a count value indicating that said interval is equal to or greater than a predetermined time.

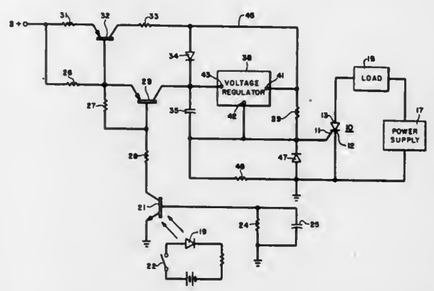
4,554,462
NON-POLARIZED CONTACTLESS RELAY
Hidetsugu Komiya; Michiya Inoue, and Yoshiyuki Saitoh, all of Hino, Japan, assignors to Fanuc Limited, Minamitsuru, Japan
Filed Mar. 11, 1983, Ser. No. 474,337
Claims priority, application Japan, Mar. 16, 1982, 57-36403[U]; Mar. 16, 1982, 57-36404[U]
Int. Cl.⁴ H03K *17/56*
U.S. Cl. 307—140 **2 Claims**



1. A non-polarized, contactless relay comprising:
a transformer having primary and secondary windings;
oscillator means for providing an oscillating signal;
an AND gate having a first input operatively connected to receive said oscillating signal, a second input and an output;
a transistor having a collector operatively connected a primary winding of said transformer, an emitter operatively connected to ground and a base operatively connected said output of said AND gate;
a diode having a anode operatively connected to a first end of said secondary transformer and a cathode, for rectifying A.C. power obtained from the secondary windings of said transformer in response to the oscillating signal applied to the primary windings thereof, said diode producing a rectified output;
a parallel connected resistor and capacitor, having a first end operatively connected to said cathode and a second end operatively connected to a second end of said secondary winding of said transformer, for smoothing the rectified output produced by said diode for delivering D.C. power; and
a pair of MOS-type field-effect transistors having interconnected gate electrodes operatively connected to said cathode, interconnected source electrodes operatively connected to said second end of said secondary winding and respective drain electrodes, said gate electrodes being driven by the D.C. power from said parallel connected resistor and capacitor; and
latch means having an input operatively connected to receive a command input and having an output operatively connected to said second input of said AND gate, for storing said command input and providing said command input as the output of said latch means.

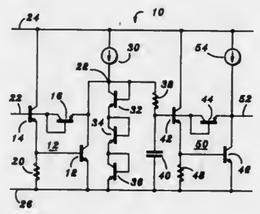
4,554,463
TRIGGER CIRCUIT FOR SOLID STATE SWITCH
Dean K. Norbeck, York, and Harold R. Schnetzka, Spring Grove, both of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed May 26, 1983, Ser. No. 498,366
Int. Cl.⁴ H03K *17/72*
U.S. Cl. 307—252 H **2 Claims**

1. A trigger circuit for gating on an SCR having gate, cathode and anode terminals, where the SCR is subject to variations in its intrinsic gate-to-cathode control voltage requirements, said trigger circuit comprising:
a source of d-c supply voltage normally having a fixed magnitude but subject to undesired variations;
an integrated circuit voltage regulator having an input pin, an output pin and a ground pin;
means including the emitter-collector conduction path of a transistor for coupling said d-c supply voltage source to the input pin of said voltage regulator;
a resistor having one end connected to the output pin of said voltage regulator and the outer end connected to the ground pin and also to the SCR's gate terminal;
and actuating means for turning said transistor on to apply a d-c voltage, from said d-c supply voltage source, to the



input pin of said voltage regulator which functions to maintain a constant d-c voltage between its output and ground pins, thereby translating constant d-c gate current through said resistor and from the SCR's gate terminal to its cathode terminal to turn the SCR on despite the presence of any unwanted variations in the d-c supply voltage or variations in the intrinsic gate-to-cathode control voltage requirements.

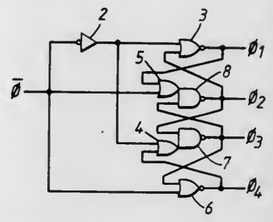
4,554,464
PROPAGATION DELAY GENERATOR
Robert B. Davies; Ira Miller, both of Tempe, and Robert N. Dotson, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 30, 1982, Ser. No. 413,051
Int. Cl.⁴ H03K *3/017, 5/04, 17/56*
U.S. Cl. 307—265 **6 Claims**



1. A propagation delay generator circuit having a first voltage conductor, a second voltage conductor, an input conductor responsive to an input signal having a first and a second level, and an output conductor, for generating a delayed digital output signal responsive to said input signal, comprising:
input means coupled to said first voltage conductor, said second voltage conductor, said input conductor, and a first node, and responsive to said input signal for initializing a charging signal having a first voltage level at said first node when said input signal is at said first level;
capacitive means coupled to said first voltage conductor, said second voltage conductor, said first node, and a second node, and responsive to said charging signal for charging said first node to a second voltage level when said input signal is at said second level and for providing a gating signal having a third voltage level at said second node subsequent to receiving said charging signal; said capacitive means comprising:
a current source coupled between said first voltage conductor and said first node;

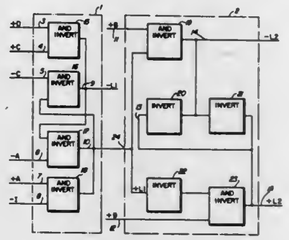
a resistor coupled between said first node and said second node; and
a capacitor coupled between said second voltage conductor and said second node;
voltage level means coupled between said first node and said second voltage conductor for establishing said second voltage level at said first node; and
output means coupled to said first voltage conductor, said second voltage conductor, and said second node, and responsive to said gating signal for providing said output signal.

4,554,465
4-PHASE CLOCK GENERATOR
Hideharu Koike, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Dec. 27, 1983, Ser. No. 565,653
Claims priority, application Japan, Dec. 27, 1982, 57-234055
Int. Cl.⁴ H03K *3/037, 5/15*
U.S. Cl. 307—269 **11 Claims**



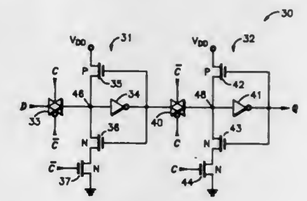
1. A 4-phase clock generator for producing four clock signals responsive to first and second master clock signals comprising:
first gate means having first and second inputs and an output for outputting a first clock signal;
second gate means having first, second and third inputs and an output for outputting a second clock signal, the first input of the second gate means being connected to the output of the first gate means and the output of the second gate means being connected to the second input of the first gate means;
third gate means having first, second and third inputs and an output for outputting a third clock signal, the first input of the third gate means being connected to the output of the second gate means and the output of the third gate means being connected to the third input of the second gate means; and
fourth gate means having first and second inputs and an output for outputting a fourth clock signal, the first input of the fourth gate means being connected to the output of the third gate means, the output of the fourth gate means being connected to the third input of the third gate means; and
said first master clock signal being inputted to the first input of the first gate means and to the second input of the third gate means, said second master clock signal being complementary to the first master clock signal and being inputted to the second inputs of the second and fourth gate means, the logic levels of first, second, third and fourth clock signals changing in sequential order after the first master clock signal changes from a first logic level to a second logic level and after the second master clock signal changes from the second logic level to the first logic level and the logic levels of first, second, third and fourth clock signals changing in reverse sequential order after the first master clock signal changes from the second logic level to the first logic level and after the second master clock signal changes from the first logic level to the second logic level.

4,554,466
EDGE-TRIGGERED LATCH CIRCUIT CONFORMING TO LSSD RULES
Gary E. Dillon, Tucson, Ariz., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 1, 1982, Ser. No. 445,888
Int. Cl.⁴ H03K *3/284, 17/56*
U.S. Cl. 307—272 A **7 Claims**



1. An integrated circuit latch configuration conforming to level sensitive scan design rules including:
a first polarity hold latch having a data input, an input for receiving a first clock pulse train, another input for receiving a second clock pulse train, and an output,
a second polarity hold latch having an input connected to the output of said first polarity hold latch, an input for receiving a third clock pulse train, and an output,
gate means connected to the second clock pulse train input for disabling the third clock pulse train input to the second latch when a data pulse is transferred to the first latch, and
circuit means connected to the second clock pulse train input for enabling the third clock pulse train input to the second latch when the data pulse and the second clock train pulse terminate, whereby data is positively transferred from the first latch to the second latch.

4,554,467
CMOS FLIP-FLOP
Herchel A. Vaughn, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 22, 1983, Ser. No. 506,959
Int. Cl.⁴ H03K *3/289, 17/04, 19/003*
U.S. Cl. 307—279 **6 Claims**



1. A CMOS flip-flop, comprising:
a first controllable switch, having an input for receiving an input signal, and an output, for coupling the input signal to the output when a clock signal is at or near a voltage present at a first power supply terminal and for preventing the input signal from reaching the output when the clock signal is at or near a voltage at a second power supply terminal;
a first inverter having an input coupled to the output of the first controllable switch, and an output;
a first P channel transistor having a first current electrode directly connected to the first power supply terminal with no intervening elements therebetween, a control electrode coupled to the output of the first inverter, and a second current electrode directly connected to the input of the first inverter with no intervening elements therebetween;

a first N channel transistor having a first current electrode coupled to the input of the first inverter, a control electrode coupled to the output of the first inverter, and a second current electrode; and

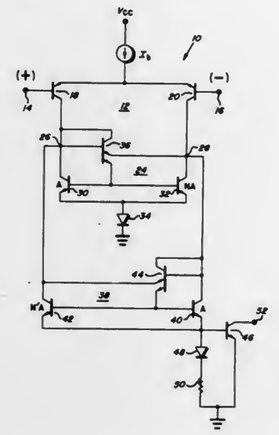
a second N channel transistor having a first current electrode coupled to the second current electrode of the first N channel transistor, a control electrode for receiving a signal complementary to the clock signal, and a second current electrode coupled to the second power supply terminal.

4,554,468

LATCHING COMPARATOR WITH HYSTERESIS

Robert C. Rumbaugh, Phoenix, and Ira Miller, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1983, Ser. No. 510,044
Int. Cl.⁴ H03K *5/24*
U.S. Cl. 307—355 **9 Claims**



1. A self latching comparator circuit having hysteresis, comprising:

differential amplifier means having first and second inputs and first and second outputs, said first and second inputs being responsive to a differential signal applied thereacross;

first current mirror means coupled to said first and second outputs for producing a first predetermined input offset voltage in said differential amplifier means when said first current mirror means is activated, said first current mirror means including first transistor means;

second current mirror means coupled between said first and second outputs and a common node for producing a second predetermined input offset voltage in said differential amplifier means when said second current mirror means is activated, said second current mirror means being activated when the magnitude of said differential input signal incrementally exceeds said first predetermined input offset voltage in a positive sense for regeneratively inactivating said first current mirror means and said first current mirror means being activated when the magnitude of the differential input signal incrementally exceeds said second input offset voltage in a negative sense for regeneratively inactivating said second current mirror means, said second current mirror means including second transistor means;

first means for preventing said first transistor means from saturating when said first current mirror means is activated;

second means for preventing said second transistor means from saturating when said second current mirror means is activated; and

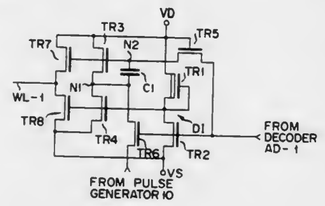
output circuit means coupled to said common node for causing a voltage level at an output thereof to switch between first and second output level states after said first and second current mirror means are respectively activated.

4,554,469

STATIC BOOTSTRAP SEMICONDUCTOR DRIVE CIRCUIT

Makoto Segawa, and Shoji Arizumi, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 25, 1983, Ser. No. 469,631
Claims priority, application Japan, Feb. 26, 1982, 57-29905
Int. Cl.⁴ H03K *17/06, 19/094*
U.S. Cl. 307—482 **15 Claims**



1. A semiconductor circuit comprising:

a trigger terminal;

a short pulse generation circuit having an output terminal for providing a short pulse in response to a trigger signal supplied to said trigger terminal; and

a static bootstrap circuit comprising an input terminal and an output terminal, first and second voltage source terminals, a first MOS transistor having a gate to which a predetermined voltage is applied and a current path which is connected at a first terminal to said input terminal, a MOS inverter for inverting an input signal supplied to said input terminal with a predetermined period of delay time, a second MOS transistor having the gate connected to the output terminal of said MOS inverter and the current path connected at a first terminal thereof to said second voltage source terminal, a third MOS transistor having the current path connected between said second voltage source terminal and said output terminal and the gate connected to the output terminal of said MOS inverter, a fourth MOS transistor having the gate connected to the second terminal of the current path of said first MOS transistor and the current path connected between said first voltage source terminal and said output terminal, a fifth MOS transistor having the gate connected to a second terminal of the current path of said first MOS transistor and the current path connected between said first voltage source terminal and a second terminal of the current path of said second MOS transistor, capacitive means connected between the gate of said fifth MOS transistor and the connection point between said second and fifth MOS transistors, and potential setting means connected to the output terminal of said short pulse generation circuit and to the connection point between said second and fifth MOS transistors to set the potential on the connection point between said second and fifth MOS transistors to a predetermined potential level in response to a short pulse generated from said short pulse generation circuit.

4,554,470

POLYBUTADIENE VPI RESIN

Donald D. Jerson, Norvelt, and James F. Chance, Turtle Creek, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1984, Ser. No. 618,841
Int. Cl.⁴ H02K *15/12*
U.S. Cl. 310—45 **13 Claims**

1. An electrical article comprising a coil of insulated elongated conductors impregnated with a resin which comprises:

(A) polybutadiene, at least about 15% of which is 1,2-polybutadiene;

(B) about 10 to about 150 phr dicyclopentadiene acrylate;

(C) about 0.005 to about 0.75 phr free radical polymerization inhibitor;

(D) about 0.05 to about 2.5 phr free radical polymerization initiator; and

(E) up to about 2.0 phr coupling agent.

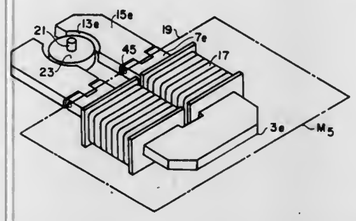
4. An article according to claim 1 wherein said insulated elongated conductors is a motor or generator winding.

4,554,471

ELECTRIC MOTOR HAVING A U-SHAPED STATOR IRON

Leo Bertram, Stolberg, Fed. Rep. of Germany; Hugo Schemmann, Schaesberg, and Jan de Boer, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 571,284, Jan. 16, 1984,. This application Mar. 13, 1985, Ser. No. 710,940
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301263
Int. Cl.⁴ H02K *31/00*
U.S. Cl. 310—49 R **24 Claims**



1. An electric motor which comprises a rotor having a shaft and a U-shaped stator having two shanks, each shank having a free end, said motor also including induction coils disposed around each of said shanks, each of said shanks being formed to define pole shoes between the free ends of each of said shanks and said induction coil disposed on that shank, said U-shaped stator having the major portion thereof configured so that an imaginary central plane extends through all of said stator except the free ends of said shanks, each of said shanks in the area between said pole shoes and said coils being bent with respect to said central plane in such a manner that said shaft encloses with said central plane an angle which is less than 90°.

4,554,472

LOW INERTIA INDUCTION MOTOR

Hiroshi Kumatani, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1983, Ser. No. 504,165
Claims priority, application Japan, Jun. 14, 1982, 57-88272
Int. Cl.⁴ H02K *9/06*
U.S. Cl. 310—62 **7 Claims**

1. A low inertia induction motor which comprises in combination:

a yoke disposed in confrontation to a stator core, around which a stator winding is wound, forming a space between said yoke and said stator winding;

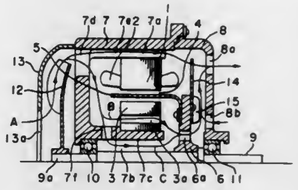
a frame with a through-hole being formed at the center portion thereof and a supporting portion to support said yoke and said stator core;

a rotary disc having an air passage formed therein and radially extending between said yoke and an axial end portion of said frame;

a rotor rotatably supported on a first side of said rotary disc and positioned within said space;

a rotational shaft extending into said through-hole of said frame and being supported in a freely rotatable manner;

a cooling fan fixedly secured to said rotational shaft and feeding cooling air into the interior of said frame through the revolution of said rotational shaft wherein said frame and said stator core form a through-hole through which



cooling air is fed into the interior of said frame by means of said cooling fan from outside said frame and said yoke has a through-hole formed therein to pass cooling air introduced into the interior of said frame by said cooling fan; and

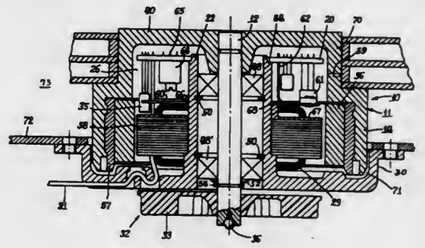
an air discharge fan mounted on a second side of said rotary disc opposite said first side of said rotor, said axial end portion of said frame including an air intake port for drawing air thereinto by said air discharge fan and an air discharge port formed therein such that air drawn through said air passage formed in said rotary disc is accelerated in a radial direction toward an outer periphery of said rotary disc.

4,554,473

BRUSHLESS DIRECT CURRENT MOTOR SYSTEM

Rolf Müller, Black Forest, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, Black Forest, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 244,971, Mar. 18, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 581,337
Claims priority, application Switzerland, May 10, 1980, 3658/80
Int. Cl.⁴ H02K *21/12*
U.S. Cl. 310—67 R **21 Claims**



1. A brushless direct current motor system, said system including an outer rotor type motor, comprising:

a cup-shaped rotor housing having a shaft concentrically mounted therein extending internally thereof, the outer portion of said housing being formed as a drive boss to receive at least one load member for the direct driving thereof;

a bearing system in said motor receiving said shaft so as to rotate said rotor housing;

stator means concentrically mounting said bearing system within said motor, said rotor housing being mounted to rotate around the periphery of said stator means and separated by an air gap; and

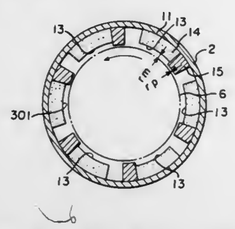
at least one stationary electronic circuit support means mounted inside the closed end of said cup-shaped rotor housing axially between the stator and said closed end and having a diameter not greater than that of the air gap, the outside of said rotor housing at its closed end being provided with a step-wise reduction in the outer diameter thereof, allowing the outside of this portion of the rotor housing to serve as a hub for mounting and driving the load member.

4,554,474

STATOR FOR A MAGNET MOTOR

Akira Morishita, and Kyoichi Okamoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,988
Claims priority, application Japan, Jul. 7, 1983, 58-106090[U]
Int. Cl.⁴ H02K *21/26*
U.S. Cl. 310—154 **4 Claims**



1. A stator for a magnetic motor comprising a cylindrical yoke, at least one pair of main magnetic poles formed of permanent magnets fixed to the inner peripheral surface of said yoke, at least one pair of auxiliary magnetic poles made of a soft iron material each placed at a side portion of each of said main magnetic poles, characterized in that an air gap formed between the inner peripheral surface of each of said main magnetic poles and the outer peripheral surface of an armature rotatably placed at the axial center of said yoke is made greater than an air gap formed between the inner peripheral surface of each of said auxiliary magnetic poles and the outer peripheral surface of said armature.

4,554,475

FIELD COIL AIR VENTS FOR DYNAMOELECTRIC MACHINE

Hollis D. Sisk, Chesterfield, Mo., assignor to Century Electric, Inc., St. Louis, Mo.

Continuation of Ser. No. 352,447, Feb. 25, 1982, abandoned. This application Jun. 5, 1984, Ser. No. 617,240
Int. Cl.⁴ H02K *1/32*
U.S. Cl. 310—208 **12 Claims**

1. In a dynamoelectric machine having a main field coil, the main field coil comprising:

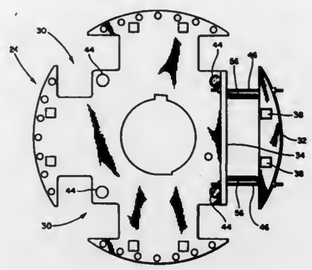
a support having a predetermined geometry,

a solid strand electrical wire wound about said support to form a coil of wire,

coil head air vents of predetermined width interspaced in said wound electrical wire in the head of said coil,

means for forming said air vents,

means for temporarily supporting the forming means at least partially in said air vents, said forming means having means to hold successive turns of said electrical wire parallel to each other as said wire is wound about said support so that said coil is free from cross-overs, and



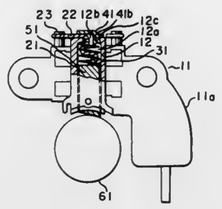
means to remove said forming means from said coil head air vents by separating the forming means from said temporary support means.

4,554,476

BRUSH-RETAINING DEVICE

Hitoshi Gotoh, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,210
Claims priority, application Japan, Sep. 6, 1983, 58-139367[U]
Int. Cl.⁴ H02K *13/00*
U.S. Cl. 310—239 **4 Claims**



1. A brush-retaining device which comprises:

a conducting brush in slide-contact with a rotating conduction part,

a conducting lead wire having one end connected to said conducting brush and the other end connected to a connecting terminal of the brush retaining device,

a brush holder provided with a cavity for receiving said brush and said lead wire in a movable manner and with a draw-out hole for lead wire, and

an insulating cover for covering the entirety of said draw-out hole and at least a part of said lead wire, said insulating cover being provided with an elastically engaging part fittable to said brush holder means for permitting a passage of said lead wire through said insulating wire through said insulating cover.

4,554,477

DRIVE CIRCUIT FOR A PLURALITY OF ULTRASONIC GENERATORS USING AUTO FOLLOW AND FREQUENCY SWEEP

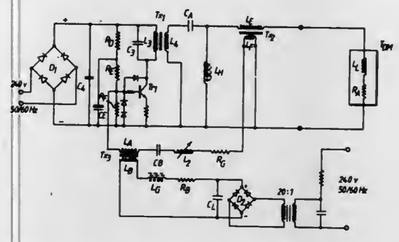
Henry K. Ratcliff, 14 Hadfield Ave., Hoylake, Wirral, Merseyside L47 3DJ, England

Filed Nov. 25, 1983, Ser. No. 554,908
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—316 **4 Claims**

1. An ultrasonic generator for driving a plurality of ultrasonic transducers, comprising:

an electronic oscillator which provides an A.C. signal for driving said transducers;

autofollow means, responsive to the current supplied to the transducers, for varying the oscillator frequency to maintain the transducer current at a maximum level; and



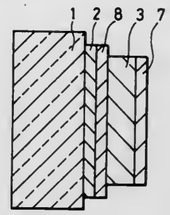
frequency sweep means, which operates independently of said autofollow means, for cyclically sweeping between upper and lower limits the oscillator frequency determined by said autofollow means.

4,554,478

PHOTOELECTRIC CONVERSION ELEMENT

Yasuharu Shimomoto, Tokyo; Yasuo Tanaka, Kokubunji; Yukio Takasaki, Hachioji; Sachio Ishioka; Toshihisa Tsukada, both of Tokyo, and Toru Baji, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 226,879, Jan. 21, 1981, abandoned. This application May 25, 1983, Ser. No. 497,841
Claims priority, application Japan, Jan. 21, 1980, 55-4622
Int. Cl.⁴ H01J *31/38*
U.S. Cl. 313—366 **9 Claims**



1. In a photoelectric conversion element including at least a first electrode and a photoconductive layer having an amorphous material whose indispensable constituent is silicon and which contains hydrogen as an essential constituent element on a predetermined substrate, the improvement wherein said layer of the amorphous material is disposed on said first electrode via a light transmitting or semi-light transmitting metallic film for adhesion relative to said amorphous material, and said metallic film for adhesion consists of a metallic layer consisting essentially of at least one element selected from the group consisting of Ta, Cr, W, Nd, Mo, V and Ti.

4,554,479

CATHODE-RAY TUBE HAVING A LOW POWER CATHODE ASSEMBLY

Stephen T. Opresko, Manor Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 8, 1983, Ser. No. 559,378
Int. Cl.⁴ H01J *31/02*
U.S. Cl. 313—417 **11 Claims**

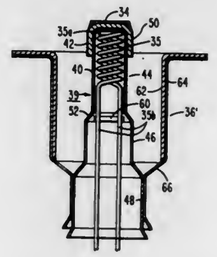
1. In a cathode-ray tube having an electron gun including at least one cathode assembly comprising

a cathode sleeve having oppositely disposed ends, said cathode sleeve being open at one end and closed at the other end, said closed end including a cap having an electron emitting coating thereon,

a heater filament disposed within said sleeve, said heater filament having a heater body portion with a pair of heater legs extending therefrom, and

a cathode eyelet disposed around at least a portion of said cathode sleeve and attached thereto, the improvement wherein

said cathode sleeve comprises a longitudinally extending first portion having a first diameter conforming closely to said heater body portion of said heater filament for reducing the power requirement thereof, and at least one other longitudinally extending portion having a diameter greater than said first diameter, said first portion and said



other portion being connected by a transition region inclined at an obtuse angle to said longitudinally extending first portion, and

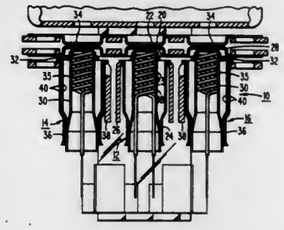
a plurality of openings in said transition region, said openings having an effective length in the longitudinal direction less than their actual length along the inclined transition region and a lateral dimension greater than the effective length thereof, said openings providing a heat dam to restrict the conduction of heat along the sleeve while limiting the radiative heat loss through said openings from said heater legs disposed within said cathode sleeve due to reduced effective length of said openings.

4,554,480

CATHODE-RAY TUBE HAVING AN ELECTRON GUN ASSEMBLY WITH EMISSIVITY MODIFYING MEANS

Richard E. Schlack, Lower Winsor Township, York County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1983, Ser. No. 556,184
Int. Cl.⁴ H01J *19/14, 29/46*
U.S. Cl. 313—446 **4 Claims**



1. In a cathode-ray tube having an electron gun assembly including a plurality of cathode assemblies each comprising

a cathode sleeve having oppositely disposed ends, said cathode sleeve being open at one end and closed at the other end by a cap having an electron emissive material thereon,

a heater filament disposed within said sleeve and spaced therefrom, and

a cathode eyelet coaxially surrounding at least a portion of said cathode sleeve, said eyelet having an interior surface and an exterior surface, said open end of said cathode

sleeve being attached to said interior surface of said eyelet, the improvement wherein

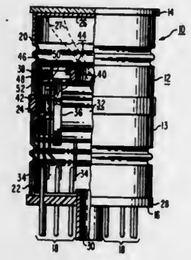
at least a portion of said interior surface of at least one of said eyelets includes emissivity modifying means to change the radiant energy emission characteristic of said portion of said interior surface to be different from the radiant energy emission characteristic of a similar portion of at least one other of said eyelets wherein said emissivity modifying means comprises an oxide coating formed on at least the interior surface of said cathode eyelets to increase the emissivity thereof.

4,554,481

ELECTRON DISCHARGE DEVICE HAVING A CERAMIC MEMBER WITH MEANS FOR REDUCING LUMINESCENCE THEREIN

Richard D. Faulkner, and James L. Rhoads, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 28, 1983, Ser. No. 546,536
Int. Cl.⁴ H01J *31/48, 43/28*
U.S. Cl. 313—533 **3 Claims**



1. In an electron discharge device comprising an evacuated envelope including at least one alumina ceramic insulator member,

a source of electrons within said envelope,

an anode spaced from said source of electrons, and

means for propagating and concatenating electron emission from said source to said anode,

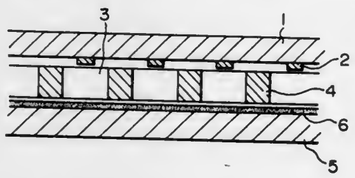
the improvement wherein said ceramic insulator member includes means for reducing luminescence therein, said means comprising an opaque high resistance material diffused into said ceramic insulator member.

4,554,482

DC TYPE GAS DISCHARGE DISPLAY PANELS

Takeo Kamegaya, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Electric Industries Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1981, Ser. No. 321,965
Claims priority, application Japan, Apr. 28, 1981, 56-64621
Int. Cl.⁴ H01J *61/06*
U.S. Cl. 313—582 **3 Claims**



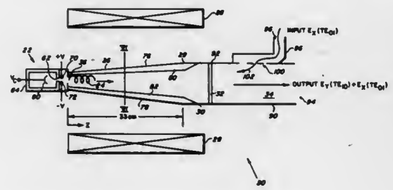
1. A DC type gas discharge display panel having a cathode comprised of a mixture of a tetra- or hexa-boride of a rare earth element or a mixture thereof, and molybdenum, tungsten, aluminum with a thin film of aluminum oxide provided on the surface thereof, or a mixture thereof.

4,554,483

ACTIVE CIRCULATOR GYROTRON TRAVELING-WAVE AMPLIFIER

J. Mark Baird, Sandy, Utah; Larry R. Barnett, Manassas, Va., and Yue-Ying Lau, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1983, Ser. No. 537,474
Int. Cl.⁴ H01J *25/00*
U.S. Cl. 315—4 **21 Claims**



1. An RF traveling-wave amplifier comprising:

a tapered interaction waveguide wherein the cross-section thereof gradually increases from a small first end to a larger second end for propagating electromagnetic energy in a broad frequency band therein, said interaction waveguide supporting first and second orthogonal polarization modes therein with approximately the same propagation characteristic for said first and second modes;

means for generating a beam of relativistic electrons with helical electron motion and for directing said beam into said interaction waveguide through said small first end to axially propagate toward said larger second end of said interaction waveguide;

means for generating a tapered magnetic field within said interaction waveguide in a direction approximately parallel to the axis of said interaction waveguide and for profiling said magnetic field to near grazing interaction with said second polarization mode of said waveguide;

means disposed in said interaction waveguide for loading said first polarization mode relative to said second polarization mode;

means for launching an input electromagnetic wave of said first polarization mode into said interaction waveguide at said larger second end to propagate toward said smaller first end such that various different frequency components of said input wave will be reflected at various points along the constriction of said tapered interaction waveguide, said reflected input wave exciting said second polarization mode in said interaction waveguide such that said first and second polarization modes copropagate with said electron beam and are amplified thereby, the portion of said reflected wave in said second polarization mode being amplified to a greater extent than the portion of said reflected wave in said first polarization mode.

4,554,484

COMPLEX CAVITY GYROTRON

Michael E. Read, Oakton, Va.; Yuval Carmel, Haifa, Israel; Kwo R. Chu, Annandale, and Achintya K. Ganguly, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

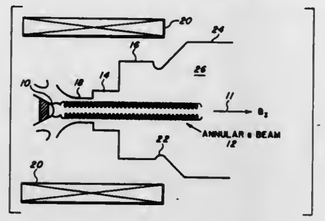
Filed Aug. 29, 1983, Ser. No. 527,626
Int. Cl.⁴ H01J *25/00*
U.S. Cl. 315—4 **15 Claims**

1. A complex cavity gyrotron comprising:

means for generating and directing an electron beam along an axis;

a cavity disposed axially with said electron beam axis such that said electron beam passes therethrough, said cavity having at least a first and a second adjacent axial sections coupled to facilitate axial mode continuation therebetween, with the dimensions of said axial sections adjusted so that a first mode of a first frequency is resonant in said first axial section and a second mode of said first frequency is resonant in said second axial section simultaneously with said first and second modes having the same azimuthal eigen number but different radial eigen numbers; and

means for generating an axially directed magnetic field within said cavity.

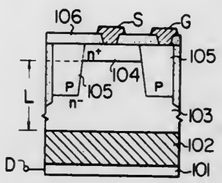


4,554,485

SOLID-STATE IMAGE DISPLAY DEVICE

Takahiro Yamada, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 17, 1983, Ser. No. 495,413
Claims priority, application Japan, May 20, 1982, 57-85841
Int. Cl.⁴ H01J *7/44*
U.S. Cl. 315—169.3 **4 Claims**



1. A solid-state image display device comprising:

a phosphor region acting as a drain region and formed on a surface of a semiconductor substrate having a low impurity density,

a carrier supply region of a first conduction type, having a high impurity density and formed on another surface of said semi-conductor substrate, opposite to said surface having said phosphor region formed thereon, and

a gate region of a second conduction type formed on said another surface of said semiconductor substrate, for controlling an amount of carriers injected from said carrier supply region into said semiconductor substrate, wherein said carriers injected from said carrier supply region into said semiconductor substrate reach said phosphor region by running in a non-scattered manner such that a running distance of said carriers is shorter than a mean free path thereof, thereby causing light emission from said phosphor region.

4,554,486

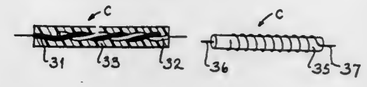
IGNITION TRANSFORMER WITH PASSIVE VOLTAGE AND CURRENT MULTIPLYING MEANS

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Oct. 18, 1984, Ser. No. 663,329
Int. Cl.⁴ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **27 Claims**

1. An ignition transformer having a secondary winding, characterized by:

a distributed capacity component having first and second ends, said component constituting a pair of electrical insulation-clad transposed wires comprising first and second wires, said first wire being coupled to the secondary winding at the first end and being unterminated at the second end, said second wire being coupled to the secondary winding at the second end and being unterminated at the first end, said electrical insulation constituting dielectric material for said distributed capacity component.

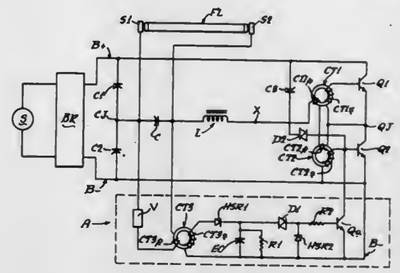


4,554,487

ELECTRONIC FLUORESCENT LAMP BALLAST WITH OVERLOAD PROTECTION

Ole K. Nilssen, Caesar Dr., R.R.-5, Barrington, Ill. 60010

Filed May 17, 1983, Ser. No. 495,540
Int. Cl.⁴ H05B *41/24*
U.S. Cl. 315—224 **15 Claims**



1. An arrangement for powering a gas discharge lamp, said arrangement comprising:

a source of DC voltage;

an inverter connected with said source of DC voltage and operable to provide an AC voltage at an output, said inverter having a disable-means operative on receipt of a disable-signal to disable inverter operation and thereby to remove said AC voltage from said output;

a series-combination of an inductor and a capacitor, said series-combination connected in circuit across said output and being substantially series-resonant at the fundamental frequency of said AC voltage;

means for connecting said gas discharge lamp in parallel-circuit with said capacitor, said gas discharge lamp requiring for proper functioning an initial starting-voltage of relatively large magnitude and a subsequent operating-voltage of relatively low magnitude, said starting-voltage having to be present across said lamp for a length of time that is not longer than a certain maximum-period;

voltage-clamping-means connected in parallel-circuit with said capacitor, said voltage-clamping-means being: (i) operative to limit the magnitude of the voltage across said capacitor to a maximum level, said maximum level being not lower than said relatively large magnitude, and (ii) substantially non-conductive at voltages of magnitudes not higher than said relatively low magnitude;

current-sensing-means connected in circuit with said voltage-clamping-means and operative to sense the clamping-current flowing therethrough and to provide a clamping-signal-output in response to said clamping-current; and

integration-means connected in circuit between said clamping-signal-output and said disable-means, said integration-

means being operative to provide said disable-signal to said disable-means whenever said clamping-signal-output has been present for a length of time that is not shorter than said maximum-period;

whereby, if said lamp fails to start within said length of time, said inverter is rendered disabled.

4,554,488

DEVICE FOR CORRECTING AN IMAGE ON A PICTURE TUBE HAVING IN-LINE ELECTRON GUNS AND A COIL ASSEMBLY FOR THE DEVICE

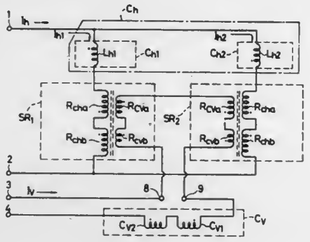
Toshio Kobayashi, Noda, and Hideo Hishiki, Iwai, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 11, 1982, Ser. No. 387,434

Claims priority, application Japan, Jun. 14, 1981, 56-91275; Jul. 17, 1981, 56-111650; Jan. 7, 1982, 57-769[U]

Int. Cl.⁴ H01J *29/70, 29/76*

U.S. Cl. 315—368 **16 Claims**



1. A device for correcting an image on a picture tube for use with an in-line type color picture tube of self-convergence system, comprising:

(a) first and second horizontal deflecting coils;

(b) first and second vertical deflecting coils;

(c) a first saturable reactor having first and second coils connected in series in opposite directions, third and fourth coils connected in series in the same direction, an H-shaped, open magnetic path type core for said first through fourth coils, and a permanent magnet for magnetizing said core in a given direction, a series circuit of said first and second coils being connected in series with said first horizontal deflecting coil so as to form a first series circuit;

(d) a second saturable reactor having fifth and sixth coils connected in series in opposite directions, seventh and eighth coils connected in series in the same direction, a second H-shaped, open magnetic path type core for said fifth through eighth coils, and a permanent magnet for magnetizing said second core in a given direction, a series circuit containing said fifth and fourth coils being connected in series with said second horizontal deflecting coil so as to form a second series circuit, said first and second series circuits being connected in parallel such that a parallel circuit of said first and second series circuits receives a horizontal deflection driving current;

a series circuit including said fifth and sixth coils connected in series with a series circuit including said seventh and eighth coils so as to form a third series circuit which is connected in series with a series circuit including said first and second vertical deflecting coils;

the winding directions of said first through eighth coils and the polarity of said magnets of said first and second saturable reactors being selected such that the impedance of the series circuit of said first and second coils increases and decreases when the impedance of the series circuit of said fifth and sixth coils decreases and increases respectively in accordance with a degree of vertical deflection effected by said vertical deflecting coils.

4,554,489

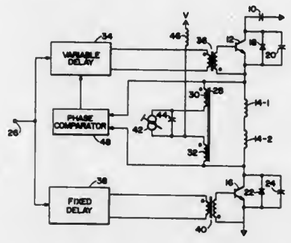
RESONANT MAGNETIC DEFLECTION CIRCUIT

Barry A. McKibben, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 13, 1982, Ser. No. 449,070

Int. Cl.⁴ H01J *29/70*

U.S. Cl. 315—399 **15 Claims**



1. A resonant magnetic deflection circuit comprising:

a deflection coil;

means controlled by a drive signal for developing a first flyback voltage pulse at one end of said deflection coil and a second flyback voltage pulse, having a polarity opposite to said first flyback voltage pulse, at the other end of said deflection coil;

means for variably delaying said drive signal;

means for fixedly delaying said drive signal; and

means for comparing said flyback voltage pulses to provide a compensation signal to said variably delaying means so that the delayed drive signals from said variably and fixedly delaying means are applied to said developing means to cause said flyback voltage pulses occur simultaneously.

4,554,490

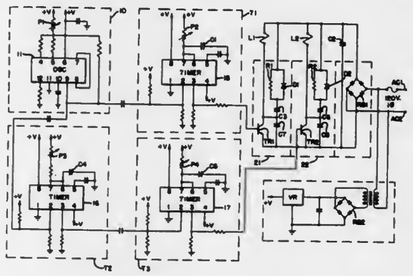
VARIABLE-FREQUENCY DUAL-MOTION FEEDER CONTROL USING A SINGLE PHASE POWER SOURCE

Junius D. Scott, Homer City, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 11, 1983, Ser. No. 540,592

Int. Cl.⁴ H02K *33/00*

U.S. Cl. 318—130 **12 Claims**



1. A variable-frequency dual-motion feeder control for use with a single phase power source and a pair of drive coils, said control being adapted to move a variety of materials in either one of two directions, said control comprising:

a variable-frequency oscillator for providing a timing signal having a continuously variable range of frequencies for operating said drive coils at a frequency best adapted to move a given material;

first and second coil drive circuits;

a power supply for connection to said power source for developing power for driving said pair of coils;

means for connecting said first drive circuit between said power supply and a first of said coils to provide drive pulses to said first coil;

means for connecting said second drive circuit between said power supply and a second of said coils to provide drive pulses to said second coil;

means for connecting said oscillator to said first drive circuit for using said timing signals to control the duration of each of a plurality of drive pulses coupled to said first coil and thereby control the amount of power to said first coil;

phase shifting means connected between said oscillator and said second drive circuit for developing phase-shifted timing signals to control the phase of drive pulses to said second coil relative to drive pulses to said first coil; and

means for controlling the duration of each of a plurality of drive pulses coupled to said second coil and thereby control the amount of power to said second coil.

4,554,491

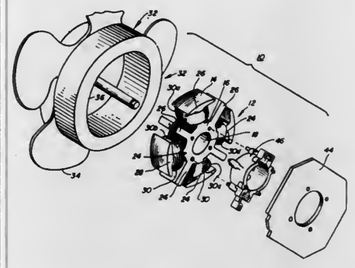
BRUSHLESS DC MOTOR HAVING A LAMINATED STATOR WITH A SINGLE STATOR WINDING

Larry E. Plunkett, Danville, Ill., assignor to MSL Industries, Inc., Lincolnwood, Ill.

Filed Aug. 10, 1984, Ser. No. 639,331

Int. Cl.⁴ H02P *6/02;* **F04B** *35/04;* **F01P** *7/02*

U.S. Cl. 318—254 **14 Claims**



1. A stator for a brushless DC motor having a rotor, said stator being formed of a plurality of stacked stator laminations, with each stator lamination comprising:

a central annular portion defining a central aperture;

a plurality of winding core members extending radially from said central annular portion:

a plurality of intermediate core members extending radially from said central annular portion and positioned intermediate said winding core members;

a single series connected stator winding defining a plurality of winding coil portions extending around each of the winding core members of each stator lamination with the winding coil portions on adjacent winding core members being wound in opposite directions electrically; and

each of said winding core members having a circumferential head portion at its distal end, with the circumferential head portion being eccentric and non-symmetrical about the axis of the respective winding core member.

4,554,492

MOTOR CONTROL SYSTEM

John L. Karpowicz, Crystal Lake, and Randall A. Zielsdorf, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 561,685, Dec. 15, 1983, abandoned. This application Jan. 4, 1985, Ser. No. 688,283

Int. Cl.⁴ G05B *5/00*

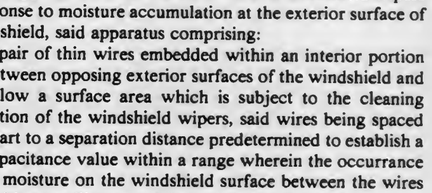
U.S. Cl. 318—309 **7 Claims**

1. An improved system for controlling the speed of a motor having a motor winding and a shaft, said system including, a motor control circuit for providing a command voltage to the winding of the motor and first means for sensing a motor speed parameter and for providing a feedback signal to the motor control circuit, the improvement comprising:

second means for sensing the actual speed of the motor shaft to generate data representative of said actual speed;

calculating means for receiving said data representative of said actual speed and for periodically calculating an input command based on said data representative of said actual speed;

said calculating means being operable at selected times to



calculate an input command that is equal to A−(B−C)/K, where A is an input command calculated by said calculating means during an immediately preceeding period, B is data representative of the actual speed of the motor, C is a desired motor speed data and K is a selected constant; and

means for transmitting said input command to said motor control circuit input, whereby said command voltage from said motor control circuit is adjusted in response to variations in said input command.

4,554,493

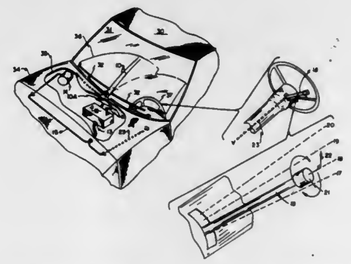
AUTOMATED WINDSHIELD WIPER SYSTEM

Howard L. Armstrong, 2730 Hollydale Dr., Homewood, Ill. 60430

Filed Feb. 29, 1984, Ser. No. 584,716

Int. Cl.⁴ H02P *1/04*

U.S. Cl. 318—444 **4 Claims**



1. An apparatus for automated control of windshield wipers in response to moisture accumulation at the exterior surface of a windshield, said apparatus comprising:

a. a pair of thin wires embedded within an interior portion between opposing exterior surfaces of the windshield and below a surface area which is subject to the cleaning action of the windshield wipers, said wires being spaced apart to a separation distance predetermined to establish a capacitance value within a range wherein the occurrance of moisture on the windshield surface between the wires yields a readily detectable capacitance increase;

b. detection circuitry coupled to one end of each of the respective wires and operable to detect and register the resultant increase in capacitance upon accumulation of moisture at the exterior windshield area between the separated wires;

c. drive means coupled to the windshield wipers for recipro-

cating the wipers over the surface area of the windshield to be cleared of moisture;

d. activating circuitry coupled between the detecting circuity and drive means for activating the drive means into operation, said activating circuitry being responsive to the detected increase in capacitance between the thin wires; and

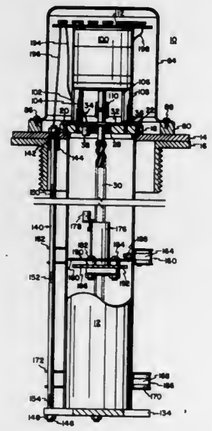
e. means for momentarily disabling the activating circuitry after a predetermined number of reciprocations of the wipers to provide for a new measurement of moisture content at the windshield surface.

4,554,494

FLUID LEVEL GAUGE HAVING MAGNETIC SENSOR

James R. Howeth, Euless, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

Filed Sep. 21, 1984, Ser. No. 653,869
Int. Cl.[4] G01F *23/12;* H02P *8/00*
U.S. Cl. 318—482 **29 Claims**



1. A fluid measurement gauge, comprising:

a housing for extending into a fluid,

a leadscrew within said housing,

means for rotationally driving said leadscrew,

means threadably engaged to said leadscrew for longitudinally traversing along said leadscrew in response to rotation of said leadscrew,

a float positioned exterior to said housing for floating at the surface of said fluid,

a magnet mounted to said float, and

a magnetic sensor mounted to said means engaged to said leadscrew for producing a detection signal when said sensor is in the vicinity of said magnet for detecting the level of said fluid.

29. A fluid measurement gauge, comprising:

an elongate, fluid-tight cylindrical housing for extending vertically into a body of fluid,

a leadscrew mounted coaxially within said housing and supported by upper and lower bearings,

a stepper motor connected to rotationally drive said leadscrew,

a nut threadedly engaged to said leadscrew for longitudinally traversing said leadscrew when said leadscrew is rotated relative to said nut,

first and second guide rods within said housing parallel to said leadscrew and positioned to prevent rotation of said nut, at least one of said guide rods electrically insulated from said housing, said guide rods serving as electrical conduction paths,

a float encircling said housing and floating at the surface of said fluid,

a magnet mounted to said float,

a Hall-effect magnetic sensor mounted on said nut for generating a detection signal when said magnet is in the vicinity of said sensor for detecting the level of said fluid,

brushes connected to said magnetic sensor and touching said guide rods for transmitting said detection signal from said sensor to said guide rods, and

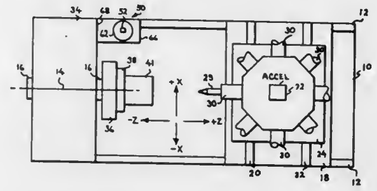
an optical sensor for generating a reference position signal when said magnetic sensor reaches a predetermined reference position wherein said fluid level is measured as the distance from said reference position to a position of said magnetic sensor where said detection signal is generated.

4,554,495

DATUM REFERENCE FOR TOOL TOUCH PROBE SYSTEM

Richard K. Davis, Charlottesville, Va., assignor to Ormand R. Austin, Charlottesville, Va.

Filed Aug. 29, 1984, Ser. No. 645,280
Int. Cl.[4] G05B *19/24*
U.S. Cl. 318—572 **20 Claims**



1. A method of tool touch probing for determining the desired dimension on a workpiece being machined, comprising the steps of:

locating fixed datum surface means a calibrated distance away from the rotational axis of the workpiece;

vibrating said datum surface means;

bringing a machine tool, which may be comprised of a cutting tool, mounted on a machining system into contact with said datum surface means and sensing vibrations emanating therefrom;

determining the position of the surface of said tool when said datum surface means is touched;

bringing said tool into predetermined contact with said workpiece and sensing said workpiece contact;

determining the position of said tool surface when said workpiece is touched; and

differencing the two positions of contact and determining therefrom the desired dimension.

4,554,496

CONTROLLABLE ROTARY ACTUATOR

George Rudich, Jr.; Charles F. Beeson, both of Goshen; Gary L. Bartley, Elkhart, and Terry A. Heckenbach, Middlebury, all of Ind., assignors to Johnson Service Company, Milwaukee, Wis.

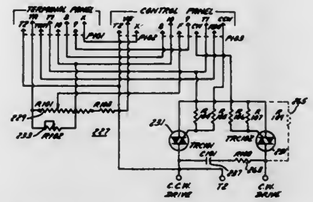
Filed Feb. 25, 1983, Ser. No. 469,928
Int. Cl.[4] G05B *19/26*
U.S. Cl. 318—600 **6 Claims**

1. A motor-driven rotary actuator including:

an AC electric drive motor configured for providing one of a plurality of output torques, said motor being capable of providing substantially the same output torque for either direction of motor rotation;

power transmission means having a predetermined unchangeable gearing ratio and including a rotatable output shaft, said transmission means being coupled to said drive motor and including drive elements formed of disparate materials selected for transmitting one of said output torques;

electric control means coupled to said motor for providing rotation positioning control of said output shaft in response to addressably coded digital command signals and including means for generating a feedback signal representative of the actual angular position of said output shaft, means for selecting an address signal to which said control means will be responsive and means for generating an



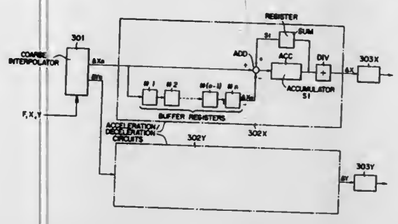
error signal representative of the difference between the actual position and a desired position of said output shaft; said electric control means further including interface means for attenuating spurious electrical noise and converter means coacting with microcomputer means for providing a clocked pulse signal representative of the position of said output shaft.

4,554,497

ACCELERATION/DECELERATION CIRCUIT

Ryoichiro Nozawa; Hideaki Kawamura, and Takao Sasaki, all of Tokyo, Japan, assignors to Fanuc Ltd., Hino, Japan

PCT No. PCT/JP83/00326, § 371 Date May 14, 1984, § 102(e) Date May 14, 1984, PCT Pub. No. WO84/01444, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 30, 1983, Ser. No. 610,983
Claims priority, application Japan, Oct. 1, 1982, 57-172863
Int. Cl.[4] G05B *21/02*
U.S. Cl. 318—636 **10 Claims**



1. An acceleration/deceleration circuit for raising or lowering a feed velocity of movable machine element having an axis of movement to achieve a commanded velocity, comprising:

means for computing a traveling distance of the element along the axis for every sampling period (T);

first storage means for storing n samples of the traveling distances where $n=\tau/T$, and τ is a time constant;

arithmetic means for performing an operation:

$$\Delta Xn-\Delta Xo+St\rightarrow St$$

where ΔXn represents the most recently computed traveling distance, ΔXo represents the oldest computed traveling distance component among the traveling distances stored in said first storage means, and St represents the result of the operation, and for dividing the result St of the operation by n;

second storage means for storing the result St; and

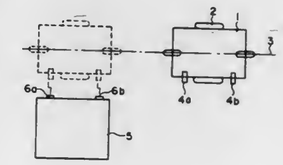
means for providing St/n as an output corresponding to a traveling distance at a present sampling period.

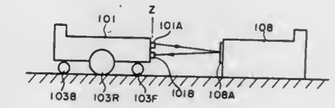
4,554,498

CONTROL APPARATUS FOR RUNNING MOVING OBJECT

Kunio Fujiwara; Hisashi Katoo; Fumihide Satoo, and Hirokazu Taki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00073, § 371 Date Oct. 20, 1982, § 102(e) Date Oct. 20, 1982, PCT Pub. No. WO82/03283, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 16, 1982, Ser. No. 438,850
Claims priority, application Japan, Mar. 16, 1981, 56-38316; Jun. 11, 1981, 56-91396
Int. Cl.[4] G05B *1/06;* B64C *13/18*
U.S. Cl. 318—640 **13 Claims**





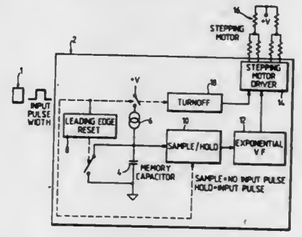
1. A running control apparatus for a moving vehicle, comprising a pair of photoelectric sensors on the vehicle, each sensor including a light emitting element and a light receiving element, a pair of reflectors at a predetermined target position opposing said photoelectric sensors, first means for stopping the moving vehicle when the light receiving elements of said pair of sensors each substantially simultaneously receives light reflected by a corresponding one of said reflectors of the target, and means for fixed point turning said moving vehicle near said target position until said moving vehicle assumes an attitude whereat at least one of said sensors receives a maximum amount of light reflected from said reflectors.

4,554,499

COMPUTER CONTROLLED MOTOR

Leonard H. Sherman, Sunnyvale; James R. Swartz, San Mateo, and James M. Williams, Palo Alto, all of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

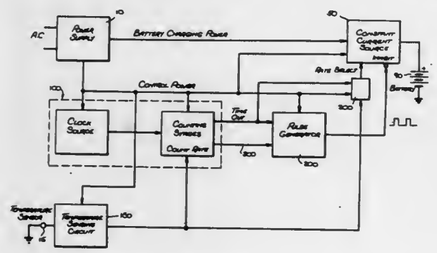
Continuation of Ser. No. 491,115, May 3, 1983, abandoned. This application Oct. 24, 1984, Ser. No. 664,110
Int. Cl.[4] H02P *8/00*
U.S. Cl. 318—696 **14 Claims**



1. Apparatus for driving a motor at a desired motor speed, said apparatus comprising:

means for generating a command signal having a preselected pulse width which varies logarithmically with said desired motor speed;
means connected to receive said command signal for generating a control signal which has a preselected control component exponentially related to said command component of said command signal;
means connected to receive said control signal and for translating the control signal into said desired motor speed, which speed is directly proportional to said control component of said control signal.

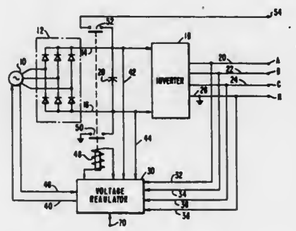
4,554,500
BATTERY CHARGING APPARATUS AND METHOD
Thomas J. Sokira, Cheshire, Conn., assignor to Anton/Bauer, Inc., Shelton, Conn.
Filed Mar. 31, 1983, Ser. No. 480,746
Int. Cl.[4] H02J *7/04*
U.S. Cl. 320—31 **25 Claims**



1. A battery charger comprising:
controlled current source means which can be coupled to a battery to be charged for sourcing current to said battery and having an inhibiting input for inhibiting the sourcing of current;
counting means for generating a timing signal which changes from a first state to a second state after a time interval
means for generating a two-state signal responsive to the temperature of said battery being charged, said signal being in a first state when said battery is below a threshold temperature and being in a second state when said battery is above said threshold temperature, said current source means having a further input for determining, from two different constant current levels, the current sourced by said current source means to said battery, said further input responsive to said two-state signal so as to charge said battery at a first constant current rate when said two-state signal is in said first state and to charge said battery at a second, reduced constant current rate when said two-state signal is in said second state, said battery being substantially fully charged at one of the first, second or combination of the first and second current rates when said timing signal is in said first state; and
means for generating a pulsing signal;
said inhibiting input of said current source means responsive to said pulsing signal when said timing signal is in said second state, said current source means delivering a pulsed current to said battery when said timing signal is in said second state so as to keep said battery from self-discharging after said battery is substantially fully charged.

4. A method for charging a battery, comprising the steps of:
charging said battery in a constant current charging mode, so as to substantially fully charge said battery, including the steps of:
charging said battery at a first constant current rate;
generating a timing signal which changes state after a predetermined time interval;
generating a signal responsive to the temperature of said battery if the temperature of said battery exceeds a predetermined temperature;
said step of charging at a first constant current rate continuing for said predetermined time interval or until said signal responsive to the temperature is generated, said battery being thereafter charged, if said signal responsive to the temperature is generated, at a reduced constant current rate for a second time interval; and
charging said battery with a pulsed current after said constant current charging mode has terminated so as to keep said battery from self-discharging after said battery is substantially fully charged.

4,554,501
VARIABLE SPEED CONSTANT FREQUENCY POWER SYSTEM WITH AUXILIARY DC OUTPUT
Donal E. Baker, American Township, Lima County, Ohio, assignor to Westinghouse Electric Corp., Pittsbugh, Pa.
Filed Apr. 27, 1984, Ser. No. 604,690
Int. Cl.[4] H02P *9/42, 9/48*
U.S. Cl. 322—29 **11 Claims**

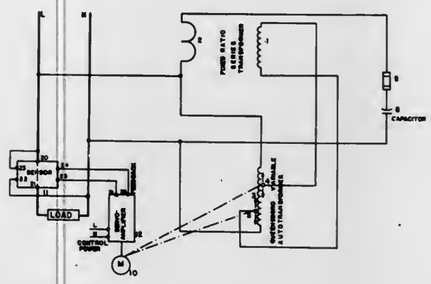


1. A DC-link, variable speed constant frequency power supply, having an auxiliary DC output, comprising:
an electrical generator for producing a DC voltage on a pair of DC-link conductors;
means for regulating said DC voltage at alternative voltage levels by controlling the output of said generator;
an inverter for converting said DC voltage to a constant frequency AC voltage, when said DC voltage is at a first one of said voltage levels; and
means for switching a first one of said DC-link conductors to an auxiliary DC output line and for switching the other one of said DC-link conductors to a reference terminal, when said DC voltage is at a second one of said voltage levels.

8. A method of operating a DC-link, variable speed constant frequency power supply having a generator which supplies DC power to an inverter via a pair of DC link conductors, said method comprising the steps of:
controlling the generator output voltage to produce a first DC voltage between said DC-link conductors in the absence of an auxiliary output command signal;
controlling the generator output voltage to produce a second DC voltage between said DC-link conductors in response to an auxiliary output command signal; and
switching one of said DC-link conductors to an auxiliary output terminal while switching the other DC-link conductor to a reference terminal in response to said auxiliary output command signal.

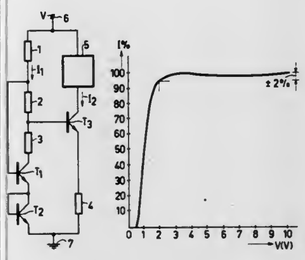
4,554,502
POWER FACTOR CORRECTION SYSTEM
Frederick Rohatyn, 166-10 15th Dr., Beechhurst, N.Y. 11357
Filed May 6, 1983, Ser. No. 480,496
Int. Cl.[4] G05F *1/24*
U.S. Cl. 323—208 **20 Claims**

1. A power-factor correction system for reactive power control and concomitant power factor correction adapted to cooperate with a line supplying power at a given line voltage from power generating means to an inductive load via a given path, comprising in combination,
reactive power compensation means in shunt with said line supplying power, and adapted to be connected in shunt with said inductive load, and including
fixed capacitance means, and
voltage applying means delivering a voltage of continuously variable magnitude in a stepless manner to said fixed capacitance means in response to any change in



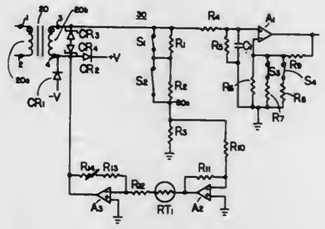
lagging reactive power consumed by said load so as to correct the magnitude of the power factor in said line supplying power to said inductive load to a predetermined correction value as a result of said power compensation means generating thereacross a compensatory reactive power in proportion to the square of said voltage of variable magnitude delivered to said fixed capacitance means so as to at least partly off-set said lagging reactive power, whereby power factor correction is optimized, yet not producing any transient.

4,554,503
CURRENT STABILIZING CIRCUIT ARRANGEMENT
Wolfdietrich G. Kasperkovitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 27, 1984, Ser. No. 574,774
Claims priority, application Netherlands, Feb. 10, 1983, 8300499
Int. Cl.[4] G05F *3/20;* **H03K** *17/00*
U.S. Cl. 323—315 **2 Claims**



1. A current stabilizing arrangement comprising a first circuit between a first and a second power supply terminal which comprises a series arrangement of a first resistor, a second resistor and the collector-emitter path of a first transistor whose base is connected to a point between the first and the second resistor, and a second circuit between a third terminal and the second power supply terminal which comprises the collector-emitter path of a second transistor whose base is coupled to the collector of the first transistor, characterized in that in the first circuit, in series with the first and the second resistor, a third resistor is provided between the connection point of the base of the second transistor and the collector of the first transistor.

4,554,504
NEGATIVE RESISTANCE COMPENSATED TRANSFORMER
Philip L. Dillon, Arlington, Tex., assignor to Reliance Electric Company, Cleveland, Ohio
Filed Apr. 30, 1984, Ser. No. 605,646
Int. Cl.[4] H01F *15/18*
U.S. Cl. 323—356 **11 Claims**

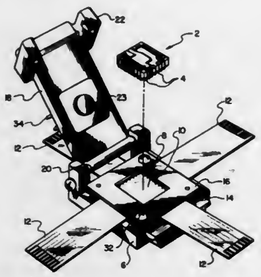


1. A compensated circuit for use in interfacing a transmission device to a cable facility comprising:
(a) transformer means having first and second windings, said first winding being connected to said cable facility and said second winding having first and second terminals; and
(b) impedance generating means connected between said second winding and said transmission device comprising:
(i) first selectable switch means for selecting one of a predetermined number of resistances each of said resistances being associated with a selected one of a predetermined number of selectable impedances; and
(ii) negative resistance generating means having an input and an output, said first selectable means being connected between said first terminal and said input, said output being connected to said second terminal to thereby form a loop, said negative resistance generating means being responsive to the current flowing in said loop for presenting a negative resistance at said second terminal such that said circuit provides to said cable facility said selected one of said predetermined number of selectable impedances.

4,554,505
TEST SOCKET FOR A LEADLESS CHIP CARRIER
Clyde L. Zachry, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 10, 1983, Ser. No. 503,002
Int. Cl.[4] G01R *31/02;* **H01R** *39/00*
U.S. Cl. 324—158 F **6 Claims**

1. A test socket for a high frequency leadless chip carrier, comprising:
a base;
a cover coupled to and spaced from said base;
a frame coupled to said base, said frame having an opening to receive and position the chip carrier;
a planar assembly of coaxial cables having contacts at one end, said planar assembly being coupled to said frame;
a resilient pad supported by said base within said opening and positioned under said coaxial cable contacts in line with the corresponding contacts of the chip carrier so that said coaxial cable contacts can be compressed against the

corresponding contacts of the chip carrier in a planar manner; and



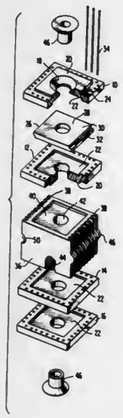
means connected to said cover for compressing the contacts of the leadless chip carrier against said contacts of said coaxial cables.

4,554,506

MODULAR TEST PROBE

Louis H. Faure, Poughkeepsie; Dana R. Townsend, Fishkill, and Thomas J. Walsh, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 278,950, Jun. 30, 1981, abandoned.
This application Dec. 10, 1984, Ser. No. 680,232
Int. Cl.⁴ G01R *1/06*
U.S. Cl. 324—158 P **9 Claims**



1. A probe assembly for clustering deflectable beam elements in an array corresponding to an array of surface terminals of an integrated circuit to be tested comprising:

a plurality of straight deflectable beam elements;

first guide means having an aperture and a plurality of through-holes around said aperture for receiving said beam elements to space and align them in a predetermined orientation,

second guide means having an aperture and a plurality of through-holes around said aperture for receiving beam elements to space and align them in a predetermined orientation,

a center post having said first and second guide means mounted on opposite ends thereof and establishing a predetermined separation distance therebetween, said beam elements positioned by said first and second guide means and around said center post, and

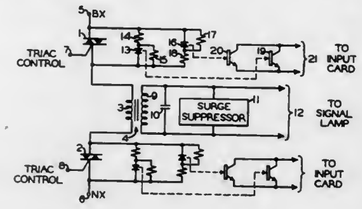
fastener means positioned in said apertures uniting said center post and said first and second guide means in a single assembly, wherein said first guide means causes said beams elements to prebow in said predetermined orientation and to buckle under an applied load in various degrees but in the same direction without contacting each other when beams ends contact the surface of the integrated circuit under test to establish a uniform predetermined beam contact force.

4,554,507

ARRANGEMENT FOR TESTING THE OPERABILITY OF A SEMICONDUCTIVE DEVICE

Christopher R. Brown, Chippenham, England, assignor to Westinghouse Brake and Signal Co., Ltd., Chippenham, England

Filed Nov. 8, 1982, Ser. No. 439,702
Claims priority, application United Kingdom, Nov. 14, 1981, 8134401
Int. Cl.⁴ G01R *31/26*; G08B *21/00*
U.S. Cl. 324—158 SC **20 Claims**



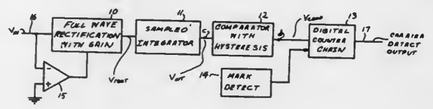
1. Apparatus for testing the operability of a semiconductive device comprising, means for injecting test pulses into a normal control signal to induce a momentary change of the operating state of said semiconductive device, sensing means connected in parallel with said semiconductive device sensitive to the induced change to produce a binary output sequence indicating the induced change, and correlation means operative to correlate the test pulses with the sensed response which is arranged to carry out a predetermined action in event that said correlation means determines a state of inoperability of said semiconductive device.

4,554,508

CARRIER DETECTION CIRCUIT

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Dec. 7, 1983, Ser. No. 559,157
Int. Cl.⁴ H04B *17/00*
U.S. Cl. 329—101 **12 Claims**



1. A carrier detection circuit for determining the presence of a carrier signal on an input lead comprising:

means for rectifying the signal on said input lead and providing a rectified signal;

integration means for integrating said rectified signal and providing an integrated signal;

a comparator for comparing said integrated signal with a reference signal, said comparator producing a comparator output signal whenever the amplitude of said integrated signal equals or exceeds the amplitude of said reference signal; and

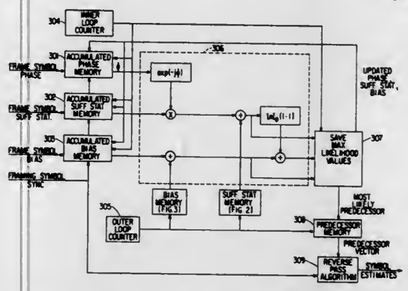
timing means for receiving of said comparator output signal and determining the length of time that a comparator output signal has been received and for providing an output signal indicating when a carrier signal has been detected for a time greater than a selected length of time.

4,554,509

FREQUENCY SHIFT KEYED DEMODULATION SYSTEM

Frank N. Cornett, State College, Pa., assignor to HRB-Singer, Inc., State College, Pa.

Filed Aug. 27, 1984, Ser. No. 644,296
Int. Cl.⁴ H04L *27/14*
U.S. Cl. 329—105 **2 Claims**



1. A method for demodulating a sequence of continuous phase frequency shift keyed signals into a sequence of symbols, comprising the steps of:

(a) choosing the most likely predecessor symbol for each of the available symbols at each symbol time from the frequency shift keyed signals;

(b) storing all such chosen predecessor symbols;

(c) determining whether there is a singular predecessor symbol;

(d) When a singular predecessor symbol is encountered, choosing from the stored predecessor symbols a unique sequence of predecessor symbols from that singular predecessor symbol back to the next most recent previously encountered singular predecessor symbol; and

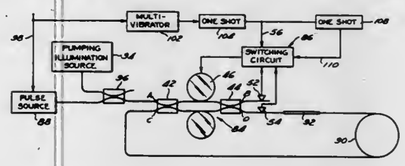
(e) outputting the unique sequence of symbols.

4,554,510

SWITCHING FIBER OPTIC AMPLIFIER

Herbert J. Shaw, Stanford, and Michel J. F. Digonnet, Palo Alto, both of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 12, 1983, Ser. No. 531,231
Int. Cl.⁴ H01S *3/094*; H03F *3/68*
U.S. Cl. 330—4.3 **18 Claims**



1. An amplifier for fiber optic systems, comprising:

a crystal fiber formed of material which is capable of lasing;

a source of pumping illumination for inverting said material;

a source of signals to be amplified; and

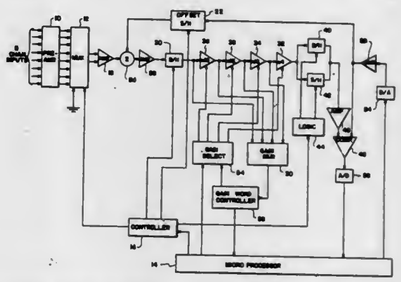
switching means coupled to said source of pumping illumination, said source of signals to be amplified, and one end of said crystal fiber for alternatively coupling said pumping illumination or said signals to be amplified to said one end of said crystal fiber.

4,554,511

OFFSET VOLTAGE CORRECTION NETWORK FOR INSTANTANEOUS FLOATING POINT AMPLIFIER

Steve W. Braun, San Diego, Calif., assignor to Tetra Tech, Inc., Pasadena, Calif.

Filed Sep. 29, 1982, Ser. No. 427,489
Int. Cl.⁴ H03F *1/02, 3/217, 3/45*; H03G *3/20*
U.S. Cl. 330—9 **26 Claims**



1. An instantaneous floating point amplifier, comprising

an analog signal input summation network for receiving analog data signals,

synchronized means for storing a predetermined value of offset voltage said synchronized means coupled to said analog signal input summation network for effectively subtracting an offset voltage component from said analog data signals,

a sample-and-hold network coupled to receive an output signal from said summation network,

cascaded amplifier means coupled to said sample-and-hold network for developing an analog mantissa value for said sampled-and-held data and a digital gain word related thereto, and

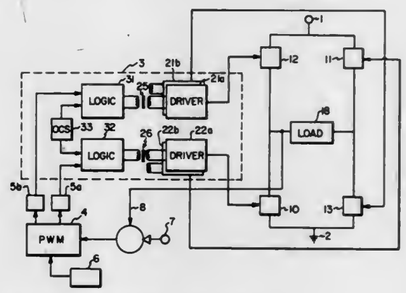
an analog-to-digital converter coupled to said cascaded amplifier means for converting said analog mantissa value to a digital mantissa value, which, with said digital gain word, represents in digital form said sample analog data.

4,554,512

SWITCHING AMPLIFIER WITH MOSFET DRIVER CIRCUIT

Michael E. Aiello, Monroeville, Pa., assignor to Aerotech, Inc., Pittsburgh, Pa.

Filed Aug. 27, 1984, Ser. No. 644,775
Int. Cl.⁴ H03F *3/38*
U.S. Cl. 330—10 **44 Claims**



1. A switching amplifier comprising:

(a) an input terminal for being connected to a d.c. power supply;

(b) an output terminal for being connected to a load;

(c) at least one bipolar power transistor, said transistor hav-

ing collector, emitter and control terminals, said transistor having its collector-emitter circuit in series with the input and output terminals such that the signal at the control terminal establishes an on or off condition of the bipolar power transistor;

(d) a PWM circuit outputting a pulse width modulated signal;

(e) an isolating driver circuit between the PWM circuit and the control terminal of the power transistor comprising:

(i) a low voltage power supply;

(ii) a transformer having primary and secondary windings said secondary winding having first and second terminals;

(iii) an oscillator for outputting a high frequency signal;

(iv) means for gating the high frequency signal from the oscillator to the primary winding of the transformer in response to the pulse width modulated signal from the PWM circuit;

(v) a MOSFET having source, drain and gate terminals, said source and drain terminals being arranged in a circuit with the control terminal of the power transistor such that the signal at the gate terminal establishes the on or off condition of the MOSFET;

(vi) means for rectifying the voltage in the secondary winding of the transformer and for applying the rectified voltage at the first winding terminal to the gate terminal of the MOSFET;

(vii) switching means for rapidly discharging the gate terminal of the MOSFET when the high frequency signal is no longer gated to the primary winding of the transformer;

whereby the on or off condition of the MOSFET and therefore its ability to control the on or off condition of the bipolar power transistor is substantially entirely independent of the voltage at the input terminal connected to the d.c. power supply.

4,554,513

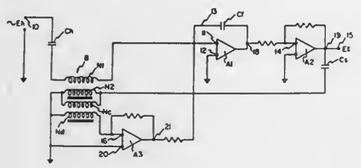
REPLICA CIRCUIT

Eddy So, Gloucester, Canada, assignor to Canadian Patents and Development Limited-Société Canadienne des Brevets et D'Exploitation Limteé , Ottawa, Canada

Filed Oct. 17, 1984, Ser. No. 661,610

Int. Cl.[4] H03F *1/34*

U.S. Cl. 330—85 **14 Claims**



1. A circuit for generating a replica of an active alternating electrical parameter, comprising

(a) an input terminal for receiving an alternating high voltage input;

(b) a first impedance having one terminal connected to said input terminal;

(c) an output terminal for delivering a replica of said high voltage input or of a current generated in said first impedance by said high voltage input;

(d) a current comparator having a pair of input windings and a detection winding;

(e) a main amplifier having a ground input, an active input, an output and a feedback loop between its output and active input including a second impedance, said active input being connected to the other terminal of the first impedance through a first one of said input windings;

(f) a third impedance having one terminal connected to said output terminal and to receive the output of the main amplifier and its other terminal connected to ground through the second input winding; and

(g) a feedback amplifier having a ground input, an active input and an output, such active input of the feedback amplifier being connected to ground through the detection winding, and the output of the feedback amplifier being connected to modify the current in one of said input windings to return the current in said detection winding to zero.

4,554,514

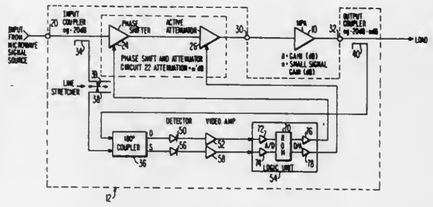
PREDISTORTION CIRCUIT WITH FEEDBACK

James C. Whartenby, Princeton, and Mahesh Kumar, Dayton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 21, 1984, Ser. No. 685,241

Int. Cl.[4] H03F *1/26, 1/32;* **H03C** *1/06;* **H04B** *1/12*

U.S. Cl. 330—149 **8 Claims**



1. A predistortion circuit, for a power amplifier exhibiting phase and amplitude nonlinearities at its output as a function of input power, comprises in combination:

an input terminal coupled to receive a signal to be amplified and an output terminal coupled to the input of said power amplifier;

means coupled to said input terminal for producing a first signal which is a predetermined fraction X of the signal to be amplified;

means coupled to the output of said power amplifier for producing a second signal which is said fraction X of the output power of said amplifier reduced by a value equal to the gain of said amplifier at a small value of input signal,

means responsive to said first and second signals for producing a third signal which is substantially proportional to the phase difference between said first and second signals and producing a fourth signal which is substantially proportional to the sum of the first and second signals; and

means coupled between said input terminal and said output terminal and responsive to said third and fourth signals applied thereto for changing the phase and amplitude of the signal passing therethrough to compensate for nonlinearities of said power amplifier such as to reduce the phase and amplitude nonlinearities in said amplifier output signal from said power amplifier.

4,554,515

CMOS OPERATIONAL AMPLIFIER

Kyle L. Burson; Scott H. Early, and Apparajan Ganesan, all of Indianapolis, Ind., assignors to AT&T Laboratories, Murray Hill, N.J.

Filed Jul. 6, 1984, Ser. No. 628,582

Int. Cl.[4] H03F *3/45*

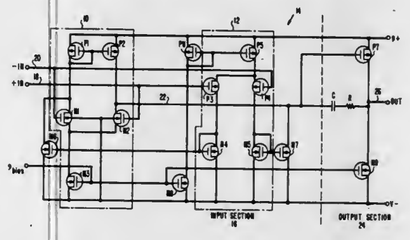
U.S. Cl. 330—261 **12 Claims**

1. An operational amplifier comprising:

first and a second power supply voltage nodes;

a first differential input stage connected between said supply voltage nodes and including first and second input current branches with one end connected to said first supply voltage node and the other end connected to one side of a first current source, the other side of said first current source being connected to said second supply voltage node;

a second differential input stage connected between said supply voltage nodes, in parallel with said first stage, and including first and second input current branches with one end connected to said second supply voltage node and the other end connected to one side of a second current source, the other side of said second current source being connected to said first supply voltage node;



first means coupled between said first branch of said first stage and said first branch of said second stage for establishing proportional currents in them;

second means coupled between said second branch of said first stage and said second branch of said second stage for establishing proportional currents in them, and

an output stage having an input node coupled to said second branch of said first stage.

4,554,516

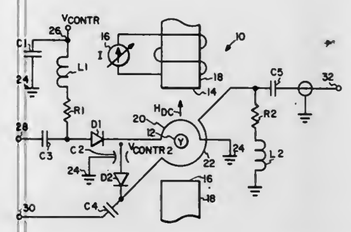
FREQUENCY SOURCE HAVING YIG ABSORPTION/TRANSMISSION FILTER

Ganesh R. Basawapatna, Santa Rosa, Calif., assignor to Microsource, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 371,381, Apr. 23, 1982, abandoned. This application Nov. 29, 1984, Ser. No. 676,043

Int. Cl.[4] H03B *1/00, 1/04, 19/14, 23/00*

U.S. Cl. 331—76 **7 Claims**



1. For use in microwave signal generation, a transmission-/absorption filter comprising:

a sphere of monocrystalline garnet;

a turnable DC magnet for producing a controlled magnetic field about said sphere thereby to form a magnetic field structure;

a first coupling loop disposed transverse of the magnetic field about said sphere;

a second coupling loop disposed transverse of said magnetic field about said sphere and orthogonal to said first coupling loop;

said first coupling loop having a first output coupled to a DC ground and a first input coupled to receive a first microwave signal at a first input port;

said second coupling loop having a second output coupled to an output port and a second input coupled to receive a second microwave signal at a second input port;

first means for blocking and unblocking said first microwave signal applied to said first coupling loop; and

second means for blocking and unblocking said second microwave signal applied to said second coupling loop; wherein

said sphere is operative to resonate under control of said DC magnet to either pass a selected fundamental frequency or alternately to reject said fundamental frequency for providing alternatively transmission filtering and absorption filtering of harmonically related microwave signals applied to said first coupling loop and said second coupling loop to convey a selected microwave signal respectively to said output port.

4,554,517

DEVICE FOR THE AUTOMATIC LINEARIZATION OF THE CONTROL SIGNAL-FREQUENCY CHARACTERISTIC OF A FREQUENCY-MODULATED VARIABLE FREQUENCY OSCILLATOR

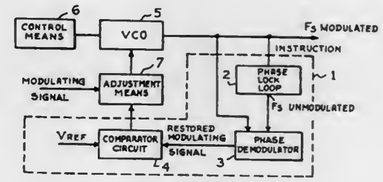
Alain Parniére, Rueil Malmaison, and Dominique Bazenant, Paris, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 13, 1983, Ser. No. 560,975

Claims priority, application France, Dec. 14, 1982, 82 20967

Int. Cl.[4] H03C *3/08, 3/09*

U.S. Cl. 332—18 **5 Claims**



1. A device for the automatic linearization of the control signal-frequency characteristic of a frequency-modulated variable frequency oscillator in which the operating frequency of the oscillator is obtained on the basis of a first control signal applied to the control input of the oscillator and the modulation frequency is obtained on the basis of a modulating signal whose amplitude is adjusted, by adjustment means, as a function of the modulation index of the desired frequency-modulated signal, the modulating signal being added to said first control signal in order to obtain said frequency-modulated signal at the output of said oscillator, comprising:

a phase lock loop having an output and an instruction input to which is applied a signal corresponding to said frequency-modulated signal, and a pass band which is regulated in order to obtain at said output a frequency-filtered signal corresponding to said frequency-modulated signal applied to said instruction input;

a phase demodulator coupled by first and second inputs respectively to said instruction input and to said output of said phase lock loop in order to produce a signal corresponding to the modulation index of said frequency-modulated signal; and

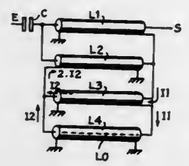
a comparator circuit having an output and coupled by a first input to said phase demodulator, and having a second input to which is applied a reference signal corresponding to a desired modulation index, in order to obtain at said comparator output a second control signal which is provided to said adjustment means for adjusting the amplitude of said modulating signal so as to permanently adjust the modulation index of said frequency-modulated signal to the value of the desired modulation index.

4,554,518

WIDE BAND IMPEDANCE TRANSFORMER WITH TRANSFORMATION RATIO CLOSE TO THREE FOR RADIO FREQUENCIES

Jean-Michel Baer, Franconville, France, assignor to Thomson CSF, Paris, France

Filed Jun. 13, 1984, Ser. No. 620,259
Claims priority, application France, Jun. 17, 1983, 83 10064
Int. Cl.⁴ H01P *5/02*
U.S. Cl. 333—33 **5 Claims**



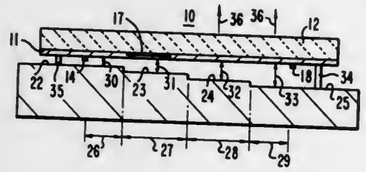
1. A wide band impedance transformer for radio frequencies of the coaxial type, having a transformation ratio close to 3, which comprises an input terminal, an output terminal, a conducting connection and a first, a second and a third coaxial cable, each having an inner conductor with a first and a second end and an outer conductor with a first and a second end and wherein the first cable has the first and the second ends of its inner conductor coupled respectively to the input terminal and to the output terminal and the first end of its outer conductor connected to ground, the second cable has the first and second ends of its inner conductor connected respectively to the first end of the inner conductor of the first cable and to the second end of the outer conductor of the first cable and the second end of its outer conductor connected to ground, the third cable has the first and the second ends of its inner conductor connected respectively to the first end of the outer conductor of the second cable and to the second end of the inner conductor of the second cable and the first end of its outer conductor connected to ground, and the connection connects together the first end of the inner conductor of the third cable and the second end of the outer conductor of the third cable.

4,554,519

MAGNETOSTATIC WAVE DELAY LINE

John D. Adam, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1983, Ser. No. 542,840
Int. Cl.⁴ H03H *9/30*
U.S. Cl. 333—141 **24 Claims**



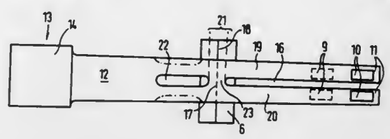
1. A magnetostatic wave device operable within a biasing magnetic field for delaying microwave signals wherein the delay varies by a predetermined amount with frequency comprising:
- a body of yttrium iron garnet for propagating magnetostatic waves having a thickness in the range of 5 to 50 micrometers,
- first and second transducers located in spaced apart relationship for generating and receiving magnetostatic waves along a path in said body of yttrium iron garnet;
- a plurality of ground planes coupled together, said ground planes formed from a common metal block having a layer of plated gold, each ground plane having a predetermined length along said path in said material and spaced by a predetermined distance from said material.

4,554,520

ELECTROMAGNETIC MINIATURE RELAY

Werner Minks, Heroldsberg-Kleingeschaidt, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,524
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238223
Int. Cl.⁴ H01H *9/02*
U.S. Cl. 335—106 **5 Claims**



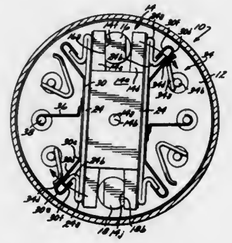
1. Electromagnetic miniature compact relay comprising: a contact spring firmly clamped at one end; and
- said contact spring having a bifurcated end including a pair of legs separated by a longitudinal slot;
- each of said legs carrying one upper contact body and one lower contact body symmetrically opposing identical bodies mounted on another leg;
- said contact spring including a cross-sectionally weakened area abutting a web spanning a hiatus between said slot and said weakened area;
- an armature actuator extending across an entire width of said contact spring;
- a line of contact between said contact spring and said actuator being disposed between said weakened area and closed end of said slot;
- said legs being capable of moving independently of each other and said bifurcated end being twistable within said weakened area.

4,554,521

ARMATURE/CONTACT SYSTEM

Max Hurter, Riverside, Calif., assignor to Babcock Electro-Mechanical, Inc., Costa Mesa, Calif.

Filed Jul. 3, 1984, Ser. No. 627,436
Int. Cl.⁴ H01H *67/06*
U.S. Cl. 335—125 **12 Claims**



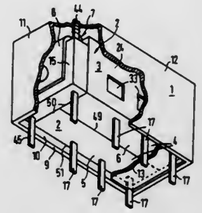
1. An armature/contact system for controlling the continuity of an electrical circuit, comprising in combination,
- a pivotal armature adapted to move about a given axis,
- a resilient (moveable) contactor carried by such armature (and) having a contactor surface and an axis of flexure relative to said armature which are within a plane which includes said pivotal axis for said armature,
- and a stationary contact positioned relative to said armature and having an arcuate surface to be engaged by said contactor at said contactor surface upon pivotal movement of said armature.

4,554,522

ELECTROMAGNETIC RELAY

Werner Minks, Heroldsberg-Kleingeschaidt, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,716
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239047
Int. Cl.⁴ H01H *45/02*
U.S. Cl. 335—202 **11 Claims**



1. Electromagnetic relay with terminal elements projecting therefrom and comprising:
- a cup-shaped cover slidably and frictionally engaging with a pair of juxtaposed shells being self-aligned and self-locked relative to each other;
- each shell having a plurality of said terminal elements being integral therewith and depending from one wall thereof;
- said shells housing and complementary engaging an electromagnetic drive system so as to form continuous common bottom and side walls therewith;
- terminal elements depending from both said system and said shells and projected outwardly from said common bottom wall;
- said common bottom wall being offset from a rim of said cover;
- a waterproof sealing compound filling the space in said offset and sealing all joints and seams of said bottom wall.

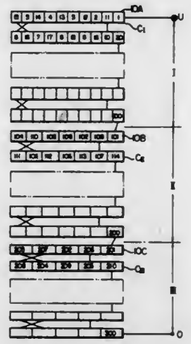
4,554,523

WINDING FOR STATIC INDUCTION APPARATUS

Atsushi Miki; Etsunori Mori; Minoru Hoshi, and Masaru Higaki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 240,858, Mar. 5, 1981, abandoned. This application Oct. 5, 1984, Ser. No. 658,026
Claims priority, application Japan, Mar. 5, 1980, 55-26666
Int. Cl.⁴ H01F *15/14*
U.S. Cl. 336—70 **3 Claims**

1. A winding for a static induction apparatus comprising a plurality of interleaved coils each formed by winding a strand conductor in a radial spiral, said coils being stacked in the axial direction of the coils and electrically connected in series from a line terminal side to other terminal side, wherein said winding is divided into at least three blocks each including a plurality of ones of said interleaved coils, the interleaved coils belonging to the block located closer to said other terminal side being formed by winding a strand conductor which has a greater dimension in the radial direction of said coil and a smaller dimension in the axial direction of the coil as compared with those of the strand conductor forming the interleaved coils belonging to the block located closer to said line terminal side but has a substantially same cross-sectional area as the latter strand conductor, and the interleaved coils belonging to the block located intermediate the block located closer to said other terminal side and the block located closer to said line terminal side being formed by winding a strand conductor which has intermediate dimensions in both the radial and the axial directions of the coil but has substantially the same cross-sectional area as compared with the respective dimensions and cross-sectional area of the strand conductors forming the interleaved coils belonging to the block located closer to the other terminal side and the block located closer to the line terminal side, whereby the number of turns of each of the interleaved coils belonging to the respective blocks are progressively increased from the block located closer to said other terminal side to the block located on said line terminal side.

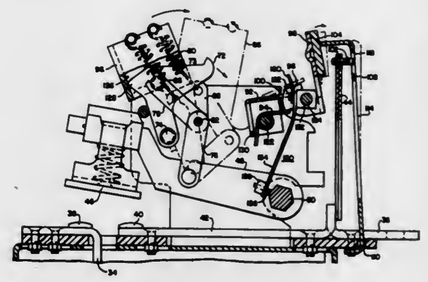


4,554,524

SECONDARY CIRCUIT BREAKER FOR DISTRIBUTION TRANSFORMER WITH INDICATOR LIGHT SWITCH MECHANISM

Raymond J. Radus, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1984, Ser. No. 643,511
Int. Cl.⁴ H01H *37/52*
U.S. Cl. 337—3 **9 Claims**



1. A distribution transformer comprising:
- a housing;
- a transformer within the housing;
- a circuit interrupter disposed within the housing and operable between a closed position permitting current flow through the transformer and an open position interrupting flow through the transformer, the circuit interrupter being operable to automatically trip to the open position upon overload current conditions through the transformer;
- the circuit breaker including a releasable latch arm operable to maintain the circuit breaker in closed position;
- a latch plate movable between latched and unlatched positions of said arm;
- a reciprocable cam movable between unlatched and latched

positions of the plate and having a cam surface engageable with the plate, reciprocable trip means operable upon overload current conditions to rotate the cam to the unlatched position;

signal means for indicating when overload current conditions exceed a predetermined level and including a switch arm and a moving contact on the arm, the arm being movable with the cam for moving the contact to open and close a signal circuit;

the cam and the switch arm being mounted on a rotatable shaft and the contact being mounted on a portion of the switch arm from the shaft and the cam surface being a circular arc of a predetermined constant radius;

the contact being movable to open and close the signal circuit;

the contact closing the signal circuit during rotation of the cam toward the unlatched condition; and

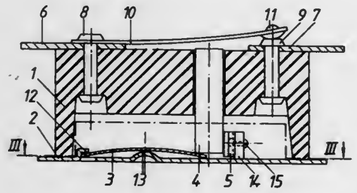
magnetic means being associated with the contact for maintaining the contact in a closed condition so long as the circuit interrupter is in closed position.

4,554,525

THERMAL SWITCH

Helmut Bayer, Vienna, Austria, assignor to Electrovac Fabrikation Electrotechnischer Spezialartikel Gesellschaft mbH, Vienna, Austria

Filed Mar. 1, 1983, Ser. No. 471,108
Claims priority, application Austria, Mar. 3, 1982, 831/82
Int. Cl.⁴ H01H *37/52*
U.S. Cl. 337—356 **12 Claims**



1. In a thermal switch having a temperature sensor formed of a thermal bimetallic snap disk, said temperature sensor cooperating via a displaceable transmission member with a contact system which has a displaceable contact carrier bearing at least one movable contact, the movable contact resting under spring force in its closed-circuit position of rest against at least one fixed contact, and a locking member being provided which, upon a temperature-caused movement of the transmission member, is displaceable, under spring force, in the direction towards the transmission member at least approximately perpendicular to the direction of displacement of said transmission member and holds the contact carrier fast in its open-circuit end position after a temperature-caused movement of said carrier, the improvement comprising

said disk having a point of attack upon said transmission member, which point of attack lies on that end of said transmission member which faces away from the contact system,

said disk being arranged with two support points at least approximately in a plane lying parallel to the direction of displacement of said transmission member,

a first said support point lying on that edge of said disk which is opposite said point of attack and a second said support point lying between said point of attack and said first support point, and

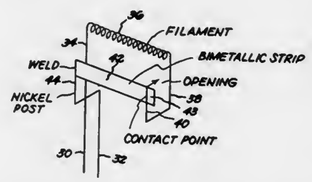
said locking member being arranged at that end of said transmission member which faces away from said contact system.

4,554,526

FLUORESCENT LAMP WITH IRON-NICKEL BIMETAL FILAMENT SWITCH

Rodger H. Bricknell, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1984, Ser. No. 643,577
Int. Cl.⁴ H01H *37/52*
U.S. Cl. 337—379 **4 Claims**



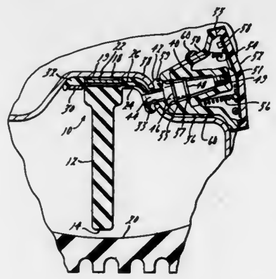
1. A thermally actuated switch resistant to thermally induced stresses from about −100° C. to about +600° C. which comprises a stationary and a movable contact member adapted to close to allow flow of current through said switch, a continuously movable arm anchored at one end and disposed to urge said movable contact into and out of electrical engagement with the stationary contact, said arm being formed of an iron-nickel bimetal of two iron-nickel bialloys in which the two metals of the bimetal are each selected from the Fe-Ni binary system in the range of 25 to 45 wt % Ni, said bimetal being adapted to low rates of movement at −100° C. and at +500° C. and being adapted to its highest rate of movement at about 200° C.

4,554,527

TIRE HEIGHT SENSOR WITH VALVE STEM ATTACHING TRANSMITTER MODULE

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 27, 1980, Ser. No. 134,599
Int. Cl.⁴ B60C *23/00*
U.S. Cl. 340—58 **10 Claims**



1. A pneumatic tire profile height sensor system including:

a wheel rim for mounting a pneumatic tire;

a compressible probe extending radially from the inside of said wheel rim;

a power source between said probe and said wheel rim for generating electrical energy in response to said probe touching the inside casing of a pneumatic tire mounted on said wheel rim;

a radio frequency transmitter mounted external of said wheel rim and being electrically connected to said internal power source;

an inflation valve adjacent said probe and extending through said wheel rim, wherein said transmitter attaches to the externally extended portion of said wheel valve;

wherein said externally extending portion of said inflation valve has a base portion against said wheel rim, an extreme end opening and a plurality of exposed electrical contacts, between said base and said opening, being electrically connected to said power source; and

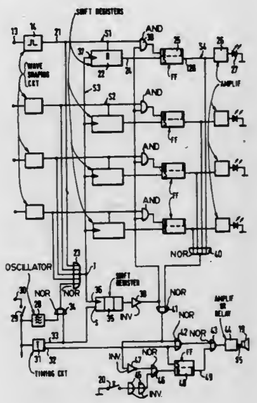
said radio frequency transmitter is encased within an inflation valve cap and contains a plurality of electrical contacts disposed to contact corresponding ones of exposed contacts on said inflation valve when said cap is attached to said valve.

4,554,528

VEHICLE TIRE PRESSURE MONITORING SYSTEM

Rainer Burkel, Asperg, and Cornelius Peter, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,724
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1982, 3232919
Int. Cl.⁴ B60C *23/02*
U.S. Cl. 340—58 **11 Claims**



1. Vehicular tire pressure monitoring system for a plurality of wheels (10) to be monitored, having

a plurality of pressure transducers (11, 12), one each being associated with a wheel of the vehicle and providing, respectively, "correct pressure" or "low pressure" signals upon each revolution of the respective wheel, said signals forming a plurality of signal trains (S1, S2) associated with the respective wheels;

a signal processing and evaluation network (15) having counters (22), each having a reset terminal, one each associated with a respective wheel;

and a plurality of warning indicators (26, 27), one each associated with a respective wheel and providing a warning indication of low tire pressure,

said system comprising

a combining logic circuit (23) including a NOR-function element (23), having its input connected to the outputs (21) of the transducers (11, 12) of all the wheels, in parallel, to receive the signal trains (S1, S2) of all the wheels, combine said signal trains, and provide combined output signals (S3);

a connection means (J) from said combining logic circuit, the output from the combining logic circuit being formed by said connection means (J) to form common junction which, in turn, is connected to the count inputs (37) of all of said counters (22);

means (13, 14) for connecting the respective transducers (11, 12) to the respective reset terminals (R) of the associated counters (22) to reset the respective counters when the transducer provides to the respective counters "correct pressure" signals, but failing to reset the respective counter upon providing "low pressure" signals;

means (24, 25, 28) for connecting the shift output of the respective counters to the respective associated indicators, shifting of the counters to fully loaded condition being indicated by the respective warning indicator (26, 27) to thereby provide a warning indication signal indicative of low pressure at the respective tire after the associated counter has been fully loaded by the combined output signals (S3) derived from those transducers which have still provided "correct pressure" signal trains (S2); and

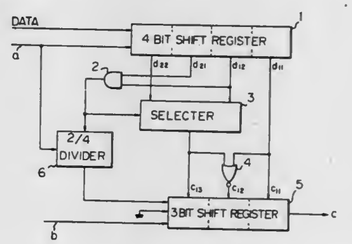
an oscillator (28) energizeable by connection of a vehicle main switch (29), the output of the oscillator (28) being connected to a further input of said NOR-function element (23) to pretest the warning indicators (26, 27) and operability of the combining logic circuit (23), the connection means (J) from said combining logic circuit, the counters (22) and the connection means (24, 25, 28) connecting the shift output of the respective counters to the respective associated indicators.

4,554,529

METHOD FOR CONVERTING BINARY DATA TRAIN

Yoshiaki Moriyama, and Kenji Yamagata, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,129
Claims priority, application Japan, Oct. 29, 1981, 56-173258
Int. Cl.⁴ H03K *13/24*
U.S. Cl. 340—347 DD **7 Claims**



1. A method for converting a binary data train into recording data and recording the same on a recording medium comprising:

a first step for dividing said binary data train into a plurality of successive M-bit (M being a natural number) data blocks;

a second step for converting each of said M-bit data blocks into an N-bit (N being a natural number and N≧M+1) data block, said N-bit data block being one of a plurality of bit patterns corresponding respectively to bit patterns of said M-bit data blocks;

a third step for converting a predetermined data block in every L (L being a natural number) data blocks of said N-bit data block into a J-bit (J being a natural number and J≧N+1) data block, said J-bit data block being one of a plurality of bit patterns corresponding to said bit patterns of N-bit data block; and

a step for recording a recording signal obtained through the data conversion of said first through third steps on a recording medium;

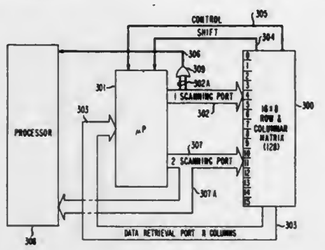
wherein at least a predetermined bit pattern of said N-bit data block corresponds to at least two bit patterns of said J-bit data block, and said third step includes a step for selecting one of said at least two bit patterns of J-bit data block corresponding to said predetermined bit pattern of the N-bit data block so that the dc and low frequency components of said recording signal are minimized.

4,554,530

METHOD AND APPARATUS FOR SCANNING A MATRIX OF SWITCHABLE ELEMENTS

Richard F. Mussmann, Indianapolis, Ind., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 21, 1981, Ser. No. 333,066
Int. Cl.⁴ G06F *3/02*
U.S. Cl. 340—365 S **4 Claims**



1. A method of scanning a matrix (**300**) having switchable elements using a first processor (**301**) having ports (**302, 303,** and **307**) comprising data input and output leads, the first processor performing the steps of:

scanning the matrix using the output leads (**302, 307**);

sensing a state change on at least one input lead resulting from a change in status of the switchable elements of the matrix;

outputting a code indicative of the change in status of the switchable elements on at least one output lead that is connected in parallel to the matrix (**300**) and a second processor (**308**); and

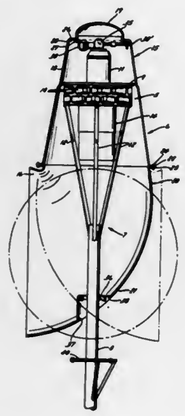
outputting a signal when the code is to be read by the second processor, which signal is output on another output lead that is connected in parallel to the matrix and the second processor.

4,554,531

OMNIDIRECTIONAL SIREN

James E. Biersach, 5231 W. Parkview Dr., Mequon, Wis. 53092

Filed Dec. 27, 1982, Ser. No. 453,702
Int. Cl.⁴ G08B *3/00*
U.S. Cl. 340—387 **7 Claims**



1. A siren of the type comprising an elongated horn which has a closed end and which flares along its length from said closed end to a wide mouth at its opposite end, a sound generator in the closed end portion of said horn comprising an annular siren stator having an axis, an inlet, radially outwardly opening outlets and a siren rotor in said siren stator rotatable on said axis to draw air through said inlet and intermittently expel it through said outlets to generate sound energy that is concentrated by said horn and is emitted from the mouth thereof, and a motor by which the siren rotor is rotatably driven, said siren being characterized by:

A. an upright post;

B. stator supporting means on an upper portion of said post securing the siren stator in fixed coaxial relation to the post;

C. said motor being mounted on top of the siren stator;

D. said inlet being at the bottom of the siren stator;

E. the closed end portion of said horn comprising

(1) a frustoconical downwardly flaring portion surrounding said motor and coaxially surrounding the siren stator in radially spaced relation thereto and

(2) a dome-like portion extending across and closing the upper end of said frustoconical portion, said closed end portion having in its interior a downwardly facing annular surface concentric to said axis;

F. the horn having a lower portion into which said frustoconical portion opens unrestrictedly downwardly and which curves downwardly and to one side of said post from said frustoconical portion, said lower portion

(1) defining a mouth that is wholly spaced below the sound generator and opens radially to said one side of the post and

(2) having a bottom wall portion wherein there is an aperture through which the post extends; and

G. horn supporting and drive means enclosed within the closed end portion of the horn and engaging said annular surface

(1) for supporting the horn and confining it to rotation about said axis and the post and

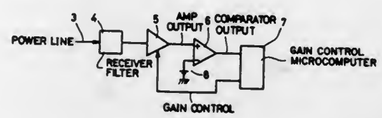
(2) for driving the horn for such rotation.

4,554,532

AUTOMATIC RECEIVER GAIN CONTROL IN CENTRALIZED MONITOR SYSTEM

Masahiro Ise, Kashihara; Hidehiko Tanaka, Tenri; Katsuyuki Machino, Nara; Toshiyuki Matsubara, and Teiji Terasaka, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1983, Ser. No. 455,770
Claims priority, application Japan, Jan. 11, 1982, 57-3178
Int. Cl.⁴ G08B *23/00;* **H04M** *11/04*
U.S. Cl. 340—501 **8 Claims**



1. An automatic receiver gain control in a centralized monitor system having a master monitoring panel which periodically communicates with one or more remote monitoring units over a channel, comprising:

receiving means for monitoring said channel to receive signals present thereon;

amplifier means, operatively connected to said receiving means, for amplifying said signals monitored thereby to develop amplified signals at its output, the amount of amplification of said amplifier means being controllably variable;

means for detecting the presence of said communications within said amplified signals, said communications being represented by one and zero states where one of said states corresponds to the presence of a voltage and the other state by the absence of a voltage; and

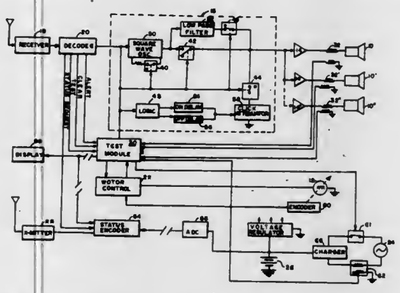
control means, responsive to said means for detecting, for controlling the amount of amplification of said amplifier means, said control means increasing the amount of amplification of said amplifying means if no communication is sensed for a period of time greater than the period between periodic communications, said control means decreasing the amount of application if a communication is sensed which has no states corresponding to the presence of voltage therein for a period of time greater than the period between periodic communications.

4,554,533

METHOD OF AND APPARATUS FOR THE TESTING OF WARNING SYSTEMS

John J. Bosnak, Old Saybrook, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.

Filed Sep. 26, 1983, Ser. No. 535,579
Int. Cl.⁴ G08B *29/00;* **H04M** *5/00*
U.S. Cl. 340—514 **20 Claims**



1. In an electronic siren system, the system including a tone generator and at least a first loudspeaker, the loudspeaker having a voice coil and being responsive to the energization of the tone generator to produce an audible sound commensurate with the output frequency of the tone generator, the improvement comprising:

means for generating a test command signal

means responsive to the test command signal for energizing the tone generator and varying the output frequency of the tone generator from the audible range to a frequency above the audible range;

means for sensing the flow of current at the frequency above the audible range through the loudspeaker voice coil and producing a signal indicative of such current flow; and

means for storing the signal produced by said sensing means.

4,554,534

CONTROL CIRCUIT FOR A MULTI-BLOW FORMING PROCESS

William J. Jones, Toledo, Ohio, assignor to Helm Instrument Company, Maumee, Ohio

Filed Feb. 22, 1983, Ser. No. 468,481
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—665 **32 Claims**

1. A control circuit for measuring the forces applied to a workpiece during two blows of a multi-blow forming process comprising:

load sensor means for generating a signal representing the amount of force applied to the workpiece during each blow of the forming process;

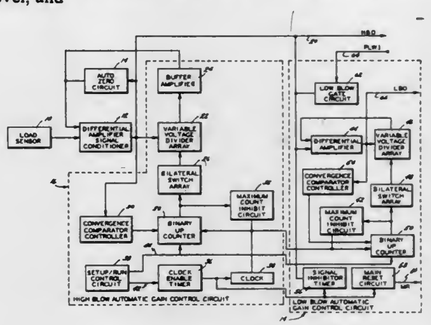
first amplifier means connected to said load sensor means for generating a first amplified signal;

first gain control means connected to said first amplifier means for adjusting the amount of amplification of said first amplified signal to a first predetermined level;

logic control means connected to said first amplifier means for generating a first enable signal during a first blow in the forming process and for generating a second enable signal during a second blow in the forming process;

second amplifier means connected to said first amplifier means for generating a second amplified signal;

second gain control means connected to said second amplifier means for adjusting the amount of amplification of said second amplified signal to a second predetermined level; and



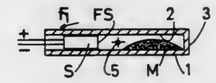
means responsive to said first and second amplified signals and said first and second enable signals for indicating the forces applied to the workpiece during the first and second blows of the forming process.

4,554,535

METHOD AND APPARATUS FOR OBTAINING ELECTRICAL SIGNALS CORRELATED WITH THE POSITION OF A MASS OF MERCURY IN INSTRUMENTS AND THE LIKE

Pier-Luigi Floris, and Yvonne O'Toole, both of Via Pitzolo 23, I 09100 Cagliari, Italy

Filed Jul. 20, 1983, Ser. No. 515,526
Claims priority, application Italy, Jul. 27, 1982, 9482 A/82
Int. Cl.⁴ G08B *21/00;* **G01L** *9/10*
U.S. Cl. 340—689 **3 Claims**



1. A method of obtaining electrical signals indicative of the tilt angle with respect to the horizontal of an object tiltable about a horizontal axis which method comprises: providing a straight tube of non-metallic material with one end thereof closed; partially filling said tube with a mercury mass; fitting a proximity sensor fluid-tight into the other end of said tube; affixing said tube to said tiltable object with said tube in horizontal position; including said proximity sensor in a high frequency oscillating circuit; deriving from said oscillating circuit one or more signals corresponding to the power absorbed by the oscillating circuit at the various positions of said mercury mass relative to the active face of said sensor.

4,554,536

LOGIC TIMING DIAGRAM DISPLAY APPARATUS

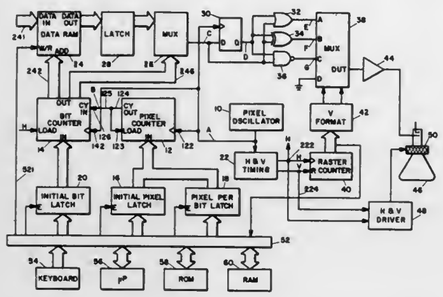
Ronald M. Jackson, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 23, 1983, Ser. No. 478,114
Int. Cl.⁴ G06F *3/14*
U.S. Cl. 340—747 **10 Claims**

1. A display apparatus for displaying a logic timing diagram on a raster scan type display device, comprising:

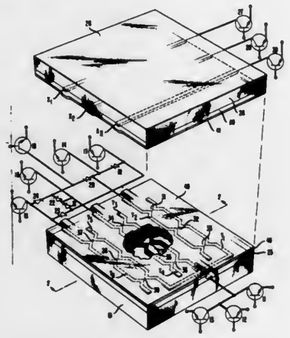
memory means for storing representations of a logic signal consisting of digital bits to be displayed, the stored representations of said logic signal in said memory means being read repeatedly in synchronism with the raster scan opera-

tion of said display device, wherein a predetermined number of bits are read for each of a plurality of raster lines;
delay means for delaying the logic signal from said memory means by a predetermined time shorter than the time for one bit of the logic signal to be read from said memory means to provide a delayed logic signal; and



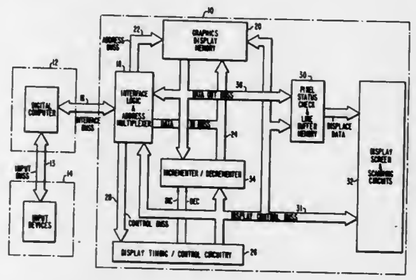
logic gate means coupled to said memory means and said delay means to receive the logic signal from said memory means and the delayed logic signal from said delay means for generating an intensity control signal comprising blanking levels and turn-on levels for said raster scan device.

4,554,537
GAS PLASMA DISPLAY
George W. Dick, Sinking Spring, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 27, 1982, Ser. No. 437,154
Int. Cl.⁴ G09F *9/313*
U.S. Cl. 340—775 **12 Claims**



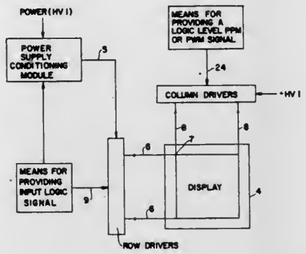
12. A display device comprising:
first and second substrates placed so as to define a gap region between them;
a gas capable of forming a glow discharge occupying the gap;
first and second arrays of electrodes formed in the gap region, covered by dielectric layers, and positioned so as to form crosspoint regions between the electrodes of the two arrays, said first array comprising a plurality of at least pairs of electrodes spaced in at least the crosspoint regions so that a glow discharge may be sustained at the surface of the dielectric between the electrodes of each pair;
means for supplying a voltage selectively to the electrodes of the first and second arrays in order to select pairs of electrodes of the first array for initiation and extinction of a display glow discharge at desired crosspoint regions by accumulation of charge on the portions of the dielectric over the selected electrodes of the first and second array;
means for supplying a voltage to another electrode in the first array in the desired crosspoint region sufficient to transfer the charge accumulated over the electrode in the second array to the dielectric portion over the said another electrode; and
means for supplying a voltage to both electrodes of each pair of electrodes in the first array to sustain glow discharges between the pairs of electrodes selected for glow discharges at the desired crosspoint regions.

4,554,538
MULTI-LEVEL RASTER SCAN DISPLAY SYSTEM
Matthew J. Bieneman, Middle River, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 25, 1983, Ser. No. 498,212
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—799 **6 Claims**



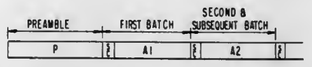
2. A graphics display system including means for non-destructive relocation of image elements shared by a plurality of images, comprising:
(a) a display screen divided into a matrix of display elements (pixels), during normal operation each of said display elements being used to display an image having a first illumination state, all other display elements having a second illumination state;
(b) an addressable multiple storage location digital memory with each of said display elements being associated with a specific storage location, each of said storage locations providing storage capacity for a multi-bit digital number, a selected value of said stored digital number corresponding to said first illumination state, each additional unique binary value corresponding to said second illumination state and to a unique number of images intersecting at and sharing a display element associated with said storage location;
(c) first control means for selectively reading digital numbers from said digital memory to generate a raster scan video signal;
(d) means for coupling said video signal to said display screen to display a selected image;
(e) second control means for selectively changing the value of digital numbers stored in said digital memory to change the number of independent images associated with said digital number.

4,554,539
DRIVER CIRCUIT FOR AN ELECTROLUMINESCENT MATRIX-ADDRESSED DISPLAY
Steven P. Graves, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 8, 1982, Ser. No. 440,116
Int. Cl.⁴ G09G *3/30*
U.S. Cl. 340—805 **8 Claims**



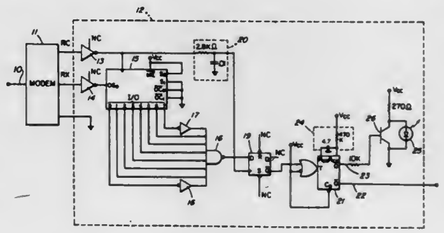
1. A driver circuit for a thin film AC electroluminescent matrix-addressed display comprising:
row drivers having switching means for applying a timed ramp voltage to a selected row of said display;
a single power supply conditioning module for providing all said row drivers with the same voltage input;
means for providing an input logic signal to said row driver, said logic signal being referenced to said conditioning module;
a column driver having means for switching selected columns from a first to a second voltage, said first voltage being insufficient and said second voltage being sufficient to cause electroluminescence at a selected pixel in said display when combined with said ramp voltage; and
a means for providing an input logic level pulse-modulated signal to said column driver, whereby said column switching is timed to coincide with a selected voltage from said ramped voltage and thereby to produce a differential column and row voltage at said selected pixel that provides the desired brightness at said selected pixel.

4,554,540
SIGNAL FORMAT DETECTION CIRCUIT FOR DIGITAL RADIO PAGING RECEIVER
Toshihiro Mori, and Koichi Nagata, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Japan
Filed Nov. 19, 1982, Ser. No. 443,004
Claims priority, application Japan, Nov. 19, 1981, 56-185762
Int. Cl.⁴ H04Q *7/00*; H04B *1/16*; G08B *29/00*; H04L *7/00*
U.S. Cl. 340—825.44 **8 Claims**



1. A signal detection circuit for a digital radio paging receiver, including means for receiving and demodulating a carrier wave modulated with a calling signal which includes a synchronization codeword having n bits, n being an integer not less than 2; register means having m stages for storing the demodulated output in response to clock pulses having a frequency f_s, m being an integer not less than 2; means for generating said clock pulses; combination circuit means, including at least one inverter circuit and at least one direct connection which are respectively coupled to the outputs of said register means such that outputs of said combination circuit means become a predetermined logical level when said register means stores said synchronization codeword;
scanning means for sequentially scanning said outputs of said combination circuit means in response to a scan signal of a frequency kf_s, k being equal to or greater than n; and
means for determining whether said synchronization code word has been received, in response to output of said scanning means.

4,554,541
FLAG DETECTION CIRCUIT
Jonas R. Bielkevicius, Newton, and Paul M. Schmitt, Needham, both of Mass., assignors to GTE Communications Products Corporation, Stamford, Conn.
Filed Sep. 12, 1983, Ser. No. 531,516
Int. Cl.⁴ H04Q *00/00*
U.S. Cl. 340—825.68 **4 Claims**



1. A flag detection circuit for detecting the binary flag "01111110" serially transmitted through a telecommunication channel, comprising:
receiving means for receiving serial digital bits from said telecommunication channel;
clock means for providing clock pulses synchronized with said digital signals;
an octal shift register arranged with said receiver means and said clock means for storing the eight most recent consecutive bits from said telecommunication channel and having an eight bit output at which the eight stored bits appear in parallel;
a NAND gate having an eight bit input coupled to the eight bit output of said octal shift register and having an output; said eight bit input has a most significant bit input and a least significant bit input;
a first inverter interposed in the most signifcant bit input of said NAND gate; and
a second inverter interposed in the least significant bit input of said NAND gate;
said NAND gate arranged to provide a logic "0" output upon the presence of all "1" inputs.
a latched gate having an input coupled to the output of said NAND gate; and
a delay circuit interposed between said clock means and said latched gate for delaying said clock pulses;
said latched gate having an output arranged to provide a logic "1" at said output of said latched gate upon the presence of a logic "0" input and a delayed clock pulse, said logic "1" indicative of a detected flag.

4,554,542
GUARD TONE CAPTURE METHOD
Arman V. Dolikian, Palatine, Ill., assignor to Motorola, Inc., Rolling Meadows, Ill.
Filed Dec. 10, 1982, Ser. No. 448,457
Int. Cl.⁴ H04B *1/16*; H04Q *1/38*
U.S. Cl. 340—825.76 **14 Claims**

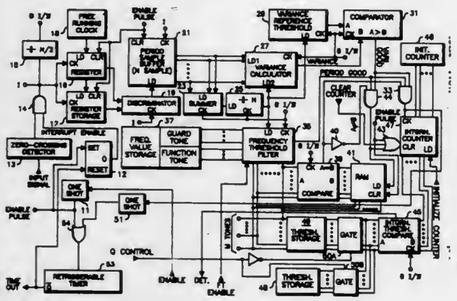
1. A decoder for receiving and decoding a series of coded messages wherein a first amplitude of a particular frequency ends a first coded message and a second amplitude of said particular frequency begins a second coded message, said decoder comprising,
receiver means for receiving said coded message,

detector means responsive to said receiver means for detecting said particular frequency, said detector means having at least first and second states, wherein said detector means can detect said first and second amplitudes of said particular frequency in said first state and said second amplitude of said particular frequency in said second state,

sensor means responsive to said receiver means for detecting a threshold amplitude of said coded message,

control means responsive to said detector means and said sensor means to control the state of said detector means,

function means response to said receiver means and enabled by said control means,



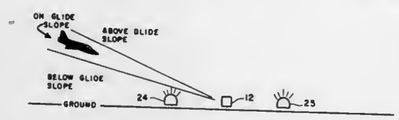
said control means being responsive to detection of said first amplitude of said particular frequency by said detector means to hold said function means in an enabled condition, said control means also being responsive to detection of a threshold amplitude by said sensor means to change said detector means from said first state to said second state thus allowing said detector means to detect said second amplitude of said particular frequency, said control means disabling said function means in response to a detection of said second amplitude of said particular frequency by said detector means in said second state.

4,554,543

GLIDE SLOPE INDICATOR SYSTEM

Ivan S. Wyatt, Gilbert, Ariz., and Harry L. Task, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,392
Int. Cl.⁴ G08C *5/00*
U.S. Cl. 340—948 **6 Claims**



3. A visual approach indicator system which utilizes a source of light such as landing lights emitted by an incoming aircraft to guide the aircraft along a desired glide slope to a runway, comprising:

a spherical objective lens of the converging type oriented with its optical axis in the direction of the incoming aircraft;

a cylindrical lens placed adjacent to said spherical objective lens with the height of the cylinder being in the vertical direction and perpendicular to said optical axis such that said spherical/cylindrical lens combination shapes the light from the light source into a line image;

a photodiode array in which each photodiode is electrically independent from each other, said array being mounted at the back focal plane of said objective lens such that said line image strikes and energizes at least one of the photodiodes in said array;

logic means connected to said photodiode array such that for each energized photodiode a determination is made as to whether said aircraft's position is above, below or on said desired glide slope by comparing said line image position with a reference position;

indicator means which includes at least two indicator lamps located on or adjacent to said runway; and

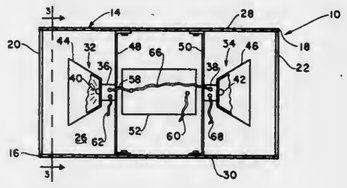
an interface/driver means coupled between said logic means and said indicator means for powering said indicator means to cause the lamps to flash, to burn steadily, or a combination of flashing and burning steadily, to communicate to the pilot of said aircraft whether the aircraft is above, below or on said desired glide slope.

4,554,544

DIFFUSE INCANDESCENT RUNWAY MARKER LIGHT APPARATUS FOR OVERT/COVERT OPERATION

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 536,142
Int. Cl.⁴ G08G *5/00*; B64F *1/18*
U.S. Cl. 340—953 **4 Claims**



4. Diffuse incandescent marker light apparatus for aiding overt or covert aircraft landing operation at an austere runway, comprising:

a. a housing having a pair of generally parallel top and bottom walls and a pair of generally parallel side walls interconnecting said top and bottom walls said walls defining a pair of open opposite ends of said housing;

b. a visible light diffusing plate mounted to said housing across a first of said ends;

c. an infrared light diffusing plate mounted to said housing across the second said end;

d. a pair of light socket bases mounted within said housing, each said base mounted near a corresponding diffusing plate;

e. an incandescent light bulb mounted in each said light socket base;

f. a frusto-conical shaped reflector mounted to each said light socket base and generally surrounding a said bulb, each said reflector opening outwardly toward the corresponding said diffusing plate for directing the light emanating from said bulb through said corresponding diffusing plate;

g. a d.c. battery operatively connected to said light bulbs for providing an electrical power source to said bulbs; and

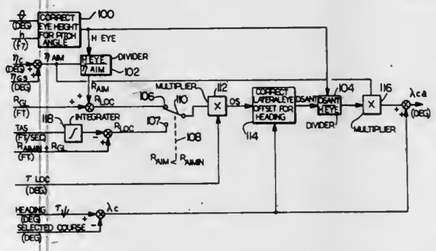
h. a three-position electrical switch mounted on the exterior of said housing and operatively interconnecting said battery and said light bulbs whereby at a first position of said switch power is provided to the light bulb near said visible light diffusing plate and the light bulb near said infrared light diffusing plate is off, at a second position of said switch power is provided to the light bulb near said infrared light diffusing plate and the light bulb near said visible light diffusing plate is off, and at a third position of said switch both said light bulbs are off.

4,554,545

CONFORMAL HEAD-UP DISPLAY

James R. Lowe, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 202,167, Oct. 30, 1980, Pat. No. 4,454,496. This application May 2, 1984, Ser. No. 606,021
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.⁴ G08G *5/00*; G01S *1/16*
U.S. Cl. 340—980 **11 Claims**



1. Apparatus for providing guidance information to an aircraft pilot, the aircraft having an attitude, location and motion relative to the earth, in the form of a conformal head-up display (HUD) which comprises:

means for generating an aircraft symbol on the display that simulates the attitude, location and motion of the aircraft relative to the earth;

means for generating symbols that simulate on the display selected ground cues in position and orientation which superimpose over actual selected ground cues as seen by the pilot when they are visible through the display; and

means for generating an aim symbol that is positioned on the display to provide a reference to which the aircraft symbol is directed for proper operation of the aircraft in selected flight modes

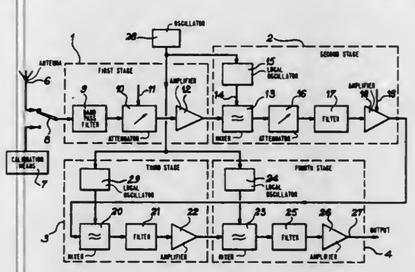
wherein lateral guidance control error is displayed to the pilot by the angle said aircraft signal is deflected laterally relative to a desired touch-down point on a visible runway.

4,554,546

RECEIVER FOR A SOUNDER PERMITTING THE DETECTION AND MEASUREMENT OF PHONOMENA LINKED WITH THE EARTHS ENVIRONMENT

Louis Herbreteau, Bretigny sur Orge, and Alain Le Roy, Vanves, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 18, 1982, Ser. No. 442,581
Claims priority, application France, Nov. 24, 1981, 81 21969
Int. Cl.⁴ G01S *13/95, 7/40*
U.S. Cl. 343—5 W **8 Claims**



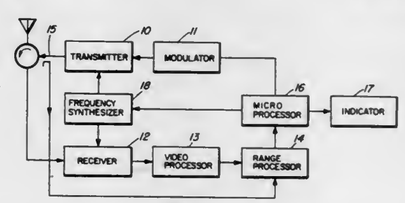
1. A receiver for a sounder for the detection and measurement of a phenomenon linked with the earth's environment, comprising: a reception channel having one input for receiving echo signals of electromagnetic signals emitted towards a phenomenon, means of calibrating the amplitude and frequency of signals to be received for providing a test signal of a predetermined amplitude and frequency, said reception channel comprising a first stage having in series means for filtering, attenuating and amplifying the echo signals received, a second stage connected in series with said first stage and comprising in series means for the frequency conversion, attenuation, filtering and amplification of the signals received from the first stage, and a third stage comprising in series means for frequency conversion, filtering and amplification of the signals received from the second stage, the attenuation means of the first and second stage being independently controllable for each frequency of the signals received, in such a way that the signals from the respective amplification means have an amplitude higher than the amplitude of distortions produced by the reception channel and the amplitude of noise signals received by the reception channel.

4,554,547

RANGE PROCESSOR FOR DME

Brendan J. Spratt, Boca Raton; David J. Pryor, N. Lauderdale; James B. Jones, Jr., Deerfield Beach; Dennis W. Davis, Boca Raton, all of Fla., and Richard V. Frazier, Jr., Boulder Heights, Colo., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 13, 1982, Ser. No. 449,064
Int. Cl.⁴ G01S *13/08*
U.S. Cl. 343—7.3 **8 Claims**



6. In airborne distance measuring equipment including a transmitter for transmitting interrogation signals to a ground based station and a receiver for receiving reply signals from said ground based station, a range processor comprising,

a source of clock pulses;

means providing a trigger signal indicating transmission of an interrogation signal by said distance measuring equipment;

a counter for accumulating a continuous count of said clock pulses, the operation of said counter being initiated by said trigger signal said counter providing a multiple bit binary digital output in parallel format;

means providing a detected video signal upon receipt by said distance measuring equipment of a reply signal from said ground based station;

first memory means of the random access type including a plurality of storage locations, said storage locations being addressed sequentially by accumulated count from said counter;

logic means for incrementing the contents of the particular storage location of said first memory means being addressed whenever said detected video signal appears and for decrementing the contents of said particular storage location being addressed if no detected video signal appears;

second memory means of the parallel load type for storing the output count of said counter;

means for loading in parallel into said second memory means said output count of said counter existing at the time of appearance of each said detected video signal;

means for generating a range gate signal whenever the con-

tents stored at a particular location of said first memory means exceeds a threshold value;

means controlled by said range gate signal for preventing storage by said second memory means of output count of said counter for detected video signals appearing later than said range gate signal; and

means for blocking output from said second memory means until said range gate signal has been generated.

4,554,548

SIDE-LOBE SUPPRESSING UNIT FOR A PULSE RADAR APPARATUS

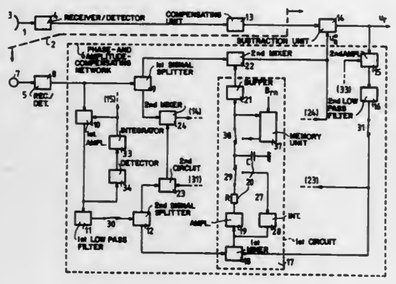
Albert Brilman, Bathmen, and Geert Koops, Haaksbergen, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Sep. 23, 1982, Ser. No. 421,936

Claims priority, application Netherlands, Oct. 2, 1981, 8104485

Int. Cl.⁴ G01S *3/16, 13/00, 7/28*

U.S. Cl. 343—379 **2 Claims**



1. A pulse radar apparatus having means for suppressing noise signals and continuous wave interference signals in a received signal including target returns, said means comprising:

(a) a main transmission channel electrically-connected to a directional antenna for the intermediate-frequency detection of said received signal; and

(b) an interference canceller electrically-connected to said main transmission channel for selecting, from the intermediate-frequency-detected signal, target returns received from the major lobe of the directional antenna radiation pattern, said interference canceller comprising an omnidirectional antenna, an auxiliary transmission channel electrically-connected to the omnidirectional antenna and including means for the intermediate frequency detection of the received signal, a phase and amplitude compensating network electrically-connected to the auxiliary transmission channel, and a subtraction circuit electrically-connected to the main transmission channel and the compensating network, said compensating network responding to output signals from the subtraction circuit and the auxiliary transmission channel by applying to the subtraction circuit output signals which are equal in phase and amplitude to signals applied to the subtraction circuit by the main transmission channel, insofar as the output signals of the main transmission channel are weaker than those of the auxiliary transmission channel;

characterized in that the phase and amplitude compensating network comprises a first circuit electrically-connected to the auxiliary transmission channel and adapted to receive only output signals of a predefined phase, and a second circuit electrically-connected to the auxiliary transmission channel and adapted to receive only output signals of a phase in quadrature with said predefined phase, each of the first and second circuits comprising a first mixer electrically-connected to the subtraction circuit and the auxiliary transmission channel, a filter electrically-connected to said first mixer, and a second mixer electrically-connected to said filter and the auxiliary transmission channel, said phase and amplitude compensating network including means for combining the output signals from the second mixers of the first and second circuits to obtain the output signals applied to the subtraction circuit;

said phase and amplitude compensating network further comprising switching means for interrupting at preset intervals the signal supply from the auxiliary transmission channel to the first mixer of each of said first and second circuits, and wherein the filter of each of said first and second circuits comprises a negative feedback unit operable during said preset intervals for producing a compensating voltage effecting adjustment of an existing offset voltage of the respective filter.

4,554,549

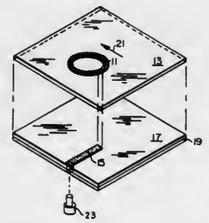
MICROSTRIP ANTENNA WITH CIRCULAR RING

Matthew Fassett, Billerica; John F. Toth, Reading; Michael L. Lewis, Arlington, and William F. Miccioli, Acton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 19, 1983, Ser. No. 533,836

Int. Cl.⁴ H01Q *1/38, 13/10*

U.S. Cl. 343—700 MS **1 Claim**



1. A radar antenna comprising:

(a) a first and a second dielectric sheet in abutting relationship one to the other;

(b) a ground plane printed on, and covering, the free surface of the first dielectric sheet;

(c) at least one antenna element printed on the free surface of the second dielectric sheet, such antenna element having the shape of a ring, the mean circumference of such ring being equal to one wavelength of radio frequency energy at a desired frequency and in the effective air/dielectric medium;

(d) a feed line printed on an abutting surface of one of the dielectric sheets, such feed line being tangential to the antenna element and being terminated in an open circuit; and

(e) means for applying radio frequency energy to the feed line to couple such energy capacitively to the at least one antenna element.

4,554,550

RESONANT WAVEGUIDE APERTURE MANIFOLD

Alfred R. Lopez, Commack, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed May 23, 1983, Ser. No. 497,349

Int. Cl.⁴ H01Q *13/10*

U.S. Cl. 343—771 **12 Claims**

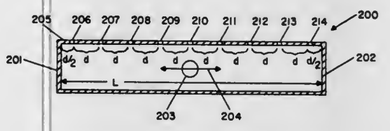
1. An apparatus for monitoring radiated signals, said apparatus comprising:

(a) a transmission line for directing electromagnetic energy in a predetermined frequency range, said line having first and second ends;

(b) means for sampling the radiated signals, said means including elements associated with said line;

(c) a transducer associated with said line for converting energy having a frequency within the predetermined frequency range into an electrical signal having a corresponding frequency;

(d) said transducer having an impedance which is matched to said line as if said line had substantially non-reflecting terminations coupled to the first and second ends thereof;



(e) first means for creating a short circuit at the first end of said line; and

(f) second means for creating a short circuit at the second end of said line whereby said transducer is not impedance-matched to said first and second means so that the transducer output is independent of changes in temperature and frequency within the desired frequency range.

4,554,551

ASYMMETRIC RESONANT WAVEGUIDE APERTURE MANIFOLD

Richard F. Frazita, St. James, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed May 23, 1983, Ser. No. 497,350

Int. Cl.⁴ H01Q *13/10*

U.S. Cl. 343—771 **12 Claims**

1. An apparatus for monitoring radiated signals, said apparatus comprising:

(a) a transmission line for directing electromagnetic energy in a predetermined frequency range, said line having first and second ends;

(b) means for sampling the radiated signals, said means including groups of elements associated with said line wherein adjacent groups have different phase, each group having N elements wherein adjacent elements within each group have different phases, where N is a positive even integer greater than one;

(c) a transducer associated with said line for converting energy having a frequency within the predetermined frequency range into an electrical signal having a corresponding frequency;

(d) said transducer having an impedance which is matched to said line as if said line had substantially non-reflecting terminations coupled to the first and second ends thereof;

(e) first means for creating a short circuit at the first end of said line; and

(f) second means for creating a short circuit at the second end of said line whereby said transducer is not impedance-matched to said first and seconds means so that the transducer output is independent of changes in temperature and frequency within the desired frequency range.

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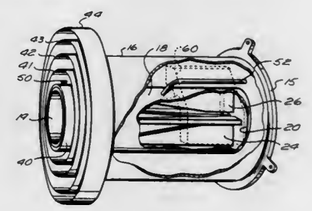
ANTENNA FEED SYSTEM WITH CLOSELY COUPLED AMPLIFIER

James L. Alford, and Robert E. Terry, both of Rancho Palos Verdes, Calif., assignors to Gamma-f Corporation, Torrance, Calif.

Filed Dec. 21, 1981, Ser. No. 333,016

Int. Cl.⁴ H01Q *13/02*

U.S. Cl. 343—786 **6 Claims**



1. A system for cooperation with a microwave antenna that receives signals in a group of channels, with the signals in adjacent channels being cross-polarized relative to each other, for passing amplified signals to associated processing equipment with low interference between the cross-polarized channels, comprising:

a waveguide feed coupled to the antenna and responsive to wave energy focused thereby, the waveguide feed comprising a waveguide of circular cross section disposed along a central axis and having an input end and an output end, the waveguide including means defining an electrical short across the output end, a wall and a plurality of internal orthogonally disposed ridges mounted within the wall to define orthogonal planes of preferred mode wave propagation, the internal ridges being of decreasing height in a direction toward the input end;

first and second orthogonally disposed probes coupled to the waveguide feed, each of the probes extending into the internal waveguide ridges to transmit wave energy from the waveguide, being in alignment with a different preferred propagation plane and extending through the wall of the waveguide feed with vertically polarized waves being detected at the first probe and horizontally polarized waves being detected at the second probe;

a housing disposed about the waveguide;

amplifier means mounted between the waveguide and the housing and directly connected to the probe means with no waveguide intermediate the amplifier means and probe means for amplifying signals from at least one of the probe means; and

means for adjustably positioning the waveguide within the housing, so as to permit the orientation of the waveguide to correspond to the angle of polarization of incoming wave energy.

4,554,553

POLARIZED SIGNAL RECEIVER PROBE

Fay Grim, 565 Newburgh, Port Charlotte, Fla. 33952

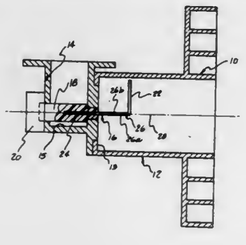
Filed Jun. 15, 1984, Ser. No. 621,119

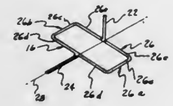
Int. Cl.⁴ H01P *1/165;* **H01Q** *13/02*

U.S. Cl. 343—786 **9 Claims**

1. A polarized signal receiver comprising a first waveguide of circular cross-section for receiving polarized electromagnetic signals applied to an open end thereof, said first waveguide having an axis of symmetry and another end closed by a rear wall, a second waveguide for transmitting polarized signals, said second waveguide having an axis of symmetry and said first and second waveguides being disposed with their axes of symmetry at a substantially 90° angle, a dielectric rod mounted through the rear wall of said first waveguide, said dielectric rod being rotatable around an axis of rotation aligned with the axis of symmetry of said first waveguide, a signal

transferring probe fixedly mounted in said dielectric rod for rotation thereby about the axis of rotation thereof, said signal transferring probe comprising a receiver probe portion disposed in said first waveguide in a plane orthogonal to the axis of symmetry of said first waveguide for receiving one of the polarized signals in said first waveguide, a signal launch probe portion extending into the second waveguide substantially perpendicular to the axis of symmetry of said second waveguide, said signal launch probe portion being disposed concentric within said dielectric rod, and a transmission line portion





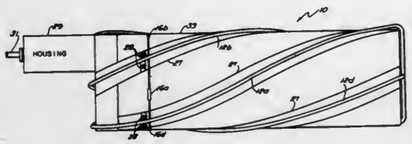
connecting said signal receiver probe portion to said signal launch probe portion, said transmission line portion having two integral oppositely directed and symmetrical generally U-shaped branch portions forming a rectangle disposed in said first waveguide in a single plane along the axis of symmetry of said first waveguide and perpendicular to the plane in which said signal receiver probe portion is disposed, and means for controllably rotating said dielectric rod and said signal transferring probe for transferring a selected one of said polarized signals from said first waveguide to said second waveguide at a peak of signal amplitude in said second waveguide.

4,554,554

QUADRIFILAR HELIX ANTENNA TUNING USING PIN DIODES

Ralph C. Olesen, Waterford, Conn.; Robert A. Sainati, Bloomington, Minn.; John J. Gropelli, Jr., Pawcatuck, and Andrew J. Stanland, Old Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1983, Ser. No. 528,825
Int. Cl.⁴ H01Q *1/36*
U.S. Cl. 343—895 **12 Claims**



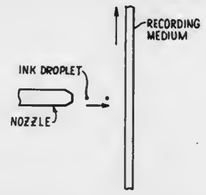
1. An antenna system comprising:
a resonant quadrifilar helix antenna having a plurality of arms with said arms grounded at a first predetermined location on each of said plurality of arms;
bias means for providing an electrical signal to said resonant antenna; and
short circuit means connected to said resonant antenna at a second predetermined location on each of said plurality of arms, said short circuit means for receiving said electrical signal and for providing a short circuit to ground at said second predetermined location on each of said plurality of arms.

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RECORDING METHOD BY USE OF INKS

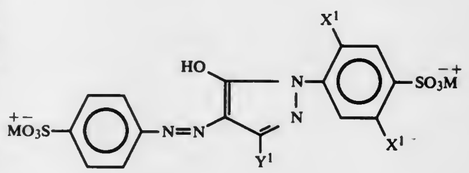
Tamotsu Aruga, Kamakura; Tadashi Fujii, Yokohama; Kakuji Murakami, Kawasaki, and Eiichi Akutsu, Ichikawa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 560,089
Claims priority, application Japan, Dec. 10, 1982, 57-215486
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—1.1 **14 Claims**



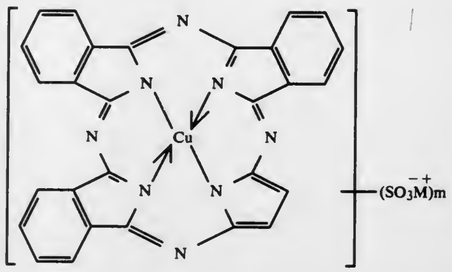
1. A recording method which comprises imagewise applying (1) an aqueous ink comprising at least one dye selected from the group consisting of the following dyes (a) through (d) onto (2) a recording medium containing at least one component selected from the group consisting of water soluble metal salts in which the metal has a valence of 2 or more, alkyl amine salts, polyamines and quaternary ammonium salts, whereby to form an image on said recording medium,

(a) a pyrazolone azo dye of the following formula I



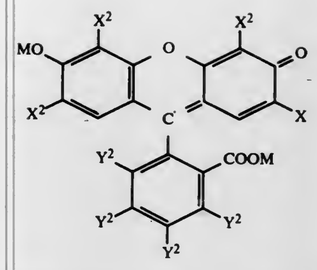
where M^+ represents Li^+, Na^+, K^+, Cs^+, NH_4^+ or NR_4^{1+} wherein R^1 represents an alkyl group, X^1 represents F, Cl, Br, I or hydrogen, and Y^1 represents hydrogen, an alkyl group or —COO—M^+;

(b) a phthalocyanine sulfonate dye of the following formula II

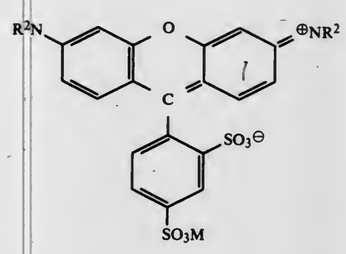


where M^+ is the same as that defined in the formula I, and m m is an integer of 2 to 4;

(c) a xanthene dye of the following formula III or IV

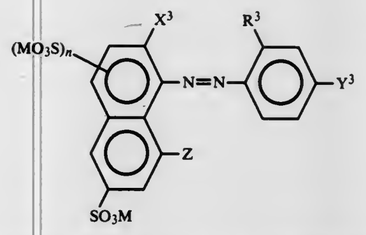


where M represents Li, Na, K, Cs, NH_4 or NR_4^1 wherein R^1 represents an alkyl group, X^2 represents Br, I or Cl, and Y^2 represents Br, I or Cl;

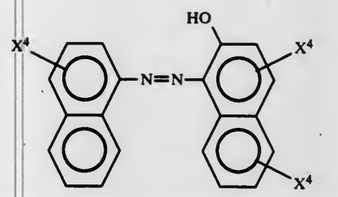


where M is the same as that in the formula III, and R^2 represents hydrogen or an alkyl group;

(d) an azo dye of the following formula V or VI



where n is an integer of 0 or 1, X^3 represents hydrogen or —NH_2, Y^3 represents hydrogen or —NHR^1 wherein R^1 represents an alkyl group, Z represents hydrogen, —OH or —COOM, and R^3 represents hydrogen, an alkyl group or —SO_3M wherein M is the same as that defined in formula III;



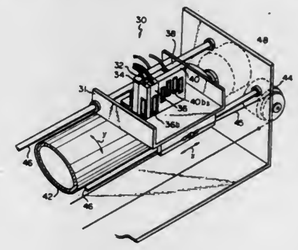
wherein X^4 represents hydrogen, —SO_3M or —COOM in which M is the same as that defined in the formula III.

4,554,556

COLOR PLOTTER

Shinichi Hirata, Yamato, and Takuro Isayama, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,423
Claims priority, application Japan, May 11, 1982, 57-78773
Int. Cl.⁴ G01D *9/28, 15/18*
U.S. Cl. 346—49 **10 Claims**



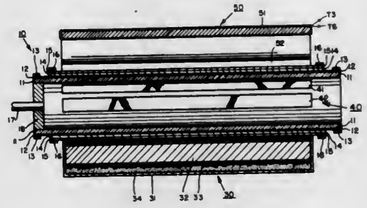
1. A color plotter comprising:
plotting means for plotting graphic data on a sheet at a spacing therefrom;
a carriage for mounting said plotting means thereon;
first drive means for driving said carriage in a reciprocal movement in a first predetermined direction;
second drive means for driving the sheet in a reciprocal movement in a second predetermined direction which is perpendicular to the first direction;
control means for controlling the plotting means, the first drive means and the second drive means in a predetermined mode in which the graphic data is plotted in a colored pattern on the sheet; and
character printing means for printing out character data on the sheet at a spacing therefrom, said character printing means being mounted on the carriage, the control means controlling the plotting means, the first drive means, the second drive means and the character printing means selectively in the first predetermined mode; and in a second predetermined mode in which the character data is printed out on the sheet in a dot matrix;
the plotting means comprising ink ejection head means for ejecting ink of a plurality of colors each from a nozzle allocated exclusively thereto.

4,554,557

THERMOMAGNETIC PRINTER

Toshifumi Kimoto; Hidemasa Todoh; Teruhiko Itami, and Koichi Saitoh, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 482,612, Apr. 6, 1983, abandoned. This application Apr. 22, 1985, Ser. No. 725,518
Claims priority, application Japan, Apr. 8, 1982, 57-58499
Int. Cl.⁴ G01D *15/06*
U.S. Cl. 346—74.4 **8 Claims**



1. A thermomagnetic printer comprising:

a cylindrical recording drum rotating in a fixed direction, said recording drum including a transparent cylindrical base member, said base member being provided with a transparent electrically conductive layer on the surface thereof, said electrically conductive layer being provided with a photoconductive layer on the surface thereof, said photoconductive layer being provided with a magnetic recording layer of low Curie temperature on the surface thereof,

first and second electrodes connected to said electrically conductive layer and said magnetic recording layer, respectively, said first and second electrodes being provided at an end portion of said recording drum,

electric power supplying means for applying electricity between said electrically conductive layer and said magnetic recording layer through said first and second electrodes,

magnetic field applying means fixedly disposed at the vicinity of said magnetic recording layer, for applying a magnetic field to said magnetic recording layer,

light emitting means, fixedly disposed inside said transparent base member and operative as said recording drum rotates, for irradiating light representing an image to be reproduced, through said transparent base member and said transparent electrically conductive layer, onto portions of said photoconductive layer adjacent to portions of said magnetic recording layer to which said magnetic field is applied,

developing means for performing development of a magnetic latent image formed by the magnetization effect on portions of said magnetic recording layer to which said magnetic field is applied, said portions being selectively heated beyond the Curie point by said applying of electricity from said electric power supplying means and by said irradiation of light by means of said emitting means, said selectively irradiated portions becoming magnetized as they rotate away from the location of light irradiation within said magnetic field, said developement being performed by coating magnetic toner to said magnetized portions as said recording drum rotates, and

transferring means for transferring the developed image onto a paper.

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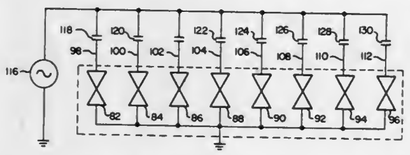
FLUID JET PRINT HEAD

William R. Beaudet, Melbourne, Fla.; Mark A. Pepper, Plano, and David H. Rester, Dallas, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 496,329, May 19, 1983, abandoned. This application Jul. 16, 1984, Ser. No. 630,783

Int. Cl.⁴ G01P *15/18*

U.S. Cl. 346—75 **39 Claims**



37. A fluid jet print head for producing a plurality of jet drop streams of fluid at a predetermined frequency, comprising,

manifold means defining an elongated cavity therein, said cavity extending in its direction of elongation a distance not equal to an integer multiple of the wavelength of pressure waves through the fluid at the predetermined frequency,

an orifice plate, defining a plurality of orifices arranged in a row and mounted on the manifold means such that said orifices communicate with said cavity, and

stimulator means mounted in said cavity and spaced from said orifice plate, said stimulator means including a piezoelectric transducer which is elongated generally in the direction of elongation of said cavity, said transducer defining a plurality of slots which extend alternately from the side of said transducer facing said orifice plate and from the opposite side of said transducer partially therethrough and spaced along said transducer, said slots being in planes substantially perpendicular to said orifice plate and to the direction of elongation of said transducer, and said transducer extending a distance in its direction of elongation which is at least one wavelength greater than the length of said row of orifices.

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THERMAL PRINT HEAD

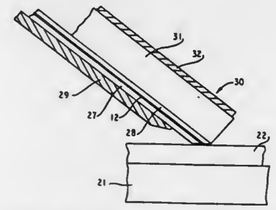
John S. Heath, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,104

Claims priority, application United Kingdom, Jun. 30, 1982, 82303425

Int. Cl.⁴ G01D *15/10;* **B41J** *3/02*

U.S. Cl. 346—76 PH **7 Claims**



1. A print head assembly for non-impact printing comprising a body portion supporting a printed circuit print head formed as a plurality of electrodes on an insulating substrate, the electrodes extending across a portion of the substrate and having a first plurality of said electrodes terminating at one end thereof as a closely-spaced group of electrodes defining a line of print elements of predetermined size and print density, the body portion carrying a corresponding first plurality of conductors each disposed for unique one-to-one connection to said first plurality of electrodes, characterized in that the body portion is constructed to receive interchangeably any one of a plurality of such printed circuit print heads and includes registration means operable during installation of a head to control its position with respect to said body portion in an attempt to bring said electrodes on the head into the required registration with the conductors on the body portion and means operable to exert a clamping force on an installed print head to establish and maintain ohmic contact between any such electrodes and conductors in registration, said print head having an additional printed circuit electrode arranged, when the head is installed on said body portion, to contact a further conductor on the body portion, said further conductor being provided with two printed circuit guard conductors, on on each side of said further conductor and equal distant therefrom, the width of the additional electrode or the head and the spacing of the guard conductors, from the further conductor being such that lateral displacement of the installed head in either direction by more than a predetermined acceptable amount results in bridging, by said further electrode, of the gap between the further conductor and one of other of the guard conductors.

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SIDE PRINTING APPARATUS

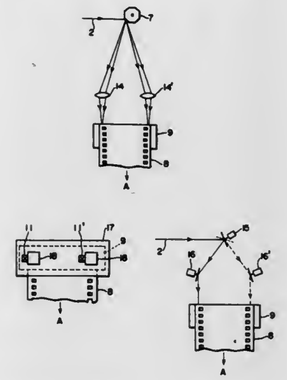
Takeshi Kanaoka, and Shigehisa Shimizu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 21, 1983, Ser. No. 554,115

Claims priority, application Japan, Nov. 25, 1982, 57-206520

Int. Cl.⁴ G01D *9/42;* **G03B** *17/24*

U.S. Cl. 346—108 **6 Claims**



1. A side printing apparatus for providing latent images of characters, numerals, symbols and the like on a photosensitive product moving with continuous motion, said apparatus comprising:

an oscillator for emitting a beam of laser light;

means for modulating said beam of laser light upon passing therethrough;

means for deflecting said modulated beam of laser light in accordance with the angular disposition thereof so as to scan the surface of a photosensitive product in a direction perpendicular to that in which said photosensitive product moves with continuous motion;

means for selectively setting patterns of characters, numerals, symbols and the like, of which the latent images are required to be provided on said photosensitive product and simultaneously producing signals in accordance with said patterns selectively set;

means driven by said product for detecting a moved length of said photosensitive product and to produce corresponding signals; and

means for controlling said modulating means by said signals from said pattern setting means and said detecting means so as to provide said required latent images on said photosensitive product at predetermined locations.

4,554,561

MULTI-CHANNEL ELECTRO-OPTIC PRINTER FOR PRINTING PLURAL IMAGE LINES AT ONCE

Joseph J. Daniele, Pittsford, and Kwok-leung Yip, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1983, Ser. No. 484,038

Int. Cl.⁴ G01D *9/42*

U.S. Cl. 346—108 **10 Claims**

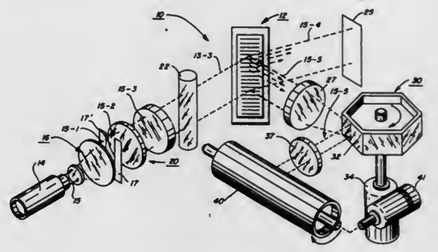
1. In an electro-optic printer combining high speed and high resolution including means for generating a beam of high intensity light and a recording member for recording images thereon, the improvement comprising:

(a) modulator means;

(b) optical means for transforming said beam into a relatively wide sheet of light impinging across said modulator means;

said modulator means modulating said sheet of light into a plurality of parallel beams for exposing multiple image lines at once on said recording member in response to a number of plural individual image signal inputs, each of said image signal inputs representing a separate image line, said modulator means having plural light valves arranged in a row and forming a plurality of discrete modulating sections, there being at least one light valve in each modulating section;

the width of said sheet of light being sufficient to impinge across all of said row of light valves at once,



the plane of said sheet of light being substantially parallel to the longitudinal axis of aid row of light valves;

(c) control means for operating the light valves of each modulating section individually in response to the image signal input associated with the modulating section to output a plurality of parallel exposure beams equal in number to said modulating sections; and

(d) means to simultaneously scan said plural exposure beams across said recording member and thereby write plural image lines on said recording member at once.

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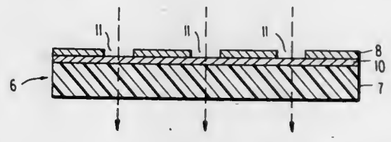
SCRATCH RESISTANT RECORDING MATERIALS FOR ELECTROEROSION PRINTING NOT REQUIRING A LUBRICANT OVERCOAT

Ali Afzali-Ardakani, Katonah; Mitchell S. Cohen, Ossining; Keith S. Pennington, Somers, and Krishna G. Sachdev, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,297

Int. Cl.⁴ G01D *15/34;* **B05D** *5/12;* **B32B** *7/00*

U.S. Cl. 346—135.1 **61 Claims**



61. An electroerosion recording material comprising, in combination,

a thin conductive layer which is erodable when contacted by a plurality of styli through which electrical signals pass during electroerosion recording,

a support layer, and

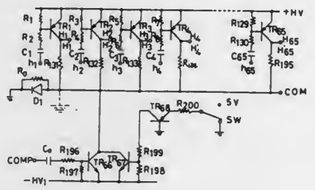
an intermediate layer located between said support layer and said thin conductive layer, said intermediate layer including a hard polymer and a particulate material, and further including 'Teflon' in an amount less than 5%, by weight, of said intermediate layer.

4,554,563

DRIVE SYSTEM IN A MULTI-PIN-ELECTRODE ELECTROSTATIC RECORDING APPARATUS

Fumikazu Nagano, Yamatokoriyama, and Hiroshi Shirakoshi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 200,135, Oct. 24, 1980, abandoned. This application Sep. 13, 1983, Ser. No. 531,587
Claims priority, application Japan, Oct. 25, 1979, 54-138517
Int. Cl.⁴ G01D *15/06*
U.S. Cl. 346—154 **3 Claims**



1. Means for driving a multi-pin-electrode recording head of an electrostatic recording system, said recording head including a plurality of pin electrodes and auxiliary electrodes positioned adjacent said pin electrodes, said means for driving comprising:

first means for applying a select voltage of a first polarity to a selected said pin electrode;

second means for applying an enable voltage having a polarity opposite said first polarity to said auxiliary electrode adjacent said selected pin electrode to produce a net voltage therebetween sufficient to form an electrostatic image on a dielectric layer of recording paper; and

third means for applying a compensation voltage to each of said auxiliary electrodes, said compensation voltage having said first polarity and being of sufficient magnitude to prevent the undesired formation of an electrostatic ghost image at undesired points.

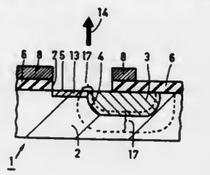
4,554,564

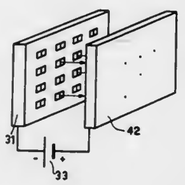
SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME, AS WELL AS A PICK-UP DEVICE AND A DISPLAY DEVICE HAVING SUCH A SEMICONDUCTOR DEVICE

Gerardus G. P. van Gorkom, and Arthur M. E. Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 170,363, Jul. 21, 1980, which is a division of Ser. No. 971,767, Dec. 21, 1978, Pat. No. 4,259,678. This application Feb. 5, 1982, Ser. No. 345,994
Claims priority, application Netherlands, Jan. 27, 1978, 7800987
Int. Cl.⁴ G01D *15/06*
U.S. Cl. 346—161 **7 Claims**

1. A method of displaying a pattern on a photoresist layer using electron lithography comprising the steps of generating an electron pattern from a matrix of cathodes formed in a semiconductor device comprising a silicon slice covered by a photoresist layer by applying control signals to selected ones of said cathodes to cause electron emission, and exposing said photoresist layer with said electron pattern, wherein each cathode of said matrix has two connection electrodes and an accelerating electrode, and wherein said cathodes providing electron emission are selected by applying a potential to their connection electrodes for generating electrons from each of said selected cathodes as an electron beam having an intensity





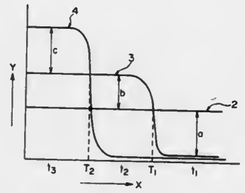
dependent on a potential applied to said accelerating electrode of that cathode.

4,554,565

METHOD OF PRODUCING REVERSIBLE THERMOCHROMIC DISPLAY

Tutomu Kito, Gifu; Norikazu Nakasuji, Aichi; Takashi Kataoka, Aichi; Hiroshi Inagaki, Aichi, and Yutaka Shibahashi, Aichi, all of Japan, assignors to Pilot Ink Co., Ltd., Aichi, Japan

Filed Apr. 6, 1984, Ser. No. 597,292
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—201 **3 Claims**



1. In a method for forming a reversible thermochromic display, the improvement comprising: forming a plurality of overlapping colored image layers on a support, at least one of said layers providing reversible thermochromic image, said layers being so arranged to provide images having different visual densities, and the image on one of said layers being visible at any particular temperature range, and upon temperature change, the image on any reversible thermochromic layer becoming paler or darker than the densities of other images to develop an image more discernible from said already visible image.

4,554,566

HEAT-SENSITIVE RECORDING MATERIAL

Junichi Yoneda, and Akira Igarashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 21, 1984, Ser. No. 653,108
Claims priority, application Japan, Sep. 21, 1983, 58-174977; Sep. 21, 1983, 58-174978; Sep. 28, 1983, 58-179782
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—207 **8 Claims**

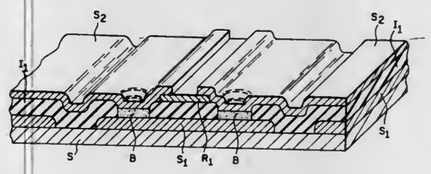
1. A heat-sensitive recording material comprising a heat-sensitive recording layer containing an electron-donating colorless dye and an electron-accepting compound, said heat-sensitive layer being provided on a support base, and said heat-sensitive layer containing from 5 to 50% by weight, based on the total weight of the heat-sensitive layer-constituting component, of polymer particles having an average particles size of from 0.03 to 16 microns, selected from the group consisting of ethylene-α-olefin copolymer particles, low density polyethylene particles, and ethylene-vinyl acetate copolymer particles.

4,554,567

SUPERCONDUCTIVE INTEGRATED CIRCUIT INCORPORATING A MAGNETICALLY CONTROLLED INTERFEROMETER

Don W. Jillie, Arlington, and Lawrence N. Smith, Lexington, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,278
The portion of the term of this patent subsequent to Feb. 7, 2001, has been disclaimed.
Int. Cl.⁴ H01L *39/22*
U.S. Cl. 357—5 **20 Claims**



1. A superconductive logic device comprising:

(a) a first layer of superconductive material, including at least one inductive loop of superconductive material for magnetic control and a ground plane, said loop and said ground plane coplanar with said first layer,

(b) a barrier layer overlaying said first layer,

(c) a second layer of superconductive material, superposed on said barrier layer such that at least two superconductive junctions are formed by said first and second superconductive layers and said barrier layer, whereby tunneling currents can flow therethrough between said superconductive layers, and

(d) a third layer of superconductive material including at least one inductive loop of superconductive material superposed with respect to said first and second superconductive layers with insulating means therebetween, conductively coupled to said two superconductive junctions, and responsive to inductive coupling from said inductive loop for magnetic control for biasing said superconductive junctions thereby interrupting at least a portion of said tunneling currents when a predetermined current is applied to said inductive loop for magnetic control.

12. A superconductive logic device comprising:

(a) a first layer of superconductive material, including at least one inductive loop of superconductive material for magnetic control and a ground plane, said loop and said ground plane coplanar with said first layer,

(b) a layer of insulating material overlaying said first layer, having openings therethrough defining a plurality of superconductive junctions,

(c) a barrier layer overlaying said openings

(d) a second layer of superconductive material, superposed on said barrier layer, such that at least two superconductive junctins are formed by said first and second superconductive layers and said barrier layer, whereby tunneling currents can flow therethrough between said superconductive layers,

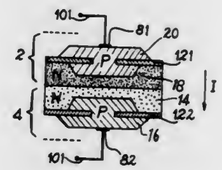
said second layer of superconductive material defining at least one inductive loop superposed with respect to said first superconductive layer, and responsive to inductive coupling from said loop for magnetic control for biasing said at least two superconductive junctions, thereby interrupting said tunneling currents when a predetermined current is applied to said inductive loop for magnetic control.

4,554,568

TEMPERATURE-COMPENSATED ZENER DIODE

Jacques Champon, Creteil; Bruno Maurice, Eguilles, and Michel Rouméguere, Gif sur Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 24, 1982, Ser. No. 391,919
Claims priority, application France, Jun. 30, 1981, 81 12846
Int. Cl.⁴ H01L *29/90*
U.S. Cl. 357—13 **5 Claims**



1. A temperature compensated Zener diode comprising:

a first pn junction;

a second pn junction distinct from said first junction wherein said first junction is joined to said second junction in such a way that said first pn junction can be forward-biased while said second pn junction is reverse-biased, and wherein

said first junction has a first p-type silicon layer containing no diffused metal impurities and wherein said first p-type silicon layer is deposed on a first n silicon substrate wherein said first n silicon substrate has a first doping and wherein said first silicon substrate contains diffused metallic impurities, and wherein

said second junction has a second p-type silicon layer deposed on a second n silicon substrate with said second n silicon substrate having a second doping distinct from said first doping and said second n silicon substrate contains no metallic impurities, and wherein said first and second substrates are in contact with each other and wherein a precise discontinuity in the structure of the Zener diode is formed by said contact between said first and second substrates.

4,554,569

INTEGRATED ELECTRON CIRCUITS HAVING SCHOTTKY FIELD EFFECT TRANSISTORS OF P- AND N-TYPE

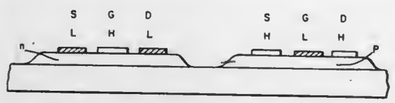
Per-Arne Tove, Malma Ringväg 36, S-752 46 Uppsala; Kjell Bohlin, Fänkålsgatan 23, S-754 47 Uppsala; Lars Stolt, Flogstavägen 59E, S-752 63 Uppsala, and Herman Norde, Studentvägen 22, S-752 34 Uppsala, all of Sweden

PCT No. PCT/SE82/00093, § 371 Date Nov. 3, 1982, § 102(e) Date Nov. 3, 1982, PCT Pub. No. WO82/03498, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 29, 1982, Ser. No. 441,530
Claims priority, application Sweden, Mar. 27, 1981, 8101994
Int. Cl.⁴ H01L *29/48, 29/80, 27/02, 29/56*
U.S. Cl. 357—15 **18 Claims**

1. Integrated electronic circuit comprising Schottky field effect transistors of both p- and n-type, the contact elements to the transistors comprising two conductor types, the first of which has a low Schottky barrier to n-type material and makes contact with source and drain of n-transistors and gate of p-transistors, and the second of which has a high Schottky barrier to n-type material and makes contact with source and drain of p-transistors and gate of n-transistors.

2. The circuit of claim 1 wherein said two conductor types comprise metals or materials with metallic conductivity.

3. The circuit of claim 1 or 2 wherein the second conductor comprises material selected from the group consisting of Ir, Pt,



Os, Mo, silicides, conducting plastics, Au, Bi, Sb, Ag or $(SN)_x$-polymers.

6. The circuit of claim 3 wherein the first conductor comprises material selected from the group consisting of Tb, Er, Yb, Y, Mn, Hf, Al, silicides, conducting plastics, Ca, Mg or W.

4,554,570

VERTICALLY INTEGRATED IGFET DEVICE

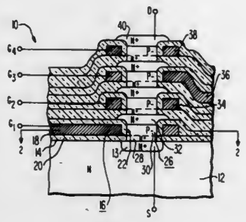
Lubomir L. Jastrzebski, Plainsboro, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 2, 1983, Ser. No. 500,399

Claims priority, application United Kingdom, Jun. 24, 1982, 8218286

Int. Cl.⁴ H01L *29/78, 27/01, 29/06, 27/12*

U.S. Cl. 357—23.4 **9 Claims**



1. An integrated device incorporating a plurality of interconnected vertical IGFETs on a substrate surface, comprising:

a monocrystalline silicon region extending from an area of the substrate surface; and

a plurality of insulated gate electrodes which are disposed in an overlying and substantially coincident relationship with respect to each other and which can be selectively biased, each of said insulated gate electrodes being contiguous with a segment of the monocrystalline silicon region such that a predetermined voltage applied to a particular electrode creates an inversion channel in the segment of the monocrystalline silicon region contiguous therewith each of said inversion channels having a length which is perpendicular to the substrate surface.

4,554,571

MATCHED PHOTONIC DETECTOR-CHARGE TRANSFER READER ASSEMBLY AND IMAGE FORMING TARGET USING SUCH AN ASSEMBLY

Marc Arques, Paris, France, assignor to Thomson-CSF, Paris, France

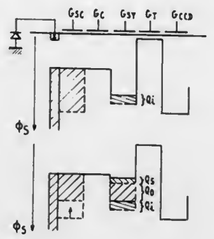
Filed Jun. 17, 1982, Ser. No. 389,288

Claims priority, application France, Jun. 23, 1981, 81 12296

Int. Cl.⁴ H01L *29/78, 27/14, 31/00;* **G11C** *19/28*

U.S. Cl. 357—24 **5 Claims**

1. In a photon detector-charge transfer readout device assembly comprising at least one photon detector exposed to incident radiation and a readout device for reading a signal from this detector, transfer charges created in the readout device being of the same sign to those of the signal of the detector, detector and said readout device being connected together by way of a MOS field effect transister having a source, an auxiliary electrode, a control gate, a drain-forming electrode and a transfer gate, said MOS transistor being integrated with the readout device, the signals from the detector being transmitted to the readout device by sequential switching of the potentials of the electrodes of the transister, said auxiliary electrode being adjacent the source for accumulating thereunder in said substrate during operation a fixed reserve charge, and means for applying a steadily decreasing potential in time to this additional electrode during a switching cycle.



4,554,572

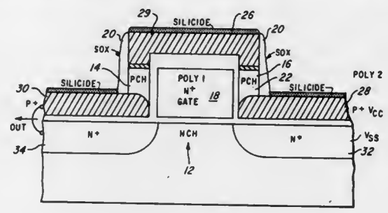
SELF-ALIGNED STACKED CMOS

Pallab K. Chatterjee, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 17, 1983, Ser. No. 505,534

Int. Cl.⁴ H01L *27/02*

U.S. Cl. 357—42 **20 Claims**



1. An integrated circuit structure comprising:

(a) a substrate transistor formed at the surface of a semiconductor substrate, said substrate transistor having source and drain regions of a first conductivity type and a channel region interposed therebetween;

(b) an insulated gate electrode above said channel region of said substrate transistor, said insulted gate electrode having sidewalls substantially normal to said surface of said substrate: and

(c) a thin polysilicon layer extending continuously from atop the source of said substrate transistor, over a first sidewall of said gate electrode, over the top surface of said gate electrode, over a second sidewall of said gate electrode, and over the drain of said substrate transistor;

(d) said thin polysilicon layer comprising channel portions having a dopant concentration of less than 10^{18} and being disposed adjacent to and along the sidewalls of said gate electrode, said channel portions of said thin polysilicon layer being separated from said gate electrode by an insulator thickness of less than 500 angstroms;

(e) said channel portions of said thin polysilicon layer having doping levels which are less than the dopant concentration of the remainder of said thin polysilicon layer by at least an order of magnitude, said remainder of said thin polysilicon layer being doped with a second conductivity type.

4,554,573

GLASS-SEALED CERAMIC PACKAGE TYPE SEMICONDUCTOR DEVICE

Hideharu Yamamoto, Tokyo, and Hiroshi Tsuneno, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

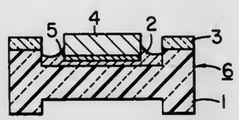
Division of Ser. No. 306,863, Sep. 29, 1981, Pat. No. 4,437,228.

This application Dec. 20, 1983, Ser. No. 563,617

Claims priority, application Japan, Oct. 1, 1980, 55-135869

Int. Cl.⁴ H01L *21/58, 21/52, 23/08, 23/54*

U.S. Cl. 357—73 **9 Claims**



1. A semiconductor device, comprising:

a ceramic substrate having a flat surface;

a glass film of low melting point bonded to said flat surface of said ceramic substrate;

a silicon pellet having an upper surface and a lower surface; and

an adhesion reinforcing film formed on the lower surface of said silicon pellet, said adhesion reinforcing film cooperating with said glass film of low melting point to exhibit a bonding strength greater than the one produced through cooperation of silicon material of said silicon pellet and said glass film of low melting point, said adhesion reinforcing film adhering to said glass film of the low melting point, to thereby increase adhesion between the silicon pellet and the glass film as compared with the adhesion between the silicon pellet and glass film obtained without use of the adhesion reinforcing film, whereby delamination of the silicon pellet from the glass film and consequent cracking of the silicon pellet is prevented.

4,554,574

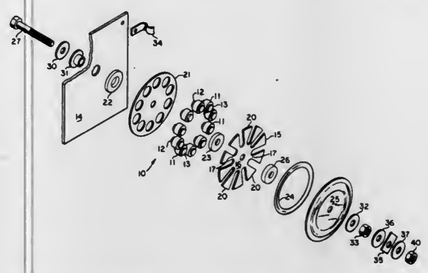
RECTIFIER ASSEMBLY FOR PARALLEL CONNECTION OF DIODES

Bruce R. Wright, St. Louis, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.

Continuation of Ser. No. 519,896, Aug. 4, 1983, abandoned, which is a continuation of Ser. No. 222,326, Jan. 5, 1981, abandoned. This application May 17, 1985, Ser. No. 735,708

Int. Cl.⁴ H01L *25/04, 23/34, 21/603, 21/326*

U.S. Cl. 357—74 **4 Claims**



1. A diode rectifier assembly comprising:

a plurality of diodes, each diode having anode and cathode sides,

a first means electrically connecting one of the anode and cathode sides of each of said diodes to one another,

a second means electrically connecting the other of said anode and cathode sides of each of said diodes to one another, said second means including:

a common conduction area defining a central electronically conductive area, a plurality of links extending radially from the common conduction area, each link having a predetermined area for regulating current flow through said predetermined area, said predetermined area delimiting a fuse which opens under predetermined conditions so as to disconnect an individual one of said plurality of diodes from said central conduction area, thereby permitting said rectifier assembly to operate even with failure of individual ones of said diode plurality, and a plurality of diode contact areas peripherally spaced about the common conduction area, each diode contact area engaging one of said anode and cathode sides of said diodes, each link interconnecting one of the diode contact areas and the common conduction area, said second electrically connecting means

being integrally formed from a single material sheet, and

pressure means engaging and applying pressure to the diode contact areas of said second electrically connecting means for holding the diode contact areas against one of said anode and cathode sides of said diodes and holding the other of said anode and cathode sides of said diodes against said first electrically connecting means, said pressure means maintaining mechanical and electrical contact between the anode and cathode sides of said diodes and respective ones of said first and said second electrically connecting means, and wherein

each diode area is thermally conductive for providing thermal conduction from its associated diode to its associated link,

the links have a positive coefficient of resistance, and

the links have a cross-section providing greater electrical resistance than the contact areas.

4,554,575

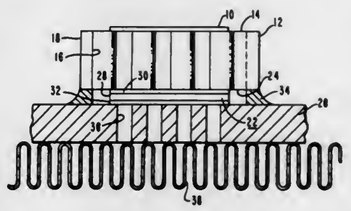
LOW STRESS LEADLESS CHIP CARRIER AND METHOD OF ASSEMBLY

Michael R. Lucas, Arbutus, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1983, Ser. No. 493,903

Int. Cl.⁴ H01L *23/14, 23/10, 23/34*

U.S. Cl. 357—80 **3 Claims**



1. An integrated circuit chip carrier for mounting and electrically connecting the integrated circuit chip to a printed circuit board conductor pattern, which carrier comprises a leadless carrier member having a conductive path disposed on a top surface with the integrated circuit chip mounted on this top surface with chip contacts electrically connected to the conductive path, and wherein a plurality of castellations are provided in the perimeter walls of the carrier with reflowed solder conductor means extending along the castellated perimeter wall portions and electrically connecting the carrier top surface conductive path with the printed circuit board conductor pattern and a spacer member is disposed between the under surface of the leadless carrier member and the printed circuit board, which spacer member comprises a high thermal conductivity planar metal portion sandwiched between adhesive insulating layers on either side of the planar metal portion which spacer member is about 0.015 inch thick, with solder connections extending between the printed circuit board and the carrier castellations, with the thermal expansion coefficient

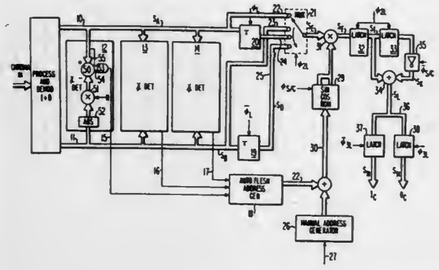
for the spacer matched to that of the solder and the thickness of the spacer member defining a solder connection height providing a low stress solder connection.

4,554,576

AUTO FLESH CIRCUITRY AS FOR A DIGITAL TV RECEIVER

Yih-Sien Kao, Gaithersburg, Md., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 21, 1983, Ser. No. 487,084
Int. Cl.[4] H04N *9/535*
U.S. Cl. 358—28 **14 Claims**



1. In a television receiver including a source of quadrature sampled data PCM color mixture signals A1 and A2, apparatus for performing tint control by rotating the axes of the color mixture signals comprising:

means for generating address codes corresponding to the angle by which said axes are to be rotated;

means for generating clock signals in synchronism with the A1 and A2 signal samples;

means including a multiplier circuit comprising a first input port coupled to said source for applying a sequence of alternating A1 and A2 samples, a second input port for applying a multiplier signal, and an output port;

means responsive to said address codes and coupled to said clock signal generating means for alternately generating at an output port thereof, signals corresponding to the sine and cosine of the angle by which the axes are to be rotated;

means for coupling said output port of the sine and cosine signal generating means to said second multiplier input port;

delay means including an input port coupled to the multiplier circuit output port, and an output port; and

means including an ADDER circuit coupled to said clock generating means and including first and second input ports respectively coupled to said input and output ports of said delay means, for sequentially producing the sums of successive output signals from said multiplier circuit means.

4,554,577

KEYED DC STABILIZATION SYSTEM WITH PROTECTION FROM ERROR INTRODUCTION DURING VERTICAL SYNC INTERVAL

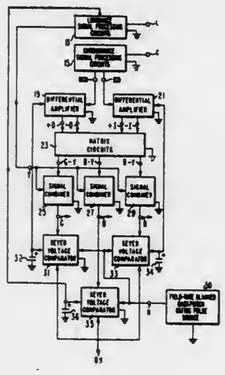
Robert L. Shanley, II; Thomas D. Yost, and William A. Lagoni, all of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 14, 1983, Ser. No. 561,280
Int. Cl.[4] H04N *5/68*
U.S. Cl. 358—34 **7 Claims**

1. In a color television receiver for displaying color images in response to composite video signals inclusive of respective image-representative luminance and chrominance signal components and line-rate and field-rate deflection synchronizing components, said image-representative components being absent during a vertical blanking portion of each field interval and during horizontal blanking portions of line intervals lying outside of said vertical blanking portions, said field rate deflection synchronizing component appearing during a succession of line intervals within each of said vertical blanking portions; said receiver including a luminance signal channel for processing said luminance signal component, a chrominance signal channel for processing said chrominance signal component and recovering therefrom first and second color-difference signals, and signal combining means responsive to said first and second color-difference signals and said processed luminance signal components for forming first, second and third color signals; a DC stabilization system comprising:

a source of line rate keying pulses;

a first control loop for controlling the DC level of said first color signal formed by said signal combining means;



a second control loop for controlling the DC level of said second color signal formed by said signal combining means; and

a third control loop for controlling the DC level of said third color signal formed by said signal combining means;

wherein each of said control loops includes a keyed voltage comparator for comparing a respectively different one of said color signals with a common reference voltage during recurring keying periods defined by the line rate keying pulses provided by said source; and

wherein said source of line rate keying pulses is rendered responsive to field rate pulses indicative of the timing of the appearance of said field rate deflection synchronizing component in such manner as to preclude keying of said voltage comparator during at least some of said succession of line intervals.

4,554,578

ERROR COMPENSATED CONTROL SYSTEM IN A VIDEO SIGNAL PROCESSOR

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

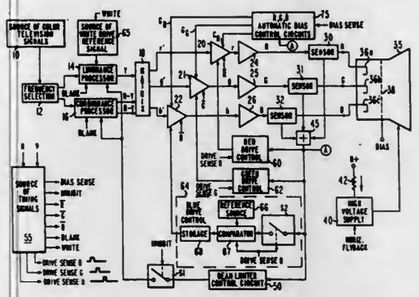
Filed Mar. 2, 1984, Ser. No. 585,388
Int. Cl.[4] H04N *9/20, 5/68, 9/16, 9/535*
U.S. Cl. 358—65 **7 Claims**

7. In a system including a video channel comprising luminance and chrominance channels for processing a video signal containing image intervals and image blanking intervals, and an image display device responsive to video signals coupled thereto via said video channel; apparatus comprising:

automatic drive control means coupled to said video channel for monitoring the conduction of said image display device during prescribed drive control intervals within image blanking intervals, to maintain a desired drive characteristic for said video channel;

automatic bias control means coupled to said video channel for monitoring the conduction of said image display device during prescribed bias control intervals within image blanking intervals, to maintain a desired bias characteristic for said video channel;

means for automatically limiting excessive beam currents



conducted by said image display device in response to video signal image information, said limiting means providing an output beam current limiting control signal; and

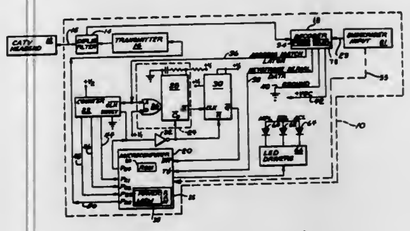
means for rendering said video channel responsive to said control signal during said image intervals; for rendering at least said chrominance channel responsive to said control signal during said bias control intervals; and for rendering at least said luminance channel non-responsive to said control signal during said drive control intervals.

4,554,579

TWO-WAY CATV SYSTEM WITH AML COMMANDS

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 560,029, Dec. 9, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 648,841
Int. Cl.[4] H04N *7/10, 7/14, 7/16*
U.S. Cl. 358—86 **9 Claims**



1. In a two-way CATV system wherein video program signals are transmitted downstream from a headend to a plurality of subscriber terminals each uniquely identified by a respective stored multibit subscriber address code and wherein a plurality of multibit subscriber address codes may be selectively transmitted during a vertical blanking interval of said video program signals, a system for controlling a selected subscriber terminal from said headend comprising:

means associated with said headend for transmitting a multibit command code during the VBI of a selected field of said program signal for controlling said selected subscriber terminal, each bit of said command code being represented by the transmission or non-transmission during a respective time interval of the address code corresponding to the stored address code identifying said selected subscriber terminal;

means coupled to said cable for receiving the transmitted command code and for generating a match signal in response to each received address code that corresponds to the stored address code identifying said selected subscriber terminal; and

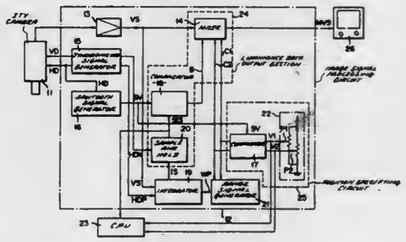
means for decoding the match signals generated during each vertical blanking interval for selectively controlling said selected subscriber terminal.

4,554,580

IMAGE INFORMATION OUTPUT APPARATUS

Masakazu Hayashi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 10, 1983, Ser. No. 503,252
Claims priority, application Japan, Jun. 18, 1982, 57-150115
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—107 **5 Claims**



1. An image information output apparatus, comprising:

synchronizing signal generator means for generating horizontal and vertical synchronizing signals;

image pickup means, responsive to said synchronizing signals, for generating an image signal corresponding to an object image;

sawtooth signal generator means for generating a sawtooth signal in synchronization with said horizontal synchronizing signal;

cursor line means for superposing at least two vertical lines on said object image so as to be included in said image signal, and having means for outputting cursor voltages and for producing cursor signals in cooperation with said sawtooth signal, which cursor signals correspond to said vertical lines;

integrating means for integrating components of said image signal corresponding to a region between said two vertical lines, and for outputting an integration signal indicative thereof;

image signal output means for converting said integration signal into a brightness signal in comparison with the level of said sawtooth signal;

mixer means for mixing said brightness signal with said image signal; and

display means for displaying cursor vertical lines based on said cursor signals, a detection vertical line based on said brightness signal and said object image based on said image signal.

4,554,581

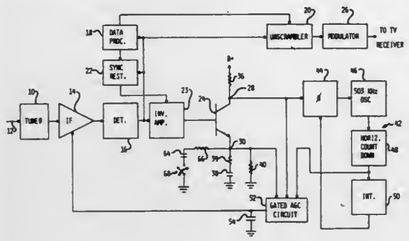
STV DECODER WITH IMPROVED DATA SIGNAL RECOGNITION CAPABILITY

Michael Tentler, Wheeling; David L. Walker, Arlington Hts.; Wayne E. Bretl, Schaumburg, and Gregory A. Williams, Elk Grove Village, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 450,817, Dec. 20, 1982, abandoned. This application Feb. 14, 1985, Ser. No. 701,713

Int. Cl.[4] H04N *7/16, 5/52*

U.S. Cl. 358—120 **12 Claims**



1. In a subscription television system wherein there is transmitted from a head-end facility a scrambled television signal including fields of video characterized by suppressed horizontal sync pulses and vertical intervals characterized by encoded data signals and non-suppressed sync pulses, an improved addressable decoder comprising:

means including an IF amplifier for receiving and converting the transmitted television signal to a composite baseband video signal;

means responsive to the composite baseband video signal for processing the data signals encoded in the vertical intervals thereof;

means responsive to the composite baseband video signal for developing an AGC voltage having a level substantially corresponding to the sync tip level of the non-suppressed sync pulses during the vertical intervals thereof and decaying during the video fields between successive vertical intervals at a relatively slow rate such that the AGC voltage developed at the beginning of each vertical interval is relatively close to the sync tip level of the non-suppressed sync pulses thereof; and

means for coupling the AGC voltage for controlling the gain of the IF amplifier, whereby the sync pulses characterizing the vertical intervals of the composite baseband video signal are not subjected to excessive IF gain for facilitating processing of the data signals by the data processing means.

4,554,582

APPARATUS FOR SYNCHRONIZING A SOURCE OF COMPUTER CONTROLLED VIDEO TO ANOTHER VIDEO SOURCE

Charles M. Wine, Mercer, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 31, 1983, Ser. No. 528,229

Int. Cl.[4] H04N *5/04*

U.S. Cl. 358—149 **14 Claims**

1. A video synchronizer for synchronizing a first source of computer controlled video signal to a second source of video signal, comprising:

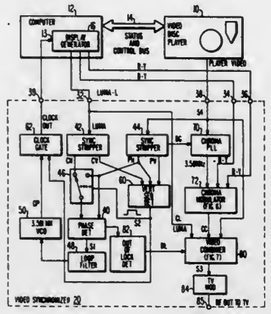
(a) input means for connection to said sources for receiving said video signals;

(b) output means for connection to said first source for supplying clock pulses thereto;

(c) phase detector means coupled to said input means for receiving horizontal synchronizing components of said video signals and developing an error signal;

(d) controlled oscillator means coupled to said output means for supplying said clock pulses thereto and responsive to said error signal for varying the clock pulse rate to synchronize the horizontal synchronizing components of said video signals;

(e) sequence detector means coupled to said input means for producing a control signal having a duration substantially equal to the duration of an integer multiple of one horizontal line when the vertical synchronizing component of said first source leads the vertical synchronizing component of said second video source; and



(f) clock gating means responsive to said control signal for effectively interrupting a predetermined number of cycles of said clock pulses when said control signal is present, the number of interrupted clock pulses being substantially independent of said integer multiple and the sum of the time durations of the interrupted clock cycles being substantially equal to the duration of one horizontal line for synchronizing the vertical synchronizing component of said first source to that of said second source.

4,554,583

SHADING CORRECTION DEVICE

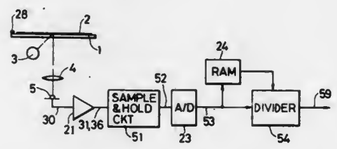
Hiroyuki Saitoh, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,310

Claims priority, application Japan, Apr. 9, 1982, 57-58028

Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—163 **9 Claims**



1. In a reading device for raster scanning an original disposed on a platen which is illuminated by a light source, a conversion correcting device comprising:

an A/D converter for converting a first analog picture signal representing a reference line scanned by said reading device into a first reference digital picture signal;

memory means for storing said first digital picture signal;

said A/D converter including a plurality of comparison means for comparing an analog picture signal applied thereto to a plurality of threshold levels, and a threshold circuit means responsive to a peak value of said first analog picture signal for generating said plurality of threshold levels;

means for applying a second analog picture signal, produced during the scanning of said original, and said threshold levels to said plurality of comparison means; and

switching means for switching between said plurality of comparison means, said switching means receiving said first digital picture signal from said memory means in synchronism with said scanning of said original and switching between said comparison means as a function of said first digital picture signal, said switching means outputting a corrected digital picture signal.

4,554,584

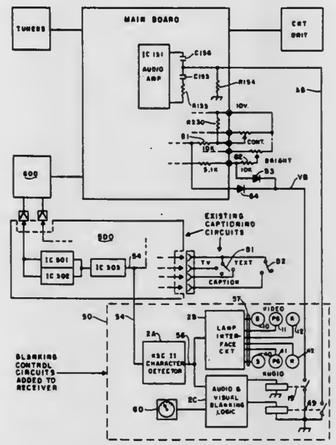
VIDEO AND AUDIO BLANKING SYSTEM

Carl M. Elam, 8018 Carey Branch Pl., Ft. Washington, Md. 20744, and Dale A. Leavy, 7 B St., Edwards AFB, Calif. 93523

Filed Jul. 8, 1983, Ser. No. 512,063

Int. Cl.[4] H04N *3/24, 7/04*

U.S. Cl. 358—165 **14 Claims**



1. A television editing system activated by transmitted digital codes for blanking at least part of the output of a receiver, in which the receiver includes at least a portion of a captioning circuit means for detecting digital data if present in the transmitted signal and supplying the data to a data bus;

wherein said editing system comprises an auxiliary circuit which includes a character detector, rating select switch means, and blanking logic means;

the character detector having inputs coupled to said data bus, means for decoding predetermined digital codes of a special set of characters, and output to rating signal lines, there being a separate rating signal line for each character of said special set;

the rating select switch means having settings for different ratings; and

the blanking logic means having logic circuits coupled to the rating signal lines and to the rating select switch means to compare the switch setting to signals on the rating signal lines, and in response to the comparison to generate a logic output signal condition for selectively either blanking or not blanking at least part of the receiver output.

4,554,585

SPATIAL PREFILTER FOR VARIABLE-RESOLUTION SAMPLED IMAGING SYSTEMS

Curtis R. Carlson, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 12, 1983, Ser. No. 522,692

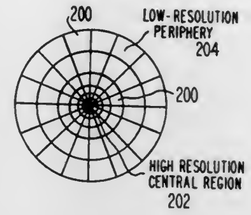
Int. Cl.[4] H04N *5/30*

U.S. Cl. 358—209 **6 Claims**

1. In an imaging system, the combination comprising:

an imager having a spatial distribution pattern of discrete picture elements for detecting a light image projected thereon, wherein the respective sizes of said discrete picture elements in said pattern in at least one given dimension vary continually from relatively the smallest in a first region of said pattern to relatively the largest in a second region of said pattern spaced from said first region thereof, thereby to derive a corresponding spatial pattern of image samples having relatively high spatial resolution in said first region, relatively low spatial resolution in said second region and a spatial resolution that varies continually from high to low in regions of said spatial pattern in between first and second regions thereof; and

a spatial frequency low-pass prefilter situated in the path of said projected light image for illuminating said imager



with only the spatial frequencies of said projected image which pass through said prefilter, said prefilter being comprised of a diffusing surface in spaced relationship with respect to said pattern of picture elements of said imager with the spacing distance between said diffusing surface and each of said picture elements of said pattern increasing as a direct function of the size of that picture element, thereby to vary the spatial cutoff frequency of said prefilter in accordance with the spatial resolution of each region of image samples, whereby aliasing in the variable resolution sampled image detected by said imager is significantly reduced.

4,554,586

SOLID STATE IMAGE SENSING DEVICE

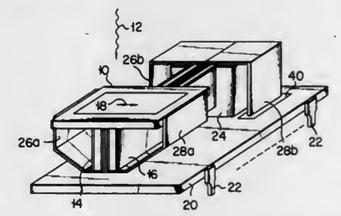
Chiaki Tanuma, Tokyo; Katsunori Yokoyama, Ebina, and Yoshiyuki Suda, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 13, 1983, Ser. No. 484,511

Claims priority, application Japan, May 12, 1982, 57-78328; May 12, 1982, 57-78331

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213 **12 Claims**



1. An image-sensing device applied to an image pickup system in which one frame consists of a plurality of field periods comprising:

a solid state image sensor element receiving an image light to produce an electrical image pickup signal corresponding to the image light;

a base board having a top surface;

vibrating means, mechanically connected to said image sensor element, for receiving an external electrical signal and for vibrating said image sensor element on a plane substantially parallel to the top surface of said base board in response to the external electrical signal so as to cause

said image sensor element to periodically vibrate in conformity with the relative positions of said image sensor element and the image light, whereby said image sensor element periodically vibrates in such a manner as to occupy a different image pickup position during a different field period, said vibrating means comprising a piezoelectric element; and

support means, provided between said base board and said vibrating means, so as to cause said vibrating means to occupy a prescribed position above the top surface of said base board.

4,554,587

IMAGE PICKUP APPARATUS

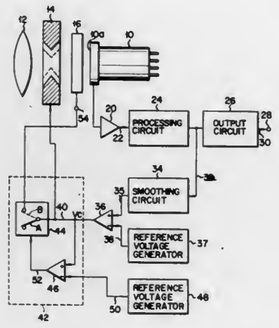
Kazushige Ooi, Sagamihara; Shigekazu Fujiwara, Kamakura; Nobuaki Yoshida, Tokyo, and Tsuneo Sukegawa, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Nippon Kogaku K.K., both of Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,884

Claims priority, application Japan, Feb. 22, 1982, 57-26937

Int. Cl.⁴ H04N *5/14, 5/19*

U.S. Cl. 358—228 **15 Claims**



1. An apparatus for picking up incident image light, comprising:

(a) an image sensing element having an image pickup surface for receiving and sensing incident image light;

(b) diaphragm means, responsive to an aperture control signal and disposed along an optical path of the image light incident on said image sensing element, for setting an aperture size from and including a first aperture size corresponding to a fully opened diaphragm state to and including a second aperture size corresponding to a predetermined lower limit diaphragm state which is no smaller than 2% of said fully opened diaphragm state, thereby controllably changing the amount of said image light incident on said image sensing element;

(c) filter means, disposed along said optical path of said image light incident on said image sensing element and having an electrochromic layer of an electrochromic material, for changing transmissivity of said electrochromic layer in accordance with said aperture control signal selectively applied thereto, thereby changing the amount of said image light incident on said image sensing element; and

(d) exposure controlling means, selectively outputting said aperture control signal to said diaphragm means and said filter means to perform an exposure control operation with respect to said image sensing element, for only controlling said diaphragm means to set aperture size thereby performing said exposure control operation when illuminance of actual incident image light is smaller than a predetermined reference illuminance, and for controlling said diaphragm means to set and hold aperture size at said second aperture size and for controlling said filter means so as to change said transmissivity and thereby perform said exposure control operation when illuminance of actual incident image light is not less than said predetermined reference illuminance.

4,554,588

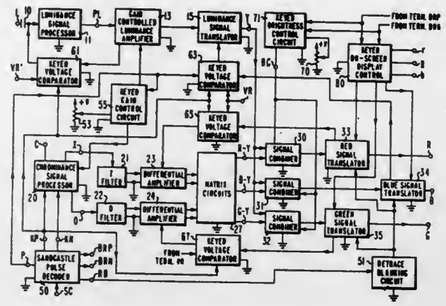
CONTROL SYSTEM FOR LUMINANCE/CHROMINANCE SIGNAL PROCESSING CIRCUITS

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 14, 1983, Ser. No. 561,176

Int. Cl.⁴ H04N *5/68, 9/16, 9/20, 3/24*

U.S. Cl. 358—243 **7 Claims**



1. In a color television receiver for displaying color images in response to composite video signals inclusive of respective image-representative luminance and chrominance components, said image-representative components being absent during horizontal blanking portions of successive line intervals within periodic field intervals, and also absent during the vertical blanking portion of each field interval, said receiver including: a color kinescope having a plurality of beam intensity control electrodes for controlling the intensity of a plurality of electron beams tracing a raster of scanning lines upon a viewing screen; means for automatically controlling the bias on the respective control electrodes during periodic bias control intervals encompassing a plurality of successive line intervals within each of said vertical blanking portions; a luminance signal channel for processing said luminance component and including a gain controlled luminance signal amplifier, and a luminance signal translator responsive to an output of said luminance signal amplifier; a chrominance signal channel for processing said chrominance component, and including means responsive to said processed chrominance signal component for developing a plurality of color-difference signal outputs; a signal combiner responsive to one of said color-difference signal outputs and to an output of said luminance signal translator for forming a first color signal; and means for applying said first color signal to one of said kinescope electrodes; control apparatus comprising:

an adjustable gain control voltage source;

keyed gain control means responsive to an output of said gain control voltage source for (1) rendering the gains of said luminance signal amplifier and said chrominance signal processor responsive to said adjustable gain control voltage during all field interval portions with the exception of said bias control intervals; and (2) substantially disabling said luminance signal amplifier and said chrominance signal processor during said bias control intervals;

a control loop for controlling the DC level of said output of said luminance signal translator, said control loop including: keyed comparator means for comparing the voltage attained by said first color signal throughout said bias control intervals with a reference voltage; and means, coupled to said luminance signal translator and responsive to the output of said keyed comparator means, for opposing departures of said attained color signal voltage from substantial equality with said reference voltage;

an adjustable brightness control voltage source; and

keyed brightness control means for rendering the DC level of said signal combiner output responsive to said adjustable brightness control voltage during the presence of said image-representative signal components but independent of said adjustable brightness control voltage throughout said bias control intervals.

4,554,589

PROCESS AND DEVICE ENSURING THE FIXATION ON THE NECK OF A CATHODE TUBE OF THE DEVIATION COLLAR OF THE TUBE

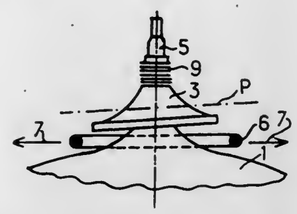
Ignazio Cormio, Montrouge, France, assignor to Videocolor S.A., Montrouge, France

Continuation of Ser. No. 396,330, Jul. 8, 1982, Pat. No. 4,515,568. This application Nov. 7, 1984, Ser. No. 669,001

Claims priority, application France, Jul. 9, 1981, 81 13472

Int. Cl.⁴ H04N *5/645*

U.S. Cl. 358—248 **9 Claims**



1. In a cathode tube having a deflection yoke, a device for ensuring the fixation of the deflection yoke on a neck of the tube, said device comprising an adjustable fixed abutment positioned on the neck of the tube on one side of said yoke with respect to a transverse median plane, and

an elastic abutment freely mounted on the neck of the tube on the other side of the said yoke with respect to said transverse median plane.

4,554,590

DEVICE FOR POSITIONING VIDEO DISPLAY UNIT

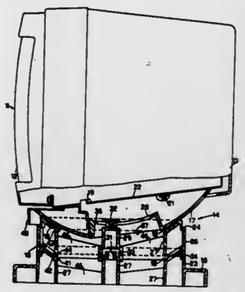
Cesare Chelin, Caluso, and Vittorio Ceradelli, Cascinette d'Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 268,143, May 28, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 588,513

Claims priority, application Italy, Jun. 5, 1980, 67868 A/80

Int. Cl.⁴ H04N *5/655*

U.S. Cl. 358—248 **4 Claims**



1. A device for positioning a video display unit with respect to a fixed structure wherein the video display unit is mounted on a video structure having a lower portion, said device comprising a base having a vertical projection which projects upward and includes internally a seat, a spherical surface element projecting downward from the lower portion of said video structure arranged to cooperate with said seat, a pin and slot connection between the spherical surface element and the seat for enabling the video display unit to incline with respect to said base in a vertical plane passing through the axis of the slot and to freely rotate in a horizontal plane perpendicular to the axis of the pin, wherein the section of said spherical surface element is dimensionally slightly smaller than the section of said video structure, and wherein the curvature of the spherical surface element is such that the center of gravity of the video display unit substantially coincides with the center of curvature of the spherical surface element, and mounting means for holding together the video display unit with the base and for enabling the dismantling of the video display unit from the base and the handling of the video display unit away from said base, said mounting means comprising the pin of said pin and slot connection fixed to said base, means defining a circular edge on the lower portion of the spherical surface element for supporting the video structure when the video structure is dismantled from the base, wherein said means defining a circular edge include a recessed surface which extends internally to said spherical surface and contains the slot of said pin and slot connection, and wherein said slot is recessed with respect to said circular edge, and an enlarged element at one end of said pin to avoid disengagement of the pin from the slot, means defining a widened portion at one end of the slot which allows passage of said enlarged element, and a releasable stop element for limiting the stroke of the pin along the slot preventing registration of said enlarged element with the widened portion of said slot, wherein said stop element is flexibly supported by said spherical surface element and it is forceable by said pin to cause said enlarged element to pass through said widened portion.

4,554,591

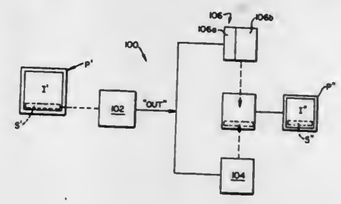
REPRODUCIBLE IMAGE AND INFORMATION BEARING RECORD

Richard C. Kee, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 19, 1983, Ser. No. 533,425

Int. Cl.⁴ H04N *1/00*

U.S. Cl. 358—256 **10 Claims**



1. A method of reproducing an original article having a visible image thereon as well as visually indiscernible machine readable information for reproducing the image, said method comprising the steps of:

reading the machine readable information of the original article and converting said information into corresponding electrical signals;

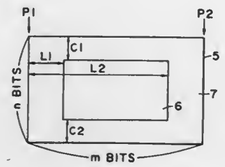
providing an information bearing medium having means for receiving and storing an electrical signal as visually indescernible machine readable information and means for receiving and supporting a visible image;

storing said electrical signals on said means for receiving and storing as visually indiscernible machine readable information; and

controlling a means for generating an image with said elec-

trical signals to generate an image on said means for receiving and supporting a visible image.

4,554,592
IMAGE FORMING APPARATUS
Tadashi Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 339,282, Jan. 13, 1982, Pat. No. 4,439,790. This application Oct. 20, 1983, Ser. No. 543,907
Claims priority, application Japan, Jan. 23, 1981, 56-8614; Feb. 16, 1981, 56-21236
Int. Cl.⁴ H04N *1/32*
U.S. Cl. 358—257 **15 Claims**

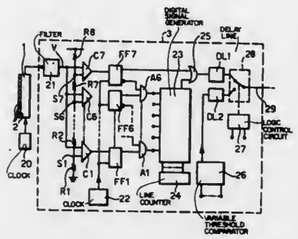


1. An image reading apparatus comprising:
means for reading an original and for producing an image signal as an output, said reading means comprising at least one scanning device in relative movement relation with the original in an auxiliary scanning direction perpendicular to a main scanning direction, said scanning device being adapted to perform a scanning in the main scanning direction;
detecting means responsive to the output from said reading means for detecting the left and right edges of the original in the main scanning direction;
means for measuring the time of detection of the left and right edges of the original by said detecting means; and
means for identifying the size of the original in accordance with the measurement result of said measuring means.

4,554,593
UNIVERSAL THRESHOLDER/DISCRIMINATOR
Sidney J. Fox; Filip J. Yeskel, both of Boulder County, Colo., and William J. Zimmermann, Jr., Tioga, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 222,103, Jan. 2, 1981, abandoned. This application Aug. 18, 1982, Ser. No. 409,239
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—282 **27 Claims**

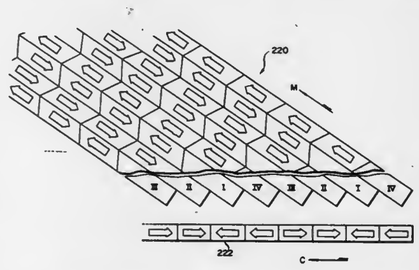
1. A thresholding mode-switching device for automatically selecting an optimum operational mode for printing copies of documents having a mixed format, said mode-switching device comprising:
scanning means for generating a stream of pixel values representative of reflectance characteristics of a scanned document;
input buffer means for storing a predetermined number of pixel values;
look-ahead logic means coupled to said buffer means for supplying look-ahead signals based on values of pixels subsequent to said pixel of interest;
hysteresis means coupled to said buffer means for supplying hysteresis signals based on values of pixels preceding said pixel of interest; and
controller means responsive to said look-ahead signals, said hysteresis signals, and the stored value of said pixel of interest for selecting an optimum operational mode.

4,554,594
APPARATUS FOR SCANNING AND DIGITALLY PROCESSING HALF-TONE IMAGES
Giovanni Ciardiello, Ivrea, and Ferdinando Augusti, Turin, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Mar. 18, 1983, Ser. No. 476,559
Claims priority, application Italy, Mar. 22, 1982, 67360 A/82
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **11 Claims**



7. An apparatus for scanning and digitally processing images comprising:
an optical scanning device for scanning elements of an image and for outputting corresponding electrical image signals,
a plurality of threshold comparator circuits selectable for comparing the image signals with a plurality of reference signals associated with said circuits,
a digital-signal generator circuit for generating digital signals in response to the selected one of said comparator circuits, and
a selecting circuit for automatically selecting the comparator circuit associated with the threshold reference signal last traversed by the image signal, whereby for a reverse transition of the image signal the threshold is automatically adapted in pursuit of the same image signal.

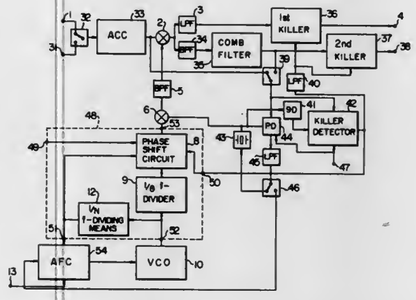
4,554,595
VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS WITH CROSSTALK AND TRACKING ERROR ELIMINATION
Shunpei Tanaka, and Kenji Kimura, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1982, Ser. No. 448,786
Claims priority, application Japan, Dec. 15, 1981, 56-201858
Int. Cl.⁴ H04N *9/491*
U.S. Cl. 358—328 **11 Claims**



1. A video signal recording apparatus with crosstalk and tracking error elimination, in which a plurality of video tracks each having a predetermined number of horizontal scanning components are formed on a recording medium adjacent to each other, comprising:
separating means for separating horizontal and vertical synchronizing signals from an input video signal having a chrominance signal;

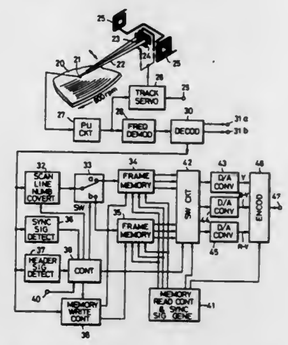
phase controlling means coupled to receive said input video signal, and including means for periodically and sequentially changing the phase of said chrominance signal in response to said horizontal and vertical synchronizing signals, and means for periodically forming first to fourth recording patterns from said changed phase chrominance signal, said first recording pattern having odd horizontal scanning components, a phase of which is inverted, and even horizontal scanning components, a phase of which is kept noninverted, said second recording pattern having a phase noninverted, said third recording pattern having odd horizontal scanning components, a phase of which is kept noninverted, and even horizontal scanning components, a phase of which is inverted, and said fourth recording pattern having a phase which is inverted; and
means coupled to said phase controlling means for recording an output signal from said phase controlling means, such that said first to fourth recording patterns are recorded on the respective adjacent video tracks of said recording medium.

4,554,596
COLOR VIDEO SIGNAL RECORDING APPARATUS
Akira Shibata, Katsuta; Noboru Kojima, Yokohama, and Tomomitsu Kuroyanagi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 1, 1982, Ser. No. 438,246
Claims priority, application Japan, Nov. 4, 1981, 56-175673; Nov. 4, 1981, 56-175677; Nov. 4, 1981, 56-175678; Mar. 12, 1982, 57-37994; Mar. 12, 1982, 57-37996; Apr. 2, 1982, 57-53820
Int. Cl.⁴ H04N *9/493*
U.S. Cl. 358—330 **5 Claims**



1. A color video signal recording apparatus wherein a luminance signal and a chrominance signal are separated from a color video signal, said luminance signal is transformed into a frequency modulation signal, said chrominance signal is converted to have a lower frequency, and said frequency-modulated luminance signal and said frequency-converted chrominance signal are recorded on a frequency multiplex basis on a recording medium, comprising:
a frequency converter which receives said chrominance signal separated from said color video signal;
a reference oscillator for generating a reference signal;
a phase selection circuit which receives the output of said reference oscillator and shifts the phase of the output of said reference oscillator by 90° or 180° in every horizontal period;
means for supplying the output of said phase selection circuit to said frequency converter, said frequency converter being operable to mix said chrominance signal with the output of said phase selection circuit so as to convert the frequency of said chrominance signal into said lower frequency;
a control means connected to said reference oscillator and adapted to control the oscillation frequency of said reference oscillator such that the frequency of said frequency-converted chrominance signal is $\frac{1}{8}N \cdot f_H$ (where N is an integer and f_H is a horizontal scanning frequency) and at the same time N/4 is an integer in case said phase selection circuit shifts the phase of the output of said reference oscillator by 90° in every horizontal period or (2N−2)/4 is an integer in case said phase selection circuit shifts the phase of the output of said reference oscillator by 180° in every horizontal period; and
means connected to the output of said frequency converter and adapted to extract said frequency-converted chrominance signal which is converted into the lower frequency.

4,554,597
MEMORY UTILIZATION CONTROL SYSTEM FOR COMPRESSED DIGITAL PICTURE DATA TRANSMISSION SYSTEM
Hiroyuki Sugiyama, Isehara; Takeshi Shibamoto, Sagamihara; Hideo Sato, Yokohama; Tsuneo Furuki, Yamato; Mitsuo Kubo, Yamato, and Koji Tanaka, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Japan
Filed Nov. 3, 1983, Ser. No. 548,415
Claims priority, application Japan, Nov. 5, 1982, 57-194066
Int. Cl.⁴ H04N *5/76, 5/02*
U.S. Cl. 358—335 **5 Claims**



1. A write-in and read-out control apparatus for controlling write-in and read-out of picture element data with respect to a memory circuit, said memory circuit having a memory capacity capable of storing picture element data amounting to one frame and being selectively supplied with picture element data of frame-transmission and picture element data of field-transmission, said frame-transmission being a transmission of all picture element data which are related to a displaying area within a total display area of one picture, said picture element data of frame-transmission amounting to one frame or less according to the size of said displaying area with respect to said total display area, said field-transmission being a transmission of half of the picture element data which are related to the displaying area within the total display area of said one picture, said picture element data of field-transmission amounting to one field or less according to the size of said displaying area with respect to said total display area, said write-in and read-out control apparatus comprising:
input terminal means successively applied with input picture element data, said input terminal means being coupled to said memory circuit;
an address signal generating means for generating an address signal which successively indicates write-in addresses in a first memory region corresponding to one field within said memory circuit into which picture element data which are to be reproduced in a first field among said input picture element data are written, and generating an address signal which successively indicates write-in addresses in a second memory region corresponding to one field within said memory circuit into which picture element data which are

to be reproduced in a second field are written, when said picture element data of frame-transmission are successively applied to said input terminal means as said input picture element data, and for generating two address signals which respectively and successively indicate write-in addresses in the first and second memory regions into which said picture element data of field-transmission are written, when said picture element data of field-transmission are successively applied to said input terminal means as said input picture element data;

write-in pulse generating means for generating at least one write-in pulse when said picture element data of frame-transmission are successively applied to said input terminal means every time one of said input picture element data is applied to said input terminal means, to supply the generated write-in pulse to said memory circuit and write said input picture element data into said memory circuit, and for generating one or two write-in pulses when said picture element data of field-transmission are successively applied to said input terminal means every time one of said input picture element data is applied to said input terminal means, to supply the generated write-in pulse or pulses to said memory circuit and write said input picture element data into said memory circuit; and

read-out control means for generating a read-out address signal and supplying the generated read-out address signal to said memory circuit, said read-out address indicating an address which is incremented by a predetermined integer regardless of whether stored picture element data in said memory circuit are picture element data of frame-transmission or field-transmission, so that the stored picture element data are read out from said first memory region during a reproducing period of the first field and so that the stored picture element data are read out from said second memory region during a reproducing period of the second field.

4,554,598

SINGLE REVOLUTION DISK SECTOR FORMATTER

Bruce H. Tarbox, Billerica; Donald J. Rathbun, Andover, both of Mass., and Taian Su, Palo Alto, Calif., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed May 25, 1984, Ser. No. 613,936
Int. Cl.[4] G11B *5/09*
U.S. Cl. 360—48 **4 Claims**

1. Apparatus for writing a predetermined format on a track of a mass storage disk drive during one revolution of the disk, said apparatus comprising:

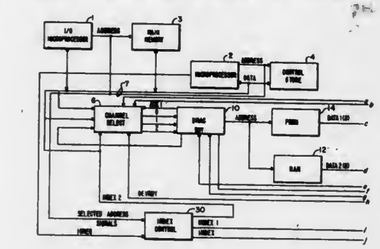
DMA controller means for storing a plurality of address signals and generating a sequence of said plurality of address signals;

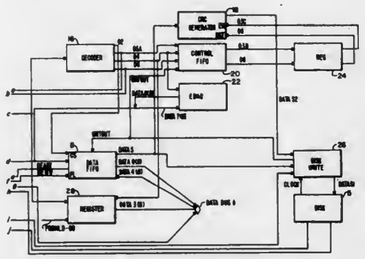
read only memory (ROM) means coupled to said DMA controller means and responsive to said sequence of said plurality of address signals for generating sequence of ROM signals representative of fixed data codes or control codes stored in first locations specified by said sequence of said plurality of address signals;

decoder means coupled to said ROM means and responsive to said sequence of ROM signals representative of said control codes for generating a sequence of control signals;

random access memory (RAM) means coupled to said ROM means and said decoder means and responsive to said sequence of said plurality of address signals for generating a sequence of RAM signals representative of variable data codes stored in second locations specified by selected ones of said sequence of said plurality of address signals;

data first in-first out (FIFO) means coupled to said DMA controller means, said decoder means, said ROM means and said RAM means and responsive to a memory write signal, a first control signal in a first state and said sequence of RAM signals for storing a sequence of variable data codes, and responsive to said memory write signal, said first control signal in a second state, a second control signal and said sequence of ROM signals for storing a sequence of fixed data codes, said FIFO means generating an output signal serializing said sequence of fixed and said





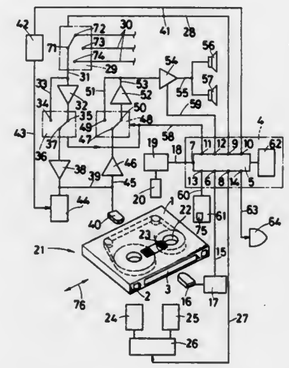
variable data codes in said predetermined format for writing on said track during said one revolution of the disk.

4,554,599

CASSETTE TAPE REPRODUCTION CONTROL ARRANGEMENT

Syuji Shiozaki, Hyogo, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jun. 21, 1983, Ser. No. 506,884
Claims priority, application Japan, Jun. 21, 1982, 57-107379; Oct. 27, 1982, 57-189929
Int. Cl.[4] G11B *5/008*
U.S. Cl. 360—69 **25 Claims**



1. A reproduction control arrangement for a cassette tape deck, in which recording and reproduction are performed by a cassette half having the magnetic tape being mounted on the deck, comprising:

a recording area having control information for record/reproduction of the magnetic tape,

said recording area being provided on the surface of the cassette half parallel to the direction in which the cassette half is attached to or discharged from the deck,

a detecting means for detecting the recording area during the time that the cassette half is being moved on the cassette deck so as to be mounted thereon, said detecting means being positioned at a location facing a cassette half moving course so that detection occurs before completion of mounting of the cassette half on the deck, and

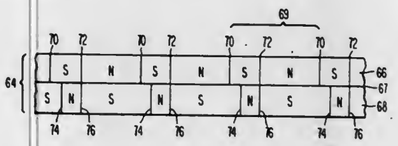
a processing unit for controlling reproduction of the cassette tape according to the control information recorded in the recording area.

4,554,600

TRACK FOLLOWING CODE AND TRACK FOLLOWING SYSTEM

Graham P. Sellars, Winsford, England, assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 447,834, Dec. 8, 1982, Pat. No. 4,519,007.
This application Sep. 10, 1984, Ser. No. 648,573
Int. Cl.[4] G11B *5/56*
U.S. Cl. 360—77 **29 Claims**



1. A data storage member comprising: a track; and a tracking code for positioning a transducer with respect to said track, said code including:

a first path including a first area of magnetic flux of one polarity followed by a second area of magnetic flux of opposite polarity;

a second path adjacent said first path and including a third area of magnetic flux of said opposite polarity followed by a fourth area of magnetic flux of said one polarity, wherein said second area immediately follows said first area and said fourth area immediately follows said third area in their respective paths, said first area and said third area commencing at substantially the same positions on said storage member, said second area and said fourth area commencing at substantially the same positions on said storage member; and

wherein said first path and said second path extend a distance X on said storage member, said first area and said third area each extend a distance Y, and said second area and said fourth area each extend a distance Z, where Y is less than Z and $X=Y+Z$.

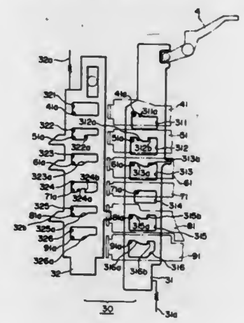
4,554,601

MODE SWITCH OPERATING DEVICE FOR TAPE RECORDER

Masanori Sugihara, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,660
Claims priority, application Japan, Sep. 2, 1981, 56-130471[U]; Sep. 2, 1981, 56-130474[U]; Sep. 2, 1981, 56-130475[U]; Sep. 2, 1981, 56-130476[U]; Sep. 2, 1981, 56-130477[U]
Int. Cl.[4] G11B *15/00*
U.S. Cl. 360—90 **13 Claims**

4. A mode switch operating device for a tape recorder, comprising; a plurality of mode operating levers, each being provided with a retaining pin; a retainer plate and a retainer slider, each movable in a direction perpendicular to the direction of movement of said mode operating levers, said plate and said slider being provided with window holes through which the retaining pins of said operating levers pass, said plate and said slider being biased to move in opposite directions relative to each other, at least some of said window holes of said retainer plate being provided with a retaining portion at a periphery thereof opposite to the biasing direction thereof.

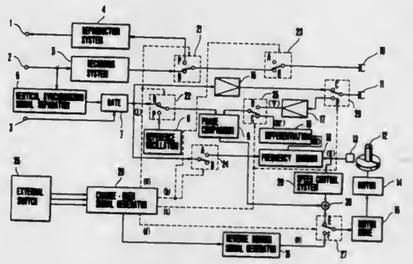


4,554,602

VIDEO SIGNAL RECORDING APPARATUS

Kazumitsu Tobe, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,349
Claims priority, application Japan, Mar. 3, 1982, 57-33289
Int. Cl.[4] H04N *5/78*; G11B *27/00*
U.S. Cl. 360—14.2 **12 Claims**



1. A video signal recording apparatus, comprising:

(a) recording means for recording a video signal on a recording medium and forming a video track;

(b) reproducing means for reproducing a control signal from a control track of the recording medium, the control signal being recorded at positions related to the video tracks;

(c) moving means for moving the recording medium;

(d) input means for inputting a video signal;

(e) separation means for separating a synchronizing signal from the input video signal;

(f) generation means for generating a timing signal in relation to a moving action of said moving means;

(g) control means for controlling said moving means, said control means including a selection circuit for selectively outputting the control signal reproduced by the reproducing means and the timing signal generated by the generation means, and a phase comparison circuit for phase comparing the synchronizing signal with the output signal of the selection circuit; and

(h) setting means for compulsorily setting a phase of the timing signal on the basis of a phase of said synchronizing signal when the selection circuit selects the control signal.

4,554,603

ADAPTER FOR A MINIATURE TYPE TAPE CASSETTE

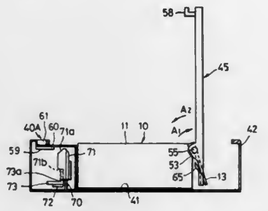
Eiichi Tsuchiya, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 25, 1983, Ser. No. 516,806

Claims priority, application Japan, Jul. 30, 1982, 57-134271; Jul. 30, 1982, 57-116936[U]; Jul. 30, 1982, 57-116938[U]

Int. Cl.[4] G11B *15/66*

U.S. Cl. 360—94 **6 Claims**



1. An adapter for a miniature type tape cassette having an external form and size smaller than those of a standard type tape cassette, said miniature type tape cassette being used with a recording and/or reproducing apparatus of a type different from a standard type recording and/or reproducing apparatus primarily designed for carrying out recording and/or reproduction with said standard type tape cassette, said adapter comprising:

an adapter case having an external form and size substantially identical to those of said standard type tape cassette;

an accommodating part for accommodating said miniature type tape cassette;

a cover for covering said accommodating part in its closed state, said cover being provided in a state free to open and close;

tape draw-out means provided within said adapter case, for drawing out a tape from said miniature type tape cassette accommodated within said accommodating part and forming a predetermined tape path within said adapter case; and

locking means for engaging with a part of said tape draw-out means when said cover is in its open state, and for locking said tape draw-out means in an immovable state at a position before said tape draw-out means starts a tape draw-out operation, said locking means being displaced by one part of said cover and being disengaged from said part of said tape draw-out means when said cover is closed to release the locking with respect to said tape draw-out means.

4,554,604

VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS HAVING A FUNCTION TO TEMPORARILY STOP RECORDING

Tsuneyuki Koyama, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 19, 1983, Ser. No. 496,129

Claims priority, application Japan, May 21, 1982, 57-85709; May 28, 1982, 57-90842; May 28, 1982, 57-90843; Jun. 15, 1982, 57-102900

Int. Cl.[4] G11B *5/00, 15/00;* **H04N** *5/76*

U.S. Cl. 360—95 **10 Claims**

1. A video signal recording and/or reproducing apparatus comprising:

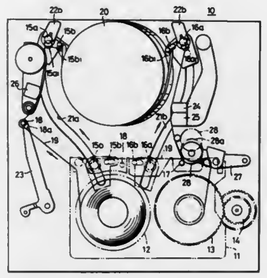
tape loading and unloading means for loading a magnetic tape along a predetermined tape path by drawing the tape outside a tape cassette which is loaded into said recording and/or reproducing apparatus when the recording and/or reproducing apparatus is set to a recording mode or a reproducing mode, and for unloading the tape from the predetermined tape path by returning the tape inside the tape cassette when the recording and/or reproducing apparatus is set to a stop mode;

a power source switch having ON and OFF states;

a power source turned ON or OFF in response to the ON or OFF state of said power source switch;

magnetic head means for recording a video signal on the tape disposed along the predetermined tape path during the recording mode and for reproducing the recorded video signal from the tape disposed along the predetermined tape path during the reproducing mode;

driving means coupled to said power source for driving the tape to move;



control means for controlling said driving means to move the tape in a forward direction during the recording mode and in a reverse direction for a predetermined time period and then stop the tape when said power source switch is turned OFF during the recording mode, said reverse direction being opposite to said forward direction; and

turning OFF means for turning OFF said power source in a state where the tape is substantially disposed along the predetermined tape path when the tape stops after moving in the reverse direction for said predetermined time period.

4,554,605

MODE SETTING DEVICE OF A MAGNETIC TAPE DRIVING APPARATUS

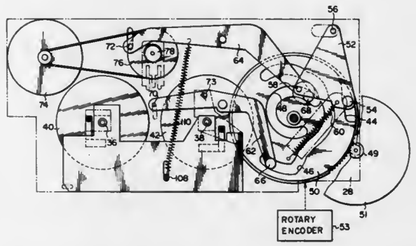
Shoichi Saito, and Kazumi Miyazi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,413

Claims priority, application Japan, Aug. 25, 1981, 56-133001; Sep. 7, 1981, 56-132763[U]

Int. Cl.[4] G11B *5/008*

U.S. Cl. 360—96.1 **4 Claims**



1. In a magnetic tape driving apparatus in which a magnetic tape (32) is driven with a reel shaft (16 or 18) and a capstan (36 or 38), a mode setting device for establishing various driving modes (i.e., EJECT. START, FF. REW, PLAY. REC, STOP, PAUSE, CUE. REVIEW) of the tape driving apparatus, comprising:

a brake lever (124 or 126) provided with a brake friction member (134 or 136) and being movable between a separating position wherein the brake friction member (134 or 136) is separted from the reel shaft (16 or 18) and a braking position wherein the brake friction member (134 or 136) is in contact with the reel shaft (16 or 18) so as to stop the rotation of the reel shaft (16 or 18);

a pinch roller retaining lever (138 or 140) provided with a pinch roller (142 or 144) and being movable between a non-pinching position wherein the pinch roller (142 or 144) does not pinch the magnetic tape (32) in cooperation with the capstan (36, 38) and a pinching position wherein the pinch roller (142 or 144) pinches the magnetic tape (32) in cooperation with the capstan (36 or 38);

a first urging means (128) for urging the brake lever (124 or 126) toward the braking position thereof;

a second urging means (162 or 164) for urging the pinch roller retaining lever (138 or 140) toward the pinching position thereof;

a first cam guide member (62) coupled to said brake lever and to said pinch roller retaining lever, and being movable among first, second, and third positions, the first cam guide member (62) setting the brake lever (124 or 126) at the separating position when the first cam guide member (62) is located at its first position, the first cam guide member (62) setting the pinch roller retaining lever (138 or 140) at the non-pinching position when the first cam guide member (62) is located at its second position, and the first cam guide member (62) setting the brake lever (124 or 126) at the separating position and setting the pinch roller retaining lever (138 or 140) at the non-pinching position when the first cam guide member (62) is located at its third position;

a second cam guide member (64) coupled to said pinch roller retaining lever, and being movable among first, second, and third positions, the second cam guide member (64) setting the pinch roller retaining lever (138 or 140) at the non-pinching position when the second cam guide member (64) is located at its third position; and

a rotary cam member (50) being capable of attaining first through six different and discrete angular positions and being coupled to said first and second cam guide members for guiding said first and second cam guide members (62 or 64) among their respective first to third positions, the cam member (50) guiding the first cam guide member (62) at its first position and the second cam guide member (64) at its third position when the cam (50) is located at its first and second angular positions, the cam member (50) guiding the first cam guide member (62) at its second position and the second cam guide member (64) at its third position when the cam member (50) is located at its third angular position, the cam member (50) guiding the first cam guide member (62) at its third position and the second cam guide member (64) at its second position when the cam member (50) is located at its fourth angular position, the cam member (50) guiding the first cam guide member (62) at its second position and the second cam guide member (64) at its first position when the cam member (50) is located at its fifth angular position, and the cam member (50) guiding the first cam guide member (62) at its first position and the second cam guide member (64) at its first position when the cam member (50) is located at its sixth angular position, so that:

the brake lever (124 or 126) separates the brake friction member (134 or 136) from the reel shaft (16 or 18) against the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) separates the pinch roller (142 or 144) from the capstan (36 or 38) against the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its first and second angular positions;

the brake lever (124 or 126) brings the brake friction member (134 or 136) in contact with the reel shaft (16 or 18) by the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) separates the pinch roller (142 or 144) from the capstan (36 or 38) against the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its third position;

the brake lever (124 or 126) separates the brake friction member (134 or 136) from the reel shaft (16 or 18) against the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) separates the pinch roller (142 or 144) from the capstan (36 or 38) against the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its fifth position; and

the brake lever (124 or 126) separates the brake friction member (134 or 136) from the reel shaft (16 or 18) against the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) makes the pinch roller (142 or 144) pinch the magnetic tape (34) with the capstan (36 or 38) by the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its sixth angular position.

4,554,606

MAGNETIC RECORDING MEDIUM

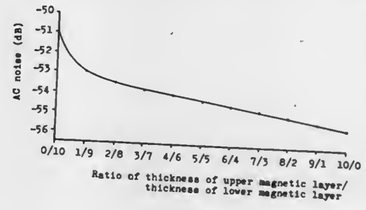
Takato Karashima, Nishinomiya, and Hiroshi Zaitsu, Takatsuki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 12, 1982, Ser. No. 433,910

Claims priority, application Japan, Oct. 13, 1981, 56-163620

Int. Cl.[4] G11B *23/00;* **B32B** *7/02*

U.S. Cl. 360—131 **4 Claims**



1. A magnetic recording medium comprising a non-magnetic support having thereon two magnetic layers, an upper magnetic layer and a lower magnetic layer, each of said magnetic layers consisting essentially of magnetic metallic particles dispersed in a binder said lower magnetic layer having a coercive force of at least 100 oersteds lower than that of said upper magnetic layer, the thicknesses of the upper and lower magnetic layers being in the ratio of the thickness of the upper magnetic layer to that of the lower magnetic layer of 1/1 to 1/9, and the total coercive force of the upper and lower magnetic layers being at least 1,000 oersteds.

4,554,607

FUSE LOSS INDICATING CIRCUIT

Erwin P. Mora, Mt. Clemens, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 29, 1982, Ser. No. 428,502

Int. Cl.[4] H02H *5/04;* **G08B** *21/00*

U.S. Cl. 361—104 **3 Claims**

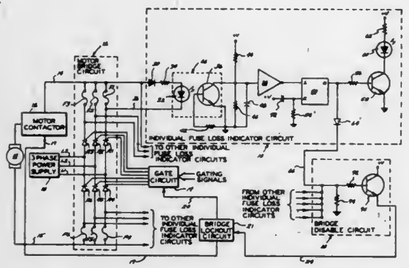
1. In an SCR motor bridge circuit including a power source, at least one fuse for limiting the amount of current supplied by the power source to a motor, a gate circuit for supplying gating signals to the SCR's, and a normally closed motor contactor for supplying power to the motor armature, a fuse loss monitoring and protection circuit comprising:

optical isolator means coupled to monitor the one fuse for generating a set signal when the one fuse has opened;

latching means responsive to said set signal for generating a fuse loss signal;

indicator means responsive to said fuse loss signal for indicating that the one fuse has opened; and

protection means responsive to said fuse loss signal for generating a first disable signal to the gate circuit for disconnecting the gate circuit for supplying the gating signals from the SCR's and for generating a second disable signal to the motor contactor for opening the motor contactor.



4,554,608

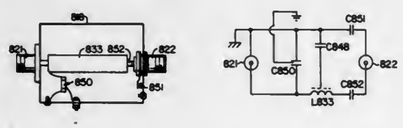
CONNECTOR FOR ELECTROMAGNETIC IMPULSE SUPPRESSION

Roger R. Block, P.O. Box 1198, Gardnerville, Nev. 89410

Continuation-in-part of Ser. No. 441,765, Nov. 15, 1982, Pat. No. 4,409,637. This application Oct. 6, 1983, Ser. No. 539,709

Int. Cl.⁴ H02H *3/22*

U.S. Cl. 361—119 **23 Claims**



1. An electrical surge suppressor for shunting electromagnetic impulse energy traveling along a radio frequency signal transmission line of the type having primary and secondary conductors and a known characteristic impedance therebetween, the suppressor comprising in combination:

first and second electrical connector means each having primary and secondary conductors for being operatively interposed along the primary and secondary conductors of the radio frequency signal transmission line;

discharge means including first and second discharge devices each for defining a known breakdown voltage and a known capacitance between first and second sections thereof;

first means for electrically coupling said first section of said first discharge device between said primary conductors of said first and second electrical connector means;

second means for electrically coupling said first section of said second discharge device between said secondary conductors of said first and second electrical connector means;

a first capacitor interposed along said first means and a second capacitor interposed along said second means for blocking the flow of DC energy through the primary and secondary conductors; and

third means for electrically coupling said second section of each of said discharge devices to a ground potential, with said first means and said second means and said third means having known inductances which interact with the capacitance of said discharge means and any stray capacitance of the combination thereof to produce a charcteristic impedance which is generally equal to the characteristic impedance of the radio frequency signal cable, whereby the suppressor will shunt electrical impulse energy to ground potential while normally representing a low standing wave ratio for radio frequency energy transmitted along the transmission line.

4,554,609

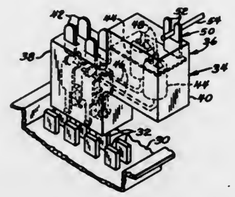
TRANSIENT VOLTAGE PROTECTOR

William E. Ruehl, Wheeling; Richard H. Heidorn, Lombard, and Edwin G. Swick, Bartlett, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 5, 1984, Ser. No. 568,178

Int. Cl.⁴ H02H *1/04*

U.S. Cl. 361—119 **10 Claims**



1. A transient voltage protector for telephone circuits and the like comprising an insulating plastic housing having a lower portion and an upper portion, at least one terminal in said lower portion and each of said at least one terminal having a female connector thereon disposed within said housing, said housing having an aperture therein respectfully aligned with each of said female connectors for admitting a male terminal such as on a telephone connector, voltage limiting means in said upper housing portion, means connecting said voltage limiting means to one of said at least one terminal, a grounding terminal in said upper housing portion, means connecting said voltage limiting means to said grounding terminal, an opening in said upper housing portion adjacent said grounding terminal, and a connector on said grounding terminal extending through said opening and out of said housing.

4,554,610

MAGNETIC GRIPPING DEVICE

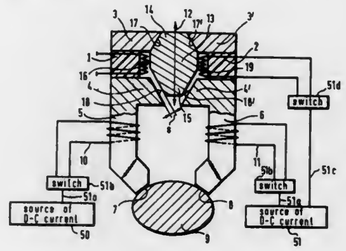
Rudi Metz, Donzdorf, and Herbert Scholl, Göppingen, both of Fed. Rep. of Germany, assignors to EMAG Mashinenfabrik GmbH, Salach, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,516

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319928

Int. Cl.⁴ H01F *7/04*

U.S. Cl. 361—144 **17 Claims**



1. A device for manipulating magnetizable loads, comprising a permanent magnet having two pole shoes and a first magnetic flux conductor connected with said pole shoes and defining a first gap; an electromagnet having two pole shoes constituting extensions of the pole shoes of said permanent magnet and a magnetic flux conductor connected to the pole shoes of said electromagnet in parallel with said first conductor and defining

a second gap; and an armature movable between a first position in which it fills only said first gap and contacts the first conductor at both sides of the first gap, and a second position in which it fills only said second gap and contacts the second conductor at both sides of such second gap.

4,554,611

ELECTROSTATIC CHUCK LOADING

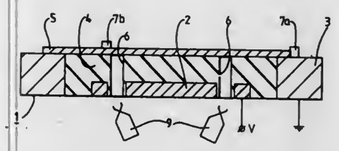
Ian H. Lewin, Forest Row, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1984, Ser. No. 645,631

Claims priority, application United Kingdom, Feb. 10, 1984, 8403547

Int. Cl.⁴ H01F *13/02*

U.S. Cl. 361—234 **8 Claims**



1. A method of loading a semiconductor wafer onto an electrostatic chuck having a layer of dielectric material on an electrically conductive member, and means for electrically contacting the wafer, which method includes the steps of locating the wafer on the dielectric layer contiguously to the contact means, connecting an external voltage source to provide a potential difference between the contact mens and the electrically conductive member thereby clamping the wafer to the chuck, and subsequently disconnecting the external voltage source whereupon the wafer remains clamped due to the effect of charge retention in the dielectric, characterised by the further step of displacing the wafer on the dielectric layer at least after connecting and before disconnecting the external voltage source.

4,554,612

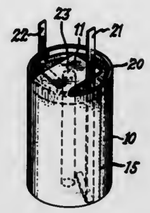
AC METALLIZED FILM CAPACITOR

John J. Childs, Bennington, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 6, 1984, Ser. No. 637,995

Int. Cl.⁴ H01G *1/14, 9/00*

U.S. Cl. 361—306 **11 Claims**



1. A capacitor encased in a metal housing comprising a wound capacitor section having two electrodes each bearing a tab, one of said tabs extending from a bottom edge of said section along its height to above a top edge of said section, another of said tabs extending above said top edge, and a unitary spacer enclosing and insulating said section from said housing and insulating said tabs from each other, said section, and said housing, said spacer having a main body portion rectangular in shape having a rectangular extension on one long side of said body portion near an end thereof and a cutout portion on a long side of said body opposite said extension, said extension being folded over said top edge between said tabs insulating them from each other and said top edge.

4,554,613

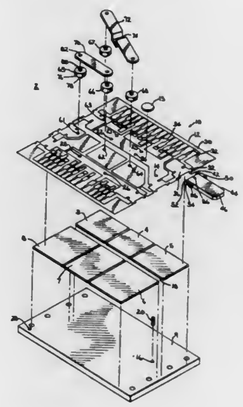
MULTIPLE SUBSTRATE CIRCUIT PACKAGE

Lance R. Kaufman, 131 N. White Oak Way, Mequon, Wis. 53092

Filed Oct. 31, 1983, Ser. No. 546,997

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—386 **17 Claims**



1. A circuit package for high power application comprising:

a base plate;

a plurality of electrically insulative thermally conductive separate substrates bonded on said base plate;

circuit means, including lead frame means, bonded on said plurality of substrates; and

alignment means including a hole in said lead frame means aligned with a hole in said base plate through a gap between said substrates.

4,554,614

ELECTRIC CIRCUIT ASSEMBLY COMPRISING A PRINTED WIRING BOARD

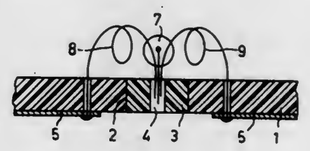
Hendricus M. van der Wijst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1983, Ser. No. 498,618

Claims priority, application Netherlands, Jun. 7, 1982, 8202285

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—400 **8 Claims**



1. An electric circuit assembly, comprising:

a printed wiring board made of a first electrically insulating material, having a plurality of openings therethrough for electrical interconnections,

a network of printed circuit conductors on the board, and

at least two circuit components interconnected through said conductors and interconnections,

characterized in that said first electrically insulating material has a given impermeability to moisture,

said printed wiring board has one opening having a size greater than the other openings for interconnections,

said assembly comprises a single member only, made of a second electrically insulating material having a moisture impermeability greater than the impermability of said first material, and having a single aperture therethrough, said member being fitted in said one opening, and

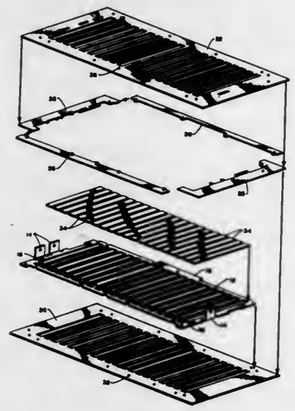
a plurality of said circuit components are electrically interconnected by connections disposed in said aperture.

4,554,615

ELECTRICALLY CONDUCTING PANEL AND METHOD OF MAKING SAME

Ralph Clark, Carson, Calif., assignor to Bussco Engineering, Inc., El Segundo, Calif.

Filed Jun. 1, 1983, Ser. No. 500,035
Int. Cl.⁴ H05K *1/11*; H02G *5/00*
U.S. Cl. 361—412 **2 Claims**



1. The method of making an electrically conducting panel comprising the steps of:

utilizing a pair of electrically conductive frames with each frame having at least one pair of electrically connecting plugs and each frame having a plurality of spaced apart enlarged openings;

locating the lower surface of one of said frames against a sheet material, electrically insulative, base section wherein the peripheral edge of said base section extends exteriorly of the peripheral edge of said one frame;

placing a plurality of sheet material, electrically insulative, inserts about the periphery of said one frame wherein each insert has an inner edge configuration closely conforming to the portion of said one frame that it abuts and the outer edge of each said insert is in alignment with the peripheral edge of said base section;

placing an electrically insulative insert within each enlarged opening substantially closing such;

locating a sheet material, electrically insulative, center cover on the upper surface of said one frame substantially completely covering same with the peripheral edge of said center cover being aligned with the peripheral edge of said base section;

placing the other frame of said pair of frames on said center cover;

placing a plurality of sheet material electrically insulative, inserts about the periphery of said other frame in a manner similar to the above first placing step and inserts within each enlarged opening in a manner similar to the above second placing step;

locating a sheet material, electrically insulative, top cover on said other frame substantially completely covering same with the peripheral edge of said top cover being aligned with the peripheral edge of said center cover;

bonding together entire assemblage of parts to form an integral unit resulting in said panel; and

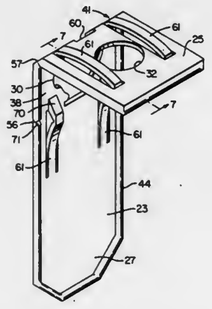
physically removing most of each insert located within each enlarged opening leaving intact the edge of each insert forming a continuous, electrically insulative, smooth wall surface for each enlarged opening.

4,554,616

PROTECTIVE SHIELD FOR EXTERNAL ELECTRICAL PARTS OF A CONTROL ARRANGEMENT AND THE COMBINATION THEREOF

Harold A. McIntosh, Crestline, Calif., assignor to RobertShaw Controls Company, Richmond, Va.

Filed Jul. 2, 1984, Ser. No. 627,047
Int. Cl.⁴ H02B *1/04*
U.S. Cl. 361—424 **5 Claims**



1. In a combination of a control arrangement having housing means provided with certain external electrical means and a one-piece protective shield carried by said housing means and having a section thereof covering said certain external electrical means, the improvement wherein said section of said protective shield is movable relative to the remainder of said shield between a first position thereof that covers said certain external electrical means and a second position thereof that uncovers said certain external electrical means, said protective shield being substantially flat when said section is in said first position thereof, said section of said protective shield being substantially transverse to said remainder of said shield when said section is in said second position thereof, said protective shield having hinge means that hinge said section to said remainder of said protective shield, said hinge means having means that holds said section in said first position thereof when said section is moved to said first position thereof and that holds said section in said second position thereof when said section is moved to said second position thereof, said housing means having socket means, said shield having integral projection means on the remainder thereof received in said socket means and thereby securing said shield to said housing means.

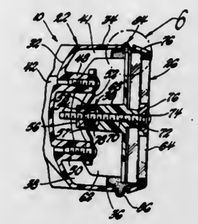
4,554,617

ADJUSTABLE LAMP ASSEMBLY

David O. Tyler, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1984, Ser. No. 663,411
Int. Cl.⁴ B60Q *1/06*
U.S. Cl. 362—61 **3 Claims**

1. An adjustable lamp assembly for an automobile, said lamp assembly comprising a support housing, a lamp unit including a reflector member and a lens member, an adjustment mechanism connecting said lamp unit to said support housing for adjustable positioning of said lamp unit between two extreme positions about a horizontal axis, said adjustment mechanism including a pair of bosses extending rearwardly from said reflector member, a bore formed in each of said bosses, cooperating pivot means formed on said bosses and on said support housing for allowing said lamp unit to pivot about said horizontal axis, a screw located in each of said bores in said pair of bosses, a plate member carried by said housing, a nut threadably receiving each screw and supported by said plate member for movement between said two extreme positions along an arc having said horizontal axis as its center so that upon tightening of said screw, said nut is drawn into frictional engagement with said plate member whereby said lamp unit maintains an adjusted position between said two extreme positions.

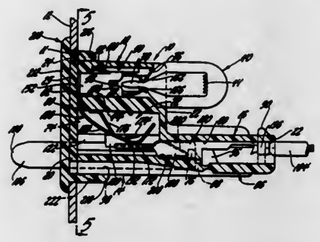


4,554,618

SWITCH, LAMP, AND CONNECTOR ASSEMBLY

Daniel V. Bafunno, Warren; Gary C. Detter, Berlin Center, both of Ohio; James D. Ehrhardt, El Paso, Tex.; Patrick J. Gaughan, West Farmington, Ohio; Dale C. Johnson, Cortland, Ohio, and Richard C. Rowlands, Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 14, 1984, Ser. No. 609,839
Int. Cl.⁴ H01H *3/16*
U.S. Cl. 362—155 **5 Claims**



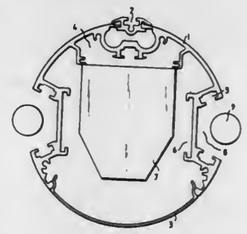
1. A closure actuated switch, lamp, and connector assembly for illuminating a compartment comprising, an insulator having a front side and a back side and including an integral socket portion and an integral connector body portion, means mounting said insulator adjacent said compartment, first passage means in said insulator including a pair of parallel contact passages in said socket portion between said front and said back sides, second passage means in said insulator including a pair of parallel terminal passages extending from said back toward said front side, a pair of unitary contacts each having a body portion adapted for plug-in reception from said front side in respective ones of said contact passages and an integral leg portion concurrently extending into a corresponding one of said terminal passages, a bulb, means operative to support said bulb on said socket portion and to define an electrical circuit through said bulb from one of said contact body portions to the other, a pair of terminals on respective ones of a pair of conductors, each of said terminals being received in plug-in fashion from said back side in respective ones of said terminal pasages and engaging the corresponding one of said contact leg portions to complete a circuit between said conductors through said bulb for energizing the latter, and cam and plunger means on said insulator operable by said closure in response to compartment closing movement thereof to separate one of said contact leg portions from the corresponding one of said terminals and interrupt the circuit through said bulb whereby illumination of said compartment is terminated.

4,554,619

LAMP WITH A LINEAR LIGHT SOURCE

Armin Bansbach, and Helmut Senkel, both of Berlin, Fed. Rep. of Germany, assignors to Semperlux GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,614
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 8330300[U]
Int. Cl.⁴ F21S *7/00*
U.S. Cl. 362—222 **17 Claims**



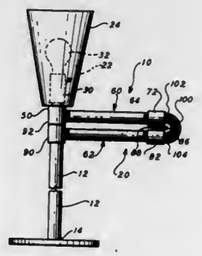
1. A lamp, comprising a housing having an inspection cover and formed with a suspension groove, a chamber for accommodating a wiring, and further including fixtures for weldless longitudinal joints and fixtures for receiving lamp supports; a switching circuit device; and at least one linear light source, said housing being provided with at least one continuous recess which opens outward of said housing, said linear light source being at least partially accommodated in said recess.

4,554,620

LAMP AND LAMP ARM

Jerome Warshawsky, 1322 Everitt Pl., Hewlett Harbor, N.Y. 11557

Filed May 25, 1984, Ser. No. 613,810
Int. Cl.⁴ F21V *21/26*
U.S. Cl. 362—269 **26 Claims**



1. A support arm for the light source of a lamp comprising:

(a) first support arm section means;

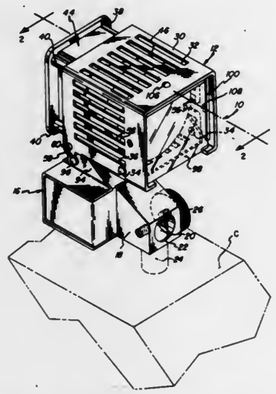
(b) second support arm section means;

(c) articulation means connecting said first support arm section means and said second support arm section means so as to enable said support arm, and a light source when carried thereby to assume either one of only two selected dispositions;

(d) said articulation means including hinge means enabling movement of said first support arm section and said sec-

ond support arm section one with respect to the other about said hinge means, and disposition of said first support arm section and said second support arm section, one with respect to the other, into said either one of said only two selected dispositions.

4,554,621
MODULAR LIGHT ASSEMBLY
John J. Corrigan, Washington, Conn., assignor to Anton/Bauer, Inc., Shelton, Conn.
Filed Oct. 29, 1984, Ser. No. 665,939
Int. Cl.⁴ H01R *33/00*
U.S. Cl. 362—382 **15 Claims**



1. A modular light assembly comprising:
a base member,
at least one electrical socket means pivotably mounted on said base member,
a light module having
a housing adapted to mount a lamp, said housing including a pair of sideplates and a hood pivotably mounted to said sideplates and pivotable from a first position forming an enclosure with said sideplates to a second position permitting access to the interior of said enclosure for removing and replacing a lamp mounted therein,
means for securing said module onto said electrical socket means, and
means between said electrical socket means and module for releasably retaining said module on said electrical socket means, with the lamp in said module in electrical contact with said electrical socket means, and
means on said base member for securing said base member to a support, said means including a pocket on the module slidably received on the electrical socket means.

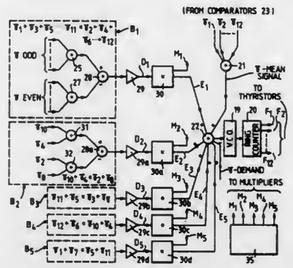
4,554,622
COMPACT VOLTAGE MULTIPLIER FOR SPRAY GUNS
Gordon V. Mommsen, Brooklyn Center, and Dale R. Hemming, Fridley, both of Minn., assignors to Graco Inc, Minneapolis, Minn.
Filed Sep. 22, 1983, Ser. No. 534,740
Int. Cl.⁴ H02M *7/00*
U.S. Cl. 363—61 **6 Claims**

1. A solid state voltage multiplier circuit of the Cockcroft-Walton type having capacitors and diodes connected in multiple stages and having the first stage adapted for coupling to a predetermined voltage source and the Nth stage adapted for coupling to a load, and wherein all capacitors have substantially the same capacitance values, and wherein the voltage rating of each of said capacitors is directly proportional to a length dimension of said capacitor, comprising said first stage capacitors having a predetermined first voltage rating and hence a predetermined length dimension, and said Nth stage capacitors having predetermined lower voltage ratings than



said first stage, and have predetermined shorter length dimensions, whereby the overall length of said multiplier is reduced.

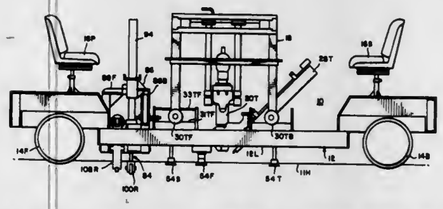
4,554,623
FIRING-ANGLE CONTROL IN INVERTERS
John D. Ainsworth, Stafford, England, assignor to Associated Electrical Industries Limited, England
Filed Feb. 9, 1984, Ser. No. 578,514
Claims priority, application United Kingdom, Feb. 14, 1983, 8304016
Int. Cl.⁴ H02M *1/08*
U.S. Cl. 363—96 **9 Claims**



1. In a multi-phase inverter comprising a bridged array of phase-controlled unidirectional semiconductor switching devices and a controllable source of firing pulses for firing said semiconductor switching devices at controlled firing instants, each said switching device having an individual extinction angle, a phase control system linked to said semiconductor switching devices and said source of firing pulses, comprising:
(a) means for measuring the extinction angle of each switching device
(b) means for comparing the values of selected pairs of sums of one or more selected extinction angles and deriving at least one net difference signal, and
(c) means for deriving from the at least one net difference signal a control signal for selectively controlling the firing of said controllable source of firing pulses at times corresponding to the firing instants of those switching devices which determine the selected extinction angles.

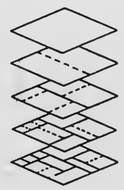
4,554,624
RAILROAD MEASURING, GAUGING AND SPIKING APPARATUS
Thomas D. Wickham, Fairmont, and Wayne R. Monson, Hamburg, both of Minn., assignors to Harsco Corporation, Camp Hill, Pa.
Filed Oct. 31, 1983, Ser. No. 547,396
Int. Cl.⁴ G05B *13/02*; E01B *29/04, 35/02*; B61K *9/08*
U.S. Cl. 364—148 **41 Claims**

21. A railroad measuring, gauging and spiking apparatus operable to bring a distance between rails to a desired gauge comprising;
a frame;
a sensor mounted on said frame having a sensor output representative of the distance between a pair of rails at a gauge point;
a gauging mechanism operable in a first direction and in a second direction to change the distance between the pair of rails, said gauging mechanism including inboard pushing means for increasing a separation between the rails and outboard pushing means for decreasing the separation between the rails;
a gauge setter for setting the desired gauge of the rails;



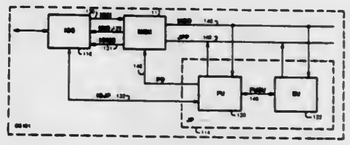
a feedback control circuit operable to receive said sensor output and operable to compare an actual gauge of the rails with the desired gauge of the rails as set on the gauge setter and operable to control said gauging mechanism to automatically bring the rails into the desired gauge; and
a spiker for spiking at least one rail into position after the gauging mechanism has brought the rails to the desired gauge; and
wherein said gauge point is closed to said spiker than it is to said gauging mechanism.

4,554,625
METHOD FOR GENERATING AN OPTIMIZED NESTED ARRANGEMENT OF CONSTRAINED RECTANGLES
Ralph H. J. M. Otten, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 14, 1983, Ser. No. 504,206
Int. Cl.⁴ B26D *5/00*
U.S. Cl. 364—148 **24 Claims**



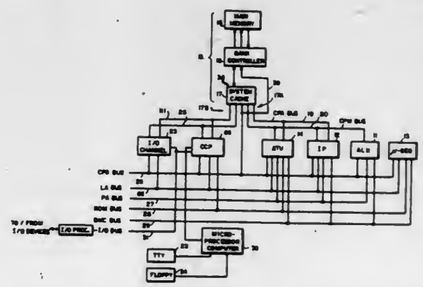
1. A method for allocating rectangular areas for given elements on a rectangular surface of a product such as an integrated circuit, each element being limited by a shape constraint and related to the other elements by proximity information, comprising the steps of:
deriving a distance space to position a center of each said element on said product surface in a configuration of points in a plane;
constructing a slicing structure from said point configuration of said element centers;
determining from the result of the above steps the dimensions, position, and orientation of said elements; and
dividing up said product surface accordingly.

4,554,626
DIGITAL DATA PROCESSING SYSTEM
Lawrence H. Katz, Oregon City, Oreg.; Douglas M. Wells, Chapel Hill, N.C., and Richard G. Bratt, Wayland, Mass., assignors to Data General Corporation, Westboro, Mass.
Continuation of Ser. No. 266,531, May 22, 1981, abandoned.
This application Aug. 20, 1984, Ser. No. 642,732
Int. Cl.⁴ G05F *9/00*
U.S. Cl. 364—200 **12 Claims**



1. In a multiprogramming data processing system which includes processing means for executing programs in response to processes which control the execution of said programs and virtual processor means temporarily bound to a process and containing state items for permitting said processing means to execute a program under control of said process, said system including
process synchronization means comprising
processing await means for performing a process level await operation to suspend the execution of a program which is controlled by a process;
virtual processor await means responsive to said process level await operation for performing a virtual processor level await operation and for temporarily inhibiting the loading of state items required for the execution of said program into said processing means;
virtual processor advance means responsive to the occurrence of an event for performing a virtual processor level advance operation to cease the temporary inhibition of the loading of the state items of said process into said processing means; and
process advance means responsive to said virtual processor level advance operation for causing said processing means to resume the execution of the suspended program which is under the control of said process.

4,554,627
DATA PROCESSING SYSTEM HAVING A UNIQUE MICRO-SEQUENCING SYSTEM
Charles J. Holland, Northboro; Kenneth D. Holberger, N. Grafton; David I. Epstein, Natick; Paul Reilly, Foxboro, and Josh Rosen, Westboro, all of Mass., assignors to Data General Corporation, Westboro, Mass.
Continuation of Ser. No. 143,710, Apr. 25, 1980, abandoned.
This application Mar. 9, 1983, Ser. No. 473,560
Int. Cl.⁴ G06F *13/00*
U.S. Cl. 364—200 **10 Claims**



1. In a data processing system having a central processor

which includes means for decoding macroinstructions to produce starting microaddresses of micro-instructions and a microsequencing means for providing one or more successive micro-instructions for execution by said central processor, said micro-sequencing means comprising

microcontrol store means for storing a plurality of micro-instructions;

said microcontrol store means being responsive to a selected microaddress for accessing a current micro-instruction stored at said selected microaddress of said microcontrol store means;

micro-instruction decoding means connected to said microcontrol store means and responsive to selected bits of said currently accessed micro-instruction for providing microaddress selection control signals for use in determining the microaddress of the next successive micro-instructions to be executed;

a plurality of microaddress sources capable of supplying the microaddress of the next successive micro-instruction, said microaddress sources including microprogram counter means for providing the microaddress of the next successive micro-instruction stored in said microcontrol store means and said macro-instruction decoding means for providing a starting microaddress; and

microaddress selection logic responsive to at least said microaddress selection control signals for selecting the microaddress of the next micro-instruction to be executed from one of said plurality of microaddress sources independently from all the other said microaddress sources and for supplying said selected microaddress directly and immediately to said microcontrol store.

4,554,628

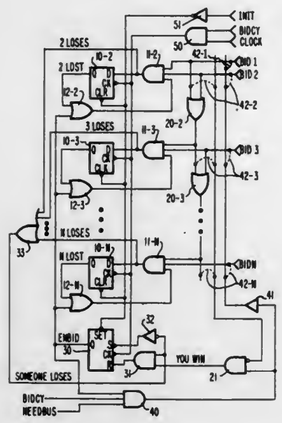
SYSTEM IN WHICH MULTIPLE DEVICES HAVE A CIRCUIT THAT BIDS WITH A FIXED PRIORITY, STORES ALL LOSING BIDS IF ITS BID WINS, AND DOESN'T BID AGAIN UNTIL ALL STORED BIDS WIN

John L. Bell, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 293,453, Aug. 17, 1981, abandoned. This application Nov. 9, 1984, Ser. No. 670,117

Int. Cl.⁴ G06F *9/46*

U.S. Cl. 364—200 **9 Claims**



1. A system comprised of a plurality of devices coupled to a time-shared data bus where each device includes a means for sending messages over said bus in a time-shared fashion; the improvement being that at least three of said devices incorporate their own bid control circuit which is comprised of:

means for bidding for the use of said bus with a priority which is fixed;

means for determining if a bid from the device into which said circuit is incorporated is the highest priority bid being made by said plurality of devices;

means for storing all bids other than its own bid upon said determination that the bid from the device into which said circuit is incorporated is the highest priority bid being made; and

means for inhibiting all bids from the device into which said circuit is incorporated, after said storing operation, until each of said stored bids has thereafter become the highest priority bid being made.

4,554,629

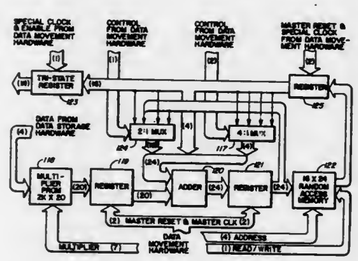
PROGRAMMABLE TRANSFORM PROCESSOR

Winthrop W. Smith, Jr., 100 Mariner Way, Maitland, Fla. 32751

Filed Feb. 22, 1983, Ser. No. 468,336

Int. Cl.⁴ G06F *9/00, 11/00, 7/38*

U.S. Cl. 364—200 **4 Claims**



1. A programmable transform processor comprising in combination:

input and output means for receiving and transmitting data;

data storage means for storing input data and intermediate transform results and for storing completed computational results;

arithmetic processing means for processing input signals including multiplier accumulator means to perform a multiplier accumulator function, said arithmetic processing means having the multiplication function performed as a sequence of products combined in the accumulator portion of said arithmetic processing means simultaneously with the accumulator accumulating the sum of products therein and said arithmetic processing means multiplier accumulator means having an accumulator portion for accumulating partial multiplier products and the sum of the accumulated multiplier products, simultaneously in an adder circuit and said multiplier accumulator means having a accumulation register having a plurality of storage locations therein;

data control means operatively connected to the input and output means, the data storage means and the arithemtic processing means for controlling the input and output of data for the input and output means and the operation of the arithmetic processing means and the control of data to and from the data storage means and said data control means including a memory means which has preprogrammed sequencing data stored therein for addressing said data storage means by individually developing a portion of a data storage address.

4,554,630

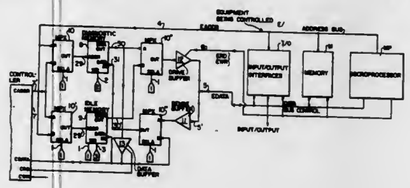
CONTROL APPARATUS FOR BACK-DRIVING COMPUTER MEMORY AND FORCING EXECUTION OF IDLE LOOP PROGRAM IN EXTERNAL MEMORY

Brian Sargent, Tyngsboro, and James Skilling, Harvard, both of Mass., assignors to GenRad, Inc., Concord, Mass.

Filed Aug. 24, 1981, Ser. No. 295,765

Int. Cl.⁴ G06F *11/00, 13/00, 9/00*

U.S. Cl. 364—200 **6 Claims**



1. External computer control apparatus for use with a computer having addressed computer memory comprising, diagnostic memory means external to the computer memory for storing addressed test data to be transferred to or from the computer, said diagnostic memory means having at least some addresses that correspond to predetermined addresses of said computer memory, means for connecting fhe diagnostic memory means to the computer and including driver means for back-driving the computer memory at said predetermined addresses thereof and for thereby forcing the computer to operate upon data stored at addresses in the diagnostic memory means that correspond to said predetermined addresses, rather than to operate upon data stored in the computer memory at said predetermined addresses, idle memory means for storing an idle loop program and connecting means for alternately connecting the idle memory means or the diagnostic memory means to the computer, said idle loop program comprising a series of no-operation fetch and execute instructions, whereby data may be read into or out of the diagnostic memory means while the computer executes the idle loop program stored in the idle memory means.

4,554,631

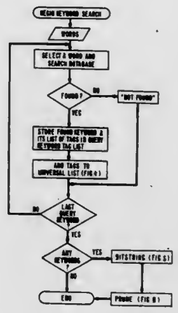
KEYWORD SEARCH AUTOMATIC LIMITING METHOD

Thomas B. Reddington, Kingwood Township, Hunterdon County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 13, 1983, Ser. No. 513,158

Int. Cl.⁴ G06F *15/40*

U.S. Cl. 364—300 **8 Claims**



1. A method for retrieving query keyword locations in a textual database, the method comprising the steps of

constructing a tabulation of all keywords of said database together with indications of their respective locations in said database,

identifying at least one location in said database that is common to keywords of a query keyword set, said set including either all of said query keywords or at least two subsets of said query keywords, and

limiting said identifying step to subsets that contain at least one keyword not included in a larger set having an identified common location.

4,554,632

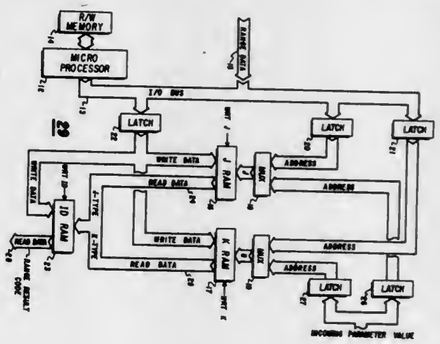
METHOD AND APPARATUS FOR DETERMINING IF A DIGITAL VALUE LIES WITHIN A RANGE

Richard A. Nygaard, Jr., and Fredrick J. Palmer, both of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 28, 1982, Ser. No. 392,980

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—300 **20 Claims**



1. A method of addressing memories to determine if a parameter value lies within a range defined upon an ordered collection of m·n discrete values for the digital signals, comprising the steps of:

representing instances of the m·n discrete values of the digital signals in the form of two digits J and K, where J represents the most significant portion of the value and the radix of J is m, and where K represents the remaining least significant portion of the value and the radix of K is n;

dividing the digital signals into a most significant group representing J and a least significant group representing K;

representing the left and right endpoints of the range as the JK pairs $J_L K_L$ and $J_R K_R$, respectively;

partitioning the m-many values of J into groups delimited by J_L and J_R;

assigning J-types to the groups of J-values to distinguish the various ways those groups affect whether or not the parameter value lies within the range;

storing the assigned J-types in a first memory means addressed by the most significant group of digital signals;

partitioning the n-many values of K into groups delimited by K_L and K_R;

assigning K-types to the groups of K-values to distinguish the various ways those groups affect whether or not the parameter value lies within the range;

storing the assigned K-types in a second memory means addressed by the least significant group of digital signals;

finding in the first memory means the assigned J-type associated with the J portion of a parameter value;

finding in the second memory means the assigned K-type associated with the K portion of that same parameter value; and

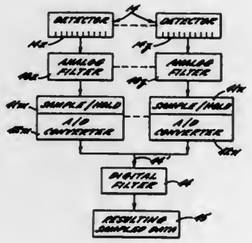
indicating whether or not the parameter value lies within the range, based upon the particular combination of the J-type and K-type resulting from the two finding steps above.

4,554,633

SAMPLED DATA CT SYSTEM INCLUDING ANALOG FILTER AND COMPENSATING DIGITAL FILTER

Gary H. Glover, Waukesha; Dennis G. DallaPiazza, Oconomowoc, and Norbert J. Pelc, Wauwatosa, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 428,771
Int. Cl.⁴ G06F *15/42*; G01T *1/17*
U.S. Cl. 364—414 **6 Claims**



1. In a CT scanner having an x-ray source and a plurality of detector cells for producing and measuring radiation passed through a body, the scanner having a predetermined scan speed, wherein the improvement comprises a sampled data system for producing a plurality of discrete x-ray readings comprising in combination, means responsive to the respective detector cells for producing a plurality of analog signals having magnitudes varying in proportion to the radiation received by the associated detector cells during a scan, a plurality of analog filters for filtering the analog signals each having a non-ideal characteristic, sample and hold means for receiving the filtered signals and producing discrete samples thereof at a sampling rate coordinated to the scanning speed of the scanner, digitizer means for digitizing the sampled signals, and a digital filter operating on the digitized signals and having a predetermined characteristic coordinated to that of the analog filters for compensating for the non-ideal characteristic of the analog filters and producing a more nearly ideal composite filter characteristic.

2. The sampled data system as set out in claim 1 wherein the analog filters have a characteristic which sharply attenuates the analog signals at frequencies above the cutoff frequency but as a result thereof introduce distortion in the analog signals below the cutoff frequency, and the digital filter has a characteristic adapted to compensate for the distortion introduced by the analog filters, thereby to produce a more nearly ideal composite filter characteristic.

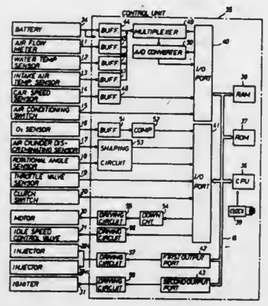
3. The sampled data system as set out in claims 1 or 2 wherein the scanner has a plurality of scan speeds but the sample and hold means has only a single sampling rate, wherein the digital filter further comprising a plurality of digital filters corresponding to the plurality of scan speeds, the digital filters having different bandwidths related to the respective scan speeds for band limiting the digitized sampled signals to the bandwidth associated with the respective scan speeds.

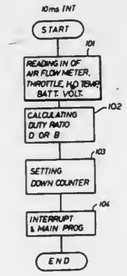
4,554,634

ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM

Kazuo Shinoda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 11, 1983, Ser. No. 474,322
Claims priority, application Japan, Apr. 2, 1982, 57-55624
Int. Cl.⁴ F02M *39/00, 51/00*; F02D *5/02*
U.S. Cl. 364—431.10 **8 Claims**





1. An electrically controlled fuel injection system for an engine, comprising:

a controlled injector to inject fuel into the engine;

controllable fuel pump means for sending pressurized fuel to said injector;

motor means for controlling said fuel pump means;

control circuit means for outputting pulse signals to said motor indicative of duration of fuel injection corresponding to operative conditions of the engine;

detecting means for detecting engine load;

sensing means for sensing on-condition of the engine; and

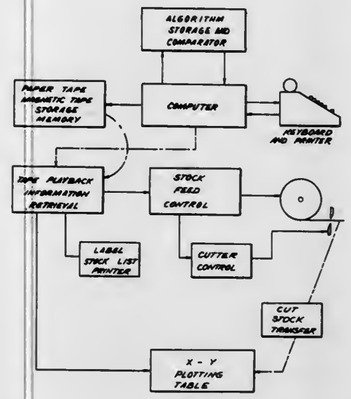
means, responsive to said detecting and sensing means, for decreasing the duty ratio of said pulse signals output from said control circuit means to said motor means in accordance with decreasing engine load detected by said detecting means and for selectively increasing said duty ratio in accordance with the sensed condition of the engine sensed by said sensing means, thereby reducing fuel pump means operation noise and power consumption during low engine load conditions while providing adequate engine performance.

4,554,635

METHOD AND APPARATUS FOR MARKING OR CUTTING LAMINAR PATTERNS OR FORMS

Richard W. Levine, Dobbs Ferry, N.Y., assignor to Construction Technology, Inc., Dobbs Ferry, N.Y.

Continuation-in-part of Ser. No. 402,607, Jul. 28, 1982, abandoned. This application Jun. 13, 1983, Ser. No. 503,699
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—475 **51 Claims**



1. The method of creating a pattern or group of patterns for a three dimensional product which can then be fabricated from patterns of sheet material including the steps of:

creating, through mathematical calculation, the pattern of a selected portion of the end product on the basis of dimensional information;

creating, through mathematical calculation, the others of the patterns of the end product;

positioning all the patterns required for such end product in a grouping such that the grouping when aligned on a sheet material may be severed from the sheet material by a single, substantially straight, cut across the sheet material;

positioning selected pairs of patterns in said group with like edge configurations into relative juxtaposition,

comparing said pairs of patterns to yield a juxtaposition which provides for optimum material usage and for severance of the patterns with a minimum of cutting steps; and

converting the optimum pattern or group of patterns into physical form onto a sheet of material.

4,554,636

APPARATUS FOR TESTING CIRCUITS WITHIN A SYSTEM

Joseph A. Maggi, and Barry F. Wilensky, both of Brooklyn, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,599
Int. Cl.⁴ G01R *31/00*
U.S. Cl. 364—481 **18 Claims**

6. In a system for testing equipment by using means to generate programs for a plurality of time-dependent functions, apparatus for testing circuits within the system comprising:

(a) a plurality of test point multiplexers within the system, each multiplexer selecting data from at least one of a plurality of test points, the test point multiplexers providing test point multiplexer outputs;

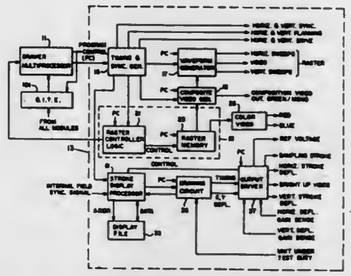
(b) a first multiplexer receiving analog signals from a plurality of the test points multiplexers and generating an analog output;

(c) output means;

(d) means connected to the first multiplexer, said means converting the analog output to corresponding digital output data, the converting means providing said digital output data to the output means;

(e) a digital multiplexer receiving digital signals from a plurality of the test point multiplexers and generating a digital output;

(f) a delay generator connected to the digital multiplexer and generating first and second time delay signals in response to said digital outputs after an appropriate time, the appropriate time being selectable;



(g) means to activate the means to convert the analog signal so as to transmit said corresponding digital data to the output means in response to the first time delay signal; and

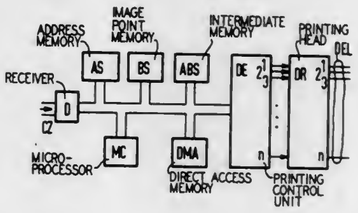
(h) means to transmit information concerning the second time delay signal to said output means, the information being an indication of a relationship of at least one of the time-dependent functions.

4,554,637

METHOD FOR REDUCING THE REDUNDANCY OF BINARY CHARACTER SEQUENCES FOR MATRIX PRINTING

Rudolf Kuntze, Otterfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,730
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132842
Int. Cl.⁴ G06F *15/04*
U.S. Cl. 364—518 **8 Claims**



1. A method for reducing the redundancy of binary character sequences describing characters or graphics patterns in a matrix printer having an image point memory in which said binary character sequences are stored and wherein said characters are represented by a plurality of selected points in a character matrix, said printer having a printing control unit and a printing head movable relative to a recording medium having a plurality of printing elements respectively disposed in rows and columns, each row having only one printing element, said method comprising the steps of:

identifying the location of each point in said matrix with a coordinate pair;

storing each of said binary character sequences for representing a particular character in said image point memory

in a format which includes differential coordinates signifying the magnitude and direction of movement from an immediately preceding printed point in said character to the next successive printed point in said character;

evaluating said binary character sequences in said printing control unit; and

actuating selected ones of said plurality of printing elements in a sequence for printing said particular character on said recording medium in accordance with said binary character sequences for said character and;

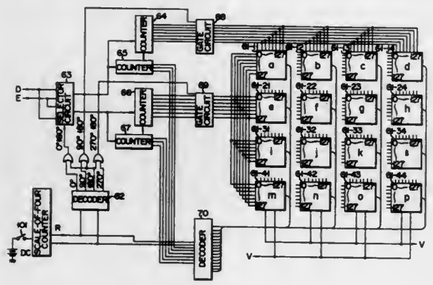
controlling movement of said print head during printing in the x-direction relative to said recording medium by means of an operational byte which is contained in said sequence format for each binary character sequence, said operational byte either causing single step movement of said print head or causing said print head to skip a selected number of steps, as needed for printing said character.

4,554,638

DISPLAY DEVICE INCLUDING APPARATUS FOR ROTATING THE IMAGE TO BE DISPLAYED

Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 316,485, Oct. 29, 1981, abandoned. This application Sep. 13, 1984, Ser. No. 650,565
Claims priority, application Japan, Oct. 31, 1980, 55-153272
Int. Cl.[4] G06F *3/153, 15/20*
U.S. Cl. 364—521 **4 Claims**



1. A display device comprising:

a plurality of memory chips arranged in rows and columns to form a matrix array of the memory chips, each of said memory chips having a plurality of randomly accessible addresses arranged in rows and columns;

means for supplying partial picture information to said memory chips for storing the same therein;

means for generating a picture display angle designating signal selectively representing four angles of rotation 0°, 90°, 180° and 270° at which angle said partial picture information is to be stored in said memory chips;

means for supplying, in succession, write enable signals of said partial picture information to said memory chips in accordance with a rotation angle represented by said picture display angle designating signal;

means for designating said randomly accessible addresses of said memory chips in row and column directions wherein all the addresses of memory chips included in rows and columns are simultaneously designated;

means for supplying to said address designation means in row and column directions a first address designation signal in a horizontal direction of said partial picture information and a second address designation signal in a vertical direction of said partial picture information in accordance with said picture display angle designating signal representing a rotation angle; and

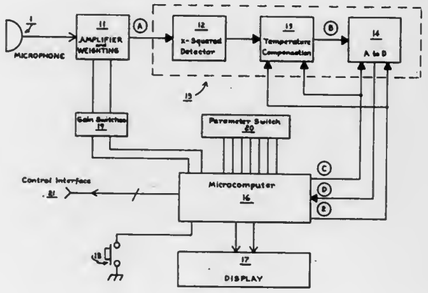
a display unit for displaying a partial picture information at said rotation angle, the partial picture information being stored in said memory chips at a rotation angle corresponding to said picture display angle designating signal.

4,554,639

AUDIO DOSIMETER

William B. Baker, Newark, Del., and Harry E. Betsill, Timonium, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1983, Ser. No. 482,594
Int. Cl.[4] G01H *3/12;* **G08B** *21/00*
U.S. Cl. 364—556 **10 Claims**



1. An audio dosimeter for measuring exposure to sound comprising:

(a) an electronic microphonic sound sensor means which generates electric input signal upon activation by sound;

(b) an amplifier and weighting circuit electrically connected to the sound sensor means which amplifies the input signal from the sound sensor means and provides an "A" weighted signal directly related to the frequency of the sound which activated the sound sensor;

(c) an x-squared detector circuit electrically connected to the amplifier and weighting circuit which receives the input signal and generates a voltage signal which is proportional to the log of the square of the input signal;

(d) temperature compensation circuit electrically connected to the x-squared detector circuit which develops reference signals through ramping and intergrating means matched to the x-squared detector circuit and thereby temperature compensating the voltage signal of the x-squared detector circuit;

(e) analog to digital time converter circuit electrically attached to the temperature compensation circuit which converts the temperature compensated voltage signal to digital time signal;

(f) a microcomputer electrically connected to the temperature compensation circuit and controls the integrating and ramping functions of the circuit and electrically connected to the analog to digital time converter and controls the functions of the converter and receives the digital time signals from the converter and having a calculating means for converting the time signals into sound measurement values.

4,554,640

PROGRAMMABLE ARRAY LOGIC CIRCUIT WITH SHARED PRODUCT TERMS

Sing Y. Wong, and John M. Birkner, both of Sunnyvale, Calif., assignors to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Jan. 30, 1984, Ser. No. 575,845
Int. Cl.[4] H03K *19/20*
U.S. Cl. 364—716 **4 Claims**

1. A programmable integrated logic circuit array comprising:

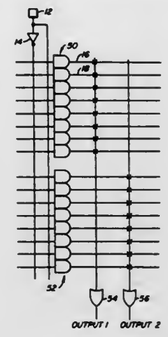
(a) a plurality of groups of logical AND gates;

(b) a plurality of logical OR gates;

(c) a matrix of electrical conductor lines arranged in rows and columns comprising:

(i) input lines, and

(ii) AND gate input lines for each of the AND gates within said plurality of groups of logical AND gates;



(d) connecting means for selectively connecting the outputs from individual ones of said AND gates to the inputs of one or the other, but not both, of a pair of logical OR gates from among said plurality of logical OR gates; and

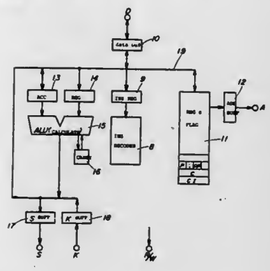
(e) means for selectively connecting input lines and AND gate input lines to program a desired logical output from said OR gates.

4,554,641

PROGRAMMABLE CALCULATOR

Isamu Haneda, and Tetsuo Myooi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1981, Ser. No. 236,211
Claims priority, application Japan, Feb. 19, 1980, 55-19952
Int. Cl.[4] G06F *3/023, 9/06, 15/02*
U.S. Cl. 364—710 **3 Claims**



1. A programmable calculator comprising:

display means for displaying numerical or alphabetic data;

key input means for introducing desired numerical or alphabetic data into a space assigned for a variable;

means for providing an annotator, said display means being responsive to said providing means for displaying said annotator; and

display control means for selectively erasing the annotator from the display means and for displaying only the introducted numerical or alphabetic data upon introduction of the numerical or alphabetic data

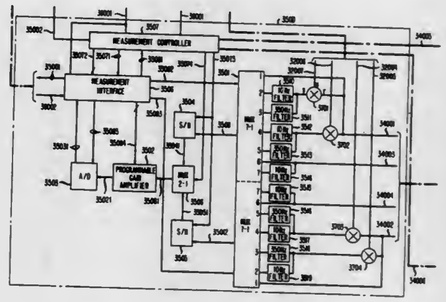
or for displaying the introduced numerical or alphabetic data together with the annotator upon introduction of the numerical or alphabetic data.

4,554,642

DIGITAL FILTERING WITH MONITORED SETTLING TIME

Harvey Rubin, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,189
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—724 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(18 Microfiche, 1055 Pages)



1. Circuitry (**3600**) for processing a digital signal produced by measurement means (**3100,3500**) comprising

a plurality of digital filters (**4000**) connected in cascade, said cascade having an input for receiving said signal and a plurality of encoded signal sample outputs corresponding to the outputs of each of said filters,

means (DC6_SET.d routine) for monitoring each of said encoded signal sample outputs for a settled value determined by a preselected number of consecutive encoded signal samples having amplitude values within a predetermined range amplitudes, and

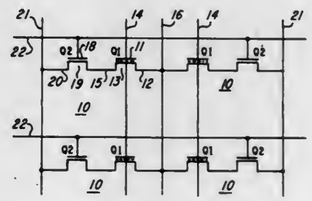
means (**4000**) for signaling said measurement means whenever said settled value is detected.

4,554,643

ELECTRICALLY ERASABLE PROGRAMMABLE MNOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 49,526, Jun. 18, 1979,. This application Jul. 8, 1982, Ser. No. 647,941
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—104 **5 Claims**



1. A method of making a semiconductor device comprising the steps of: forming a plurality of insulated gate field effect transistor cells in a face of semiconductor body, each of the transistor cells having an MNOS transistor and an MOS transistor, including for each transistor forming a source-drain path and a gate, the transistor cells being formed in a regular pattern to provide a memory array with the source-drain paths of the MNOS transistor and the MOS transistor being connected in series in each cell in the array; applying address lines to said

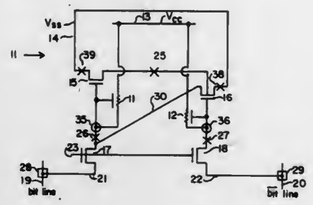
face and programming lines to said face intersecting each cell in the array for programming the array of memory cells by applying voltage to the gates of both transistors in selected cells and reading the array by applying voltage to the gate of only the MOS transistor in a selected cell.

4,554,644

STATIC RAM CELL

Peter C. Chen, Sunnyvale, and Alex Au, Los Altos, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jun. 21, 1982, Ser. No. 390,082
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—154 **13 Claims**



1. A semiconductor memory cell capable of storing a single binary digit (bit) comprising:

a first voltage supply line;

a second voltage supply line having a sheet resistivity low enough that the resistance of said second voltage supply line when supplying a plurality of cells which are simultaneously selected does not interfere with proper operation of the cells;

a word line;

a bit line;

a $\overline{bit}$ line;

a first and a second transistor each having a source and a drain and each having a gate connected to said word line, said source of said first transistor being connected to said bit line and said suurce of said second transistor being connected to said $\overline{bit}$ line;

a third and a fourth transistor each having a gate and a drain and each having a source connected to said second voltage supply line;

said gate of said third transistor being connected to said drain of said first transistor and to said drain of said fourth transistor, said gate of said fourth transistor being connected to said drain of said second transistor and to said drain of said third transistor; and

a first and a second load device, said first load device connected between said first voltage supply line and said gate of said third transistor, and said second load device connected between said first voltage supply line and said gate of said fourth transistor.

4,554,645

MULTI-PORT REGISTER IMPLEMENTATION

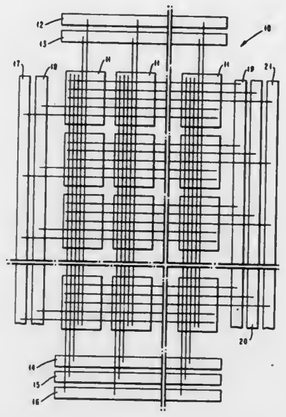
Anatol Furman, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1983, Ser. No. 473,927
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **5 Claims**

1. A dynamic memory cell that can be concurrently written and read or sequentially written and read comprising:

a write bit line transistor having its drain coupled to a first write bit line, its gate coupled to a first write word line and its source coupled to a storage means and an amplifier,

said amplifier comprising a transistor whose source is grounded, whose gate is connected to the storage means and whose drain is coupled through first and second read bit line transistors to respective first and second read bit lines, the gates of the read bit line transistors being coupled to respective first and second read word lines.

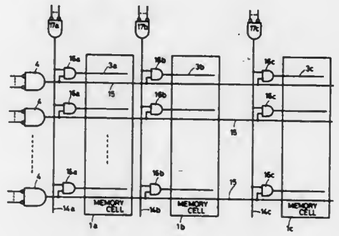


4,554,646

SEMICONDUCTOR MEMORY DEVICE

Masahiko Yoshimoto; Tsutomu Yoshihara; Kenji Anami, and Hirofumi Shinohara, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,388
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **12 Claims**



1. A semiconductor memory device including a matrix of memory cells arranged in rows and columns, said semiconductor memory device comprising:

a plurality of groups of memory cells divided by segmenting said matrix in the direction of the columns;

memory cell group selection lines for every one of said groups for selecting any one of said plurality of the groups of said memory cells;

row decoders for every one of said rows for decoding of row address information for a particular memory cell to be accessed;

preceding word lines each connected to the output of each of said row decoders;

AND gates each provided for providing a logical product of a group enable signal carried on said memory cell group selection line and a row enable signal from said row decoders on said preceding word lines;

group word lines each provided per group and per row for receiving the logical product output from each of said AND gates;

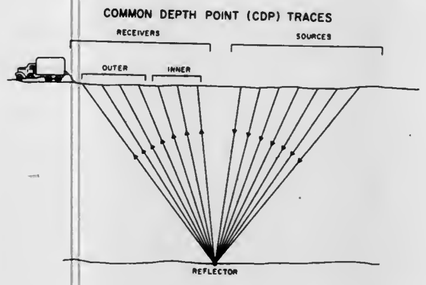
wherein said particular memory cell is accessed with the logical product output from the corresponding one of said group word lines.

4,554,647

METHOD FOR MEASURING SEISMIC PHASE SHIFT OF COMPRESSIONAL WAVEFORMS

Bijan J. Rafipour, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,206
Int. Cl.⁴ G01V *1/28*
U.S. Cl. 367—48 **2 Claims**



1. A method of distinguishing between gas and water saturation characteristics of subsurface earth formations in which the fluid characteristics of the earth's layerings give rise to unique seismic reflections having identifiable phase characteristics, comprising:

(a) generating seismic compressional pulse waveforms which travel through the subsurface earth formations,

(b) recording the phase shift of said compressional pulse waveforms as they reflect normally from common subsurface reflecting points on subsurface formation interfaces,

(c) recording the phase shift of said compressional pulse waveforms as they reflect at a plurality of incremental oblique angles from said common subsurface reflecting points,

(d) subtracting the recorded phase shift of each of said normally reflected pulse waveforms from the recorded phase shift of those of said plurality of obliquely reflected pulse waveforms which reflect from the same common subsurface reflecting point as each of said normally reflected pulse waveforms to determine the amount of phase change observable for each incremental oblique reflection angle about each of said common subsurface reflecting points,

(e) identifying subsurface porous layers having the greater phase changes attributable to the plurality of obliquely reflected pulse waveforms about each of said common subsurface reflecting points along the interfaces of said subsurface porous layers as the water saturated formations and those with the lesser phase changes as the gas saturated formations, and

(f) correcting said observable phase change for formation geometric dispersion $\Delta\phi_2$ in accordance with the following

$$\Delta\phi_2=(\Delta x)(f)[1/[C-\Delta C(f)]-1/C]$$

where

Δx = the difference in path length with respect to normal incidence;

f = frequency of the seismic pulse waveform;

C = constant (2.38 Km/sec); and

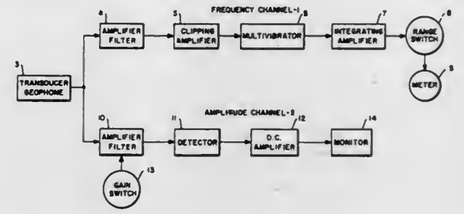
$\Delta c(f)$ = phase velocity: $(c_1)(\text{Cosec}\theta)$, where c_1 is sound velocity through the subsurface formation and θ is the angle of incidence of the seismic pulse waveform with respect to the normal incidence at the subsurface reflecting point along the boundary with the underlying medium.

4,554,648

ELECTRONIC EARTH SEISMIC NOISE MEASURING METHOD

Charles B. Greer, Lenoir, N.C.; Donald W. Keehan, Fairfax, and John A. Springer, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 165,586, Jul. 3, 1980,. This application Aug. 18, 1982, Ser. No. 409,251
Int. Cl.⁴ G01V *1/00*; H04B *11/00*
U.S. Cl. 367—49 **1 Claim**



1. A method for both electronically determining the approximate gross character of the earth's outer crust or soil layer as to general type, depth, and range, and in turn for determining the effect thereof upon transmissivity of background seismic noise therethrough, thus providing a visual readout indication of the soil's effect on the performance of seismic sensor devices, said method being useful to initially set or calibrate any suitable site-adapting seismic sensor device designed to inherently sense soil properties, and being in lieu of time-consuming soil refractometry tests, thus enhancing any seismic sensor device's operation to optimize potential identification of any encroaching vehicle, aircraft or pedestrian traffic which inherently generates seismic signal activity, said method comprising the steps of:

(a) implanting a passive type transducer such as a geophone in the earth's crust, in association with an electronic circuit means coupled to the output of said transducer/geophone which is capable of detecting seismic signature frequency signals from 4–200 hertz;

(b) utilizing the earth's crust which is considered to be a band-pass filter of unknown characteristics and sensing inherent background seismic noise or signature within the earth by use of the transducer/geophone to detect and produce a readout as hereinafter of that seismic noise in the form of resonant frequency within a bandwidth of from 4–200 hertz;

(c) amplifying and filtering the resonant frequency detected by the transducer/geophone

(d) applying said amplified signal to a clipping amplifier to produce a square wave that corresponds to the frequency of said signals produced by said transducer/geophone;

(e) applying the output of said clipping amplifier to trigger a multivibrator;

(f) applying the output signal of said multivibrator to an integrating amplifier to integrate said multivibrator output signal to generate a D.C. signal;

(g) applying the output signal of said integrating amplifier to a frequency meter that is adapted to indicate the frequency of the signal sensed by said transducer/geophone as a visual readout of the resonant frequency of the earth's effect on performance of seismic sensor devices; and

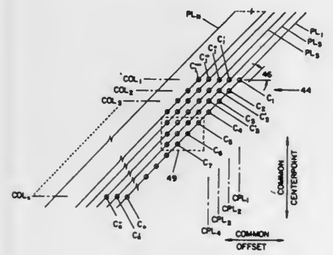
(h) utilizing the sensed data to then adjust or readjust band-pass performance and gain of said site-adapting seismic sensor device to optimize the potential seismic detection.

4,554,649

METHOD FOR THE INTERPRETATION OF SEISMIC RECORDS TO YIELD VALUABLE CHARACTERISTICS, SUCH AS GAS-BEARING POTENTIAL AND LITHOLOGY STRATA

Earl F. Herkenhoff, Orinda, and William J. Ostrander, Benicia, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 1, 1982, Ser. No. 344,892
Int. Cl.⁴ G01V *1/34, 1/36*
U.S. Cl. 367—68 **22 Claims**



1. A method for determining hydrocarbon-bearing potential and/or lithology of strata in the earth using amplitude events in seismic records generated by conventional common centerpoint seismic collection and processing techniques in which presence of refraction energy within said records, has been minimized, comprising the steps of:

(a) generating seismic data by said conventional common centerpoint collection and processing techniques, including recording signals from acoustic discontinuities associated with said strata of interest by positioning and employing an array of sources and detectors such that centerpoints between selected pairs of sources and detectors from a series of centerpoints along a line or survey, said recorded signals being the output of said detectors;

(b) by means of automated processing means, statically and dynamically correcting said recorded signals to form corrected traces whereby each of said corrected traces is associated with a centerpoint horizontally midway between a source-detector pair from which said each corrected trace was originally derived;

(c) by means of automated processing means, indexing said corrected traces so that each of said corrected traces is identified in its relationship to neighboring traces on the basis of progressive changes in common centerpoint location;

(d) for an amplitude event of interest, determining among a series of analytic functions of known mathematical character, a best fit to amplitude vs. horizontal offset variations of a gather of said corrected traces, said best fitting analytic function approximating the amplitude vs. offset form of said amplitude event of interest within said gather wherein the independent variable of said function is horizontal offset and the dependent variable is amplitude, said gather of traces being identified with a common centerpoint location and a set of progressively changing horizontal offset values;

(e) predicting near and far amplitude vs. time trace projections for said gather of corrected traces at new offset locations by substituting one of said new near and far offset locations in said best fitting analytic function as the independent variable and solving said function for the associated dependent amplitude projection thereof, followed by substituting the other of said new offset locations as the independent variable in said best fitting analytic function and solving said function for the dependent associated amplitude projection thereof, said predicted near and far offset trace projections being identified with offset locations falling on opposite sides of said set of changing horizontal offset values;

(f) displaying a first series of said trace projections of step (e) associated with near offset locations, side-by-side with a second series of trace projections also of step (e) associated with far offset locations, said first and second series of displayed traces all being associated with at least the same general common groups of centerpoints so that progressive change in said amplitude event of interest in said displayed traces is identified as a function of progressive change in centerpoint values.

4,554,650

OIL FILLED TOWED ARRAY HOSE WITHOUT COUPLINGS

Douglas E. Brown, East Lyme, and William Matthews, Baltic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1982, Ser. No. 364,818
Int. Cl.⁴ H04R *17/00, 15/00*
U.S. Cl. 367—154 **11 Claims**



1. A continuous, oil filled towed array without intersectional couplings comprising:

a long continuous inner pliable plastic hose having an internal cavity therethrough;

a plurality of conductors wrapped helically around and bonded to the external periphery of said inner pliable plastic hose parallel to a neutral axis thereof;

a plurality of sensors, placed within said inner pliable plastic hose cavity at preselected locations therealong and attached to said conductors in such a fashion as to preclude the need for intersectional couplings;

a long continuous outer pliable plastic hose superposed over and in contact with said inner pliable plastic hose and said plurality of conductors; and

a plurality of longitudinal strength members equally spaced around and embedded within the wall of said outer pliable plastic hose.

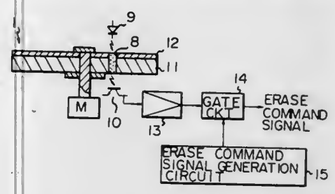
4,554,651

MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD FOR PREVENTING THE ERASING OF THE INFORMATION RECORDED ON THE MAGNETO-OPTICAL RECORDING MEDIUM

Mikio Kanai; Hideki Hatano; Norikiyo Tajiri; Sakashi Ōtaki, and Sigeru Kato, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,674
Claims priority, application Japan, Jun. 4, 1981, 56-086148; Jun. 4, 1981, 56-086149
Int. Cl.⁴ G11B *11/00, 15/04*
U.S. Cl. 369—13 **3 Claims**

1. A magneto-optical recording medium comprising a first side with a vertical magnetization film on which information is recorded, and the medium including a sign indicating whether or not erasing of the information is permitted, said sign comprising an optically readable pattern provided on a second side of said recording medium and whose reflectance of light is different from that of the other portions of the second side of the recording medium.

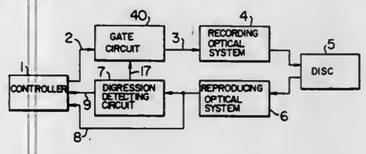


4,554,652

OPTICAL INFORMATION PROCESSOR

Takeshi Maeda, Kokubunji; Yoshito Tsunoda, Mitaka; Takakazu Huno, Tachikawa; Masahiro Takasago, and Yasumitsu Mizoguchi, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 490,165
Claims priority, application Japan, Apr. 30, 1982, 57-71233
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—44 **7 Claims**



1. An optical information processor comprising a recording medium which has tracks along each of which predetermined information is optically recorded and reproduced, means for recording including means for modulating the intensity of a light beam and for irradiating said recording medium with the light beam, light receiving means for receiving the light beam after the irradiation of said recording medium thereby, tracking signal generator means for generating on the basis of an output from said light receiving means a tracking signal which reflects a state of trace of one of said tracks by the light beam, and tracking control means for controlling the irradiation position of the light beam on said recording medium in accordance with said tracking signal so that the light beam correctly follows the track, first means for comparing said tracking signal with first and second preset values defining a predetermined range to produce an output signal indicating that said tracking signal departs from said predetermined range, and second means for stopping the intensity-modulation of the light beam in accordance with the output signal of said first means.

4,554,653

FOCUSING OPTICAL HEAD MOVABLE RADIALLY BY A CARRIAGE

Roland Malissin, and Claude Monlouis, both of Paris, France, assignors to Thomson-CSF, Paris, France

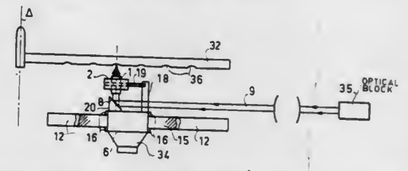
Filed Feb. 28, 1983, Ser. No. 470,380
Claims priority, application France, Mar. 2, 1982, 82 03425
Int. Cl.⁴ G11B *7/08, 21/10*
U.S. Cl. 369—45 **25 Claims**

1. A device for controlling access to a track element belonging to a set of adjacent track elements arranged in a reference surface of a data carrier, said device comprising:

an objective lens projecting a light spot for interaction with anyone of said track elements; said objective lens being movable along a first direction perpendicular to said reference surface for controlling the focusing of said spot and along a second direction parallel to said reference surface and transverse to said track elements for controlling said access;

bench means;

carriage means slidably mounted on said bench means for causing said objective lens to displace along said second direction; wherein said objective lens is supported by said carriage means using a lens mount movable along said first direction; and wherein said carriage means comprises a body for supporting said lens mount,



moving coil actuator means secured by said body for generating an electrodynamic force parallel to said second direction;

a plurality of slider contacting areas in frictional relationship with said bench means; and

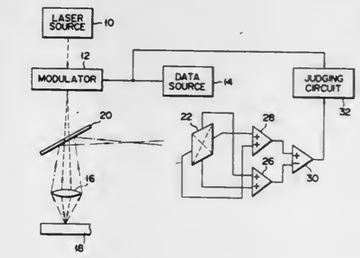
spring connecting means arranged between said slider contacting areas and said body for enabling, in at least said second direction, a relative motion between said body and said slider contacting areas.

4,554,654

OPTICAL MEMORY DEVICE WITH MEANS FOR DETECTING ERRONEOUS DATA WRITING

Kiichi Kato, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,262
Claims priority, application Japan, Jan. 11, 1982, 57-2494
Int. Cl.⁴ G11B *7/00, 27/36*
U.S. Cl. 369—54 **5 Claims**



1. An optical memory device comprising:

a single light beam radiating means for radiating a single recording light beam which is modulated in accordance with recording data;

objective lens means for focusing said recording light beam from said single radiating means onto a recording medium, said recording medium being arranged within a focal plane of said objective lens means, and said recording medium and a focused light beam moving relative to each other;

sensing means for sensing said recording light beam which is focused onto said recording medium and reflected therefrom, said sensing means being arranged in a far field of said objective lens means and being divided into four segments by first and second lines which are symmetrical with respect to a direction of relative movement between said recording medium and said focused recording light beam, said sensing means producing outputs correspond-

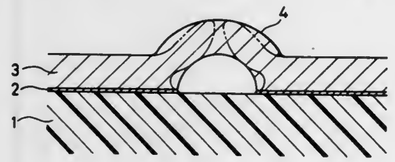
ing to the light sensed by said segments of said sensing means;
operating means for calculating a difference between sums of outputs from two pairs of opposing ones of said segments of said sensing means; and
judging means for detecting an erroneous writing operation in accordance with an output from said operating means and said recording data.

4,554,655

OPTICAL DATA RECORDING DISC AND SYSTEM

Osamu Kumasaka, Yamanashi, and Teruo Touma, Tokyo, Japan, assignors to Pioneer Video Corporation, Yamanashi, Japan

Filed Feb. 23, 1983, Ser. No. 469,053
Claims priority, application Japan, Feb. 24, 1982, 57-28342
Int. Cl.⁴ G11B *25/04, 7/00*
U.S. Cl. 369—275 **10 Claims**



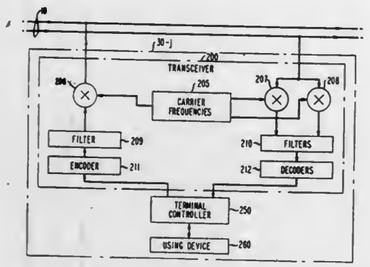
1. An optical data recording disc, comprising:
an optically polished disc;
a gas generated metal layer formed on said disc; and
a protrusion forming layer formed on said gas generating metal layer, said gas generating metal layer being evaporated to produce a gas by an optical beam having an intensity modulated by data, said gas forming protrusions in said protrusion forming layer which are representative of said data, said metal layer acting as an adhesive between said optically polished disc and said protrusion forming layer.

4,554,656

METHOD AND SYSTEM FOR CONTROLLING THE INTERCONNECTING OF A PLURALITY OF LOCAL DATA NETWORKS

Zigmantas L. Budrikis, Dalkeith, Australia, and Arun N. Netravali, Westfield, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 11, 1982, Ser. No. 407,145
Int. Cl.⁴ H04J *3/02*
U.S. Cl. 370—85 **22 Claims**



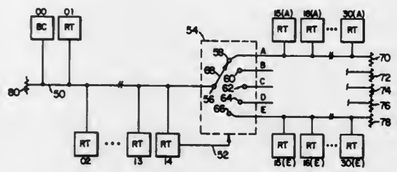
1. A method for controlling digital signals in a communication system that includes a plurality of home networks, each home network coupling a set of stations assigned thereto, a plurality of said stations having a transmitter, at least a first receiver and a second receiver, a communication path for connecting station second receivers to home networks other than assigned home networks including a plurality of channels each for connecting station second receivers of any of said home networks designated as a source home network to any other of said home networks designated as a destination home network,
each of said plurality of stations including means for coupling signals to its assigned home network through its transmitter, means for receiving signals from its assigned home network through its first receiver and means for receiving signals from other home networks through its second receiver and one of said second receiver to home network channels on said communication path,
said method comprising the steps of:
at a source station coupled to a source home network having its second receiver connectable to a plurality of receiver to home network connecting channels on said communication path, determining the home network of a destination station having at least one receiver to home network connecting channel on said path, and
connecting the second receiver of said source station to said destination home network through one of the receiver to home network connecting channels whereby a station is capable of transmitting on its assigned home network and receiving on another home network.

4,554,657

MULTIPLEXED MULTIPLEX BUS

Dayton H. Wilson, Irving, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Continuation of Ser. No. 385,350, Jun. 7, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 705,043
Int. Cl.⁴ H04J *3/00, 6/00*
U.S. Cl. 370—85 **18 Claims**



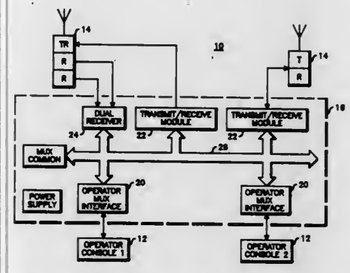
1. A command-response system for multiplexing a multiplex bus comprising:
a half duplex main bus;
a first plurality of remote terminals attached to said main bus, each of said first plurality of remote terminals having a unique address;
a plurality of extended half duplex buses;
a second plurality of remote terminals attached to each of said extended buses, each of said second plurality of remote terminals in each of said extended buses having a unique address within an individual one of said extended buses corresponding to an identical address in each of the remaining of said extended buses;
means for selectively connecting one of said extended buses to said main bus;
means for controlling said connecting means; and
a command-response bus controller for directing traffic on said main bus and for controlling said controlling means directly under random access, non-syhchronous control, such that one of said extended buses can be selected, said extended buses and said main bus being operable in half duplex mode.

4,554,658

SYSTEM FOR PRODUCING ENCODED AND DECODED VOICE, INTERNAL AUDIO TONES, AND DATA COMMUNICATION WITHIN A TIME DIVISION MULTIPLEX NETWORK

Russell A. Marten, Schaumburg, and Greg M. Townsend, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 7, 1983, Ser. No. 511,682
Int. Cl.⁴ H04J *3/02, 3/12*
U.S. Cl. 370—85 **29 Claims**



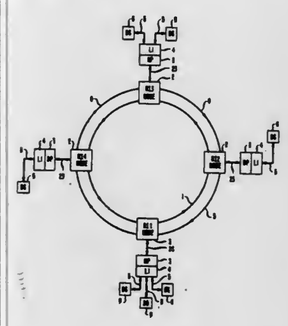
1. A remote site interface apparatus for use in a network of the type including a time-division multiplex (TDM) bus for carrying a plurality of digital audio signals and digital control packets assigned to an identifiable time slot, said apparatus providing encoding and decoding of the TDM digital audio signals and control data packets, and for generating control tone signals, said apparatus comprising:
decoding means for converting a TDM digital audio to an analog signal;
control means including tone generating means adapted for providing a digitized tone signal and;
select means responsive to said control means for selectively coupling said decoding means to said bus or to said tone generating means; whereby,
when said select means couples said decoding means to said bus, said apparatus outputs said analog audio signal, and when said select means couples said decoding means to said tone generating means, said apparatus outputs an analog tone signal.

4,554,659

DATA COMMUNICATION NETWORK

Mark L. Blood, Columbus; Joseph W. Darnell, Gahanna; Allen D. Fergeson, Johnstown, and David M. Rouse, Whitehall, all of Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 12, 1983, Ser. No. 560,166
Int. Cl.⁴ H04J *3/00*
U.S. Cl. 370—88 **24 Claims**



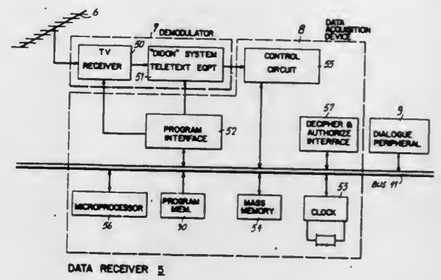
1. A node (2) for coupling a data bus (23) with ring transmission paths (0,1) to form a network enabling communication between data systems (6) coupled with the data bus characterized in that
said node comprises
means (211) enabled by predefined data appearing at first data rates on the data bus and incoming ones of the ring transmission paths for defining node disposition of data as it appears on the data bus and incoming ring transmission paths and generating a disposition available signal,
means (210) coupled with the ring transmission paths and data bus for receiving and temporarily storing data, and one of said
means (212) responsive to a first predefined data appearing at an output of said receiving and temporarily storing means and enabled by said generated disposition available signal for controlling the node to receive the data and propagate the received data on the data bus and outgoing ones of the ring transmission paths at second data rates independent of said first data rates in accordance with said defined node disposition.

4,554,660

ONE-WAY DATA TRANSMISSION SYSTEM

Yves M. Noirel, Montfort; Jean-Claude Vardo, St. Gregoire, and Gérard Cheveé, Rennes, all of France, assignors to L'Etat Francais, represente par le Ministre des P.T.A. (Centre National d'Etudes des Telecommunications CNET) and Etablissement Public de Diffusion dit "Telediffusion de France", both of, France

Filed Oct. 14, 1982, Ser. No. 434,531
Claims priority, application France, Oct. 15, 1981, 81 19789
Int. Cl.⁴ H04J *3/00*
U.S. Cl. 370—94 **9 Claims**



1. A one-way broadcasting transmission system for teletext data stored in a data base bank file, said system comprising a transmitter station connected to a one-way digital data transmission support channel, and a plurality of data receiver sets which receive data that is transmitted over said channel, said transmitter station having means for acquiring data from the data bank file which is to be transmitted, means for formatting the acquired data into data packets and groups for presenting and broadcasting the information delivered from the data bank via said transmission support channel, each of said data receiver sets having demodulating means for receiving the data transmitted over the transmission support channel, data acquisition means comprising a memory means for storing the received file of data information, and dialogue peripheral means coupled to said memory means for exploiting the data information stored in said memory, wherein each receiver set further comprises microprocessor means in the data acquisition means, a data bus, programmed memory means and programming interface means coupled to said data bus, said programming interface means also being coupled to the demodulation means, data packet and group processing means having an output coupled to the data bus, and RAM memory means coupled to the data bus to store all of the transmitted data files, the dia-

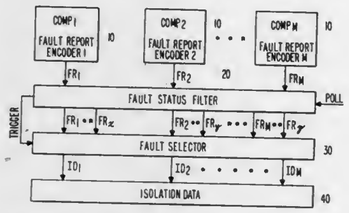
logue peripheral means also being coupled to the data bus for consulting access to the data files stored in said RAM memory.

4,554,661

GENERALIZED FAULT REPORTING SYSTEM

Richard J. Bannister, Newtown Square, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 31, 1983, Ser. No. 547,339
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—15 **15 Claims**



1. A fault reporting system for isolating faults to a particular circuit element or elements based upon error signals detected therefrom comprising in combination:

fault encoder means coupled to each circuit element for encoding the detected error signals in accordance with a predetermined classification of fault sources, said fault encoder means providing respective fault reports for the circuit elements based upon said classification,

fault status filter means coupled to said fault encoder means for receiving said fault reports and for comparing each current report with the preceding report for the same circuit element, said fault status filter means generating a trigger signal in response to a difference in the last mentioned reports,

fault selector means coupled to said fault status filter means, said fault selector means being comprised of a plurality of logic circuits which are divided into a plurality of partitions, each of said partitions being comprised of logic circuits conforming to the electrical connectivity between a given circuit element and any other circuit element, said logic circuits in each partition receiving respective fault reports derived from said fault status filter means for said given circuit element and for any other circuit element coupled thereto which receives an external output therefrom,

said trigger signal generated by said fault status filter means being applied to said logic circuits in each partition, said logic circuits providing an isolation data output signal level in response to said trigger signal which is indicative of the presence of a fault in said given circuit element.

4,554,662

INPUT SIGNAL TESTING DEVICE FOR ELECTRONIC COPIER

Takanobu Suzuki; Kenichiro Nakayama; Izumi Takahashi, and Terumasa Sugiyama, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

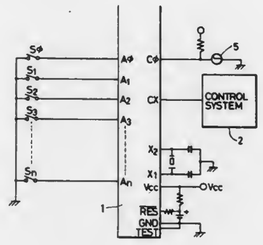
Filed Jul. 15, 1982, Ser. No. 398,466
Claims priority, application Japan, Jul. 15, 1981, 56-109217
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—20 **3 Claims**

1. An input signal testing device for an electronic copier, comprising: 'a control section for controlling the operations of various sections of said copier;

a plurality of detectors providing input signals to said control section, controlled by said control section and located at said various sections of said copier;

means for displaying a number of copies to be made, controlled by said control section;

a test switch, which when actuated, causes said control section to operate in a test mode to test a plurality of said input signals, wherein said control section, in said test mode, effects changes in said various sections to thereby change said detectors, checks variations in input signals inputted from said detectors before and after said changes in the various sections, and controls said display means to indicate with one signal any abnormality in the results of said checking of said plurality of detectors when said test switch is actuated; and



a plurality of interconnection means between said control section, said detectors, said displaying means and said test switch; wherein said control section receives

from said plurality of detectors a corresponding plurality of sets of at least a first input signal and a second input signal at different times on the same interconnection means for each set; and

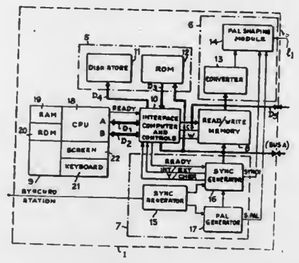
said control section further comprises means for comparing said first and second input signals in each set to detect an abnormality.

4,554,663

DEVICE AND APPARATUS FOR TESTING ELECTRONIC EQUIPMENT AND PARTICULARLY TELEVISION EQUIPMENT

Luc Pham van Cang, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 16, 1983, Ser. No. 476,020
Claims priority, application France, Mar. 19, 1982, 82 04754
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—20 **18 Claims**



1. A device for testing electronic equipment, comprising:

an analog test signal generator for providing test signals for testing said electronic equipment wherein said generator includes a digital computer, a digital-analog converter coupled to said digital computer and a means for storing said test signals in the form of digital signals;

a device for the acquisition of a signal supplied by said tested electronic equipment in response to said test signals received by said tested equipment; and

display means controlled by said computer for the purpose of displaying the signals transmitted the test signal generator and the signals received by the acquisition device, wherein

said digital computer includes a microprogrammed processing unit for producing said digital signals which microprogrammed processor unit includes a calculation means, said digital computer further comprising a means for storing signal descriptors wherein said means for storing signal description is addressed by a keyboard through said digital computer, a means for storing program instruction sequences, a means for storing data for obtaining said digital signals, a means for transferring said stored samples and said means for transferring further including a means for transferring said digital signals to said digital-analog converter and wherein

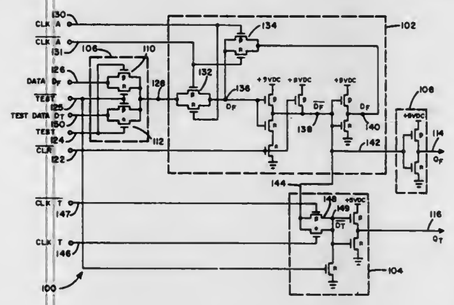
said signal descriptor storage means comprises, for each descriptor, a zone indicating the type of descriptor, a zone for storing the starting address of the instruction sequence to obtain samples corresponding to said descriptor, address zones for an operating area for storing the parameters relative to the signal in the data storage means and a starting address zone of a sample arrangement area into the storage means.

4,554,664

STATIC MEMORY CELL WITH DYNAMIC SCAN TEST LATCH

Dale E. Schultz, Burnsville, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,599
Int. Cl.⁴ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—25 **3 Claims**



1. A level sensitive scan design latch cell comprising:

a static functional latch;

a data selector;

means for coupling said data selector to said static functional latch;

a dynamic test latch;

means for coupling said static functional latch to said dynamic test latch;

means for coupling successive bits of a serial string of test data bits to said data selector;

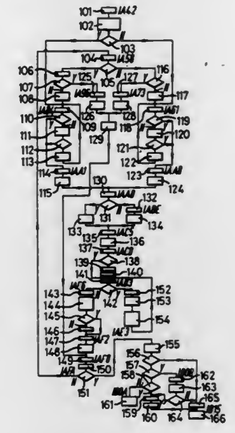
means coupled to said data selector for gating said successive bits of a serial string of test data bits from said data selector to said static functional latch and then to said dynamic test latch for being serially output by said dynamic test latch.

4,554,665

RADIO RECEIVER INCORPORATING A DATA OPERATED SQUELCH SYSTEM

Graham E. Beesley, Basingstoke, England, assignor to Motorola, Inc., Schaumburg, Ill.

PCT No. PCT/GB82/00159, § 371 Date Feb. 7, 1983, § 102(e) Date Feb. 7, 1983, PCT Pub. No. WO82/04513, PCT Pub. Date Dec. 23, 1982
PCT Filed May 28, 1982, Ser. No. 465,867
Claims priority, application United Kingdom, Jun. 16, 1981, 8118533
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—55 **7 Claims**



1. A radio receiver comprising in combination:

receiving means for receiving a digitally coded radio signal in which the code format has a pattern that provides a plurality of zero crossings;

decoding means for decoding a received signal fed from the receiving means and producing a signal representative of the difference between the duration of a preselected interval between zero crossings expressed as a ratio to a predetermined bit period, and a predetermined integer value of the said ratio;

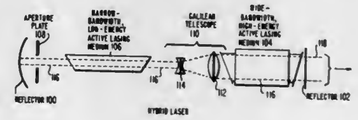
means for switching at least part of the receiver between a quiescent and an active state in dependence upon the value of the integrated signal.

4,554,666

HIGH-ENERGY, SINGLE LONGITUDINAL MODE HYBRID LASER

Wolf P. Altman, Richboro, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 24, 1982, Ser. No. 444,454
Int. Cl.⁴ H01S *3/098*
U.S. Cl. 372—19 **9 Claims**



1. In a hybrid laser comprised of two spaced reflectors forming a given resonant cavity capable of supporting wave energy within a certain frequency band, and a relatively wide aperture, high-energy active lasing medium and a relatively narrow aperture, low-energy active lasing medium situated in

serial relationship with one another within said given resonant cavity, said high-energy active lasing medium having a first bandwidth within said certain frequency band which first bandwidth is sufficiently wide to support a plurality of longitudinal oscillation modes of said wave energy and said low-energy active lasing medium having a second bandwidth within said first bandwidth which is sufficiently narrow to support only a single one of said plurality of longitudinal oscillation modes of said wave energy; the improvement wherein said hybrid laser further comprises:

means for achieving high energy in a single longitudinal mode from said hybrid laser, said means including a Galilean telescope situated within said given resonant cavity and located in between said low-energy active lasing medium and said high-energy active lasing medium (1) for concentrating the wave energy emerging from said high-energy active lasing medium and traveling in a direction from said high-energy active lasing medium toward said low-energy active lasing medium from the relatively wide aperture occupied thereby in said high-energy active lasing medium to the relatively narrow aperture occupied thereby in said low-energy active lasing medium and (2) for expanding in size the wave energy emerging from said low-energy active lasing medium and traveling in a direction from said low-energy active lasing medium toward said high-energy active lasing medium from the relatively narrow aperture occupied thererby in said low-energy active lasing medium to the relatively wide aperture occupied thereby in said high-energy active lasing medium.

4,554,667

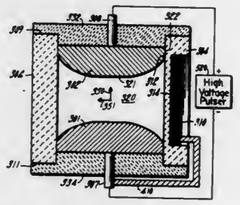
SEALED-OFF CO_2 LASER

Walter R. Kaminski, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 256,282, Apr. 23, 1981, abandoned. This application Oct. 27, 1983, Ser. No. 546,134

Int. Cl.⁴ H01S *3/02, 3/097*

U.S. Cl. 372—83 **6 Claims**



1. A TEA CO_2 laser having a CO_2 laser gain medium and bounded by a sealed-off enclosure having an optic axis and a traverse axis and having first and second end members disposed perpendicular to said optic axis, first and second side members and first and second cover members, said side members and cover members being disposed parallel to said optic axis and together surrounding said axis, all of said members being formed from the same material;

said laser further including reflective optical elements disposed along said optic axis and defining an optical cavity therebetween for resonating optical radiation within said gain medium;

including anode and cathode electrodes disposed on opposite sides of the interior of said enclosure parallel with said optic axis and a predetermined electrode distance along said transverse axis and being separated by said side members, said anode electrode having a curved surface facing said cathode electrode and planar wall surfaces abutting said side members, said curved surface and said planar wall surfaces meeting in a transition area having a radius of curvature of at least 0.003 inches;

said laser further including at least one extra-cavity electrode electrically connected to said cathode electrode by means of a low-inductance lead and being mounted along the outer surface of one of said side members overlapping said anode electrode along said transverse axis in such a manner that the shortest straight line between said anode and said extra-cavity electrode in a plane perpendicular to said transverse axis passes through a portion of said laser medium and also through a layer of insulating material in the form of a portion of said enclosure wall; and means for applying pulsed high voltage to said anode and cathode electrodes, said voltage having a rise time of at least 30 nanoseconds and a peak value such that a field of at least 18 kv/cm is produced between said anode and cathode electrodes, whereby a corona discharge is formed between said anode and said extra-cavity electrode which pre-ionizes the CO_2 medium between said anode and cathode electrodes.

4,554,668

FREQUENCY-HOPPING RADIO COMMUNICATIONS SYSTEM

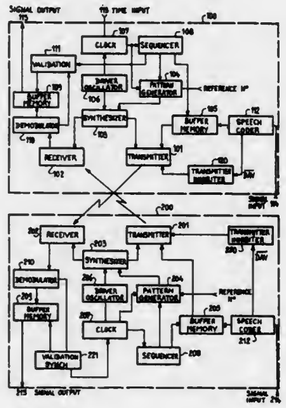
Pierre Deman, and Henri Butin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 20, 1983, Ser. No. 496,564

Claims priority, application France, May 27, 1982, 82 09258

Int. Cl.⁴ H04B *7/12*

U.S. Cl. 375—1 **12 Claims**



1. A radio communications system comprising at least one master station and a plurality of slave stations, wherein information to be transmitted between said stations is in digital form, wherein a two-way link between any of said slave stations and a master station is established over a frequency-hopping channel in which transmission takes place in bursts of predetermined duration at different frequencies with said frequency-hopping channel being determined by a frequency-hopping pattern which is associated with each slave station, each slave station having an independent frequency-hopping pattern associated therewith and all of said frequency-hopping channels using frequencies selected from a pool of frequencies common to all of said channels, and wherein useful transmission bursts are synchronized for the system as a whole with each slave station being synchronized from data received from a master station.

4,554,669

FREQUENCY JUMP RADIOCOMMUNICATIONS SYSTEM WITH INTERBURST REDUNDANCY

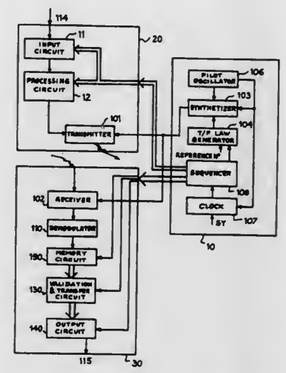
Pierre Deman, and Henri Butin, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Jun. 13, 1983, Ser. No. 503,598

Claims priority, application France, Jun. 18, 1982, 82 10709

Int. Cl.⁴ H04B *7/12;* **H04L** *1/08*

U.S. Cl. 375—1 **4 Claims**



1. A radiocommunications system for transmitting packets of digitized data between a fixed central station and a plurality of subscriber stations using a set of frequencies common to all said stations, each one of said plurality of subscriber stations being assigned at least one frequency law which is independent from frequency laws assigned to other subscriber stations, said fixed central station being assigned all of the frequency laws in said system, each one of said fixed central station and said subscriber stations comprising:

input means for receiving an input signal and for providing a succession of compressed packets of digitized data corresponding to said input signal;

processing means, connected to said input means, for calculating and inserting redundancy data into said succession of compressed packets of digitized data;

transmitter means, connected to said processing means and having a plurality of carrier frequencies, for transmitting said packets of digitized data and said redundancy data in a sequence of bursts variable in number, each burst corresponding to a brief transmission of one of said plurality of carrier frequencies modulated by said digitized data;

means, connected to said transmitter means, for varying by steps the transmitter carrier frequency at each said transmission according to the frequency law assigned to the subscriber station to which said transmission is directed, the frequency steps for all of said subscriber stations are synchronous and have the same duration; and

reception means for receiving said transmitted packets of digitized data and for producing an output signal, including:

receiving means for receiving said transmitted packets of digitized data and said redundancy data;

demodulator means, connected to said receiving means, for demodulating the received packets of digitized data and said redundancy data;

memory means, connected to said demodulator means, for storing the demodulated data;

validation means, connected to said memory means, for validating said demodulated data, including comparator means for comparing said demodulated data with the associated redundancy data, whereby said demodulated data is validated when said redundancy data is that data which was inserted into the associated packet of digitized data; and

output means, connected to and controlled by said validation means, for outputting a signal containing the validated, demodulated data.

4,554,670

SYSTEM AND METHOD FOR ADPCM TRANSMISSION OF SPEECH OR LIKE SIGNALS

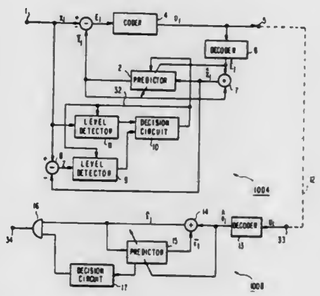
Shinichi Aiko; Rikio Maruta, and Takao Nishitani, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,676

Claims priority, application Japan, Apr. 14, 1982, 57-63032; Apr. 14, 1982, 57-63033; Apr. 14, 1982, 57-63034

Int. Cl.⁴ H03K *13/22*

U.S. Cl. 375—30 **14 Claims**



1. An ADPCM transmission system comprising:

a transmitter having coding means including a subtractor for providing a difference E_j between an input signal X_j and a first predicted signal X_j, a coder for coding said difference E_j given from said subtractor into a coded signal U_j, a first decoder for obtaining a first reproduced error signal E_j by decoding said coded signal U_j given from said coder, and first prediction means for generating said first predicted signal X_j on the basis of said first reproduced error signal E_j from said first decoder; means for producing a locally decoded signal X_j in response to said first reproduced error signal E_j and said first predicted signal X_j, and first control means for controlling said first prediction means in response to said input signal X_j and a difference signal representing the difference between said input signal X_j and said locally decoded signal X_j; and

a receiver having decoding means including a second decoder for receiving said code U_j supplied from said transmitter and decoding said received code U_j into a second reproduced error signal e_j, second prediction means for producing a second predicted signal x_j on the basis of said second reproduced error signal e_j from said second decoder, means for producing a decoded signal x_j in response to said second reproduced error signal e_j and said predicted signal x_j, and second control means for controlling said decoded signal x_j in response to a signal produced by said second prediction means.

4,554,671

DELTA MODULATED COMMUNICATION SYSTEM

Galen R. Collins, San Jose, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1983, Ser. No. 548,804

Int. Cl.⁴ H03K *13/22*

U.S. Cl. 375—30 **8 Claims**

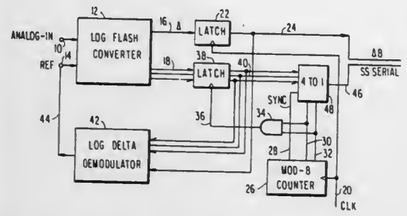
1. A digital communication system for an analog signal, comprising:

a companded A/D converter (12) for comparing said analog signal against a reference signal, said companded converter comprising a flash converter including a plurality of comparators (70-96) each receiving said analog signal

and a signal derived from said reference signal, said converter outputting a step-size signal indicating the magnitude of the difference between said analog signal and said reference signal and a delta signal indicating the sign of said difference, said step size being companded, with the smallest step size associated with the smallest difference;

a clock outputting a clock signal (**20**) at a clock rate;

delta data selection means (**22**) receiving said clock signal and said delta signal for outputting a digital transmitted delta signal at a clock rate;



a step clock (**26, 34**) connected to said clock and outputting a step clock signal at a step clock rate that is a predetermined subharmonic of said clock rate;

step data selection means (**38**) receiving said step-size signal for outputting a digital transmitted step-size signal at the step clock rate;

a companded delta demodulator (**42**) receiving said transmitted delta signal and said transmitted step-size signal for outputting an analog transmitted amplitude signal determined by the present and past transmitted delta and step-size signals, said transmitted amplitude signal being used as said reference signal.

4,554,672

PHASE AND FREQUENCY VARIABLE OSCILLATOR

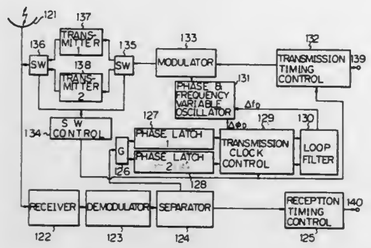
Tatsuro Masamura; Masahiro Morikura, both of Kanagawa, and Takayoshi Maki, Fukuoka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Feb. 21, 1984, Ser. No. 582,215

Claims priority, application Japan, Feb. 21, 1983, 58-26340; Nov. 15, 1983, 58-213298

Int. Cl.⁴ H04B *7/02*; H03L *7/00*

U.S. Cl. 375—40 **5 Claims**



2. A non-blocking redundant switching system in a clock coherent satellite communication system comprising,

an earth station having an antenna, a receiver coupled to said antenna, primary and secondary transmitters, a switching means for switching on one of said transmitters, a demodulator coupled with said receiver, a separator coupled with said demodulator to extract a phase error signal from a received data burst, a pair of latch circuits coupled to said separator for holding phase error signals from said separator for said primary and secondary transmitters, respectively, a phase and frequency variable oscillator for providing a controlled clock signal according to the output of a selected one of said latch circuits, a modulator receiving the output of said phase and frequency variable oscillator for modulating a transmission data signal and applying the modulated signal to one of said transmitters also coupled the said antenna,

a satellite station having an antenna, primary and secondary receivers coupled with said antenna, a switching means for switching on one of said receivers, a regenerative repeater having a demodulator coupled with the output of said receiver, a clock recovery circuit coupled with the output of said receiver, and a decision circuit coupled to the output of said demodulator for recognizing the received signal, a fixed oscillator coupled with said decision circuit for providing a fixed clock signal thereto, a phase detector for comparing the phase of said fixed oscillator and the phase of the output of said clock recovery circuit to provide a phase error signal, a signal combiner coupled with said phase detector for combining said phase error signal and a transmission data burst, a transmitter having an output coupled with said antenna and an input coupled with said signal combiner through a modulator to transmit the combined signal through said antenna,

wherein the phase error of the clock signal of said controlled clock signal for the primary and secondary transmitters in an earth station, and primary and secondary receivers on a satellite is detected by said phase comparator in said satellite station, and the detected phase error signals for the primary and secondary transmitters or receiver are sent to the earth station and are stored in the primary and secondary latch circuits, respectively, and said latch circuit are switched simultaneously with the switching of the transmitters or receivers, and wherein said phase and frequency variable oscillator comprises (a) a fixed oscillator, (b) a quadrature hybrid circuit coupled with the output of said fixed oscillator for providing a pair of quadrature phased signals, (c) a first control input for accepting a frequency control signal (Δf_D), (d) a second control input for accepting a phase control signal ($\Delta\phi_D$), (e) a control signal generator for providing a pair of quadrature phased control signals which depend upon said frequency control signal (Δf_d) and said phase control signal ($\Delta\phi_D$), (f) a first mixer for providing a product of one of the outputs of said quadrature hybrid circuit and one of the outputs of said control signal generator, (g) a second mixer for providing a product of another output of said quadrature hybrid circuit and another output of said control signal generator, (h) a power combiner for providing in-phase combination of outputs of said first mixer and said second mixer, and (i) an output terminal coupled with said power combiner to provide a controlled output signal.

4,554,673

SEQUENTIAL DATA TRANSMISSION SYSTEM WITH RESYNCHRONIZATION

Reginald W. Stevens, Stockport, England, assignor to International Computers Limited, London, England

Filed Feb. 17, 1983, Ser. No. 467,305

Claims priority, application United Kingdom, Feb. 19, 1982, 8205015

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 375—118 **6 Claims**

1. A data transmission system comprising

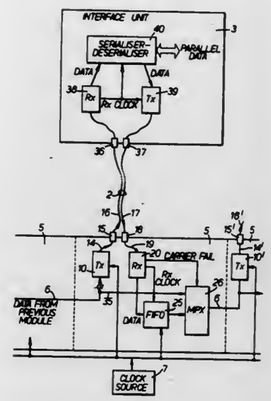
(a) a plurality of interface units, each comprising input means for receiving an input self-clocking signal and recovering a local clock signal and an input data signal therefrom, and output means for combining the recovered lock clock signal with an output data signal to produce an output self-clocking signal,

(b) clock means for generating a master clock signal,

(c) a plurality of resynchronisation means each connected to the clock means to receive the master clock signal, each resynchronisation means comprising means for receiving an input self-clocking signal and for resynchronising it to

produce an output self-clocking signal synchronised to the master clock signal, and

(d) data transmission means for connecting the interface units and resynchronisation means together in series, with each resynchronisation means positioned between a different pair of interface units in said series, the output self-



clocking signal of each interface unit in said series being connected to the next resynchronisation means in the series to provide said input self-clocking signal therefor, and the output self-clocking signal of each resynchronisation means being connected to the next interface unit in the series to provide said input self-clocking signal therefor.

4,554,674

APPARATUS FOR DETECTING THE AMOUNT OF MOVEMENT OF A MEMBER TO BE CONTROLLED

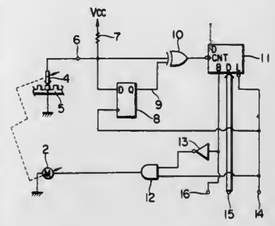
Shinji Sakai, Yokohama; Takashi Kawabata, Kamakura, and Yoshihito Harada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 506,999

Claims priority, application Japan, Jul. 6, 1982, 57-118232

Int. Cl.⁴ G03B *7/00*; G01B *7/00*

U.S. Cl. 377—17 **13 Claims**



1. A movement amount detecting apparatus having a monitor signal source for forming a pulse signal in association with movement of an associated member to be controlled, said apparatus being for detecting the pulse signal from said monitor signal source and thereby detecting the amount of movement of said associated member to be controlled, said apparatus including:

(a) discriminating means for discriminating the initial state of said monitor signal source;

(b) a detecting circuit for detecting said pulse signal and obtaining information corresponding to the amount of movement of said associated member to be controlled; and

(c) a mode determining circuit for determining, on the basis of the result of the discrimination of said discriminating means, the pulse signal detecting operation for said pulse signal to any one of a rising pulse detecting mode and a falling pulse detecting mode.

4,554,675

CHARGE TRANSFER DEVICE OPERATIVE AT HIGH SPEED

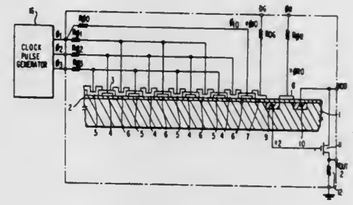
Kazuo Miwada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,177

Claims priority, application Japan, Dec. 16, 1981, 56-202850

Int. Cl.⁴ G11C *19/28*; H01L *29/78*

U.S. Cl. 377—60 **12 Claims**



1. A charge transfer device on a semiconductor substrate comprising:

a plurality of input terminals receiving clock pulses;

a plurality of first resistors each connected with a corresponding one of said input terminals;

a plurality of first signal lines each connected with a corresponding one of said first resistors;

a plural set of transfer gates disposed in a line such that a predetermined order of said sets is repeated, said transfer gates in each of said sets, except for a final stage transfer gate, being connected with corresponding ones of said first signal lines to receive corresponding ones of said clock pulses;

a second resistor having one end connected with one of said input terminals;

a second signal line inserted between the other end of said second resistor said said final stage transfer gate, said second signal line being physically separated from said first signal lines; and

a detection means disposed adjacent to said final stage transfer gate for producing an output signal in response to charges transferred thereinto from a region of said semiconductor substrate under said final stage transfer gate.

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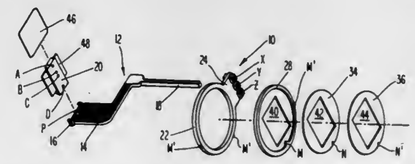
DENTAL AIMING DEVICE

Robert Maldonado, Santa Clara, and Clark E. Loughry, San Jose, both of Calif., assignors to The S. S. White Company, Holmdel, N.J.

Filed Mar. 16, 1983, Ser. No. 475,824

Int. Cl.⁴ A61B *6/14*

U.S. Cl. 378—170 **12 Claims**



1. A dental aiming device comprising:

an alignment member having film holding means at one end and an aligning arm at its other end with a biteplate inter-

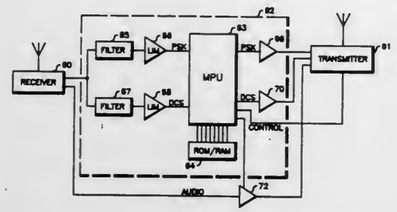
mediate thereof, said arm being offset with respect to said film holding means and said bite plate;
a film holder slideably adjustable in a vertical direction within said film holding means;
an alignment ring adjustably mounted to said aligning arm for slidable movement thereon;
a plate holder rotatably mounted to said alignment ring; and
an x-ray opaque plate mounted to said plate holder, said plate holder and said x-ray opaque plate each having an aligned centrally disposed aperture therein of identical configuration.

4,554,677

QUEUED COMMUNITY REPEATER CONTROLLER

Paul F. Smith, Fort Worth; Eric Schorman, Bedford; Timothy M. Burke, Fort Worth, and Charles N. Lynk, Jr., Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1983, Ser. No. 564,634
Int. Cl.⁴ H04B *1/00*
U.S. Cl. 455—54 **17 Claims**



1. A central controller for a single channel communications system regulating access by a plurality of remote units to the single channel, each remote unit associated with one of a plurality of predetermined groups of remote units and each remote unit adapted to request service on the channel and, after permission is granted, to transmit a message on the channel, comprising:
means for detecting an end-of-transmission condition of a first remote unit of a first group;
means, responsive to said end-of-transmission condition detection, for establishing a period of time on the single communications channel during which a remote unit of a second group may request service;
means for processing a received second group remote unit request for service;
storage means for storing said processed remote unit request in a queue with other remote unit requests;
means for maintaining a grant of service to said first group following said period of time whereby a second remote unit of said first group may transmit;
means for revoking said first group grant of service if said second remote unit does not transmit; and
means for granting said request for service of said second group remote unit in accordance with a priority in said storage means when said first group grant of service is revoked.

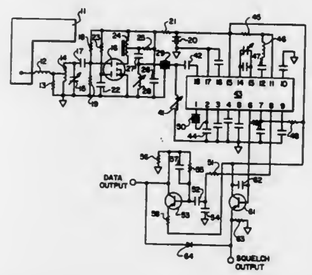
4,554,678

WIRELESS RECEIVER HAVING CRYSTAL FILTER AT OUTPUTS OF PREAMPLIFIER

George A. Bowman, Vernon Hills, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1982, Ser. No. 449,349
Int. Cl.⁴ H04B *1/26*
U.S. Cl. 455—286 **13 Claims**

1. A wireless superheterodyne receiver comprising:
an antenna for receiving wireless transmissions;
preamplifier means having an input connected to said antenna and having an output;
crystal filter means having an input connected to the output of said preamplifier means and having an output, said crystal filter means having a first crystal tuned to the frequencies of the wireless transmissions, said crystal filter means comprising means for operating said first crystal in its third overtone mode;
demodulator means having an input connected to the output of said crystal filter means, said demodulator means having a single mixer; and,



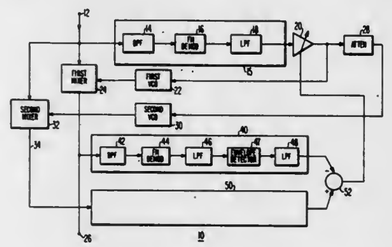
oscillator means having a second crystal connected to said single mixer of said demodulator means, said oscillator means comprising means for operating said second crystal in its fundamental vibration mode,
wherein said demodulator means supplies at an output a demodulated signal based upon said wireless transmission.

4,554,679

NOISE REDUCTION SYSTEM FOR A SINGLE SIDEBAND MULTIPLEX SIGNAL

Leonard N. Schiff, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 15, 1983, Ser. No. 551,922
Int. Cl.⁴ H04B *1/10*
U.S. Cl. 455—303 **6 Claims**



5. In a communication receiver for processing a received signal modulated by a pilot signal at a given frequency and an information signal occupying a certain band of frequencies separated from said given frequency, a noise reduction apparatus comprising:
a first means for detecting modulation on said pilot signal present in said received signal;
means for generating a signal having a frequency which varies in response to the amount of modulation detected on said pilot signal;
means for mixing the generated signal with the received signal so that the frequencies of the two signals combine to produce an output signal which is lower in frequency than said received signal;
a second means for detecting modulation on the pilot signal present in said output signal; and
means for varying the amplitude of the detected modulation from the first means for detecting modulation in response to the output of the second means for detecting modulation.

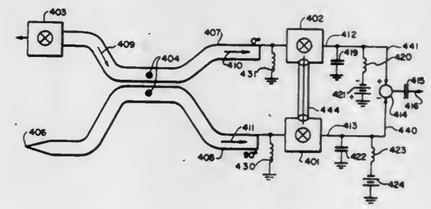
4,554,680

THREE DIODE BALANCED MIXER

Harold Jacobs, West Long Branch, and Samuel Dixon, Jr., Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 1, 1983, Ser. No. 519,154
Int. Cl.⁴ H04B *1/26*
U.S. Cl. 455—326 **7 Claims**

1. A mixer device comprising, in combination:
three cavities, each including a self-oscillating negative resistance device, two of said cavities being injection locked together by a connecting means said connecting means being adjustable in length such that it is compatible with a 180° phase difference which exists between the locked together cavities;
means to feed an output signal from the third of said cavities to the two injection locked cavities as an input signal thereto;

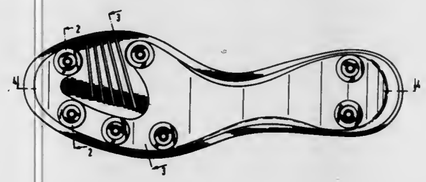


means for outputting signals from the negative resistance devices in the injection locked cavities; and
means for combining these signals to form a mixed signal.

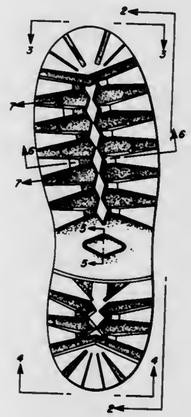
DESIGNS

NOVEMBER 19, 1985

281,370
SOLE FOR A SPORTS SHOE
Simon J. Peel, Huddersfield, England, assignor to Benjamin Crook & Sons Limited, West Yorkshire, England
Filed Sep. 9, 1983, Ser. No. 530,817
Claims priority, application United Kingdom, Mar. 11, 1983, 1 011 938
Term of patent 14 years
U.S. Cl. D2—319



281,371
SHOE SOLE
Delton W. Young, Belmont, Mass., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 2, 1983, Ser. No. 471,571
Term of patent 14 years
U.S. Cl. D2—320



281,372
SOLE FOR FOOTWEAR
Giuseppe Sironi, Albizzate, Italy, assignor to Vibram S.P.A., Albizzate, Italy
Filed Mar. 3, 1983, Ser. No. 471,716
Claims priority, application Italy, Oct. 21, 1982, 23251/82[U]
Term of patent 14 years
U.S. Cl. D2—320



281,373
BOXING GLOVE
John C. Golomb, Brooklyn, N.Y., assignor to Everlast World's Boxing Headquarters Corporation, Bronx, N.Y.
Filed Jul. 21, 1983, Ser. No. 515,772
The portion of the term of this patent subsequent to May 29, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—361



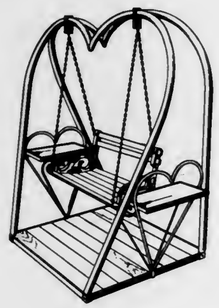
281,374
NEEDLEWORK FRAME
Albert Mazeika, Tucson, Ariz., assignor to Needlepointer, Tucson, Ariz.
Filed Jun. 1, 1983, Ser. No. 500,006
Term of patent 14 years
U.S. Cl. D3—26



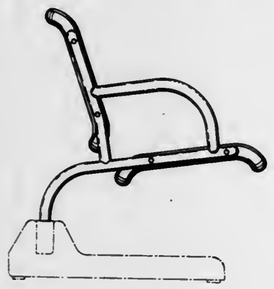
281,375
TOOTHBRUSH
Kosta Konjovic, 28 bis, rue Sergent Godefroy, 93100 Montreuil s/bois, France
Filed Jun. 20, 1983, Ser. No. 505,810
Claims priority, application France, Dec. 29, 1982, 82 4585
Term of patent 14 years
U.S. Cl. D4—104



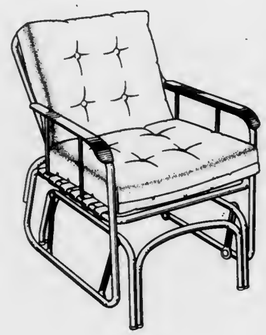
281,376
SWING
James C. Gregory, III, 4314 W. 54th Ter., Shawnee Mission, Kans. 66205
Filed May 16, 1983, Ser. No. 494,717
Term of patent 14 years
U.S. Cl. D6—344



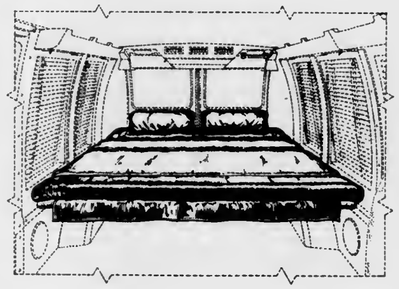
281,377
CHAIR
Charles A. Gibilterra, 12722 Tyson Pl., Granada Hills, Calif. 91344
Filed Mar. 15, 1983, Ser. No. 462,947
Term of patent 14 years
U.S. Cl. D6—362



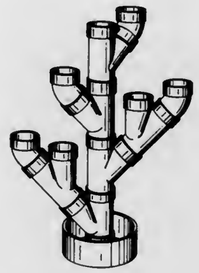
281,378
GLIDER
Paul H. Parker, Box 132 R.F.D., Poultney, Vt. 05764
Filed Mar. 31, 1983, Ser. No. 480,747
Term of patent 14 years
U.S. Cl. D6—379



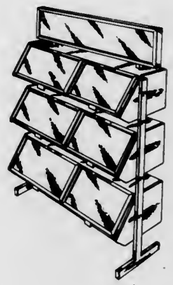
281,379
SOFA BED FOR A VAN CONVERSION
Robert O. Isham, Rte. 2, Box 136-B, Decatur, Tex. 76234, and Wayne S. Reese, 7201 Hovenkamp Ave., Richland Hills, Tex. 76118
Filed Apr. 25, 1983, Ser. No. 487,980
Term of patent 14 years
U.S. Cl. D6—382

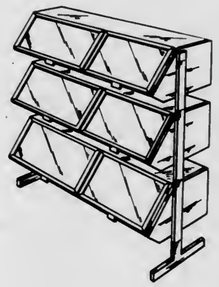


281,380
PLANTER
Carl R. Smith, Waco, Tex., assignor to Weststar Marketing, Inc., Waco, Tex.
Filed Dec. 19, 1983, Ser. No. 563,284
Term of patent 14 years
U.S. Cl. D6—404

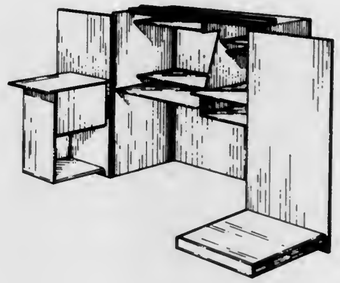


281,381
DISPLAY FIXTURE
Robert W. Moher, Jr., Sherrill; Charles S. French, Oneida, and Robert J. Reed, Vernon, all of N.Y., assignors to Oneida Ltd., Oneida, N.Y.
Filed Jun. 13, 1983, Ser. No. 503,510
Term of patent 14 years
U.S. Cl. D6—471

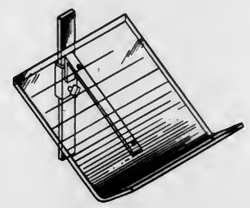




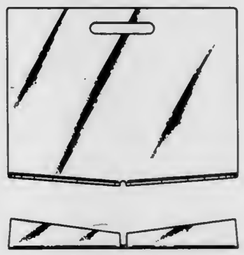
281,382
COMPUTER WORK STATION
Philip J. Byrne, P.O. Box 10475, and John B. Stege, P.O. Box 8355, both of, Aspen, Colo. 81612
Filed Feb. 17, 1983, Ser. No. 467,145
Term of patent 14 years
U.S. Cl. D6—474



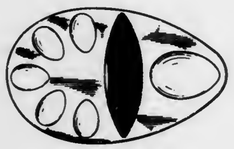
281,383
ARTICLE DISPLAY BRACKET
Wilma R. Beach, Rhinebeck, N.Y., assignor to Daniel E. Gelles Associates, Inc., New York, N.Y.
Filed May 25, 1983, Ser. No. 498,068
Term of patent 14 years
U.S. Cl. D6—572



281,384
KITCHEN CUTTING BOARD
David A. Lacey, Deerfield, Ill., assignor to Ronald M. Wilen, Wheeling, Ill.
Filed Apr. 25, 1983, Ser. No. 488,344
Term of patent 14 years
U.S. Cl. D7—46

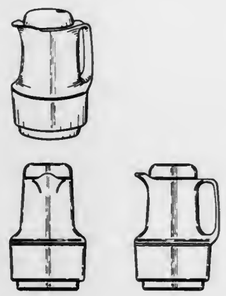


281,385
EGG CRACKER
James R. Ivy, 9001 Glacier, Apt. 138, Texas City, Tex. 77591
Filed Jan. 14, 1983, Ser. No. 458,017
Term of patent 14 years
U.S. Cl. D7—84.1





281,386
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Oct. 12, 1982, Ser. No. 433,725
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1982, MR 171
Term of patent 14 years
U.S. Cl. D7—317



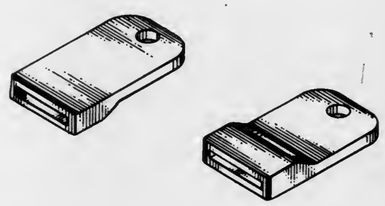
281,387
RAKE
Walter Kolb, Betzdorf, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Filed May 28, 1982, Ser. No. 383,154
Term of patent 14 years
U.S. Cl. D8—13



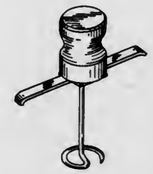
281,388
ADJUSTABLE BOX WRENCH
Hin C. Lok, B1, Earl St., Earl Garden, Kowloon, Hong Kong
Filed Jan. 24, 1983, Ser. No. 460,400
Claims priority, application United Kingdom, Sep. 1, 1982, 1008507
Term of patent 14 years
U.S. Cl. D8—22



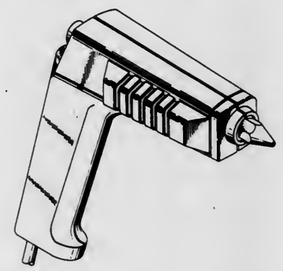
281,389
OPENER FOR POP-TOP CONTAINERS
James A. Summers, 20730 W. Soledad St., Unit J, Canyon Country, Calif. 91351
Filed May 4, 1983, Ser. No. 491,530
Term of patent 14 years
U.S. Cl. D8—40



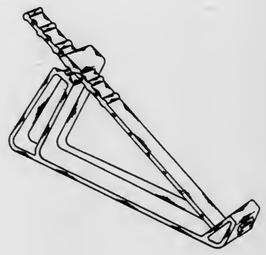
281,390
BOTTLE CLOSURE DEVICE
Florian J. Gorski, 11000 S. Central, Chicago Ridge, Ill. 60415
Filed Nov. 7, 1983, Ser. No. 549,503
Term of patent 14 years
U.S. Cl. D8—40



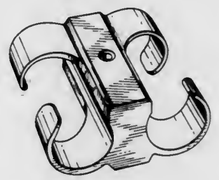
281,391
ELECTRIC GLUE GUN
Robert I. Somers, 5217 Caber Rd., Raleigh, N.C. 27612
Filed Nov. 28, 1983, Ser. No. 555,682
Term of patent 14 years
U.S. Cl. D8—61

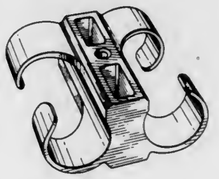


281,392
ABRADING TOOL
Paul S. Hepworth, 4B The Broadway, Oadby, Leicester, England
Filed Jul. 1, 1982, Ser. No. 394,474
Claims priority, application United Kingdom, Jan. 14, 1982, 821004661
Term of patent 14 years
U.S. Cl. D8—90

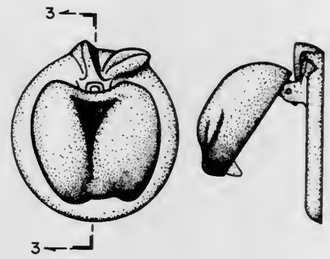


281,393
HOLDER FOR ELONGATED OBJECTS
Lars O. Karnhag, Runbovagen 28, S-191 48 Sollentuna, and Per-Olov Franzen, Bjorkebyvagen 6, S-175 62 Jarfalla, both of Sweden
Filed Apr. 21, 1983, Ser. No. 487,426
Claims priority, application Sweden, Oct. 21, 1982, 82-2532
Term of patent 14 years
U.S. Cl. D8—373





281,394
DOOR KNOCKER OR SIMILAR ARTICLE
Barbara G. Porta, Tappan, N.Y., assignor to Valley Head Farms, Suffern, N.Y.
Filed Apr. 11, 1983, Ser. No. 483,918
Term of patent 14 years
U.S. Cl. D8—401



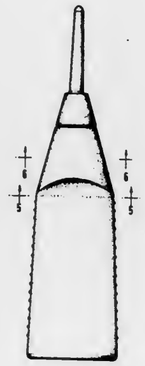
281,395
DISPLAY CONTAINER
Harold Robey, 64 Crescent Rd., Kingston-on-Thames, Surrey, England
Filed Nov. 30, 1982, Ser. No. 445,665
Claims priority, application United Kingdom, Jun. 1, 1982, 821007035
Term of patent 14 years
U.S. Cl. D9—307



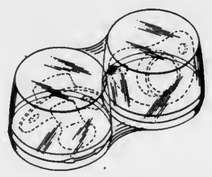
281,396
FLAGON
Charles S. Tobias, Tortola, British Virgin Isls., assignor to Pusser's Inc., Tortola, British Virgin Isis.
Filed Apr. 19, 1983, Ser. No. 486,463
Term of patent 14 years
U.S. Cl. D9—309



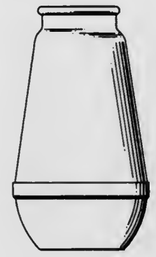
281,397
BOTTLE OR THE LIKE
Timothy Dearing, Ipswich, England, assignor to E. R. Howard Limited, Suffolk, England
Filed Jan. 28, 1983, Ser. No. 461,844
Term of patent 14 years
U.S. Cl. D9—338



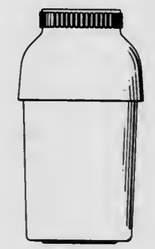
281,398
DUAL CONTAINER PACKAGE
Lutz Kesselring, Zeven, Fed. Rep. of Germany, assignor to MAPA GmbH Gummi- und Plastikwerke, Zeven, Fed. Rep. of Germany
Filed Mar. 3, 1983, Ser. No. 471,790
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, MR 14
Term of patent 14 years
U.S. Cl. D9—341



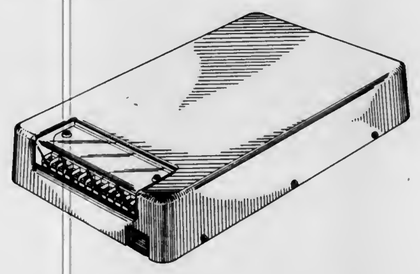
281,399
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,559
Term of patent 14 years
U.S. Cl. D9—347



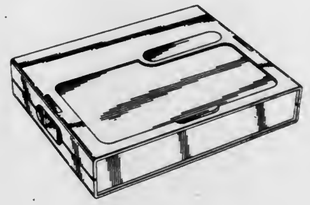
281,400
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Aug. 18, 1983, Ser. No. 524,272
Term of patent 14 years
U.S. Cl. D9—370



281,401
DETECTOR MODULE FOR A LINE MONITOR OR THE LIKE
Allen R. Perrins, Branford, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed Jun. 20, 1983, Ser. No. 506,705
Term of patent 14 years
U.S. Cl. D10—75



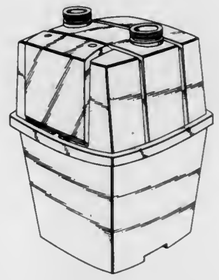
281,402
PROGRAMMABLE MULTIMETER HOUSING
John P. O'Connell, Halesowen, England, assignor to Fisons plc, Ipswich, England
Filed Nov. 18, 1982, Ser. No. 442,695
Term of patent 14 years
U.S. Cl. D10—78



281,403
ELECTRONIC WEIGHING SCALE FOR DIETERS
Willard L. Zeigner, San Ramon, and John A. MacIntosh, Cupertino, both of Calif., assignors to Zemco, Inc., San Ramon, Calif.
Filed Jul. 18, 1983, Ser. No. 514,549
Term of patent 14 years
U.S. Cl. D10—93



281,404
POSITIVE DISPLACEMENT DIAPHRAGM FLUID METER HOUSING
Irwin A. Hicks, Radnor, Pa., assignor to The Singer Company, Stamford, Conn.
Filed May 13, 1983, Ser. No. 494,597
Term of patent 14 years
U.S. Cl. D10—99



281,405
LINK FOR JEWELRY CHAIN
Gianni Bulgari, Rome, Italy, assignor to Ditta Sotirio Bulgari di Constantino e Giorgio Bulgari S.a.s., Rome, Italy
Continuation-in-part of Ser. No. 345,112, Feb. 2, 1982, abandoned, and a continuation-in-part of Ser. No. 420,469, Sep. 20, 1982, Pat. No. Des. 271,574. This application Jun. 8, 1983, Ser. No. 502,414
Term of patent 14 years
U.S. Cl. D11—93



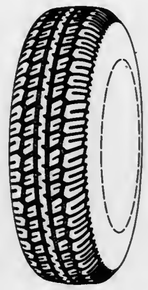
281,406
CULTIVATING TOWER FOR PLANTS, FLOWERS OR THE LIKE
Robert Guénat, Maison Rosa-Tach, à l'attn de Mons. R. Guénat, Ponthaux, Switzerland (CH-1772)
Filed Feb. 25, 1983, Ser. No. 469,815
Term of patent 14 years
U.S. Cl. D11—153



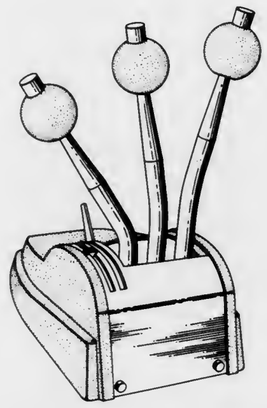
281,407
STAFF FOR A PENNANT
Regis Gustafsson, Gnosjö, Sweden, assignor to Vilhelmina Plast AB, Vilhelmina, Sweden
Filed Dec. 12, 1983, Ser. No. 560,397
Term of patent 14 years
U.S. Cl. D11—181



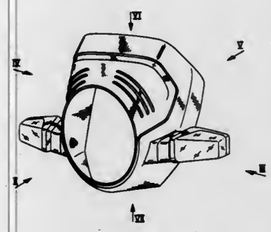
281,408
TIRE
Maurice Graas, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 24, 1983, Ser. No. 544,676
Term of patent 14 years
U.S. Cl. D12—147



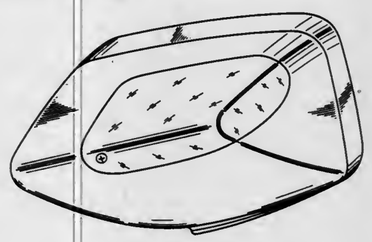
281,409
SHIFT CONTROL LEVER UNIT
Emanuel F. Cambria, Tannersville, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.
Filed Jan. 10, 1983, Ser. No. 456,800
Term of patent 14 years
U.S. Cl. D12—179

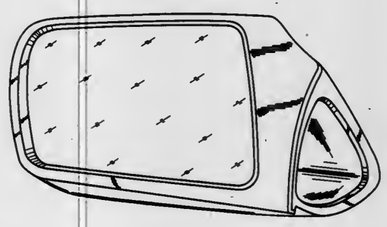


281,410
COMBINED MOTORCYCLE FAIRING AND DIRECTION INDICATORS
Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 23, 1983, Ser. No. 477,870
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13095
Term of patent 14 years
U.S. Cl. D12—182

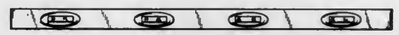


281,411
COMBINED REAR-VIEW MIRROR AND DIRECTION INDICATOR FOR MOTORCYCLES
Karl H. Abe, Steinbach, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Oct. 21, 1983, Ser. No. 544,432
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, MR 13423
Term of patent 14 years
U.S. Cl. D12—188

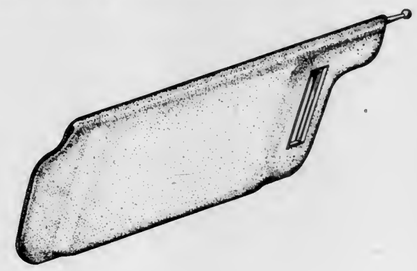




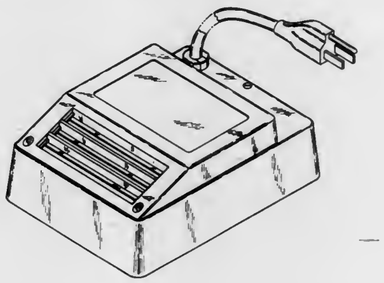
281,412
TRIM STRIP FOR A TRUCK SLEEPER COMPARTMENT
Leslie C. Barnhart, 5404 NW. 113th St., Oklahoma City, Okla. 73132
Filed Jan. 30, 1984, Ser. No. 575,312
Term of patent 14 years
U.S. Cl. D12—190



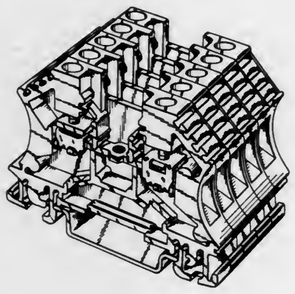
281,413
VISOR
Prince Corporation, 02, Holland, Mich., and Michael J. Cody, Holland, Mich.
Filed Dec. 6, 1982, Ser. No. 447,232
Term of patent 14 years
U.S. Cl. D12—191



281,414
MOTOR FOR ROTATING A SPIT
Hans Wolf, Pompton Lakes, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.
Filed Aug. 4, 1983, Ser. No. 520,260
Term of patent 14 years
U.S. Cl. D13—2



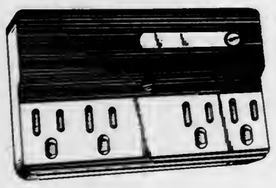
281,415
TERMINAL BLOCK
Octavio Nüsse, Münster, Fed. Rep. of Germany, assignor to C.A. Weismüller GmbH & Co., Detmold, Fed. Rep. of Germany
Filed Apr. 15, 1982, Ser. No. 368,679
Term of patent 14 years
U.S. Cl. D13—24



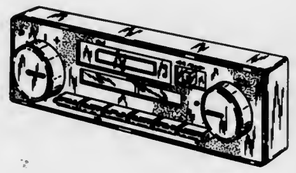
281,416
ELECTRICAL CONNECTOR
John H. Buscher, East Amherst, and Michael E. Hoffman, Lockport, both of N.Y., assignors to Eastman Machine Company, Buffalo, N.Y.
Filed Sep. 30, 1982, Ser. No. 431,169
Term of patent 14 years
U.S. Cl. D13—24



281,417
OVERLOAD-PROTECTED ELECTRICAL RECEPTACLE-MULTIPLYING PLUG OR SIMILAR ARTICLE
Francois Guichard, 11 rue Stanislas, 75006 Paris, France
Filed Nov. 30, 1983, Ser. No. 556,698
Claims priority, application France, Aug. 18, 1983, 83 3064
Term of patent 14 years
U.S. Cl. D13—28



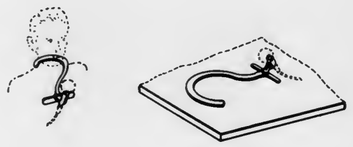
281,418
FRONT CONTROL PANEL FOR A VEHICULAR COMBINED TAPE PLAYER AND RADIO OR THE LIKE
Robert H. Lewis, Farmington Hills, and Hector J. Munoz, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 30, 1983, Ser. No. 538,020
Term of patent 14 years
U.S. Cl. D14—10



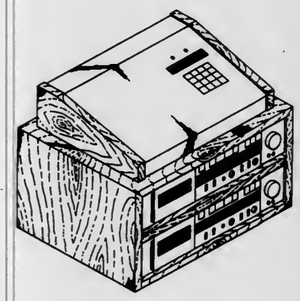
281,419
MICROPHONE OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 22, 1983, Ser. No. 525,187
Term of patent 14 years
U.S. Cl. D14—12



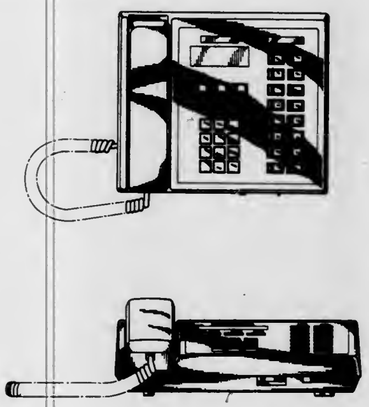
281,420
DUAL PURPOSE MICROPHONE SUPPORTER
Maurice I. Rosenthal, 8900 Alto Cedro, Beverly Hills, Calif. 90210
Filed Jul. 28, 1983, Ser. No. 517,908
Term of patent 14 years
U.S. Cl. D14—13



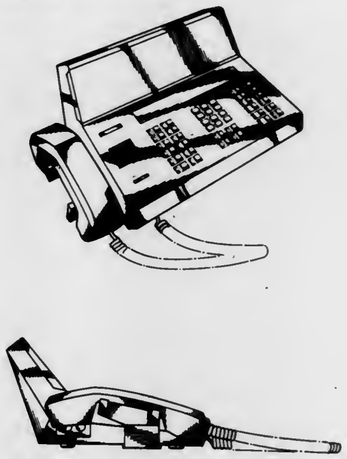
281,421
AUTOMATED TELEPHONE COMMUNICATING MACHINE
Charles L. Meininger, Littleton, Colo., and Robert S. Bugash, Wheaton, Md., assignors to Applied Computer, Inc., Denver, Colo.
Filed Sep. 29, 1982, Ser. No. 426,803
Term of patent 14 years
U.S. Cl. D14—52



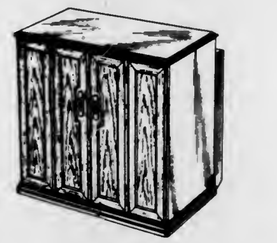
281,422
TELEPHONE UNIT
Norio Miura, Niiza; Noboru Mihara, Mitaka, and Atsuko Kamoshida, Tokyo, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1982, Ser. No. 454,453
Claims priority, application Japan, Jul. 14, 1982, 57-31814
Term of patent 14 years
U.S. Cl. D14—58

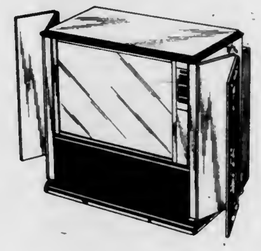


281,423
CALL PROCESSOR FOR A TELEPHONE SYSTEM
Takashi Oshima, Tokyo; Noboru Mihara, Mitaka, and Shuji Yamauchi, Higashikurume, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1982, Ser. No. 454,454
Claims priority, application Japan, Jul. 16, 1982, 57-32243
Term of patent 14 years
U.S. Cl. D14—58



281,424
PROJECTION TELEVISION RECEIVER
John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed Dec. 20, 1982, Ser. No. 451,095
Claims priority, application Japan, Jun. 18, 1982, 57-26949
Term of patent 14 years
U.S. Cl. D14—83

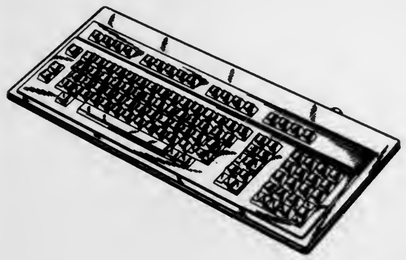




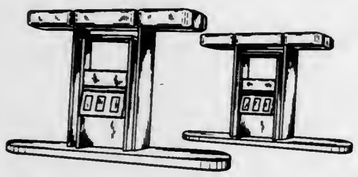
281,425
HOUSING FOR A CABLE TELEVISION CHANNEL SELECTOR UNIT
Silas S. Dulan, 3820 N. Bartel Rd., Oklahoma City, Okla. 73121
Filed May 5, 1983, Ser. No. 491,848
Term of patent 14 years
U.S. Cl. D14—84



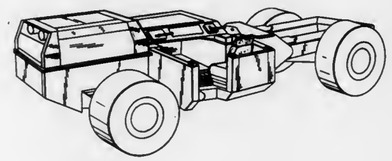
281,426
KEYBOARD FOR AN ELECTRONIC COMPUTER
Masaki Kurihara, and Masahiko Mizuno, both of Shiojiri, Japan, assignors to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan
Filed May 31, 1983, Ser. No. 499,698
Claims priority, application Japan, Dec. 3, 1982, 57-54376
Term of patent 14 years
U.S. Cl. D14—100



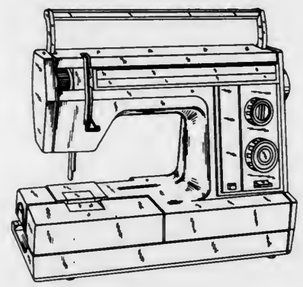
281,427
SERVICE STATION ISLAND
Charles M. Baffo, Wilton, Conn., and Thomas H. Geismar, New York, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 31, 1983, Ser. No. 528,334
Term of patent 14 years
U.S. Cl. D15—9.2



281,428
MINE CARRIER VEHICLE
Godfrey S. Kent, Woodstock, Canada, assignor to Timberjack Inc., Woodstock, Canada
Filed May 10, 1982, Ser. No. 376,870
Term of patent 14 years
U.S. Cl. D15—21



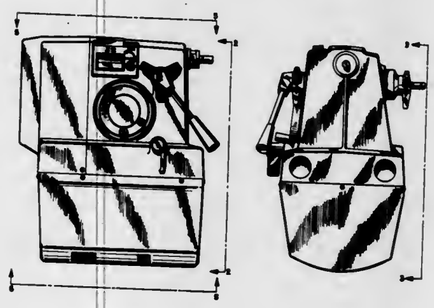
281,429
SEWING MACHINE
Nobufusa Kuroki, Machida, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Feb. 7, 1983, Ser. No. 464,734
Claims priority, application Japan, Oct. 7, 1982, 57-45475
Term of patent 14 years
U.S. Cl. D15—69



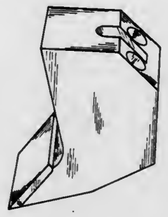
281,430
HYDRAULIC PRESS
Miroslav Uroshevich, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Harrison, Ohio
Filed May 5, 1983, Ser. No. 491,917
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—123



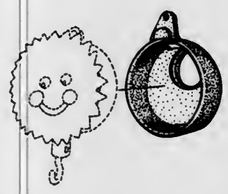
281,431
HEADSTOCK FOR A MULTIPURPOSE WOODWORKING TOOL
Charles J. Haas, Middletown, and Michael J. Duwell, Cincinnati, both of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Filed Nov. 16, 1983, Ser. No. 552,587
Term of patent 14 years
U.S. Cl. D15—125



281,432
CHIPPING BLADE
Jorma Tuomaala, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Apr. 27, 1982, Ser. No. 372,120
Claims priority, application Finland, Dec. 1, 1981, 925/81; Dec. 1, 1981, 926/81
Term of patent 14 years
U.S. Cl. D15—139



281,433
CHILD'S MUSICAL MOBILE MUSIC BOX COVER
Anthony Chrones, Warwick, R.I., assignor to Gerber Products Company, Fremont, Mich.
Filed Jul. 14, 1983, Ser. No. 513,558
Term of patent 14 years
U.S. Cl. D17—24



281,434
TYPEWRITER
Shigemasa Kato, Kanagawa, and Sanae Takada, Tokyo, both of Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1983, Ser. No. 552,285
Claims priority, application Japan, Jul. 29, 1983, 58-033407
Term of patent 14 years
U.S. Cl. D18—1

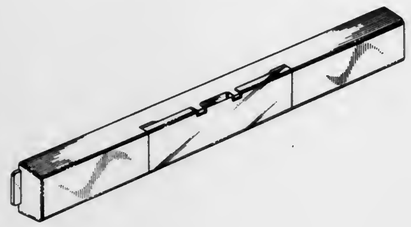


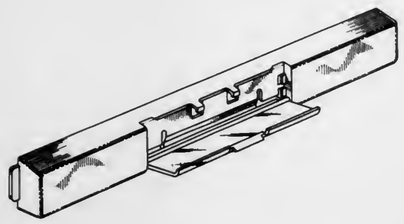
281,435
PRINTING CALCULATOR
Masaji Sawada; Hiroshi Sakaguchi; Shigeaki Hayashi, and Kazuo Yamada, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Sep. 29, 1982, Ser. No. 426,616
Claims priority, application Japan, Mar. 30, 1982, 57-13651
Term of patent 14 years
U.S. Cl. D18—7



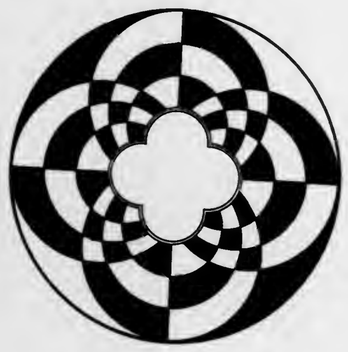


281,436
IDENTIFICATION HOLDER FOR A LUGGAGE CASE OR THE LIKE
Roger D. Winter, Lakewood; James S. Gregg, Aurora, and Daniel R. Skewis, Westminster, all of Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Jul. 25, 1983, Ser. No. 516,750
Term of patent 14 years
U.S. Cl. D20—43

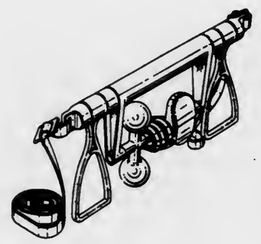




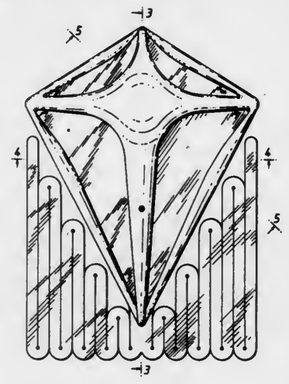
281,437
GAME BOARD FOR CHESS, CHECKERS OR THE LIKE
Eugene E. Perlow, 740 E. Baseline Rd., Phoenix, Ariz. 85040-6615
Filed Jul. 20, 1983, Ser. No. 515,491
Term of patent 14 years
U.S. Cl. D21—24



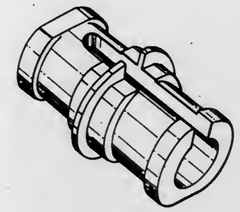
281,438
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Filed May 2, 1983, Ser. No. 490,428
Claims priority, application United Kingdom, Nov. 18, 1982, 1009770
Term of patent 14 years
U.S. Cl. D21—63



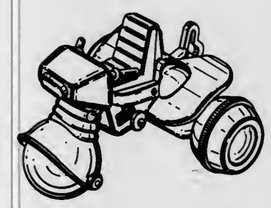
281,439
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James T. Jordan, 76a, Beckwith Rd., North Dulwich, London SE24, England
Filed Sep. 21, 1982, Ser. No. 420,723
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Term of patent 14 years
U.S. Cl. D21—88



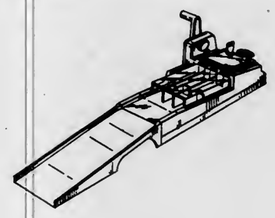
281,440
TOY CONSTRUCTION PIECE
Nils A. I. Petersson, Killeberg, Sweden, assignor to Brio Toy AB, Osby, Sweden
Filed Sep. 20, 1983, Ser. No. 533,579
Claims priority, application Sweden, Mar. 25, 1983, 83-0867
Term of patent 14 years
U.S. Cl. D21—108



281,441
TOY MOTORCYCLE
Sin C. Tam, and Chong V. Sou, both of Kowloon, Hong Kong, assignors to Evergood Toys Manufacturing Ltd., Hong Kong, Hong Kong
Filed May 9, 1983, Ser. No. 492,836
Claims priority, application United Kingdom, Nov. 17, 1982, 1009762
Term of patent 14 years
U.S. Cl. D21—134



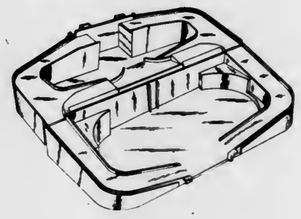
281,442
DEVICE FOR PROPELLING TOY CARS
Kazutaka Takeuchi, Murakami Yachiyo, Japan, assignor to Blue Box Toy Factory Limited, Hong Kong, Hong Kong
Filed Apr. 22, 1983, Ser. No. 487,674
Claims priority, application United Kingdom, Oct. 28, 1982, 1009434
Term of patent 14 years
U.S. Cl. D21—141



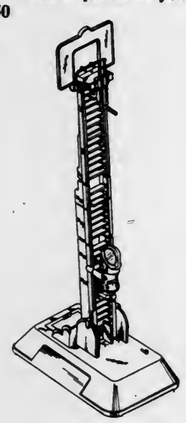
281,443
TOY RAILWAY TRACK SECTION
Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Dec. 10, 1982, Ser. No. 448,753
The portion of the term of this patent subsequent to Oct. 15, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—143



281,444
TOY TRACKWAY
Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Jan. 31, 1983, Ser. No. 462,346
Term of patent 14 years
U.S. Cl. D21—143



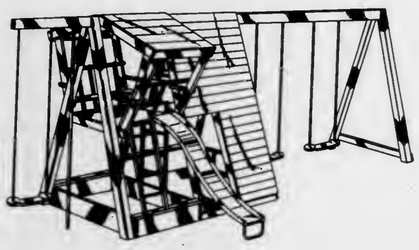
281,445
ELEVATING FIREMAN TOY
Yoshio Udagawa, Chiba, Japan, assignor to Dah Yang Toy Industrial Co., Ltd., Tainan, Taiwan
Filed Dec. 2, 1982, Ser. No. 446,483
Claims priority, application Taiwan, Sep. 11, 1982, 7132759
Term of patent 14 years
U.S. Cl. D21—150



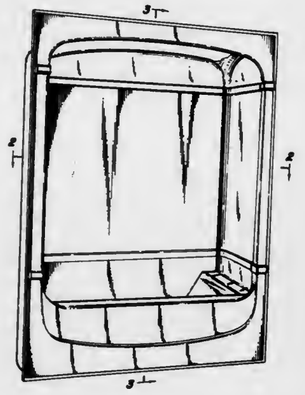
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EXERCISE BAR
Roger S. Keilman, 22447 Edison, Dearborn, Mich. 48124
Filed May 6, 1983, Ser. No. 492,236
Term of patent 14 years
U.S. Cl. D21—191



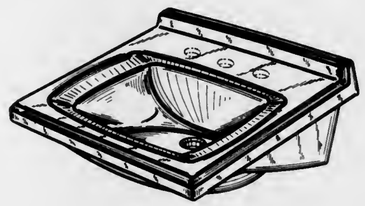
281,447
OUTDOOR CHILD'S PLAY UNIT
Richard F. Gordon, Salt Lake City, Utah, assignor to Sportplay Creative Enterprises, Inc., Utah
Filed May 2, 1983, Ser. No. 490,859
Term of patent 14 years
U.S. Cl. D21—244



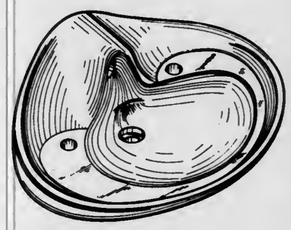
281,448
COMBINED BATHTUB AND SHOWER ENCLOSURE
Joseph Primucci, Willowdale, Canada, assignor to Mirolin Industries, Inc., Toronto, Canada
Filed Oct. 6, 1983, Ser. No. 539,397
Claims priority, application Canada, Apr. 20, 1983, D 20-04-83-1
Term of patent 14 years
U.S. Cl. D23—49



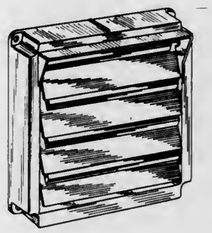
281,449
CABINET-TOP LAVATORY
Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,087
Term of patent 14 years
U.S. Cl. D23—58



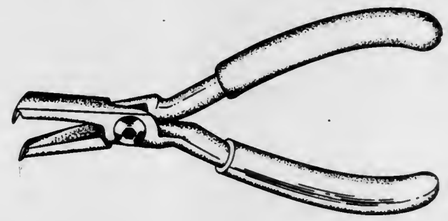
281,450
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Joseph W. Platner, Footes Bridge Rd., Guilford, Conn. 06437
Filed Mar. 18, 1983, Ser. No. 476,644
Term of patent 14 years
U.S. Cl. D23—58



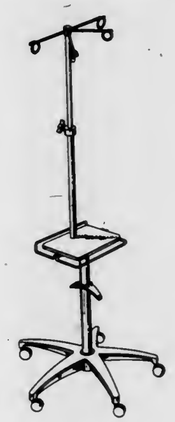
281,451
VENT FOR CLOTHES DRYER
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Aug. 26, 1982, Ser. No. 411,671
Term of patent 14 years
U.S. Cl. D23—151



281,452
ORTHODONTIC ARCHWIRE CUTTER
Craven H. Kurz, 465 N. Roxbury Dr., #1011, Beverly Hills, Calif. 90210
Filed Sep. 29, 1982, Ser. No. 426,842
Term of patent 14 years
U.S. Cl. D24—10



281,453
STAND FOR INTRAVENOUS EQUIPMENT
Al DiGianfilippo, Arlington Heights, and James Hitchcock, Jr., Barrington, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jul. 15, 1983, Ser. No. 514,052
Term of patent 14 years
U.S. Cl. D24—31



281,454
MALE SANITARY DEVICE
Francis T. Feeney, No. 2 Windsor Ct., Lansdale, Pa. 19446
Filed Sep. 22, 1982, Ser. No. 421,520
Term of patent 14 years
U.S. Cl. D24—49



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TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Distin, Robert G., Jr.; and Lang, Thomas J., 4,553,451, Cl. 74-805.000.

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Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, 4,554,088, Cl. 252-62.540.

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Crissy, Charles F.; and Holmes, Paul M., 4,553,888, Cl. 410-144.000.

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Allied Corporation: *See—*
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Thomann, Roland; and Amann, Markus, 4,553,874, Cl. 404-4.000.

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Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.

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Hall, Wilbur S., 4,554,305, Cl. 524-321.000.

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Los, Marinus, 4,554,013, Cl. 71-92.000.

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Bentley, Trisha; Walls, John E.; and Dhillon, Major S., 4,554,236, Cl. 430-157.000.
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DeYoung, Joyce L., 4,554,164, Cl. 514-649.000.
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Haque, Yusuf A., 4,554,508, Cl. 329-101.000.

American Newspaper Publishers Association: *See*—
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Dellario, Patrick R., 4,553,736, Cl. 251-334.000.
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Lense, Robert F., 4,553,656, Cl. 192-142.00R.

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Cappos, David J.; and Klunk, Thomas M., 4,553,322, Cl. 29-739.000.
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Weidler, Charles H.; and Trout, George E., 4,553,808, Cl. 339-97.00R.

Anami, Kenji: *See*—
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.

Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., to General Foods Corporation. Process for prepared, gelatin-containing food products. 4,554,169, Cl. 426-576.000.

Anderson, Thomas L.; and Herrington, F. John, to Mobil Oil Corporation. Bag folder, transporter and carton loader having improved loading and stomper mechanism. 4,553,370, Cl. 53-117.000.

Ando, Makoto; Metabi, Tsuneyo; Miki, Yukio; and Egawa, Takeshi. Automatic and manual focusing exchangeable lens assembly. 4,553,817, Cl. 350-255.000.

Ando, Takeki: *See*—
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.

Ando, Tomiaki, to Pioneer Electronic Corporation. Speaker with tweeter angle adjusting device. 4,553,630, Cl. 181-144.000.

Andreasson, Bo C., to Aktiebolaget Electrolux. Ignition system with additional functions. 4,553,517, Cl. 123-417.000.

Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., to Vsesojuzny Nauchno-Issledovatelsky Instrumentalny Institut. Multilayer coatings of metal-cutting tools. 4,554,201, Cl. 428-215.000.

Andretta, Angelo: *See*—
Fischer, Bruno; and Andretta, Angelo, 4,553,319, Cl. 29-596.000.

Angebault, Joel: *See*—
Moessinger, Albert; Gosciniak, Guy; and Angebault, Joel, 4,553,570, Cl. 139-435.000.

Anton/Bauer, Inc.: *See*—
Corrigan, John J., 4,554,621, Cl. 362-382.000.
Sokira, Thomas J., 4,554,500, Cl. 320-31.000.

Aoyagi, Kenichi: *See*—
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,553,514, Cl. 123-308.000.

Aoyama, Takafumi: *See*—
Tabaru, Kazunori; Aoyama, Takafumi; and Kumakura, Toshio, 4,554,232, Cl. 430-106.600.

Arai, Tomio: *See*—
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.

Arakawa, Akio: *See*—
Kimbara, Masahiko; and Arakawa, Akio, 4,553,569, Cl. 139-1.00E.

Arakawa, Noriyuki: *See*—
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.

Araki, Junichi: *See*—
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.

Arcadian Corporation: *See*—
Hawkins, Edwin F., 4,554,005, Cl. 71-30.000.

Archibald, James F.: *See*—
Turbitt, David M.; and Archibald, James F., 4,554,066, Cl. 209-3.000.

Ariizumi, Shoji: *See*—
Segawa, Makoto; and Ariizumi, Shoji, 4,554,469, Cl. 307-482.000.

Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, to Toyo Soda Manufacturing Co. Ltd. Spherical micro-porous silica gel and a production process thereof. 4,554,211, Cl. 428-402.000.

Arimitsu, Yoshiro, to John Bodger & Sons Co. Seed treating machine. 4,554,067, Cl. 209-136.000.

Armco Inc.: *See*—
Schoen, Jerry W.; and Young, Russel L., 4,554,029, Cl. 148-112.000.

Armstrong, Howard L. Automated windshield wiper system. 4,554,493, Cl. 318-444.000.

Armstrong, Maclay M.; Rogers, John R.; and Houser, Steven A., to Armstrong, Maclay M. Method and implement for pulling bonded orthodontic brackets off teeth. 4,553,932, Cl. 433-4.000.

Armstrong, Maclay M.; and Houser, Steven A., to Armstrong, Maclay M. Force-adjustable and disconnectible connector for orthodontic headgear. 4,553,933, Cl. 433-5.000.

Armstrong, Maclay M.; and Houser, Steven A., to Armstrong, Maclay M. Force-adjustable and disconnectible connector for orthodontic headgear. 4,553,934, Cl. 433-5.000.

Armstrong, Timothy J.; and Wynen, Gerrard A. Safety harness system for confined space workers. 4,553,633, Cl. 182-3.000.

Armstrong, William E., to Scovill Inc. Intercom system. 4,554,411, Cl. 179-37.000.

Arnaudeau, Marcel: *See*—
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Arndt, Stephan: *See*—
Gehring, Fritz; and Arndt, Stephan, 4,553,571, Cl. 139-446.000.

Arnold, William T., to Brouwer Turf Equipment Limited. Sod cutting machine having split undercutting blade. 4,553,606, Cl. 172-19.000.

Arntyr, Oscar S.; and Engstrom, Thord I. Method and apparatus for laying drains in frost-susceptible ground, and drains laid in such ground. 4,553,876, Cl. 405-50.000.

Arpe, Hans-Jurgen; and Litterer, Heinz, to Hoechst Aktiengesellschaft. Process for the manufacture of o-toluidine and/or m-toluidine and/or p-toluidine. 4,554,380, Cl. 564-424.000.

Arques, Marc, to Thomson-CSF. Matched photonic detector-charge transfer reader assembly and image forming target using such an assembly. 4,554,571, Cl. 357-24.000.

Artama, Arvi; and Nurmi, Uuno, to Lastro Ky. Continuously rinsed electric dust collector. 4,553,987, Cl. 55-118.000.

Artos Engineering Company: *See*—
Stoehr, Herbert M.; and Toben, John J., 4,553,418, Cl. 72-132.000.

Arturo Salice S.p.A.: *See*—
Salice, Luciano, 4,553,873, Cl. 403-245.000.

Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Apparatus for casting steel in a continuous casting mold equipped with comoving mold walls. 4,553,582, Cl. 164-432.000.

Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, to Ricoh Company, Ltd. Recording method by use of inks. 4,554,555, Cl. 346-1.100.

Arzouman, Harry H., to Safe-T-Jack, Inc. Extendible jack stand adapted for remote control. 4,553,727, Cl. 248-354.700.

Asakawa, Shirow: *See*—
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.

Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, to Permelec Electrode Ltd. Durable electrode for electrolysis and process for production thereof. 4,554,176, Cl. 427-125.000.

ASC Incorporated: *See*—
Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., 4,553,307, Cl. 29-434.000.

Aseptic Technologies, Inc.: *See*—
Shuster, Herbert V., 4,553,677, Cl. 215-33.000.

Ashikian, Baruir. Two-stage rotary compressor. 4,553,903, Cl. 417-204.000.

Ashland Products Company: *See*—
Simpson, Harold, 4,553,353, Cl. 49-161.000.

Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., to Metal Box p.l.c. Pouch-like bags for containing liquids. 4,553,971, Cl. 604-415.000.

ASM Fico Tooling, b.v.: *See*—
Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., 4,553,420, Cl. 72-380.000.

Assaf, Gad, to Solmat Systems Ltd. Method of an apparatus for dynamically stabilizing the wind-mixed layer of a salt-water solar pond. 4,553,529, Cl. 126-415.000.

Associated Electrical Industries Limited: *See*—
Ainsworth, John D., 4,554,623, Cl. 363-96.000.

Associated Equipment Corporation: *See*—
Wright, Bruce R., 4,554,574, Cl. 357-74.000.

Association pour la Recherche et le Developpement des Methodes et Processus Industriels: *See*—
Yvan, Schwob, 4,553,978, Cl. 44-1.00E.

Assony, Edward M.: *See*—
Kazmierczak, Walter; and Assony, Edward M., 4,553,626, Cl. 180-307.000.

AT&T Bell Laboratories: *See*—
Alferness, Rodney C.; Korotky, Steven K.; and Marcatili, Enrique A. J., 4,553,810, Cl. 350-96.140.
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., 4,554,045, Cl. 156-613.000.
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., 4,554,659, Cl. 370-88.000.
Boyer, Kim L., 4,554,417, Cl. 179-170.200.
Budrikis, Zigmantas L.; and Netravali, Arun N., 4,554,656, Cl. 370-85.000.
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.
Dick, George W., 4,554,537, Cl. 340-775.000.
Manocha, Ajit S., 4,554,048, Cl. 156-643.000.
Minford, William J.; Murphy, Edmond J.; and Rice, Trudie C., 4,554,050, Cl. 156-664.000.
Mussmann, Richard F., 4,554,530, Cl. 340-365.00S.
Reddington, Thomas B., 4,554,631, Cl. 364-300.000.
Rubin, Harvey, 4,554,642, Cl. 364-724.000.

AT&T Information Systems Inc.: *See*—
Smith, Douglas C., 4,554,412, Cl. 179-78.00R.

AT&T Laboratories: *See*—
Burson, Kyle L.; Early, Scott H.; and Ganesan, Apparajan, 4,554,515, Cl. 330-261.000.

AT&T Technologies: *See*—
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.

AT&T Technologies, Inc.: *See*—
Frazee, Ralph E., Jr.; and Smithgall, David H., Sr., 4,553,706, Cl. 242-18.00A.
Huggins, Ronald G.; O'Brien, William D., Jr.; and Partus, Fred P., 4,554,078, Cl. 210-749.000.
Small, Richard D., Jr., 4,554,229, Cl. 430-17.000.

Atchisson, Maxwell G. Low-recoil firearm with noncircular guide rod for angularly locating bolt carrier assembly. 4,553,469, Cl. 89-191.020.

Atlantic Richfield Company: *See*—
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,554,395, Cl. 585-500.000.

Atwood, Charles W.: *See*—
Williams, Rodger W.; and Atwood, Charles W., 4,553,957, Cl. 604-43.000.

Au, Alex: *See*—
Chen, Peter C.; and Au, Alex, 4,554,644, Cl. 365-154.000.

Aubrun, Claude. Headed cotter pin with safety annular retaining means. 4,553,891, Cl. 411-351.000.

Augusti, Ferdinando: *See*—
Ciardiello, Giovanni; and Augusti, Ferdinando, 4,554,594, Cl. 358-283.000.

Ault, Russell L.: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,553,364, Cl. 52-309.130.

Austin, Ormand R.: *See*—
Davis, Richard K., 4,554,495, Cl. 318-572.000.

Autelca AG.: *See*—
Siegenthaler, Fritz, 4,553,694, Cl. 232-7.000.

Autologic, S.A.: *See*—
Moulin, Michel; and Risse, Jean-Claude, 4,553,825, Cl. 354-5.000.

Ayata, Naoki; and Konuki, Tadashi, to Canon Kabushiki Kaisha. Mask aligner having a malfunction disposal device. 4,553,834, Cl. 355-53.000.

Ayengar, Padmasini K.: *See*—
Aladjem, Frederick J.; and Ayengar, Padmasini K., 4,554,257, Cl. 436-519.000.

Ayers, Ray R., to Shell Oil Company. Barge-based oil barrier. 4,554,072, Cl. 210-242.300.

Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A.: *See*—
Silvestrini, Bruno, 4,554,288, Cl. 514-418.000.

Babcock Electro-Mechanical, Inc.: *See*—
Hurter, Max, 4,554,521, Cl. 335-125.000.

Babler, Fridolin; and Munk, Kurt, to Ciba-Geigy Corporation. Electrically conductive fillers. 4,554,094, Cl. 252-518.000.

Back, Karl J., to Stretch Emballering AB. Plant for wrapping the envelope surface of a preferably cylindrical article. 4,553,372, Cl. 53-411.000.

Badger, Philip O., to Miracle Metals, Inc. Implantation of certain solid lubricants into certain metallic surfaces by mechanical inclusion. 4,553,417, Cl. 72-42.000.

Baer, Jean-Michel, to Thomson CSF. Wide band impedance transformer with transformation ratio close to three for radio frequencies. 4,554,518, Cl. 333-33.000.

Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., to General Motors Corporation. Switch, lamp, and connector assembly. 4,554,618, Cl. 362-155.000.

Bagg, Robert D. Golf apparatus. 4,553,752, Cl. 273-32.00A.

Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., to International Business Machines Corporation. Detachable fiber optic connector assembly. 4,553,814, Cl. 350-96.210.

Bailey, Alan, to Cape Gate Fence & Wire Works (Proprietary) Limited. Fencing. 4,553,740, Cl. 256-33.000.

Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, to Allied Corporation; and Societe Anonyme D.B.A. Axial retention of the shoe of a drum brake and a drum-brake shoe equipped with an axial-retention device. 4,553,649, Cl. 188-340.000.

Bailleul, Gilles; and Coville, Patrick, to U.S. Philips Corporation. Heating plate for printing apparatus. 4,554,434, Cl. 219-216.000.

Baines, Richard M. Flexible barrier holding and manipulating mechanism. 4,553,739, Cl. 256-23.000.

Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, to United States of America, Navy. Active circulator gyrotron traveling-wave amplifier. 4,554,483, Cl. 315-4.000.

Baji, Toru: *See*—
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.

Baker, Charles D., to University of Utah Research Institute. Artificial sphincter apparatus and method. 4,553,271, Cl. 623-14.000.

Baker, Donal E., to Westinghouse Electric Corp. Variable speed constant frequency power system with auxiliary DC output. 4,554,501, Cl. 322-29.000.

Baker, Richard W., to Membrane Technology and Research, Inc. Process for recovering organic vapors from air. 4,553,983, Cl. 55-16.000.

Baker, William B.; and Betsill, Harry E., to Du Pont de Nemours, E. I., and Company. Audio dosimeter. 4,554,639, Cl. 364-556.000.

Balage, Charly G.: *See*—
Le Dantec, Olivier J.; and Balage, Charly G., 4,553,889, Cl. 411-21.000.

Baldwin, Francis P.: *See*—
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.

Ball Corporation: *See*—
Jones, William E., 4,553,998, Cl. 65-69.000.

Ball, James H., to Minnesota Mining and Manufacturing Company. Buried cable splice closure. 4,554,401, Cl. 174-37.000.

Bannister, Richard J., to Burroughs Corporation. Generalized fault reporting system. 4,554,661, Cl. 371-15.000.

Bansbach, Armin; and Senkel, Helmut, to Semperlux GmbH. Lamp with a linear light source. 4,554,619, Cl. 362-222.000.

Barabas, Eugene S.; and Cho, James R., to GAF Corporation. Method of preparing an aqueous solution comprising vinylpyrrolidone/vinyl acetate copolymers of various molecular weights using a single initiator system consisting essentially of t-Butylperoxypivalate. 4,554,311, Cl. 524-808.000.

Barabas, Eugene S.; and Cho, James R., to GAF Corporation. Method of preparing aqueous solutions of polyvinyl-pyrrolidone homopolymer of various molecular weights using a single initiator system consisting essentially of t-Butylperoxypivalate. 4,554,312, Cl. 524-808.000.

Baram, David. Valve. 4,553,564, Cl. 137-554.000.

Baran, John S.: *See*—
Lowrie, Harman S.; and Baran, John S., 4,554,359, Cl. 549-231.000.

Barbero, Mario, to Fiat Auto S.p.A. Guide device for sliding windows of motor vehicles and a method for its manufacture. 4,553,354, Cl. 49-431.000.

Barclay, John A.; and Dyson, Jack E., to United States of America, Energy. Rotary multiposition valve. 4,553,566, Cl. 137-625.110.

Bardhan, Nabendu: *See*—
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.

Bares, Jan, to Xerox Corporation. Metering blade for use in a development system. 4,553,829, Cl. 355-3.0DD.

Barlian, Reinhold; and Fischle, Martin, to Barlian, Reinhold. Temperature-humidity surveillance equipment. 4,553,432, Cl. 73-336.000.

Barnett, Larry R.: *See*—
Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, 4,554,483, Cl. 315-4.000.

Baron, Joseph J., Jr.: *See*—
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.

Barre, Guy: *See*—
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, 4,554,292, Cl. 518-728.000.

Barsacq, Gabriel, to S.A.R.L. Aspiramatic. Centralized suction cleaning installations. 4,553,991, Cl. 55-218.000.
Barten, Axel: *See—*
Stahl, Werner; and Barten, Axel, 4,553,460, Cl. 83-113.000.
Barth, Gerhard: *See—*
Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, 4,553,288, Cl. 19-113.000.
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Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, 4,553,288, Cl. 19-113.000.
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Bartley, Gary L.: *See—*
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,554,496, Cl. 318-600.000.
Bartsch, Erhard: *See—*
Nothen, Michael; and Bartsch, Erhard, 4,553,697, Cl. 237-12.30B.
Bartsch, Karl: *See—*
Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, 4,554,041, Cl. 156-276.000.
Basawapatna, Ganesh R., to Microsource, Inc. Frequency source having YIG absorption/transmission filter. 4,554,516, Cl. 331-76.000.
BASF Aktiengesellschaft: *See—*
Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,554,142, Cl. 423-277.000.
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.
Schulz, Guenther; and Zuerger, Manfred, 4,554,240, Cl. 430-285.000.
Volkamer, Klaus; Wagner, Eckhart; and Wagner, Ulrich, 4,553,984, Cl. 55-46.000.
Zeeh, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,554,285, Cl. 514-383.000.
BASF Farben & Fasern AG: *See—*
Diefenbach, Horst; Dobbelstein, Arnold; and Hille, Hans-Dieter, 4,554,212, Cl. 428-413.000.
BASF Wyandotte Corporation: *See—*
Wingard, Michael G.; and Peterson, John F. D., 4,554,079, Cl. 210-776.000.
Bastenbeck, Edwin W., to Enthone, Incorporated. Selective nickel stripping compositions and method of stripping. 4,554,049, Cl. 156-656.000.
Bastian, Donald G.: *See—*
Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., 4,554,044, Cl. 156-510.000.
Batchelor, Douglas R., to Libman Broom Company. Mop head. 4,553,282, Cl. 15-150.000.
Battelle Memorial Institute: *See—*
Ensminger, Dale, 4,554,034, Cl. 156-69.000.
Battistella, Guido: *See—*
Richelli, Angelo; and Battistella, Guido, 4,553,406, Cl. 62-341.000.
Bauman, Bernard D.: *See—*
Burke, Thomas W.; Welch, Robert A.; Schmoyer, Kevin S.; and Bauman, Bernard D., 4,554,025, Cl. 134-17.000.
Baxter Travenol Laboratories, Inc.: *See—*
Aid, James D.; and Lindsay, Edward R., 4,554,069, Cl. 210-101.000.
Karpowicz, John L.; and Zielsdorf, Randall A., 4,554,492, Cl. 318-309.000.
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Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, 4,554,187, Cl. 427-387.000.
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,554,340, Cl. 528-77.000.
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, 4,553,996, Cl. 65-4.400.
Schroder, Rolf; and Lurssen, Klaus, 4,554,017, Cl. 71-113.000.
Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, 4,554,183, Cl. 427-306.000.
Bayer, Gernold: *See—*
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.
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Bayerische Motoren Werke Aktiengesellschaft: *See—*
Pfleger, Albert; and Klesel, Peter, 4,553,585, Cl. 165-41.000.
Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, to Lipha Lyonnaise Industrielle Pharmaceutique. 2-Amino-5-phenyl-1,3-benzodiazepines. 4,554,273, Cl. 514-221.000.
Bazenant, Dominique: *See—*
Parniere, Alain; and Bazenant, Dominique, 4,554,517, Cl. 332-18.000.
BBC Brown, Boveri & Company Limited: *See—*
Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, 4,554,063, Cl. 204-254.000.
Mayer, Andreas, 4,553,387, Cl. 60-274.000.
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., to AT&T Bell Laboratories. Method for producing metal silicide-silicon heterostructures. 4,554,045, Cl. 156-613.000.
Beattie, Willard H.: *See—*
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.
Beaudet, William R.; Pepper, Mark A.; and Rester, David H., to Mead Corporation, The. Fluid jet print head. 4,554,558, Cl. 346-75.000.
Bechstein, Bradley L., to Tibbet Incorporated. Support system for ceiling and wall panels. 4,553,365, Cl. 52-483.000.
Beck, Ernst: *See—*
Schuler, Bernhard; and Beck, Ernst, 4,553,411, Cl. 66-123.000.
Beck, Harald: *See—*
Kusmenskji, Karl-Heinz; and Beck, Harald, 4,553,618, Cl. 177-185.000.
Becker, Gero, legal representative: *See—*
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.
Becker, Hans C., legal representative: *See—*
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.
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Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.
Becker, Wayne A.: *See—*
Lapraik, Scott J.; and Becker, Wayne A., 4,553,803, Cl. 339-74.00R.
Lapraik, Scott J.; and Becker, Wayne A., 4,553,804, Cl. 339-74.00R.
Beckman Instruments, Inc.: *See—*
Lam, Kin C.; and Williams, Ronald K., 4,553,955, Cl. 494-16.000.
Becton, Dickinson and Co.: *See—*
Burns, James A., 4,553,541, Cl. 128-314.000.
Muller, A. Bromley, 4,553,956, Cl. 604-9.000.
Beesley, Graham E., to Motorola, Inc. Radio receiver incorporating a data operated squelch system. 4,554,665, Cl. 371-55.000.
Beeson, Charles F.: *See—*
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,554,496, Cl. 318-600.000.
Begin, Pierre: *See—*
Boissinot, Jean-Guy; and Begin, Pierre, 4,553,992, Cl. 55-279.000.
Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum. Synthetic wound covering. 4,554,317, Cl. 525-28.000.
Behn, Ernest E.; and Behn, Jerome L. Ridge cleaning attachment for planters. 4,553,607, Cl. 172-156.000.
Behn, Jerome L.: *See—*
Behn, Ernest E.; and Behn, Jerome L., 4,553,607, Cl. 172-156.000.
Behrens, Walter R. Illuminated wind socks for airports. 4,553,430, Cl. 73-188.000.
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, to International Business Machines Corporation. Electron beam projection lithography. 4,554,458, Cl. 250-492.200.
Bekiaroglou, Prodromos. Engine with rotating cylinder wall. 4,553,506, Cl. 123-45.00R.
Belamaric, Zelimir, to L. Schuler GmbH. Electrical power source for resistance welding apparatus. 4,554,430, Cl. 219-108.000.
Bell & Howell Company: *See—*
Fallos, George, 4,553,652, Cl. 192-18.00R.
Bell, John L., to Burroughs Corporation. System in which multiple devices have a circuit that bids with a fixed priority, stores all losing bids if its bid wins, and doesn't bid again until all stored bids win. 4,554,628, Cl. 364-200.000.
Belongia, Larry P., to Magna-Graphics Corporation. Rotary web processing apparatus. 4,553,461, Cl. 83-344.000.
Bemis Manufacturing Company: *See—*
Pepper, Kenneth V., 4,553,356, Cl. 52-11.000.
Pepper, Kenneth V., 4,553,357, Cl. 52-12.000.
Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 4,553,688, Cl. 227-67.000.
Ben-Hur, Nahum: *See—*
Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum, 4,554,317, Cl. 525-28.000.
Bender, Annie L.: *See—*
Bender, Robert L.; and Bender, Annie L., 4,553,749, Cl. 273-1.00R.
Bender, Robert L.; and Bender, Annie L. Toy and game apparatus. 4,553,749, Cl. 273-1.00R.
Bendiberica S.A.: *See—*
Folch, Carlos M., 4,553,644, Cl. 188-72.400.
Bengtsson, Alvar. Irrigation system. 4,553,699, Cl. 239-183.000.
Bennett, George R.; and Day, Robert S., to Molins plc. Handling rod-like articles. 4,553,660, Cl. 198-425.000.
Bennett, James G.; and Chambers, Gregory R., to General Electric Company. Copper-magnesium catalyst and method for alkylation of hydroxyaromatic compounds therewith. 4,554,266, Cl. 502-344.000.
Bennett, James G., Jr.: *See—*
Chambers, Gregory R.; and Bennett, James G., Jr., 4,554,267, Cl. 502-340.000.
Bennett, Peter C.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
Bennett, Robert A. One piece press and lock tab for containers. 4,553,684, Cl. 220-268.000.

Benoit, Gordon L., to Mobil Oil Corporation. Thermoplastic bag and thermoplastic bag pack. 4,554,192, Cl. 428-35.000.
Bentley, Trisha; Walls, John E.; and Dhillon, Major S., to American Hoechst Corporation. Amino acid stabilizers for water soluble diazonium compound condensation products. 4,554,236, Cl. 430-157.000.
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., to Wagner Zip-Change Inc. Display letter mounting and method therefor. 4,553,345, Cl. 40-576.000.
Berg, Martin. Combustion chamber for dual turbine wheel engine. 4,553,386, Cl. 60-39.150.
Bergsten, Sten E.: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.
Berks, Robert S.: *See—*
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, to Ste Look. Ski binding for cross-country skiing. 4,553,771, Cl. 280-615.000.
Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, to U.S. Philips Corporation. Electric motor having a U-shaped stator iron. 4,554,471, Cl. 310-49.00R.
Besser Company: *See—*
Kaschner, William C.; and Bobolts, Elroy, Jr., 4,553,893, Cl. 414-152.000.
Betatene Limited: *See—*
Curtain, Cyril C.; and Snook, Harvey, 4,554,390, Cl. 568-870.000.
Bethlehem Steel Corporation: *See—*
Carpenter, John A., 4,553,731, Cl. 251-27.000.
Betsill, Harry E.: *See—*
Baker, William B.; and Betsill, Harry E., 4,554,639, Cl. 364-556.000.
Betz, Ansgar, to Zahnradfabrik Friedrichshafen, AG. Pressure support means in rack and pinion steering. 4,553,447, Cl. 74-422.000.
Beyl, Jean J. A.: *See—*
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.
Biadigo, Mario; and Zucchi, Gianfranco, to Ideal Standard S.p.A. Automatic machine for the fettling of the syphon of sanitary appliances. 4,553,920, Cl. 425-267.000.
BICC Public Limited Company: *See—*
Cane, Michael R., 4,553,807, Cl. 339-94.00R.
Cooke, Edward I., 4,554,116, Cl. 264-1.500.
Bickford, Ian J.: *See—*
Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., 4,554,422, Cl. 200-61.910.
Bidan, Gerard: *See—*
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, 4,554,292, Cl. 518-728.000.
Bielkevicius, Jonas R.; and Schmitt, Paul M., to GTE Communications Products Corporation. Flag detection circuit. 4,554,541, Cl. 340-825.680.
Bieneman, Matthew J., to Westinghouse Electric Corp. Multi-level raster scan display system. 4,554,538, Cl. 340-799.000.
Bierlein, John C.; and DeHart, Arnold O., to General Motors Corporation. Bearing having nickel-tin-copper barrier layer. 4,553,856, Cl. 384-276.000.
Bierlein, John C.: *See—*
MacIver, Bernard A.; Erskine, James C., Jr.; and Bierlein, John C., 4,554,208, Cl. 428-332.000.
Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., to J. R. Simplot Company. Process for granulation of fertilizer materials. 4,554,004, Cl. 71-29.000.
Biersach, James E. Omnidirectional siren. 4,554,531, Cl. 340-387.000.
Bilkie, Robert M. Tap duct crimping tool. 4,553,422, Cl. 72-458.000.
Binev, Binio: *See—*
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.
Birkner, John M.: *See—*
Wong, Sing Y.; and Birkner, John M., 4,554,640, Cl. 364-716.000.
BL Technology Limited: *See—*
King, Charles S.; and Poole, Joseph J., 4,553,515, Cl. 123-308.000.
Blair, Ian L., to George Blair Public Limited Company. Linked chain. 4,553,791, Cl. 305-39.000.
Blake, Peter J.: *See—*
Turner, Edward W.; Blake, Peter J.; and Strzegowski, Joseph C., Jr., 4,553,464, Cl. 83-865.000.
Blatt, Leland F. Retractor mechanism for article transfer apparatus. 4,553,444, Cl. 74-110.000.
Blesing, Dieter; Habel, Erich; and Walther, Hans J., to Carl Freudenberg, Firma. Seal. 4,553,761, Cl. 277-152.000.
Blien, Harry: *See—*
Strobl, Otto; Blien, Harry; and Uliczka, Wolfgang, 4,553,289, Cl. 19-161.100.
Block, Roger R. Connector for electromagnetic impulse suppression. 4,554,608, Cl. 361-119.000.
Blohm & Voss AG: *See—*
Sadler, Karl-Otto; and Schmidt, Willy, 4,553,493, Cl. 114-1.000.
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., to AT&T Bell Laboratories. Data communication network. 4,554,659, Cl. 370-88.000.
Bloomquist, Dayton E., to Red Owl Stores, Inc. Refrigeration/air exchanger system maintaining two different temperature compartments. 4,553,584, Cl. 165-30.000.
Blum, Ronald D., to Tie-Tite Products, Incorporated. Reusable tying device. 4,553,293, Cl. 24-119.000.
Bobolts, Elroy, Jr.: *See—*
Kaschner, William C.; and Bobolts, Elroy, Jr., 4,553,893, Cl. 414-152.000.
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, to Schubert & Salzer. Yarn accumulator. 4,553,709, Cl. 242-47.010.
Bock, Mark G.; and Freidinger, Roger M., to Merck & Co., Inc. Substituted quinazolino-1,4-benzodiazepin-6,9-diones and their preparation. 4,554,272, Cl. 514-219.000.
Bock, Thomas J., to Borg-Warner Corporation. Chain-belt. 4,553,953, Cl. 474-201.000.
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Organoleptic uses of esters of 1-hydroxymethyl-2-acyl cylopropane. 4,554,095, Cl. 252-522.00R.
Boden, Richard M.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,384, Cl. 568-445.000.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,385, Cl. 568-496.000.
Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Chlosta, Wolfgang; and Riegger, Wolfgang, 4,554,436, Cl. 219-385.000.
Boehringer Mannheim GmbH: *See—*
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.
Rosicke, Bernd; and Rosenbladt, Rudolf V., 4,553,848, Cl. 356-448.000.
Boeing Company, The: *See—*
Cole, James B., 4,553,722, Cl. 244-219.000.
Pinson, George T., 4,553,718, Cl. 244-3.150.
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, to Dr. Ing. h.c.F. Porsche AG. Installation for controlling a clutch in response to drive pedal position and engine speed. 4,553,654, Cl. 192-0.076.
Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Method of preparing active magnesium-hydride or magnesium hydrogen-storer systems. 4,554,152, Cl. 423-647.000.
Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Process for the production of magnesium hydrides. 4,554,153, Cl. 423-647.000.
Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Oxamic acid derivatives. 4,554,290, Cl. 514-487.000.
Bogese, Charles E., to Virginia Patent Development Corp. Low profile modular plug. 4,553,800, Cl. 339-59.00M.
Boggs, Roger L., to Caterpillar Tractor Co. Flexible dirt guard with back-up plate for track-type vehicle. 4,553,790, Cl. 305-12.000.
Bogisich, Ferenc: *See—*
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.
Bohlen, Harald: *See—*
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.
Bohlin, Kjell: *See—*
Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman, 4,554,569, Cl. 357-15.000.
Bohls, Fred O., to Runge, Thomas M. Externally valved shunt for cardiopulmonary bypass pump. 4,553,532, Cl. 128-1.00D.
Boissinot, Jean-Guy; and Begin, Pierre. Scrubber apparatus for purifying foul air produced during an embalming, an autopsy or the like. 4,553,992, Cl. 55-279.000.
Boller, Edward; and Williams, Michael R., to Hydrovane Compressor Company Limited. Positive displacement rotary compressors. 4,553,906, Cl. 417-295.000.
Bolton-Emerson, Inc.: *See—*
Danforth, Donald W., 4,554,051, Cl. 162-49.000.
Bolton, Theodore S.: *See—*
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., 4,553,405, Cl. 62-262.000.
Borchardt, John K.; and Rao, S. Prabhakara, to Halliburton Company. High density well drilling, completion and workover brines, fluid loss reducing additives therefor and methods of use. 4,554,081, Cl. 252-8.50A.
Borg-Warner Corporation: *See—*
Bock, Thomas J., 4,553,953, Cl. 474-201.000.
Lech, Thaddeus, Jr.; and Schmitz, Paul L., 4,553,655, Cl. 192-106.200.
Norbeck, Dean K.; and Schnetzka, Harold R., 4,554,463, Cl. 307-252.00H.
Winter, Rudolph R.; and Propst, Verle V., 4,553,313, Cl. 29-568.000.
Borrman, Bo; and Puggioli, Roberto, to AB Asea Atom. Flexible, annular metallic sealing device. 4,553,764, Cl. 277-226.000.
Bosnak, John J., to Whelen Engineering Company, Inc. Method of and apparatus for the testing of warning systems. 4,554,533, Cl. 340-514.000.
Bostolas, Carol: *See—*
Botsolas, Chris J., 4,553,308, Cl. 29-450.000.
Botsolas, Chris J., to Bostolas, Carol. Pipe fitting cover and method for covering pipe fittings. 4,553,308, Cl. 29-450.000.
Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, to Salomon S.A. Safety ski binding. 4,553,772, Cl. 280-628.000.
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, to Societe de Vente de l'Aluminium Pechiney. Method of preparing telomers which can be cross-linked by light. 4,554,373, Cl. 560-192.000.

Bowling, Clarence C. Process for coating rice seed with calcium peroxide by chemical reaction on the seed. 4,554,171, Cl. 427-4.000.

Bowman, George A., to Honeywell Inc. Wireless receiver having crystal filter at outputs of preamplifier. 4,554,678, Cl. 455-286.000.

Boyce, Peter H.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.

Boyer, Kim L., to AT&T Bell Laboratories. Tandem adaptive echo canceler arrangement. 4,554,417, Cl. 179-170.200.

Boyer, Robert D.: *See—*
Provost, Lawrence A.; and Boyer, Robert D., 4,553,421, Cl. 72-402.000.

Brademeyer, David L., to General Motors Corporation. Wheel cylinder assembly with proportioner. 4,553,471, Cl. 91-173.000.

Brandstetter, Franz: *See—*
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.

Brandt, Kim: *See—*
Huffman, James; Brandt, Kim; and Doutre, Alton G., 4,553,892, Cl. 414-121.000.

Branz, Michael A., to Kysor Industrial Corporation. Refrigeration monitor and alarm system. 4,553,400, Cl. 62-127.000.

Bratt, Richard G.: *See—*
Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., 4,554,626, Cl. 364-200.000.

Bratton, Kenneth L.: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Brauch, Robert B.; and Mihovch, John, to Singer Company, The. Control mechanism in a sewing machine for pattern and buttonhole sewing. 4,553,491, Cl. 112-465.000.

Braughler, J. Mark; and Hall, Edward D., to Upjohn Company, The. Use of high doses of derivatives of 6α-methylprednisolone for the acute treatment of stroke syndrome. 4,554,271, Cl. 514-179.000.

Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, to BBC Brown, Boveri & Company Limited. Cathodic, gas- and liquid-permeable current collector. 4,554,063, Cl. 204-254.000.

Braun, Steve W., to Tetra Tech, Inc. Offset voltage correction network for instantaneous floating point amplifier. 4,554,511, Cl. 330-9.000.

Braven, James: *See—*
Brown, Leslie; Braven, James; and Rhead, Michael M., 4,554,077, Cl. 210-656.000.

Brehm, Gustav, to Retech AG. Device for producing twist-crimped threads. 4,553,382, Cl. 57-284.000.

Brekka, Thomas T.: *See—*
Langley, Dennis C.; and Brekka, Thomas T., 4,553,843, Cl. 356-375.000.

Bressand, Rene: *See—*
Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, 4,553,772, Cl. 280-628.000.

Bressier, Peter: *See—*
Urion, Kenard E.; and Bressier, Peter, 4,553,711, Cl. 242-55.300.

Bresson, Clarence R.: *See—*
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,068, Cl. 209-167.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,108, Cl. 260-455.00A.

Bretl, Wayne E.: *See—*
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.

Brewster, Albert L. Thread gauge for measuring thread pitch diameters. 4,553,337, Cl. 33-199.00R.

Bricknell, Rodger H., to General Electric Company. Fluorescent lamp with iron-nickel bimetal filament switch. 4,554,526, Cl. 337-379.000.

Bricmont & Associates, Inc.: *See—*
Bricmont, Francis H., 4,553,925, Cl. 431-178.000.

Bricmont, Francis H., to Bricmont & Associates, Inc. Flow distribution header system. 4,553,925, Cl. 431-178.000.

Bridges, Charles D.: *See—*
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., 4,553,589, Cl. 166-53.000.

Bridgestone Corporation: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.

Bridgestone Tire Company Limited: *See—*
Matsumoto, Kenji; and Suzuki, Yasuo, 4,553,579, Cl. 152-450.000.
Mukae, Makito; and Oshima, Tsuginori, 4,553,894, Cl. 414-331.000.

Briggs, Thomas V. Float means for connecting the winch line of a boat trailer to a boat. 4,553,897, Cl. 414-559.000.

Brilman, Albert; and Koops, Geert, to Hollandse Signaalapparaten B.V. Side-lobe suppressing unit for a pulse radar apparatus. 4,554,548, Cl. 343-379.000.

British-American Tobacco Company Limited: *See—*
Krywiczanin, Wladyslaw H.; and Lumsden, William, 4,553,712, Cl. 242-58.000.
Stewart-Cox, Adrian R., 4,553,555, Cl. 131-110.000.

British Gas Corporation: *See—*
Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.

Brock, George W.: *See—*
Grimm, M. Andreas; and Brock, George W., 4,554,217, Cl. 428-469.000.

Brocklehurst, John C.: *See—*
Hickey, David S.; and Brocklehurst, John C., 4,553,959, Cl. 604-96.000.

Brogi, Mario: *See—*
Ceresara, Sergio; and Brogi, Mario, 4,554,407, Cl. 174-128.00S.

Broken Hill Proprietary Company Limited, The: *See—*
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Brooks, Daryl G., to Kent-Moore Corporation. Boring tool with fluid feed. 4,553,883, Cl. 408-130.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Imaizumi, Mamoru; and Kojima, Yasumichi, 4,553,860, Cl. 400-68.000.

Broughton, Amos W. Separator for immiscible fluid mixture. 4,554,074, Cl. 210-519.000.

Brouwer Turf Equipment Limited: *See—*
Arnold, William T., 4,553,606, Cl. 172-19.000.

Brown, Alfred: *See—*
Huang, Wann-Sheng; and Brown, Alfred, 4,553,595, Cl. 166-278.000.

Brown, Christopher R., to Westinghouse Brake and Signal Co., Ltd. Arrangement for testing the operability of a semiconductive device. 4,554,507, Cl. 324-158.0SC.

Brown, Douglas E.; and Matthews, William, to United States of America, Navy. Oil filled towed array hose without couplings. 4,554,650, Cl. 367-154.000.

Brown, Kenneth L. Dowel cutter and sizer. 4,553,575, Cl. 144-12.000.

Brown, Leslie; Braven, James; and Rhead, Michael M., to Devon County Council, a part interest. Method and apparatus for monitoring sewage treatment efficiency and determining sewage sources. 4,554,077, Cl. 210-656.000.

Brown, Ronald: *See—*
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, 4,553,742, Cl. 266-156.000.

Brundage, Robert W.; and Swatty, Gene. Solenoid controlled flow valve. 4,553,732, Cl. 251-30.010.

Brundage, Robert W. Solenoid controlled valve. 4,553,735, Cl. 251-129.160.

Brunet, Jean-Louis. Medical syringe. 4,553,962, Cl. 604-198.000.

Bryant-Jeffries, Keith C.; Dickie, Hugh G.; and Vaughan, Eric V., to International Business Machines Corporation. Rotor for a dynamo-electric machine and method of making same. 4,553,320, Cl. 29-598.000.

BS&B Safety Systems, Inc.: *See—*
Short, Edward H., III, 4,553,559, Cl. 137-68.00R.

Budden, Renke: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.

Budnik, James M.: *See—*
Gregory, Joseph D.; and Budnik, James M., 4,553,853, Cl. 374-25.000.

Budrikis, Zigmantas L.; and Netravali, Arun N., to AT&T Bell Laboratories. Method and system for controlling the interconnecting of a plurality of local data networks. 4,554,656, Cl. 370-85.000.

Buehler, Ernest: *See—*
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,554,136, Cl. 422-209.000.

Bugianesi, Robert L.: *See—*
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,554,349, Cl. 536-55.000.

Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., to International Business Machines Corporation. Method for conditioning a surface of a dielectric substrate for electroless plating. 4,554,182, Cl. 427-304.000.

Burger, William R.; Hutton, James E.; and Silverberg, Morton, to Xerox Corporation. Recirculative document inverter. 4,553,828, Cl. 355-3.0BE.

Burgess, Glenn A.: *See—*
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., 4,553,474, Cl. 98-1.500.

Burke, Thomas W.; Welch, Robert A.; Schmoyer, Kevin S.; and Bauman, Bernard D., to Air Products and Chemicals, Inc. Method of removing built-up layers of organic coatings. 4,554,025, Cl. 134-17.000.

Burke, Timothy M.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.

Burkel, Rainer; and Peter, Cornelius, to Robert Bosch GmbH. Vehicle tire pressure monitoring system. 4,554,528, Cl. 340-58.000.

Burlington Industries, Inc.: *See—*
Crocker, Charles L.; Wallace, Michael; and Powell, Lee, 4,553,384, Cl. 57-406.000.
Gamblin, Rodger L., 4,554,219, Cl. 428-667.000.

Burns, James A., to Becton, Dickinson and Co. Automatic retractable lancet assembly. 4,553,541, Cl. 128-314.000.

Burroughs Corporation: *See—*
Bannister, Richard J., 4,554,661, Cl. 371-15.000.
Bell, John L., 4,554,628, Cl. 364-200.000.
Sellars, Graham P., 4,554,600, Cl. 360-77.000.

Burson, Kyle L.; Early, Scott H.; and Ganesan, Apparajan, to AT&T Laboratories. CMOS Operational amplifier. 4,554,515, Cl. 330-261.000.

Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Apparatus for tensioning a belt. 4,553,664, Cl. 198-814.000.

Buscher, John H., to Eastman Machine Company. Guided lifting apparatus. 4,553,328, Cl. 33-32.00G.

Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, to BASF Aktiengesellschaft. Phenylpropylammonium salts, their manufacture and agents containing these compounds. 4,554,006, Cl. 71-76.000.

Buschmann, Ernst: *See—*
Zeeh, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,554,285, Cl. 514-383.000.

Buschmann, Gerd: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.

Bushman, Stanley C., to Minnesota Mining and Manufacturing Company. Spectrally-sensitized imaging system. 4,554,238, Cl. 430-258.000.

Bussco Engineering, Inc.: *See—*
Clark, Ralph, 4,554,615, Cl. 361-412.000.

Butin, Henri: *See—*
Deman, Pierre; and Butin, Henri, 4,554,668, Cl. 375-1.000.
Deman, Pierre; and Butin, Henri, 4,554,669, Cl. 375-1.000.

Butterworth, George A. M.; Evans, William M.; and Goldner, Howard J., to American Hospital Supply Corporation. Sterilization container formed of nonwoven material. 4,553,669, Cl. 206-439.000.

Byrd, James V., Jr.; and Mints, Danny K., to Halliburton Company. Hydra-pneumatic load sensor and signal system. 4,553,880, Cl. 406-23.000.

C F Braun & Co.: *See—*
Grotz, Bernard J.; Parnkopf, Fiske O.; and Prescott, G. Robert, 4,554,135, Cl. 422-148.000.

Caines, R. Scott, to American Hoechst Corporation. Polyester film primed with organic acid salts. 4,554,200, Cl. 428-207.000.

Calderini, Leonardo: *See—*
Primati, Marco; and Calderini, Leonardo, 4,553,343, Cl. 38-33.000.

Camco, Incorporated: *See—*
Logan, Francis D., 4,553,310, Cl. 29-517.000.

Cameron Iron Works, Inc.: *See—*
Kilmoyer, James E., 4,553,759, Cl. 277-12.000.

Campillo, Christian: *See—*
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Canadian Patents and Development Limited-Societe Canadienne des Brevets et D'Exploitation Limtee : *See—*
So, Eddy, 4,554,513, Cl. 330-85.000.

Candiotti, Marcello: *See—*
Marini, Paolo; and Candiotti, Marcello, 4,554,213, Cl. 428-418.000.

Cane, Michael R., to BICC Public Limited Company. Separable electrical connectors with fluid escape path. 4,553,807, Cl. 339-94.00R.

Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., to International Business Machines Corporation. Method for plating from an electroless plating bath. 4,554,184, Cl. 427-345.000.

Canon Kabushiki Kaisha: *See—*
Ayata, Naoki; and Konuki, Tadashi, 4,553,834, Cl. 355-53.000.
Harada, Yuji, 4,553,820, Cl. 350-331.00R.
Hirooka, Masaaki, 4,554,180, Cl. 427-248.100.
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.
Kato, Masatake; and Hashimoto, Shigeru, 4,553,823, Cl. 350-463.000.
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, 4,553,845, Cl. 356-400.000.
Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, 4,554,674, Cl. 377-17.000.
Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, 4,553,317, Cl. 29-572.000.
Tobe, Kazumitsu, 4,554,602, Cl. 360-14.200.
Yoshida, Tadashi, 4,554,592, Cl. 358-257.000.

Cape Gate Fence & Wire Works (Proprietary) Limited: *See—*
Bailey, Alan, 4,553,740, Cl. 256-33.000.

Cappos, David J.; and Klunk, Thomas M., to AMP Incorporated. Floating locator head for application tooling. 4,553,322, Cl. 29-739.000.

Capurka, Zbynek A., to Motorola, Inc. Reference pulse verification circuit adaptable for engine control. 4,553,426, Cl. 73-116.000.

Caputo, Jeffrey C.: *See—*
Caputo, Mario A.; and Caputo, Jeffrey C., 4,553,414, Cl. 70-58.000.

Caputo, Mario A.; and Caputo, Jeffrey C. Theft prevention device for automobile audio equipment. 4,553,414, Cl. 70-58.000.

Carey, Clarence W. Collar fastener. 4,553,291, Cl. 24-55.000.

Carl Freudenberg, Firma: *See—*
Blesing, Dieter; Habel, Erich; and Walther, Hans J., 4,553,761, Cl. 277-152.000.
Hoelzer, Helmut, 4,553,762, Cl. 277-152.000.

Carl, William P.: *See—*
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,554,112, Cl. 260-543.00F.

Carlson, Curtis R., to RCA Corporation. Spatial prefilter for variable-resolution sampled imaging systems. 4,554,585, Cl. 358-209.000.

Carmel, Yuval: *See—*
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.

Carmichael, Richard W.: *See—*
Pugh, James G.; and Carmichael, Richard W., 4,553,789, Cl. 303-54.000.

Carpenter, John A., to Bethlehem Steel Corporation. Fail-closed, tight seal gas safety valve system. 4,553,731, Cl. 251-27.000.

Carpenter Technology Corporation: *See—*
DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., 4,554,028, Cl. 148-38.000.

Carre, Jean-Jacques; and Pressaco, Pierre, to Societe Anonyme D.B.A. Brake motor with automatic adjustment. 4,553,646, Cl. 188-196.0BA.

Carrier Corporation: *See—*
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., 4,553,405, Cl. 62-262.000.

Carroll, William G., to Imperial Chemical Industries PLC. Polymer-modified polyols. 4,554,306, Cl. 524-377.000.

Carson, John C., Jr.: *See—*
Schebece, Frank; and Carson, John C., Jr., 4,554,097, Cl. 252-542.000.

Carter, Charles G.; and Lee, David L., to Stauffer Chemical Company. O-Aryloxyphenoxyacyl-α-N,N,-dialkylaminooximes and herbicidal methods of use. 4,554,014, Cl. 71-94.000.

Carter, Russell P., Jr.: *See—*
Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, 4,554,315, Cl. 525-67.000.

Casey, Steven M. Method for making barrier structure. 4,553,875, Cl. 404-6.000.

Caste, Thomas K., to General Electric Company. Multiple key with invisible hinge. 4,554,426, Cl. 200-159.00B.

Castellano, Thomas P.; and Mandel, Nathan, to Mandel, Nathan. Repeating firearm trigger mechanism. 4,553,468, Cl. 89-140.000.

Catalysts & Chemicals Industries Co., Ltd.: *See—*
Fuchikami, Jun; and Yano, Takemithu, 4,554,263, Cl. 502-66.000.

Caterpillar Tractor Co.: *See—*
Boggs, Roger L., 4,553,790, Cl. 305-12.000.
Reed, Lyle T.; and Olt, Arthur E., Jr., 4,553,760, Cl. 277-12.000.
Ruseff, Walter Z.; and Schimpf, James E., 4,553,904, Cl. 417-218.000.

Caxton Doss-Desouza, Argus F.: *See—*
Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., 4,554,422, Cl. 200-61.910.

CDP, Ltd.: *See—*
Ecer, Gunes M., 4,554,130, Cl. 419-8.000.

Celanese Corporation: *See—*
Chenevey, Edward C., 4,554,119, Cl. 264-85.000.
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.
Sinker, Stephen M.; and McChesney, Charles E., 4,554,329, Cl. 525-437.000.
Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, 4,554,377, Cl. 564-205.000.

CEM Corporation: *See—*
Collins, Michael J., 4,554,132, Cl. 422-68.000.

Cena, Arnulfo Q. Rotary piston machine. 4,553,503, Cl. 123-18.00A.

Central Glass Company Limited: *See—*
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, 4,554,382, Cl. 568-404.000.

Centro Sperimentale Metallurgico SpA: *See—*
Marini, Paolo; and Candiotti, Marcello, 4,554,213, Cl. 428-418.000.

Century Electric, Inc.: *See—*
Sisk, Hollis D., 4,554,475, Cl. 310-208.000.

Ceradelli, Vittorio: *See—*
Chelin, Cesare; and Ceradelli, Vittorio, 4,554,590, Cl. 358-248.000.

Ceresara, Sergio; and Brogi, Mario, to La Metalli Industriale S.p.A. Superconducting conductors having a stabilizing sheath brazed to its matrix and a process for making the same. 4,554,407, Cl. 174-128.00S.

Chagnon, Mark S.: *See—*
Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, 4,554,088, Cl. 252-62.540.

Chagnot, Bruce J.; and Wood, James G., to Stirling Technology, Inc. Self pressurizing, crank-type Stirling engine having reduced loading of displacer drive linkages. 4,553,392, Cl. 60-517.000.

Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., to Allied Corporation. Hydrothermal apparatus for synthesizing crystalline powders. 4,554,136, Cl. 422-209.000.

Chalupka, Georg: *See—*
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, 4,553,996, Cl. 65-4.400.

Chambers, Gregory R.; and Bennett, James G., Jr., to General Electric Company. Catalyst and method for ortho-alkylation of hydroxyaromatic compounds. 4,554,267, Cl. 502-340.000.

Chambers, Gregory R.: *See—*
Bennett, James G.; and Chambers, Gregory R., 4,554,266, Cl. 502-344.000.

Champion International Corporation: *See—*
Hain, Paul O., 4,554,127, Cl. 264-324.000.

Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, to Commissariat a l'Energie Atomique. Temperature-compensated Zener diode. 4,554,568, Cl. 357-13.000.

Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, to Mostek Corporation. Method for making a semiconductor device. 4,553,314, Cl. 29-571.000.

Chance, James F.: *See—*
Jerson, Donald D.; and Chance, James F., 4,554,470, Cl. 310-45.000.

Chandler Evans Inc.: *See—*
Noell, Godwin L.; and Sundberg, Jack G., 4,553,914, Cl. 418-69.000.

Chandra, Rangasami S.; and Orlando, Franklin P., to FMC Corporation. Load cell clamping apparatus. 4,553,872, Cl. 403-25.000.

Chandrasekhar, Hosekere S., to RCA Corporation. Method of making integrated PNP and NPN bipolar transistors and junction field effect transistor. 4,553,318, Cl. 29-577.00C.

Chang, Clarence D.; and Chu, Cynthia T. W., to Mobil Oil Corporation. Olefin upgrading with ferrosilicate zeolite catalyst. 4,554,396, Cl. 585-531.000.

Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, to North Carolina State University. Process of degrading chloro-organics by white-rot fungi. 4,554,075, Cl. 210-611.000.

Changle, Joseph F.: *See—*
Grunert, Kurt A.; and Changle, Joseph F., 4,554,421, Cl. 200-43.150.

Charbonnages de France: *See—*
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.

Charbonnier, Jacques: *See—*
Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, 4,553,649, Cl. 188-340.000.

Chasse, Dennis W.; and Clark, Vincent M., to Honeywell Information Systems Inc. Digital pulse stretcher. 4,554,445, Cl. 235-472.000.

Chatterjee, Pallab K., to Texas Instruments Incorporated. Self-aligned stacked CMOS. 4,554,572, Cl. 357-42.000.

Chaudot, Gerard. Safety system for removing any risk of carrying liquids to the nose of the flare or to the vent-hole during burning or dispersion of the gases associated with production. 4,553,989, Cl. 55-177.000.

Cheesman, Anthony. Tear-open compartmented cat litter container. 4,553,671, Cl. 206-611.000.

Chelin, Cesare; and Ceradelli, Vittorio, to Ing. C. Olivetti & C., S.p.A. Device for positioning video display unit. 4,554,590, Cl. 358-248.000.

Chembakaffery, George M.: *See—*
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,324, Cl. 29-822.000.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,572, Cl. 140-92.800.

Chen, Peter C.; and Au, Alex, to Fairchild Camera & Instrument Corporation. Static RAM cell. 4,554,644, Cl. 365-154.000.

Chenevey, Edward C., to Celanese Corporation. Process for heat treating shaped articles of poly {[benzo(1,2-d:4,5-d')bisthiazole-2,6-diyl]-1,4-phenylene}, its cis isomer or mixtures thereof. 4,554,119, Cl. 264-85.000.

Cheng, Paul J., to Phillips Petroleum Company. Method for producing carbon black. 4,554,149, Cl. 423-450.000.

Chevee, Gerard: *See—*
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

Chevron Research Company: *See—*
Herkenhoff, Earl F.; and Ostrander, William J., 4,554,649, Cl. 367-68.000.
Jordan, Roland H., 4,554,070, Cl. 210-109.000.
Loh, William, 4,554,010, Cl. 71-88.000.
Loh, William, 4,554,011, Cl. 71-88.000.
Marcantonio, Paul J., 4,554,138, Cl. 423-53.000.

Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, to Nippon Kokan Kabushiki Kaisha; and Yushiro Chemical Industry Co., Ltd. Metal processing composition. 4,554,087, Cl. 252-49.900.

Chigusa, Yoshiki, to Sumitomo Electric Industries, Ltd. Process for producing image fiber. 4,553,995, Cl. 65-4.200.

Chikamasa, Hiroshi; and Noda, Shinji, to Fuji Photo Film Co., Ltd. Drying method. 4,554,177, Cl. 427-130.000.

Child, Jonathan E.: *See—*
Albinson, Kenneth R.; and Child, Jonathan E., 4,554,065, Cl. 208-59.000.

Childs, John J., to Sprague Electric Company. AC Metallized film capacitor. 4,554,612, Cl. 361-306.000.

Chiozza, Enrico, to Uniderm Farmaceutici s.n.c. Intrauterine contraceptive device. 4,553,536, Cl. 128-130.000.

Chiu, Kin-Chung R.: *See—*
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., 4,554,045, Cl. 156-613.000.

Chlosta, Wolfgang; and Riegger, Wolfgang, to Bodenseewerk Perkin-Elmer & Co., GmbH. Electric heater for a rotating sample vessel container in a sampling device for gas chromatography. 4,554,436, Cl. 219-385.000.

Cho, James R.: *See—*
Barabas, Eugene S.; and Cho, James R., 4,554,311, Cl. 524-808.000.
Barabas, Eugene S.; and Cho, James R., 4,554,312, Cl. 524-808.000.

Chorvat, Robert J.; and Desai, Bipinchandra N., to G. D. Searle & Co. 2,5-Pyrrolidinedione derivatives useful as antiarrhythmic agents. 4,554,353, Cl. 546-208.000.

Chotard, Michel: *See—*
Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, 4,553,649, Cl. 188-340.000.

Christoffersson, Evert. Venetian blind. 4,553,580, Cl. 160-172.000.

Chu, Cynthia T. W.: *See—*
Chang, Clarence D.; and Chu, Cynthia T. W., 4,554,396, Cl. 585-531.000.

Chu, Kwo R.: *See—*
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.

Chung, Daniel A.: *See—*
Liggett, Paul E.; and Chung, Daniel A., 4,554,300, Cl. 523-466.000.

Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., to Mobay Chemical Corporation. Thermoplastic molding compositions. 4,554,314, Cl. 525-67.000.

Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, to Mobay Chemical Corporation. Thermoplastic resinous blend and a method for its preparation. 4,554,315, Cl. 525-67.000.

Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., to Corning Glass Works. Fiber reinforced glass/glass-ceramic mirror blanks. 4,554,197, Cl. 428-113.000.

Ciardiello, Giovanni; and Augusti, Ferdinando, to Ing. C. Olivetti & C., S.p.A. Apparatus for scanning and digitally processing half-tone images. 4,554,594, Cl. 358-283.000.

Ciba-Geigy Corporation: *See—*
Babler, Fridolin; and Munk, Kurt, 4,554,094, Cl. 252-518.000.
Boger, Manfred; and Drabek, Jozef, 4,554,290, Cl. 514-487.000.
Dittrich, Volker, 4,554,270, Cl. 514-120.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,554,016, Cl. 71-105.000.
Howell, Frederick H., 4,554,379, Cl. 564-374.000.
Maul, Rudolf; Stephan, Hans; and Wolf, Walter, 4,554,368, Cl. 556-91.000.
Raisin, Helmut; and Teutelink, Bernard C., 4,553,976, Cl. 8-639.000.
Su, Kai C., 4,553,975, Cl. 8-507.000.

Cibulsky, Albinas A.: *See—*
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., 4,553,657, Cl. 194-4.00R.

Cicognani, Mario: *See—*
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,553,952, Cl. 474-153.000.

Cieslowski, Thomas C.: *See—*
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.

Ciga-Geigy Corporation: *See—*
Wehner, Wolfgang; and Grade, Reinhardt, 4,554,367, Cl. 556-20.000.

Ciliberti, David F.; and Lippert, Thomas E., to Westinghouse Electric Corp. Filtering system and method of using same. 4,553,986, Cl. 55-68.000.

Citizen Watch Co., Ltd.: *See—*
Nakai, Toshihiko, 4,553,867, Cl. 400-323.000.

Citta, Richard W., to Zenith Electronics Corporation. Two-way CATV system with AML commands. 4,554,579, Cl. 358-86.000.

Clark, Ralph, to Bussco Engineering, Inc. Electrically conducting panel and method of making same. 4,554,615, Cl. 361-412.000.

Clark, Vincent M.: *See—*
Chasse, Dennis W.; and Clark, Vincent M., 4,554,445, Cl. 235-472.000.

Clark, William S., to USM Corporation. Component placement head control. 4,553,323, Cl. 29-741.000.

Clarke, David E., to Lever Brothers Company. Opaque general-purpose cleaning composition comprising alcohol esterified resin copolymers. 4,554,099, Cl. 252-551.000.

Clover Mfg. Co., Ltd.: *See—*
Okada, Hidekazu, 4,553,410, Cl. 66-117.000.

Coca-Cola Company, The: *See—*
King, Eddie W.; Duke, Herman K.; and Summerville, Don S., 4,554,419, Cl. 200-5.00A.

Coers, Don H.: *See—*
Wheat, Don R.; and Coers, Don H., 4,553,524, Cl. 126-25.00R.

Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., to Imperial Chemical Industries PLC. Spraying system. 4,553,702, Cl. 239-690.000.

Cohen, Mitchell S.: *See—*
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,554,562, Cl. 346-135.100.

Cohen, Richard L., to Allied Corporation. Directional filter for filtering ambient light. 4,553,818, Cl. 350-276.00R.

Cole, James B., to Boeing Company, The. Variable-camber airfoil. 4,553,722, Cl. 244-219.000.

Cole Sewell Corporation: *See—*
Ralph, James L., 4,553,361, Cl. 52-209.000.

Coleman, William M., III; and Edmondson, Morris S., to Dow Chemical Company, The. Polymerization of olefins employing a catalyst containing a titanium component derived from alicyclic hydroxy compounds. 4,554,333, Cl. 526-127.000.

Colgate-Palmolive Company: *See—*
Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., 4,554,098, Cl. 252-547.000.
Schebece, Frank; and Carson, John C., Jr., 4,554,097, Cl. 252-542.000.

Collens, Richard. Medical reminder device. 4,553,670, Cl. 206-534.000.

Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., to USM Corporation. Lockstitch sewing machine. 4,553,490, Cl. 112-38.000.

Collins, Albert L.: *See—*
Powell, Bert R.; and Collins, Albert L., 4,553,352, Cl. 47-71.000.

Collins, Galen R., to Fuji Photo Film Co., Ltd. Delta modulated communication system. 4,554,671, Cl. 375-30.000.

Collins, Michael J., to CEM Corporation. Analytical apparatus for determining volatiles, solids, and solvent extractables in a sample. 4,554,132, Cl. 422-68.000.

Collins, Raymond L., Jr. Ignitor probe assembly and ceramic insulator therefor. 4,553,927, Cl. 431-264.000.

Colombo, Charles D. Awning type window frame for installing either rigid glazing pane or flexible glazing sheet. 4,553,360, Cl. 52-202.000.

Commander, David J.: *See—*
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.

Commissariat a l'Energie Atomique: *See—*
Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, 4,554,568, Cl. 357-13.000.
Herbreteau, Louis; and Le Roy, Alain, 4,554,546, Cl. 343-5.00W.
Kerviel, Hildebert; and Poulard, Serge, 4,554,031, Cl. 149-19.300.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Curtain, Cyril C.; and Snook, Harvey, 4,554,390, Cl. 568-870.000.

Comnix Kabushiki Kaisha: *See—*
Sasano, Nakamichi, 4,554,415, Cl. 179-170.00G.

Compagnie Francaise des Petroles: *See—*
Vigouroux, Georges; Fort, Gilbert; and Soleille, Louis, 4,553,600, Cl. 166-343.000.

Conn, Shepard; and Kushner, Arnold. Fluid-expansible contraceptive tampon and applicator. 4,553,965, Cl. 604-286.000.

Connors, Frank T., to Symons Corporation. Multi-panelled concrete forming structure for forming flat curved walls. 4,553,729, Cl. 249-40.000.

Conoco Inc.: *See—*
Doerr, Richard E., 4,553,881, Cl. 406-115.000.

Consolidated Freightways, Inc.: *See—*
Markland, Richard D., 4,553,782, Cl. 296-1.00S.

Constantinescu, Spiridon. Aquatic camera. 4,553,494, Cl. 114-66.000.

Construction Robotics, Inc.: *See—*
Deike, Robert F., 4,553,358, Cl. 52-98.000.

Construction Technology, Inc.: *See—*
Levine, Richard W., 4,554,635, Cl. 364-475.000.

Conway, Michael W.: *See—*
Almond, Stephen W.; and Conway, Michael W., 4,553,601, Cl. 166-308.000.

Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., to AT&T Bell Laboratories; and AT&T Technologies. Downstream apparatus and technique. 4,554,047, Cl. 156-643.000.

Cooke, Edward I., to BICC Public Limited Company. Optical cable element manufacture. 4,554,116, Cl. 264-1.500.

Cookson, Alan H., to United States of America, Energy. Particle trap for compressed gas insulated transmission systems. 4,554,399, Cl. 174-14.00R.

Cooper, Raymond M. Fishing lure. 4,553,348, Cl. 43-42.060.

Coppa, Gianni; and Grego, Giorgio, to Cselt Centro Studi E Laboratori Telecomunicazioni, S.p.A. Method of and apparatus for measuring thickness and refractive index of transparent bodies. 4,553,841, Cl. 356-349.000.

Copple, Warren B.: *See—*
Ezis, Andre; and Copple, Warren B., 4,554,117, Cl. 264-67.000.

Copyer Kabushiki Kaisha: *See—*
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Cordis Corporation: *See—*
Pohndorf, Peter J.; and Wesner, Walter H., 4,553,961, Cl. 604-175.000.

Core Industries, Inc.: *See—*
Feterl, Leon G., 4,553,898, Cl. 414-573.000.

Corley, Larry S., to Shell Oil Company. Heat-curable compositions comprising an epoxy resin, an amine and a sulfonium salt. 4,554,342, Cl. 528-90.000.

Cormio, Ignazio, to Videocolor S.A. Process and device ensuring the fixation on the neck of a cathode tube of the deviation collar of the tube. 4,554,589, Cl. 358-248.000.

Cornett, Frank N., to HRB-Singer, Inc. Frequency shift keyed demodulation system. 4,554,509, Cl. 329-105.000.

Corning Glass Works: *See—*
Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., 4,554,197, Cl. 428-113.000.

Correll, Charles. Visual aid apparatus for viewing objects beneath water surface. 4,553,819, Cl. 350-319.000.

Corrigan, John J., to Anton/Bauer, Inc. Modular light assembly. 4,554,621, Cl. 362-382.000.

Corsello, Thomas. Multiple position bookstand. 4,553,728, Cl. 248-452.000.

Cosenza, Frank J.; and Yamamoto, Albert K., to Rexnord Inc. Installation tool, tangless helically coiled insert. 4,553,302, Cl. 29-240.500.

Cosper, David R.; and McKay, Gretchen L., to Nalco Chemical Company. Aqueous hydrotrope solutions for paint detackifiers. 4,554,026, Cl. 134-38.000.

Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., to Mead Corporation, The. Ink jet recording sheet having a bicomponent cationic recording surface. 4,554,181, Cl. 427-261.000.

Coville, Patrick: *See—*
Bailleul, Gilles; and Coville, Patrick, 4,554,434, Cl. 219-216.000.

Cox, Clayton E. Cornerboard for pallets. 4,553,484, Cl. 108-55.100.

Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, to British Gas Corporation; and Rubber and Plastics Research Assoc. of GB. Method and apparatus for the heat treatment of materials. 4,553,930, Cl. 432-120.000.

Coyle, Robert W., to Rohm and Haas Company. Methacrylic acid separation. 4,554,054, Cl. 203-15.000.

Cramer, Carl V., Sr. Non-reversible multiple-refrigeration-cycle solar apparatus including a variable directing valve mechanism. 4,553,402, Cl. 62-235.100.

Creasy, Charles K.; and Hendley, Eustis. Plastic fence assembly. 4,553,741, Cl. 256-66.000.

Creer, Jack G.: *See—*
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Crespy, Serge. Holder combined with instrument. 4,553,926, Cl. 431-253.000.

Crissy, Charles F.; and Holmes, Paul M., to Aeroquip Corporation. Captive dunnage fitting. 4,553,888, Cl. 410-144.000.

Crocker, Charles L.; Wallace, Michael; and Powell, Lee, to Burlington Industries, Inc. Take-up shaft guard for open-end yarn spinning machine. 4,553,384, Cl. 57-406.000.

Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., to Texaco Inc. Method and apparatus for the production of exhaust gas filters. 4,553,499, Cl. 118-428.000.

Crosio, Pasquale, to Ing. C. Olivetti & C., S.p.A. Device for mounting a daisywheel on a typewriter. 4,553,868, Cl. 400-356.000.

Cross, Michael; and Gordon, John T., to Westinghouse Electric Corp. Two wire heater regulator control circuit having continuous temperature sensing excitation independent of the application of heater voltage. 4,554,439, Cl. 219-497.000.

Cross, William T.; and Ramshaw, Colin, to Imperial Chemical Industries PLC. Centrifugal heat pump. 4,553,408, Cl. 62-476.000.

Cselt Centro Studi E Laboratori Telecomunicazioni, S.p.A.: *See—*
Coppa, Gianni; and Grego, Giorgio, 4,553,841, Cl. 356-349.000.

Cummins Engine Company, Inc.: *See—*
Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., 4,553,504, Cl. 123-25.00J.

Curl, Barry J.: *See—*
Hilton, Graham H.; and Curl, Barry J., 4,553,846, Cl. 356-429.000.

Currall, William J. P.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.

Curtain, Cyril C.; and Snook, Harvey, to Commonwealth Scientific and Industrial Research Organization; and Betatene Limited. Method for harvesting algae. 4,554,390, Cl. 568-870.000.

Dabi, Shmuel, to Personal Products Company. Resilient cellular polymers from amine terminated poly(oxyalkylene) and polyfunctional epoxides. 4,554,297, Cl. 521-178.000.

Daghe, Joseph L.; and Sands, Robert E., to Mueller Co. Relief valve assembly for use with backflow preventers. 4,553,563, Cl. 137-494.000.

Dahlgren, Robert W.; and Dennis, William H., to Phillips Petroleum Company. Gas chromatography. 4,553,985, Cl. 55-67.000.

Daicel Chemical Industries, Ltd.: *See—*
Yuki, Heimei; and Okamoto, Yoshio, 4,554,323, Cl. 525-272.000.
Yuki, Heimei; and Okamoto, Yoshio, 4,554,334, Cl. 526-177.000.

Daidotokushuko Kabushikikaisha: *See—*
Hattori, Seiji, 4,553,301, Cl. 29-237.000.

Daimler-Benz Aktiengesellschaft: *See—*
Lindenmaier, Klaus; and Zieger, Josef, 4,553,520, Cl. 123-557.000.

Daiwa Golf Co., Ltd.: *See—*
Yamada, Magoichi, 4,553,755, Cl. 273-171.000.

Dall'Aglio, Carlo: *See—*
Golinelli, Guido; and Dall'Aglio, Carlo, 4,553,332, Cl. 33-561.000.

DallaPiazza, Dennis G.: *See—*
Glover, Gary H.; DallaPiazza, Dennis G.; and Pelc, Norbert J., 4,554,633, Cl. 364-414.000.

Dammig, Joachim: *See—*
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.

Dana Corporation: *See—*
Eley, James M., 4,553,915, Cl. 418-102.000.
Mora, Erwin P., 4,554,607, Cl. 361-104.000.

Danforth, Donald W., to Bolton-Emerson, Inc. Fiber length indicating apparatus and method. 4,554,054, Cl. 162-49.000.

Daniele, Joseph J.; and Yip, Kwok-leung, to Xerox Corporation. Multichannel electro-optic printer for printing plural image lines at once. 4,554,561, Cl. 346-108.000.

Darley, Henry M.: *See—*
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.

Darnell, Joseph W.: *See—*
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., 4,554,659, Cl. 370-88.000.

Data General Corporation: *See—*
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.
Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., 4,554,626, Cl. 364-200.000.

Davies, Robert B.; Miller, Ira; and Dotson, Robert N., to Motorola, Inc. Propagation delay generator. 4,554,464, Cl. 307-265.000.

Davis, Dennis W.: *See—*
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.

Davis, Richard K., to Austin, Ormand R. Datum reference for tool touch probe system. 4,554,495, Cl. 318-572.000.

Davis, William M.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.

Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., to Manville Service Corporation. Centrifugal carton tester. 4,553,438, Cl. 73-830.000.

Day, Robert S.: *See—*
Bennett, George R.; and Day, Robert S., 4,553,660, Cl. 198-425.000.
DBM Industries Limited: *See—*
Perrella, Guido; and Thompson, William E., 4,553,583, Cl. 164-458.000.
De La Rue Systems Limited: *See—*
Hilton, Graham H.; and Curl, Barry J., 4,553,846, Cl. 356-429.000.
Dearman, Timothy C. Pipefitter's scribing and spacing tool. 4,553,305, Cl. 29-272.000.
Debes, Michael H.; and Keenan, Paul C., III, to Du Pont de Nemours, E. I., and Company. Automatic control system for X-ray film cassette loader and unloader apparatus. 4,553,369, Cl. 53-55.000.
de Boer, Jan: *See—*
Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, 4,554,471, Cl. 310-49.00R.
DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., to Carpenter Technology Corporation. Large warm worked, alloy article. 4,554,028, Cl. 148-38.000.
De Bree, Hans: *See—*
Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.
De Choudhury, Pranabesh, to Elliott Turbomachinery Company, Inc. Damper and spring shaft support assembly. 4,553,855, Cl. 384-99.000.
De Cortanze, Andre , to Elf France. Supporting arm assembly for a driving wheel of an automotive vehicle. 4,553,622, Cl. 180-227.000.
Deere & Company: *See—*
Koeller, David L., 4,554,431, Cl. 219-121.0PP.
Teich, Christian M., 4,553,950, Cl. 464-176.000.
Deguchi, Naoyasu: *See—*
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.
Degussa Aktiengesellschaft: *See—*
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.
DeHart, Arnold O.: *See—*
Bierlein, John C.; and DeHart, Arnold O., 4,553,856, Cl. 384-276.000.
Deike, Robert F., to Construction Robotics, Inc. Post anchor. 4,553,358, Cl. 52-98.000.
Deiss, Willy-Jean: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.
De Jaeger, Roger: *See—*
Abou Chakra, Taher; and De Jaeger, Roger, 4,554,113, Cl. 260-927.00N.
Dejaifve, Pierre: *See—*
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, 4,554,292, Cl. 518-728.000.
De Jong, Tim: *See—*
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.
Delaquila, Gary E.: *See—*
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.
Delaruelle, Dale H.: *See—*
Nichols, Richard E.; and Delaruelle, Dale H., 4,553,723, Cl. 246-167.00R.
Dellario, Patrick R., to American Standard Inc. Pneumatic plunger-type valve. 4,553,736, Cl. 251-334.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., to Wisconsin Alumni Research Foundation. Method for preparing 1α-hydroxyvitamin D compounds. 4,554,106, Cl. 260-397.200.
Deman, Pierre; and Butin, Henri, to Thomson-CSF. Frequency-hopping radio communications system. 4,554,668, Cl. 375-1.000.
Deman, Pierre; and Butin, Henri, to Thomson CSF. Frequency jump radiocommunications system with interburst redundancy. 4,554,669, Cl. 375-1.000.
de Marchi, Jean-Louis: *See—*
Pradier, Serge; and de Marchi, Jean-Louis, 4,553,292, Cl. 24-70.0SK.
Demonte, Filippo; and Figini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter. 4,553,866, Cl. 400-144.200.
Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,554,361, Cl. 549-302.000.
Dempsey, Jock D.: *See—*
Dempsey, John D.; and Dempsey, Jock D., 4,553,453, Cl. 81-58.000.
Dempsey, John D.; and Dempsey, Jock D. Stepless wrench including quick release mechanism. 4,553,453, Cl. 81-58.000.
Denlinger, Timothy L.: *See—*
Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., 4,554,044, Cl. 156-510.000.
Dennis, Lawrence D.: *See—*
Flick, Robert H.; and Dennis, Lawrence D., 4,554,423, Cl. 200-293.000.
Dennis, William H.: *See—*
Dahlgren, Robert W.; and Dennis, William H., 4,553,985, Cl. 55-67.000.
Dentsply Research & Development Corp.: *See—*
Koblitz, Francis F.; and Smith, Roy L., 4,553,940, Cl. 523-115.000.
Wang, Wu-Lan, 4,553,936, Cl. 433-37.000.
Depin, Jean-Claude: *See—*
Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, 4,554,273, Cl. 514-221.000.
Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, to W. R. Grace & Co. Apparatus and method for heat flow measurement. 4,553,852, Cl. 374-1.000.
Derderian, Thomas; and Richard, Daniel J., to Nike, Inc. Article of footwear with an adjustable width, adjustable tension closure system. 4,553,342, Cl. 36-97.000.
de Ruiter, Ernest: *See—*
von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest, 4,554,198, Cl. 428-143.000.
Dervan, Andrew H.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,554,332, Cl. 525-532.000.
Dery, Ronald A.; and Jones, Warren C., to AMP Incorporated. Method of forming an electrical interconnection means. 4,554,033, Cl. 156-52.000.
Desai, Bipinchandra N.: *See—*
Chorvat, Robert J.; and Desai, Bipinchandra N., 4,554,353, Cl. 546-208.000.
DeSantis, Raymond P., to PTX-Pentronix, Inc. Tray locator and loader for conveyor apparatus, and method. 4,553,375, Cl. 53-475.000.
Desbois, Michel, to Rhone-Poulenc Specialites Chimiques. Process for sulfonylation of halobenzenes. 4,554,381, Cl. 568-34.000.
DeSordi, Marlette S.; DeSordi, Pete, III; McCullin, Jan C.; and McCullin, Sidney G. Device and process for cleaning shrimp and the like. 4,553,287, Cl. 17-48.000.
DeSordi, Pete, III: *See—*
DeSordi, Marlette S.; DeSordi, Pete, III; McCullin, Jan C.; and McCullin, Sidney G., 4,553,287, Cl. 17-48.000.
Dessau, Ralph M., to Mobil Oil Corporation. Chiral hydrogenating catalysts. 4,554,262, Cl. 502-62.000.
Deters, Paul M. Electrical connector clip assembly. 4,553,799, Cl. 339-19.000.
Detter, Gary C.: *See—*
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.
Devon County Council: *See—*
Brown, Leslie; Braven, James; and Rhead, Michael M., 4,554,077, Cl. 210-656.000.
Dewanjee, Mrinal K., to Mayo Foundation. Treatment of collagenous tissue with glutaraldehyde and aminodiphosphonate calcification inhibitor. 4,553,974, Cl. 8-94.110.
DeYoung, Joyce L., to American Home Products Corporation. Parenteral formulation. 4,554,164, Cl. 514-649.000.
Dhillon, Major S.: *See—*
Bentley, Trisha; Walls, John E.; and Dhillon, Major S., 4,554,236, Cl. 430-157.000.
Dick, George W., to AT&T Bell Laboratories. Gas plasma display. 4,554,537, Cl. 340-775.000.
Dickie, Hugh G.: *See—*
Bryant-Jeffries, Keith C.; Dickie, Hugh G.; and Vaughan, Eric V., 4,553,320, Cl. 29-598.000.
Dickie, Ray A.: *See—*
Holubka, Joseph W.; and Dickie, Ray A., 4,554,188, Cl. 427-393.500.
Didek, Stanislav; Fajt, Ludvik; Reymanova, Marketa; and Markova, Marie, to Vyzkumny ustav bavlnarsky. Method of and apparatus for spinning yarn from staple fibers in an air vortex. 4,553,383, Cl. 57-403.000.
Diefenbach, Horst; Dobbelstein, Arnold; and Hille, Hans-Dieter, to BASF Farben & Fasern AG. Binders for cathodically depositable coating compositions, a process for their preparation and their use. 4,554,212, Cl. 428-413.000.
Diehl GmbH & Co.: *See—*
Weber, Adolf; and Porzelt, Carmen, 4,553,482, Cl. 102-529.000.
Diemer, Peter: *See—*
Rizzon, John; Adomat, Gunter; and Diemer, Peter, 4,554,053, Cl. 201-21.000.
Diesel Kiki Co., Ltd.: *See—*
Eberhardt, H. Alfred, 4,553,902, Cl. 417-34.000.
Swain, James C.; and Thomas, David L., 4,553,905, Cl. 417-222.000.
Dietrich, Hermann, to Ingenieurburo, Hermann Dietrich. Mechanism for lathe-working articles. 4,553,295, Cl. 29-1.320.
Digonnet, Michel J. F.: *See—*
Shaw, Herbert J.; and Digonnet, Michel J. F., 4,554,510, Cl. 330-4.300.
Dillon, Gary E., to International Business Machines Corp. Edge-triggered latch circuit conforming to LSSD rules. 4,554,466, Cl. 307-272.00A.
Dillon, Kenneth R.: *See—*
Gardner, Richard N.; and Dillon, Kenneth R., 4,554,218, Cl. 428-567.000.
Dillon, Philip L., to Reliance Electric Company. Negative resistance compensated transformer. 4,554,504, Cl. 323-356.000.
Distin, Robert G., Jr.; and Lang, Thomas J., to Advanced Energy Concepts '81 Ltd. Pin controlled retainer for epicyclic transmission. 4,553,451, Cl. 74-805.000.
Dittrich, Volker, to Ciba Geigy Corporation. Pesticidal composition containing a synergistic combination of 3-hydroxymethylacrylic acid methyl ester dimethylthionophosphate and cypermethrin. 4,554,270, Cl. 514-120.000.

Dixon, Barry M., to Xerox Corporation. Copiers. 4,553,831, Cl. 355-26.000.
Dixon International Limited: *See—*
Reeve, William E., 4,553,792, Cl. 308-3.00R.
Dixon, Samuel, Jr.: *See—*
Jacobs, Harold; and Dixon, Samuel, Jr., 4,554,680, Cl. 455-326.000.
Dobashi, Akihiko: *See—*
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.
Dobbelstein, Arnold: *See—*
Diefenbach, Horst; Dobbelstein, Arnold; and Hille, Hans-Dieter, 4,554,212, Cl. 428-413.000.
Doboy Packaging Machinery, Inc.: *See—*
Ziller, Robert E., 4,553,368, Cl. 53-51.000.
Dr. Ing. h.c.F. Porsche AG: *See—*
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, 4,553,654, Cl. 192-0.076.
Trenkler, Werner, 4,553,784, Cl. 296-107.000.
Dodd, Clayton: *See—*
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.
Dodd, Paul L., to Shell Oil Company. Tubing connector. 4,553,776, Cl. 285-212.000.
Doerr, Marvin L.: *See—*
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.
Doerr, Richard E., to Conoco Inc. Slurry pump tram control apparatus. 4,553,881, Cl. 406-115.000.
Dohi, Hidemi; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Modified two-part type adhesive composition. 4,554,301, Cl. 524-210.000.
Dohmer, Rolf: *See—*
Gastmeier, William J.; and Dohmer, Rolf, 4,553,627, Cl. 181-135.000.
Dolikian, Arman V., to Motorola, Inc. Guard tone capture method. 4,554,542, Cl. 340-825.760.
Dong, Walter; and Petty, Walter L., to Shell Oil Company. Cyanohydrination catalyst comprising non-crystalline or amorphous dipeptide. 4,554,102, Cl. 260-112.50R.
Donogues, Jacques P.: *See—*
Le Ribault, Loic P.; Donogues, Jacques P.; and Duffaut, Norbert C., 4,553,597, Cl. 166-305.00R.
Dotson, Robert N.: *See—*
Davies, Robert B.; Miller, Ira; and Dotson, Robert N., 4,554,464, Cl. 307-265.000.
Dougherty, Delford O., to St. Luke's Hospital. Drop dispenser. 4,553,686, Cl. 222-212.000.
Douma, Willem A. S.: *See—*
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.
Doutre, Alton G.: *See—*
Huffman, James; Brandt, Kim; and Doutre, Alton G., 4,553,892, Cl. 414-121.000.
Dover Corporation: *See—*
Raloff, Valgene E., 4,554,432, Cl. 219-137.430.
Dow Chemical Company, The: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,554,333, Cl. 526-127.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,554,112, Cl. 260-543.00F.
Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., 4,554,391, Cl. 570-231.000.
Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., 4,554,378, Cl. 564-332.000.
Park, Chung P., 4,554,293, Cl. 521-81.000.
Renga, James M.; Periana-Pillai, Roy A.; and Frazier, Kevin A., 4,554,372, Cl. 560-161.000.
Schmidt, Donald L.; and Harris, Robert F., 4,554,325, Cl. 525-326.800.
Dow Corning Corporation: *See—*
Fey, Kenneth C.; and Lefler, Harold V., III, 4,554,331, Cl. 525-478.000.
Haluska, Loren A.; and Molzahn, Marcelle G., 4,554,354, Cl. 548-110.000.
Keil, Joseph W., 4,554,296, Cl. 521-154.000.
Dow Corning Ltd.: *See—*
Hill, Michael P.; and Pittet, Gilbert H., 4,554,369, Cl. 556-418.000.
Drabek, Jozef: *See—*
Boger, Manfred; and Drabek, Jozef, 4,554,290, Cl. 514-487.000.
Dragerwerk A.G.: *See—*
Leichnitz, Kurt, 4,554,133, Cl. 422-87.000.
Draney, Robert G.: *See—*
Youngers, Stephen A.; and Draney, Robert G., 4,553,448, Cl. 74-480.00R.
Dreuilhe, Jacques; and Landet, Paul-Victor, to Framatome & Cie; Charbonnages de France; and Institut Francais du Petrole. Tube-type heat exchanger. 4,553,502, Cl. 122-4.00D.
Drexhage, Gerrit K. Tip-up bed and post tensioned bedding retainer. 4,553,278, Cl. 5-136.000.
DSL Dynamic Sciences Limited: *See—*
Schmid, Hartmut, 4,554,221, Cl. 429-1.000.
Dubach, Fredi: *See—*
Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.
Duffaut, Norbert C.: *See—*
Le Ribault, Loic P.; Donogues, Jacques P.; and Duffaut, Norbert C., 4,553,597, Cl. 166-305.00R.
Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., to Cummins Engine Company, Inc. Means and method for alternate fuel fumigation in internal combustion engines. 4,553,504, Cl. 123-25.00J.
Duke, George B., Jr.; and Pierce, S. Mark. Lounge chair cover. 4,553,785, Cl. 297-229.000.
Duke, Herman K.: *See—*
King, Eddie W.; Duke, Herman K.; and Summerville, Don S., 4,554,419, Cl. 200-5.00A.
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Hearnshaw, David, 4,554,403, Cl. 174-42.000.
Duncan, Ronnie J. Faucet and clamping mechanism. 4,553,277, Cl. 4-643.000.
Duphar International Research B.V.: *See—*
Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.
Du Pont de Nemours, E. I., and Company: *See—*
Aikens, Paul W., 4,553,805, Cl. 339-75.0MP.
Baker, William B.; and Betsill, Harry E., 4,554,639, Cl. 364-556.000.
Debes, Michael H.; and Keenan, Paul C., III, 4,553,369, Cl. 53-55.000.
Lee, Chi C., 4,554,207, Cl. 428-288.000.
Ritchie, Robert J., 4,554,061, Cl. 204-181.600.
Duracell Inc.: *See—*
Goodman, John T., 4,553,419, Cl. 72-349.000.
Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., to Honeywell Inc. Tunable Fabry-Perot filter. 4,553,816, Cl. 350-166.000.
Durham, Marion E. Earth boring machine. 4,553,612, Cl. 175-122.000.
Dwyer, John J. Replaceable deflectors for the sprinkler heads of automatic fire extinguishing systems. 4,553,603, Cl. 169-38.000.
Dynagraphic Merchandising Corp.: *See—*
Glasener, Kenneth A., 4,553,346, Cl. 40-602.000.
Dynamit Nobel AG: *See—*
Leuck, Hans; and Westermann, Hans-Jorg, 4,554,392, Cl. 570-254.000.
Dyson, Jack E.: *See—*
Barclay, John A.; and Dyson, Jack E., 4,553,566, Cl. 137-625.110.
E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Schreder, Felix, 4,554,438, Cl. 219-449.000.
E. R. Squibb & Sons, Inc.: *See—*
Ferguson, Keith; and McClees, Nancy, 4,553,967, Cl. 604-317.000.
McCullough, John E., 4,554,250, Cl. 435-172.300.
Eagle-Picher Industries, Inc.: *See—*
Whitford, James C., 4,554,056, Cl. 204-2.100.
Early, Scott H.: *See—*
Burson, Kyle L.; Early, Scott H.; and Ganesan, Apparajan, 4,554,515, Cl. 330-261.000.
Eastern Foam Products, Inc.: *See—*
Ridge, Charles A., Jr., 4,554,295, Cl. 521-110.000.
Eastman Kodak Company: *See—*
Gourley, Robert N., 4,554,348, Cl. 534-768.000.
Hilbert, Samuel D.; and McConnell, Richard L., 4,554,206, Cl. 428-261.000.
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Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., 4,554,303, Cl. 524-277.000.
Eastman Machine Company: *See—*
Buscher, John H., 4,553,328, Cl. 33-32.00G.
Eaton Corporation: *See—*
Madsen, Kay, 4,553,838, Cl. 356-237.000.
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Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,553,544, Cl. 128-340.000.
Eberhardt, H. Alfred, to Diesel Kiki Co., Ltd. Floating portable pump. 4,553,902, Cl. 417-34.000.
Ebert, Thomas P. Method for installing a whirlpool bath on an in-place bathtub. 4,553,299, Cl. 29-157.00R.
Ecer, Gunes M., to CDP, Ltd. Consolidation of a part from separate metallic components. 4,554,130, Cl. 419-8.000.
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, to Linde Aktiengesellschaft. Vehicles with differential speed steering. 4,553,620, Cl. 180-6.480.
Edgren, David, to Alza Corporation. Process for preparing osmotic device. 4,553,973, Cl. 604-892.000.
Edinborough, Charles R.: *See—*
Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., 4,554,004, Cl. 71-29.000.
Edmondson, Morris S.: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,554,333, Cl. 526-127.000.
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Edwards, Wallace. Color reproduction process. 4,554,241, Cl. 430-301.000.
Egawa, Takeshi: *See—*
Ando, Makoto; Metabi, Tsuneyo; Miki, Yukio; and Egawa, Takeshi, 4,553,817, Cl. 350-255.000.

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Ehrmann, Peter, to Freudenberg, Carl. Seal ring having an axis parallel intermediate ring. 4,553,763, Cl. 277-153.000.

Eibe, Werner W., to White Consolidated Industries, Inc. Self-contained inflatable crown roll. 4,553,296, Cl. 29-113.00R.

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Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., 4,554,058, Cl. 204-110.000.

Eitel, Frederick G., to United States of America, Air Force. Machining a cooled cylindrical optic to compensate for pressure distortion. 4,553,457, Cl. 82-1.00C.

Ejnar Jensen & Son Maskinfabrik A/S: *See—*
Munch Jensen, Jorn, 4,553,662, Cl. 198-456.000.

Elam, Carl M.; and Leavy, Dale A. Video and audio blanking system. 4,554,584, Cl. 358-165.000.

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Bayer, Helmut, 4,554,525, Cl. 337-356.000.

Eley, James M., to Dana Corporation. Low pressure lubrication system for fluid device. 4,553,915, Cl. 418-102.000.

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De Cortanze, Andre , 4,553,622, Cl. 180-227.000.

Elionix, Inc.: *See—*
Suganuma, Tadao, 4,554,452, Cl. 250-310.000.

Elliott Turbomachinery Company, Inc.: *See—*
De Choudhury, Pranabesh, 4,553,855, Cl. 384-99.000.

Ellis Industries, Inc.: *See—*
Ellis, Lawrence D., 4,553,895, Cl. 414-401.000.

Ellis, Lawrence D., to Ellis Industries, Inc. Truck latch. 4,553,895, Cl. 414-401.000.

EMA Company: *See—*
Guglielmo, Richard J., Sr., 4,554,092, Cl. 252-400.00R.

EMAG Mashinenfabrik GmbH: *See—*
Metz, Rudi; and Scholl, Herbert, 4,554,610, Cl. 361-144.000.

Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., to AB Electronic Components Limited. Gearbox indicator switch. 4,554,422, Cl. 200-61.910.

Emhart Industries, Inc.: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Enck, Rudolph C.: *See—*
Foley, Geoffrey M. T.; and Enck, Rudolph C., 4,554,230, Cl. 430-58.000.

Ende Company: *See—*
Erickson, Nancy D., 4,554,193, Cl. 428-40.000.

Energy-Adaptive Grinding, Inc.: *See—*
Smith, Roderick L., 4,553,355, Cl. 51-165.870.

Engel, Jurgen: *See—*
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.

Engel, Richard C. Portable wood cutting device. 4,553,463, Cl. 83-796.000.

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Arntyr, Oscar S.; and Engstrom, Thord I., 4,553,876, Cl. 405-50.000.

Enomoto, Hiroshi: *See—*
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.

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Enthone, Incorporated: *See—*
Bastenbeck, Edwin W., 4,554,049, Cl. 156-656.000.

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Magid, David J., 4,553,685, Cl. 222-1.000.

Epson Corporation: *See—*
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.

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Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.

Erickson, Dennis E.: *See—*
Heaps, John F.; and Erickson, Dennis E., 4,554,319, Cl. 525-155.000.

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Ernst Beckert Nadelfabrik KG: *See—*
Schuler, Bernhard; and Beck, Ernst, 4,553,411, Cl. 66-123.000.

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MacIver, Bernard A.; Erskine, James C., Jr.; and Bierlein, John C., 4,554,208, Cl. 428-332.000.

Eszakmagyarorszagi Vegyimuvek: *See—*
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Etablissement Public de Diffusion dit "Telediffusion de France": *See—*
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

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Pradier, Serge; and de Marchi, Jean-Louis, 4,553,292, Cl. 24-70.0SK.

Ethyl Corporation: *See—*
Ranken, Paul F., 4,554,352, Cl. 546-156.000.
Scull, Herbert M.; and Laurent, Sebastian M., 4,554,141, Cl. 423-245.000.
Seemuth, Paul D., 4,554,387, Cl. 568-704.000.
Shin, Kju Hi; and Tatum, Edward F., 4,554,389, Cl. 568-722.000.

Ethyl Petroleum Additives, Inc.: *See—*
Hanlon, J. Vincent; Lenane, Denis L.; and Retzloff, James B., 4,553,979, Cl. 44-57.000.

Eurobreva Engineering Trust: *See—*
Klinkel, Wolfgang, 4,553,377, Cl. 53-548.000.

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Panzner, Frank; and Evans, Brian R., 4,554,170, Cl. 426-651.000.

Evans, John L.; Gehrig, George F.; and Speers, Jerry M., to Exxon Production Research Co. Method and apparatus for monitoring fluid flow between a borehole and the surrounding formations in the course of drilling operations. 4,553,429, Cl. 73-155.000.

Evans, William M.: *See—*
Butterworth, George A. M.; Evans, William M.; and Goldner, Howard J., 4,553,669, Cl. 206-439.000.

Ex-Cell-O Corporation: *See—*
Jackson, Theodore A., 4,553,726, Cl. 248-297.100.
Plummer, Jeffrey J.; and Adleman, Larry G., 4,553,738, Cl. 254-358.000.

Extraktionstechnik Gesellschaft Fur Anlagenbau mbH: *See—*
Weber, Klaus, 4,554,163, Cl. 424-195.100.

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Evans, John L.; Gehrig, George F.; and Speers, Jerry M., 4,553,429, Cl. 73-155.000.

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Barthomeuf, Denise M.; and Rosenfeld, Daniel D., 4,554,398, Cl. 585-828.000.
Graves, Victoria, 4,554,265, Cl. 502-113.000.
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.
Pieters, Wim J. M.; and Okumura, Yoshiharu, 4,554,260, Cl. 502-61.000.
Vaughan, David E., 4,554,146, Cl. 423-329.000.

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Ezure, Yoji: *See—*
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.

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Fachini, Robert M.; and Orsborn, Jesse H., to J. I. Case Company. On board cotton module system for cotton harvesting machines. 4,553,378, Cl. 56-16.600.

Fag Kugelfischer Georg Schafer (KGaA): *See—*
Neugebauer, Steffen; and Scharting, Gunter, 4,553,858, Cl. 384-473.000.

Fagerstedt, Mikael: *See—*
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.

Fairchild Camera & Instrument Corporation: *See—*
Chen, Peter C.; and Au, Alex, 4,554,644, Cl. 365-154.000.

Fajt, Ludvik: *See—*
Didek, Stanislav; Fajt, Ludvik; Reymanova, Marketa; and Markova, Marie, 4,553,383, Cl. 57-403.000.

Falckenberg, Richard: *See—*
Grabmaier, Josef; and Falckenberg, Richard, 4,554,203, Cl. 428-229.000.

Falconer, Roy D.: *See—*
Wilson, Robert R.; and Falconer, Roy D., 4,553,704, Cl. 241-39.000.

Fallos, George, to Bell & Howell Company. Coupling mechanism. 4,553,652, Cl. 192-18.00R.

Fanuc Limited: *See—*
Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, 4,554,462, Cl. 307-140.000.
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,554,497, Cl. 318-636.000.

Farge, Daniel: *See—*
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.

Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, to Eszakmagyarorszagi Vegyimuvek. Plant tissue cultivation process. 4,554,252, Cl. 435-240.000.

Farrar, David; and Hawe, Malcolm, to Allied Colloids Limited. Water soluble polymers. 4,554,298, Cl. 523-336.000.

Farrar, David; and Hawe, Malcolm, to Allied Colloids Limited. Water soluble polymers and dispersions containing them. 4,554,307, Cl. 524-425.000.

Fasel, Herman P.: *See—*
Kapur, Jagdish C.; and Fasel, Herman P., 4,554,104, Cl. 260-245.20R.

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Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, 4,553,390, Cl. 60-384.000.
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,553,389, Cl. 60-384.000.

Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., to Raytheon Company. Microstrip antenna with circular ring. 4,554,549, Cl. 343-700.0MS.

Faublas, Serge: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,554,413, Cl. 179-99.00M.

Faulkner, Richard D.; and Rhoads, James L., to RCA Corporation. Electron discharge device having a ceramic member with means for reducing luminescence therein. 4,554,481, Cl. 313-533.000.

Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., to International Business Machines Corporation. Modular test probe. 4,554,506, Cl. 324-158.00P.

Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, to Siemens Aktiengesellschaft. Apparatus for recording X-ray images. 4,554,453, Cl. 250-327.200.

Fell, Edwin H., to Westinghouse Electric Corp. Universal dowel pin system. 4,553,334, Cl. 33-181.00R.

Fergeson, Allen D.: *See—*
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., 4,554,659, Cl. 370-88.000.

Ferguson, Keith; and McClees, Nancy, to E. R. Squibb & Sons, Inc. Wound care and drainage system having hand access port. 4,553,967, Cl. 604-317.000.

Ferrand, Gerard: *See—*
Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, 4,554,273, Cl. 514-221.000.

Ferranti, plc: *See—*
Sillitto, Hillary G., 4,554,448, Cl. 250-216.000.

Feterl, Leon G., to Core Industries, Inc. Swingably mounted truck hopper. 4,553,898, Cl. 414-573.000.

Fey, Kenneth C.; and Lefler, Harold V., III, to Dow Corning Corporation. Liquid copolymeric organosiloxanes. 4,554,331, Cl. 525-478.000.

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Barbero, Mario, 4,553,354, Cl. 49-431.000.

Fiat Products Incorporated: *See—*
Paradis, Robert C., 4,553,276, Cl. 4-612.000.

Fibrestone Incorporated: *See—*
Sudrabin, David A., 4,554,124, Cl. 264-263.000.

Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., to ASM Fico Tooling, b.v. Method and apparatus for touch-free lead bending. 4,553,420, Cl. 72-380.000.

Figge, Dieter: *See—*
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.

Figini, Mario: *See—*
Demonte, Filippo; and Figini, Mario, 4,553,866, Cl. 400-144.200.

Filipowicz, Anthony H.: *See—*
Rubin, Gene L.; Filipowicz, Anthony H.; and Valenza, Frank, 4,553,344, Cl. 40-152.000.

Fingermatrix, Inc.: *See—*
Marcus, Daniel H., 4,553,837, Cl. 356-71.000.

Finike Italiana Marposs S.p.A.: *See—*
Golinelli, Guido; and Dall'Aglio, Carlo, 4,553,332, Cl. 33-561.000.

Finnieston, Alan; and Zagorski, Joseph B. Thigh brace. 4,553,535, Cl. 128-88.000.

Fischer, Bruno; and Andretta, Angelo, to Micafil AG. Method for connecting the ends of stator windings to the stator supply terminals. 4,553,319, Cl. 29-596.000.

Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, to Max. Planck-Gesellschaft zur. Wound treating agent. 4,554,156, Cl. 424-81.000.

Fischer, Hermann: *See—*
Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, 4,553,478, Cl. 101-426.000.

Fischle, Martin: *See—*
Barlian, Reinhold; and Fischle, Martin, 4,553,432, Cl. 73-336.000.

Fisher, Ralph H. Reversible cycle heating and cooling system. 4,553,401, Cl. 62-160.000.

Fitzgerald, Gary W.; Gulibon, Robert S.; and Penrod, Paula M., to Kennametal Inc. Boring tool and method of reducing vibrations therein. 4,553,884, Cl. 408-143.000.

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Petersson, Rolf, 4,553,340, Cl. 34-114.000.

Flamm, Daniel L.: *See—*
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.

Flanagan, Maureen. Mathematical teaching device. 4,553,944, Cl. 434-191.000.

Flanigen, Edith M.: *See—*
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., 4,554,143, Cl. 423-306.000.

Fletcher, Donald E.: *See—*
Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., 4,554,169, Cl. 426-576.000.

Fleuret, Daniel, to Thomson CSF. Method for the production of a multilayered capacitor block. 4,553,304, Cl. 29-25.420.

Flick, Robert H.; and Dennis, Lawrence D., to Westinghouse Electric Corp. Molded case circuit breaker with adjacent pole mechanisms spaced closer than adjacent terminals. 4,554,423, Cl. 200-293.000.

Flick, Robert H.; and Huffman, Walter K., to Westinghouse Electric Corp. Molded case circuit breaker with movable lower electrical contact. 4,554,427, Cl. 200-250.000.

Floris, Pier-Luigi; and O'Toole, Yvonne. Method and apparatus for obtaining electrical signals correlated with the position of a mass of mercury in instruments and the like. 4,554,535, Cl. 340-689.000.

Flynn, John J.: *See—*
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,554,136, Cl. 422-209.000.

FMC Corporation: *See—*
Chandra, Rangasami S.; and Orlando, Franklin P., 4,553,872, Cl. 403-25.000.
Kazmierczak, Walter; and Assony, Edward M., 4,553,626, Cl. 180-307.000.
Scott, Junius D., 4,554,490, Cl. 318-130.000.
Uppgren, John J.; and Scott, James W., 4,553,581, Cl. 164-16.000.
Viitanen, Veikko K.; and Kreamer, William C., 4,553,373, Cl. 53-441.000.

Foglein, Ferenc: *See—*
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Folch, Carlos M., to Bendiberica S.A. Hydro-pneumatic braking device. 4,553,644, Cl. 188-72.400.

Foley, Geoffrey M. T.; and Enck, Rudolph C., to Xerox Corporation. Electrophotographic imaging member with interface layer. 4,554,230, Cl. 430-58.000.

Forbus, Nancy P.; and Kaeding, Warren W., to Mobil Oil Corporation. Organophosphorus-treated zeolite catalysts for para-selective aromatics conversion. 4,554,394, Cl. 585-474.000.

Ford Motor Company: *See—*
Ezis, Andre; and Copple, Warren B., 4,554,117, Cl. 264-67.000.
Holubka, Joseph W.; and Dickie, Ray A., 4,554,188, Cl. 427-393.500.
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,554,332, Cl. 525-532.000.
Muller, George H., 4,554,527, Cl. 340-58.000.
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., 4,554,085, Cl. 252-46.600.

Foresman, Robert. Quick release tiller extension. 4,553,496, Cl. 114-144.00R.

Forney, Edgar W., Jr.; and Hogendobler, Richard S., to AMP Incorporated. Coaxial electrical connector for multiple outer conductor coaxial cable. 4,553,806, Cl. 339-94.00C.

Foroulis, Z. Andrew: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.

Fort, Gilbert: *See—*
Vigouroux, Georges; Fort, Gilbert; and Soleille, Louis, 4,553,600, Cl. 166-343.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba Geigy Corporation. Oxime derivatives for protecting plant crops. 4,554,016, Cl. 71-105.000.

Foster, Daniel S., to Foster Marine Products, Inc. Boat propulsion. 4,553,945, Cl. 440-51.000.

Foster Marine Products, Inc.: *See—*
Foster, Daniel S., 4,553,945, Cl. 440-51.000.

Fouin, Jean: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., to International Business Machines Corporation. Universal threshold/discriminator. 4,554,593, Cl. 358-282.000.

Framatome & Cie: *See—*
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.
Le Dantec, Olivier J.; and Balage, Charly G., 4,553,889, Cl. 411-21.000.

Francel, Josef, to Owens-Illinois, Inc. Chemical resistant lead-free glass frit compositions. 4,554,258, Cl. 501-21.000.

Franke, John M., Sr., to Singer Company, The. Fabric clamping means for driven work folder. 4,553,745, Cl. 270-45.000.

Franklin, Brian; and Mader, Karl-Heinz, to Schott Glass Technologies, Inc. Low expansion, alkali-free borosilicate glass suitable for photomask applications. 4,554,259, Cl. 501-67.000.

Frazee, Ralph E., Jr.; and Smithgall, David H., Sr., to AT&T Technologies, Inc. Lightguide fiber spool changeover technique. 4,553,706, Cl. 242-18.00A.

Frazier, Kevin A.: *See—*
Renga, James M.; Periana-Pillai, Roy A.; and Frazier, Kevin A., 4,554,372, Cl. 560-161.000.

Frazier, Richard V., Jr.: *See—*
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.

Frazita, Richard F., to Hazeltine Corporation. Asymmetric resonant waveguide aperture manifold. 4,554,551, Cl. 343-771.000.

Freepons, Donald E., to Melamine Chemicals, Inc. Fertilizer processes and compositions using s-triazines. 4,554,003, Cl. 71-28.000.

Freidinger, Roger M.: *See—*
Bock, Mark G.; and Freidinger, Roger M., 4,554,272, Cl. 514-219.000.

French, James C.: *See—*
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.

Freudenberg, Carl: *See—*
Ehrmann, Peter, 4,553,763, Cl. 277-153.000.

Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., to United States of America, Energy. Photolytic separation of isotopes in cryogenic solution. 4,554,060, Cl. 204-157.10R.

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Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.

Frick Company: *See—*
Pillis, Joseph W., 4,553,911, Cl. 418-1.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.

Frohbieter, Edwin H.: *See—*
Malchow, Gregory L.; and Frohbieter, Edwin H., 4,553,404, Cl. 62-262.000.

Fry, Thomas H. Solid waste processing. 4,553,977, Cl. 44-1.00D.

Fu, Horng S.: *See—*
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.

Fuchikami, Jun; and Yano, Takemithu, to Catalysts & Chemicals Industries Co., Ltd. Catalysts for hydrotreating heavy oils. 4,554,263, Cl. 502-66.000.

Fuderer, Andrija, to Union Carbide Corporation. Enhanced hydrogen recovery from effluent gas streams. 4,553,981, Cl. 48-62.00R.

Fudickar, Harald; and Thies, Peter, to Wagener Schwelm GmbH & Co. Belt press with multiple press frames. 4,554,043, Cl. 156-502.000.

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Chikamasa, Hiroshi; and Noda, Shinji, 4,554,177, Cl. 427-130.000.
Collins, Galen R., 4,554,671, Cl. 375-30.000.
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,553,833, Cl. 355-40.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,554,560, Cl. 346-108.000.
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, 4,554,242, Cl. 430-393.000.
Ono, Mitsunori; and Itoh, Isamu, 4,554,243, Cl. 430-543.000.
Taniguchi, Yutaka, 4,554,454, Cl. 250-327.200.
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,554,089, Cl. 252-62.560.
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, 4,554,246, Cl. 430-611.000.
Yoneda, Junichi; and Igarashi, Akira, 4,554,566, Cl. 346-207.000.

Fuji Standard Research, Inc.: *See—*
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.

Fuji Xerox Co., Ltd.: *See—*
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.
Saitoh, Hiroyuki; and Kurata, Masami, 4,554,583, Cl. 358-163.000.
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.

Fujii, Satoru: *See—*
Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, 4,553,416, Cl. 72-40.000.

Fujii, Tadashi: *See—*
Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, 4,554,555, Cl. 346-1.100.

Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, to Toyo Soda Manufacturing Co., Ltd. Method for separating and purifying amino acid. 4,554,376, Cl. 562-554.000.

Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, to Furukawa Electric Co., Ltd., The; and Japan Atomic Energy Research Institute. Method for manufacturing flame-retardant insulated wire and cable for nuclear power stations. 4,554,173, Cl. 427-120.000.

Fujinaga, Yasuhiro, to Shimadzu Corporation. Electronic balance with averaging feature for vibration error correction. 4,553,619, Cl. 177-185.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Bicyclo tertiary hydroxyl carboxaldehyde. 4,554,384, Cl. 568-445.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Tertiary hydroxyl carboxaldehydes, organoleptic uses thereof, and processes for producing same. 4,554,385, Cl. 568-496.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.

Fujitec Co., Ltd.: *See—*
Tsutsumi, Suteo; and Koh, Hiroshi, 4,554,459, Cl. 250-550.000.

Fujitsu Ten Limited: *See—*
Shiozaki, Syuji, 4,554,599, Cl. 360-69.000.

Fujiwara, Hitoshi: *See—*
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.

Fujiwara, Junji: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.

Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for running moving object. 4,554,498, Cl. 318-640.000.

Fujiwara, Shigekazu: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.

Fujiwara, Takayoshi: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.

Fukatsu, Yoshiaki: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, 4,554,032, Cl. 149-21.000.

Fukuhara, Satoru: *See—*
Todokoro, Hideo; and Fukuhara, Satoru, 4,554,455, Cl. 250-305.000.

Fukuo, Koichi: *See—*
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.

Fukushi, Yutaka: *See—*
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.

Funada, Fumiaki: *See—*
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.

Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, to Sumitomo Chemical Company, Limited. Geometrical isomer of 1-substituted-1-triazolylstyrenes, and their production and use as fungicide, herbicide and/or plant growth regulant. 4,554,007, Cl. 71-076.000.

Furman, Anatol, to International Business Machines Corporation. Multi-port register implementation. 4,554,645, Cl. 365-189.000.

Furukawa Electric Co., Ltd., The: *See—*
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.

Furukawa, Tetsuro, to Hitachi Zosen Corporation. Multiple regeneration multiple absorption type heat pump. 4,553,409, Cl. 62-476.000.

Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Rear suspension for vehicles. 4,553,768, Cl. 280-91.000.

Furuki, Tsuneo: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Furumoto, Takayuki, to Hitachi, Ltd. System for maintenance and diagnosis of mobile telephone equipment. 4,554,410, Cl. 179-2.00E.

Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Tag attaching device. 4,553,688, Cl. 227-67.000.

Futamura, Shoji: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.

G. D. Searle & Co.: *See—*
Chorvat, Robert J.; and Desai, Bipinchandra N., 4,554,353, Cl. 546-208.000.
Lowrie, Harman S.; and Baran, John S., 4,554,359, Cl. 549-231.000.

G. Rau GmbH & Co.: *See—*
Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, 4,554,027, Cl. 148-11.50R.

GAF Corporation: *See—*
Barabas, Eugene S.; and Cho, James R., 4,554,311, Cl. 524-808.000.
Barabas, Eugene S.; and Cho, James R., 4,554,312, Cl. 524-808.000.

Gaiser, Robert F.; and Myers, Lawrence R., to Allied Corporation. Combination hill holder and proportioning valve mechanism. 4,553,651, Cl. 192-13.00A.

Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, to Mitsubishi Gas Chemical Company, Inc. Preparation of curable resin from cyanate ester compound. 4,554,346, Cl. 528-363.000.

Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, to Moteurs Leroy-Somer. Motor-pump set for boreholes and a method of protection relating thereto. 4,553,909, Cl. 417-369.000.

Galambos, Tibor: *See—*
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.

Gamblin, Rodger L., to Burlington Industries, Inc. Synergistic brightener combination for amorphous nickel phosphorus electroplatings. 4,554,219, Cl. 428-667.000.

Gamma-f Corporation: *See—*
Alford, James L.; and Terry, Robert E., 4,554,552, Cl. 343-786.000.

Ganesan, Apparajan: *See—*
Burson, Kyle L.; Early, Scott H.; and Ganesan, Apparajan, 4,554,515, Cl. 330-261.000.

Ganguly, Achintya K.: *See—*
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, 4,553,312, Cl. 29-564.300.

Garascia, David C.: *See—*
Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., 4,553,307, Cl. 29-434.000.

Gardner, E. Boyd: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Gardner, Richard N.; and Dillon, Kenneth R., to Minnesota Mining and Manufacturing Company. Infiltrated powered metal composite article. 4,554,218, Cl. 428-567.000.

Garrett Corporation, The: *See—*
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., 4,553,474, Cl. 98-1.500.

Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., to Harris Graphics Corporation. Collating apparatus with adjustable gear. 4,554,044, Cl. 156-510.000.

Gasser, Markus, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for deflecting articles. 4,553,658, Cl. 198-369.000.

Gassew, Garry L.; and Samaras, Byron. Multi-purpose paint stick. 4,553,279, Cl. 7-105.000.

Gastmeier, William J.; and Dohmer, Rolf, to Unitron Industries. Hearing aid wax guard. 4,553,627, Cl. 181-135.000.

Gasway Corporation: *See—*
Hecht, Richard M.; and Seaverns, Robert G., 4,553,713, Cl. 242-78.100.

Gaughan, Patrick J.: *See—*
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.

Gavrilko, Igor V.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Gavrilov, Alexei G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Gehrig, George F.: *See—*
Evans, John L.; Gehrig, George F.; and Speers, Jerry M., 4,553,429, Cl. 73-155.000.

Gehring, Fritz; and Arndt, Stephan, to Lindauer Dornier Gesellschaft mbH. Apparatus for the constrained actuation of the clamping system of filling yarn insertion devices in shuttleless weaving machines. 4,553,571, Cl. 139-446.000.

Geier, Josef: *See—*
Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, 4,553,312, Cl. 29-564.300.

Geissler, Bernhard H., to Phillips Petroleum Company. Tube support. 4,553,588, Cl. 165-162.000.

GenCorp Inc.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,553,578, Cl. 152-209.00R.

Genentech, Inc.: *See—*
Sherman, Leonard H.; Swartz, James R.; and Williams, James M., 4,554,499, Cl. 318-696.000.

General Dynamics Pomona Division: *See—*
Long, Stuart G.; and Maciocia, Michael J., 4,554,210, Cl. 428-349.000.

General Electric Company: *See—*
Bennett, James G.; and Chambers, Gregory R., 4,554,266, Cl. 502-344.000.
Bricknell, Rodger H., 4,554,526, Cl. 337-379.000.
Caste, Thomas K., 4,554,426, Cl. 200-159.00B.
Chambers, Gregory R.; and Bennett, James G., Jr., 4,554,267, Cl. 502-340.000.
Glover, Gary H.; DallaPiazza, Dennis G.; and Pelc, Norbert J., 4,554,633, Cl. 364-414.000.
Lorenzen, Steven C.; and Sterling, Vaughn C., 4,553,928, Cl. 431-359.000.
Mark, Victor, 4,554,110, Cl. 260-463.000.
Mark, Victor; and Hedges, Charles V., 4,554,309, Cl. 524-611.000.
Mark, Victor; and Hedges, Charles V., 4,554,330, Cl. 525-462.000.
Stoll, Robert W.; and MacLaury, Michael R., 4,554,147, Cl. 423-335.000.
Verbicky, John W., Jr.; and O'Neil, Elbridge A., Jr., 4,554,357, Cl. 548-461.000.
Ward, William J., III; Ritzer, Alan; and Lapidot, Heine, 4,554,370, Cl. 556-472.000.
Wengrovius, Jeffrey H.; and Niedrach, Leonard W., 4,554,310, Cl. 524-715.000.
Wengrovius, Jeffrey H., 4,554,338, Cl. 528-18.000.
Williams, Arlene G., 4,554,186, Cl. 427-387.000.

General Foods Corporation: *See—*
Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., 4,554,169, Cl. 426-576.000.
Morimoto, Keisuke, 4,554,166, Cl. 426-276.000.
Sorge, Richard M.; Ponzoni, Ronald W.; and Shoaf, Myron D., 4,554,167, Cl. 426-285.000.

General Motors Corporation: *See—*
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.
Bierlein, John C.; and DeHart, Arnold O., 4,553,856, Cl. 384-276.000.
Brademeyer, David L., 4,553,471, Cl. 91-173.000.
Hess, Edward C.; and Trevino, Edward, 4,553,309, Cl. 29-450.000.
MacIver, Bernard A.; Erskine, James C., Jr.; and Bierlein, John C., 4,554,208, Cl. 428-332.000.
Tyler, David O., 4,554,617, Cl. 362-61.000.
Warwick, Edward H.; and Parker, Donald L., 4,553,650, Cl. 192-4.00A.

General Refractories Company: *See—*
Stein, Joseph L.; and Maskell, Thomas J., 4,554,035, Cl. 156-89.000.

Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, to Matsushita Electric Industrial Co., Ltd. Washing machine. 4,553,413, Cl. 68-12.00R.

GenRad, Inc.: *See—*
Sargent, Brian; and Skilling, James, 4,554,630, Cl. 364-200.000.

Geomarex: *See—*
Rossfelder, Andre M.; and Jung, Peter A., 4,553,443, Cl. 74-22.00R.

George Blair Public Limited Company: *See—*
Blair, Ian L., 4,553,791, Cl. 305-39.000.

George, Joseph W.: *See—*
Wolf, Charles B.; and George, Joseph W., 4,554,435, Cl. 219-383.000.

Georgia Tech Research Corporation: *See—*
Speaker, Lois M., 4,554,076, Cl. 210-639.000.

Gerber Scientific Instrument Company, The: *See—*
Pavone, Robert J., 4,553,951, Cl. 474-148.000.

Gergely, Anthony J.; and Nichols, Ralph A., to Jungle Laboratories Corporation. Composition and method for removing chloramine from water containing same. 4,554,261, Cl. 502-62.000.

Gerry, Martin E. Ignition transformer with passive voltage and current multiplying means. 4,554,486, Cl. 315-209.00R.

Gibbons, Gerald F. Angular hockey stick grip. 4,553,753, Cl. 273-67.00A.

Gilbey, Mark S.: *See—*
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.

Gilder, Thomas G., Jr.; and O'Dean, Raymond D., to Gte Products Corporation. Support for lead frame for IC chip carrier. 4,554,404, Cl. 174-52.0FP.

Gist-Brocades N.V.: *See—*
Kapur, Jagdish C.; and Fasel, Herman P., 4,554,104, Cl. 260-245.20R.

Giuseppe, Carrara. Procedure and furnace to incinerate waste materials without producing smoke. 4,553,488, Cl. 110-346.000.

Gizard, Michel, to Valeo. Transmission between a power input and an output shaft suitable for an automobile vehicle. 4,553,450, Cl. 74-689.000.

Glasener, Kenneth A., to Dynagraphic Merchandising Corp. Display device. 4,553,346, Cl. 40-602.000.

Glen, John D.; and Glen, Rose-Mary M., to Telpac Company Limited. Packing element and method using same. 4,554,114, Cl. 261-95.000.

Glen, Rose-Mary M.: *See—*
Glen, John D.; and Glen, Rose-Mary M., 4,554,114, Cl. 261-95.000.

Glotin, Bernard J., to Schlumberger Technology Corporation. Control apparatus for oil well production string closing tool. 4,553,599, Cl. 166-332.000.

Glover, Gary H.; DallaPiazza, Dennis G.; and Pelc, Norbert J., to General Electric Company. Sampled data CT system including analog filter and compensating digital filter. 4,554,633, Cl. 364-414.000.

Gesellschaft mit beschrankter Haftung Kabelmetal Electro: *See—*
Roderburg, Harald, 4,554,179, Cl. 427-163.000.

Goda, Kensuke: *See—*
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.

Godtfredsen, Wagn O., to Lovens Kemiske Fabrik Produktionsaktieselskab. Penicillin esters, salts thereof and methods for their preparation. 4,554,160, Cl. 424-114.000.

Goepel, Ernst, to Siemens Aktiengesellschaft. Device for angle of rotation determination. 4,554,450, Cl. 250-231.0SE.

Goetze AG: *See—*
Lonne, Klaus; and Majewski, Klaus-Peter, 4,554,084, Cl. 252-12.400.

Goins, Robert R., to Phillips Petroleum Company. Method for blending solids or the like. 4,553,849, Cl. 366-134.000.

Goldfarb, Harold; Perkins, Kenneth L.; and Weigand, Bernard L., to United States of America, Air Force. Elevated transient temperature leak test for unstable microelectronic packages. 4,553,435, Cl. 73-40.700.

Goldner, Howard J.: *See—*
Butterworth, George A. M.; Evans, William M.; and Goldner, Howard J., 4,553,669, Cl. 206-439.000.

Goldner, Richard. Page turning apparatus and method. 4,553,467, Cl. 84-487.000.

Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, to International Business Machines Corporation. Apparatus for the bounce-free landing of a print head. 4,553,862, Cl. 400-121.000.

Goldstein, Jerome C. Cleaning cloths and dispensers therefor. 4,553,275, Cl. 4-605.000.

Golinelli, Guido; and Dall'Aglio, Carlo, to Finike Italiana Marposs S.p.A. Probe for checking linear dimensions. 4,553,332, Cl. 33-561.000.

Golub, Gregory J., to Westinghouse Electric Corp. Electrical switch. 4,554,420, Cl. 200-11.0TC.

Gombault, Jacobus F., to Hadewe B.V. Methods and an apparatus for trilaterally opening an envelope. 4,553,459, Cl. 83-36.000.

Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, to Fuji Standard Research, Inc. Process for the preparation of carbon fibers. 4,554,148, Cl. 423-447.100.

Gomi, Yoshifumi: *See—*
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.

Goodlaxson, James M. Corn popping machine and method of assembling the same. 4,554,037, Cl. 156-152.000.

Goodman, John T., to Duracell Inc. Process for forming cell cans having internal longitudinal ribs. 4,553,419, Cl. 72-349.000.

Goodyear Aerospace Corporation: *See—*
Liggett, Paul E., 4,554,299, Cl 523-466.000.
Liggett, Paul E.; and Chung, Daniel A., 4,554,300, Cl. 523-466.000.

Goodyear Tire & Rubber Company, The: *See—*
Johnson, David W., 4,553,663, Cl. 198-731.000.
Piccoli, Dante E.; and Nadkarni, Pradeep D., 4,553,568, Cl. 138-125.000.

Gordon, John T.: *See—*
Cross, Michael; and Gordon, John T., 4,554,439, Cl. 219-497.000.

Gordon, Pat L.: *See—*
Varrichio, Anthony J.; and Gordon, Pat L., 4,553,548, Cl. 128-421.000.

Gosciniak, Guy: *See—*
Moessinger, Albert; Gosciniak, Guy; and Angebault, Joel, 4,553,570, Cl. 139-435.000.

Gosschalk, Terry, to Nebo Pumps Pty. Ltd. Pulse driven hydraulic pump. 4,553,910, Cl. 417-378.000.

Gotoh, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Brush-retaining device. 4,554,476, Cl. 310-239.000.

Gourley, Robert N., to Eastman Kodak Company. 2-Amino-cinnamoylthiophene acid azo dye compounds having an aniline, tetrahydroquinoline, or benzomorpholine coupler. 4,554,348, Cl. 534-768.000.

Grable, William A. Method for fabricating a reciprocating piston pump. 4,553,298, Cl. 29-156.40R.

Grabmaier, Josef; and Falckenberg, Richard, to Siemens Aktiengesellschaft. Method for manufacturing large surface silicon crystal bodies for solar cells, and bodies so produced. 4,554,203, Cl. 428-229.000.

Graco Inc: *See—*
Mommsen, Gordon V.; and Hemming, Dale R., 4,554,622, Cl. 363-61.000.

Grade, Reinhardt: *See—*
Wehner, Wolfgang; and Grade, Reinhardt, 4,554,367, Cl. 556-20.000.

Graham, John W.; and Sinclair, A. Richard, to Santrol Products, Inc. Well completion technique. 4,553,596, Cl. 166-295.000.

Graham, Neil A.: *See—*
Munro, Robert; Parker, David A.; and Graham, Neil A., 4,553,472, Cl. 92-176.000.

Grain Processing Corporation: *See—*
Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., 4,554,021, Cl. 106-213.000.

Grainger, Alfred J., to NL Industries, Inc. Rotary drilling bits. 4,553,615, Cl. 175-329.000.

Grant, Willie T. Automatic damper means for air ducts. 4,553,695, Cl. 236-9.00A.

Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, to Bayer Aktiengesellschaft. Stable silicone emulsions. 4,554,187, Cl. 427-387.000.

Graves, Steven P., to Rockwell International Corporation. Driver circuit for an electroluminescent matrix-addressed display. 4,554,539, Cl. 340-805.000.

Graves, Victoria, to Exxon Research & Engineering Co. Polymerization catalyst. 4,554,265, Cl. 502-113.000.

Gray, Reed A., to Stauffer Chemical Co. Herbicidal antidotes. 4,554,008, Cl. 71-83.000.

Gray Tool Company: *See—*
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., 4,553,589, Cl. 166-53.000.

Grebur, Dennis J.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,554,332, Cl. 525-532.000.

Green, Lorrence H.; and Roberts, John W., to American Home Products Corporation. Composition and method for detecting Antistreptolysin O. 4,554,248, Cl. 435-7.000.

Greene, Janice L.; and Loza, Roman, to Standard Oil Company, The. Preparation of liquid polyamide from dinitrile and diamine. 4,554,345, Cl. 528-336.000.

Greene, Neil E.; and Hanna, Terry J., to Owens-Corning Fiberglas Corporation. Method for forming glass fibers. 4,553,994, Cl. 65-2.000.

Greer, Charles B.; Keehan, Donald W.; and Springer, John A., to United States of America, Army. Electronic earth seismic noise measuring method. 4,554,648, Cl. 367-49.000.

Gregg, John D. W. Wheel structure with resilient spokes. 4,553,577, Cl. 152-12.000.

Grego, Giorgio: *See—*
Coppa, Gianni; and Grego, Giorgio, 4,553,841, Cl. 356-349.000.

Gregory, Joseph D.; and Budnik, James M., to International Business Machines Corporation. End point detector for a tin lead evaporator. 4,553,853, Cl. 374-25.000.

Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing machine presetting arrangement. 4,553,478, Cl. 101-426.000.

Griffin, James L., to Illinois Tool Works Inc. Two dimensional optical position indicating apparatus. 4,553,842, Cl. 356-375.000.

Griffin, Larry E.: *See—*
Parker, Richard L.; Swords, Richard J.; and Griffin, Larry E., 4,553,698, Cl. 239-3.000.

Griffiths, Edward E. Auto-leveled crane boom man baskets. 4,553,632, Cl. 182-2.000.

Griggs, James S.; and Lada-Mocarski, Laura K., to Lada-Mocarski, Laura K. Display case. 4,553,680, Cl. 220-4.00F.

Grim, Fay. Polarized signal receiver probe. 4,554,553, Cl. 343-786.000.

Grimm, M. Andreas; and Brock, George W., to Verbatim Corporation. Process for creating wear and corrosion resistant film for magnetic recording media. 4,554,217, Cl. 428-469.000.

Grimmett, Earl S.: *See—*
Rasmussen, George P.; and Grimmett, Earl S., 4,553,487, Cl. 110-245.000.

Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, to Stamicarbon B.V. Process for the preparation of methyl tertiary butyl ether. 4,554,386, Cl. 568-697.000.

Groman, Ernest V.: *See—*
Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, 4,554,088, Cl. 252-62.540.

Grone, Wolfgang: *See—*
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.

Gropelli, John J., Jr.: *See—*
Olesen, Ralph C.; Sainati, Robert A.; Gropelli, John J., Jr.; and Stanland, Andrew J., 4,554,554, Cl. 343-895.000.

Gross, Clifford M., to Hospital for Joint Diseases Orthopedic Institute. Lifting belt. 4,553,551, Cl. 128-567.000.

Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Additives for hot mix asphalt. 4,554,022, Cl. 106-273.00N.

Grotz, Bernard J.; Parnkopf, Fiske O.; and Prescott, G. Robert, to C F Braun & Co. Ammonia converter. 4,554,135, Cl. 422-148.000.

Grunert, Kurt A.; and Changle, Joseph F., to Westinghouse Electric Corp. Molded case circuit breaker with handle lock. 4,554,421, Cl. 200-43.150.

GTE Communications Products Corporation: *See—*
Bielkevicius, Jonas R.; and Schmitt, Paul M., 4,554,541, Cl. 340-825.680.

Gte Products Corporation: *See—*
Gilder, Thomas G., Jr.; and O'Dean, Raymond D., 4,554,404, Cl. 174-52.0FP.
Lapraik, Scott J.; and Becker, Wayne A., 4,553,803, Cl. 339-74.00R.
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Guay, R. Edgar, to Ministere de l'Energie et des Ressources. Method of treating a soil. 4,553,351, Cl. 47-58.000.

Guerin, Gabriel. Fixation device for an artificial stone plate facing on a wall structure. 4,553,366, Cl. 52-487.000.

Guesnet, Patrice: *See—*
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.

Guglielmo, Richard J., Sr., to EMA Company. Preservative system composition for non-porous surfaces and wooden surfaces. 4,554,092, Cl. 252-400.00R.

Gulibon, Robert S.: *See—*
Fitzgerald, Gary W.; Gulibon, Robert S.; and Penrod, Paula M., 4,553,884, Cl. 408-143.000.

Gulistan, Bulent. Captive panel screw. 4,553,890, Cl. 411-318.000.

Gullikson, Ralph G., to Owens-Illinois, Inc. Shipping and display carton with cut protection for contents. 4,553,666, Cl. 206-44.00R.

Gunnerson, Robert E., to Sun-Diamond Growers of California. Method for production of semi-fluid fruit composition. 4,554,168, Cl. 426-473.000.

Gupta, Arunava; and Yardley, James T., to Allied Corporation. Iron/-silicon-based catalyst exhibiting high selectivity to C_2-C_6 alkenes in CO/H_2 Fischer-Tropsch reactions. 4,554,291, Cl. 518-700.000.

Haas, Heinz; and Struve, Klaus-Dieter, to Teppichwerk Neumunster GmbH. Self-adhesive floor covering. 4,554,194, Cl. 428-40.000.

Habel, Erich: *See—*
Blesing, Dieter; Habel, Erich; and Walther, Hans J., 4,553,761, Cl. 277-152.000.

Hadewe B.V.: *See—*
Gombault, Jacobus F., 4,553,459, Cl. 83-36.000.

Hagadorn, M. Weston, to Westinghouse Electric Corp. Self-powered gamma responses detector. 4,554,456, Cl. 250-370.000.

Hagen Batterie AG: *See—*
Kiessling, Reiner, 4,554,228, Cl. 429-242.000.

Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, to Societe Anonyme dite: Elf France. Process for preparing bitumen-polymer compositions, application of these compositions of the obtention of coverings and mother solution of polymer usable for the obtention of the said compositions. 4,554,313, Cl. 525-54.500.

Hagita, Hyoji: *See—*
Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, 4,553,416, Cl. 72-40.000.

Hagiwara, Miyuki: *See—*
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.

Hahn, Louis T.: *See—*
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,554,022, Cl. 106-273.00N.

Hain, Paul O., to Champion International Corporation. Method for forming a paperboard receptacle. 4,554,127, Cl. 264-324.000.

Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W. Method of manufacturing a semiconductor device by means of a molecular beam technique. 4,554,030, Cl. 148-175.000.

Hall, Edward D.: *See—*
Braughler, J. Mark; and Hall, Edward D., 4,554,271, Cl. 514-179.000.

Hall, Wilbur S., to Amchem Products, Inc. Hydrogen peroxide-free and hydrofluoric acid-free autodeposition baths. 4,554,305, Cl. 524-321.000.

Halliburton Company: *See—*
Almond, Stephen W.; and Conway, Michael W., 4,553,601, Cl. 166-308.000.
Borchardt, John K.; and Rao, S. Prabhakara, 4,554,081, Cl. 252-8.50A.
Byrd, James V., Jr.; and Mints, Danny K., 4,553,880, Cl. 406-23.000.

Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,554,082, Cl. 252-8.55R.

Halling, Horace P., to Pressure Science Incorporated. Resilient annular seal with supporting liner. 4,553,775, Cl. 285-55.000.

Haluska, Loren A.; and Molzahn, Marcelle G., to Dow Corning Corporation. Tintable, dyeable, curable coatings and coated articles. 4,554,354, Cl. 548-110.000.

Hamano, Fumio: *See—*
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, 4,554,461, Cl. 307-40.000.

Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Starting system for internal combustion engine. 4,553,441, Cl. 74-7.00R.

Hamazaki, Haruo; and Mitsugi, Makinoda, to Kurita Machinery Manufacturing Company Limited. Cleaning device for a filter press. 4,553,558, Cl. 134-181.000.

Hamilton, William C.: *See—*
Sasser, R. Garth; and Hamilton, William C., 4,554,256, Cl. 436-510.000.

Hands, David: *See—*
Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.

Haneda, Isamu; and Myooi, Tetsuo, to Sharp Kabushiki Kaisha. Programmable calculator. 4,554,641, Cl. 364-710.000.

Haneda, Satoshi: *See—*
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,553,500, Cl. 118-657.000.

Hanlon, J. Vincent; Lenane, Denis L.; and Retzloff, James B., to Ethyl Petroleum Additives, Inc. Diesel fuel compositions. 4,553,979, Cl. 44-57.000.

Hanna, Marie R.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,554,095, Cl. 252-522.00R.

Hanna, Terry J.: *See—*
Greene, Neil E.; and Hanna, Terry J., 4,553,994, Cl. 65-2.000.

Hansen, David R.; and Korcz, William H., to Shell Oil Company. Hot melt butylene/ethylene adhesives. 4,554,304, Cl. 524-291.000.

Hansen, Glen D.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,553,664, Cl. 198-814.000.

Hanson, Karl L.: *See—*
Sewell, Peter C.; Rundle, Gregory E.; and Hanson, Karl L., 4,553,954, Cl. 493-309.000.

Hanson, Raymond; and Tillyard, Malcolm, to USM Corporation. Apparatus for the heat treatment of lasted shoe uppers. 4,553,341, Cl. 34-236.000.

Hansson, Jan I., to Texas Instruments Incorporated. Silicon accelerometer. 4,553,436, Cl. 73-517.00R.

Haque, Yusuf A., to American Microsystems, Incorporated. Carrier detection circuit. 4,554,508, Cl. 329-101.000.

Hara, Fumio: *See—*
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.

Harada, Naoki: *See—*
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, 4,553,854, Cl. 374-129.000.

Harada, Yoshihito: *See—*
Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, 4,554,674, Cl. 377-17.000.

Harada, Yuji, to Canon Kabushiki Kaisha. Keyboard switch with a mesh of fibers. 4,553,820, Cl. 350-331.00R.

Harder, Helmut, to Thyssen Industrie Aktiengesellschaft. Connecting mechanism for an airplane passenger bridge. 4,553,720, Cl. 244-137.00P.

Hardigg Industries, Inc.: *See—*
Turner, Edward W.; Blake, Peter J.; and Strzegowski, Joseph C., Jr., 4,553,464, Cl. 83-865.000.

Hardy Bros (Alnwick) Ltd.: *See—*
Humble, Raymond, 4,553,714, Cl. 242-84.10R.

Hardy, James H.; and Roberson, James E. Method and apparatus for applying chemicals to weed and plants. 4,553,350, Cl. 47-1.500.

Hardy, Peter D.: *See—*
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.

Hargis, Ivan G.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,553,578, Cl. 152-209.00R.

Harkins, Desira; and MuAddi, Farid. Needle breaking and storage device. 4,553,687, Cl. 225-93.000.

Harley-Davidson Motor Co., Inc.: *See—*
Mezger, Hans; and Konneker, Reinhard, 4,553,509, Cl. 123-90.270.

Harman International Industries Incorporated: *See—*
House, William N., 4,554,414, Cl. 179-115.5PS.

Harper-Wyman Company: *See—*
Stohrer, Charles E., Jr., 4,553,523, Cl. 126-9.00B.

Harrell, Bobby E.: *See—*
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.

Harris Corporation: *See—*
McCarty, Chris, 4,553,315, Cl. 29-571.000.
Nichols, Richard E.; and Delaruelle, Dale H., 4,553,723, Cl. 246-167.00R.
Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., 4,554,059, Cl. 204-129.300.

Harris Graphics Corporation: *See—*
Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., 4,554,044, Cl. 156-510.000.

Harris, Phillip C.: *See—*
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,554,082, Cl. 252-8.55R.

Harris, Robert F.: *See—*
Schmidt, Donald L.; and Harris, Robert F., 4,554,325, Cl. 525-326.800.

Harrison, Charles H., to Olin Corporation. Method of repairing electrode surfaces. 4,554,172, Cl. 427-12.000.

Harrison, N. Cole: *See—*
Allen, Ray L.; and Harrison, N. Cole, 4,553,748, Cl. 273-1.00E.

Harsco Corporation: *See—*
Wickham, Thomas D.; and Monson, Wayne R., 4,554,624, Cl. 364-148.000.

Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., to Grain Processing Corporation. Preparation of a cationic starch paste. 4,554,021, Cl. 106-213.000.

Hasebe, Kazunori: *See—*
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.

Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Idling rpm control method for an internal combustion engine adapted to improve fuel consumption characteristic of the engine. 4,553,516, Cl. 123-339.000.

Hasegawa, Shumpei: *See—*
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.

Hashihama, Mitsuyuki: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, to Ricoh Company, Ltd. Electrophotographic toner containing triazolium compound as charge controlling agent. 4,554,233, Cl. 430-106.600.

Hashimoto, Shigeru: *See—*
Kato, Masatake; and Hashimoto, Shigeru, 4,553,823, Cl. 350-463.000.

Hatakeyama, Takanobu: *See—*
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.

Hatakeyama, Yoshiharu; and Minosawa, Yoshio, to Yoshida Industry Co., Ltd. Inner closure cap for bottle or tube type container. 4,553,679, Cl. 215-232.000.

Hatano, Hideki: *See—*
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.

Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, to Nippon Oil and Fats Company, Limited. Water-in-oil emulsion explosive composition. 4,554,032, Cl. 149-21.000.

Hattori, Morihisa, to Nikko Kakoozai Co., Ltd. Personal wearing article. 4,553,550, Cl. 128-505.000.

Hattori, Seiji, to Daidotokushuko Kabushikikaisha. Threadedly fixing apparatus. 4,553,301, Cl. 29-237.000.

Hattori, Tetsuya: *See—*
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, 4,553,674, Cl. 211-26.000.

Hawe, Malcolm: *See—*
Farrar, David; and Hawe, Malcolm, 4,554,298, Cl. 523-336.000.
Farrar, David; and Hawe, Malcolm, 4,554,307, Cl. 524-425.000.

Hawkes, J. Barry, Jr., to W. R. Grace & Co. Microwave curing of latex-based compositions. 4,554,347, Cl. 528-503.000.

Hawkins, Edwin F., to Arcadian Corporation. Triazone fertilizer and method of making. 4,554,005, Cl. 71-30.000.

Hawkins, Richard: *See—*
Pope, Bryan M.; and Hawkins, Richard, 4,553,549, Cl. 128-421.000.

Hawkins, Ronald G.; and Hooker, Robert M., to Aluminum Company of America. Vibration damper for overhead conductor. 4,554,402, Cl. 174-42.000.

Hayakawa, Shoichi; and Saito, Muneo, to Nippondenso Co., Ltd. Starter control apparatus for automotive vehicles. 4,553,511, Cl. 123-179.00B.

Hayashi, Masakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Image information output apparatus. 4,554,580, Cl. 358-107.000.

Hayashi, Mikio, to Seikosha Co., Ltd. Multicolor cross-hammer printer. 4,553,864, Cl. 400-121.000.

Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, to Fuji Photo Film Co., Ltd. Color reversal light-sensitive materials. 4,554,245, Cl. 430-567.000.

Hayssen Manufacturing Company: *See—*
James, Robert C.; and Kovacs, Lloyd, 4,553,668, Cl. 206-391.000.

Haze, Setsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus having memory for storing weighing conditions. 4,553,616, Cl. 177-1.000.

Hazeltine Corporation: *See—*
Frazita, Richard F., 4,554,551, Cl. 343-771.000.
Lopez, Alfred R., 4,554,550, Cl. 343-771.000.

Headley, James A., to Texaco Inc. Aqueous drilling fluids containing alkenyl succinic anhydrides. 4,554,080, Cl. 252-8.50A.

Heaps, John F.; and Erickson, Dennis E., to Monsanto Company. Process for low temperature curable coating composition. 4,554,319, Cl. 525-155.000.
Hearnshaw, David, to Dulmison Pty. Limited. Articulated spacer-damper. 4,554,403, Cl. 174-42.000.
Hearthstone Corporation, The: *See—*
von Conta, Peter E. W., 4,553,526, Cl. 126-58.000.
Heath, John S., to International Business Machines Corporation. Thermal print head. 4,554,559, Cl. 346-76.0PH.
Heaume, Jean, to Societe de Transformation des Matieres Plastiques. Fuel tank for a motor vehicle. 4,553,681, Cl. 220-72.000.
Hecht, Richard M.; and Seaverns, Robert G., to Gasway Corporation. Coil winding control guide. 4,553,713, Cl. 242-78.100.
Heckenbach, Terry A.: *See—*
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,554,496, Cl. 318-600.000.
Hedges, Charles V.: *See—*
Mark, Victor; and Hedges, Charles V., 4,554,309, Cl. 524-611.000.
Mark, Victor; and Hedges, Charles V., 4,554,330, Cl. 525-462.000.
Heerema Engineering Service: *See—*
Willemse, Kees; Meek, Jan; and Michelsen, Finn C., 4,553,878, Cl. 405-203.000.
Heese, Joachim: *See—*
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.
Heger, Werner; Kaltenthaler, Wolfgang; and Wilke, Helmut, to WABCO Fahrzeugbremsen GmbH. Unloading mechanisms for air compressors. 4,553,907, Cl. 417-297.000.
Heidorn, Richard H.: *See—*
Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., 4,554,609, Cl. 361-119.000.
Heinrich, Hans: *See—*
Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, 4,554,453, Cl. 250-327.200.
Heizer, Ray T., to Water Services of America, Inc. Brine concentrator. 4,553,396, Cl. 60-648.000.
Helix Technology Corporation: *See—*
Young, Niels O., 4,553,398, Cl. 62-6.000.
Helm Instrument Company: *See—*
Jones, William J., 4,554,534, Cl. 340-665.000.
Hemming, Dale R.: *See—*
Mommsen, Gordon V.; and Hemming, Dale R., 4,554,622, Cl. 363-61.000.
Hendley, Eustis: *See—*
Creasy, Charles K.; and Hendley, Eustis, 4,553,741, Cl. 256-66.000.
Henkel KGaA: *See—*
Soldanski, Heinz-Dieter; and Holdt, Bernd-Dieter, 4,554,083, Cl. 252-8.570.
Henrich, Werner. Process for winding wire upon a reel. 4,553,707, Cl. 242-25.00R.
Henry Ford Hospital: *See—*
Wu, Kent K., 4,553,273, Cl. 623-18.000.
Herbreteau, Louis; and Le Roy, Alain, to Commissariat a l'Energie Atomique. Receiver for a sounder permitting the detection and measurement of phonomena linked with the earths environment. 4,554,546, Cl. 343-5.00W.
Herkenhoff, Earl F.; and Ostrander, William J., to Chevron Research Company. Method for the interpretation of seismic records to yield valuable characteristics, such as gas-bearing potential and lithology strata. 4,554,649, Cl. 367-68.000.
Herrington, F. John: *See—*
Anderson, Thomas L.; and Herrington, F. John, 4,553,370, Cl. 53-117.000.
Hesener, Walter: *See—*
Weick, Heinz H.; Hesener, Walter; and Wattinger, Rolf, 4,553,665, Cl. 206-37.000.
Hess, Edward C.; and Trevino, Edward, to General Motors Corporation. Robotic assembly of vehicle headliners. 4,553,309, Cl. 29-450.000.
Hesse, Robert H., to Research Institute For Medicine and Chemistry Inc. Process for the preparation of 1-hydroxylated vitamin D compounds. 4,554,105, Cl. 260-397.200.
Hesston Corporation: *See—*
O'Halloran, Michael L., 4,553,380, Cl. 56-305.000.
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, to Bayer Aktiengesellschaft. Homogeneous, storage-stable polyol compositions of high ethylene glycol content and their use for the production of polyurethanes. 4,554,340, Cl. 528-77.000.
Hewlett-Packard Company: *See—*
Nygaard, Richard A., Jr.; and Palmer, Fredrick J., 4,554,632, Cl. 364-200.000.
Hickey, David S.; and Brocklehurst, John C., to Victoria University of Manchester, The. Urethral catheter. 4,553,959, Cl. 604-96.000.
Hicks, Irwin A., to Singer Company, The. Rotary meter with integral instrument housing. 4,553,433, Cl. 73-273.000.
Hidden Valley Associates: *See—*
Phillips, Edward H., 4,553,590, Cl. 166-53.000.
Hide, Ichiro, to Hoxan Corporation. Apparatus for producing polyacetylene film. 4,553,919, Cl. 425-90.000.
Higaki, Masaru: *See—*
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.
Higaki, Yuzo: *See—*
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.
Hilbert, Samuel D.; and McConnell, Richard L., to Eastman Kodak Company. Polyester hot-melt adhesives. 4,554,206, Cl. 428-261.000.
Hilco House, Inc.: *See—*
Miller, R. Lee, 4,553,946, Cl. 446-327.000.
Hill, Larry O.: *See—*
Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., 4,554,181, Cl. 427-261.000.
Hill, Michael P.; and Pittet, Gilbert H., to Dow Corning Ltd. Organosilicon compounds and preparation and use thereof. 4,554,369, Cl. 556-418.000.
Hille, Hans-Dieter: *See—*
Diefenbach, Horst; Dobbelstein, Arnold; and Hille, Hans-Dieter, 4,554,212, Cl. 428-413.000.
Hillion, Gerard: *See—*
Stern, Robert; and Hillion, Gerard, 4,554,397, Cl. 585-638.000.
Hilton, Graham H.; and Curl, Barry J., to De La Rue Systems Limited. Optical detection system for features on a sheet or web. 4,553,846, Cl. 356-429.000.
Hink, Walter F., Jr., to Ohio State University Research Foundation, The. Process and medium for culturing ant venom gland cells. 4,554,251, Cl. 435-240.000.
Hino, Takao: *See—*
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.
Hiraga, Ryozo: *See—*
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, 4,553,845, Cl. 356-400.000.
Hirano, Kenichi: *See—*
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, to Nissan Motor Co., Ltd. Cylinder head of internal combustion engine. 4,553,505, Cl. 123-41.200.
Hirao, Kazuhiro: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.
Hiraoka, Tutomu: *See—*
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.
Hirashima, Yasuhito: *See—*
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.
Hirata, Shinichi; and Isayama, Takuro, to Ricoh Company, Ltd. Color plotter. 4,554,556, Cl. 346-49.000.
Hirayama, Ryuta: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.
Hirayama, Takeshi: *See—*
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, 4,554,461, Cl. 307-40.000.
Hirooka, Masaaki, to Canon Kabushiki Kaisha. Process for producing silicon-containing deposit film. 4,554,180, Cl. 427-248.100.
Hirose, Minoru, to Kabushiki Kaisha Toshiba. Automatic bank note transaction apparatus. 4,554,444, Cl. 235-379.000.
Hishiki, Hideo: *See—*
Kobayashi, Toshio; and Hishiki, Hideo, 4,554,488, Cl. 315-368.000.
Hitach, Ltd.: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.
Hitachi Chemical Company: *See—*
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.
Hitachi Chemical Company, Ltd.: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.
Hitachi, Ltd.: *See—*
Furumoto, Takayuki, 4,554,410, Cl. 179-2.00E.
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.
Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, 4,553,844, Cl. 356-376.000.
Nogami, Taro; and Tsukada, Masamichi, 4,553,840, Cl. 356-333.000.
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, 4,554,461, Cl. 307-40.000.
Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, 4,554,596, Cl. 358-330.000.
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.
Todokoro, Hideo; and Fukuhara, Satoru, 4,554,455, Cl. 250-305.000.
Yamamoto, Hideharu; and Tsuneno, Hiroshi, 4,554,573, Cl. 357-73.000.
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, 4,554,223, Cl. 429-20.000.
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, 4,553,674, Cl. 211-26.000.
Hitachi Maxell, Ltd.: *See—*
Karashima, Takato; and Zaitsu, Hiroshi, 4,554,606, Cl. 360-131.000.
Takagi, Hiroyoshi, 4,553,717, Cl. 242-198.000.

Hitachi Zosen Corporation: *See—*
Furukawa, Tetsuro, 4,553,409, Cl. 62-476.000.
Hnat, James G. Process for melting glass in a toroidal vortex reactor. 4,553,997, Cl. 65-27.000.
Hobby, William M.: *See—*
Valdespino, Joseph M.; Holcomb, Allen K.; and Hobby, William M., 4,553,552, Cl. 128-637.000.
Hockemeyer, Friedrich; and Preiner, Gerhard, to Wacker-Chemie GmbH. Organopolysiloxanes containing both acryloxyalkyl groups and Si-bonded hydrogen atoms in the same molecule. 4,554,339, Cl. 528-26.000.
Hoeberechts, Arthur M. E.: *See—*
van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., 4,554,564, Cl. 346-161.000.
Hoechst Aktiengesellschaft: *See—*
Arpe, Hans-Jurgen; and Litterer, Heinz, 4,554,380, Cl. 564-424.000.
Mohr, Dieter, 4,554,057, Cl. 204-29.000.
Mohr, Dieter, 4,554,216, Cl. 428-469.000.
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Process for the preparation of borosilicate zeolites. 4,554,142, Cl. 423-277.000.
Hoelzer, Helmut, to Carl Freudenberg, Firma. Shaft seal ring. 4,553,762, Cl. 277-152.000.
Hoffman, Albert, to Linde Aktiengesellschaft. Device for separating gaseous and liquid components from a foamy gas liquid mixture. 4,553,990, Cl. 55-178.000.
Hoffmann, Hanspeter. Protective helmet with securing collar. 4,553,270, Cl. 2-421.000.
Hoffmann-La Roche Inc.: *See—*
Krasso , Anna; and Ramuz, Henri, 4,554,280, Cl. 514-338.000.
Hogendobler, Richard S.: *See—*
Forney, Edgar W., Jr.; and Hogendobler, Richard S., 4,553,806, Cl. 339-94.00C.
Hokanson, Gerard C.: *See—*
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.
Hokari, Sadao: *See—*
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Holberger, Kenneth D.: *See—*
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.
Holbrook, Joe C.; and Shepard, Bobby L. Intermittent movement-controlling indexing shuttle device. 4,553,445, Cl. 74-130.000.
Holcomb, Allen K.: *See—*
Valdespino, Joseph M.; Holcomb, Allen K.; and Hobby, William M., 4,553,552, Cl. 128-637.000.
Holdt, Bernd-Dieter: *See—*
Soldanski, Heinz-Dieter; and Holdt, Bernd-Dieter, 4,554,083, Cl. 252-8.570.
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, to Data General Corporation. Data processing system having a unique micro-sequencing system. 4,554,627, Cl. 364-200.000.
Holland, James F.: *See—*
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.
Holland, Redus F.: *See—*
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.
Hollandse Signaalapparaten B.V.: *See—*
Brilman, Albert; and Koops, Geert, 4,554,548, Cl. 343-379.000.
Hollenberg, David H., to W. R. Grace & Co. Hydraulic cement admixture compositions. 4,554,020, Cl. 106-90.000.
Holmes, Ann: *See—*
Sircar, Ila; and Holmes, Ann, 4,554,282, Cl. 514-357.000.
Holmes, Paul M.: *See—*
Crissy, Charles F.; and Holmes, Paul M., 4,553,888, Cl. 410-144.000.
Holt, Neil L., to Raychem Corporation. Electrical connector. 4,553,809, Cl. 339-275.00T.
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., to Halliburton Company. Fracturing method for stimulation of wells utilizing carbon dioxide based fluids. 4,554,082, Cl. 252-8.55R.
Holubka, Joseph W.; and Dickie, Ray A., to Ford Motor Company. Chain-extendable crosslinkable urethane modified polyhydroxy oligomers and coating composition comprising same. 4,554,188, Cl. 427-393.500.
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, to Boehringer Mannheim GmbH. Device for the detection of bacteria, fungi, and viruses in blood. 4,553,553, Cl. 128-749.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.
Hasegawa, Shumpei, 4,553,516, Cl. 123-339.000.
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.
Kawaguchi, Takeshi, 4,553,769, Cl. 280-276.000.
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.
Okubo, Akira; and Miura, Seishi, 4,553,388, Cl. 60-276.000.
Yano, Yoshiki; and Kawaguchi, Yuji, 4,553,510, Cl. 123-90.340.
Honda, Yasuhiro: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Honeywell Inc.: *See—*
Bowman, George A., 4,554,678, Cl. 455-286.000.
Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., 4,553,816, Cl. 350-166.000.
Howard, James W.; and Reilly, David M., 4,554,447, Cl. 250-216.000.
Honeywell Information Systems Inc.: *See—*
Chasse, Dennis W.; and Clark, Vincent M., 4,554,445, Cl. 235-472.000.
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,554,598, Cl. 360-48.000.
Honl, Wolf-Dieter, to REPA Feinstanzwerk GmbH. Mechanism in roll-up device for safety belts in motor vehicles. 4,553,716, Cl. 242-107.700.
Hoobler, Mary A.: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,554,009, Cl. 071-087.000.
Hooker, Robert M.: *See—*
Hawkins, Ronald G.; and Hooker, Robert M., 4,554,402, Cl. 174-42.000.
Hooper, Ronald; and Nichols, Kenneth, to United States of America, Navy. Apparatus for demodulating gyroscope position information. 4,553,439, Cl. 74-5.400.
Hop Developments Limited: *See—*
Panzner, Frank; and Evans, Brian R., 4,554,170, Cl. 426-651.000.
Hopp, Thomas P., to New York Blood Center, Inc. Identification and preparation of epitopes on antigens and allergens on the basis of hydrophilicity. 4,554,101, Cl. 260-112.50R.
Horiba, Ltd.: *See—*
Tanimoto, Masahiro, 4,553,423, Cl. 73-1.00G.
Horix Manufacturing Co.: *See—*
Le Donne, Giovanni G., 4,553,574, Cl. 141-286.000.
Horvath, Ibolya: *See—*
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.
Hoshi, Minoru: *See—*
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.
Hospital for Joint Diseases Orthopedic Institute: *See—*
Gross, Clifford M., 4,553,551, Cl. 128-567.000.
Hoster, Thomas: *See—*
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.
Houghton, Leonard E.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
House, William N., to Harman International Industries Incorporated. Multi-driver loudspeaker. 4,554,414, Cl. 179-115.5PS.
Houser, Steven A.: *See—*
Armstrong, Maclay M.; Rogers, John R.; and Houser, Steven A., 4,553,932, Cl. 433-4.000.
Armstrong, Maclay M.; and Houser, Steven A., 4,553,933, Cl. 433-5.000.
Armstrong, Maclay M.; and Houser, Steven A., 4,553,934, Cl. 433-5.000.
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., to Texas Instruments Incorporated. Self-aligned gate method for making MESFET semiconductor. 4,553,316, Cl. 29-571.000.
Howard, Colin R.: *See—*
Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., 4,554,157, Cl. 424-89.000.
Howard, James W.; and Reilly, David M., to Honeywell Inc. Multi-element spectral filter with curved interior surfaces. 4,554,447, Cl. 250-216.000.
Howell, Frederick H., to Ciba Geigy Corporation. Aminoalkyl aromatic compounds and their production. 4,554,379, Cl. 564-374.000.
Howeth, James R., to Rochester Gauges, Inc. Fluid level gauge having magnetic sensor. 4,554,494, Cl. 318-482.000.
Hoxan Corporation: *See—*
Hide, Ichiro, 4,553,919, Cl. 425-90.000.
HRB-Singer, Inc.: *See—*
Cornett, Frank N., 4,554,509, Cl. 329-105.000.
Hswe, Myint: *See—*
Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, 4,553,314, Cl. 29-571.000.
Huang, Wann-Sheng; and Brown, Alfred, to Texaco Inc. Method for forming a gravel packed horizontal well. 4,553,595, Cl. 166-278.000.
Hubbard, E. Daniel: *See—*
Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., 4,554,021, Cl. 106-213.000.
Hucul, Dennis A.: *See—*
Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., 4,554,391, Cl. 570-231.000.
Hudson, John E.; and Yohe, David B. Bowling ball carrying container. 4,553,667, Cl. 206-315.900.
Huffman, James; Brandt, Kim; and Doutre, Alton G., to Storage Technology Corporation. Self aligning, load capacity enhancing, workpiece handling device for use with a robotic system. 4,553,892, Cl. 414-121.000.
Huffman, Walter K.: *See—*
Flick, Robert H.; and Huffman, Walter K., 4,554,427, Cl. 200-250.000.

Huggins, Ronald G.; O'Brien, William D., Jr.; and Partus, Fred P., to AT&T Technologies, Inc. Methods of and apparatus for effluent disposal. 4,554,078, Cl. 210-749.000.
Humble, Raymond, to Hardy Bros (Alnwick) Ltd. Fishing reel with a variable pressure click pawl. 4,553,714, Cl. 242-84.10R.
Huno, Takakazu: *See*—
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.
Hunt, Charles V.: *See*—
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,554,082, Cl. 252-8.55R.
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., to Uniroyal, Inc. Nitro urea based blowing agents. 4,554,294, Cl. 521-93.000.
Hurter, Max, to Babcock Electro-Mechanical, Inc. Armature/contact system. 4,554,521, Cl. 335-125.000.
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., to Minnesota Mining and Manufacturing Co. Acrylate copolymer pressure-sensitive adhesive composition and sheet materials coated therewith. 4,554,324, Cl. 525-301.000.
Hutton, James E.: *See*—
Burger, William R.; Hutton, James E.; and Silverberg, Morton, 4,553,828, Cl. 355-3.0BE.
Huynh, Van-Ba: *See*—
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., to Shell Oil Company. Film compositions of butene polymers. 4,554,321, Cl. 525-240.000.
Hydrovane Compressor Company Limited: *See*—
Boller, Edward; and Williams, Michael R., 4,553,906, Cl. 417-295.000.
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Automobile speed control system. 4,553,621, Cl. 180-179.000.
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating mechanism for engines. 4,553,473, Cl. 92-261.000.
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, to Topre Corporation. Air conditioning apparatus. 4,553,696, Cl. 236-49.000.
Ichikawa, Yoshiro: *See*—
Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.
Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, to Seikoh Chemicals Co., Ltd. Casting coating. 4,554,214, Cl. 428-423.100.
Idaho Research Foundation, Inc., The: *See*—
Sasser, R. Garth; and Hamilton, William C., 4,554,256, Cl. 436-510.000.
Ideal Standard S.p.A.: *See*—
Biadigo, Mario; and Zucchi, Gianfranco, 4,553,920, Cl. 425-267.000.
Igarashi, Akira: *See*—
Yoneda, Junichi; and Igarashi, Akira, 4,554,566, Cl. 346-207.000.
Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Display device including apparatus for rotating the image to be displayed. 4,554,638, Cl. 364-521.000.
Iitsuka, Yoshitsune, to Nippon I.C.S. Co., Ltd. Coin crimper. 4,553,371, Cl. 53-285.000.
Ikai, Katsushige: *See*—
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, to Epson Corporation. Ink-supplied wire dot printer. 4,553,865, Cl. 400-124.000.
Illinois Tool Works Inc.: *See*—
Griffin, James L., 4,553,842, Cl. 356-375.000.
Ruehl, William E., 4,553,802, Cl. 339-74.00R.
Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., 4,554,609, Cl. 361-119.000.
Imaging Associates: *See*—
Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, 4,553,437, Cl. 73-602.000.
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, to Imahori, Kazutomo; Kenkyusho, Rikagaku; and Unitika Ltd. Apparatus for synthesizing adenosine-5'-triphosphate. 4,554,253, Cl. 435-288.000.
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, to Canon Kabushiki Kaisha. Toner application method and composition therefor. 4,554,234, Cl. 430-122.000.
Imai, Kiyotaka: *See*—
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, 4,553,854, Cl. 374-129.000.
Imai, Tatsuo: *See*—
Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, 4,554,214, Cl. 428-423.100.
Imaizumi, Mamoru; and Kojima, Yasumichi, to Brother Kogyo Kabushiki Kaisha. Text processing method and apparatus. 4,553,860, Cl. 400-68.000.
Imasco-CDC Research Foundation: *See*—
McClintock, Sam A.; and Purdy, William C., 4,554,064, Cl. 204-411.000.
Imperial Chemical Industries PLC: *See*—
Carroll, William G., 4,554,306, Cl. 524-377.000.
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
Cross, William T.; and Ramshaw, Colin, 4,553,408, Cl. 62-476.000.
Imperial Oil Limited: *See*—
Riley, Victor, 4,553,362, Cl. 52-236.300.
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, to Hitachi, Ltd. Controller for elevator. 4,553,640, Cl. 187-29.00R.
Inaba, Tsutomu: *See*—
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.
Inagaki, Hiroshi: *See*—
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.
INAX Corporation: *See*—
Ono, Nobuhiro; and Miwa, Eiji, 4,554,204, Cl. 428-246.000.
Industrie Pirelli S.p.A.: *See*—
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,553,952, Cl. 474-153.000.
Industrie Specializzate Articoli Plastici SpA: *See*—
Padovani, Pietro, 4,553,692, Cl. 229-2.5EC.
Ing. C. Olivetti & C., S.p.A.: *See*—
Chelin, Cesare; and Ceradelli, Vittorio, 4,554,590, Cl. 358-248.000.
Ciardiello, Giovanni; and Augusti, Ferdinando, 4,554,594, Cl. 358-283.000.
Crosio, Pasquale, 4,553,868, Cl. 400-356.000.
Demonte, Filippo; and Figini, Mario, 4,553,866, Cl. 400-144.200.
Ingenieurburo, Hermann Dietrich: *See*—
Dietrich, Hermann, 4,553,295, Cl. 29-1.320.
Inoue, Michiya: *See*—
Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, 4,554,462, Cl. 307-140.000.
Institut Francais du Petrole: *See*—
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.
Stern, Robert; and Hillion, Gerard, 4,554,397, Cl. 585-638.000.
Institute Merieux: *See*—
Roizman, Bernard; and Lang, M. Robert, 4,554,159, Cl. 424-89.000.
Institute of Technology & Precision Electrical Discharge Work's: *See*—
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.
Institute Straumann AG: *See*—
Sutter, Franz, 4,553,942, Cl. 433-225.000.
Insul Company, Inc.: *See*—
LaBate, Michael D., II; and Perri, Joseph A., 4,553,743, Cl. 266-272.000.
International Business Machines Corporation: *See*—
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,554,562, Cl. 346-135.100.
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.
Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.
Bryant-Jeffries, Keith C.; Dickie, Hugh G.; and Vaughan, Eric V., 4,553,320, Cl. 29-598.000.
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.
Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., 4,554,184, Cl. 427-345.000.
Dillon, Gary E., 4,554,466, Cl. 307-272.00A.
Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., 4,554,506, Cl. 324-158.00P.
Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., 4,554,593, Cl. 358-282.000.
Furman, Anatol, 4,554,645, Cl. 365-189.000.
Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, 4,553,862, Cl. 400-121.000.
Gregory, Joseph D.; and Budnik, James M., 4,553,853, Cl. 374-25.000.
Heath, John S., 4,554,559, Cl. 346-76.0PH.
McNaughton, James L.; and Petrozello, James R., 4,553,813, Cl. 350-96.200.
Otten, Ralph H. J. M., 4,554,625, Cl. 364-148.000.
Varker, Kenneth J., 4,554,405, Cl. 174-68.500.
International Computers Limited: *See*—
Stevens, Reginald W., 4,554,673, Cl. 375-118.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,554,095, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,384, Cl. 568-445.000.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,385, Cl. 568-496.000.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,554,096, Cl. 252-522.00R.
International Shoe Machine Corporation: *See*—
Vornberger, Karl F., 4,553,281, Cl. 12-8.100.
International Standard Electric Corporation: *See*—
Minks, Werner, 4,554,520, Cl. 335-106.000.
Minks, Werner, 4,554,522, Cl. 335-202.000.
International Telephone and Telegraph Corporation: *See*—
West, Michael D., 4,553,733, Cl. 251-291.000.

Ipri, Alfred C.: *See*—
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,554,570, Cl. 357-23.400.
Isayama, Takuro: *See*—
Hirata, Shinichi; and Isayama, Takuro, 4,554,556, Cl. 346-49.000.
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, to Sharp Kabushiki Kaisha. Automatic receiver gain control in centralized monitor system. 4,554,532, Cl. 340-501.000.
Ishige, Kanji: *See*—
Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, 4,553,844, Cl. 356-376.000.
Ishiguri, Yukio: *See*—
Sasaki, Mitsuru; and Ishiguri, Yukio, 4,554,111, Cl. 260-502.40R.
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, to Sanwa Shoji Co., Ltd. Determination of sulfurous acid in liquids and an apparatus therefor. 4,554,255, Cl. 436-102.000.
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, to Sharp Kabushiki Kaisha. Liquid crystal display devices. 4,553,821, Cl. 350-339.00R.
Ishikawa, Minoru: *See*—
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, to Canon Kabushiki Kaisha; and Copyer Kabushiki Kaisha. Electrophotographic photosensitive member. 4,554,231, Cl. 430-59.000.
Ishioka, Sachio: *See*—
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.
Isobe, Asao: *See*—
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.
Isobe, Yoshinobu: *See*—
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.
Isono, Yoshinobu: *See*—
Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, 4,554,376, Cl. 562-554.000.
Itami, Teruhiko: *See*—
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Apparatus and method for developing electrostatic latent image. 4,553,500, Cl. 118-657.000.
Ito, Akitoshi: *See*—
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Ito, Yoshimasa: *See*—
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.
Itoh, Hideki: *See*—
Itoh, Hideo; Itoh, Hideki; and Itoh, Hideya, 4,553,636, Cl. 182-231.000.
Itoh, Hideo; Itoh, Hideki; and Itoh, Hideya. Lifesaving apparatus for escaping from a building. 4,553,636, Cl. 182-231.000.
Itoh, Hideya: *See*—
Itoh, Hideo; Itoh, Hideki; and Itoh, Hideya, 4,553,636, Cl. 182-231.000.
Itoh, Isamu: *See*—
Ono, Mitsunori; and Itoh, Isamu, 4,554,243, Cl. 430-543.000.
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, 4,554,246, Cl. 430-611.000.
Iuchi, Koji: *See*—
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, 4,554,358, Cl. 549-229.000.
Iwasa, Yasuo: *See*—
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, 4,554,246, Cl. 430-611.000.
Iwasaki, Tatsuo: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.
IWK Verpackungstechnik GmbH: *See*—
Reim, Werner; and Pluschow, Dieter, 4,553,659, Cl. 198-372.000.
izushi, Tomoya: *See*—
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
J. I. Case Company: *See*—
Fachini, Robert M.; and Orsborn, Jesse H., 4,553,378, Cl. 56-16.600.
Salva, Henri E., 4,553,609, Cl. 172-647.000.
Youngers, Stephen A.; and Draney, Robert G., 4,553,448, Cl. 74-480.00R.
J. R. Simplot Company: *See*—
Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., 4,554,004, Cl. 71-29.000.
Jackson, Francis J. Gun trigger actuator. 4,553,347, Cl. 42-69.00R.
Jackson, Ronald M., to Tektronix, Inc. Logic timing diagram display apparatus. 4,554,536, Cl. 340-747.000.
Jackson, Theodore A., to Ex-Cell-O Corporation. Adjustable height seat apparatus for combat vehicle. 4,553,726, Cl. 248-297.100.
Jackson, Winston J., Jr.; and Watkins, Joseph J., to Eastman Kodak Company. Process for the production of high molecular weight polyester. 4,554,343, Cl. 528-274.000.
Jackson, Winston J., Jr.; and Watkins, Joseph J., to Eastman Kodak Company. Process for preparation of polyesters with improved molecular weight from glycols containing a vicinal secondary hydroxyl group. 4,554,344, Cl. 528-283.000.
Jacobs, Harold; and Dixon, Samuel, Jr., to United States of America, Army. Three diode balanced mixer. 4,554,680, Cl. 455-326.000.
Jagenberg AG: *See*—
Sommer, Herbert; and Wohlfeil, Gerhard, 4,553,498, Cl. 118-126.000.
Jain, Anil K.: *See*—
Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., 4,553,816, Cl. 350-166.000.
James Howden & Company Limited: *See*—
Wilson, Robert R.; and Falconer, Roy D., 4,553,704, Cl. 241-39.000.
James, Max F., to Tea Industries, Inc. Waterbed rail and method of making same. 4,554,039, Cl. 156-213.000.
James, Robert C.; and Kovacs, Lloyd, to Hayssen Manufacturing Company. Packing articles, such as packages of rolls of paper. 4,553,668, Cl. 206-391.000.
Janicki, Richard T., to Owens-Corning Fiberglas Corporation. Modified asphalt. 4,554,023, Cl. 106-273.00N.
Janome Sewing Machine Co. Ltd.: *See*—
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,553,544, Cl. 128-340.000.
Janome Sewing Machine Industry Co. Ltd.: *See*—
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,553,870, Cl. 400-662.000.
Jansen, Jacobus: *See*—
Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, 4,554,386, Cl. 568-697.000.
Japan Atomic Energy Research Institute: *See*—
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.
Japan Bano'k Co., Ltd.: *See*—
Furutsu, Akira, 4,553,688, Cl. 227-67.000.
Japan Medical Supply Co., Ltd.: *See*—
Sasaki, Hideki, 4,553,964, Cl. 604-248.000.
Japan Storage Battery Company Limited: *See*—
Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, 4,554,227, Cl. 429-178.000.
Jastrzebski, Lubomir L.; and Ipri, Alfred C., to RCA Corporation. Vertically integrated IGFET device. 4,554,570, Cl. 357-23.400.
Javelle, Edmond. Assembly for regulating the energy circulating in the meridians and method of use. 4,553,546, Cl. 128-395.000.
Jeffs, Keith D.: *See*—
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., to Gray Tool Company. Fire-safe surface-controlled subsurface safety valve control line/wellhead connector and blowout preventer. 4,553,589, Cl. 166-53.000.
Jensen, Ronald K.: *See*—
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., 4,554,085, Cl. 252-46.600.
Jerson, Donald D.; and Chance, James F., to Westinghouse Electric Corp. Polybutadiene VPI resin. 4,554,470, Cl. 310-45.000.
Jidosha Kiki Co., Ltd.: *See*—
Suzuki, Isao; and Abe, Kenichi, 4,553,648, Cl. 188-273.000.
Jillie, Don W.; and Smith, Lawrence N., to Sperry Corporation. Superconductive integrated circuit incorporating a magnetically controlled interferometer. 4,554,567, Cl. 357-5.000.
John Bodger & Sons Co.: *See*—
Arimitsu, Yoshiro, 4,554,067, Cl. 209-136.000.
Johnson, Dale C.: *See*—
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.
Johnson, David K.: *See*—
Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., 4,554,004, Cl. 71-29.000.
Johnson, David W., to Goodyear Tire & Rubber Company, The. Conveyor for a crop harvester. 4,553,663, Cl. 198-731.000.
Johnson, David W. Streamlining apparatus for sea/land containers. 4,553,781, Cl. 296-1.00S.
Johnson, Frances M. Hairpin opener. 4,553,557, Cl. 132-1.00R.
Johnson, Graham C.: *See*—
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
Johnson, Milton D.: *See*—
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., 4,554,085, Cl. 252-46.600.
Johnson Service Company: *See*—
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,554,496, Cl. 318-600.000.
Johnson, Vaino A. Portable tree stand. 4,553,635, Cl. 182-187.000.
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion. 4,554,395, Cl. 585-500.000.
Jones, Derek A.: *See*—
Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.
Jones, Frank: *See*—
Jones, Robert A.; Jones, Frank; and Taylor, Graham, 4,554,091, Cl. 252-187.250.

Jones, James B., Jr.: *See—*
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.

Jones, Loyd W. Combination corrosion/scale inhibitor. 4,554,090, Cl. 252-181.000.

Jones, Robert A.; Jones, Frank; and Taylor, Graham, to Lever Brothers Company. Colored bleaching compositions. 4,554,091, Cl. 252-187.250.

Jones, Warren C.: *See—*
Dery, Ronald A.; and Jones, Warren C., 4,554,033, Cl. 156-52.000.

Jones, William E., to Ball Corporation. Method for producing glass containers with reduced strain. 4,553,998, Cl. 65-69.000.

Jones, William J., to Helm Instrument Company. Control circuit for a multi-blow forming process. 4,554,534, Cl. 340-665.000.

Jordan, David D.: *See—*
Parks, Kevin B.; Jordan, David D.; and Taig, Alistair G., 4,553,949, Cl. 464-153.000.

Jordan, Roland H., to Chevron Research Company. Weir-type skimmer employing a wave diffuser. 4,554,070, Cl. 210-109.000.

Jorgensen, Bernard J., to Lockheed Corporation. Spoiler device for attachment to a leading edge slat. 4,553,721, Cl. 244-213.000.

Josephson, Lee: *See—*
Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, 4,554,088, Cl. 252-62.540.

Joyce, Thomas W.: *See—*
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.

Jung, Johann: *See—*
Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.

Jung, Peter A.: *See—*
Rossfelder, Andre M.; and Jung, Peter A., 4,553,443, Cl. 74-22.00R.

Jung, Thomas: *See—*
Jurgens, Rainer; and Jung, Thomas, 4,553,614, Cl. 175-302.000.

Jungle Laboratories Corporation: *See—*
Gergely, Anthony J.; and Nichols, Ralph A., 4,554,261, Cl. 502-62.000.

Jurgens, Erwin F., to Union Special GmbH. Needle guide for sewing machines. 4,553,492, Cl. 112-227.000.

Jurgens, Rainer; and Jung, Thomas, to Norton Christensen, Inc. Compensation device for insertion in a drill string for deep-well drilling tools. 4,553,614, Cl. 175-302.000.

Justice, Rhonda G.: *See—*
Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., 4,554,181, Cl. 427-261.000.

Juszynski, Marta: *See—*
Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum, 4,554,317, Cl. 525-28.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Ohkubo, Masahiro, 4,553,623, Cl. 180-247.000.
Shimazu, Toshiaki, 4,553,470, Cl. 91-6.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kanno, Yosuke, 4,553,850, Cl. 368-201.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Haze, Setsuo, 4,553,616, Cl. 177-1.000.
Tatematsu, Takashi, 4,553,617, Cl. 177-25.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Oka, Koichi; and Shintani, Fumio, 4,553,734, Cl. 251-58.000.

Kabushiki Kaisha Meidensha: *See—*
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,554,425, Cl. 200-144.00B.

Kabushiki Kaisha Toshiba: *See—*
Hirose, Minoru, 4,554,444, Cl. 235-379.000.
Kanatani, Tadayuki; and Sakata, Yasuo, 4,553,929, Cl. 432-59.000.
Taguchi, Minoru; and Sasaki, Gen, 4,554,046, Cl. 156-637.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kimbara, Masahiko; and Arakawa, Akio, 4,553,569, Cl. 139-1.00E.

Kaeding, Warren W.: *See—*
Forbus, Nancy P.; and Kaeding, Warren W., 4,554,394, Cl. 585-474.000.

Kafri, Oded; Karny, Ziv; and Meyerstein, Dan. Frequency marking systems. 4,553,839, Cl. 356-300.000.

Kali-Chemie Pharma GmbH: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.

Kaltenthaler, Wolfgang: *See—*
Heger, Werner; Kaltenthaler, Wolfgang; and Wilke, Helmut, 4,553,907, Cl. 417-297.000.

Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., to ASC Incorporated. Method for installing a sliding roof panel assembly. 4,553,307, Cl. 29-434.000.

Kalverkamp, Klemens. Method and apparatus for harvesting of corn or other granular fruits. 4,553,379, Cl. 56-60.000.

Kamata, Keiji: *See—*
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.

Kamegaya, Takeo; and Watanabe, Satoshi, to Okaya Electric Industries Co., Ltd. DC Type gas discharge display panels. 4,554,482, Cl. 313-582.000.

Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, to Showa Denko Kabushiki Kaisha. Packaging cloth. 4,554,202, Cl. 428-225.000.

Kaminski, Walter R., to United Technologies Corporation. Sealed-off CO_2 laser. 4,554,667, Cl. 372-83.000.

Kamo, Takashi: *See—*
Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, 4,553,424, Cl. 73-27.00R.

Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, to Pioneer Electronic Corporation. Magneto-optical recording medium and method for preventing the erasing of the information recorded on the magneto-optical recording medium. 4,554,651, Cl. 369-13.000.

Kanaoka, Takeshi; and Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Side printing apparatus. 4,553,833, Cl. 355-40.000.

Kanaoka, Takeshi; and Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Side printing apparatus. 4,554,560, Cl. 346-108.000.

Kanatani, Tadayuki; and Sakata, Yasuo, to Kabushiki Kaisha Toshiba. Heating furnace. 4,553,929, Cl. 432-59.000.

Kanbara, Hisashige: *See—*
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.

Kanebo, Ltd.: *See—*
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, 4,554,358, Cl. 549-229.000.

Kaneko, Tadao: *See—*
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, 4,554,223, Cl. 429-20.000.

Kanno, Yosuke, to Kabushiki Kaisha Daini Seikosha. Logical regulation circuit for an electronic timepiece. 4,553,850, Cl. 368-201.000.

Kanoh, Osamu; and Senda, Atsuo, to Murata Manufacturing Co., Ltd. Corrosion inhibiting coating comprising layer of organic corrosion inhibitor and layer of fluoridized acrylate. 4,554,209, Cl. 428-334.000.

Kao, Yih-Sien, to RCA Corporation. Auto flesh circuitry as for a digital TV receiver. 4,554,576, Cl. 358-28.000.

Kapur, Jagdish C.; and Fasel, Herman P., to Gist-Brocades N.V. Dehalogenation process of a penicillanic acid derivative. 4,554,104, Cl. 260-245.20R.

Karahashi, Yoshimitu: *See—*
Yamauchi, Mineo; and Karahashi, Yoshimitu, 4,553,330, Cl. 33-164.00R.

Karashima, Takato; and Zaitsu, Hiroshi, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,554,606, Cl. 360-131.000.

Karny, Ziv: *See—*
Kafri, Oded; Karny, Ziv; and Meyerstein, Dan, 4,553,839, Cl. 356-300.000.

Karol, Thomas J.; and Magaha, Harold S., to Texaco Inc. Borate esters of hydrocarbyl-substituted mono- and bis-succinimides containing polyamine chain linked hydroxyacyl groups and lubricating oil compositions containing same. 4,554,086, Cl. 252-49.600.

Karpowicz, John L.; and Zielsdorf, Randall A., to Baxter Travenol Laboratories, Inc. Motor control system. 4,554,492, Cl. 318-309.000.

Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, to Spofa, Spojene podniky pro zdravotnickou vyrobu. Alkylamides of carboxyalkanoyl peptides and method for preparation thereof. 4,554,100, Cl. 260-112.50R.

Kaschak, Ronald A.: *See—*
Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., 4,554,184, Cl. 427-345.000.

Kaschner, William C.; and Bobolts, Elroy, Jr., to Besser Company. Article transfer apparatus. 4,553,893, Cl. 414-152.000.

Kashima, Masaru: *See—*
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Kashiwagi, Takashi, to Process Shizai Co., Ltd. Recording material containing a dyed thermally coagulatable proteinaceous compound. 4,554,239, Cl. 430-270.000.

Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, to Kabushiki Kaisha Meidensha. Contact of vacuum interrupter and manufacturing process therefor. 4,554,425, Cl. 200-144.00B.

Kashiwayama, Shinei. Dermatic medicament. 4,554,161, Cl. 424-115.000.

Kaski, Erkki: *See—*
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.

Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. Current stabilizing circuit arrangement. 4,554,503, Cl. 323-315.000.

Kassam, Saleem: *See—*
Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, 4,553,437, Cl. 73-602.000.

Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, to Hitach, Ltd.; and Hitachi Chemical Company, Ltd. Photosensitive resin composition and method for forming fine patterns with said composition. 4,554,237, Cl. 430-197.000.

Kataoka, Takashi: *See—*
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.

Katayama, Yasunori: *See—*
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.

Katayama, Yoshiyuki; and Nishida, Tetsuya, to Kubota, Ltd. Work-vehicle with rolling-control mechanism. 4,553,605, Cl. 172-2.000.

Kato, Hisaaki, to Murata Kikai Kabushiki Kaisha. Apron for a draft apparatus. 4,553,290, Cl. 19-244.000.

Kato, Katsunori: *See—*
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.

Kato, Kiichi, to Olympus Optical Co. Ltd. Optical memory device with means for detecting erroneous data writing. 4,554,654, Cl. 369-54.000.

Kato, Masatake; and Hashimoto, Shigeru, to Canon Kabushiki Kaisha. Large relative aperture objective lens. 4,553,823, Cl. 350-463.000.

Kato, Sigeru: *See—*
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.

Kato, Toshiro: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.

Katoo, Hisashi: *See—*
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.

Katsuhara, Yutaka: *See—*
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, 4,554,382, Cl. 568-404.000.

Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., to Data General Corporation. Digital data processing system. 4,554,626, Cl. 364-200.000.

Kaufman, Lance R. Multiple substrate circuit package. 4,554,613, Cl. 361-386.000.

Kaufmann, Anna: *See—*
Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, 4,554,063, Cl. 204-254.000.

Kawabata, Takashi: *See—*
Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, 4,554,674, Cl. 377-17.000.

Kawabata, Toshiyasu: *See—*
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.

Kawaguchi, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Front fork for a two-wheeled vehicle. 4,553,769, Cl. 280-276.000.

Kawaguchi, Yuji: *See—*
Yano, Yoshiki; and Kawaguchi, Yuji, 4,553,510, Cl. 123-90.340.

Kawai, Yoichi: *See—*
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.

Kawamura, Hideaki: *See—*
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,554,497, Cl. 318-636.000.

Kawasaki Steel Corporation: *See—*
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.

Kawashima, Susumu; and Yamada, Shigeru, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument producing bass and chord tones utilizing channel assignment. 4,553,465, Cl. 84-1.030.

Kawata, Shoji: *See—*
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,621, Cl. 180-179.000.

Kazlauskas, Gasparas. Cylindrical tube welding assembly. 4,554,429, Cl. 219-60.200.

Kazmierczak, Walter; and Assony, Edward M., to FMC Corporation. Speed control mechanism for a hydrostatically driven vehicle. 4,553,626, Cl. 180-307.000.

Kee, Richard C., to Polaroid Corporation. Reproducible image and information bearing record. 4,554,591, Cl. 358-256.000.

Keehan, Donald W.: *See—*
Greer, Charles B.; Keehan, Donald W.; and Springer, John A., 4,554,648, Cl. 367-49.000.

Keenan, Paul C., III: *See—*
Debes, Michael H.; and Keenan, Paul C., III, 4,553,369, Cl. 53-55.000.

Keeney, Edward M. Combat simulator. 4,553,757, Cl. 273-369.000.

Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, to Kali-Chemie Pharma GmbH. N,Quaternary derivatives of ajmaline and isoajmaline, methods and intermediate products in the manufacture of their derivatives and method of using same and pharmaceutical compositions thereof. 4,554,274, Cl. 514-239.000.

Keil, Joseph W., to Dow Corning Corporation. Polyorganosiloxane compositions. 4,554,296, Cl. 521-154.000.

Keim, Karl-Heinz; and Korff, Joachim, to Rheinische Braunkohlenwerke Aktiengesellschaft. Process for isomerization and transalkylation of alkylphenols. 4,554,388, Cl. 568-716.000.

Keimel, John G., to Medtronic, Inc. Cardiac pacemaker synchronized programming. 4,553,547, Cl. 128-419.0PG.

Kellen, James N.: *See—*
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.

Keller, Ernst. Method for producing security keys having closure possibilities differing from one another. 4,553,452, Cl. 76-110.000.

Kelly, Michael A., to Surface Science Laboratories, Inc. Magnetic lens to rotate transverse particle momenta. 4,554,457, Cl. 250-396.0ML.

Kempter, Karl: *See—*
Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, 4,554,453, Cl. 250-327.200.

Kenkyusho, Rikagaku: *See—*
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Kennametal Inc.: *See—*
Fitzgerald, Gary W.; Gulibon, Robert S.; and Penrod, Paula M., 4,553,884, Cl. 408-143.000.

Kent-Moore Corporation: *See—*
Brooks, Daryl G., 4,553,883, Cl. 408-130.000.

Kerebel, Alain, to Matra. Liquid storage reservoir with capillary confinement. 4,553,565, Cl. 137-590.000.

Kern & Co. AG.: *See—*
Meier, Dietrich; and Minder, Hans-Ulrich, 4,553,836, Cl. 356-5.000.

Kerviel, Hildebert; and Poulard, Serge, to Commissariat a l'Energie Atomique. Cold moldable explosive composition. 4,554,031, Cl. 149-19.300.

Ketchum, John L. Rebound apparatus. 4,553,751, Cl. 273-26.00A.

Ketchum, Thomas W.: *See—*
Roberts, Manuel E.; and Ketchum, Thomas W., 4,553,634, Cl. 182-134.000.

Kickhofen, Botho: *See—*
Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, 4,554,156, Cl. 424-81.000.

Kidd, Patrick D.; and Sterrett, Terry L., to Sybron Corporation. Urethane modified orthodontic adhesive. 4,554,336, Cl. 526-301.000.

Kiessling, Reiner, to Hagen Batterie AG. Negative electrode for lead accumulators. 4,554,228, Cl. 429-242.000.

Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., to Kilmartin Industries, Inc. Magnetically selective token system. 4,553,657, Cl. 194-4.00R.

Kilmartin, David F., Jr.: *See—*
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., 4,553,657, Cl. 194-4.00R.

Kilmartin Industries, Inc.: *See—*
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., 4,553,657, Cl. 194-4.00R.

Kilmoyer, James E., to Cameron Iron Works, Inc. Valve and improved stem seal therefor. 4,553,759, Cl. 277-12.000.

Kilpinen, Michael E.: *See—*
Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., 4,553,307, Cl. 29-434.000.

Kimbara, Hidenori: *See—*
Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, 4,554,346, Cl. 528-363.000.

Kimbara, Masahiko; and Arakawa, Akio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Control method of stopping a loom at a predetermined position thereof. 4,553,569, Cl. 139-1.00E.

Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., to Phillips Petroleum Company. Ore flotation and flotation agents for use therein. 4,554,068, Cl. 209-167.000.

Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., to Phillips Petroleum Company. Alkali carboxyalkyl dithiocarbamates and use as ore flotation reagents. 4,554,108, Cl. 260-455.00A.

Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, to Fuji Xerox Co., Ltd. Thermomagnetic printer. 4,554,557, Cl. 346-74.400.

Kimura, Keiichi: *See—*
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,554,362, Cl. 549-352.000.

Kimura, Kenji: *See—*
Tanaka, Shunpei; and Kimura, Kenji, 4,554,595, Cl. 358-328.000.

Kimura, Shirou: *See—*
Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, 4,553,424, Cl. 73-27.00R.

Kimura, Takahiko: *See—*
Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, 4,553,518, Cl. 123-478.000.

King, Charles S.; and Poole, Joseph J., to BL Technology Limited. Cylinder head for spark ignition internal combustion engine. 4,553,515, Cl. 123-308.000.

King, Eddie W.; Duke, Herman K.; and Summerville, Don S., to Coca-Cola Company, The. Touch selection panel for a vending machine. 4,554,419, Cl. 200-5.00A.

King, Warren D.: *See—*
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., 4,553,589, Cl. 166-53.000.

Kintz, Glenn W. Rack attachment for game tables. 4,553,750, Cl. 273-22.000.

Kinumoto, Namio: *See—*
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.

Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Ink pad. 4,553,476, Cl. 101-111.000.

Kirk, Geoffrey F. Hydraulically operated cranes. 4,553,675, Cl. 212-205.000.

Kirk, Thomas K.: *See—*
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.

Kirstein, Gerhard, to Zahnraderfabrik Renk A.G. Optoelectronic position indicator for a drive system. 4,554,451, Cl. 250-237.00G.

Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Intake secondary air supply system for internal combustion engines. 4,553,521, Cl. 123-587.000.

Kishimoto, Shinzo: *See—*
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, 4,554,242, Cl. 430-393.000.

Kitahara, Makoto: *See—*
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Kitakizaki, Kaoru: *See—*
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,554,425, Cl. 200-144.00B.

Kitamoto, Tatsuji: *See*—
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,554,089, Cl. 252-62.560.

Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, to Pilot Ink Co., Ltd. Method of producing reversible thermochromic display. 4,554,565, Cl. 346-201.000.

Klamer, Reuben B.: *See*—
Robjent, Frederick B.; and Klamer, Reuben B., 4,553,767, Cl. 280-11.210.

Klein, Raymond, to Kollmorgen Technologies Corp. Photodetector automatic adaptive sensitivity system. 4,554,460, Cl. 250-578.000.

Klesel, Peter: *See*—
Pfleger, Albert; and Klesel, Peter, 4,553,585, Cl. 165-41.000.

Klingensmith, George B.: *See*—
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., 4,554,321, Cl. 525-240.000.

Klinkel, Wolfgang, to Eurobreva Engineering Trust. Packaging machine with sealing means. 4,553,377, Cl. 53-548.000.

Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., to Colgate-Palmolive Company. Mild liquid detergent compositions. 4,554,098, Cl. 252-547.000.

Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., to Dow Chemical Company, The. Preparation of 2-halo-1-alkenes from hydrocarbon streams. 4,554,391, Cl. 570-231.000.

Klunk, Thomas M.: *See*—
Cappos, David J.; and Klunk, Thomas M., 4,553,322, Cl. 29-739.000.

Knapp, Julius Z., to Schering Corporation. Method of making a stopper for a sterile fluid container. 4,554,125, Cl. 264-266.000.

Knappertz, Walter P., to Trutzschler GmbH & Co. KG. Method and apparatus for pneumatically conveying fiber material. 4,553,882, Cl. 406-181.000.

Knifton, John F., to Texaco Inc. Process for producing p-tolualdehyde from toluene using an aluminum halide alkyl pyridinium halide 'melt' catalyst. 4,554,383, Cl. 568-428.000.

Knol, Dirk: *See*—
Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, 4,554,386, Cl. 568-697.000.

Knoll, Helmut: *See*—
Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, 4,554,041, Cl. 156-276.000.

Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, to Shinko Electric Industries Co., Ltd. Selective plating apparatus. 4,553,501, Cl. 118-669.000.

Kobayashi, Keiitsu: *See*—
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Kobayashi, Seishichi: *See*—
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.

Kobayashi, Toshio; and Hishiki, Hideo, to Victor Company of Japan, Limited. Device for correcting an image on a picture tube having in-line electron guns and a coil assembly for the device. 4,554,488, Cl. 315-368.000.

Koblitz, Francis F.; and Smith, Roy L., to Dentsply Research & Development Corp. Visible light curable dental compositions. 4,553,940, Cl. 523-115.000.

Kobori, Michio: *See*—
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, 4,554,255, Cl. 436-102.000.

Kochs Adler AG: *See*—
Landwehr, Gunter, 4,553,489, Cl. 112-121.120.

Koeller, David L., to Deere & Company. Water shield ring for plasma arc cutting torch. 4,554,431, Cl. 219-121.0PP.

Koh, Hiroshi: *See*—
Tsutsumi, Suteo; and Koh, Hiroshi, 4,554,459, Cl. 250-550.000.

Koibuchi, Shigeru: *See*—
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. 4-Phase clock generator. 4,554,465, Cl. 307-269.000.

Kojima, Junpei: *See*—
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.

Kojima, Noboru: *See*—
Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, 4,554,596, Cl. 358-330.000.

Kojima, Yasumichi: *See*—
Imaizumi, Mamoru; and Kojima, Yasumichi, 4,553,860, Cl. 400-68.000.

Kojiro, Tetsuya; and Takeda, Jun, to Mitsubishi Denki Kabushiki Kaisha. Penetration assembly for bringing an optical fiber cable through a vessel wall. 4,553,812, Cl. 350-96.200.

Kollmeyer, Willy D.: *See*—
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.

Kollmorgen Technologies Corp.: *See*—
Klein, Raymond, 4,554,460, Cl. 250-578.000.

Komis, Glenna. External male urinary catheter with garment. 4,553,968, Cl. 604-349.000.

Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, to Fanuc Limited. Non-polarized contactless relay. 4,554,462, Cl. 307-140.000.

Konan Camera Research Institute, Inc.: *See*—
Abe, Kuniomi, 4,553,824, Cl. 351-219.000.

Kondo, Hitoshi: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Kondo, Masahiko: *See*—
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, 4,553,505, Cl. 123-41.200.

Kone Oy: *See*—
Pelto-Huikko, Raimo K.; Ahlman, Esko A. O.; and Rautimo, Pertti V., 4,553,610, Cl. 173-1.000.

Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, to Tokai Rubber Industries Ltd. Damper device for engine mountings or the like. 4,553,744, Cl. 267-140.100.

Konishiroku Photo Industry Co., Ltd.: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,553,500, Cl. 118-657.000.
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.
Shibue, Toshiaki; and Nagayasu, Koichi, 4,554,175, Cl. 427-44.000.
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.

Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Konneker, Reinhard: *See*—
Mezger, Hans; and Konneker, Reinhard, 4,553,509, Cl. 123-90.270.

Konuki, Tadashi: *See*—
Ayata, Naoki; and Konuki, Tadashi, 4,553,834, Cl. 355-53.000.

Koops, Geert: *See*—
Brilman, Albert; and Koops, Geert, 4,554,548, Cl. 343-379.000.

Kopola, Harri: *See*—
Ahola, Raimo; Kopola, Harri; and Myllyla , Risto, 4,553,943, Cl. 434-22.000.

Korbel, Gerald E.; Robins, Janis; and Rude, Harold E., to Minnesota Mining and Manufacturing Co. Coated abrasive containing epoxy binder and method of producing the same. 4,553,982, Cl. 51-298.000.

Korcz, William H.: *See*—
Hansen, David R.; and Korcz, William H., 4,554,304, Cl. 524-291.000.

Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Ford Motor Company. Thermosetting coating composition useful as chip resistant primer II. 4,554,332, Cl. 525-532.000.

Korff, Joachim: *See*—
Keim, Karl-Heinz; and Korff, Joachim, 4,554,388, Cl. 568-716.000.

Korn, Heinrich, to Roder GmbH, Sitzmobelwerke. Apparatus for activating a bowden cable. 4,553,449, Cl. 74-501.00R.

Korotky, Steven K.: *See*—
Alferness, Rodney C.; Korotky, Steven K.; and Marcatili, Enrique A. J., 4,553,810, Cl. 350-96.140.

Korpman, Ralf, to Personal Products Company. Ethylene-containing polymer foam/adhesive system. 4,554,191, Cl. 428-35.000.

Korteweg, Wayne, to Americal Corporation. Device for draining body fluids and irrigating solutions. 4,553,966, Cl. 604-317.000.

Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, to Amano Pharmaceutical Company Limited. Method for the quantitative determination of physiological components in biological fluids. 4,554,249, Cl. 435-10.000.

Koshikawa, Takao: *See*—
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.

Koutz, Stanley L.: *See*—
Peinado, Charles O.; and Koutz, Stanley L., 4,554,129, Cl. 376-298.000.

Kovacs, Lloyd: *See*—
James, Robert C.; and Kovacs, Lloyd, 4,553,668, Cl. 206-391.000.

Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, to Magyar Vagon-es Gepgyar. Apparatus for the initial and improvement machining of active surface of steer cams, particularly of brake spanners. 4,553,885, Cl. 409-201.000.

Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., to Exxon Research & Engineering Co. Process for the manufacture of halogenated polymers. 4,554,326, Cl. 525-354.000.

Koyama, Tsuneyuki, to Victor Company of Japan, Ltd. Video signal recording and/or reproducing apparatus having a function to temporarily stop recording. 4,554,604, Cl. 360-95.000.

Kozuka, Michihiro: *See*—
Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, 4,553,947, Cl. 446-443.000.

Kramers, Aloysius A. J., to Akzona Incorporated. Method of forming latent-contractable elastomeric composite yarns. 4,554,121, Cl. 264-103.000.

Krasso , Anna; and Ramuz, Henri, to Hoffmann-La Roche Inc. Pyridyl methyl thio or sulfinyl indeno(5,6-d)imidazoles. 4,554,280, Cl. 514-338.000.

Kreamer, William C.: *See*—
Viitanen, Veikko K.; and Kreamer, William C., 4,553,373, Cl. 53-441.000.

Krinski, Thomas L.; and Steinmetz, Alan L., to Ralston Purina Company. Modified protein adhesive binder and process for producing. 4,554,337, Cl. 527-201.000.

Krumm, Helmut: *See*—
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.

Krupp-Koppers GmbH: *See*—
Rizzon, John; Adomat, Gunter; and Diemer, Peter, 4,554,053, Cl. 201-21.000.

Krystal, Gerald. Protein assay by silver binding. 4,554,254, Cl. 436-86.000.

Krywiczanin, Wladyslaw H.; and Lumsden, William, to British-American Tobacco Company Limited. Feeding web material. 4,553,712, Cl. 242-58.000.

Kubo, Mitsuo: *See*—
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Kubota, Ltd.: *See*—
Katayama, Yoshiyuki; and Nishida, Tetsuya, 4,553,605, Cl. 172-2.000.
Matsubara, Yoshitaka, 4,553,446, Cl. 74-471.00R.
Yoshii, Takashi, 4,553,624, Cl. 180-255.000.

Kubozuka, Takao: *See*—
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, 4,553,505, Cl. 123-41.200.

Kudo, Yoshihiko, to Kureha Chemical Industry Co., Ltd. Off-gas desulfurization process. 4,554,140, Cl. 423-243.000.

Kuehl, Ulrich: *See*—
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.

Kuhlmann, Erven J.: *See*—
Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., 4,553,499, Cl. 118-428.000.

Kukka, Aarre: *See*—
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.

Kulcke, Werner: *See*—
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.

Kumakura, Toshio: *See*—
Tabaru, Kazunori; Aoyama, Takafumi; and Kumakura, Toshio, 4,554,232, Cl. 430-106.600.

Kumar, Mahesh: *See*—
Whartenby, James C.; and Kumar, Mahesh, 4,554,514, Cl. 330-149.000.

Kumasaka, Osamu; and Touma, Teruo, to Pioneer Video Corporation. Optical data recording disc and system. 4,554,655, Cl. 369-275.000.

Kumashiro, Kenji: *See*—
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.

Kumatani, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Low inertia induction motor. 4,554,472, Cl. 310-62.000.

Kuntze, Rudolf, to Siemens Aktiengesellschaft. Method for reducing the redundancy of binary character sequences for matrix printing. 4,554,637, Cl. 364-518.000.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Electrically erasable programmable MNOS read only memory. 4,554,643, Cl. 365-104.000.

Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, to Nippondenso Co., Ltd. Rotational reference position detection apparatus. 4,553,427, Cl. 73-117.300.

Kurata, Masami: *See*—
Saitoh, Hiroyuki; and Kurata, Masami, 4,554,583, Cl. 358-163.000.

Kureha Chemical Industry Co., Ltd.: *See*—
Kudo, Yoshihiko, 4,554,140, Cl. 423-243.000.

Kureha Kagaku Kogyo K.K.: *See*—
Okada, Shingo; Sawa, Yuji; and Adachi, Kuniomi, 4,553,376, Cl. 53-511.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.

Kurita Machinery Manufacturing Company Limited: *See*—
Hamazaki, Haruo; and Mitsugi, Makinoda, 4,553,558, Cl. 134-181.000.

Kuroda, Hiroyuki: *See*—
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.

Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, to Canon Kabushiki Kaisha. Device for and method of aligning two bodies. 4,553,845, Cl. 356-400.000.

Kurosawa, Toshiaki: *See*—
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.

Kuroyanagi, Tomomitsu: *See*—
Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, 4,554,596, Cl. 358-330.000.

Kurtis, Soma: *See*—
Wilensky, Joseph, 4,553,397, Cl. 60-649.000.

Kushner, Arnold: *See*—
Conn, Shepard; and Kushner, Arnold, 4,553,965, Cl. 604-286.000.

Kusmenskji, Karl-Heinz; and Beck, Harald, to Mettler-Waagen GmbH. Weighing cell. 4,553,618, Cl. 177-185.000.

Kuwamoto, Hiroshi: *See*—
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.

Kwiecinski, James R., to Westinghouse Electric Corp. Room temperature curable polybutadiene resins with copper ethylacetoacetate catalyst. 4,554,322, Cl. 525-245.000.

Kyocera Corporation: *See*—
Mizukami, Akihiko; and Shimaya, Tetsushi, 4,553,530, Cl. 126-422.000.
Ueno, Masato, 4,553,935, Cl. 433-32.000.

Kysor Industrial Corporation: *See*—
Branz, Michael A., 4,553,400, Cl. 62-127.000.

L. Schuler GmbH: *See*—
Belamaric, Zelimir, 4,554,430, Cl. 219-108.000.

La Metalli Industriale S.p.A.: *See*—
Ceresara, Sergio; and Brogi, Mario, 4,554,407, Cl. 174-128.00S.

LaBate, Michael D., II; and Perri, Joseph A., to Insul Company, Inc. Elevated device for placing slag retention means in tapping converters. 4,553,743, Cl. 266-272.000.

Labsystems Oy: *See*—
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.

Lada-Mocarski, Laura K.: *See*—
Griggs, James S.; and Lada-Mocarski, Laura K., 4,553,680, Cl. 220-4.00F.

Lagana, Giuseppe. Motor vehicle with its body in the form of a volumetric shell of resilient material. 4,553,783, Cl. 296-31.00P.

Lagoni, William A.: *See*—
Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., 4,554,577, Cl. 358-34.000.

Lai, Kuo-Yann: *See*—
Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., 4,554,098, Cl. 252-547.000.

Lam, Kin C.; and Williams, Ronald K., to Beckman Instruments, Inc. Multi-angle adapter for fixed angle centrifuge rotor. 4,553,955, Cl. 494-16.000.

LaMattina, John L., to Pfizer Inc. 2-Amino-5-hydroxy-4-methylpyrimidine derivatives. 4,554,276, Cl. 514-272.000.

Lambert, Harry; and Lambert, Margaret C. Tape cassettes. 4,554,443, Cl. 235-103.000.

Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, to Shell Oil Company. Process for the production of hydrocarbons. 4,554,292, Cl. 518-728.000.

Lambert, Margaret C.: *See*—
Lambert, Harry; and Lambert, Margaret C., 4,554,443, Cl. 235-103.000.

Lamont, John S. Internal combustion engine. 4,553,385, Cl. 60-39.600.

Lamothe, Boulan, Dunogues, Duffaut, and Ribault: *See*—
Le Ribault, Loic P.; Donogues, Jacques P.; and Duffaut, Norbert C., 4,553,597, Cl. 166-305.00R.

Lamphere, Carla A.; and Spector, George. Electrically heated ice cream scoop. 4,553,921, Cl. 425-279.000.

Lancaster, Charles D.: *See*—
Laskey, Daniel A., 4,553,454, Cl. 81-125.000.

Lancaster, Patrick R., III: *See*—
Lancaster, William G.; and Lancaster, Patrick R., III, 4,553,374, Cl. 53-465.000.

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Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.

Landwehr, Gunter, to Kochs Adler AG. Sewing device with a sewing head including a rotary housing. 4,553,489, Cl. 112-121.120.

Lane, Thomas; and Rosen, Murray, to Marine Shield Corporation. Anti-fouling coating composition, process for applying same and coating thereby obtained. 4,554,185, Cl. 427-385.500.

Lang, Gunter, to Maschinenfabrik Alfred Schmermund GmbH & Co. Packaging quality control method and apparatus. 4,553,847, Cl. 356-445.000.

Lang, M. Robert: *See*—
Roizman, Bernard; and Lang, M. Robert, 4,554,159, Cl. 424-89.000.

Lang, Thomas J.: *See*—
Distin, Robert G., Jr.; and Lang, Thomas J., 4,553,451, Cl. 74-805.000.

Langley, Dennis C.; and Brekka, Thomas T., to Micro Component Technology, Inc. Apparatus for determining the alignment of leads on a body. 4,553,843, Cl. 356-375.000.

Langner, Carl G., to Shell Oil Company. Pipelaying in artic offshore waters. 4,553,879, Cl. 405-270.000.

Lanuzzi, Max: *See*—
Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.

Lapidot, Heine: *See*—
Ward, William J., III; Ritzer, Alan; and Lapidot, Heine, 4,554,370, Cl. 556-472.000.

Lapraik, Scott J.; and Becker, Wayne A., to GTE Products Corporation. Electrical connector. 4,553,803, Cl. 339-74.00R.

Lapraik, Scott J.; and Becker, Wayne A., to GTE Products Corporation. Electrical connector. 4,553,804, Cl. 339-74.00R.

Lardner, Graham G., to Unipart Group Limited. Motor vehicle oil cooler. 4,553,586, Cl. 165-76.000.

Larsen, Poul K.: *See*—
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.

Larsen, Walter L. Clip-type hook fastening device. 4,553,294, Cl. 24-489.000.

Laskey, Daniel A., to Lancaster, Charles D.; and Laskey, Richard F. Nut retaining socket with replaceable nut retainer. 4,553,454, Cl. 81-125.000.

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Laskey, Daniel A., 4,553,454, Cl. 81-125.000.

Lassota, Marek J. Cylinder-piston of a rotary compressor. 4,553,912, Cl. 418-54.000.

Lastro Ky: *See—*
Artama, Arvi; and Nurmi, Uuno, 4,553,987, Cl. 55-118.000.

Lau, Yue-Ying: *See—*
Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, 4,554,483, Cl. 315-4.000.

Laurello, Vincent P., to United Technologies Corporation. Stator structure for a gas turbine engine. 4,553,901, Cl. 415-138.000.

Laurent, Sebastian M.: *See—*
Scull, Herbert M.; and Laurent, Sebastian M., 4,554,141, Cl. 423-245.000.

Lazarus, Harrison; and Nelson, James A., to Lazarus, Harrison; and Nelson, James A., a part interest. Peritoneal fluid treatment apparatus, package and method. 4,553,960, Cl. 604-158.000.

Lear Siegler, Inc.: *See—*
Pierce, William C., 4,553,773, Cl. 280-676.000.

Leavy, Dale A.: *See—*
Elam, Carl M.; and Leavy, Dale A., 4,554,584, Cl. 358-165.000.

LeBeau, Gary J. Archery bow adjustable scope mount. 4,553,338, Cl. 33-265.000.

Lech, Thaddeus, Jr.; and Schmitz, Paul L., to Borg-Warner Corporation. Two-stage clutch damper assembly. 4,553,655, Cl. 192-106.200.

LeCocq, Andrew D., to Quest Medical, Inc. IV Delivery controller. 4,553,958, Cl. 604-67.000.

Lectron Products, Inc.: *See—*
Slavin, Michael; and Miller, Ellsworth S., 4,554,406, Cl. 174-94.00R.

Le Dantec, Olivier J.; and Balage, Charly G., to Framatome & Cie. Expanding plug. 4,553,889, Cl. 411-21.000.

Le Donne, Giovanni G., to Horix Manufacturing Co. Valve tip for filling apparatus. 4,553,574, Cl. 141-286.000.

Lee, Chain-Hsiang. Extension table with single leg. 4,553,485, Cl. 108-86.000.

Lee, Chi C., to Du Pont de Nemours, E. I., and Company. Stretched-and-bonded polyethylene plexifilamentary nonwoven sheet. 4,554,207, Cl. 428-288.000.

Lee, David L.: *See—*
Carter, Charles G.; and Lee, David L., 4,554,014, Cl. 71-94.000.

Lee, Grady E.: *See—*
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.

Lee, Mark C., to United States of America, National Aeronautics and Space Administration. Apparatus for production of ultrapure amorphous metals utilizing acoustic cooling. 4,553,917, Cl. 425-6.000.

Lee, Maurice W., Jr. Automatic circuit control for electrical resistance cooking apparatus. 4,554,440, Cl. 219-501.000.

Lee, Seok H.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.

Lee, Valerie H., to Lee, Valerie Holdeman; Lee, William Matthias; Schaffner, Arlene; and Schaffner, Donald. Hand exerciser. 4,553,746, Cl. 272-68.000.

Lee, Valerie Holdeman: *See—*
Lee, Valerie H., 4,553,746, Cl. 272-68.000.

Lee, William Matthias: *See—*
Lee, Valerie H., 4,553,746, Cl. 272-68.000.

Leewood, Alan R.: *See—*
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,553,364, Cl. 52-309.130.

le Faou, Daniel: *See—*
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Lefler, Harold V., III: *See—*
Fey, Kenneth C.; and Lefler, Harold V., III, 4,554,331, Cl. 525-478.000.

Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., to Owens-Corning Fiberglas Corporation. Window sash and frame molded of fibrous material. 4,553,364, Cl. 52-309.130.

Leggett & Platt, Incorporated: *See—*
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,324, Cl. 29-822.000.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,572, Cl. 140-92.800.

Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., to United States of America, Interior. Electrolytic production of precious metals. 4,554,058, Cl. 204-110.000.

Leichnitz, Kurt, to Dragerwerk A.G. Gas measuring testing tube. 4,554,133, Cl. 422-87.000.

Leighton, Stephen B. Intra-urethral prosthetic sphincter valve. 4,553,533, Cl. 128-1.00R.

Leland Stanford Junior University, The Board of Trustees of: *See—*
Shaw, Herbert J.; and Digonnet, Michel J. F., 4,554,510, Cl. 330-4.300.

Lemole, Gerald M. Electrical lead and method for temporary cardiac pacing. 4,553,554, Cl. 128-784.000.

Lemon, Gary K.: *See—*
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Lenane, Denis L.: *See—*
Hanlon, J. Vincent; Lenane, Denis L.; and Retzloff, James B., 4,553,979, Cl. 44-57.000.

Lendl, Joseph, to Triumph-Adler Aktiengesellschaft fur Buro-Informationstechnik. Control system for thermal printing typewriters or like machines. 4,553,861, Cl. 400-120.000.

Lense, Robert F., to Amerock Corporation. Power actuated operator for windows and the like. 4,553,656, Cl. 192-142.00R.

Lenzen, Gunter: *See—*
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.

Leonard, Herbert G.: *See—*
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.

Leonard, John J.: *See—*
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,554,395, Cl. 585-500.000.

Leone, James W.: *See—*
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.

Lephardt, John O., to Philip Morris Incorporated. Cigarette having a corrugated wrapper. 4,553,556, Cl. 131-336.000.

Le Ribault, Loic P.; Donogues, Jacques P.; and Duffaut, Norbert C., to Lamothe, Boulan, Dunogues, Duffaut, and Ribault. Process for eliminating clays from rocks and sedimentary environments. 4,553,597, Cl. 166-305.00R.

Lerner, Michael. Cleat. 4,553,495, Cl. 114-218.000.

Le Roy, Alain: *See—*
Herbreteau, Louis; and Le Roy, Alain, 4,554,546, Cl. 343-5.00W.

Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, to Rhone-Poulenc Sante. 3-(1-Halo-2-oxoethyl)cephalosporin intermediates. 4,554,350, Cl. 544-22.000.

Lest, William L., to United States of America, Agriculture. Aliquot part locator. 4,554,442, Cl. 235-88.00R.

L'Etat Francais, represente par le Ministre des P.T.A. (Centre National d'Etudes des Telecommunications CNET): *See—*
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

Leuck, Hans; and Westermann, Hans-Jorg, to Dynamit Nobel AG. Method of preparing 1,2-dichloroethane from ethylene and chlorine gas. 4,554,392, Cl. 570-254.000.

Leuthold, Karl: *See—*
Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, 4,553,312, Cl. 29-564.300.

Levavasseur, Jacques A.: *See—*
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, 4,554,268, Cl. 502-439.000.

Lever Brothers Company: *See—*
Clarke, David E., 4,554,099, Cl. 252-551.000.
Jones, Robert A.; Jones, Frank; and Taylor, Graham, 4,554,091, Cl. 252-187.250.

Levine, Richard W., to Construction Technology, Inc. Method and apparatus for marking or cutting laminar patterns or forms. 4,554,635, Cl. 364-475.000.

Lewin, Ian H., to U.S. Philips Corporation. Electrostatic chuck loading. 4,554,611, Cl. 361-234.000.

Lewis, Dan, Jr., to Miles Laboratories, Inc. Collapsible molded container. 4,553,970, Cl. 604-408.000.

Lewis, Michael L.: *See—*
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.

Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, to Broken Hill Proprietary Company Limited, The; and Commonwealth Scientific and Industrial Research Organisation. Two-stage process for converting propane to aromatics. 4,554,393, Cl. 585-322.000.

Libman Broom Company: *See—*
Batchelor, Douglas R., 4,553,282, Cl. 15-150.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.

Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, to Zahnradfabrik Friedrichshafen, AG. Hydrostatic steering arrangement. 4,553,390, Cl. 60-384.000.

Liebert, Karl-Heinz: *See—*
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,553,389, Cl. 60-384.000.

Liggett, Paul E., to Goodyear Aerospace Corporation. Controlling the rate of diamine curing agents in polyurethane cements. 4,554,299, Cl. 523-466.000.

Liggett, Paul E.; and Chung, Daniel A., to Goodyear Aerospace Corporation. Reducing the speed of aliphatic diamine curing agents in polyurethane cements. 4,554,300, Cl. 523-466.000.

Lin, Jiang-Jen, to Texaco Inc. Process for dicarbonylation of simple olefins. 4,554,374, Cl. 560-204.000.

Lin, Jiang-Jen; and Alexander, David C., to Texaco Inc. Co-preparation of 2,7-octadienyl formate, 1,6-octadiene and 4 vinylcyclohexene from butadiene using a platinum catalyst. 4,554,375, Cl. 560-244.000.

Lin, Jiang-Jen: *See—*
Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, 4,554,364, Cl. 549-453.000.

Lindauer Dornier Gesellschaft mbH: *See—*
Gehring, Fritz; and Arndt, Stephan, 4,553,571, Cl. 139-446.000.

Linde Aktiengesellschaft: *See—*
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.
Hoffman, Albert, 4,553,990, Cl. 55-178.000.

Lindenmaier, Klaus; and Zieger, Josef, to Daimler-Benz Aktiengesellschaft. Device for the generation of a defined fuel vapor/air mixture. 4,553,520, Cl. 123-557.000.

Lindsay, Edward R.: *See—*
Aid, James D.; and Lindsay, Edward R., 4,554,069, Cl. 210-101.000.

Linnekin, Robert L. Circular chess. 4,553,756, Cl. 273-261.000.

Lipha Lyonnaise Industrielle Pharmaceutique: *See—*
Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, 4,554,273, Cl. 514-221.000.

Lippert, Thomas E.: *See—*
Ciliberti, David F.; and Lippert, Thomas E., 4,553,986, Cl. 55-68.000.

Lippold, John B.: *See—*
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., 4,553,474, Cl. 98-1.500.

Litterer, Heinz: *See—*
Arpe, Hans-Jurgen; and Litterer, Heinz, 4,554,380, Cl. 564-424.000.

Liu, Chen-Chia. Rocking and moving mimic horse. 4,553,766, Cl. 280-1.182.

Livigni, Russell A.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,553,578, Cl. 152-209.00R.

Lockett, William, III; and Oliver, Edward D., to Lockett, William, III. Infant seating and lounge unit. 4,553,786, Cl. 297-440.000.

Lockheed Corporation: *See—*
Jorgensen, Bernard J., 4,553,721, Cl. 244-213.000.

Logan, Francis D., to Camco, Incorporated. Integrally formed side-pocket mandrel. 4,553,310, Cl. 29-517.000.

Loh, William, to Chevron Research Company. 5-Deoxy-3-O-arylmethyl or substituted arylmethyl-1,2-O-substituted-alkylidene-alpha-D-xylofuranose herbicide derivatives. 4,554,010, Cl. 71-88.000.

Loh, William, to Chevron Research Company. Herbicidal 2S-(2β,4β,5β)-5-Arylmethoxy-4-substituted 2-alkyl-1,3-dioxane derivatives. 4,554,011, Cl. 71-88.000.

Lok, Brent M.: *See—*
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., 4,554,143, Cl. 423-306.000.

Long, Stuart G.; and Maciocia, Michael J., to General Dynamics Pomona Division. Laminated anti-static skin-packaging material. 4,554,210, Cl. 428-349.000.

Lonne, Klaus; and Majewski, Klaus-Peter, to Goetze AG. Sealing ring. 4,554,084, Cl. 252-12.400.

Looney, Mark D.; and Savage, Kerry D., to Texaco Inc. Method of protecting an RF applicator. 4,553,592, Cl. 166-248.000.

Lopez, Alfred R., to Hazeltine Corporation. Resonant waveguide aperture manifold. 4,554,550, Cl. 343-771.000.

Lorenzen, Steven C.; and Sterling, Vaughn C., to General Electric Company. Switching device for photoflash unit. 4,553,928, Cl. 431-359.000.

Los, Marinus, to American Cyanamid Company. Herbicidal imidazolinyl naphthoic acids. 4,554,013, Cl. 71-92.000.

Loughry, Clark E.: *See—*
Maldonado, Robert; and Loughry, Clark E., 4,554,676, Cl. 378-170.000.

Lovas, Kurt: *See—*
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.

Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Godtfredsen, Wagn O., 4,554,160, Cl. 424-114.000.

Lowe, James R., to McDonnell Douglas Corporation. Conformal head-up display. 4,554,545, Cl. 340-980.000.

Lowrie, Harman S.; and Baran, John S., to G. D. Searle & Co. 3-Substituted pentanedioic acids and derivatives thereof. 4,554,359, Cl. 549-231.000.

Loza, Roman: *See—*
Greene, Janice L.; and Loza, Roman, 4,554,345, Cl. 528-336.000.

LTV Aerospace and Defense Company: *See—*
Wilson, Dayton H., 4,554,657, Cl. 370-85.000.

Lucas Industries public limited company: *See—*
Price, Anthony G.; and Parry, David, 4,553,395, Cl. 60-562.000.

Lucas, Michael R., to Westinghouse Electric Corp. Low stress leadless chip carrier and method of assembly. 4,554,575, Cl. 357-80.000.

Luebeck, Duane A.: *See—*
Snyder, Irving F.; and Luebeck, Duane A., 4,553,700, Cl. 239-215.000.

Lueth, Roy C., to Ultra-Temp Corporation. Electric heating coil. 4,554,441, Cl. 219-552.000.

Luetzelschwab, Wayne E., to Marathon Oil Company. Flow control method. 4,553,594, Cl. 166-275.000.

Lumsden, William: *See—*
Krywiczanin, Wladyslaw H.; and Lumsden, William, 4,553,712, Cl. 242-58.000.

Lupke, Manfred A. A. Producing thermoplastic articles particularly with porous walls. 4,553,923, Cl. 425-393.000.

Lurssen, Klaus: *See—*
Schroder, Rolf; and Lurssen, Klaus, 4,554,017, Cl. 71-113.000.

Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, to Imaging Associates. Hybrid non-invasive ultrasonic imaging system. 4,553,437, Cl. 73-602.000.

Lyford-Pike, Edward J.: *See—*
Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., 4,553,504, Cl. 123-25.00J.

Lyman, Roger T. Wheelchair attachment. 4,553,770, Cl. 280-289.0WC.

Lynch Machinery: *See—*
Shields, Ronald H., 4,554,001, Cl. 65-160.000.

Lynk, Charles N., Jr.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.

Lyons, William C. Pressure drop regulator for downhole turbine. 4,553,611, Cl. 175-71.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, 4,553,478, Cl. 101-426.000.

Maass, Dierk; and Wallsten, Hans I., to Medinvent S.A. Device for application in blood vessels or other difficultly accessible locations and its use. 4,553,545, Cl. 128-341.000.

Maassen, Egbertus J. P., to U.S. Philips Corporation. Tri-color additive color printing head and enlarger. 4,553,832, Cl. 355-32.000.

Mabuchi, Minoru: *See—*
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Macchiarulo, Vincenzo: *See—*
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,553,952, Cl. 474-153.000.

Machida, Isao: *See—*
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.

Machino, Katsuyuki: *See—*
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.

Maciocia, Michael J.: *See—*
Long, Stuart G.; and Maciocia, Michael J., 4,554,210, Cl. 428-349.000.

MacIver, Bernard A.; Erskine, James C., Jr.; and Bierlein, John C., to General Motors Corporation. Metal bearing surface having an adherent score-resistant coating. 4,554,208, Cl. 428-332.000.

MacLaury, Michael R.: *See—*
Stoll, Robert W.; and MacLaury, Michael R., 4,554,147, Cl. 423-335.000.

Mader, Karl-Heinz: *See—*
Franklin, Brian; and Mader, Karl-Heinz, 4,554,259, Cl. 501-67.000.

Madsen, Kay, to Eaton Corporation. Optical inspection system. 4,553,838, Cl. 356-237.000.

Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, to Hitachi, Ltd. Optical information processor. 4,554,652, Cl. 369-44.000.

Maeda, Takumi: *See—*
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,554,362, Cl. 549-352.000.

Maffey, Constant O. Trailer kingpin locking device with protected locking bar aperture. 4,553,415, Cl. 70-232.000.

Magaha, Harold S.: *See—*
Karol, Thomas J.; and Magaha, Harold S., 4,554,086, Cl. 252-49.600.

Magdics, Alex: *See—*
Worthington, Ralph E.; and Magdics, Alex, 4,554,139, Cl. 423-166.000.
Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., 4,554,151, Cl. 423-551.000.

Magee, John H., Jr.: *See—*
DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., 4,554,028, Cl. 148-38.000.

Maggi, Joseph A.; and Wilensky, Barry F., to Allied Corporation. Apparatus for testing circuits within a system. 4,554,636, Cl. 364-481.000.

Magid, David J., to Enviro-Spray Systems, Inc. Dispensing system and a refill pouch. 4,553,685, Cl. 222-1.000.

Magna-Graphics Corporation: *See—*
Belongia, Larry P., 4,553,461, Cl. 83-344.000.

Magni, Riccardo. High lift truck with telescoping boom assemblies. 4,553,899, Cl. 414-629.000.

Magyar Vagon-es Gepgyar: *See—*
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.

Mahlein, Hans, to Siemens Aktiengesellschaft. Optical polarizer having a dielectric multiple layer system. 4,553,822, Cl. 350-377.000.

Mahr, Peter. Laminated sailcloth. 4,554,205, Cl. 428-253.000.

Mai, Chao: *See—*
Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, 4,553,314, Cl. 29-571.000.

Maier, William B., II: *See—*
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.

Maingueneau, Gerard, to Mecanique des Moutiers Route de Loudun. Wood splitting machine with a threaded rotating cone. 4,553,576, Cl. 144-194.000.

Majewski, Klaus-Peter: *See—*
Lonne, Klaus; and Majewski, Klaus-Peter, 4,554,084, Cl. 252-12.400.

Majoie, Bernard, to Societe de Recherches Industrielles S.O.R.I. Phenoxyalkylcarboxylic acids. 4,554,371, Cl. 560-52.000.

Maki, Takayoshi: *See—*
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, 4,554,672, Cl. 375-40.000.

Makino, Daisuke: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Malchow, Gregory L.; and Frohbieter, Edwin H., to Whirlpool Corporation. Room air conditioner with high capacity fresh air circulation means. 4,553,404, Cl. 62-262.000.
Malcolm, George D. Vehicle suspension. 4,553,774, Cl. 280-718.000.
Maldonado, Paul: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,554,313, Cl. 525-54.500.
Maldonado, Robert; and Loughry, Clark E., to S. S. White Company, The. Dental aiming device. 4,554,676, Cl. 378-170.000.
Malissin, Roland; and Monlouis, Claude, to Thomson-CSF. Focusing optical head movable radially by a carriage. 4,554,653, Cl. 369-45.000.
Maliszewicz, Marc: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.
Mancha, Clayton S. Pocket "E"-ring installation tool. 4,553,300, Cl. 29-235.000.
Mandel, Nathan: *See—*
Castellano, Thomas P.; and Mandel, Nathan, 4,553,468, Cl. 89-140.000.
Mannesmann Rexroth GmbH: *See—*
Reinhardt, Peter, 4,553,391, Cl. 60-413.000.
Manocha, Ajit S., to AT&T Bell Laboratories. Anistropic etching. 4,554,048, Cl. 156-643.000.
Manville Service Corporation: *See—*
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.
Marathon Oil Company: *See—*
Luetzelschwab, Wayne E., 4,553,594, Cl. 166-275.000.
Marcantonio, Paul J., to Chevron Research Company. Leaching metals from spent hydroprocessing catalysts with ammonium sulfate. 4,554,138, Cl. 423-53.000.
Marcatili, Enrique A. J.: *See—*
Alferness, Rodney C.; Korotky, Steven K.; and Marcatili, Enrique A. J., 4,553,810, Cl. 350-96.140.
Marchetti, Augusto. Machine for sealing variable-height parallelepipedal cartons. 4,554,042, Cl. 156-350.000.
Marcus, Daniel H., to Fingermatrix, Inc. Roll fingerprint processing apparatus. 4,553,837, Cl. 356-71.000.
Marcus, Konrad H., to Prince Corporation. Mounting bracket. 4,553,797, Cl. 339-22.000.
Marine Shield Corporation: *See—*
Lane, Thomas; and Rosen, Murray, 4,554,185, Cl. 427-385.500.
Marini, Paolo; and Candiotti, Marcello, to Centro Sperimentale Metallurgico SpA; and Terni - Societa per l'Industria e l'Elettricita SpA. High punchability heat resistant coating for sheet metal. 4,554,213, Cl. 428-418.000.
Mark, Harold W.: *See—*
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,068, Cl. 209-167.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,108, Cl. 260-455.00A.
Mark, Victor, to General Electric Company. Process for the preparation of aromatic carbonates. 4,554,110, Cl. 260-463.000.
Mark, Victor; and Hedges, Charles V., to General Electric Company. Polycarbonate from cycloalkylidene tetra alkyl substituted diphenol. 4,554,309, Cl. 524-611.000.
Mark, Victor; and Hedges, Charles V., to General Electric Company. Polyestercarbonates exhibiting improved heat resistance from cycloalkylidene diphenol. 4,554,330, Cl. 525-462.000.
Markland, Richard D., to Consolidated Freightways, Inc. Air resistance reducing assembly for trucks. 4,553,782, Cl. 296-1.00S.
Markova, Marie: *See—*
Didek, Stanislav; Fajt, Ludvik; Reymanova, Marketa; and Markova, Marie, 4,553,383, Cl. 57-403.000.
Markovich, Voya: *See—*
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.
Marshall, Randall S. Articles for cooling beverages. 4,554,189, Cl. 428-11.000.
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Process for the preparation of a bicyclic lactone through a sulfonated derivative. 4,554,361, Cl. 549-302.000.
Marten, Russell A.; and Townsend, Greg M., to Motorola, Inc. System for producing encoded and decoded voice, internal audio tones, and data communication within a time division multiplex network. 4,554,658, Cl. 370-85.000.
Martin, Frank E., to Westinghouse Electric Corp. Optical fiber cable construction. 4,553,815, Cl. 350-96.230.
Martin, Henry: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,554,016, Cl. 71-105.000.
Martin-Jones, Christopher B.: *See—*
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.
Martone, John A.: *See—*
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., 4,554,321, Cl. 525-240.000.
Maruta, Rikio: *See—*
Aiko, Shinichi; Maruta, Rikio; and Nishitani, Takao, 4,554,670, Cl. 375-30.000.
Marzocchi, Alfred: *See—*
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,554,022, Cl. 106-273.00N.
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, to Nippon Telegraph & Telephone Public Corp. Phase and frequency variable oscillator. 4,554,672, Cl. 375-40.000.
Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
Lang, Gunter, 4,553,847, Cl. 356-445.000.
Maskell, Thomas J.: *See—*
Stein, Joseph L.; and Maskell, Thomas J., 4,554,035, Cl. 156-89.000.
Masson, Laverne F. Propane feeding device for internal combustion engines. 4,553,519, Cl. 123-527.000.
Matra: *See—*
Kerebel, Alain, 4,553,565, Cl. 137-590.000.
Matsubara, Toshiyuki: *See—*
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.
Matsubara, Yoshitaka, to Kubota, Ltd. Control device. 4,553,446, Cl. 74-471.00R.
Matsuda, Hideaki: *See—*
Dohi, Hidemi; and Matsuda, Hideaki, 4,554,301, Cl. 524-210.000.
Matsuda, Keiji: *See—*
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.
Matsui, Isamu; and Ueda, Yutaka, to Murata Kikai Kabushiki Kaisha. Defective package selector for winders. 4,553,708, Cl. 242-36.000.
Matsui, Katsumasa: *See—*
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.
Matsumoto, Akio; and Yamada, Takao, to Matsushita Electric Works, Ltd. Timepiece operated by solar cells. 4,553,851, Cl. 368-205.000.
Matsumoto, Kenji; and Suzuki, Yasuo, to Bridgestone Tire Company Limited. Pneumatic tires having a high resistance to cut growth. 4,553,579, Cl. 152-450.000.
Matsumura, Yasuo: *See—*
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.
Matsunaga, Kuniyoshi: *See—*
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.
Taniuchi, Tetsuo; and Tsujimoto, Yoshinobu, 4,554,449, Cl. 250-227.000.
Uchida, Yoshihisa; and Yamashita, Kazuichi, 4,553,705, Cl. 242-4.00R.
Yamada, Takahiro, 4,554,485, Cl. 315-169.300.
Matsushita Electric Works, Ltd.: *See—*
Matsumoto, Akio; and Yamada, Takao, 4,553,851, Cl. 368-205.000.
Matsuzawa, Masanao: *See—*
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.
Matthews, William: *See—*
Brown, Douglas E.; and Matthews, William, 4,554,650, Cl. 367-154.000.
Mauchly, J. William: *See—*
Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, 4,553,437, Cl. 73-602.000.
Mauersberger, Paul H.: *See—*
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.
Maul, Rudolf; Stephan, Hans; and Wolf, Walter, to Ciba-Geigy Corporation. Continuous process for the preparation of alkyltin thiocarboxylic acid esters. 4,554,368, Cl. 556-91.000.
Maurice, Bruno: *See—*
Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, 4,554,568, Cl. 357-13.000.
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, to Societe Nationale Elf Aquitaine (Production). Enrichment of minerals by flotation and collector agents employed for this purpose. 4,554,137, Cl. 423-26.000.
Maurice, Jacques: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,554,313, Cl. 525-54.500.
Max-Planck-Gesellschaft zur: *See—*
Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, 4,554,156, Cl. 424-81.000.
Mayer, Andreas, to BBC Brown, Boveri & Company, Limited. Supercharged internal combustion engine with exhaust particulates filter. 4,553,387, Cl. 60-274.000.
Mayer, Edward F., to Ricoh Company, Ltd. Electrophotographic copying apparatus including an enlarged image developing station. 4,553,827, Cl. 355-3.0DD.
Mayer, Edward H.: *See—*
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.
Mayo Foundation: *See—*
Dewanjee, Mrinal K., 4,553,974, Cl. 8-94.110.
Mazzorana, Alfred B., to Societe Paris-Rhone. Starter for heat engine comprising a reinforced support. 4,553,442, Cl. 74-7.00A.
McBride, Donald G.: *See—*
Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., 4,554,184, Cl. 427-345.000.
McCarty, Chris, to Harris Corporation. N Contact compensation technique. 4,553,315, Cl. 29-571.000.

McChesney, Charles E.: *See—*
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.
Sinker, Stephen M.; and McChesney, Charles E., 4,554,329, Cl. 525-437.000.
McClees, Nancy: *See—*
Ferguson, Keith; and McClees, Nancy, 4,553,967, Cl. 604-317.000.
McClelland, Gene E.: *See—*
Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., 4,554,058, Cl. 204-110.000.
McClintock, Sam A.; and Purdy, William C., to Imasco-CDC Research Foundation. Dual working-electrode electrochemical detector for high performance liquid chromatography. 4,554,064, Cl. 204-411.000.
McCluney, Rebecca E.: *See—*
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.
McConnell, Richard L.: *See—*
Hilbert, Samuel D.; and McConnell, Richard L., 4,554,206, Cl. 428-261.000.
Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., 4,554,303, Cl. 524-277.000.
McCullin, Jan C.: *See—*
DeSordi, Marlette S.; DeSordi, Pete, III; McCullin, Jan C.; and McCullin, Sidney G., 4,553,287, Cl. 17-48.000.
McCullin, Sidney G.: *See—*
DeSordi, Marlette S.; DeSordi, Pete, III; McCullin, Jan C.; and McCullin, Sidney G., 4,553,287, Cl. 17-48.000.
McCulloch Corporation: *See—*
West, James F., 4,553,326, Cl. 30-381.000.
McCullough, John E., to E. R. Squibb & Sons, Inc. Method of increased production of penicillin acylase and plasmid employed therein. 4,554,250, Cl. 435-172.300.
McDonnell Douglas Corporation: *See—*
Lowe, James R., 4,554,545, Cl. 340-980.000.
McGarrah, Robert, to PepsiCo Inc. Bulk syrup delivery system. 4,553,573, Cl. 141-98.000.
McHale, John P.: *See—*
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., 4,553,405, Cl. 62-262.000.
McHenry, Robert J.; Pfutzenreuter, Henry, III; Tung, Thomas T.; and Vella, John, Jr., to American Can Company. Plastic containers with folded-over internal layers and methods for making same. 4,554,190, Cl. 428-35.000.
McIntosh, Harold A., to RobertShaw Controls Company. Protective shield for external electrical parts of a control arrangement and the combination thereof. 4,554,616, Cl. 361-424.000.
McKay, Gretchen L.: *See—*
Cosper, David R.; and McKay, Gretchen L., 4,554,026, Cl. 134-38.000.
McKibben, Barry A., to Tektronix, Inc. Resonant magnetic deflection circuit. 4,554,489, Cl. 315-399.000.
McLachlan, Craig J.: *See—*
Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., 4,554,059, Cl. 204-129.300.
McLellan, Norvel J. No flash, very low noise howitzer round and tube. 4,553,480, Cl. 102-430.000.
McMahon, Matthew A.: *See—*
Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., 4,553,499, Cl. 118-428.000.
McNaughton, James L.; and Petrozello, James R., to International Business Machines Corporation. Fiber optic connector system for integrated circuit modules. 4,553,813, Cl. 350-96.200.
Mead Corporation, The: *See—*
Adair, Paul C.; and Metz, George D., 4,554,235, Cl. 430-138.000.
Beaudet, William R.; Pepper, Mark A.; and Rester, David H., 4,554,558, Cl. 346-75.000.
Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., 4,554,181, Cl. 427-261.000.
Mears, Dana C., to University of Pittsburgh. Regeneration of living tissues by growth of isolated cells in porous implant and product thereof. 4,553,272, Cl. 623-1.000.
Mecanique des Moutiers Route de Loudun: *See—*
Maingueneau, Gerard, 4,553,576, Cl. 144-194.000.
Medico, Louis J., to Perkin-Elmer Corporation, The. Chuck handling device. 4,553,311, Cl. 29-559.000.
Medinvent S.A.: *See—*
Maass, Dierk; and Wallsten, Hans I., 4,553,545, Cl. 128-341.000.
Medtronic, Inc.: *See—*
Keimel, John G., 4,553,547, Cl. 128-419.0PG.
Meek, Dale E.; and Upchurch, James M., to Schlumberger Technology Corporation. Full bore sampler valve apparatus. 4,553,598, Cl. 166-317.000.
Meek, Jan: *See—*
Willemse, Kees; Meek, Jan; and Michelsen, Finn C., 4,553,878, Cl. 405-203.000.
Meeker, Brian L. Hardened portion of a fibrous product and a method for producing the same. 4,554,196, Cl. 428-67.000.
Meier, Dietrich; and Minder, Hans-Ulrich, to Kern & Co. AG. Method and apparatus for electrooptical distance measurement. 4,553,836, Cl. 356-5.000.
Meintrup, Robert A.: *See—*
Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., 4,554,021, Cl. 106-213.000.
Meissner, David C.: *See—*
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, 4,553,742, Cl. 266-156.000.
Melamine Chemicals, Inc.: *See—*
Freepons, Donald E., 4,554,003, Cl. 71-28.000.
Membrane Technology and Research, Inc.: *See—*
Baker, Richard W., 4,553,983, Cl. 55-16.000.
Merck & Co., Inc.: *See—*
Bock, Mark G.; and Freidinger, Roger M., 4,554,272, Cl. 514-219.000.
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,554,349, Cl. 536-55.000.
Mercurio, Benardo: *See—*
Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, 4,553,900, Cl. 414-745.000.
Merten, Rudolf: *See—*
Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, 4,554,183, Cl. 427-306.000.
Mery, Jean-Claude, to Allied Corporation. Disc brake. 4,553,645, Cl. 188-73.340.
Merz, Johann, to Zahnradfabrik Friedrichshafen, AG. High pressure pump with a flow control valve. 4,553,908, Cl. 417-310.000.
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., to Union Carbide Corporation. Crystalline ferroaluminophosphates. 4,554,143, Cl. 423-306.000.
Messmer, Charles: *See—*
Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., 4,554,059, Cl. 204-129.300.
Meszaros, Annamaria: *See—*
Farkas, Tibor; Vigh, Laszlo; Horvath, Ibolya; Nagy nee Vanicsek, Aniko; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.
Metabi, Tsuneyo: *See—*
Ando, Makoto; Metabi, Tsuneyo; Miki, Yukio; and Egawa, Takeshi, 4,553,817, Cl. 350-255.000.
Metal Box p.l.c.: *See—*
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.
Mettler-Waagen GmbH: *See—*
Kusmenskji, Karl-Heinz; and Beck, Harald, 4,553,618, Cl. 177-185.000.
Metz, George D.: *See—*
Adair, Paul C.; and Metz, George D., 4,554,235, Cl. 430-138.000.
Metz, Rudi; and Scholl, Herbert, to EMAG Mashinenfabrik GmbH. Magnetic gripping device. 4,554,610, Cl. 361-144.000.
Meyerstein, Dan: *See—*
Kafri, Oded; Karny, Ziv; and Meyerstein, Dan, 4,553,839, Cl. 356-300.000.
Mezger, Hans; and Konneker, Reinhard, to Harley-Davidson Motor Co., Inc. Chain drive of a reciprocating-piston internal combustion engine. 4,553,509, Cl. 123-90.270.
Micafil AG: *See—*
Fischer, Bruno; and Andretta, Angelo, 4,553,319, Cl. 29-596.000.
Zihlmann, Siegfried; and Streiff, Werner, 4,553,321, Cl. 29-598.000.
Miccioli, William F.: *See—*
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.
Miceli, Edward C.: *See—*
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., 4,554,416, Cl. 179-170.0NC.
Michelsen, Finn C.: *See—*
Willemse, Kees; Meek, Jan; and Michelsen, Finn C., 4,553,878, Cl. 405-203.000.
Micro Component Technology, Inc.: *See—*
Langley, Dennis C.; and Brekka, Thomas T., 4,553,843, Cl. 356-375.000.
Microsource, Inc.: *See—*
Basawapatna, Ganesh R., 4,554,516, Cl. 331-76.000.
Midrex International BV Rotterdam, Zurich Branch: *See—*
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, 4,553,742, Cl. 266-156.000.
Mihovch, John: *See—*
Brauch, Robert B.; and Mihovch, John, 4,553,491, Cl. 112-465.000.
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, to Hitachi, Ltd. Winding for static induction apparatus. 4,554,523, Cl. 336-70.000.
Miki, Yukio: *See—*
Ando, Makoto; Metabi, Tsuneyo; Miki, Yukio; and Egawa, Takeshi, 4,553,817, Cl. 350-255.000.
Miles, Caesar J. Limit means for air jet responsive gyroscopes. 4,553,440, Cl. 74-5.430.
Miles Laboratories, Inc.: *See—*
Lewis, Dan, Jr., 4,553,970, Cl. 604-408.000.
Miles, Mary A. P.: *See—*
Miles, Perry E.; and Miles, Mary A. P., 4,553,513, Cl. 123-204.000.
Miles, Perry E.; and Miles, Mary A. P. Thermodynamic rotary engine. 4,553,513, Cl. 123-204.000.
Miller, Ellsworth S.: *See—*
Slavin, Michael; and Miller, Ellsworth S., 4,554,406, Cl. 174-94.00R.
Miller, Ira: *See—*
Davies, Robert B.; Miller, Ira; and Dotson, Robert N., 4,554,464, Cl. 307-265.000.
Rumbaugh, Robert C.; and Miller, Ira, 4,554,468, Cl. 307-355.000.
Miller, Kenneth F. Aromatic polycarbonate containing N,N-dialkyl amide mold release agent. 4,554,302, Cl. 524-233.000.

Miller, R. Lee, to Hilco House, Inc. Action toy and game. 4,553,946, Cl. 446-327.000.

Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, to William D. Miller, Inc. Apparatus for removing sprinkler pipe from a field. 4,553,900, Cl. 414-745.000.

Minder, Hans-Ulrich: *See*—
Meier, Dietrich; and Minder, Hans-Ulrich, 4,553,836, Cl. 356-5.000.

Mineck, Paul S. Reciprocating saw offset blade holder. 4,553,306, Cl. 29-401.100.

Mineral Deposits Ltd.: *See*—
Wright, Douglas C., 4,553,673, Cl. 209-697.000.

Minford, William J.; Murphy, Edmond J.; and Rice, Trudie C., to AT&T Bell Laboratories. Etching of titanium. 4,554,050, Cl. 156-664.000.

Ministere de l'Energie et des Ressources: *See*—
Guay, R. Edgar, 4,553,351, Cl. 47-58.000.

Ministry of International Trade and Industry: *See*—
Nakamura, Osamu; Ogino, Isao; and Adachi, Masakazu, 4,554,224, Cl. 429-30.000.

Minks, Werner, to International Standard Electric Corporation. Electromagnetic miniature relay. 4,554,520, Cl. 335-106.000.

Minks, Werner, to International Standard Electric Corporation. Electromagnetic relay. 4,554,522, Cl. 335-202.000.

Minnesota Mining and Manufacturing Company: *See*—
Aasen, Steven M., 4,553,941, Cl. 433-228.100.
Ball, James H., 4,554,401, Cl. 174-37.000.
Bushman, Stanley C., 4,554,238, Cl. 430-258.000.
Gardner, Richard N.; and Dillon, Kenneth R., 4,554,218, Cl. 428-567.000.
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.
Korbel, Gerald E.; Robins, Janis; and Rude, Harold E., 4,553,982, Cl. 51-298.000.
Niles, Gerald J., 4,553,871, Cl. 401-195.000.
Tye, Ronald G., 4,554,424, Cl. 200-86.00R.

Minosawa, Yoshio: *See*—
Hatakeyama, Yoshiharu; and Minosawa, Yoshio, 4,553,679, Cl. 215-232.000.

Mints, Danny K.: *See*—
Byrd, James V., Jr.; and Mints, Danny K., 4,553,880, Cl. 406-23.000.

Miracle Metals, Inc.: *See*—
Badger, Philip O., 4,553,417, Cl. 72-42.000.

Mishima, Fumiyuki: *See*—
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,553,870, Cl. 400-662.000.

Miskin, Richard B. Scraper with ripper assembly. 4,553,608, Cl. 172-197.000.

Mitchell, Richard T. Oil well drilling apparatus. 4,553,591, Cl. 166-76.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.
Gotoh, Hitoshi, 4,554,476, Cl. 310-239.000.
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.
Kojiro, Tetsuya; and Takeda, Jun, 4,553,812, Cl. 350-96.200.
Kumatani, Hiroshi, 4,554,472, Cl. 310-62.000.
Morishita, Akira; and Okamoto, Kyoichi, 4,554,474, Cl. 310-154.000.
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, 4,554,428, Cl. 219-69.00G.
Uetani, Kenichi, 4,553,639, Cl. 187-29.00R.
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, 4,554,346, Cl. 528-363.000.

Mitsugi, Makinoda: *See*—
Hamazaki, Haruo; and Mitsugi, Makinoda, 4,553,558, Cl. 134-181.000.

Mitsui, Kenji; and Suzuki, Akira, to Photoron Incorporated. Method of electromagnetically reading coordinate data. 4,554,409, Cl. 178-19.000.

Mitsui, Seizo: *See*—
Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.

Mitutoyo Mfg. Co., Ltd.: *See*—
Uchino, Kenju; and Sakai, Tomoo, 4,553,329, Cl. 33-147.00T.
Yamauchi, Mineo; and Karahashi, Yoshimitu, 4,553,330, Cl. 33-164.00R.

Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, to GAO Gesellschaft fur Automation und Organisation mbH. Device for removing a band from a sheet bundle. 4,553,312, Cl. 29-564.300.

Miura, Kunio: *See*—
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.

Miura, Seishi: *See*—
Okubo, Akira; and Miura, Seishi, 4,553,388, Cl. 60-276.000.

Miwa, Eiji: *See*—
Ono, Nobuhiro; and Miwa, Eiji, 4,554,204, Cl. 428-246.000.

Miwada, Kazuo, to Nippon Electric Co., Ltd. Charge transfer device operative at high speed. 4,554,675, Cl. 377-60.000.

Miyaki, Yoshiyuki: *See*—
Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, 4,554,376, Cl. 562-554.000.

Miyazi, Kazumi: *See*—
Saito, Shoichi; and Miyazi, Kazumi, 4,554,605, Cl. 360-96.100.

Mizoguchi, Yasumitsu: *See*—
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.

Mizukami, Akihiko; and Shimaya, Tetsushi, to Kyocera Corporation. Device for collecting solar heat. 4,553,530, Cl. 126-422.000.

Mizuno, Toshinori: *See*—
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.

Mobay Chemical Corporation: *See*—
Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., 4,554,314, Cl. 525-67.000.
Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, 4,554,315, Cl. 525-67.000.

Mobil Oil Corporation: *See*—
Albinson, Kenneth R.; and Child, Jonathan E., 4,554,065, Cl. 208-59.000.
Anderson, Thomas L.; and Herrington, F. John, 4,553,370, Cl. 53-117.000.
Benoit, Gordon L., 4,554,192, Cl. 428-35.000.
Chang, Clarence D.; and Chu, Cynthia T. W., 4,554,396, Cl. 585-531.000.
Dessau, Ralph M., 4,554,262, Cl. 502-62.000.
Forbus, Nancy P.; and Kaeding, Warren W., 4,554,394, Cl. 585-474.000.
Rafipour, Bijan J., 4,554,647, Cl. 367-48.000.
Rubin, Mae K., 4,554,145, Cl. 423-328.000.

Mod, William A.: *See*—
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,554,112, Cl. 260-543.00F.

Moessinger, Albert; Gosciniak, Guy; and Angebault, Joel, to Societe Alsacienne de Construction de Material Textile. Process for the insertion in the form of a loop of a weft yarn in the shed of a weaving machine and weaving machine equipped with a device for carrying out this process. 4,553,570, Cl. 139-435.000.

Mogi, Fumio: *See*—
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.

Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for manufacturing support materials for offset printing plates. 4,554,057, Cl. 204-29.000.

Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for manufacturing support materials for offset printing plates. 4,554,216, Cl. 428-469.000.

Mole, Thomas: *See*—
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Molins plc: *See*—
Bennett, George R.; and Day, Robert S., 4,553,660, Cl. 198-425.000.

Molzahn, Marcelle G.: *See*—
Haluska, Loren A.; and Molzahn, Marcelle G., 4,554,354, Cl. 548-110.000.

Mommsen, Gordon V.; and Hemming, Dale R., to Graco Inc. Compact voltage multiplier for spray guns. 4,554,622, Cl. 363-61.000.

Monarch Marking Systems, Inc.: *See*—
Kirby, Raymond L., Jr., 4,553,476, Cl. 101-111.000.

Monlouis, Claude: *See*—
Malissin, Roland; and Monlouis, Claude, 4,554,653, Cl. 369-45.000.

Monolithic Memories, Inc.: *See*—
Wong, Sing Y.; and Birkner, John M., 4,554,640, Cl. 364-716.000.

Monsanto Company: *See*—
Heaps, John F.; and Erickson, Dennis E., 4,554,319, Cl. 525-155.000.
Sikorski, James A.; and Hoobler, Mary A., 4,554,009, Cl. 071-087.000.

Monson, Wayne R.: *See*—
Wickham, Thomas D.; and Monson, Wayne R., 4,554,624, Cl. 364-148.000.

Mora, Erwin P., to Dana Corporation. Fuse loss indicating circuit. 4,554,607, Cl. 361-104.000.

Morando, E. Donald, to Queen Anne Candy Company. Egg carton adapter. 4,553,691, Cl. 229-2.5EC.

Morgan, James T., Jr. Process for producing pre-press color proofs. 4,553,835, Cl. 355-77.000.

Mori, Etsunori: *See*—
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.

Mori, Toshihiro; and Nagata, Koichi, to Nippon Electric Co., Ltd. Signal format detection circuit for digital radio paging receiver. 4,554,540, Cl. 340-825.440.

Morikura, Masahiro: *See*—
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, 4,554,672, Cl. 375-40.000.

Morimoto, Keisuke, to General Foods Corporation. Extrusion process for shrimp or crabmeat analog products in a series of non-boiling gelling baths. 4,554,166, Cl. 426-276.000.

Morimoto, Seiichi: *See*—
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, 4,554,255, Cl. 436-102.000.

Morin, Pierre: *See*—
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Morinaka, Hideo: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Morishita, Akira; and Okamoto, Kyoichi, to Mitsubishi Denki Kabushiki Kaisha. Stator for a magnet motor. 4,554,474, Cl. 310-154.000.

Morishita, Akira: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.

Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Scroll-type hydraulic machine. 4,553,913, Cl. 418-55.000.

Morita, Youske: *See*—
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.

Moriya, Michio, to Sumitomo Electric Industries, Ltd. Vehicle deceleration sensing type two-system liquid pressure control valve. 4,553,787, Cl. 303-6.00C.

Moriyama, Yoshiaki; and Yamagata, Kenji, to Pioneer Electronic Corporation. Method for converting binary data train. 4,554,529, Cl. 340-347.0DD.

Morris, Daniel C. Device for the prevention of flooding from drainage systems. 4,553,561, Cl. 137-362.000.

Morris, Henrietta K., to Surgikos, Inc. Bilateral fenestrated drape. 4,553,539, Cl. 128-132.00D.

Mosholder, Michael, to Tokyo Shibaura Denki Kabushiki Kaisha. Device for pressure fusing images onto paper in electrostatic copiers. 4,553,826, Cl. 355-3.0FU.

Mostek Corporation: *See*—
Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, 4,553,314, Cl. 29-571.000.

Moteurs Leroy-Somer: *See*—
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Motorola, Inc.: *See*—
Beesley, Graham E., 4,554,665, Cl. 371-55.000.
Capurka, Zbynek A., 4,553,426, Cl. 73-116.000.
Davies, Robert B.; Miller, Ira; and Dotson, Robert N., 4,554,464, Cl. 307-265.000.
Dolikian, Arman V., 4,554,542, Cl. 340-825.760.
Marten, Russell A.; and Townsend, Greg M., 4,554,658, Cl. 370-85.000.
Rumbaugh, Robert C.; and Miller, Ira, 4,554,468, Cl. 307-355.000.
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.
Vaughn, Herchel A., 4,554,467, Cl. 307-279.000.

Mott, Richard A.: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,553,364, Cl. 52-309.130.

Moulin, Michel; and Risse, Jean-Claude, to Autologic, S.A. Photocomposing apparatus and method. 4,553,825, Cl. 354-5.000.

Moutonnier, Claude: *See*—
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.

Moynihan, John T., to American Newspaper Publishers Association. Letterpress printing ink. 4,554,019, Cl. 106-27.000.

Mross, Wolf D.: *See*—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,554,142, Cl. 423-277.000.

MSL Industries, Inc.: *See*—
Plunkett, Larry E., 4,554,491, Cl. 318-254.000.

MuAddi, Farid: *See*—
Harkins, Desira; and MuAddi, Farid, 4,553,687, Cl. 225-93.000.

Mueller Co.: *See*—
Daghe, Joseph L.; and Sands, Robert E., 4,553,563, Cl. 137-494.000.

Muhl, Bradley G. Beverage display shelving. 4,553,486, Cl. 108-108.000.

Mukae, Makito; and Oshima, Tsuginori, to Bridgestone Tire Company Ltd. Method of and apparatus for transferring annular articles from one stage to another. 4,553,894, Cl. 414-331.000.

Mulder, Albertus J., to Shell Oil Company. Process for preparing oxabicycloalkane compounds. 4,554,365, Cl. 549-463.000.

Muller, A. Bromley, to Becton, Dickinson and Co. Shunt valve and method of use. 4,553,956, Cl. 604-9.000.

Muller, Edwin: *See*—
Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, 4,554,063, Cl. 204-254.000.

Muller, George H., to Ford Motor Company. Tire height sensor with valve stem attaching transmitter module. 4,554,527, Cl. 340-58.000.

Muller, Guy: *See*—
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.

Muller, Rolf, to Papst-Motoren GmbH & Co. KG. Brushless direct current motor system. 4,554,473, Cl. 310-67.00R.

Munch Jensen, Jorn, to Ejnar Jensen & Son Maskinfabrik A/S. Apparatus for feeding pieces of laundry on a conveyor. 4,553,662, Cl. 198-456.000.

Munk, Kurt: *See*—
Babler, Fridolin; and Munk, Kurt, 4,554,094, Cl. 252-518.000.

Munro, Robert; Parker, David A.; and Graham, Neil A. Pistons and method for their manufacture. 4,553,472, Cl. 92-176.000.

Murakami, Kakuji: *See*—
Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, 4,554,555, Cl. 346-1.100.

Muramatsu, Shinichi: *See*—
Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.

Murao, Sawao: *See*—
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.

Murata, Kenji: *See*—
Sounai, Atuo; and Murata, Kenji, 4,554,225, Cl. 429-34.000.

Murata Kikai Kabushiki Kaisha: *See*—
Kato, Hisaaki, 4,553,290, Cl. 19-244.000.
Matsui, Isamu; and Ueda, Yutaka, 4,553,708, Cl. 242-36.000.

Murata Manufacturing Co., Ltd.: *See*—
Kanoh, Osamu; and Senda, Atsuo, 4,554,209, Cl. 428-334.000.

Murayama, Hisao: *See*—
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.

Murchison, Craig B.: *See*—
Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., 4,554,391, Cl. 570-231.000.

Murphy, Arthur J.; and Stratton, Joseph F. Supermarket inventory control system and method. 4,554,446, Cl. 235-487.000.

Murphy, Edmond J.: *See*—
Minford, William J.; Murphy, Edmond J.; and Rice, Trudie C., 4,554,050, Cl. 156-664.000.

Murphy, Peter. Electrical outlet. 4,553,798, Cl. 339-9.00R.

Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, to Bayer Aktiengesellschaft. Process for producing mineral wool fibers while reducing the velocity of flowing media. 4,553,996, Cl. 65-4.400.

Musser, John H., to American Home Products Corporation. Heterocyclic compounds as antiallergic agents. 4,554,355, Cl. 548-180.000.

Mussigmann, Artur: *See*—
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.

Mussmann, Richard F., to AT&T Bell Laboratories. Method and apparatus for scanning a matrix of switchable elements. 4,554,530, Cl. 340-365.00S.

Muto, Toshimi: *See*—
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.

Myers, Lawrence R.: *See*—
Gaiser, Robert F.; and Myers, Lawrence R., 4,553,651, Cl. 192-13.00A.

Myllyla , Risto: *See*—
Ahola, Raimo; Kopola, Harri; and Myllyla , Risto, 4,553,943, Cl. 434-22.000.

Myooi, Tetsuo: *See*—
Haneda, Isamu; and Myooi, Tetsuo, 4,554,641, Cl. 364-710.000.

N-Viro Energy Systems Ltd.: *See*—
Nicholson, John P., 4,554,002, Cl. 71-12.000.

Nadkarni, Pradeep D.: *See*—
Piccoli, Dante E.; and Nadkarni, Pradeep D., 4,553,568, Cl. 138-125.000.

Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., to Dow Chemical Company, The. Process for preparing polyamines with ion exchange resin catalysts. 4,554,378, Cl. 564-332.000.

Nagano, Fumikazu; and Shirakoshi, Hiroshi, to Sharp Kabushiki Kaisha. Drive system in a multi-pin-electrode electrostatic recording apparatus. 4,554,563, Cl. 346-154.000.

Nagata, Koichi: *See*—
Mori, Toshihiro; and Nagata, Koichi, 4,554,540, Cl. 340-825.440.

Nagatani, Nobuaki: *See*—
Terajima, Yoshimi; Akitoshi, Hiroshi; and Nagatani, Nobuaki, 4,553,693, Cl. 229-7.00S.

Nagayasu, Koichi: *See*—
Shibue, Toshiaki; and Nagayasu, Koichi, 4,554,175, Cl. 427-44.000.

Nagy nee Vanicsek, Aniko : *See*—
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,553,980, Cl. 44-62.000.

Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,554,327, Cl. 525-356.000.

Nakada, Morihito, to Toyo Kako Kabushiki Kaisha. Resin-molded valve and method of making the same. 4,553,562, Cl. 137-375.000.

Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, to Hitachi, Ltd. Configuration detecting method and system. 4,553,844, Cl. 356-376.000.

Nakai, Toshihiko, to Citizen Watch Co., Ltd. Dot printer control system. 4,553,867, Cl. 400-323.000.

Nakajima, Hiroshi: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Nakamichi, Toshihiro: *See*—
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, 4,554,382, Cl. 568-404.000.

Nakamura, Akira: *See—*
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.
Nakamura, Hisatsugu. Speaker system. 4,553,628, Cl. 181-145.000.
Nakamura, Kenichi: *See—*
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.
Nakamura, Masatatsu: *See—*
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.
Nakamura, Osamu; Ogino, Isao; and Adachi, Masakazu, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Hydrogen-oxygen solid electrolyte fuel cell. 4,554,224, Cl. 429-30.000.
Nakamura, Teruya: *See—*
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Nakamura, Toshiyuki: *See—*
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.
Nakamura, Yasuo, to Sanden Corporation. Clutch rotor for an electromagnetic clutch and method of making the rotor. 4,553,690, Cl. 29-159.00R.
Nakanishi, Akira: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.
Nakasuji, Norikazu: *See—*
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.
Nakayama, Kenichiro: *See—*
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.
Nakazato, Seiichi: *See—*
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.
Nalco Chemical Company: *See—*
Cosper, David R.; and McKay, Gretchen L., 4,554,026, Cl. 134-38.000.
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,553,514, Cl. 123-308.000.
Nanya, Toshiki: *See—*
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., to Carrier Corporation. Vent assembly for use with an air conditioning unit. 4,553,405, Cl. 62-262.000.
National Research Development Corporation: *See—*
Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., 4,554,157, Cl. 424-89.000.
Nebo Pumps Pty. Ltd.: *See—*
Gosschalk, Terry, 4,553,910, Cl. 417-378.000.
NEC Corporation: *See—*
Aiko, Shinichi; Maruta, Rikio; and Nishitani, Takao, 4,554,670, Cl. 375-30.000.
Neefe, Charles W. Method of controlling the convex curve of soft lenses. 4,554,115, Cl. 264-1.100.
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, to Shell Oil Company. Process for the preparation of modified refractory oxides. 4,554,268, Cl. 502-439.000.
Negoro, Hisao. Dust guard for a scroll chuck. 4,553,765, Cl. 279-1.0ME.
Nehmiz, Peter: *See—*
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.
Nelboeck, Michael: *See—*
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.
Nelson, Arthur J. Tow of barges by tugs. 4,553,497, Cl. 114-246.000.
Nelson, James A.: *See—*
Lazarus, Harrison; and Nelson, James A., 4,553,960, Cl. 604-158.000.
Nelson, Robert L.; and Stough, Donald M., to Westinghouse Electric Corp. Jackshaft controlled boiler combustion control system. 4,553,924, Cl. 431-12.000.
Neogi, Amar N.: *See—*
Allan, George G.; and Neogi, Amar N., 4,554,155, Cl. 424-22.000.
Netravali, Arun N.: *See—*
Budrikis, Zigmantas L.; and Netravali, Arun N., 4,554,656, Cl. 370-85.000.
Neubert, Wolfgang: *See—*
Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, 4,553,288, Cl. 19-113.000.
Neugebauer, Steffen; and Scharting, Gunter, to Fag Kugelfischer Georg Schafer (KGaA). Bottom plate for a bushing mounted via rolling elements on a pin. 4,553,858, Cl. 384-473.000.
Neuray, Dieter: *See—*
Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., 4,554,314, Cl. 525-67.000.
Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, 4,554,315, Cl. 525-67.000.
Neuromedics, Inc.: *See—*
Varrichio, Anthony J.; and Gordon, Pat L., 4,553,548, Cl. 128-421.000.
New York Blood Center, Inc.: *See—*
Hopp, Thomas P., 4,554,101, Cl. 260-112.50R.
Newman, Neil F.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.
Newsom, Cosby M. Portable vacuum device and method of using same. 4,554,036, Cl. 156-94.000.
Ney, Robert J. Reversible journal bearing uniflow lubrication system. 4,553,857, Cl. 384-398.000.
Nguyen, Tuan A., to Xerox Corporation. Servicing system for reproduction machines. 4,553,830, Cl. 355-14.00R.
Nichols, Kenneth: *See—*
Hooper, Ronald; and Nichols, Kenneth, 4,553,439, Cl. 74-5.400.
Nichols, Ralph A.: *See—*
Gergely, Anthony J.; and Nichols, Ralph A., 4,554,261, Cl. 502-62.000.
Nichols, Richard E.; and Delaruelle, Dale H., to Harris Corporation. Railroad air brake system. 4,553,723, Cl. 246-167.00R.
Nicholson, John P., to N-Viro Energy Systems Ltd. Beneficiating waste sludges for agricultural use and product made thereby. 4,554,002, Cl. 71-12.000.
Nicolai, Walter. Determining and indicating the quantity of a stored material. 4,553,431, Cl. 73-290.00B.
Niedrach, Leonard W.: *See—*
Wengrovius, Jeffrey H.; and Niedrach, Leonard W., 4,554,310, Cl. 524-715.000.
Nike, Inc.: *See—*
Derderian, Thomas; and Richard, Daniel J., 4,553,342, Cl. 36-97.000.
Nikko Kakoozai Co., Ltd.: *See—*
Hattori, Morihisa, 4,553,550, Cl. 128-505.000.
Niles, Gerald J., to Minnesota Mining and Manufacturing Company. Device for cleaning phonograph stylus. 4,553,871, Cl. 401-195.000.
Nilssen, Ole K. Electronic fluorescent lamp ballast with overload protection. 4,554,487, Cl. 315-224.000.
Nippon Electric Co., Ltd.: *See—*
Miwada, Kazuo, 4,554,675, Cl. 377-60.000.
Mori, Toshihiro; and Nagata, Koichi, 4,554,540, Cl. 340-825.440.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kawashima, Susumu; and Yamada, Shigeru, 4,553,465, Cl. 84-1.030.
Nippon I.C.S. Co., Ltd.: *See—*
Iitsuka, Yoshitsune, 4,553,371, Cl. 53-285.000.
Nippon Kogaku K.K.: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, 4,553,854, Cl. 374-129.000.
Nippon Oil and Fats Company, Limited: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, 4,554,032, Cl. 149-21.000.
Nippon Petrochemicals Company, Limited: *See—*
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.
Nippon Shinyaku Co., Ltd.: *See—*
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, 4,554,275, Cl. 514-245.000.
Nippon Soken, Inc.: *See—*
Tsuge, Noboru; and Taguchi, Masahiro, 4,553,625, Cl. 180-268.000.
Nippon Telegraph & Telephone Public Corp.: *See—*
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, 4,554,672, Cl. 375-40.000.
Nippondenso Co., Ltd.: *See—*
Hayakawa, Shoichi; and Saito, Muneo, 4,553,511, Cl. 123-179.00B.
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.
Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, 4,553,518, Cl. 123-478.000.
Nishida, Tetsuya: *See—*
Katayama, Yoshiyuki; and Nishida, Tetsuya, 4,553,605, Cl. 172-2.000.
Nishitani, Takao: *See—*
Aiko, Shinichi; Maruta, Rikio; and Nishitani, Takao, 4,554,670, Cl. 375-30.000.
Nissan Motor Co., Ltd.: *See—*
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, 4,553,505, Cl. 123-41.200.
Nisshin Oil Mills, Ltd.: *See—*
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.
Nitschke, Manfred: *See—*
Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, 4,553,862, Cl. 400-121.000.
Nitto Hogei Co., Ltd.: *See—*
Takao, Masayasu, 4,554,107, Cl. 260-421.000.

NL Industries, Inc.: *See—*
Grainger, Alfred J., 4,553,615, Cl. 175-329.000.
Noda, Sadafumi; and Zimmern, Bernard, to Zimmern, Bernard. Method of lubricating bearings of a refrigeration or the like compressor. 4,553,399, Cl. 62-84.000.
Noda, Shinji: *See—*
Chikamasa, Hiroshi; and Noda, Shinji, 4,554,177, Cl. 427-130.000.
Noda, Yasushi: *See—*
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,554,425, Cl. 200-144.00B.
Nodiff, Edward A.: *See—*
Saggiomo, Andrew J.; and Nodiff, Edward A., 4,554,279, Cl. 514-311.000.
Noell, Godwin L.; and Sundberg, Jack G., to Chandler Evans Inc. Method and apparatus for main fuel pumping system having backup pump. 4,553,914, Cl. 418-69.000.
Nogami, Taro; and Tsukada, Masamichi, to Hitachi, Ltd. Double monochrometer. 4,553,840, Cl. 356-333.000.
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, to L'Etat Francais, represente par le Ministre des P.T.A. (Centre National d'Etudes des Telecommunications CNET); and Etablissement Public de Diffusion dit "Telediffusion de France". One-way data transmission system. 4,554,660, Cl. 370-94.000.
Nojiri, Hidetoshi: *See—*
Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, 4,553,317, Cl. 29-572.000.
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, to Janome Sewing Machine Co. Ltd. Suturing instrument for surgical operation. 4,553,544, Cl. 128-340.000.
Nonaka, Yuji: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.
Noptel Ky: *See—*
Ahola, Raimo; Kopola, Harri; and Myllyla , Risto, 4,553,943, Cl. 434-22.000.
Norandex Inc.: *See—*
Smyth, Laurence C., 4,554,123, Cl. 264-166.000.
Norbeck, Dean K.; and Schnetzka, Harold R., to Borg-Warner Corporation. Trigger circuit for solid state switch. 4,554,463, Cl. 307-252.00H.
Norde, Herman: *See—*
Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman, 4,554,569, Cl. 357-15.000.
Nordson Corporation: *See—*
Rehman, William R.; and Smith, James C., 4,553,701, Cl. 239-432.000.
North Carolina State University: *See—*
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.
Norton Christensen, Inc.: *See—*
Jurgens, Rainer; and Jung, Thomas, 4,553,614, Cl. 175-302.000.
Radford, Steven R., 4,553,613, Cl. 175-250.000.
Nothen, Michael; and Bartsch, Erhard, to Webasto-Werk W. Baier GmbH & Co. System for supplying motor vehicle diesel engines with fuel. 4,553,697, Cl. 237-12.30B.
Nowak, Daniel. Pocket structure. 4,553,269, Cl. 2-254.000.
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, to Fanuc Ltd. Acceleration/deceleration circuit. 4,554,497, Cl. 318-636.000.
Nu-Tec Incorporated: *See—*
Albertsen, Peter S., 4,553,527, Cl. 126-58.000.
Nunokawa, Atsushi: *See—*
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.
Nunose, Akira: *See—*
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.
Nurmi, Uuno: *See—*
Artama, Arvi; and Nurmi, Uuno, 4,553,987, Cl. 55-118.000.
Nuttall, Michael: *See—*
Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, 4,553,947, Cl. 446-443.000.
Nygaard, Richard A., Jr.; and Palmer, Fredrick J., to Hewlett-Packard Company. Method and apparatus for determining if a digital value lies within a range. 4,554,632, Cl. 364-200.000.
O'Brien, William D., Jr.: *See—*
Huggins, Ronald G.; O'Brien, William D., Jr.; and Partus, Fred P., 4,554,078, Cl. 210-749.000.
Occidental Research Corporation: *See—*
Ore', Fernando, 4,554,144, Cl. 423-321.00R.
Oda, Eisuke: *See—*
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.
O'Dean, Raymond D.: *See—*
Gilder, Thomas G., Jr.; and O'Dean, Raymond D., 4,554,404, Cl. 174-52.0FP.
Odham, Carl J., to Stedman Corporation. Flat bed knitting machine having high speed secondary stitch attachment. 4,553,412, Cl. 66-207.000.
Ogino, Isao: *See—*
Nakamura, Osamu; Ogino, Isao; and Adachi, Masakazu, 4,554,224, Cl. 429-30.000.
O'Halloran, Michael L., to Hesston Corporation. Adjustable hold down for the sickle of a reciprocating cutter assembly. 4,553,380, Cl. 56-305.000.
Ohba, Masahiro: *See—*
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.
Ohgi, Tadaaki: *See—*
Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, 4,554,275, Cl. 514-245.000.
Ohio State University Research Foundation, The: *See—*
Hink, Walter F., Jr., 4,554,251, Cl. 435-240.000.
Ohiwa, Kenichi: *See—*
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.
Ohkubo, Masahiro, to Kabushiki Kaisha Daikin Seisakusho. Power change-over mechanism of a vehicle for industrial machinery. 4,553,623, Cl. 180-247.000.
Ohno, Shigeru; Kishimoto, Shinzo; and Yagibara, Morio, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,554,242, Cl. 430-393.000.
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, to Hitachi, Ltd. Information transmitting apparatus. 4,554,461, Cl. 307-40.000.
Ohta, Hideo: *See—*
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, to Hitachi Chemical Company. Process for producing radiation curable adhesive tape. 4,554,174, Cl. 427-44.000.
Oka, Koichi; and Shintani, Fumio, to Kabushiki Kaisha Komatsu Seisakusho. Finger pressure actuable dump control system for dump vehicles. 4,553,734, Cl. 251-58.000.
Okada, Hidekazu, to Clover Mfg. Co., Ltd. Knitting needles with a flexible cord. 4,553,410, Cl. 66-117.000.
Okada, Shingo; Sawa, Yuji; and Adachi, Kuniomi, to Kureha Kagaku Kogyo K.K. Automatic continuous vacuum packaging method and apparatus. 4,553,376, Cl. 53-511.000.
Okamoto, Kyoichi: *See—*
Morishita, Akira; and Okamoto, Kyoichi, 4,554,474, Cl. 310-154.000.
Okamoto, Yoshio: *See—*
Yuki, Heimei; and Okamoto, Yoshio, 4,554,323, Cl. 525-272.000.
Yuki, Heimei; and Okamoto, Yoshio, 4,554,334, Cl. 526-177.000.
Okamura, Toshihisa: *See—*
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.
Okaya Electric Industries Co., Ltd.: *See—*
Kamegaya, Takeo; and Watanabe, Satoshi, 4,554,482, Cl. 313-582.000.
Okubo, Akira; and Miura, Seishi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas purification apparatus for an internal combustion engine. 4,553,388, Cl. 60-276.000.
Okumura, Yoshiharu: *See—*
Pieters, Wim J. M.; and Okumura, Yoshiharu, 4,554,260, Cl. 502-61.000.
Okura Kogyo Kabushiki Kaisha: *See—*
Dohi, Hidemi; and Matsuda, Hideaki, 4,554,301, Cl. 524-210.000.
Olesen, Ralph C.; Sainati, Robert A.; Gropelli, John J., Jr.; and Stanland, Andrew J., to United States of America, Navy. Quadrifilar helix antenna tuning using pin diodes. 4,554,554, Cl. 343-895.000.
Olin Corporation: *See—*
Harrison, Charles H., 4,554,172, Cl. 427-12.000.
Oliver, Edward D.: *See—*
Lockett, William, III; and Oliver, Edward D., 4,553,786, Cl. 297-440.000.
Olsen, Robert A., to Sybron Corporation. Low torsional restraint instrument handpiece hose. 4,553,938, Cl. 433-126.000.
Olt, Arthur E., Jr.: *See—*
Reed, Lyle T.; and Olt, Arthur E., Jr., 4,553,760, Cl. 277-12.000.
Olympus Optical Co. Ltd.: *See—*
Kato, Kiichi, 4,554,654, Cl. 369-54.000.
Saito, Shoichi; and Miyazi, Kazumi, 4,554,605, Cl. 360-96.100.
Tanaka, Shunpei; and Kimura, Kenji, 4,554,595, Cl. 358-328.000.
Omori, Norio: *See—*
Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, 4,553,518, Cl. 123-478.000.
O'Neil, Elbridge A., Jr.: *See—*
Verbicky, John W., Jr.; and O'Neil, Elbridge A., Jr., 4,554,357, Cl. 548-461.000.
Ono, Hisashi: *See—*
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.
Ono, Mitsunori; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Silver halide material with photographic agent blocked by nucleophilic attack removable group. 4,554,243, Cl. 430-543.000.
Ono, Nobuhiro; and Miwa, Eiji, to INAX Corporation. Fiber reinforced resin molded articles for electromagnetic waves and method for production thereof. 4,554,204, Cl. 428-246.000.
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha; and Nippon Kogaku K.K. Image pickup apparatus. 4,554,587, Cl. 358-228.000.
Opresko, Stephen T., to RCA Corporation. Cathode-ray tube having a low power cathode assembly. 4,554,479, Cl. 313-417.000.

Ore', Fernando, to Occidental Research Corporation. Removal of magnesium and/or aluminum values from impure aqueous phosphoric acid. 4,554,144, Cl. 423-321.00R.
Orlandi, Robert D.: *See—*
Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, 4,553,852, Cl. 374-1.000.
Orlando, Franklin P.: *See—*
Chandra, Rangasami S.; and Orlando, Franklin P., 4,553,872, Cl. 403-25.000.
Ormiston, Thomas J.; and Rulis, Dean A., to Wilbanks International, Inc. Ceramic coated abrasion resistant member and process for making. 4,554,195, Cl. 428-49.000.
Orsborn, Jesse H.: *See—*
Fachini, Robert M.; and Orsborn, Jesse H., 4,553,378, Cl. 56-16.600.
Osaka Gas Company: *See—*
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.
Osaka Gas Co., Ltd.: *See—*
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.
Oshida, Yoshitada: *See—*
Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, 4,553,844, Cl. 356-376.000.
Oshima, Tsuginori: *See—*
Mukae, Makito; and Oshima, Tsuginori, 4,553,894, Cl. 414-331.000.
Oshita, Hirofumi: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Ostrander, William J.: *See—*
Herkenhoff, Earl F.; and Ostrander, William J., 4,554,649, Cl. 367-68.000.
Otaki, Sakashi: *See—*
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.
Otani, Sugio: *See—*
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.
O'Toole, Yvonne: *See—*
Floris, Pier-Luigi; and O'Toole, Yvonne, 4,554,535, Cl. 340-689.000.
Ott, David. Vehicle lifting system and method. 4,553,719, Cl. 244-118.100.
Otten, Ralph H. J. M., to International Business Machines Corporation. Method for generating an optimized nested arrangement of constrained rectangles. 4,554,625, Cl. 364-148.000.
Owens-Corning Fiberglas Corporation: *See—*
Greene, Neil E.; and Hanna, Terry J., 4,553,994, Cl. 65-2.000.
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,554,022, Cl. 106-273.00N.
Janicki, Richard T., 4,554,023, Cl. 106-273.00N.
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,553,364, Cl. 52-309.130.
Owens-Illinois, Inc.: *See—*
Francel, Josef, 4,554,258, Cl. 501-21.000.
Gullikson, Ralph G., 4,553,666, Cl. 206-44.00R.
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., to United States of America, Air Force. Low voltage two wire to four wire telephone circuit converter apparatus. 4,554,416, Cl. 179-170.0NC.
Padalka, Valentin G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.
Paddington, Arthur L. Pipe couplers. 4,553,777, Cl. 285-420.000.
Padovani, Pietro, to Industrie Specializzate Articoli Plastici SpA. Container having closure guide members. 4,553,692, Cl. 229-2.5EC.
Palmer, Fredrick J.: *See—*
Nygaard, Richard A., Jr.; and Palmer, Fredrick J., 4,554,632, Cl. 364-200.000.
Palmieri, John. Easy fingers. 4,553,466, Cl. 84-317.000.
Panduit Corp.: *See—*
Zajeski, Robert B., 4,553,801, Cl. 339-59.00M.
Panza, Michael J., to United McGill Corporation. Sound absorption method and apparatus. 4,553,631, Cl. 181-291.000.
Panzner, Frank; and Evans, Brian R., to Hop Developments Limited. Extraction of plant material by using carbon dioxide. 4,554,170, Cl. 426-651.000.
Papst-Motoren GmbH & Co. KG: *See—*
Muller, Rolf, 4,554,473, Cl. 310-67.00R.
Paradis, Joseph R. Tamper resistant closures. 4,553,683, Cl. 220-266.000.
Paradis, Robert C., to Fiat Products Incorporated. Sectional modular shower cabinets and method and apparatus for making and installing them. 4,553,276, Cl. 4-612.000.
Park, Chung P., to Dow Chemical Company, The. Lightly crosslinked linear olefinic polymer foam blends and process for making. 4,554,293, Cl. 521-81.000.
Parker, Darrell S.: *See—*
Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., 4,554,169, Cl. 426-576.000.
Parker, David A.: *See—*
Munro, Robert; Parker, David A.; and Graham, Neil A., 4,553,472, Cl. 92-176.000.
Parker, Donald L.: *See—*
Warwick, Edward H.; and Parker, Donald L., 4,553,650, Cl. 192-4.00A.
Parker, Merle A.; Rice, George F.; and Patrick, Stanley S., to Westinghouse Electric Corp. Nuclear fuel rod end plug weld inspection. 4,554,128, Cl. 376-252.000.
Parker Pest Control: *See—*
Parker, Richard L.; Swords, Richard J.; and Griffin, Larry E., 4,553,698, Cl. 239-3.000.
Parker, Richard L.; Swords, Richard J.; and Griffin, Larry E., to Parker Pest Control. Pneumatic pesticide duster for treatment of structures. 4,553,698, Cl. 239-3.000.
Parks, Kevin B.; Jordan, David D.; and Taig, Alistair G., to Allied Corporation. Universal joint with clearance elimination elements. 4,553,949, Cl. 464-153.000.
Parniere, Alain; and Bazenant, Dominique, to Thomson-CSF. Device for the automatic linearization of the control signal-frequency characteristic of a frequency-modulated variable frequency oscillator. 4,554,517, Cl. 332-18.000.
Parnkopf, Fiske O.: *See—*
Grotz, Bernard J.; Parnkopf, Fiske O.; and Prescott, G. Robert, 4,554,135, Cl. 422-148.000.
Parry, David: *See—*
Price, Anthony G.; and Parry, David, 4,553,395, Cl. 60-562.000.
Partus, Fred P.: *See—*
Huggins, Ronald G.; O'Brien, William D., Jr.; and Partus, Fred P., 4,554,078, Cl. 210-749.000.
Pas, Ireneus J. T. M.: *See—*
Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., 4,553,420, Cl. 72-380.000.
Pascal, Roger: *See—*
Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, 4,553,772, Cl. 280-628.000.
Patrick, Stanley S.: *See—*
Parker, Merle A.; Rice, George F.; and Patrick, Stanley S., 4,554,128, Cl. 376-252.000.
Pavone, Robert J., to Gerber Scientific Instrument Company, The. Non-slip pulley and belt drive. 4,553,951, Cl. 474-148.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., to Shell Oil Company. Certain substituted, 7-oxabicyclo[2.2.1]heptan-2-ols and -2-ones as intermediates. 4,554,366, Cl. 549-463.000.
PC Manufacturing Corporation: *See—*
Pool, Daniel L., 4,553,710, Cl. 242-55.200.
Peascoe, Warren J.: *See—*
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,554,294, Cl. 521-93.000.
Peinado, Charles O.; and Koutz, Stanley L., to United States of America, Energy. Gas-cooled nuclear reactor. 4,554,129, Cl. 376-298.000.
Pelc, Norbert J.: *See—*
Glover, Gary H.; DallaPiazza, Dennis G.; and Pelc, Norbert J., 4,554,633, Cl. 364-414.000.
Pelto-Huikko, Raimo K.; Ahlman, Esko A. O.; and Rautimo, Pertti V., to Kone Oy. Hydraulic striking machine. 4,553,610, Cl. 173-1.000.
Pennington, Keith S.: *See—*
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,554,562, Cl. 346-135.100.
Penrod, Paula M.: *See—*
Fitzgerald, Gary W.; Gulibon, Robert S.; and Penrod, Paula M., 4,553,884, Cl. 408-143.000.
Pepper, Kenneth V., to Bemis Manufacturing Company. Rainwater gutter sealing arrangement. 4,553,356, Cl. 52-11.000.
Pepper, Kenneth V., to Bemis Manufacturing Company. Adjustable rainwater gutter mounting arrangement. 4,553,357, Cl. 52-12.000.
Pepper, Mark A.: *See—*
Beaudet, William R.; Pepper, Mark A.; and Rester, David H., 4,554,558, Cl. 346-75.000.
PepsiCo Inc.: *See—*
McGarrah, Robert, 4,553,573, Cl. 141-98.000.
Periana-Pillai, Roy A.: *See—*
Renga, James M.; Periana-Pillai, Roy A.; and Frazier, Kevin A., 4,554,372, Cl. 560-161.000.
Perkin-Elmer Corporation, The: *See—*
Medico, Louis J., 4,553,311, Cl. 29-559.000.
Perkins, Kenneth L.: *See—*
Goldfarb, Harold; Perkins, Kenneth L.; and Weigand, Bernard L., 4,553,435, Cl. 73-40.700.
Permelec Electrode Ltd.: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.
Perrella, Guido; and Thompson, William E., to DBM Industries Limited. Method of controlling temperature of die casting mold. 4,553,583, Cl. 164-458.000.
Perri, Joseph A.: *See—*
LaBate, Michael D., II; and Perri, Joseph A., 4,553,743, Cl. 266-272.000.
Personal Products Company: *See—*
Dabi, Shmuel, 4,554,297, Cl. 521-178.000.
Korpman, Ralf, 4,554,191, Cl. 428-35.000.
Pet Incorporated: *See—*
Wagner, Dennis L.; and Wells, Harold D., 4,554,437, Cl. 219-388.000.
Peter, Cornelius: *See—*
Burkel, Rainer; and Peter, Cornelius, 4,554,528, Cl. 340-58.000.

Peterson, John F. D.: *See—*
Wingard, Michael G.; and Peterson, John F. D., 4,554,079, Cl. 210-776.000.
Peterson, Ronald E.: *See—*
Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., 4,553,816, Cl. 350-166.000.
Petersson, Rolf, to Flakt Aktiebolag. Sealing device in a cylinder drier. 4,553,340, Cl. 34-114.000.
Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., to Eastman Kodak Company. Copolyester compositions. 4,554,303, Cl. 524-277.000.
Petrolite Corporation: *See—*
Naiman, Michael I.; and Schield, John A., 4,553,980, Cl. 44-62.000.
Naiman, Michael I.; and Schield, John A., 4,554,327, Cl. 525-356.000.
Petrozello, James R.: *See—*
McNaughton, James L.; and Petrozello, James R., 4,553,813, Cl. 350-96.200.
Petty, Walter L.: *See—*
Dong, Walter; and Petty, Walter L., 4,554,102, Cl. 260-112.50R.
Peyronel, Jean-Francois: *See—*
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.
Pfizer Inc.: *See—*
LaMattina, John L., 4,554,276, Cl. 514-272.000.
Richardson, Kenneth; and Whittle, Peter J., 4,554,286, Cl. 514-383.000.
Pfleger, Albert; and Klesel, Peter, to Bayerische Motoren Werke Aktiengesellschaft. Cooling arrangement for internal combustion engines with combined seawater-fresh water cooling. 4,553,585, Cl. 165-41.000.
Pflueger, Richard: *See—*
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.
Pfutzenreuter, Henry, III: *See—*
McHenry, Robert J.; Pfutzenreuter, Henry, III; Tung, Thomas T.; and Vella, John, Jr., 4,554,190, Cl. 428-35.000.
Pham van Cang, Luc, to Thomson-CSF. Device and apparatus for testing electronic equipment and particularly television equipment. 4,554,663, Cl. 371-20.000.
Phelps, Mary E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.
Philip Morris Incorporated: *See—*
Lephardt, John O., 4,553,556, Cl. 131-336.000.
Phillips, Edward H., to Hidden Valley Associates. Apparatus for pumping subterranean fluids. 4,553,590, Cl. 166-53.000.
Phillips Petroleum Company: *See—*
Cheng, Paul J., 4,554,149, Cl. 423-450.000.
Dahlgren, Robert W.; and Dennis, William H., 4,553,985, Cl. 55-67.000.
Geissler, Bernhard H., 4,553,588, Cl. 165-162.000.
Goins, Robert R., 4,553,849, Cl. 366-134.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,068, Cl. 209-167.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,108, Cl. 260-455.00A.
Rooney, Patrick, 4,554,055, Cl. 203-89.000.
Shaw, James E., 4,553,593, Cl. 166-270.000.
Photoron Incorporated: *See—*
Mitsui, Kenji; and Suzuki, Akira, 4,554,409, Cl. 178-19.000.
Piccoli, Dante E.; and Nadkarni, Pradeep D., to Goodyear Tire & Rubber Company, The. Shape restoring hose. 4,553,568, Cl. 138-125.000.
Pieczykolan, George S. Automatic on-off sprinkler head. 4,553,602, Cl. 169-19.000.
Pierce, S. Mark: *See—*
Duke, George B., Jr.; and Pierce, S. Mark, 4,553,785, Cl. 297-229.000.
Pierce, William C., to Lear Siegler, Inc. Load equalizer valve and suspension system. 4,553,773, Cl. 280-676.000.
Pieters, Wim J. M.; and Okumura, Yoshiharu, to Exxon Research & Engineering Co. Two stage process for improving the catalyst life of zeolites in the synthesis of lower olefins from alcohols and their ether derivatives. 4,554,260, Cl. 502-61.000.
Pietrasanta, Yves: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.
Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Aphicidal 3-(2-alkyl-2,3-dihydrobenzofuran-7-yl)-5-(R,R^1-amino)-1,3,4-oxadiazol-2(3H)-ones. 4,554,283, Cl. 514-364.000.
Pillis, Joseph W., to Frick Company. Method of coding the oil in screw compressors equipped with automatic variable volume ratio. 4,553,911, Cl. 418-1.000.
Pilot Ink Co., Ltd.: *See—*
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., to PKS/Communications, Inc. Key telephone system. 4,554,413, Cl. 179-99.00M.
Pinson, George T., to Boeing Company, The. Naval harrassment missile. 4,553,718, Cl. 244-3.150.
Pioneer Electronic Corporation: *See—*
Ando, Tomiaki, 4,553,630, Cl. 181-144.000.
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.
Moriyama, Yoshiaki; and Yamagata, Kenji, 4,554,529, Cl. 340-347.0DD.
Sugihara, Masanori, 4,554,601, Cl. 360-90.000.
Pioneer Video Corporation: *See—*
Kumasaka, Osamu; and Touma, Teruo, 4,554,655, Cl. 369-275.000.
Pissiotas, Georg: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,554,016, Cl. 71-105.000.
Pittet, Gilbert H.: *See—*
Hill, Michael P.; and Pittet, Gilbert H., 4,554,369, Cl. 556-418.000.
PKS/Communications, Inc.: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,554,413, Cl. 179-99.00M.
Planmobel Eggersmann GmbH & Co. KG: *See—*
Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.
Plau, Bernard: *See—*
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.
Plummer, Jeffrey J.; and Adleman, Larry G., to Ex-Cell-O Corporation. Cable pulling device with anti-reversing clutch. 4,553,738, Cl. 254-358.000.
Plunkett, Larry E., to MSL Industries, Inc. Brushless DC motor having a laminated stator with a single stator winding. 4,554,491, Cl. 318-254.000.
Pluschow, Dieter: *See—*
Reim, Werner; and Pluschow, Dieter, 4,553,659, Cl. 198-372.000.
Poate, John M.: *See—*
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., 4,554,045, Cl. 156-613.000.
Pohndorf, Peter J.; and Wesner, Walter H., to Cordis Corporation. Suture sleeve with structure for enhancing pacing lead gripping. 4,553,961, Cl. 604-175.000.
Polaris Home Systems, Inc.: *See—*
Snyder, Irving F.; and Luebeck, Duane A., 4,553,700, Cl. 239-215.000.
Polaroid Corporation: *See—*
Kee, Richard C., 4,554,591, Cl. 358-256.000.
Polydrain, Inc.: *See—*
Thomann, Roland; and Amann, Markus, 4,553,874, Cl. 404-4.000.
Pommer, Ernst-Heinrich: *See—*
Zeeh, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,554,285, Cl. 514-383.000.
Ponce, Felix C. Latch face template for a portable router. 4,553,336, Cl. 33-197.000.
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., to Merck & Co., Inc. Aralkyl and aralkenyl glycosides as inhibitors of antigen-specific T-cell proliferation. 4,554,349, Cl. 536-55.000.
Ponzoni, Ronald W.: *See—*
Sorge, Richard M.; Ponzoni, Ronald W.; and Shoaf, Myron D., 4,554,167, Cl. 426-285.000.
Pool, Daniel L., to PC Manufacturing Corporation. Roll holding fixture. 4,553,710, Cl. 242-55.200.
Poole, Joseph J.: *See—*
King, Charles S.; and Poole, Joseph J., 4,553,515, Cl. 123-308.000.
Pope, Bryan M.; and Hawkins, Richard. Oral orthopedic/orthodontic appliance for treating neuromuscular imbalance. 4,553,549, Cl. 128-421.000.
Porzelt, Carmen: *See—*
Weber, Adolf; and Porzelt, Carmen, 4,553,482, Cl. 102-529.000.
Potschke, Jurgen: *See—*
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.
Potter, Robert S. Convertible restaurant seating. 4,553,359, Cl. 52-173.00R.
Poulard, Serge: *See—*
Kerviel, Hildebert; and Poulard, Serge, 4,554,031, Cl. 149-19.300.
Powell, Bert R.; and Collins, Albert L., to Texas Processed Plastics, Inc. Plant container for draining moisture from the soil. 4,553,352, Cl. 47-71.000.
Powell, James E.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.
Powell, Lee: *See—*
Crocker, Charles L.; Wallace, Michael; and Powell, Lee, 4,553,384, Cl. 57-406.000.
PPG Industries, Inc.: *See—*
Rukavina, Thomas G., 4,554,318, Cl. 525-118.000.
Pradier, Serge; and de Marchi, Jean-Louis, to Etablissements Francois Salomon et Fils. Rapid attachment device for ski boots. 4,553,292, Cl. 24-70.0SK.
Preiner, Gerhard: *See—*
Hockemeyer, Friedrich; and Preiner, Gerhard, 4,554,339, Cl. 528-26.000.
Prescott, G. Robert: *See—*
Grotz, Bernard J.; Parnkopf, Fiske O.; and Prescott, G. Robert, 4,554,135, Cl. 422-148.000.
Pressaco, Pierre: *See—*
Carre , Jean-Jacques; and Pressaco, Pierre, 4,553,646, Cl. 188-196.0BA.
Pressure Science Incorporated: *See—*
Halling, Horace P., 4,553,775, Cl. 285-55.000.
Price, Anthony G.; and Parry, David, to Lucas Industries public limited company. Master cylinder assembly for a vehicle braking system. 4,553,395, Cl. 60-562.000.

Primati, Marco; and Calderini, Leonardo, to Stabilimento Industriale Srl. Automatic ironing press. 4,553,343, Cl. 38-33.000.
Prince Corporation: *See*—
Marcus, Konrad H., 4,553,797, Cl. 339-22.000.
Process Shizai Co., Ltd.: *See*—
Kashiwagi, Takashi, 4,554,239, Cl. 430-270.000.
Prodeco, Inc.: *See*—
Worthington, Ralph E.; and Magdics, Alex, 4,554,139, Cl. 423-166.000.
Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., 4,554,151, Cl. 423-551.000.
Promoli, Johann-Christian: *See*—
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.
Propst, Verle V.: *See*—
Winter, Rudolph R.; and Propst, Verle V., 4,553,313, Cl. 29-568.000.
Provost, Lawrence A.; and Boyer, Robert D., to Sealed Power Corporation. Ring compressor tool. 4,553,421, Cl. 72-402.000.
Pryor, David J.: *See*—
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.
PTX-Pentronix, Inc.: *See*—
DeSantis, Raymond P., 4,553,375, Cl. 53-475.000.
Puggioli, Roberto: *See*—
Borrman, Bo; and Puggioli, Roberto, 4,553,764, Cl. 277-226.000.
Pugh, James G.; and Carmichael, Richard W., to Allied Corporation. Dual brake valve with brake proportioning. 4,553,789, Cl. 303-54.000.
Pullen, Roger J., to Schlumberger Electronics (U.K.) Limited. Cable outlet adaptors. 4,554,408, Cl. 174-135.000.
Pullman Standard Inc.: *See*—
Yates, Donald B., 4,553,642, Cl. 188-56.000.
Purdy, William C.: *See*—
McClintock, Sam A.; and Purdy, William C., 4,554,064, Cl. 204-411.000.
Pursley, David A. Rotator cuff machine. 4,553,747, Cl. 272-118.000.
Q.P. Corporation: *See*—
Takao, Masayasu, 4,554,107, Cl. 260-421.000.
Quaker Oats Company, The: *See*—
Robjent, Frederick B.; and Klamer, Reuben B., 4,553,767, Cl. 280-11.210.
Queen Anne Candy Company: *See*—
Morando, E. Donald, 4,553,691, Cl. 229-2.5EC.
Quest Medical, Inc.: *See*—
LeCocq, Andrew D., 4,553,958, Cl. 604-67.000.
Rader, Laura A.: *See*—
Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., 4,554,378, Cl. 564-332.000.
Radford, Steven R., to Norton Christensen, Inc. Hydraulic lift inner barrel in a drill string coring tool. 4,553,613, Cl. 175-250.000.
Radus, Raymond J., to Westinghouse Electric Corp. Secondary circuit breaker for distribution transformer with indicator light switch mechanism. 4,554,524, Cl. 337-3.000.
Rafelson, Stephen. Endoscopic pillow covering with high absorbency characteristics. 4,553,538, Cl. 128-132.00D.
Rafert, Don L. Wrench-holding fixture for vehicular wheels. 4,553,456, Cl. 81-462.000.
Rafipour, Bijan J., to Mobil Oil Corporation. Method for measuring seismic phase shift of compressional waveforms. 4,554,647, Cl. 367-48.000.
Raisin, Helmut; and Teutelink, Bernard C., to Ciba-Geigy Corporation. Process for dyeing or printing polyamide fibres. 4,553,976, Cl. 8-639.000.
Rajbenbach, Arie L.: *See*—
Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum, 4,554,317, Cl. 525-28.000.
Raloff, Valgene E., to Dover Corporation. Components for gas metal arc welding gun. 4,554,432, Cl. 219-137.430.
Ralph, James L., to Cole Sewell Corporation. Tiered drain channel for extruded door insert. 4,553,361, Cl. 52-209.000.
Ralston Purina Company: *See*—
Krinski, Thomas L.; and Steinmetz, Alan L., 4,554,337, Cl. 527-201.000.
Ramamurthy, Arakalgud V., to Union Carbide Corporation. Process for eliminating surface melt fracture during extrusion of thermoplastic polymers. 4,554,120, Cl. 264-85.000.
Ramsey, Charles W.: *See*—
Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., 4,554,303, Cl. 524-277.000.
Ramshaw, Colin: *See*—
Cross, William T.; and Ramshaw, Colin, 4,553,408, Cl. 62-476.000.
Ramuz, Henri: *See*—
Krasso , Anna; and Ramuz, Henri, 4,554,280, Cl. 514-338.000.
Ranken, Paul F., to Ethyl Corporation. Preparation of 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid. 4,554,352, Cl. 546-156.000.
Rannenberg, George C., to United Technologies Corporation. High efficiency air cycle air conditioning system. 4,553,407, Cl. 62-402.000.
Rao, S. Prabhakara: *See*—
Borchardt, John K.; and Rao, S. Prabhakara, 4,554,081, Cl. 252-8.50A.
Rasmussen, George P.; and Grimmett, Earl S., to Waste-Tech Services, Inc. Removal of tramp material from fluid bed vessels. 4,553,487, Cl. 110-245.000.
Rasshofer, Werner: *See*—
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,554,340, Cl. 528-77.000.
Ratcliff, Henry K. Drive circuit for a plurality of ultrasonic generators using auto follow and frequency sweep. 4,554,477, Cl. 310-316.000.
Rathbun, Donald J.: *See*—
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,554,598, Cl. 360-48.000.
Rautimo, Pertti V.: *See*—
Pelto-Huikko, Raimo K.; Ahlman, Esko A. O.; and Rautimo, Pertti V., 4,553,610, Cl. 173-1.000.
Ray, William C., to Allis-Chalmers Corporation. Hose tensioning device. 4,553,638, Cl. 187-9.00E.
Raychem Corporation: *See*—
Holt, Neil L., 4,553,809, Cl. 339-275.00T.
Raytheon Company: *See*—
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.
RCA Corporation: *See*—
Altman, Wolf P., 4,554,666, Cl. 372-19.000.
Carlson, Curtis R., 4,554,585, Cl. 358-209.000.
Chandrasekhar, Hosekere S., 4,553,318, Cl. 29-577.00C.
Faulkner, Richard D.; and Rhoads, James L., 4,554,481, Cl. 313-533.000.
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,554,570, Cl. 357-23.400.
Kao, Yih-Sien, 4,554,576, Cl. 358-28.000.
Opresko, Stephen T., 4,554,479, Cl. 313-417.000.
Schiff, Leonard N., 4,554,679, Cl. 455-303.000.
Schlack, Richard E., 4,554,480, Cl. 313-446.000.
Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., 4,554,577, Cl. 358-34.000.
Shanley, Robert L., II, 4,554,588, Cl. 358-243.000.
Whartenby, James C.; and Kumar, Mahesh, 4,554,514, Cl. 330-149.000.
Willis, Donald H., 4,554,578, Cl. 358-65.000.
Wine, Charles M., 4,554,582, Cl. 358-149.000.
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., to United States of America, Navy. Complex cavity gyrotron. 4,554,484, Cl. 315-4.000.
Red Owl Stores, Inc.: *See*—
Bloomquist, Dayton E., 4,553,584, Cl. 165-30.000.
Reddington, Thomas B., to AT&T Bell Laboratories. Keyword search automatic limiting method. 4,554,631, Cl. 364-300.000.
Redien, Jean-Paul, to Schuco Heinz Schurmann GmbH & Co. Frame for a door or window with at least one brace manufactured from hollow, preferably heat-insulated composite sections. 4,553,367, Cl. 52-656.000.
Reed, Alvin R.: *See*—
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.
Reed, Lyle T.; and Olt, Arthur E., Jr., to Caterpillar Tractor Co. Flexible seal for a spherical joint. 4,553,760, Cl. 277-12.000.
Reeve, William E., to Dixon International Limited. Structural slide bearing. 4,553,792, Cl. 308-3.00R.
Reeves, Robert L., to St. Regis Corporation. Dunnage bag. 4,553,887, Cl. 410-119.000.
Rehman, William R.; and Smith, James C., to Nordson Corporation. Foam generating nozzle. 4,553,701, Cl. 239-432.000.
Reichmann, Wolfgang: *See*—
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,554,340, Cl. 528-77.000.
Reilly, David M.: *See*—
Howard, James W.; and Reilly, David M., 4,554,447, Cl. 250-216.000.
Reilly, Paul: *See*—
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.
Reim, Werner; and Pluschow, Dieter, to IWK Verpackungstechnik GmbH. Insertion apparatus. 4,553,659, Cl. 198-372.000.
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, to BASF Aktiengesellschaft. Nylon molding materials having high impact strength. 4,554,320, Cl. 525-183.000.
Reinalda, Donald: *See*—
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, 4,554,268, Cl. 502-439.000.
Reinecke, Paul S.: *See*—
Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., 4,554,059, Cl. 204-129.300.
Reinhardt, Peter, to Mannesmann Rexroth GmbH. Control device for a hydraulic cylinder for maintaining the pulling force thereof constant. 4,553,391, Cl. 60-413.000.
Reith, Walter: *See*—
Walter, Lothar; Reith, Walter; and Winkler, Otmar, 4,553,796, Cl. 308-6.00C.
Releasomers, Inc.: *See*—
Allardice, John M., 4,554,122, Cl. 264-130.000.
Reliance Electric Company: *See*—
Dillon, Philip L., 4,554,504, Cl. 323-356.000.
Woyton, Joseph T., 4,553,335, Cl. 33-181.00R.
Renga, James M.; Periana-Pillai, Roy A.; and Frazier, Kevin A., to Dow Chemical Company, The. Preparation of carbamates. 4,554,372, Cl. 560-161.000.
REPA Feinstanzwerk GmbH: *See*—
Honl, Wolf-Dieter, 4,553,716, Cl. 242-107.700.

Research Institute For Medicine and Chemistry Inc.: *See*—
Hesse, Robert H., 4,554,105, Cl. 260-397.200.
Rester, David H.: *See*—
Beaudet, William R.; Pepper, Mark A.; and Rester, David H., 4,554,558, Cl. 346-75.000.
Retech AG: *See*—
Brehm, Gustav, 4,553,382, Cl. 57-284.000.
Retzloff, James B.: *See*—
Hanlon, J. Vincent; Lenane, Denis L.; and Retzloff, James B., 4,553,979, Cl. 44-57.000.
Rexnord Inc.: *See*—
Cosenza, Frank J.; and Yamamoto, Albert K., 4,553,302, Cl. 29-240.500.
Yamamoto, Albert K., 4,553,303, Cl. 29-240.500.
Reymanova, Marketa: *See*—
Didek, Stanislav; Fajt, Ludvik; Reymanova, Marketa; and Markova, Marie, 4,553,383, Cl. 57-403.000.
Rhead, Michael M.: *See*—
Brown, Leslie; Braven, James; and Rhead, Michael M., 4,554,077, Cl. 210-656.000.
Rheinische Braunkohlenwerke Aktiengesellschaft: *See*—
Keim, Karl-Heinz; and Korff, Joachim, 4,554,388, Cl. 568-716.000.
Rhoads, James L.: *See*—
Faulkner, Richard D.; and Rhoads, James L., 4,554,481, Cl. 313-533.000.
Rhodia Aktiengesellschaft: *See*—
Schluter, Gert; and Zimmermann, Matthias, 4,554,073, Cl. 210-450.000.
Rhone-Poulenc Sante: *See*—
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Desbois, Michel, 4,554,381, Cl. 568-34.000.
Ricci, Vero. Shot gun shell tracer wad. 4,553,481, Cl. 102-458.000.
Rice, George F.: *See*—
Parker, Merle A.; Rice, George F.; and Patrick, Stanley S., 4,554,128, Cl. 376-252.000.
Rice, Trudie C.: *See*—
Minford, William J.; Murphy, Edmond J.; and Rice, Trudie C., 4,554,050, Cl. 156-664.000.
Richard, Daniel J.: *See*—
Derderian, Thomas; and Richard, Daniel J., 4,553,342, Cl. 36-97.000.
Richardson, Gary H., to Utah State University Foundation. Method of making cheese with proteinase negative lactic bacteria. 4,554,165, Cl. 426-36.000.
Richardson, Kenneth; and Whittle, Peter J., to Pfizer Inc. Antifungal 1-triazolyl-2-aryl-3-(5-trifluoromethylimidazol-1-yl)propan-2-ol derivatives. 4,554,286, Cl. 514-383.000.
Richartz, Adolf: *See*—
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,554,340, Cl. 528-77.000.
Richelli, Angelo; and Battistella, Guido. Device for storing and automatic drawing of so-called intermediate elements, for loading, feeding and discharge of certain products, from a freezer to horizontal plates. 4,553,406, Cl. 62-341.000.
Ricoh Company, Ltd.: *See*—
Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, 4,554,555, Cl. 346-1.100.
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.
Hirata, Shinichi; and Isayama, Takuro, 4,554,556, Cl. 346-49.000.
Mayer, Edward F., 4,553,827, Cl. 355-3.0DD.
Ridge, Charles A., Jr., to Eastern Foam Products, Inc. Method for preparing flexible polyurethane foams from polymer/polyols and improved polyurethane foam product. 4,554,295, Cl. 521-110.000.
Riegger, Wolfgang: *See*—
Chlosta, Wolfgang; and Riegger, Wolfgang, 4,554,436, Cl. 219-385.000.
Rigo, Giuseppe. Apparatus for generating a controllable steam and ozone mixture and hair-dryer for uniformly distributing said mixture on hair. 4,553,339, Cl. 34-99.000.
Riley, Victor, to Imperial Oil Limited. Prefabricated building units. 4,553,362, Cl. 52-236.300.
Rink, Norbert: *See*—
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, 4,553,996, Cl. 65-4.400.
Risse, Jean-Claude: *See*—
Moulin, Michel; and Risse, Jean-Claude, 4,553,825, Cl. 354-5.000.
Ritchie, Robert J., to Du Pont de Nemours, E. I., and Company. Anodic electrodeposition of charged aqueous powder slurry. 4,554,061, Cl. 204-181.600.
Ritzer, Alan: *See*—
Ward, William J., III; Ritzer, Alan; and Lapidot, Heine, 4,554,370, Cl. 556-472.000.
Rizzon, John; Adomat, Gunter; and Diemer, Peter, to Krupp-Koppers GmbH. Method and device for removal of heavy tar from a coke-oven gas during cooling. 4,554,053, Cl. 201-21.000.
Robbart, Edward. Coating of cellulosic base stocks and the product thereof. 4,554,215, Cl. 428-447.000.
Robbins, Clarence R.: *See*—
Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., 4,554,098, Cl. 252-547.000.
Roberson, James E.: *See*—
Hardy, James H.; and Roberson, James E., 4,553,350, Cl. 47-1.500.
Robert Bosch GmbH: *See*—
Burkel, Rainer; and Peter, Cornelius, 4,554,528, Cl. 340-58.000.
Roberts, David W.: *See*—
Sachs, Kerry M.; and Roberts, David W., 4,553,285, Cl. 110-223.000.
Roberts, Harold D. Tool for forming a recess for a dental implant. 4,553,939, Cl. 433-144.000.
Roberts, John W.: *See*—
Green, Lorrence H.; and Roberts, John W., 4,554,248, Cl. 435-7.000.
Roberts, Manuel E.; and Ketchum, Thomas W. Tree stand. 4,553,634, Cl. 182-134.000.
RobertShaw Controls Company: *See*—
McIntosh, Harold A., 4,554,616, Cl. 361-424.000.
Robins, Janis: *See*—
Korbel, Gerald E.; Robins, Janis; and Rude, Harold E., 4,553,982, Cl. 51-298.000.
Robjent, Frederick B.; and Klamer, Reuben B., to Quaker Oats Company, The. Roller skate with integral ratchet means. 4,553,767, Cl. 280-11.210.
Rochester Gauges, Inc.: *See*—
Howeth, James R., 4,554,494, Cl. 318-482.000.
Rockland, Inc.: *See*—
Tyer, Robert C., 4,553,778, Cl. 294-86.400.
Rockwell International Corporation: *See*—
Graves, Steven P., 4,554,539, Cl. 340-805.000.
Zachry, Clyde L., 4,554,505, Cl. 324-158.00F.
Roder GmbH, Sitzmobelwerke: *See*—
Korn, Heinrich, 4,553,449, Cl. 74-501.00R.
Roderburg, Harald, to Gesellschaft mit beschrankter Haftung Kabelmetal Electro. Method for the color coding of optical fibers. 4,554,179, Cl. 427-163.000.
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, to Saint-Gobain Vitrage. Inner lamina, and process for manufacture, for vehicle windshield. 4,554,199, Cl. 428-194.000.
Rogers, John R.: *See*—
Armstrong, Maclay M.; Rogers, John R.; and Houser, Steven A., 4,553,932, Cl. 433-4.000.
Rohatyn, Frederick. Power factor correction system. 4,554,502, Cl. 323-208.000.
Rohm and Haas Company: *See*—
Coyle, Robert W., 4,554,054, Cl. 203-15.000.
Roizman, Bernard; and Lang, M. Robert, to Institute Merieux. Vaccine and method of immunizing against herpes simplex virus (types 1 and 2). 4,554,159, Cl. 424-89.000.
Roman, Steven A.: *See*—
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.
Rooney, Patrick, to Phillips Petroleum Company. Solvent recovery. 4,554,055, Cl. 203-89.000.
Ropers, Till. Tooth matrix band. 4,553,937, Cl. 433-39.000.
Roselli, Federico. Extendible line. 4,553,715, Cl. 242-100.000.
Rosen, Josh: *See*—
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.
Rosen, Murray: *See*—
Lane, Thomas; and Rosen, Murray, 4,554,185, Cl. 427-385.500.
Rosenberg, Max. Surgical barrier. 4,553,537, Cl. 128-132.00R.
Rosenbladt, Rudolf V.: *See*—
Rosicke, Bernd; and Rosenbladt, Rudolf V., 4,553,848, Cl. 356-448.000.
Rosende, Francisco J. B. Solar radiation collector. 4,553,531, Cl. 126-440.000.
Rosenfeld, Daniel D.: *See*—
Barthomeuf, Denise M.; and Rosenfeld, Daniel D., 4,554,398, Cl. 585-828.000.
Rosicke, Bernd; and Rosenbladt, Rudolf V., to Boehringer Mannheim GmbH. Method of detecting and evaluating photometric signals and device for carrying out the method. 4,553,848, Cl. 356-448.000.
Rossfelder, Andre M.; and Jung, Peter A., to Geomarex. High frequency vibratory systems for earth boring. 4,553,443, Cl. 74-22.00R.
Rotpunkt Dr. Anso Zimmermann: *See*—
Zimmermann, Anso, 4,553,676, Cl. 215-13.00R.
Roubalova, Alena: *See*—
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.
Roumeguere, Michel: *See*—
Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, 4,554,568, Cl. 357-13.000.
Rouse, David M.: *See*—
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., 4,554,659, Cl. 370-88.000.
Roussel Uclaf: *See*—
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,554,361, Cl. 549-302.000.
Rowland, Donald G.: *See*—
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,554,294, Cl. 521-93.000.
Rowlands, Richard C.: *See*—
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.
Rubber and Plastics Research Assoc. of GB: *See*—
Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.

Rubin, Gene L.; Filipowicz, Anthony H.; and Valenza, Frank. Multiframe apparatus. 4,553,344, Cl. 40-152.000.

Rubin, Harvey, to AT&T Bell Laboratories. Digital filtering with monitored settling time. 4,554,642, Cl. 364-724.000.

Rubin, Mae K., to Mobil Oil Corporation. Preparation of crystalline silicate zeolite Beta. 4,554,145, Cl. 423-328.000.

Ruble, Charles G. Barbeque grill assembly. 4,553,525, Cl. 126-30.000.

Rude, Harold E.: *See—*
Korbel, Gerald E.; Robins, Janis; and Rude, Harold E., 4,553,982, Cl. 51-298.000.

Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., to Johnson Service Company. Controllable rotary actuator. 4,554,496, Cl. 318-600.000.

Rudolph, Volker: *See—*
Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, 4,553,862, Cl. 400-121.000.

Ruehl, William E., to Illinois Tool Works Inc. Modular bridging clip. 4,553,802, Cl. 339-74.00R.

Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., to Illinois Tool Works Inc. Transient voltage protector. 4,554,609, Cl. 361-119.000.

Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, to Duphar International Research B.V. Pre-column for preconcentrating substances to be chromatographed as well as device for a liquid chromatography system and coupling member for said device. 4,554,071, Cl. 210-198.200.

Rukavina, Thomas G., to PPG Industries, Inc. Cyanoethylacrylate/acrylic acid copolymer. 4,554,318, Cl. 525-118.000.

Rulis, Dean A.: *See—*
Ormiston, Thomas J.; and Rulis, Dean A., 4,554,195, Cl. 428-49.000.

Rumbaugh, Robert C.; and Miller, Ira, to Motorola, Inc. Latching comparator with hysteresis. 4,554,468, Cl. 307-355.000.

Rundle, Gregory E.: *See—*
Sewell, Peter C.; Rundle, Gregory E.; and Hanson, Karl L., 4,553,954, Cl. 493-309.000.

Runge, Thomas M.: *See—*
Bohls, Fred O., 4,553,532, Cl. 128-1.00D.

Ruoff, Carl F., to United States of America, National Aeronautics and Space Administration. Memory metal actuator. 4,553,393, Cl. 60-528.000.

Rupp, Raymond W.: *See—*
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.

Ruseff, Walter Z.; and Schimpf, James E., to Caterpillar Tractor Co. Pump control with fluid responsive standby pressure. 4,553,904, Cl. 417-218.000.

Russell, James D., to Simonsen Laboratories, Inc. Modified live sendai virus vaccine for administering through an aerosol and method of producing the same. 4,554,158, Cl. 424-89.000.

Russiello, Andrea, to Wilmington Chemical Corporation. Crosslinked polyurethane dispersions. 4,554,308, Cl. 524-591.000.

Ryoke, Katsumi: *See—*
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.

S.A.R.L. Aspiramatic: *See—*
Barsacq, Gabriel, 4,553,991, Cl. 55-218.000.

S. S. White Company, The: *See—*
Maldonado, Robert; and Loughry, Clark E., 4,554,676, Cl. 378-170.000.

Sachdev, Krishna G.: *See—*
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,554,562, Cl. 346-135.100.

Sachs, Kerry M.; and Roberts, David W. Plug furnace. 4,553,285, Cl. 110-223.000.

Sadler, Karl-Otto; and Schmidt, Willy, to Blohm & Voss AG. Warship with standardized operating units. 4,553,493, Cl. 114-1.000.

Safe-T-Jack, Inc.: *See—*
Arzouman, Harry H., 4,553,727, Cl. 248-354.700.

Saggiomo, Andrew J.; and Nodiff, Edward A., to United States of America, Army. 5-(Straight chain 3–12 carbon alkoxy)-8-quinolinamines and their use for treatment of malaria. 4,554,279, Cl. 514-311.000.

Sainati, Robert A.: *See—*
Olesen, Ralph C.; Sainati, Robert A.; Gropelli, John J., Jr.; and Stanland, Andrew J., 4,554,554, Cl. 343-895.000.

St-Amand, Maurice. Stop cock manifold holder. 4,553,724, Cl. 248-68.100.

St. Charles Manufacturing Co.: *See—*
Saunders, G. Thomas, 4,553,475, Cl. 98-36.000.

Saint-Gobain Vitrage: *See—*
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.

St. Luke's Hospital: *See—*
Dougherty, Delford O., 4,553,686, Cl. 222-212.000.

St. Regis Corporation: *See—*
Reeves, Robert L., 4,553,887, Cl. 410-119.000.

Saito, Muneo: *See—*
Hayakawa, Shoichi; and Saito, Muneo, 4,553,511, Cl. 123-179.00B.

Saito, Shoichi; and Miyazi, Kazumi, to Olympus Optical Co., Ltd. Mode setting device of a magnetic tape driving apparatus. 4,554,605, Cl. 360-96.100.

Saito, Yukihiro: *See—*
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.

Saitoh, Hiroyuki; and Kurata, Masami, to Fuji Xerox Co., Ltd. Shading correction device. 4,554,583, Cl. 358-163.000.

Saitoh, Koichi: *See—*
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.

Saitoh, Yoshiyuki: *See—*
Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, 4,554,462, Cl. 307-140.000.

Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Dielectric polymer materials. 4,554,335, Cl. 526-249.000.

Sakai, Hiroshi: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, 4,554,032, Cl. 149-21.000.

Sakai, Kiyoshi: *See—*
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, to Canon Kabushiki Kaisha. Apparatus for detecting the amount of movement of a member to be controlled. 4,554,674, Cl. 377-17.000.

Sakai, Tomoo: *See—*
Uchino, Kenju; and Sakai, Tomoo, 4,553,329, Cl. 33-147.00T.

Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, to Canon Kabushiki Kaisha; and Sakaki, Hiroyuki. Method of obtaining an impact ionization coefficient rate by junction of different kinds of semiconductors. 4,553,317, Cl. 29-572.000.

Sakakibara, Naoji: *See—*
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,621, Cl. 180-179.000.

Sakakibara, Toshimitsu: *See—*
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, 4,554,428, Cl. 219-69.00G.

Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, to Sumitomo Naugatuck Co., Ltd. Thermoplastic resin composition. 4,554,316, Cl. 525-71.000.

Sakata, Yasuo: *See—*
Kanatani, Tadayuki; and Sakata, Yasuo, 4,553,929, Cl. 432-59.000.

Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, to Toyota Jidosha Kabushiki Kaisha. Method for detecting an oxygen concentration and a method for controlling an air-to-fuel ratio based on the detected oxygen concentration. 4,553,424, Cl. 73-27.00R.

Salaam, Ameen. Centering apparatus and method. 4,553,331, Cl. 33-172.00D.

Salice, Luciano, to Arturo Salice S.p.A. Connecting fitting for releasably connecting two platelike furniture members. 4,553,873, Cl. 403-245.000.

Salomon S.A.: *See—*
Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, 4,553,772, Cl. 280-628.000.

Salva, Henri E., to J. I. Case Company. Gang plow of varible working width. 4,553,609, Cl. 172-647.000.

Salvador, Linda M.: *See—*
Zimmer, James E.; and Salvador, Linda M., 4,554,024, Cl. 106-284.000.

Salvagnini, Guido, to Salvagnini Transferica S.p.A. Selection system for flat articles, particularly metal sheets of different sizes coming from a shearing machine. 4,553,672, Cl. 209-615.000.

Salvagnini Transferica S.p.A.: *See—*
Salvagnini, Guido, 4,553,672, Cl. 209-615.000.

Samaras, Byron: *See—*
Gassew, Garry L.; and Samaras, Byron, 4,553,279, Cl. 7-105.000.

Sambucetti, Carlos J.: *See—*
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Sanden Corporation: *See—*
Nakamura, Yasuo, 4,553,690, Cl. 29-159.00R.

Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, to Texaco Inc. Production of 2-hydroxyalkyl-1,3-dioxolanes. 4,554,364, Cl. 549-453.000.

Sandoz Ltd.: *See—*
Wenger, Roland, 4,554,351, Cl. 544-177.000.

Sands, Robert E.: *See—*
Daghe, Joseph L.; and Sands, Robert E., 4,553,563, Cl. 137-494.000.

Sano, Shoichi: *See—*
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.

Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, to Takara Shuzo Co., Ltd.; and Nippon Shinyaku Co., Ltd. Of4949. 4,554,289, Cl. 514-450.000.

Santrol Products, Inc.: *See—*
Graham, John W.; and Sinclair, A. Richard, 4,553,596, Cl. 166-295.000.

Sanwa Shoji Co., Ltd.: *See—*
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, 4,554,255, Cl. 436-102.000.

Sardain, Christian: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Sargent, Brian; and Skilling, James, to GenRad, Inc. Control apparatus for back-driving computer memory and forcing execution of idle loop program in external memory. 4,554,630, Cl. 364-200.000.

Saris, Frans W.: *See—*
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.

Sasaki, Gen: *See—*
Taguchi, Minoru; and Sasaki, Gen, 4,554,046, Cl. 156-637.000.

Sasaki, Hideki, to Japan Medical Supply Co., Ltd. Infusion apparatus. 4,553,964, Cl. 604-248.000.

Sasaki, Mitsuru; and Ishiguri, Yukio, to Sumitomo Chemical Company, Limited. α-Hydroxyethylphosphinates, and their production and use. 4,554,111, Cl. 260-502.40R.

Sasaki, Takao: *See—*
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki. Takao, 4,554,497, Cl. 318-636.000.

Sasaki, Takashi: *See—*
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.

Sasaki, Tetsuo: *See—*
Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, 4,554,227, Cl. 429-178.000.

Sasaki, Toshio: *See—*
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.

Sasano, Nakamichi, to Comnix Kabushiki Kaisha. Bilateral amplifier. 4,554,415, Cl. 179-170.00G.

Sasser, R. Garth; and Hamilton, William C., to Idaho Research Foundation, Inc., The. Antigen associated with early detection of mammalian pregnancy. 4,554,256, Cl. 436-510.000.

Sato, Hideaki: *See—*
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, 4,553,674, Cl. 211-26.000.

Sato, Hideo: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Sato, Makoto: *See—*
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.

Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photosensitive materials for color photography. 4,554,244, Cl. 430-552.000.

Satoo, Fumihide: *See—*
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.

Saunders, G. Thomas, to St. Charles Manufacturing Co. Laboratory hood attachment. 4,553,475, Cl. 98-36.000.

Sauter, Hubert: *See—*
Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.

Savage, Kerry D.: *See—*
Looney, Mark D.; and Savage, Kerry D., 4,553,592, Cl. 166-248.000.

Savic, Nicolas M.: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Sawa, Yuji: *See—*
Okada, Shingo; Sawa, Yuji; and Adachi, Kuniomi, 4,553,376, Cl. 53-511.000.

Saykowski, Franz: *See—*
Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, 4,554,187, Cl. 427-387.000.

Schaffner, Arlene: *See—*
Lee, Valerie H., 4,553,746, Cl. 272-68.000.

Schaffner, Donald: *See—*
Lee, Valerie H., 4,553,746, Cl. 272-68.000.

Scharting, Gunter: *See—*
Neugebauer, Steffen; and Scharting, Gunter, 4,553,858, Cl. 384-473.000.

Schaumberg, John P.: *See—*
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.

Schebece, Frank; and Carson, John C., Jr., to Colgate-Palmolive Company. Elastic detergent product containing anionic and amphoteric synthetic organic detergents. 4,554,097, Cl. 252-542.000.

Schemmann, Hugo: *See—*
Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, 4,554,471, Cl. 310-49.00R.

Schenck, Robert R.; and Weinrib, Harry P. Methods and apparatus for joining anatomical structures. 4,553,542, Cl. 128-334.00R.

Schering Aktiengesellschaft: *See—*
Vorbrueggen, Helmut, 4,554,363, Cl. 549-415.000.

Schering Corporation: *See—*
Knapp, Julius Z., 4,554,125, Cl. 264-266.000.
Steinman, Martin; and Wong, Yee-Shing, 4,554,103, Cl. 260-239.00A.

Schield, John A.: *See—*
Naiman, Michael I.; and Schield, John A., 4,553,980, Cl. 44-62.000.
Naiman, Michael I.; and Schield, John A., 4,554,327, Cl. 525-356.000.

Schiff, Leonard N., to RCA Corporation. Noise reduction system for a single sideband multiplex signal. 4,554,679, Cl. 455-303.000.

Schilde, Heinz: *See—*
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.

Schimpf, James E.: *See—*
Ruseff, Walter Z.; and Schimpf, James E., 4,553,904, Cl. 417-218.000.

Schlack, Richard E., to RCA Corporation. Cathode-ray tube having an electron gun assembly with emissivity modifying means. 4,554,480, Cl. 313-446.000.

Schlak, Ottfried: *See—*
Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, 4,554,187, Cl. 427-387.000.

Schlieder, Klaus: *See—*
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.

Schlumberger Electronics (U.K.) Limited: *See—*
Pullen, Roger J., 4,554,408, Cl. 174-135.000.

Schlumberger Technology Corporation: *See—*
Glotin, Bernard J., 4,553,599, Cl. 166-332.000.
Meek, Dale E.; and Upchurch, James M., 4,553,598, Cl. 166-317.000.
Upchurch, James M., 4,553,428, Cl. 73-152.000.

Schluter, Gert; and Zimmermann, Matthias, to Rhodia Aktiengesellschaft. Device for uptake, transportation, and recovery of cell material, and for transfer of the recovered material to microscope slides. 4,554,073, Cl. 210-450.000.

Schmalzl, Dieter, to Siemens Aktiengesellschaft. Radio-frequency-tight shielding with planar parts. 4,554,400, Cl. 174-35.0GC.

Schmid, Hartmut, to DSL Dynamic Sciences Limited. Rechargeable battery pack. 4,554,221, Cl. 429-1.000.

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Sadler, Karl-Otto; and Schmidt, Willy, 4,553,493, Cl. 114-1.000.

Schmitt, Karl: *See—*
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.

Schmitt, Paul M.: *See—*
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Schmoyer, Kevin S.: *See—*
Burke, Thomas W.; Welch, Robert A.; Schmoyer, Kevin S.; and Bauman, Bernard D., 4,554,025, Cl. 134-17.000.

Schneider, Friedrich: *See—*
Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, 4,554,027, Cl. 148-11.50R.

Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, to Veb Kombinat Textima. Card clothing for carding segments of a carding machine. 4,553,288, Cl. 19-113.000.

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Norbeck, Dean K.; and Schnetzka, Harold R., 4,554,463, Cl. 307-252.00H.

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DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.

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Metz, Rudi; and Scholl, Herbert, 4,554,610, Cl. 361-144.000.

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Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.

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Franklin, Brian; and Mader, Karl-Heinz, 4,554,259, Cl. 501-67.000.

Schreder, Felix, to E.G.O. Elektro-Gerate Blanc u. Fischer. Electric cooker with thermostats for protecting against localized overheating. 4,554,438, Cl. 219-449.000.

Schreiber, William L.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,384, Cl. 568-445.000.
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Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.

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Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.

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Redien, Jean-Paul, 4,553,367, Cl. 52-656.000.

Schuler, Bernhard; and Beck, Ernst, to Theodor Groz & Sohne; and Ernst Beckert Nadelfabrik KG. Stamped knitting tool for knitting machines. 4,553,411, Cl. 66-123.000.

Schultz, Dale E., to Sperry Corporation. Static memory cell with dynamic scan test latch. 4,554,664, Cl. 371-25.000.

Schultz, Peter C.: *See—*
Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., 4,554,197, Cl. 428-113.000.

Schulz, Guenther; and Zuerger, Manfred, to BASF Aktiengesellschaft. Photosensitive recording material which can be developed with water, for the production of printing plates, relief plates or resist images. 4,554,240, Cl. 430-285.000.

Schurr, Anton: *See—*
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.

Schwarz, Ernest D., II, to American Standard Inc. Hinge preparation assembly for a steel door frame. 4,553,286, Cl. 16-382.000.

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Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,554,142, Cl. 423-277.000.

Schwerin, Vernon L.: *See—*
Wilcox, Melvin S.; and Schwerin, Vernon L., 4,553,455, Cl. 81-443.000.

Scott, Darwin H.: *See—*
Thompson, David S.; and Scott, Darwin H., 4,554,131, Cl. 420-546.000.

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Scott, James W.: *See—*
Uppgren, John J.; and Scott, James W., 4,553,581, Cl. 164-16.000.

Scott, Junius D., to FMC Corporation. Variable-frequency dual-motion feeder control using a single phase power source. 4,554,490, Cl. 318-130.000.

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Urion, Kenard E.; and Bressier, Peter, 4,553,711, Cl. 242-55.300.

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Armstrong, William E., 4,554,411, Cl. 179-37.000.

Scull, Herbert M.; and Laurent, Sebastian M., to Ethyl Corporation. Gas stream purification. 4,554,141, Cl. 423-245.000.

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Provost, Lawrence A.; and Boyer, Robert D., 4,553,421, Cl. 72-402.000.

Seaverns, Robert G.: *See—*
Hecht, Richard M.; and Seaverns, Robert G., 4,553,713, Cl. 242-78.100.

Seber, Gudula, legal representative: *See—*
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Seemuth, Paul D., to Ethyl Corporation. Ring opening of cyclic nitro ketones. 4,554,387, Cl. 568-704.000.

Segawa, Makoto; and Ariizumi, Shoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Static bootstrap semiconductor drive circuit. 4,554,469, Cl. 307-482.000.

Seifert, Janice P. Process of inlaying a design in molded simulated marble. 4,554,118, Cl. 264-73.000.

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Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, 4,554,227, Cl. 429-178.000.

Seiki, Ryosaburo: *See—*
Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, 4,554,214, Cl. 428-423.100.

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Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, 4,554,214, Cl. 428-423.100.

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Hayashi, Mikio, 4,553,864, Cl. 400-121.000.

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Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.

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Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.

Sellars, Graham P., to Burroughs Corporation. Track following code and track following system. 4,554,600, Cl. 360-77.000.

Semperlux GmbH: *See—*
Bansbach, Armin; and Senkel, Helmut, 4,554,619, Cl. 362-222.000.

Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, to Nippon Shinyaku Co., Ltd. Triazine derivatives. 4,554,275, Cl. 514-245.000.

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Kanoh, Osamu; and Senda, Atsuo, 4,554,209, Cl. 428-334.000.

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Seraphim, Donald P.: *See—*
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Sergio, Sala, to Telmec SPA. Machine for the continuous gold-plating of contact tabs. 4,554,062, Cl. 204-206.000.

Seward, Irwin J., Jr.: *See—*
Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., 4,554,378, Cl. 564-332.000.

Sewell, Peter C.; Rundle, Gregory E.; and Hanson, Karl L., to Western Packaging Systems, Ltd. Automatic case erector and sealer. 4,553,954, Cl. 493-309.000.

Shaffer, Donald J. Engine with additional shared flow control runner for two cylinders. 4,553,507, Cl. 123-52.00M.

Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., to RCA Corporation. Keyed DC stabilization system with protection from error introduction during vertical sync interval. 4,554,577, Cl. 358-34.000.

Shanley, Robert L., II, to RCA Corporation. Control system for luminance/chrominance signal processing circuits. 4,554,588, Cl. 358-243.000.

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Haneda, Isamu; and Myooi, Tetsuo, 4,554,641, Cl. 364-710.000.
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.
Nagano, Fumikazu; and Shirakoshi, Hiroshi, 4,554,563, Cl. 346-154.000.

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Allen, Robert C., 4,554,341, Cl. 528-89.000.
Ayers, Ray R., 4,554,072, Cl. 210-242.300.
Corley, Larry S., 4,554,342, Cl. 528-90.000.
Dodd, Paul L., 4,553,776, Cl. 285-212.000.
Dong, Walter; and Petty, Walter L., 4,554,102, Cl. 260-112.50R.
Hansen, David R.; and Korcz, William H., 4,554,304, Cl. 524-291.000.
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., 4,554,321, Cl. 525-240.000.
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, 4,554,292, Cl. 518-728.000.
Langner, Carl G., 4,553,879, Cl. 405-270.000.
Mulder, Albertus J., 4,554,365, Cl. 549-463.000.
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, 4,554,268, Cl. 502-439.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.
Pilgram, Kurt H.; and Skiles, Richard D., 4,554,283, Cl. 514-364.000.
Spaargaren, Klaas, 4,553,434, Cl. 73-304.00C.
Verbrugge, Pieter A., 4,554,109, Cl. 260-457.000.

Shen, Tsung-Ying: *See—*
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,554,349, Cl. 536-55.000.

Shepard, Bobby L.: *See—*
Holbrook, Joe C.; and Shepard, Bobby L., 4,553,445, Cl. 74-130.000.

Sherman, Leonard H.; Swartz, James R.; and Williams, James M., to Genentech, Inc. Computer controlled motor. 4,554,499, Cl. 318-696.000.

Shibahashi, Yutaka: *See—*
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.

Shibamoto, Takeshi: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, to Hitachi, Ltd. Color video signal recording apparatus. 4,554,596, Cl. 358-330.000.

Shibata, Yoshihisa: *See—*
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Shields, Ronald H., to Lynch Machinery. Variable index glass ware press with computer control. 4,554,001, Cl. 65-160.000.

Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, to Sumitomo Chemical Company, Limited. Process for producing α-olefin polymers using novel catalyst system. 4,554,264, Cl. 502-112.000.

Shima, Seiya: *See—*
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.

Shimada, Yasuo: *See—*
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.

Shimadzu Corporation: *See—*
Fujinaga, Yasuhiro, 4,553,619, Cl. 177-185.000.
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,554,362, Cl. 549-352.000.

Shimamune, Takayuki: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.

Shimamura, Toshikazu: *See—*
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Shimaya, Tetsushi: *See—*
Mizukami, Akihiko; and Shimaya, Tetsushi, 4,553,530, Cl. 126-422.000.

Shimazu, Toshiaki, to Kabushiki Kaisha Daikin Seisakusho. Assistor for reducing stepping force. 4,553,470, Cl. 91-6.000.

Shimizu, Isoo: *See—*
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.

Shimizu, Masuto: *See—*
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.

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Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,553,833, Cl. 355-40.000.
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Shin, Kju Hi; and Tatum, Edward F., to Ethyl Corporation. Unsymmetrical diphenolic compounds. 4,554,389, Cl. 568-722.000.

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Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.

Shinoda, Kazuo, to Toyota Jidosha Kabushiki Kaisha. Electronically controlled fuel injection system. 4,554,634, Cl. 364-431.100.

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Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.

Shintani, Fumio: *See—*
Oka, Koichi; and Shintani, Fumio, 4,553,734, Cl. 251-58.000.

Shiota, Eiji: *See—*
Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, 4,554,211, Cl. 428-402.000.

Shiozaki, Syuji, to Fujitsu Ten Limited. Cassette tape reproduction control arrangement. 4,554,599, Cl. 360-69.000.

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Nagano, Fumikazu; and Shirakoshi, Hiroshi, 4,554,563, Cl. 346-154.000.

Shoaf, Myron D.: *See—*
Sorge, Richard M.; Ponzoni, Ronald W.; and Shoaf, Myron D., 4,554,167, Cl. 426-285.000.

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Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

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Short, Edward H., III, to BS&B Safety Systems, Inc. Rupturable pressure relief assembly. 4,553,559, Cl. 137-68.00R.

Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., to Harris Corporation. Electrochemical dielectric isolation technique. 4,554,059, Cl. 204-129.300.

Shortridge, Timothy D. Ski caddy. 4,553,779, Cl. 294-147.000.

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Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Showman, Gerald. Fluid pump assembly. 4,553,512, Cl. 123-196.00S.

Shu, Larry S.: *See—*
Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, 4,553,852, Cl. 374-1.000.

Shurtliff, Jeffrey L. System for producing precision measurements of wing ribs. 4,553,333, Cl. 33-180.00R.

Shuster, Herbert V., to Aseptic Technologies, Inc. Dilution bottle. 4,553,677, Cl. 215-33.000.

Siadat, Bahram: *See—*
Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, 4,553,852, Cl. 374-1.000.

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Zirngibl, Ludwig; and Thiele, Kurt, 4,554,356, Cl. 548-341.000.

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Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, 4,554,453, Cl. 250-327.200.
Goepel, Ernst, 4,554,450, Cl. 250-231.0SE.
Grabmaier, Josef; and Falckenberg, Richard, 4,554,203, Cl. 428-229.000.
Kuntze, Rudolf, 4,554,637, Cl. 364-518.000.
Mahlein, Hans, 4,553,822, Cl. 350-377.000.
Schmalzl, Dieter, 4,554,400, Cl. 174-35.0GC.
Ullenboom, Hermann, 4,553,863, Cl. 400-121.000.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Gasser, Markus, 4,553,658, Cl. 198-369.000.

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Silken, Howard. Radial arm saw. 4,553,462, Cl. 83-471.300.

Sillitto, Hillary G., to Ferranti, plc. Optical elements. 4,554,448, Cl. 250-216.000.

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Burger, William R.; Hutton, James E.; and Silverberg, Morton, 4,553,828, Cl. 355-3.0BE.

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Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, 4,553,478, Cl. 101-426.000.

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Russell, James D., 4,554,158, Cl. 424-89.000.

Simonton, Robert D. Flat cell battery connector seal. 4,554,226, Cl. 429-153.000.

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Ziegler, Michael J.; and Simpkins, F. Richard, 4,553,999, Cl. 65-84.000.

Simpson, Harold, to Ashland Products Company. Latch for pivotal sash window. 4,553,353, Cl. 49-161.000.

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Graham, John W.; and Sinclair, A. Richard, 4,553,596, Cl. 166-295.000.

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Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Singer Company, The: *See—*
Brauch, Robert B.; and Mihovch, John, 4,553,491, Cl. 112-465.000.
Franke, John M., Sr., 4,553,745, Cl. 270-45.000.
Hicks, Irwin A., 4,553,433, Cl. 73-273.000.

Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., to Celanese Corporation. Modified PET polymers and copolymers suitable for extrusion blow molding. 4,554,328, Cl. 525-437.000.

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Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, to Bayer Aktiengesellschaft. Process for pretreating polyamide substrates for electroless metallization. 4,554,183, Cl. 427-306.000.

Sisk, Hollis D., to Century Electric, Inc. Field coil air vents for dynamoelectric machine. 4,554,475, Cl. 310-208.000.

Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., to National Research Development Corporation. Hepatitis B vaccine. 4,554,157, Cl. 424-89.000.

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Walter, Lothar; Reith, Walter; and Winkler, Otmar, 4,553,796, Cl. 308-6.00C.

Skiles, Richard D.: *See—*
Pilgram, Kurt H.; and Skiles, Richard D., 4,554,283, Cl. 514-364.000.

Skilling, James: *See—*
Sargent, Brian; and Skilling, James, 4,554,630, Cl. 364-200.000.

Slaby, Jan: *See—*
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.

Slavin, Michael; and Miller, Ellsworth S., to Lectron Products, Inc. Electric wiring terminal and method of making same. 4,554,406, Cl. 174-94.00R.

Sloan, Jack: *See—*
Wilensky, Joseph, 4,553,397, Cl. 60-649.000.

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Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., 4,554,169, Cl. 426-576.000.

Small, Richard D., Jr., to AT&T Technologies, Inc. Multilayer hybrid integrated circuit. 4,554,229, Cl. 430-17.000.

Smith, Douglas C., to AT&T Information Systems Inc. Resistive line circuit. 4,554,412, Cl. 179-78.00R.

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Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., 4,553,504, Cl. 123-25.00J.

Smith, Frank R. Automatic air brake control. 4,553,788, Cl. 303-7.000.

Smith, James C.: *See—*
Rehman, William R.; and Smith, James C., 4,553,701, Cl. 239-432.000.

Smith, Katherine R.: *See—*
Wacksman, David, 4,553,916, Cl. 418-173.000.

Smith, Lawrence N.: *See—*
Jillie, Don W.; and Smith, Lawrence N., 4,554,567, Cl. 357-5.000.

Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., to Motorola, Inc. Queued community repeater controller. 4,554,677, Cl. 455-54.000.

Smith, Roderick L., to Energy-Adaptive Grinding, Inc. Grinding control methods and apparatus. 4,553,355, Cl. 51-165.870.

Smith, Roy L.: *See—*
Koblitz, Francis F.; and Smith, Roy L., 4,553,940, Cl. 523-115.000.

Smith, Winthrop W., Jr. Programmable transform processor. 4,554,629, Cl. 364-200.000.

Smithgall, David H., Sr.: *See—*
Frazee, Ralph E., Jr.; and Smithgall, David H., Sr., 4,553,706, Cl. 242-18.00A.

Smithkline Beckman Corporation: *See—*
Stringer, Orum D.; and Weinstock, Joseph, 4,554,284, Cl. 514-367.000.
Stringer, Orum D.; and Weinstock, Joseph, 4,554,287, Cl. 514-387.000.

Smyth, Laurence C., to Norandex Inc. Process and apparatus for direct extrusion of thermal barrier profiles. 4,554,123, Cl. 264-166.000.

Snook, Harvey: *See—*
Curtain, Cyril C.; and Snook, Harvey, 4,554,390, Cl. 568-870.000.

Snyder, Irving F.; and Luebeck, Duane A., to Polaris Home Systems, Inc. Centrifugal sprayer having hollow cone feeder. 4,553,700, Cl. 239-215.000.

So, Eddy, to Canadian Patents and Development Limited-Societe Canadienne des Brevets et D'Exploitation Limtee . Replica circuit. 4,554,513, Cl. 330-85.000.

Societe Alsacienne de Construction de Material Textile: *See—*
Moessinger, Albert; Gosciniak, Guy; and Angebault, Joel, 4,553,570, Cl. 139-435.000.

Societe Anonyme D.B.A.: *See—*
Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, 4,553,649, Cl. 188-340.000.
Carre , Jean-Jacques; and Pressaco, Pierre, 4,553,646, Cl. 188-196.0BA.

Societe Anonyme dite: Elf France: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,554,313, Cl. 525-54.500.

Societe de Recherches Industrielles S.O.R.I.: *See—*
Majoie, Bernard, 4,554,371, Cl. 560-52.000.

Societe de Transformation des Matieres Plastiques: *See—*
Heaume, Jean, 4,553,681, Cl. 220-72.000.

Societe de Vente de l'Aluminium Pechiney: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.

Societe Nationale Elf Aquitaine: *See—*
Abou Chakra, Taher; and De Jaeger, Roger, 4,554,113, Cl. 260-927.00N.

Societe Nationale Elf Aquitaine (Production): *See—*
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.

Societe Paris-Rhone: *See—*
Mazzorana, Alfred B., 4,553,442, Cl. 74-7.00A.

Sofranko, John A.: *See—*
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,554,395, Cl. 585-500.000.

Sokira, Thomas J., to Anton/Bauer, Inc. Battery charging apparatus and method. 4,554,500, Cl. 320-31.000.

Soldanski, Heinz-Dieter; and Holdt, Bernd-Dieter, to Henkel KGaA. Liquid leather care compositions. 4,554,083, Cl. 252-8.570.

Soleille, Louis: *See—*
Vigouroux, Georges; Fort, Gilbert; and Soleille, Louis, 4,553,600, Cl. 166-343.000.

Solmat Systems Ltd.: *See—*
Assaf, Gad, 4,553,529, Cl. 126-415.000.

Soloway, Samuel B.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.

Sommer, Herbert; and Wohlfeil, Gerhard, to Jagenberg AG. Device for clamping and tensioning an elastic doctor blade. 4,553,498, Cl. 118-126.000.

Sommerville, John A.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.

Sonnenberg, Bert. Cucumber harvester. 4,553,381, Cl. 56-327.00R.

Sorge, Richard M.; Ponzoni, Ronald W.; and Shoaf, Myron D., to General Foods Corp. Method for agglomerating aspartame and acid-containing mixes. 4,554,167, Cl. 426-285.000.

Sounai, Atuo; and Murata, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Molten carbonate fuel cell. 4,554,225, Cl. 429-34.000.

Spaargaren, Klaas, to Shell Oil Company. Capacitive level gauge. 4,553,434, Cl. 73-304.00C.

Spaargaren, Robert, to Allied Corporation. Wheel cylinder and torque plate construction. 4,553,647, Cl. 188-206.00R.

Speaker, Lois M., to Georgia Tech Research Corporation. Method of modifying membrane surface with oriented monolayers of amphiphilic compounds. 4,554,076, Cl. 210-639.000.

Spector, George: *See—*
Lamphere, Carla A.; and Spector, George, 4,553,921, Cl. 425-279.000.

Speers, Jerry M.: *See—*
Evans, John L.; Gehrig, George F.; and Speers, Jerry M., 4,553,429, Cl. 73-155.000.

Spelber, Leonard G.: *See—*
Tucker, Abraham I.; and Spelber, Leonard G., 4,553,560, Cl. 137-218.000.

Sperry Corporation: *See—*
Jillie, Don W.; and Smith, Lawrence N., 4,554,567, Cl. 357-5.000.
Schultz, Dale E., 4,554,664, Cl. 371-25.000.

Speth, Peter J. Windshield wiper adapter. 4,553,283, Cl. 15-250.320.

Spofa, Spojene podniky pro zdravotnickou vyrobu: *See—*
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.

Sprague Electric Company: *See—*
Childs, John J., 4,554,612, Cl. 361-306.000.

Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., to Allied Corporation. Range processor for DME. 4,554,547, Cl. 343-7.300.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,554,096, Cl. 252-522.00R.

Springer, John A.: *See—*
Greer, Charles B.; Keehan, Donald W.; and Springer, John A., 4,554,648, Cl. 367-49.000.

Staalkat B.V.: *See—*
van der Schoot, Jelle, 4,553,661, Cl. 198-428.000.

Stabilimento Industriale Srl: *See—*
Primati, Marco; and Calderini, Leonardo, 4,553,343, Cl. 38-33.000.

Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, to Celanese Corporation. Production of N-vinyl carboxylic acid amides. 4,554,377, Cl. 564-205.000.

Stahl, Werner; and Barten, Axel. Work-holding fixture for metal power saws. 4,553,460, Cl. 83-113.000.

Stain, Donald B.: *See—*
Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., 4,554,151, Cl. 423-551.000.

Stamicarbon B.V.: *See—*
Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, 4,554,386, Cl. 568-697.000.

Standard Oil Company, The: *See—*
Greene, Janice L.; and Loza, Roman, 4,554,345, Cl. 528-336.000.

Stanland, Andrew J.: *See—*
Olesen, Ralph C.; Sainati, Robert A.; Gropelli, John J., Jr.; and Stanland, Andrew J., 4,554,554, Cl. 343-895.000.

Stauffer Chemical Company: *See—*
Carter, Charles G.; and Lee, David L., 4,554,014, Cl. 71-94.000.
Gray, Reed A., 4,554,008, Cl. 71-83.000.
Wong, Rayman Y., 4,554,277, Cl. 514-277.000.

Ste Look: *See—*
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Stedman Corporation: *See—*
Odham, Carl J., 4,553,412, Cl. 66-207.000.

Stein, Joseph L.; and Maskell, Thomas J., to General Refractories Company. Method of manufacturing a slide gate. 4,554,035, Cl. 156-89.000.

Steinman, Martin; and Wong, Yee-Shing, to Schering Corporation. Preparation of 4-acyloxyazetidinones from acyl nitrates and penams. 4,554,103, Cl. 260-239.00A.

Steinmetz, Alan L.: *See—*
Krinski, Thomas L.; and Steinmetz, Alan L., 4,554,337, Cl. 527-201.000.

Stelter, Norbert: *See—*
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, 4,553,654, Cl. 192-0.076.

Stephan, Hans: *See—*
Maul, Rudolf; Stephan, Hans; and Wolf, Walter, 4,554,368, Cl. 556-91.000.

Sterling, Vaughn C.: *See—*
Lorenzen, Steven C.; and Sterling, Vaughn C., 4,553,928, Cl. 431-359.000.

Stern, Robert; and Hillion, Gerard, to Institut Francais du Petrole. Process for manufacturing a linear olefin from a saturated fatty acid or fatty acid ester. 4,554,397, Cl. 585-638.000.

Sternberg, Robert L., to United States of America, Navy. Ellipticized acoustical lens providing balanced astigmatism. 4,553,629, Cl. 181-176.000.

Sterrett, Terry L.: *See—*
Kidd, Patrick D.; and Sterrett, Terry L., 4,554,336, Cl. 526-301.000.

Stevens, Peter F.: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,554,413, Cl. 179-99.00M.

Stevens, Reginald W., to International Computers Limited. Sequential data transmission system with resynchronization. 4,554,673, Cl. 375-118.000.

Stewart-Cox, Adrian R., to British-American Tobacco Company Limited. Cigarette making machines. 4,553,555, Cl. 131-110.000.

Stiegler, Reinhard. Apparatus for relieving psychological stress. 4,553,534, Cl. 128-24.100.

Stiff, Omar L.: *See—*
Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, 4,553,900, Cl. 414-745.000.

Stilwell, George R., Jr: *See—*
Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.

Stinebaugh, Donald E. Internal combustion engine. 4,553,508, Cl. 123-58.0AA.

Stirling Technology, Inc.: *See—*
Chagnot, Bruce J.; and Wood, James G., 4,553,392, Cl. 60-517.000.

Stoeckel, Dieter: *See—*
Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, 4,554,027, Cl. 148-11.50R.

Stoehr, Herbert M.; and Toben, John J., to Artos Engineering Company. Apparatus for producing elongated workpieces of predetermined transverse profile. 4,553,418, Cl. 72-132.000.

Stohrer, Charles E., Jr., to Harper-Wyman Company. Two-way adjustable grate and method for adjusting the length and width. 4,553,523, Cl. 126-9.00B.

Stoll, Robert W.; and MacLaury, Michael R., to General Electric Company. Method for treating fumed silica. 4,554,147, Cl. 423-335.000.

Stolt, Lars: *See—*
Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman, 4,554,569, Cl. 357-15.000.

Storage Technology Corporation: *See—*
Huffman, James; Brandt, Kim; and Doutre, Alton G., 4,553,892, Cl. 414-121.000.

Stork Screens B.V.: *See—*
van der Velden, Hendricus J., 4,554,040, Cl. 156-215.000.

Stough, Donald M.: *See—*
Nelson, Robert L.; and Stough, Donald M., 4,553,924, Cl. 431-12.000.

Strachan, Donald C. Mattress carrying harness. 4,553,780, Cl. 294-152.000.

Straith, Richard E. Airway. 4,553,540, Cl. 128-200.260.

Stratton, Joseph F.: *See—*
Murphy, Arthur J.; and Stratton, Joseph F., 4,554,446, Cl. 235-487.000.

Streiff, Werner: *See—*
Zihlmann, Siegfried; and Streiff, Werner, 4,553,321, Cl. 29-598.000.

Stretch Emballering AB: *See—*
Back, Karl J., 4,553,372, Cl. 53-411.000.

Stright, Ramon L. Water hose fitting tool. 4,553,280, Cl. 7-157.000.

Stringer, Orum D.; and Weinstock, Joseph, to Smithkline Beckman Corporation. 7-(2-Aminoethyl)-1,3-benzthia- or oxa-zol-2(3H)-ones. 4,554,284, Cl. 514-367.000.

Stringer, Orum D.; and Weinstock, Joseph, to Smithkline Beckman Corporation. Antihypertensive 7-[2-(dialkylamino)ethyl]-4-hydroxy-1,3-benzimidazol-2-ones. 4,554,287, Cl. 514-387.000.

Strobl, Otto; Blien, Harry; and Uliczka, Wolfgang. Apparatus for producing a wide fibrous web. 4,553,289, Cl. 19-161.100.

Strumbos, William P. Vacuum cleaner universal nozzle. 4,553,284, Cl. 15-414.000.

Struve, Klaus-Dieter: *See—*
Haas, Heinz; and Struve, Klaus-Dieter, 4,554,194, Cl. 428-40.000.

Strzegowski, Joseph C., Jr.: *See—*
Turner, Edward W.; Blake, Peter J.; and Strzegowski, Joseph C., Jr., 4,553,464, Cl. 83-865.000.

Studiengesellschaft Kohle mbH: *See—*
Bogdanovic, Borislav, 4,554,152, Cl. 423-647.000.
Bogdanovic, Borislav, 4,554,153, Cl. 423-647.000.

Sturdevant, Norman J., Jr.: *See—*
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., 4,554,416, Cl. 179-170.0NC.

Su, Kai C., to Ciba Geigy Corporation. Tinted contact lenses and a method for their preparation. 4,553,975, Cl. 8-507.000.

Su, Taian: *See—*
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,554,598, Cl. 360-48.000.

Suda, Yoshiyuki: *See—*
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, 4,554,586, Cl. 358-213.000.

Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, to Sumitomo Metal Industries, Ltd. Dry type continuous wire drawing process. 4,553,416, Cl. 72-40.000.

Sudrabin, David A., to Fibrestone Incorporated. Horizontally poured Fibrestone building construction. 4,554,124, Cl. 264-263.000.

Suematsu, Koshi: *See—*
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.

Sueyasu, Seisuke: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.

Suganuma, Tadao, to Elionix, Inc. Method and apparatus for handling charged particle beam. 4,554,452, Cl. 250-310.000.

Sugihara, Masahiro: *See—*
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.

Sugihara, Masanori, to Pioneer Electronic Corporation. Mode switch operating device for tape recorder. 4,554,601, Cl. 360-90.000.

Sugimoto, Shigeo: *See—*
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, 4,554,223, Cl. 429-20.000.

Sugita, Hiroshi: *See—*
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.

Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, to Victor Company of Japan, Ltd. Memory utilization control system for compressed digital picture data transmission system. 4,554,597, Cl. 358-335.000.

Sugiyama, Terumasa: *See—*
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.

Sukegawa, Tsuneo: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.

Sumitomo Chemical Company, Limited: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Sasaki, Mitsuru; and Ishiguri, Yukio, 4,554,111, Cl. 260-502.40R.
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.

Sumitomo Electric Industries, Ltd.: *See—*
Chigusa, Yoshiki, 4,553,995, Cl. 65-4.200.
Moriya, Michio, 4,553,787, Cl. 303-6.00C.

Sumitomo Metal Industries, Ltd.: *See—*
Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, 4,553,416, Cl. 72-40.000.
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.

Sumitomo Naugatuck Co., Ltd.: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.

Summers, Frank V.; Meissner, David C.; and Brown, Ronald, to Midrex International BV Rotterdam, Zurich Branch. Apparatus for generating a reducing gas. 4,553,742, Cl. 266-156.000.

Summerville, Don S.: *See—*
King, Eddie W.; Duke, Herman K.; and Summerville, Don S., 4,554,419, Cl. 200-5.00A.

Summerville, James E., Jr., heir: *See—*
Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, 4,554,377, Cl. 564-205.000.

Summerville, Richard H., deceased: *See—*
Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, 4,554,377, Cl. 564-205.000.

Sun-Diamond Growers of California: *See—*
Gunnerson, Robert E., 4,554,168, Cl. 426-473.000.

Sundberg, Jack G.: *See—*
Noell, Godwin L.; and Sundberg, Jack G., 4,553,914, Cl. 418-69.000.

Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, to Emhart Industries, Inc. Molten glass spout bowl refractory tube support mechanism and method of control. 4,554,000, Cl. 65-129.000.

Surface Science Laboratories, Inc.: *See—*
Kelly, Michael A., 4,554,457, Cl. 250-396.0ML.

Surgikos, Inc.: *See—*
Morris, Henrietta K., 4,553,539, Cl. 128-132.00D.

Sutter, Franz, to Institute Straumann AG. Device including a screw pin and a driven member for screwing the pin into a tooth. 4,553,942, Cl. 433-225.000.

Suzuki, Akira: *See—*
Mitsui, Kenji; and Suzuki, Akira, 4,554,409, Cl. 178-19.000.

Suzuki, Hikoshiro: *See—*
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.

Suzuki, Isao; and Abe, Kenichi, to Jidosha Kiki Co., Ltd. Exhaust brake apparatus of sliding type. 4,553,648, Cl. 188-273.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,553,514, Cl. 123-308.000.

Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, to Fuji Xerox Co., Ltd. Input signal testing device for electronic copier. 4,554,662, Cl. 371-20.000.

Suzuki, Takehiko: *See—*
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.

Suzuki, Yasuo: *See—*
Matsumoto, Kenji; and Suzuki, Yasuo, 4,553,579, Cl. 152-450.000.

Swain, James C.; and Thomas, David L., to Diesel Kiki Co., Ltd. Variable capacity wobble plate compressor with high stability of capacity control. 4,553,905, Cl. 417-222.000.

Swartz, James R.: *See—*
Sherman, Leonard H.; Swartz, James R.; and Williams, James M., 4,554,499, Cl. 318-696.000.

Swatty, Gene: *See—*
Brundage, Robert W.; and Swatty, Gene, 4,553,732, Cl. 251-30.010.

Swick, Edwin G.: *See—*
Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., 4,554,609, Cl. 361-119.000.

Swords, Richard J.: *See—*
Parker, Richard L.; Swords, Richard J.; and Griffin, Larry E., 4,553,698, Cl. 239-3.000.

Sybron Corporation: *See—*
Kidd, Patrick D.; and Sterrett, Terry L., 4,554,336, Cl. 526-301.000.
Olsen, Robert A., 4,553,938, Cl. 433-126.000.

Symons Corporation: *See—*
Connors, Frank T., 4,553,729, Cl. 249-40.000.

Syntex (U.S.A.) Inc.: *See—*
Vickery, Brian H., 4,553,972, Cl. 604-892.000.

Tabaru, Kazunori; Aoyama, Takafumi; and Kumakura, Toshio. Magnetic toner. 4,554,232, Cl. 430-106.600.

Taguchi, Masahiro: *See—*
Tsuge, Noboru; and Taguchi, Masahiro, 4,553,625, Cl. 180-268.000.

Taguchi, Minoru; and Sasaki, Gen, to Kabushiki Kaisha Toshiba. Method of selectively etching high impurity concentration semiconductor layer. 4,554,046, Cl. 156-637.000.

Taig, Alistair G.: *See—*
Parks, Kevin B.; Jordan, David D.; and Taig, Alistair G., 4,553,949, Cl. 464-153.000.

Tajiri, Norikiyo: *See—*
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.

Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, to Japan Storage Battery Company Limited. Alkaline battery. 4,554,227, Cl. 429-178.000.

Takagi, Hiroyoshi, to Hitachi Maxell, Ltd. Recording tape cartridge. 4,553,717, Cl. 242-198.000.

Takagi, Shozo. Mold supporting arrangement. 4,553,795, Cl. 308-6.00R.

Takahashi, Izumi: *See—*
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.

Takahashi, Masayoshi: *See—*
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,553,544, Cl. 128-340.000.

Takahashi, Wataru: *See—*
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.

Takamatsu, Hiroshi: *See—*
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.

Takamatsu, Toshiaki: *See—*
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.

Takao, Masayasu, to Q.P. Corporation; and Nitto Hogei Co., Ltd., a part interest. Refined fish oils and the process for production thereof. 4,554,107, Cl. 260-421.000.

Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, to Nippondenso Co., Ltd. Air-fuel ratio control for an exhaust gas recirculation engine. 4,553,518, Cl. 123-478.000.

Takara Shuzo Co., Ltd.: *See—*
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.

Takasago, Masahiro: *See—*
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.

Takasaki, Yukio: *See—*
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.

Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, to Mitsubishi Denki Kabushiki Kaisha. Electrospark machining control device. 4,554,428, Cl. 219-69.00G.

Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, to Fujisawa Pharmaceutical Co., Ltd. Kasugamycin derivatives, pharmaceutical compositions and method of use. 4,554,269, Cl. 514-35.000.

Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, to Kanebo, Ltd. 4-Chloro-4-methyl-5-methylene-1,3-dioxolane-2-one. 4,554,358, Cl. 549-229.000.

Takeda, Jun: *See—*
Kojiro, Tetsuya; and Takeda, Jun, 4,553,812, Cl. 350-96.200.

Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, to Toyo Soda Manufacturing Co., Ltd. Aryl N-alkyl-N-(pyridyl or pyrimidyl) carbamate. 4,554,012, Cl. 71-92.000.

Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, to Toyo Soda Manufacturing Co., Ltd. Herbicides. 4,554,015, Cl. 71-100.000.

Takenouchi, Masanori: *See—*
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.

Takenoya, Hideaki; and Mishima, Fumiyuki, to Janome Sewing Machine Industry Co. Ltd. Impact type color printer. 4,553,870, Cl. 400-662.000.

Taki, Hirokazu: *See—*
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.

Tanaka, Hidehiko: *See—*
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.

Tanaka, Koji: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Tanaka, Noriaki: *See—*
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.

Tanaka, Shizuya: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.

Tanaka, Shunpei; and Kimura, Kenji, to Olympus Optical Co., Ltd. Video signal recording/reproducing apparatus with crosstalk and tracking error elimination. 4,554,595, Cl. 358-328.000.

Tanaka, Toshinori: *See—*
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.

Tanaka, Yasuo: *See—*
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.

Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, to Industrie Pirelli S.p.A. Toothed-belt and toothed-pulley transmission. 4,553,952, Cl. 474-153.000.

Taniguchi, Yutaka, to Fuji Photo Film Co., Ltd. Optical system for scanning with laser beam. 4,554,454, Cl. 250-327.200.

Tanimoto, Masahiro, to Horiba, Ltd. Gas doser. 4,553,423, Cl. 73-1.00G.

Taniuchi, Tetsuo; and Tsujimoto, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Fiber optic magnetic field sensor. 4,554,449, Cl. 250-227.000.

Tanner, Mark. Pollution inhibitor packing nut. 4,553,637, Cl. 184-15.100.

Tanoue, Tomonori: *See—*
Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, 4,553,317, Cl. 29-572.000.

Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image sensing device. 4,554,586, Cl. 358-213.000.

Tapner, Peter N.: *See—*
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.

Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, to Honeywell Information Systems, Inc. Single revolution disk sector formatter. 4,554,598, Cl. 360-48.000.

Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, to Central Glass Company Limited. Dehydrating decomposition process for preparing carbonyl compound. 4,554,382, Cl. 568-404.000.

Tasch, Al F., Jr.: *See—*
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.

Task, Harry L., to United States of America, Air Force. Diffuse incandescent runway marker light apparatus for overt/covert operation. 4,554,544, Cl. 340-953.000.

Task, Harry L.: *See—*
Wyatt, Ivan S.; and Task, Harry L., 4,554,543, Cl. 340-948.000.

Tatematsu, Takashi, to Kabushiki Kaisha Ishida Koki Seisakusho. Article discharge apparatus in automatic weighing system. 4,553,617, Cl. 177-25.000.

Tatsuno, Koji, to Uryu Seisaku, Ltd. Oil pressure type pneumatic torque wrench. 4,553,948, Cl. 464-25.000.

Tatum, Edward F.: *See—*
Shin, Kju Hi; and Tatum, Edward F., 4,554,389, Cl. 568-722.000.

Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, to G. Rau GmbH & Co. Shaped part made of a composite material and a process for its production. 4,554,027, Cl. 148-11.50R.

Taylor, Christopher J.: *See—*
Wiggs, Christopher C.; and Taylor, Christopher J., 4,553,754, Cl. 273-153.00S.

Taylor, David H., to Thermo King Corporation. Transport refrigeration air system. 4,553,403, Cl. 62-239.000.

Taylor, Frances H. Disposable relief container with secural liner. 4,553,969, Cl. 604-355.000.

Taylor, Graham: *See—*
Jones, Robert A.; Jones, Frank; and Taylor, Graham, 4,554,091, Cl. 252-187.250.

Taylor, Mark P.: *See—*
Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., 4,554,197, Cl. 428-113.000.

Tea Industries, Inc.: *See—*
James, Max F., 4,554,039, Cl. 156-213.000.

Teague, Walter D., Jr.: *See—*
Scott, Edward L.; and Teague, Walter D., Jr., 4,553,641, Cl. 188-24.220.

Teich, Christian M., to Deere & Company. Flip-up shield assembly for tractor power take-off. 4,553,950, Cl. 464-176.000.

Tektronix, Inc.: *See—*
Jackson, Ronald M., 4,554,536, Cl. 340-747.000.
McKibben, Barry A., 4,554,489, Cl. 315-399.000.

Telander, Lee W. Pipe thread protector. 4,553,567, Cl. 138-96.00T.

Telmec SPA: *See—*
Sergio, Sala, 4,554,062, Cl. 204-206.000.

Telpac Company Limited: *See—*
Glen, John D.; and Glen, Rose-Mary M., 4,554,114, Cl. 261-95.000.

Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., to Zenith Radio Corporation. STV Decoder with improved data signal recognition capability. 4,554,581, Cl. 358-120.000.

Teppichwerk Neumunster GmbH: *See—*
Haas, Heinz; and Struve, Klaus-Dieter, 4,554,194, Cl. 428-40.000.

Terajima, Yoshimi; Akitoshi, Hiroshi; and Nagatani, Nobuaki, to Toyo Seikan Kaisha, Ltd. Bag-shaped container with a straw insert hole formed and method of producing the same. 4,553,693, Cl. 229-7.00S.

Teramachi, Hiroshi. Recirculating-ball linear bearing with a guide rail. 4,553,793, Cl. 308-6.00C.

Teramachi, Hiroshi. Linear slide roller bearing unit. 4,553,794, Cl. 308-6.00C.

Teramoto, Yoshikichi: *See—*
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.

Terasaka, Teiji: *See—*
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.

Teringer, Imre: *See—*
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.

Terni - Societa per l'Industria e l'Elettricita SpA: *See—*
Marini, Paolo; and Candiotti, Marcello, 4,554,213, Cl. 428-418.000.

Terry, Robert E.: *See—*
Alford, James L.; and Terry, Robert E., 4,554,552, Cl. 343-786.000.

Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, to Labsystems Oy. Pipette with adjustable volume. 4,554,134, Cl. 422-100.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,554,361, Cl. 549-302.000.

Tessitore, Pietro T. Hydroxybenzenesulfonic acid salts of 5-(o-chlorobenzyl)-4,5,6,7-tetrahydrothiene [3,2-c] pyridine useful in inhibiting blood-platelet aggregation. 4,554,278, Cl. 514-301.000.

Tetra Tech, Inc.: *See—*
Braun, Steve W., 4,554,511, Cl. 330-9.000.

Teutelink, Bernard C.: *See—*
Raisin, Helmut; and Teutelink, Bernard C., 4,553,976, Cl. 8-639.000.

Texaco Inc.: *See—*
Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., 4,553,499, Cl. 118-428.000.
Headley, James A., 4,554,080, Cl. 252-8.50A.
Huang, Wann-Sheng; and Brown, Alfred, 4,553,595, Cl. 166-278.000.
Karol, Thomas J.; and Magaha, Harold S., 4,554,086, Cl. 252-49.600.
Knifton, John F., 4,554,383, Cl. 568-428.000.
Lin, Jiang-Jen, 4,554,374, Cl. 560-204.000.
Lin, Jiang-Jen; and Alexander, David C., 4,554,375, Cl. 560-244.000.
Looney, Mark D.; and Savage, Kerry D., 4,553,592, Cl. 166-248.000.
Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, 4,554,364, Cl. 549-453.000.

Texas Instruments Incorporated: *See—*
Chatterjee, Pallab K., 4,554,572, Cl. 357-42.000.
Hansson, Jan I., 4,553,436, Cl. 73-517.00R.
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.
Kuo, Chang-Kiang, 4,554,643, Cl. 365-104.000.

Texas Processed Plastics, Inc.: *See—*
Powell, Bert R.; and Collins, Albert L., 4,553,352, Cl. 47-71.000.

Theodor Groz & Sohne: *See—*
Schuler, Bernhard; and Beck, Ernst, 4,553,411, Cl. 66-123.000.

Thermo King Corporation: *See—*
Taylor, David H., 4,553,403, Cl. 62-239.000.

Theysohn, Rainer: *See—*
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.

Thiele, Kurt: *See—*
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.
Zirngibl, Ludwig; and Thiele, Kurt, 4,554,356, Cl. 548-341.000.

Thies, Peter: *See—*
Fudickar, Harald; and Thies, Peter, 4,554,043, Cl. 156-502.000.

Thomann, Roland; and Amann, Markus, to Polydrain, Inc. Slotted drainage grate with support. 4,553,874, Cl. 404-4.000.

Thomas, David L.: *See—*
Swain, James C.; and Thomas, David L., 4,553,905, Cl. 417-222.000.

Thompson, David S.; and Scott, Darwin H., to United States of America, Energy. Aluminum battery alloys. 4,554,131, Cl. 420-546.000.

Thompson, William E.: *See—*
Perrella, Guido; and Thompson, William E., 4,553,583, Cl. 164-458.000.

Thomson-CSF: *See—*
Arques, Marc, 4,554,571, Cl. 357-24.000.
Baer, Jean-Michel, 4,554,518, Cl. 333-33.000.
Deman, Pierre; and Butin, Henri, 4,554,668, Cl. 375-1.000.
Deman, Pierre; and Butin, Henri, 4,554,669, Cl. 375-1.000.
Fleuret, Daniel, 4,553,304, Cl. 29-25.420.
Malissin, Roland; and Monlouis, Claude, 4,554,653, Cl. 369-45.000.
Parniere, Alain; and Bazenant, Dominique, 4,554,517, Cl. 332-18.000.
Pham van Cang, Luc, 4,554,663, Cl. 371-20.000.

Thorsbakken, Arden L. Tamper indicating container safety cover. 4,553,678, Cl. 215-218.000.

Thyssen Industrie Aktiengesellschaft: *See—*
Harder, Helmut, 4,553,720, Cl. 244-137.00P.

Tibbet Incorporated: *See—*
Bechstein, Bradley L., 4,553,365, Cl. 52-483.000.

Tie-Tite Products, Incorporated: *See—*
Blum, Ronald D., 4,553,293, Cl. 24-119.000.

Tillyard, Malcolm: *See—*
Hanson, Raymond; and Tillyard, Malcolm, 4,553,341, Cl. 34-236.000.

Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, to Zahnradfabrik Friedrichshafen, AG. Hydrostatic auxiliary steering apparatus. 4,553,389, Cl. 60-384.000.

Tischer, Werner: *See—*
Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, 4,553,390, Cl. 60-384.000.

Tisdale, Stephen L.: *See—*
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Tkachuk, Peter R., to United States of America, Navy. Dynamic pressure test unit-ratio method. 4,553,425, Cl. 73-37.000.

Tobe, Kazumitsu, to Canon Kabushiki Kaisha. Video signal recording apparatus. 4,554,602, Cl. 360-14.200.

Toben, John J.: *See—*
Stoehr, Herbert M.; and Toben, John J., 4,553,418, Cl. 72-132.000.

Todoh, Hidemasa: *See—*
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.

Todokoro, Hideo; and Fukuhara, Satoru, to Hitachi, Ltd. Potential analyzer. 4,554,455, Cl. 250-305.000.

Tokai Rubber Industries Ltd.: *See—*
Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,553,744, Cl. 267-140.100.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hayashi, Masakazu, 4,554,580, Cl. 358-107.000.
Iida, Kazuhiko, 4,554,638, Cl. 364-521.000.
Koike, Hideharu, 4,554,465, Cl. 307-269.000.
Mosholder, Michael, 4,553,826, Cl. 355-3.0FU.
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Segawa, Makoto; and Ariizumi, Shoji, 4,554,469, Cl. 307-482.000.
Sera, Michitoshi, 4,554,126, Cl. 264-272.170.
Sounai, Atuo; and Murata, Kenji, 4,554,225, Cl. 429-34.000.
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, 4,554,586, Cl. 358-213.000.

Tolcon Steel Corporation: *See—*
Willoughby, Marshall O., 4,553,479, Cl. 102-430.000.

Tolok, Vladimir T.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Tomazic, Gerd: *See—*
Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, 4,554,041, Cl. 156-276.000.

Tomio, Wada: *See—*
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.

Tomioka, Isao: *See—*
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Tomono, Makoto: *See—*
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,553,500, Cl. 118-657.000.

Tomy Kogyo Corporation, Inc.: *See—*
Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, 4,553,947, Cl. 446-443.000.

Toothaker, David L., to Tweco Products, Inc. Welding conduit stop. 4,554,433, Cl. 219-137.630.

Topping, Donald G. Mounting means for bow stabilizers. 4,553,522, Cl. 124-89.000.

Topre Corporation: *See—*
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.

Toth, Istvan: *See—*
Farkas, Tibor; Vigh, Laszlo; Horvath, Ibolya; Nagy nee Vanicsek, Aniko; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Toth, John F.: *See—*
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.

Touma, Teruo: *See—*
Kumasaka, Osamu; and Touma, Teruo, 4,554,655, Cl. 369-275.000.

Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman. Integrated electron circuits having Schottky field effect transistors of P- and N-type. 4,554,569, Cl. 357-15.000.

Townsend, Dana R.: *See—*
Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., 4,554,506, Cl. 324-158.00P.

Townsend, Greg M.: *See—*
Marten, Russell A.; and Townsend, Greg M., 4,554,658, Cl. 370-85.000.

Toy, Frank C. Information monitoring and notification method and apparatus. 4,554,418, Cl. 179-2.0DP.

Toyama, Haruji: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.

Toyo Kako Kabushiki Kaisha: *See—*
Nakada, Morihito, 4,553,562, Cl. 137-375.000.

Toyo Seikan Kaisha, Ltd.: *See—*
Terajima, Yoshimi; Akitoshi, Hiroshi; and Nagatani, Nobuaki, 4,553,693, Cl. 229-7.00S.
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.

Toyo Soda Manufacturing Co. Ltd.: *See—*
Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, 4,554,211, Cl. 428-402.000.
Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, 4,554,376, Cl. 562-554.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, 4,553,424, Cl. 73-27.00R.
Shinoda, Kazuo, 4,554,634, Cl. 364-431.100.
Yoshida, Seiki, 4,553,896, Cl. 414-495.000.

Tozzolino, Pierre: *See—*
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.

Traylor, Paul L. Backflush coupling and method for internal combustion engine cooling system. 4,553,587, Cl. 165-95.000.

Trenkler, Werner, to Dr. Ing. h.c.F. Porsche AG. Linkage arrangement for a convertible top. 4,553,784, Cl. 296-107.000.

Trevino, Edward: *See—*
Hess, Edward C.; and Trevino, Edward, 4,553,309, Cl. 29-450.000.

Trevitt, Donna J.: *See—*
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Triumph-Adler Aktiengesellschaft fur Buro-Informationstechnik: *See—*
Lendl, Joseph, 4,553,861, Cl. 400-120.000.

Trout, George E.: *See—*
Weidler, Charles H.; and Trout, George E., 4,553,808, Cl. 339-97.00R.

Trutzschler GmbH & Co. KG: *See—*
Knappertz, Walter P., 4,553,882, Cl. 406-181.000.

TRW Inc.: *See—*
Allard, Ira L., 4,554,038, Cl. 156-196.000.

Tsai, Jen-Fa. Mousetrap. 4,553,349, Cl. 43-70.000.

Tsuchiya, Eiichi, to Victor Company of Japan, Ltd. Adapter for a miniature type tape cassette. 4,554,603, Cl. 360-94.000.

Tsuge, Noboru; and Taguchi, Masahiro, to Nippon Soken, Inc. Automobile seat belt system with automatic unlocking function. 4,553,625, Cl. 180-268.000.

Tsuji, Nobuo: *See—*
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.

Tsuji, Toshinori: *See—*
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.

Tsujimoto, Yoshinobu: *See—*
Taniuchi, Tetsuo; and Tsujimoto, Yoshinobu, 4,554,449, Cl. 250-227.000.

Tsukada, Masamichi: *See—*
Nogami, Taro; and Tsukada, Masamichi, 4,553,840, Cl. 356-333.000.

Tsukada, Masamitsu: *See—*
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Tsukada, Toshihisa: *See—*
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.

Tsukamoto, Goro: *See—*
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, 4,554,358, Cl. 549-229.000.

Tsukamoto, Toshihiko: *See—*
Imanori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Tsuneno, Hiroshi: *See—*
Yamamoto, Hideharu; and Tsuneno, Hiroshi, 4,554,573, Cl. 357-73.000.

Tsunoda, Yoshito: *See—*
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.

Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, to Toyo Seikan Kaisha, Ltd. Bonded can of key-opening type and process for production thereof. 4,553,682, Cl. 220-75.000.

Tsutsumi, Hideo: *See—*
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.

Tsutsumi, Suteo; and Koh, Hiroshi, to Fujitec Co., Ltd. Monitoring system for a predetermined field of view. 4,554,459, Cl. 250-550.000.

Tsuzuki, Kenji: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Tucker, Abraham I.; and Spelber, Leonard G., to Wastemate Corporation. Anti-siphon control valve. 4,553,560, Cl. 137-218.000.

Tumey, Michael L.: *See—*
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.

Tunac, Josefino B.: *See—*
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Toothaker, David L., 4,554,433, Cl. 219-137.630.

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Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.

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Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.

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Matsui, Isamu; and Ueda, Yutaka, 4,553,708, Cl. 242-36.000.

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Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.

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Chiozza, Enrico, 4,553,536, Cl. 128-130.000.

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Fuderer, Andrija, 4,553,981, Cl. 48-62.00R.
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., 4,554,143, Cl. 423-306.000.
Ramamurthy, Arakalgud V., 4,554,120, Cl. 264-85.000.

Union Special GmbH: *See—*
Jurgens, Erwin F., 4,553,492, Cl. 112-227.000.

Unipart Group Limited: *See—*
Lardner, Graham G., 4,553,586, Cl. 165-76.000.

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Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,554,294, Cl. 521-93.000.

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Panza, Michael J., 4,553,631, Cl. 181-291.000.

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Agriculture: *See—*
Lest, William L., 4,554,442, Cl. 235-88.00R.
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Greer, Charles B.; Keehan, Donald W.; and Springer, John A., 4,554,648, Cl. 367-49.000.
Jacobs, Harold; and Dixon, Samuel, Jr., 4,554,680, Cl. 455-326.000.
Saggiomo, Andrew J.; and Nodiff, Edward A., 4,554,279, Cl. 514-311.000.
Energy: *See—*
Aldissi, Mahmoud, 4,554,093, Cl. 252-500.000.
Barclay, John A.; and Dyson, Jack E., 4,553,566, Cl. 137-625.110.
Cookson, Alan H., 4,554,399, Cl. 174-14.00R.
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.
Peinado, Charles O.; and Koutz, Stanley L., 4,554,129, Cl. 376-298.000.
Thompson, David S.; and Scott, Darwin H., 4,554,131, Cl. 420-546.000.
Interior: *See—*
Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., 4,554,058, Cl. 204-110.000.
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Lee, Mark C., 4,553,917, Cl. 425-6.000.
Ruoff, Carl F., 4,553,393, Cl. 60-528.000.
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Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, 4,554,483, Cl. 315-4.000.
Brown, Douglas E.; and Matthews, William, 4,554,650, Cl. 367-154.000.
Hooper, Ronald; and Nichols, Kenneth, 4,553,439, Cl. 74-5.400.
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Sternberg, Robert L., 4,553,629, Cl. 181-176.000.
Tkachuk, Peter R., 4,553,425, Cl. 73-37.000.

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Bailleul, Gilles; and Coville, Patrick, 4,554,434, Cl. 219-216.000.
Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, 4,554,471, Cl. 310-49.00R.
Kasperkovitz, Wolfdietrich G., 4,554,503, Cl. 323-315.000.
Lewin, Ian H., 4,554,611, Cl. 361-234.000.
Maassen, Egbertus J. P., 4,553,832, Cl. 355-32.000.
van der Wijst, Hendricus M., 4,554,614, Cl. 361-400.000.
van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., 4,554,564, Cl. 346-161.000.

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Kaminski, Walter R., 4,554,667, Cl. 372-83.000.
Laurello, Vincent P., 4,553,901, Cl. 415-138.000.
Rannenberg, George C., 4,553,407, Cl. 62-402.000.

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Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

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Gastmeier, William J.; and Dohmer, Rolf, 4,553,627, Cl. 181-135.000.

University of Pittsburgh: *See—*
Mears, Dana C., 4,553,272, Cl. 623-1.000.

University of Southern California: *See—*
Whelan, James M., 4,554,150, Cl. 423-491.000.

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Meek, Dale E.; and Upchurch, James M., 4,553,598, Cl. 166-317.000.

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Braughler, J. Mark; and Hall, Edward D., 4,554,271, Cl. 514-179.000.

Uppgren, John J.; and Scott, James W., to FMC Corporation. Sand mold making machine apparatus and method improvements. 4,553,581, Cl. 164-16.000.

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Tatsuno, Koji, 4,553,948, Cl. 464-25.000.

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Hanson, Raymond; and Tillyard, Malcolm, 4,553,341, Cl. 34-236.000.

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Richardson, Gary H., 4,554,165, Cl. 426-36.000.

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Rubin, Gene L.; Filipowicz, Anthony H.; and Valenza, Frank, 4,553,344, Cl. 40-152.000.

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Gizard, Michel, 4,553,450, Cl. 74-689.000.

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Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.

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Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.

van der Velden, Hendricus J., to Stork Screens B.V. Method of forming a printing sleeve. 4,554,040, Cl. 156-215.000.

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Vardo, Jean-Claude: *See—*
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

Vargo, William R. Steel shelving mounting clip and shelving structure. 4,553,725, Cl. 248-221.300.

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Vasilchenko, Georgy A.; and Alexeev, Leonid I. Spindle headstock. 4,553,886, Cl. 409-233.000.

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Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, 4,554,156, Cl. 424-81.000.

Vaughan, David E., to Exxon Research and Engineering Co. Process for preparing a zeolite of the L type using organic templates. 4,554,146, Cl. 423-329.000.

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Bryant-Jeffries, Keith C.; Dickie, Hugh G.; and Vaughan, Eric V., 4,553,320, Cl. 29-598.000.

Vaughn, Herchel A., to Motorola, Inc. CMOS Flip-flop. 4,554,467, Cl. 307-279.000.

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Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, 4,553,288, Cl. 19-113.000.

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Buschbom, Floyd E.; and Hansen, Glen D., 4,553,664, Cl. 198-814.000.

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McHenry, Robert J.; Pfutzenreuter, Henry, III; Tung, Thomas T.; and Vella, John, Jr., 4,554,190, Cl. 428-35.000.

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Grimm, M. Andreas; and Brock, George W., 4,554,217, Cl. 428-469.000.

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Verbrugge, Pieter A., to Shell Oil Company. Esters of 1,5-dimethyl bicyclo [3.2.1] octan-8-ol. 4,554,109, Cl. 260-457.000.

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Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, 4,554,041, Cl. 156-276.000.

Vereschaka, Anatoly S.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Verstegen, Johannes D. M.: *See—*
Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, 4,554,386, Cl. 568-697.000.

Vicic, John C. Ram-type blowout preventer and packer therefor. 4,553,730, Cl. 251-1.300.

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Kobayashi, Toshio; and Hishiki, Hideo, 4,554,488, Cl. 315-368.000.
Koyama, Tsuneyuki, 4,554,604, Cl. 360-95.000.
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.
Tsuchiya, Eiichi, 4,554,603, Cl. 360-94.000.

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Hickey, David S.; and Brocklehurst, John C., 4,553,959, Cl. 604-96.000.

Videocolor S.A.: *See—*
Cormio, Ignazio, 4,554,589, Cl. 358-248.000.

Vigh, Laszlo : *See—*
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

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Bogese, Charles E., 4,553,800, Cl. 339-59.00M.

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Volkamer, Klaus; Wagner, Eckhart; and Wagner, Ulrich, to BASF Aktiengesellschaft. Removal of CO_2 and/or H_2S from gases. 4,553,984, Cl. 55-46.000.

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vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.

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von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest, 4,554,198, Cl. 428-143.000.

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von Conta, Peter E. W., to Hearthstone Corporation, The. Secondary combustion system for woodburning stove. 4,553,526, Cl. 126-58.000.

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Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, 4,554,183, Cl. 427-306.000.

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Vornberger, Karl F., to International Shoe Machine Corporation. Side and heel lasting machine. 4,553,281, Cl. 12-8.100.
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Vyzkumny ustav bavlnarsky: *See*—
Didek, Stanislav; Fajt, Ludvik; Reymanova, Marketa; and Markova, Marie, 4,553,383, Cl. 57-403.000.
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Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, 4,553,852, Cl. 374-1.000.
Hawkes, J. Barry, Jr., 4,554,347, Cl. 528-503.000.
Hollenberg, David H., 4,554,020, Cl. 106-90.000.
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Heger, Werner; Kaltenthaler, Wolfgang; and Wilke, Helmut, 4,553,907, Cl. 417-297.000.
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, to Sumitomo Metal Industries, Ltd. Heat-resisting furnace roll. 4,553,931, Cl. 432-246.000.
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Hockemeyer, Friedrich; and Preiner, Gerhard, 4,554,339, Cl. 528-26.000.
Wacksman, David, to Smith, Katherine R. Rotary force fluid pump. 4,553,916, Cl. 418-173.000.
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Fudickar, Harald; and Thies, Peter, 4,554,043, Cl. 156-502.000.
Wagner, Dennis L.; and Wells, Harold D., to Pet Incorporated. Tunnel oven. 4,554,437, Cl. 219-388.000.
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Volkamer, Klaus; Wagner, Eckhart; and Wagner, Ulrich, 4,553,984, Cl. 55-46.000.
Wagner Zip-Change Inc.: *See*—
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.
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Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.
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Crocker, Charles L.; Wallace, Michael; and Powell, Lee, 4,553,384, Cl. 57-406.000.
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Bentley, Trisha; Walls, John E.; and Dhillon, Major S., 4,554,236, Cl. 430-157.000.
Wallsten, Hans I.: *See*—
Maass, Dierk; and Wallsten, Hans I., 4,553,545, Cl. 128-341.000.
Walsh, Thomas J.: *See*—
Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., 4,554,506, Cl. 324-158.00P.
Walter, Bruno H. Intermittently rotatable down hole drilling tool, thrust bearing for use therein and method of assembly of such thrust bearing. 4,553,859, Cl. 384-95.000.
Walter, Lothar; Reith, Walter; and Winkler, Otmar, to SKF Kugellagerfabriken GmbH. Mechanism including a bearing assembly for members adapted for longitudinal movement relative to one another. 4,553,796, Cl. 308-6.00C.
Walther, Hans J.: *See*—
Blesing, Dieter; Habel, Erich; and Walther, Hans J., 4,553,761, Cl. 277-152.000.
Wang, Wu-Lan, to Dentsply Research & Development Corp. Dental impression tray and method of use. 4,553,936, Cl. 433-37.000.
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Waris, Tapio, to A. Ahlstrom Osakeyhtio. Method and apparatus for web forming. 4,554,052, Cl. 162-203.000.
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Warshawsky, Jerome. Lamp and lamp arm. 4,554,620, Cl. 362-269.000.
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Allan, George G.; and Neogi, Amar N., 4,554,155, Cl. 424-22.000.
Waste-Tech Services, Inc.: *See*—
Rasmussen, George P.; and Grimmett, Earl S., 4,553,487, Cl. 110-245.000.
Wastemate Corporation: *See*—
Tucker, Abraham I.; and Spelber, Leonard G., 4,553,560, Cl. 137-218.000.
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Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.
Watanabe, Satoshi: *See*—
Kamegaya, Takeo; and Watanabe, Satoshi, 4,554,482, Cl. 313-582.000.
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Water Services of America, Inc.: *See*—
Heizer, Ray T., 4,553,396, Cl. 60-648.000.
Watkins, Joseph J.: *See*—
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Wattinger, Rolf: *See*—
Weick, Heinz H.; Hesener, Walter; and Wattinger, Rolf, 4,553,665, Cl. 206-37.000.
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Nothen, Michael; and Bartsch, Erhard, 4,553,697, Cl. 237-12.30B.
Webb, Stuart F.: *See*—
Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., 4,554,422, Cl. 200-61.910.
Weber, Adolf; and Porzelt, Carmen, to Diehl GmbH & Co. Practice projectile. 4,553,482, Cl. 102-529.000.
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Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.
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Weigand, Bernard L.: *See*—
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Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, to Tomy Kogyo Corporation, Inc. Shifting mechanism for motorized toy. 4,553,947, Cl. 446-443.000.
Weinar, Roger N. Outside wallboard corner construction and edging member for said corners. 4,553,363, Cl. 52-288.000.
Weinert, Friedrich. Spindle drive with expansible chamber motors. 4,553,394, Cl. 60-530.000.
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Schenck, Robert R.; and Weinrib, Harry P., 4,553,542, Cl. 128-334.00R.
Weinstock, Joseph: *See*—
Stringer, Orum D.; and Weinstock, Joseph, 4,554,284, Cl. 514-367.000.
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Welch, Robert A.: *See*—
Burke, Thomas W.; Welch, Robert A.; Schmoyer, Kevin S.; and Bauman, Bernard D., 4,554,025, Cl. 134-17.000.
Wells, Douglas M.: *See*—
Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., 4,554,626, Cl. 364-200.000.
Wells, Harold D.: *See*—
Wagner, Dennis L.; and Wells, Harold D., 4,554,437, Cl. 219-388.000.
Wells, William T. Free-standing stove and fireplace apparatus. 4,553,528, Cl. 126-123.000.
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Wengrovius, Jeffrey H.; and Niedrach, Leonard W., to General Electric Company. Room temperature vulcanizable organopolysiloxane compositions and method for making. 4,554,310, Cl. 524-715.000.
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Wesner, Walter H.: *See*—
Pohndorf, Peter J.; and Wesner, Walter H., 4,553,961, Cl. 604-175.000.
West, James F., to McCulloch Corporation. Chain saw braking system. 4,553,326, Cl. 30-381.000.
West, Michael D., to International Telephone and Telegraph Corporation. Zone control valve. 4,553,733, Cl. 251-291.000.
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Leuck, Hans; and Westermann, Hans-Jorg, 4,554,392, Cl. 570-254.000.
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Sewell, Peter C.; Rundle, Gregory E.; and Hanson, Karl L., 4,553,954, Cl. 493-309.000.

Westinghouse Brake and Signal Co., Ltd.: *See*—
Brown, Christopher R., 4,554,507, Cl. 324-158.0SC.
Westinghouse Electric Corp.: *See*—
Adam, John D., 4,554,519, Cl. 333-141.000.
Baker, Donal E., 4,554,501, Cl. 322-29.000.
Bieneman, Matthew J., 4,554,538, Cl. 340-799.000.
Ciliberti, David F.; and Lippert, Thomas E., 4,553,986, Cl. 55-68.000.
Cross, Michael; and Gordon, John T., 4,554,439, Cl. 219-497.000.
Fell, Edwin H., 4,553,334, Cl. 33-181.00R.
Flick, Robert H.; and Dennis, Lawrence D., 4,554,423, Cl. 200-293.000.
Flick, Robert H.; and Huffman, Walter K., 4,554,427, Cl. 200-250.000.
Golub, Gregory J., 4,554,420, Cl. 200-11.0TC.
Grunert, Kurt A.; and Changle, Joseph F., 4,554,421, Cl. 200-43.150.
Hagadorn, M. Weston, 4,554,456, Cl. 250-370.000.
Jerson, Donald D.; and Chance, James F., 4,554,470, Cl. 310-45.000.
Kwiecinski, James R., 4,554,322, Cl. 525-245.000.
Lucas, Michael R., 4,554,575, Cl. 357-80.000.
Martin, Frank E., 4,553,815, Cl. 350-96.230.
Nelson, Robert L.; and Stough, Donald M., 4,553,924, Cl. 431-12.000.
Parker, Merle A.; Rice, George F.; and Patrick, Stanley S., 4,554,128, Cl. 376-252.000.
Radus, Raymond J., 4,554,524, Cl. 337-3.000.
Wolf, Charles B.; and George, Joseph W., 4,554,435, Cl. 219-383.000.
Whartenby, James C.; and Kumar, Mahesh, to RCA Corporation. Predistortion circuit with feedback. 4,554,514, Cl. 330-149.000.
Wheat, Don R.; and Coers, Don H. Portable cooking and barbecuing device. 4,553,524, Cl. 126-25.00R.
Whelan, James M., to University of Southern California. Detector grade mercuric iodide. 4,554,150, Cl. 423-491.000.
Whelen Engineering Company, Inc.: *See*—
Bosnak, John J., 4,554,533, Cl. 340-514.000.
Whirlpool Corporation: *See*—
Malchow, Gregory L.; and Frohbieter, Edwin H., 4,553,404, Cl. 62-262.000.
White Consolidated Industries, Inc.: *See*—
Eibe, Werner W., 4,553,296, Cl. 29-113.00R.
Eibe, Werner W., 4,553,297, Cl. 29-113.0AD.
White, Maurice J. E. Dental product and method of dental treatment. 4,554,154, Cl. 424-16.000.
Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, to Advanced Magnetics Inc. Magnetic particles for use in separations. 4,554,088, Cl. 252-62.540.
Whitford, James C., to Eagle-Picher Industries, Inc. Impregnation of nickel electrodes using electric pH control circuits. 4,554,056, Cl. 204-2.100.
Whittle, Peter J.: *See*—
Richardson, Kenneth; and Whittle, Peter J., 4,554,286, Cl. 514-383.000.
Wickham, Thomas D.; and Monson, Wayne R., to Harsco Corporation. Railroad measuring, gauging and spiking apparatus. 4,554,624, Cl. 364-148.000.
Wiegers, Elbert: *See*—
Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Perfumery uses of phenyl alkanols. 4,554,096, Cl. 252-522.00R.
Wiggs, Christopher C.; and Taylor, Christopher J. Bead puzzle. 4,553,754, Cl. 273-153.00S.
Wigley, Albert F. Moisture eliminator. 4,553,993, Cl. 55-440.000.
Wilbanks International, Inc.: *See*—
Ormiston, Thomas J.; and Rulis, Dean A., 4,554,195, Cl. 428-49.000.
Wilcox, Charles F. Disc brake for trucks. 4,553,643, Cl. 188-71.900.
Wilcox, Melvin S.; and Schwerin, Vernon L. Nut starter with special blades. 4,553,455, Cl. 81-443.000.
Wilensky, Barry F.: *See*—
Maggi, Joseph A.; and Wilensky, Barry F., 4,554,636, Cl. 364-481.000.
Wilensky, Joseph, to Kurtis, Soma; and Sloan, Jack. Method and apparatus for a thermodynamic cycle by use of compression. 4,553,397, Cl. 60-649.000.
Wilke, Helmut: *See*—
Heger, Werner; Kaltenthaler, Wolfgang; and Wilke, Helmut, 4,553,907, Cl. 417-297.000.
Wilkerson, James W. Staple throat for stapling machine. 4,553,689, Cl. 227-139.000.
Willemse, Kees; Meek, Jan; and Michelsen, Finn C., to Heerema Engineering Service. Offshore tower constructions and methods of erection and installation thereof. 4,553,878, Cl. 405-203.000.
William D. Miller, Inc.: *See*—
Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, 4,553,900, Cl. 414-745.000.
Williams, Arlene G., to General Electric Company. Organoaluminosiloxane coating compositions and coated substrate. 4,554,186, Cl. 427-387.000.
Williams, Gregory A.: *See*—
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.
Williams, James M.: *See*—
Sherman, Leonard H.; Swartz, James R.; and Williams, James M., 4,554,499, Cl. 318-696.000.
Williams, Michael R.: *See*—
Boller, Edward; and Williams, Michael R., 4,553,906, Cl. 417-295.000.
Williams, Rodger W.; and Atwood, Charles W., to Alcon Laboratories, Inc. Irrigation/aspiration handpiece. 4,553,957, Cl. 604-43.000.
Williams, Ronald K.: *See*—
Lam, Kin C.; and Williams, Ronald K., 4,553,955, Cl. 494-16.000.
Williamson, Charles A.: *See*—
Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.
Willis, Donald H., to RCA Corporation. Error compensated control system in a video signal processor. 4,554,578, Cl. 358-65.000.
Willoughby, Marshall O., to Tolcon Steel Corporation. Plastic bullet. 4,553,479, Cl. 102-430.000.
Wilmington Chemical Corporation: *See*—
Russiello, Andrea, 4,554,308, Cl. 524-591.000.
Wilson, Dayton H., to LTV Aerospace and Defense Company. Multiplexed multiplex bus. 4,554,657, Cl. 370-85.000.
Wilson, Robert R.; and Falconer, Roy D., to James Howden & Company Limited. Pulverizing apparatus. 4,553,704, Cl. 241-39.000.
Wine, Charles M., to RCA Corporation. Apparatus for synchronizing a source of computer controlled video to another video source. 4,554,582, Cl. 358-149.000.
Wingard, Michael G.; and Peterson, John F. D., to BASF Wyandotte Corporation. Immiscible liquid collector and method of operation. 4,554,079, Cl. 210-776.000.
Winkler, Otmar: *See*—
Walter, Lothar; Reith, Walter; and Winkler, Otmar, 4,553,796, Cl. 308-6.00C.
Winner, Eduard. Apparatus for processing material. 4,553,922, Cl. 425-381.200.
Winter, Rudolph R.; and Propst, Verle V., to Borg-Warner Corporation. System to automatically change tool blocks used on turning machines. 4,553,313, Cl. 29-568.000.
Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.
Witczak, Stanley, to A.M. Internation, Inc. Ink fountain for duplicating machines. 4,553,477, Cl. 101-365.000.
Witman, Mark W.: *See*—
Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., 4,554,314, Cl. 525-67.000.
Wohlfeil, Gerhard: *See*—
Sommer, Herbert; and Wohlfeil, Gerhard, 4,553,498, Cl. 118-126.000.
Wohnsdorf, Manfred: *See*—
Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, 4,553,862, Cl. 400-121.000.
Wolf, Charles B.; and George, Joseph W., to Westinghouse Electric Corp. Electric arc heater having outlet gas admission. 4,554,435, Cl. 219-383.000.
Wolf, Gerhard D.: *See*—
Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, 4,554,183, Cl. 427-306.000.
Wolf, Walter: *See*—
Maul, Rudolf; Stephan, Hans; and Wolf, Walter, 4,554,368, Cl. 556-91.000.
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., to Garrett Corporation, The. Aircraft cabin pressurization system. 4,553,474, Cl. 98-1.500.
Wong, Rayman Y., to Stauffer Chemical Co. Pyridylpropyl cyclohexene carboxylates as insect repellents. 4,554,277, Cl. 514-277.000.
Wong, Sing Y.; and Birkner, John M., to Monolithic Memories, Inc. Programmable array logic circuit with shared product terms. 4,554,640, Cl. 364-716.000.
Wong, Yee-Shing: *See*—
Steinman, Martin; and Wong, Yee-Shing, 4,554,103, Cl. 260-239.00A.
Wood, James G.: *See*—
Chagnot, Bruce J.; and Wood, James G., 4,553,392, Cl. 60-517.000.
Worthington, Ralph E.; and Magdics, Alex, to Prodeco, Inc. Process for producing and decomposing syngenite. 4,554,139, Cl. 423-166.000.
Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., to Prodeco, Inc. Process for producing $K_3H(SO_4)_2$ crystals and potassium sulfate crystals. 4,554,151, Cl. 423-551.000.
Woyton, Joseph T., to Reliance Electric Company. Shaft alignment device. 4,553,335, Cl. 33-181.00R.
Wright, Bruce R., to Associated Equipment Corporation. Rectifier assembly for parallel connection of diodes. 4,554,574, Cl. 357-74.000.
Wright, Douglas C., to Mineral Deposits Ltd. Method and apparatus for obtaining undercuts of concentrates from pulp flow in spiral separators. 4,553,673, Cl. 209-697.000.
Wu, Kent K., to Henry Ford Hospital. Vertebral body prosthesis and spine stabilizing method. 4,553,273, Cl. 623-18.000.
Wuest, Rainer: *See*—
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, 4,553,654, Cl. 192-0.076.
Wurminghausen, Thomas: *See*—
Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, 4,554,187, Cl. 427-387.000.
Wyatt, Ivan S.; and Task, Harry L., to United States of America, Air Force. Glide slope indicator system. 4,554,543, Cl. 340-948.000.

Wynen, Gerrard A.: *See—*
Armstrong, Timothy J.; and Wynen, Gerrard A., 4,553,633, Cl. 182-3.000.
Xerox Corporation: *See—*
Bares, Jan, 4,553,829, Cl. 355-3.0DD.
Burger, William R.; Hutton, James E.; and Silverberg, Morton, 4,553,828, Cl. 355-3.0BE.
Daniele, Joseph J.; and Yip, Kwok-leung, 4,554,561, Cl. 346-108.000.
Dixon, Barry M., 4,553,831, Cl. 355-26.000.
Foley, Geoffrey M. T.; and Enck, Rudolph C., 4,554,230, Cl. 430-58.000.
Nguyen, Tuan A., 4,553,830, Cl. 355-14.00R.
Yabunaka, Kiyoshi: *See—*
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.
Yagihara, Morio: *See—*
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, 4,554,242, Cl. 430-393.000.
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, to Kawasaki Steel Corporation. Method of controlling continuous casting equipment. 4,553,604, Cl. 164-453.000.
Yamada, Magoichi, to Daiwa Golf Co., Ltd. Golf club head. 4,553,755, Cl. 273-171.000.
Yamada, Shigeo: *See—*
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, 4,554,428, Cl. 219-69.00G.
Yamada, Shigeru: *See—*
Kawashima, Susumu; and Yamada, Shigeru, 4,553,465, Cl. 84-1.030.
Yamada, Takahiro, to Matsushita Electric Industrial Co., Ltd. Solid-state image display device. 4,554,485, Cl. 315-169.300.
Yamada, Takao: *See—*
Matsumoto, Akio; and Yamada, Takao, 4,553,851, Cl. 368-205.000.
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, to Nippon Kokan Kabushiki Kaisha. Method for continuously measuring surface temperature of heated steel strip. 4,553,854, Cl. 374-129.000.
Yamagami, Hiroyuki: *See—*
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.
Yamagata, Kenji: *See—*
Moriyama, Yoshiaki; and Yamagata, Kenji, 4,554,529, Cl. 340-347.0DD.
Yamamoto, Albert K., to Rexnord Inc. Removal tool for tangless, helically coiled insert. 4,553,303, Cl. 29-240.500.
Yamamoto, Albert K.: *See—*
Cosenza, Frank J.; and Yamamoto, Albert K., 4,553,302, Cl. 29-240.500.
Yamamoto, Hideharu; and Tsuneno, Hiroshi, to Hitachi, Ltd. Glass-sealed ceramic package type semiconductor device. 4,554,573, Cl. 357-73.000.
Yamamoto, Kazuaki: *See—*
Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, 4,554,211, Cl. 428-402.000.
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, to Osaka Gas Company. Method of internally coating pipeline. 4,554,178, Cl. 427-140.000.
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, to Fuji Photo Film Co., Ltd.; and Nisshin Oil Mills, Ltd. Magnetic recording media. 4,554,220, Cl. 428-694.000.
Yamamoto, Shigeo: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Yamamoto, Takao: *See—*
Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,553,744, Cl. 267-140.100.
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Photographic silver halide light-sensitive material. 4,554,246, Cl. 430-611.000.
Yamanaka, Hiromitsu: *See—*
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.
Yamashita, Kazuichi: *See—*
Uchida, Yoshihisa; and Yamashita, Kazuichi, 4,553,705, Cl. 242-4.00R.
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,554,247, Cl. 430-622.000.
Yamauchi, Mineo; and Karahashi, Yoshimitu, to Mitutoyo Mfg. Co., Ltd. Micrometer. 4,553,330, Cl. 33-164.00R.
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, to Nippon Petrochemicals Company, Limited. Process for converting aromatic compounds. 4,554,360, Cl. 549-261.000.
Yano, Motoichi: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Yano, Takemithu: *See—*
Fuchikami, Jun; and Yano, Takemithu, 4,554,263, Cl. 502-66.000.
Yano, Yoshiki; and Kawaguchi, Yuji, to Honda Giken Kogyo Kabushiki Kaisha. Cylinder head for internal combustion engines. 4,553,510, Cl. 123-90.340.
Yardley, James T.: *See—*
Gupta, Arunava; and Yardley, James T., 4,554,291, Cl. 518-700.000.
Yasuda, Nobuyoshi: *See—*
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.
Yates, Donald B., to Pullman Standard Inc. Brake arrangement for single axle wheel truck of railway car. 4,553,642, Cl. 188-56.000.
Yeakey, Ernest L.: *See—*
Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, 4,554,364, Cl. 549-453.000.
Yeskel, Filip J.: *See—*
Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., 4,554,593, Cl. 358-282.000.
Yi, Chol H. Prying staple remover. 4,553,737, Cl. 254-28.000.
Yip, Kwok-leung: *See—*
Daniele, Joseph J.; and Yip, Kwok-leung, 4,554,561, Cl. 346-108.000.
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, to Bridgestone Corporation; and Institute of Technology & Precision Electrical Discharge Work's. Tire molding mold. 4,553,918, Cl. 425-46.000.
Yohe, David B.: *See—*
Hudson, John E.; and Yohe, David B., 4,553,667, Cl. 206-315.900.
Yokoi, Jun: *See—*
Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, 4,554,346, Cl. 528-363.000.
Yokono, Hitoshi: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, to Hitachi, Ltd. Fuel cell apparatus. 4,554,223, Cl. 429-20.000.
Yokoyama, Hiroshi: *See—*
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,553,514, Cl. 123-308.000.
Yokoyama, Katsunori: *See—*
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, 4,554,586, Cl. 358-213.000.
Yoneda, Junichi; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Heat-sensitive recording material. 4,554,566, Cl. 346-207.000.
Yonehama, Teruo: *See—*
Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,553,744, Cl. 267-140.100.
Yoshida Industry Co., Ltd.: *See—*
Hatakeyama, Yoshiharu; and Minosawa, Yoshio, 4,553,679, Cl. 215-232.000.
Yoshida, Nobuaki: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Yoshida, Seiki, to Toyota Jidosha Kabushiki Kaisha. Truck apparatus for conveying parts. 4,553,896, Cl. 414-495.000.
Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,554,592, Cl. 358-257.000.
Yoshihara, Tsutomu: *See—*
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.
Yoshii, Takashi, to Kubota, Ltd. Front-wheel driving apparatus. 4,553,624, Cl. 180-255.000.
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, to Hitachi, Ltd. Casing construction for electronic equipment. 4,553,674, Cl. 211-26.000.
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,554,646, Cl. 365-189.000.
Yoshinari, Yukihiro: *See—*
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, 4,553,845, Cl. 356-400.000.
Yost, Thomas D.: *See—*
Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., 4,554,577, Cl. 358-34.000.
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., to Warner-Lambert Company. CL-1724 Antibiotic compounds, their production and use. 4,554,162, Cl. 424-117.000.
Young, Harvey T., to American Hospital Supply Corp. Roller clamp controller. 4,553,963, Cl. 604-246.000.
Young, Niels O., to Helix Technology Corporation. Linear motor compressor with pressure stabilization ports for use in refrigeration systems. 4,553,398, Cl. 62-6.000.
Young, Russel L.: *See—*
Schoen, Jerry W.; and Young, Russel L., 4,554,029, Cl. 148-112.000.
Youngers, Stephen A.; and Draney, Robert G., to J. I. Case Company. Dual-rate control assembly. 4,553,448, Cl. 74-480.00R.
Yui, George M. Toilet-bowl bidet apparatus. 4,553,274, Cl. 4-420.400.
Yuki, Heimei; and Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Polymerizable, optically active polymer and process for preparing polymerizable polymer. 4,554,323, Cl. 525-272.000.
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Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
Yvan, Schwob, to Association pour la Recherche et le Developpement des Methodes et Processus Industriels. Process for converting ligneous matter of vegetable origin by torrefaction, and product obtained thereby. 4,553,978, Cl. 44-1.00E.
Zachry, Clyde L., to Rockwell International Corporation. Test socket for a leadless chip carrier. 4,554,505, Cl. 324-158.00F.

Zagorski, Joseph B.: *See—*
Finnieston, Alan; and Zagorski, Joseph B., 4,553,535, Cl. 128-88.000.
Zahnraderfabrik Renk A.G.: *See—*
Kirstein, Gerhard, 4,554,451, Cl. 250-237.00G.
Zahnradfabrik Friedrichshafen, AG.: *See—*
Betz, Ansgar, 4,553,447, Cl. 74-422.000.
Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, 4,553,390, Cl. 60-384.000.
Merz, Johann, 4,553,908, Cl. 417-310.000.
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,553,389, Cl. 60-384.000.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Schneider, Rudolf, 4,553,653, Cl. 192-18.00B.
Zaitsu, Hiroshi: *See—*
Karashima, Takato; and Zaitsu, Hiroshi, 4,554,606, Cl. 360-131.000.
Zajeski, Robert B., to Panduit Corp. Locking and polarizing header. 4,553,801, Cl. 339-59.00M.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., to Leggett & Platt, Incorporated. Coil spring assembly machine. 4,553,324, Cl. 29-822.000.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., to Leggett & Platt, Incorporated. Coil spring assembly machine. 4,553,572, Cl. 140-92.800.
Zaromb, Solomon. Metal-consuming power generation apparatus and methods. 4,554,222, Cl. 429-19.000.
Zeeh, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Fungicidal alpha-azolylglycols. 4,554,285, Cl. 514-383.000.
Zeeh, Bernd: *See—*
Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.
Zehr, John S. Skipping stones and method of use thereof. 4,553,758, Cl. 273-424.000.
Zenith Electronics Corporation: *See—*
Citta, Richard W., 4,554,579, Cl. 358-86.000.
Zenith Radio Corporation: *See—*
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.
Zhed, Viktor P.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.
Zieger, Josef: *See—*
Lindenmaier, Klaus; and Zieger, Josef, 4,553,520, Cl. 123-557.000.
Ziegler, Michael J.; and Simpkins, F. Richard, to AGA, A.B. Methods and apparatus for blow molding glass articles. 4,553,999, Cl. 65-84.000.
Ziegler, Walter: *See—*
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.
Zielsdorf, Randall A.: *See—*
Karpowicz, John L.; and Zielsdorf, Randall A., 4,554,492, Cl. 318-309.000.
Zihlmann, Siegfried; and Streiff, Werner, to Micafil AG. Method and apparatus for the automatic production of armatures for electric motors. 4,553,321, Cl. 29-598.000.
Ziller, Robert E., to Doboy Packaging Machinery, Inc. Finwheel servo drive for packaging machine. 4,553,368, Cl. 53-51.000.
Zimmer, James E.; and Salvador, Linda M., to United States of America, Air Force. Method for preparing an improved pitch impregnant for a carbon-carbon composite. 4,554,024, Cl. 106-284.000.
Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Insulated container. 4,553,676, Cl. 215-13.00R.
Zimmermann, Matthias: *See—*
Schluter, Gert; and Zimmermann, Matthias, 4,554,073, Cl. 210-450.000.
Zimmermann, William J., Jr.: *See—*
Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., 4,554,593, Cl. 358-282.000.
Zimmern, Bernard: *See—*
Noda, Sadafumi; and Zimmern, Bernard, 4,553,399, Cl. 62-84.000.
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., to Ford Motor Company. Non-metallic, antioxidant, antiwear lubricant additive system. 4,554,085, Cl. 252-46.600.
Zirngibl, Ludwig; and Thiele, Kurt, to Siegfried Aktiengesellschaft. Method for production of imidazolyl vinyl ethers. 4,554,356, Cl. 548-341.000.
Zucchi, Gianfranco: *See—*
Biadigo, Mario; and Zucchi, Gianfranco, 4,553,920, Cl. 425-267.000.
Zuckerman, Arie J.: *See—*
Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., 4,554,157, Cl. 424-89.000.
Zuerger, Manfred: *See—*
Schulz, Guenther; and Zuerger, Manfred, 4,554,240, Cl. 430-285.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., to Merck & Co., Inc. 13-Halo and 13-deoxy derivatives of C-076 compounds. Re. 32,034, Cl. 549-264.000.

Fisher, Michael H.: *See*—
Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., Re. 32,034, Cl. 549-264.000.

Foam Cutting Engineers, Inc.: *See*—
Pettingell, Winslow L., Re. 32,032, Cl. 264-101.000.

General Motors Corporation: *See*—
Winchell, Frank J., Re. 32,031, Cl. 280-282.000.

Hitachi, Ltd.: *See*—
Kuroiwa, Hiroshi; and Sasayama, Takao, Re. 32,035, Cl. 361-154.000.

Kuroiwa, Hiroshi; and Sasayama, Takao, to Hitachi, Ltd. Electromechanical transducer controlling device. Re. 32,035, Cl. 361-154.000.

Merck & Co., Inc.: *See*—
Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., Re. 32,034, Cl. 549-264.000.

Montgomery, Robert M.: *See*—
Moreland, James R.; and Montgomery, Robert M., Re. 32,033, Cl. 430-311.000.

Moreland, James R.; and Montgomery, Robert M., to Texas Instruments Incorporated. Automated slice processing. Re. 32,033, Cl. 430-311.000.

Mrozik, Helmut H.: *See*—
Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., Re. 32,034, Cl. 549-264.000.

Pettingell, Winslow L., to Foam Cutting Engineers, Inc. Method of densifying open-celled polyurethane material. Re. 32,032, Cl. 264-101.000.

Sasayama, Takao: *See*—
Kuroiwa, Hiroshi; and Sasayama, Takao, Re. 32,035, Cl. 361-154.000.

Texas Instruments Incorporated: *See*—
Moreland, James R.; and Montgomery, Robert M., Re. 32,033, Cl. 430-311.000.

Winchell, Frank J., to General Motors Corporation. Cambering vehicle. Re. 32,031, Cl. 280-282.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

AFA Corporation, The: *See*—
Steyns, Emile B.; and Miller, Jerry H., B1 4,072,252, Cl. 222-341.000.

American Standard Inc.: *See*—
Ruff, Robert O., B1 4,213,317, Cl. 70-450.000.

Andersen, Walter, to Kremm, Virginia. Method of making a parison. B1 3,171,729, 11-19-85, Cl. 65-76.000.

Elkins, Carlos D. Transparent slide for the examination of liquid specimens. B1 3,777,283, 11-19-85, Cl. 356-246.000.

Fegen, James F., to Richco Plastic Company. Locking base for plastic components. B1 3,909,883, 11-19-85, Cl. 174-138.00D.

Kremm, Virginia: *See*—
Andersen, Walter, B1 3,171,729, Cl. 65-76.000.

Maryland Cup Corporation: *See*—
Weinstein, David, B1 4,289,791, Cl. 426-139.000.

Miller, Jerry H.: *See*—
Steyns, Emile B.; and Miller, Jerry H., B1 4,072,252, Cl. 222-341.000.

Richco Plastic Company: *See*—
Fegen, James F., B1 3,909,883, Cl. 174-138.00D.

Ruff, Robert O., to American Standard Inc. Blank filler plate for lock edge cut-out. B1 4,213,317, 11-19-85, Cl. 70-450.000.

Steyns, Emile B.; and Miller, Jerry H., to AFA Corporation, The. Hand operated sprayer with automatic container vent. B1 4,072,252, 11-19-85, Cl. 222-341.000.

Weinstein, David, to Maryland Cup Corporation. Ice cream cone with jacket attached and method for producing same. B1 4,289,791, 11-19-85, Cl. 426-139.000.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Tuomaala, Jorma, 281,432, Cl. D15-139.000.

Abe, Karl H., to Bayerische Motoren Werke AG. Combined rear-view mirror and direction indicator for motorcycles. 281,411, 11-19-85, Cl. D12-188.000.

American Standard Inc.: *See*—
Stairs, Henry M., Jr., 281,449, Cl. D23-58.000.

Appel, Mel; and Kress, George, to Appel, Mel. Toy trackway. 281,444, 11-19-85, Cl. D21-143.000.

Applied Computer, Inc.: *See*—
Meininger, Charles L.; and Bugash, Robert S., 281,421, Cl. D14-52.000.

Baffo, Charles M.; and Geismar, Thomas H., to Mobil Oil Corporation. Service station island. 281,427, 11-19-85, Cl. D15-9.200.

Barnhart, Leslie C. Trim strip for a truck sleeper compartment. 281,412, 11-19-85, Cl. D12-190.000.

Baxter Travenol Laboratories, Inc.: *See*—
DiGianfilippo, Al; and Hitchcock, James, Jr., 281,453, Cl. D24-31.000.

Bayerische Motoren Werke AG: *See*—
Abe, Karl H., 281,411, Cl. D12-188.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Gevert, Klaus V., 281,410, Cl. D12-182.000.

Beach, Wilma R., to Daniel E. Gelles Associates, Inc. Article display bracket. 281,383, 11-19-85, Cl. D6-572.000.

Benjamin Crook & Sons Limited: *See*—
Peel, Simon J., 281,370, Cl. D2-319.000.

Blue Box Toy Factory Limited: *See*—
Takeuchi, Kazutaka, 281,442, Cl. D21-141.000.

Brio Toy AB: *See*—
Petersson, Nils A. I., 281,440, Cl. D21-108.000.

Bugash, Robert S.: *See*—
Meininger, Charles L.; and Bugash, Robert S., 281,421, Cl. D14-52.000.

Bulgari, Gianni, to Ditta Sotirio Bulgari di Constantino e Giorgio Bulgari S.a.s. Link for jewelry chain. 281,405, 11-19-85, Cl. D11-93.000.

Buscher, John H.; and Hoffman, Michael E., to Eastman Machine Company. Electrical connector. 281,416, 11-19-85, Cl. D13-24.000.

Byrne, Philip J.; and Stege, John B. Computer work station. 281,382, 11-19-85, Cl. D6-474.000.

C.A. Weismuller GmbH & Co.: *See*—
Nusse, Octavio, 281,415, Cl. D13-24.000.

Caldwell, John W. Projection television receiver. 281,424, 11-19-85, Cl. D14-83.000.

Cambria, Emanuel F., to Hurst Performance, Inc. Shift control lever unit. 281,409, 11-19-85, Cl. D12-179.000.

Chrones, Anthony, to Gerber Products Company. Child's musical mobile music box cover. 281,433, 11-19-85, Cl. D17-24.000.

Cincinnati Incorporated: *See*—
Uroshevich, Miroslav, 281,430, Cl. D15-123.000.

Cody, Michael J.: *See*—
Prince Corporation; and Cody, Michael J., 281,413, Cl. D12-191.000.

Cosden Technology, Inc.: *See*—
Fortuna, Vincent E., 281,399, Cl. D9-347.000.
Fortuna, Vincent E., 281,400, Cl. D9-370.000.

Dah Yang Toy Industrial Co., Ltd.: *See*—
Udagawa, Yoshio, 281,445, Cl. D21-150.000.

Daniel E. Gelles Associates, Inc.: *See*—
Beach, Wilma R., 281,383, Cl. D6-572.000.

Deacon & Co. Limited: *See*—
Wong, Dennis C., 281,438, Cl. D21-63.000.

Dearing, Timothy, to E. R. Howard Limited. Bottle or the like. 281,397, 11-19-85, Cl. D9-338.000.

DiGianfilippo, Al; and Hitchcock, James, Jr., to Baxter Travenol Laboratories, Inc. Stand for intravenous equipment. 281,453, 11-19-85, Cl. D24-31.000.

Ditta Sotirio Bulgari di Constantino e Giorgio Bulgari S.a.s.: *See*—
Bulgari, Gianni, 281,405, Cl. D11-93.000.

Dulan, Silas S. Housing for a cable television channel selector unit. 281,425, 11-19-85, Cl. D14-84.000.

Duwell, Michael J.: *See*—
Haas, Charles J.; and Duwell, Michael J., 281,431, Cl. D15-125.000.

E. R. Howard Limited: *See*—
Dearing, Timothy, 281,397, Cl. D9-338.000.

Eastman Machine Company: *See*—
Buscher, John H.; and Hoffman, Michael E., 281,416, Cl. D13-24.000.

Epson Corporation: *See*—
Kurihara, Masaki; and Mizuno, Masahiko, 281,426, Cl. D14-100.000.

Evergood Toys Manufacturing Ltd.: *See*—
Tam, Sin C.; and Sou, Chong V., 281,441, Cl. D21-134.000.

Everlast World's Boxing Headquarters Corporation: *See*—
Golomb, John C., 281,373, Cl. D2-361.000.

Feeney, Francis T. Male sanitary device. 281,454, 11-19-85, Cl. D24-49.000.

Fisons plc: *See*—
O'Connell, John P., 281,402, Cl. D10-78.000.

Ford Motor Company: *See*—
Lewis, Robert H.; and Munoz, Hector J., 281,418, Cl. D14-10.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 281,399, 11-19-85, Cl. D9-347.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 281,400, 11-19-85, Cl. D9-370.000.

Franzen, Per-Olov: *See*—
Karnhag, Lars O.; and Franzen, Per-Olov, 281,393, Cl. D8-373.000.

French, Charles S.: *See*—
Moher, Robert W., Jr.; French, Charles S.; and Reed, Robert J., 281,381, Cl. D6-471.000.

Geismar, Thomas H.: *See*—
Baffo, Charles M.; and Geismar, Thomas H., 281,427, Cl. D15-9.200.

Gerber Products Company: *See*—
Chrones, Anthony, 281,433, Cl. D17-24.000.

Gevert, Klaus V., to Bayerische Motoren Werke Aktiengesellschaft. Combined motorcycle fairing and direction indicators. 281,410, 11-19-85, Cl. D12-182.000.

Gibilterra, Charles A. Chair. 281,377, 11-19-85, Cl. D6-362.000.

Golomb, John C., to Everlast World's Boxing Headquarters Corporation. Boxing glove. 281,373, 11-19-85, Cl. D2-361.000.

Goodyear Tire & Rubber Company, The: *See*—
Graas, Maurice, 281,408, Cl. D12-147.000.
Young, Delton W., 281,371, Cl. D2-320.000.

Gordon, Richard F., to Sportplay Creative Enterprises, Inc. Outdoor child's play unit. 281,447, 11-19-85, Cl. D21-244.000.

Gorski, Florian J. Bottle closure device. 281,390, 11-19-85, Cl. D8-40.000.

Graas, Maurice, to Goodyear Tire & Rubber Company, The. Tire. 281,408, 11-19-85, Cl. D12-147.000.

Gregg, James S.: *See*—
Winter, Roger D.; Gregg, James S.; and Skewis, Daniel R., 281,436, Cl. D20-43.000.

Gregory, James C., III. Swing. 281,376, 11-19-85, Cl. D6-344.000.

Guenat, Robert. Cultivating tower for plants, flowers or the like. 281,406, 11-19-85, Cl. D11-153.000.

Guichard, Francois. Overload-protected electrical receptacle-multiplying plug or similar article. 281,417, 11-19-85, Cl. D13-28.000.

Gustafsson, Regis, to Vilhelmina Plast AB. Staff for a pennant. 281,407, 11-19-85, Cl. D11-181.000.

Haas, Charles J.; and Duwell, Michael J., to Shopsmith, Inc. Headstock for a multipurpose woodworking tool. 281,431, 11-19-85, Cl. D15-125.000.

Hayashi, Shigeaki: *See*—
Sawada, Masaji; Sakaguchi, Hiroshi; Hayashi, Shigeaki; and Yamada, Kazuo, 281,435, Cl. D18-7.000.

Hepworth, Paul S. Abrading tool. 281,392, 11-19-85, Cl. D8-90.000.

Hicks, Irwin A., to Singer Company, The. Positive displacement diaphragm fluid meter housing. 281,404, 11-19-85, Cl. D10-99.000.

Hitchcock, James, Jr.: *See*—
DiGianfilippo, Al; and Hitchcock, James, Jr., 281,453, Cl. D24-31.000.

Hoffman, Michael E.: *See*—
Buscher, John H.; and Hoffman, Michael E., 281,416, Cl. D13-24.000.

Hurst Performance, Inc.: *See*—
Cambria, Emanuel F., 281,409, Cl. D12-179.000.

Interlego A.G.: *See*—
Olsen, Flemming H., 281,443, Cl. D21-143.000.

Isham, Robert O.; and Reese, Wayne S. Sofa bed for a van conversion. 281,379, 11-19-85, Cl. D6-382.000.

Ivy, James R. Egg cracker. 281,385, 11-19-85, Cl. D7-84.100.

Iwatsu Electric Co., Ltd.: *See*—
Miura, Norio; Mihara, Noboru; and Kamoshida, Atsuko, 281,422, Cl. D14-58.000.
Oshima, Takashi; Mihara, Noboru; and Yamauchi, Shuji, 281,423, Cl. D14-58.000.

Janome Sewing Machine Co. Ltd.: *See*—
Kuroki, Nobufusa, 281,429, Cl. D15-69.000.

Jordan, James T. Inflatable kite. 281,439, 11-19-85, Cl. D21-88.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Kurihara, Masaki; and Mizuno, Masahiko, 281,426, Cl. D14-100.000.

Kamoshida, Atsuko: *See*—
Miura, Norio; Mihara, Noboru; and Kamoshida, Atsuko, 281,422, Cl. D14-58.000.

Karnhag, Lars O.; and Franzen, Per-Olov. Holder for elongated objects. 281,393, 11-19-85, Cl. D8-373.000.

Kato, Shigemasa; and Takada, Sanae, to Tokyo Juki Industrial Co., Ltd. Typewriter. 281,434, 11-19-85, Cl. D18-1.000.

Keilman, Roger S. Exercise bar. 281,446, 11-19-85, Cl. D21-191.000.

Kent, Godfrey S., to Timberjack Inc. Mine carrier vehicle. 281,428, 11-19-85, Cl. D15-21.000.

Kesselring, Lutz, to MAPA GmbH Gummi- und Plastikwerke. Dual container package. 281,398, 11-19-85, Cl. D9-341.000.

Kolb, Walter, to Wolf-Gerate GmbH. Rake. 281,387, 11-19-85, Cl. D8-13.000.

Konjovic, Kosta. Toothbrush. 281,375, 11-19-85, Cl. D4-104.000.

Kress, George: *See*—
Appel, Mel; and Kress, George, 281,444, Cl. D21-143.000.

Kurihara, Masaki; and Mizuno, Masahiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Keyboard for an electronic computer. 281,426, 11-19-85, Cl. D14-100.000.

Kuroki, Nobufusa, to Janome Sewing Machine Co. Ltd. Sewing machine. 281,429, 11-19-85, Cl. D15-69.000.

Kurz, Craven H. Orthodontic archwire cutter. 281,452, 11-19-85, Cl. D24-10.000.

Lacey, David A., to Wilen, Ronald M. Kitchen cutting board. 281,384, 11-19-85, Cl. D7-46.000.

Lewis, Robert H.; and Munoz, Hector J., to Ford Motor Company. Front control panel for a vehicular combined tape player and radio or the like. 281,418, 11-19-85, Cl. D14-10.000.

Lok, Hin C. Adjustable box wrench. 281,388, 11-19-85, Cl. D8-22.000.

MacIntosh, John A.: *See*—
Zeigner, Willard L.; and MacIntosh, John A., 281,403, Cl. D10-93.000.

MAPA GmbH Gummi- und Plastikwerke: *See*—
Kesselring, Lutz, 281,398, Cl. D9-341.000.

Mazeika, Albert, to Needlepointer. Needlework frame. 281,374, 11-19-85, Cl. D3-26.000.

Meininger, Charles L.; and Bugash, Robert S., to Applied Computer, Inc. Automated telephone communicating machine. 281,421, 11-19-85, Cl. D14-52.000.

Mihara, Noboru: *See*—
Miura, Norio; Mihara, Noboru; and Kamoshida, Atsuko, 281,422, Cl. D14-58.000.
Oshima, Takashi; Mihara, Noboru; and Yamauchi, Shuji, 281,423, Cl. D14-58.000.

Mirolin Industries, Inc.: *See*—
Primucci, Joseph, 281,448, Cl. D23-49.000.

Miura, Norio; Mihara, Noboru; and Kamoshida, Atsuko, to Iwatsu Electric Co., Ltd. Telephone unit. 281,422, 11-19-85, Cl. D14-58.000.

Mizuno, Masahiko: *See*—
Kurihara, Masaki; and Mizuno, Masahiko, 281,426, Cl. D14-100.000.

Mobil Oil Corporation: *See*—
Baffo, Charles M.; and Geismar, Thomas H., 281,427, Cl. D15-9.200.

Moher, Robert W., Jr.; French, Charles S.; and Reed, Robert J., to Oneida Ltd. Display fixture. 281,381, 11-19-85, Cl. D6-471.000.

Motorola, Inc.: *See*—
Nagele, Albert L., 281,419, Cl. D14-12.000.

Munoz, Hector J.: *See*—
Lewis, Robert H.; and Munoz, Hector J., 281,418, Cl. D14-10.000.

Nagele, Albert L., to Motorola, Inc. Microphone or similar article. 281,419, 11-19-85, Cl. D14-12.000.

Needlepointer: *See*—
Mazeika, Albert, 281,374, Cl. D3-26.000.

Nusse, Octavio, to C.A. Weismuller GmbH & Co. Terminal block. 281,415, 11-19-85, Cl. D13-24.000.

O'Connell, John P., to Fisons plc. Programmable multimeter housing. 281,402, 11-19-85, Cl. D10-78.000.

Olsen, Flemming H., to Interlego A.G. Toy railway track section. 281,443, 11-19-85, Cl. D21-143.000.
Oneida Ltd.: *See—*
Moher, Robert W., Jr.; French, Charles S.; and Reed, Robert J., 281,381, Cl. D6-471.000.
Oshima, Takashi; Mihara, Noboru; and Yamauchi, Shuji, to Iwatsu Electric Co., Ltd. Call processor for a telephone system. 281,423, 11-19-85, Cl. D14-58.000.
Parker, Paul H. Glider. 281,378, 11-19-85, Cl. D6-379.000.
Peel, Simon J., to Benjamin Crook & Sons Limited. Sole for a sports shoe. 281,370, 11-19-85, Cl. D2-319.000.
Perlow, Eugene E. Game board for chess, checkers or the like. 281,437, 11-19-85, Cl. D21-24.000.
Perrins, Allen R., to Superior Electric Company, The. Detector module for a line monitor or the like. 281,401, 11-19-85, Cl. D10-75.000.
Petersson, Nils A. I., to Brio Toy AB. Toy construction piece. 281,440, 11-19-85, Cl. D21-108.000.
Platner, Joseph W. Lavatory. 281,450, 11-19-85, Cl. D23-58.000.
Porta, Barbara G., to Valley Head Farms. Door knocker or similar article. 281,394, 11-19-85, Cl. D8-401.000.
Primucci, Joseph, to Mirolin Industries, Inc. Combined bathtub and shower enclosure. 281,448, 11-19-85, Cl. D23-49.000.
Prince Corporation; and Cody, Michael J. Visor. 281,413, 11-19-85, Cl. D12-191.000.
Pusser's Inc.: *See—*
Tobias, Charles S., 281,396, Cl. D9-309.000.
Reed, Robert J.: *See—*
Moher, Robert W., Jr.; French, Charles S.; and Reed, Robert J., 281,381, Cl. D6-471.000.
Reese, Wayne S.: *See—*
Isham, Robert O.; and Reese, Wayne S., 281,379, Cl. D6-382.000.
Robey, Harold. Display container. 281,395, 11-19-85, Cl. D9-307.000.
Rosenthal, Maurice I. Dual purpose microphone supporter. 281,420, 11-19-85, Cl. D14-13.000.
Rotpunkt Dr. Anso Zimmermann: *See—*
Zimmermann, Anso, 281,386, Cl. D7-317.000.
Sakaguchi, Hiroshi: *See—*
Sawada, Masaji; Sakaguchi, Hiroshi; Hayashi, Shigeaki; and Yamada, Kazuo, 281,435, Cl. D18-7.000.
Samsonite Corporation: *See—*
Winter, Roger D.; Gregg, James S.; and Skewis, Daniel R., 281,436, Cl. D20-43.000.
Sawada, Masaji; Sakaguchi, Hiroshi; Hayashi, Shigeaki; and Yamada, Kazuo, to Sharp Corporation. Printing calculator. 281,435, 11-19-85, Cl. D18-7.000.
Shames, Harold: *See—*
Shames, Sidney J.; and Shames, Harold, 281,451, Cl. D23-151.000.
Shames, Sidney J.; and Shames, Harold. Vent for clothes dryer. 281,451, 11-19-85, Cl. D23-151.000.
Sharp Corporation: *See—*
Sawada, Masaji; Sakaguchi, Hiroshi; Hayashi, Shigeaki; and Yamada, Kazuo, 281,435, Cl. D18-7.000.
Shopsmith, Inc.: *See—*
Haas, Charles J.; and Duwell, Michael J., 281,431, Cl. D15-125.000.
Singer Company, The: *See—*
Hicks, Irwin A., 281,404, Cl. D10-99.000.
Sironi, Giuseppe, to Vibram S.P.A. Sole for footwear. 281,372, 11-19-85, Cl. D2-320.000.
Skewis, Daniel R.: *See—*
Winter, Roger D.; Gregg, James S.; and Skewis, Daniel R., 281,436, Cl. D20-43.000.
Smith, Carl R., to Weststar Marketing, Inc. Planter. 281,380, 11-19-85, Cl. D6-404.000.
Somers, Robert I. Electric glue gun. 281,391, 11-19-85, Cl. D8-61.000.
Sou, Chong V.: *See—*
Tam, Sin C.; and Sou, Chong V., 281,441, Cl. D21-134.000.
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Gordon, Richard F., 281,447, Cl. D21-244.000.
Stairs, Henry M., Jr., to American Standard Inc. Cabinet-top lavatory. 281,449, 11-19-85, Cl. D23-58.000.
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Byrne, Philip J.; and Stege, John B., 281,382, Cl. D6-474.000.
Summers, James A. Opener for pop-top containers. 281,389, 11-19-85, Cl. D8-40.000.
Superior Electric Company, The: *See—*
Perrins, Allen R., 281,401, Cl. D10-75.000.
Takada, Sanae: *See—*
Kato, Shigemasa; and Takada, Sanae, 281,434, Cl. D18-1.000.
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Tam, Sin C.; and Sou, Chong V., to Evergood Toys Manufacturing Ltd. Toy motorcycle. 281,441, 11-19-85, Cl. D21-134.000.
Timberjack Inc.: *See—*
Kent, Godfrey S., 281,428, Cl. D15-21.000.
Tobias, Charles S., to Pusser's Inc. Flagon. 281,396, 11-19-85, Cl. D9-309.000.
Tokyo Juki Industrial Co., Ltd.: *See—*
Kato, Shigemasa; and Takada, Sanae, 281,434, Cl. D18-1.000.
Tuomaala, Jorma, to A. Ahlstrom Osakeyhtio. Chipping blade. 281,432, 11-19-85, Cl. D15-139.000.
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Uroshevich, Miroslav, to Cincinnati Incorporated. Hydraulic press. 281,430, 11-19-85, Cl. D15-123.000.
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Porta, Barbara G., 281,394, Cl. D8-401.000.
Vernitron Corporation: *See—*
Wolf, Hans, 281,414, Cl. D13-2.000.
Vibram S.P.A.: *See—*
Sironi, Giuseppe, 281,372, Cl. D2-320.000.
Vilhelmina Plast AB: *See—*
Gustafsson, Regis, 281,407, Cl. D11-181.000.
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Smith, Carl R., 281,380, Cl. D6-404.000.
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Lacey, David A., 281,384, Cl. D7-46.000.
Winter, Roger D.; Gregg, James S.; and Skewis, Daniel R., to Samsonite Corporation. Identification holder for a luggage case or the like. 281,436, 11-19-85, Cl. D20-43.000.
Wolf-Gerate GmbH: *See—*
Kolb, Walter, 281,387, Cl. D8-13.000.
Wolf, Hans, to Vernitron Corporation. Motor for rotating a spit. 281,414, 11-19-85, Cl. D13-2.000.
Wong, Dennis C., to Deacon & Co. Limited. Crib toy. 281,438, 11-19-85, Cl. D21-63.000.
Yamada, Kazuo: *See—*
Sawada, Masaji; Sakaguchi, Hiroshi; Hayashi, Shigeaki; and Yamada, Kazuo, 281,435, Cl. D18-7.000.
Yamauchi, Shuji: *See—*
Oshima, Takashi; Mihara, Noboru; and Yamauchi, Shuji, 281,423, Cl. D14-58.000.
Young, Delton W., to Goodyear Tire & Rubber Company, The. Shoe sole. 281,371, 11-19-85, Cl. D2-320.000.
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CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 19, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
254 4,553,269
421 4,553,270

CLASS 4
420.4 4,553,274
605 4,553,275
612 4,553,276
643 4,553,277

CLASS 5
136 4,553,278

CLASS 7
105 4,553,279
157 4,553,280

CLASS 8
94.11 4,553,974
507 4,553,975
639 4,553,976

CLASS 12
8.1 4,553,281

CLASS 15
150 4,553,282
250.32 4,553,283
414 4,553,284

CLASS 16
382 4,553,286

CLASS 17
48 4,553,287

CLASS 19
113 4,553,288
161.1 4,553,289
244 4,553,290

CLASS 24
55 4,553,291
70 SK 4,553,292
119 4,553,293
489 4,553,294

CLASS 29
1.32 4,553,295
25.42 4,553,304
113 AD 4,553,297
113 R 4,553,296
156.4 R 4,553,298
157 R 4,553,299
159 R 4,553,690
235 4,553,300
237 4,553,301
240.5 4,553,302
4,553,303
272 4,553,305
401.1 4,553,306
434 4,553,307
450 4,553,308
4,553,309
517 4,553,310
559 4,553,311
564.3 4,553,312
568 4,553,313
571 4,553,314
4,553,315
4,553,316
572 4,553,317
577 C 4,553,318
596 4,553,319
598 4,553,320
4,553,321
739 4,553,322
741 4,553,323
822 4,553,324

CLASS 30
114 4,553,325
381 4,553,326

CLASS 33
32 B 4,553,327
32 G 4,553,328
147 T 4,553,329
164 R 4,553,330
172 D 4,553,331
180 R 4,553,333
181 R 4,553,334
4,553,335
197 4,553,336
199 R 4,553,337
265 4,553,338
561 4,553,332

CLASS 34
99 4,553,339
114 4,553,340
236 4,553,341

CLASS 36
97 4,553,342

CLASS 38
33 4,553,343

CLASS 40
152 4,553,344
576 4,553,345
602 4,553,346

CLASS 42
69 R 4,553,347

CLASS 43
42.06 4,553,348
70 4,553,349

CLASS 44
1 D 4,553,977
1 E 4,553,978
57 4,553,979
62 4,553,980

CLASS 47
1.5 4,553,350
58 4,553,351
71 4,553,352

CLASS 48
62 R 4,553,981

CLASS 49
161 4,553,353
431 4,553,354

CLASS 51
165.87 4,553,355
298 4,553,982

CLASS 52
11 4,553,356
12 4,553,357
98 4,553,358
173 R 4,553,359
202 4,553,360
209 4,553,361
236.3 4,553,362
288 4,553,363
309.13 4,553,364
483 4,553,365
487 4,553,366
656 4,553,367

CLASS 53
51 4,553,368
55 4,553,369
117 4,553,370
285 4,553,371
411 4,553,372
441 4,553,373
465 4,553,374
475 4,553,375
511 4,553,376
548 4,553,377

CLASS 55
16 4,553,983
46 4,553,984
67 4,553,985
68 4,553,986
87 4,553,987
158 4,553,988
177 4,553,989
178 4,553,990
218 4,553,991
279 4,553,992
440 4,553,993

CLASS 56
16.6 4,553,378
60 4,553,379
305 4,553,380
327 R 4,553,381

CLASS 57
284 4,553,382
403 4,553,383
406 4,553,384

CLASS 60
39.15 4,553,386
39.6 4,553,385
274 4,553,387
276 4,553,388
384 4,553,389
4,553,390
413 4,553,391
517 4,553,392
528 4,553,393
530 4,553,394
562 4,553,395
648 4,553,396
649 4,553,397

CLASS 62
6 4,553,398
84 4,553,399
127 4,553,400
160 4,553,401
235.1 4,553,402
239 4,553,403
262 4,553,404
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341 4,553,406
402 4,553,407
476 4,553,408
4,553,409

CLASS 65
2 4,553,994
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27 4,553,997
69 4,553,998
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160 4,554,001

CLASS 66
117 4,553,410
123 4,553,411
207 4,553,412

CLASS 68
12 R 4,553,413

CLASS 70
58 4,553,414
232 4,553,415
450 B1 4,213,317

CLASS 71
12 4,554,002
28 4,554,003
29 4,554,004
30 4,554,005
76 4,554,006
83 4,554,008
88 4,554,010
4,554,011
92 4,554,012
4,554,013
94 4,554,014
076 4,554,007
100 4,554,015
105 4,554,016
113 4,554,017

CLASS 72
40 4,553,416
42 4,553,417
132 4,553,418
349 4,553,419
380 4,553,420
402 4,553,421
458 4,553,422

CLASS 73
1 G 4,553,423
27 R 4,553,424
37 4,553,425
40.7 4,553,435
116 4,553,426
117.3 4,553,427
152 4,553,428
155 4,553,429
188 4,553,430
273 4,553,433
290 B 4,553,431
304 C 4,553,434
336 4,553,432
517 R 4,553,436
602 4,553,437
830 4,553,438

CLASS 74
5.4 4,553,439
5.43 4,553,440
7 A 4,553,442
7 R 4,553,441
22 R 4,553,443
110 4,553,444
130 4,553,445
422 4,553,447
471 R 4,553,446
480 R 4,553,448
501 R 4,553,449
689 4,553,450
805 4,553,451

CLASS 76
110 4,553,452

CLASS 81
58 4,553,453
125 4,553,454
443 4,553,455
462 4,553,456

CLASS 82
1 C 4,553,457

CLASS 83
33 4,553,458
36 4,553,459
113 4,553,460
344 4,553,461
471.3 4,553,462
796 4,553,463
865 4,553,464

CLASS 84
1.03 4,553,465
317 4,553,466
487 4,553,467

CLASS 89
140 4,553,468
191.02 4,553,469

CLASS 91
6 4,553,470
173 4,553,471

CLASS 92
176 4,553,472
261 4,553,473

CLASS 98
1.5 4,553,474
36 4,553,475

CLASS 071
087 4,554,009

CLASS 101
111 4,553,476
365 4,553,477
426 4,553,478

CLASS 102
430 4,553,479
4,553,480
458 4,553,481
529 4,553,482

CLASS 106
20 4,554,018
27 4,554,019
90 4,554,020
213 4,554,021
273 N 4,554,022
4,554,023
284 4,554,024

CLASS 108
4 4,553,483
55.1 4,553,484
86 4,553,485
108 4,553,486

CLASS 110
223 4,553,285
245 4,553,487
346 4,553,488

CLASS 112
38 4,553,490
121.12 4,553,489
227 4,553,492
465 4,553,491

CLASS 114
5.4 4,553,493
5.43 4,553,494
1 4,553,493
66 4,553,494
144 R 4,553,496
218 4,553,495
246 4,553,497

CLASS 118
126 4,553,498
428 4,553,499
657 4,553,500
669 4,553,501

CLASS 122
4 D 4,553,502

CLASS 123
18 A 4,553,503
25 J 4,553,504
41.2 4,553,505
45 R 4,553,506
52 M 4,553,507
58 AA 4,553,508
90.27 4,553,509
90.34 4,553,510
179 B 4,553,511
196 S 4,553,512
204 4,553,513
308 4,553,514
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339 4,553,516
417 4,553,517
478 4,553,518
527 4,553,519
557 4,553,520
587 4,553,521

CLASS 124
89 4,553,522

CLASS 126
9 B 4,553,523
25 R 4,553,524
30 4,553,525
58 4,553,526
4,553,527
123 4,553,528
415 4,553,529
422 4,553,530
440 4,553,531

CLASS 128
1 D 4,553,532
1 R 4,553,533
24.1 4,553,534
88 4,553,535
130 4,553,536
132 D 4,553,538
4,553,539
132 R 4,553,537
200.26 4,553,540
314 4,553,541
334 R 4,553,542
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340 4,553,544
341 4,553,545
395 4,553,546
419 PG 4,553,547
421 4,553,548
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637 4,553,552
749 4,553,553
784 4,553,554

CLASS 131
110 4,553,555
336 4,553,556

CLASS 132
1 R 4,553,557

CLASS 134
17 4,554,025
38 4,554,026
181 4,553,558

CLASS 137
68 R 4,553,559
218 4,553,560
362 4,553,561
375 4,553,562
494 4,553,563
554 4,553,564
590 4,553,565
625.11 4,553,566

CLASS 138
96 T 4,553,567
125 4,553,568

CLASS 139
1 E 4,553,569
435 4,553,570
446 4,553,571

CLASS 140
92.8 4,553,572

CLASS 141
98 4,553,573
286 4,553,574

CLASS 144
12 4,553,575
194 4,553,576

CLASS 148
11.5 R 4,554,027
38 4,554,028
112 4,554,029
175 4,554,030

CLASS 149
19.3 4,554,031
21 4,554,032

CLASS 152
12 4,553,577
209 R 4,553,578
450 4,553,579

CLASS 156
52 4,554,033
69 4,554,034
89 4,554,035
94 4,554,036
152 4,554,037
196 4,554,038
213 4,554,039
215 4,554,040
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510 4,554,044
613 4,554,045
637 4,554,046
643 4,554,047
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656 4,554,049
664 4,554,050

CLASS 160
172 4,553,580

CLASS 162
49 4,554,051
203 4,554,052

CLASS 164
16 4,553,581
432 4,553,582
453 4,553,604
458 4,553,583

CLASS 165
30 4,553,584
41 4,553,585
76 4,553,586
95 4,553,587
162 4,553,588

CLASS 166
53 4,553,589
4,553,590
76 4,553,591
248 4,553,592
270 4,553,593
275 4,553,594
278 4,553,595

295 4,553,596
305 R 4,553,597
308 4,553,601
317 4,553,598
332 4,553,599
343 4,553,600

CLASS 169

19 4,553,602
38 4,553,603

CLASS 172

2 4,553,605
19 4,553,606
156 4,553,607
197 4,553,608
647 4,553,609

CLASS 173

1 4,553,610

CLASS 174

14 R 4,554,399
35 GC 4,554,400
37 4,554,401
42 4,554,402
4,554,403
52 FP 4,554,404
68.5 4,554,405
94 R 4,554,406
128 S 4,554,407
135 4,554,408
138 D B1 3,909,883

CLASS 175

71 4,553,611
122 4,553,612
250 4,553,613
302 4,553,614
329 4,553,615

CLASS 177

1 4,553,616
25 4,553,617
185 4,553,618
4,553,619

CLASS 178

19 4,554,409

CLASS 179

2 DP 4,554,418
2 E 4,554,410
37 4,554,411
78 R 4,554,412
99 M 4,554,413
115.5 PS 4,554,414
170 G 4,554,415
170 NC 4,554,416
170.2 4,554,417

CLASS 180

6.48 4,553,620
179 4,553,621
227 4,553,622
247 4,553,623
255 4,553,624
268 4,553,625
307 4,553,626

CLASS 181

135 4,553,627
144 4,553,630
145 4,553,628
176 4,553,629
291 4,553,631

CLASS 182

2 4,553,632
3 4,553,633
134 4,553,634
187 4,553,635
231 4,553,636

CLASS 184

15.1 4,553,637

CLASS 187

9 E 4,553,638
29 R 4,553,639
4,553,640

CLASS 188

24.22 4,553,641
56 4,553,642
71.9 4,553,643
72.4 4,553,644
73.34 4,553,645
196 BA 4,553,646
206 R 4,553,647
273 4,553,648
340 4,553,649

CLASS 192

0.076 4,553,654
4 A 4,553,650
13 A 4,553,651
18 B 4,553,653
18 R 4,553,652
106.2 4,553,655
142 R 4,553,656

CLASS 194

4 R 4,553,657

CLASS 198

369 4,553,658
372 4,553,659
425 4,553,660
428 4,553,661
456 4,553,662
731 4,553,663
814 4,553,664

CLASS 200

5 A 4,554,419
11 TC 4,554,420
43.15 4,554,421
61.91 4,554,422
86 R 4,554,424
144 B 4,554,425
159 B 4,554,426
250 4,554,427
293 4,554,423

CLASS 201

21 4,554,053

CLASS 203

15 4,554,054
89 4,554,055

CLASS 204

2.1 4,554,056
29 4,554,057
110 4,554,058
129.3 4,554,059
157.1 R 4,554,060
181.6 4,554,061
206 4,554,062
254 4,554,063
411 4,554,064

CLASS 206

37 4,553,665
44 R 4,553,666
315.9 4,553,667
391 4,553,668
439 4,553,669
534 4,553,670
611 4,553,671

CLASS 208

59 4,554,065

CLASS 209

3 4,554,066
136 4,554,067
167 4,554,068
615 4,553,672
697 4,553,673

CLASS 210

101 4,554,069
109 4,554,070
198.2 4,554,071
242.3 4,554,072
450 4,554,073
519 4,554,074
611 4,554,075
639 4,554,076
656 4,554,077
749 4,554,078
776 4,554,079

CLASS 211

26 4,553,674

CLASS 212

205 4,553,675

CLASS 215

13 R 4,553,676
33 4,553,677
218 4,553,678
232 4,553,679

CLASS 219

60.2 4,554,429
69 G 4,554,428
108 4,554,430
121 PP 4,554,431
137.43 4,554,432
137.63 4,554,433
216 4,554,434
383 4,554,435
385 4,554,436
388 4,554,437
449 4,554,438
497 4,554,439
501 4,554,440
552 4,554,441

CLASS 220

4 F 4,553,680
72 4,553,681
75 4,553,682
266 4,553,683
268 4,553,684

CLASS 222

1 4,553,685
212 4,553,686
341 B1 4,072,252

CLASS 225

93 4,553,687

CLASS 227

67 4,553,688
139 4,553,689

CLASS 229

2.5 EC 4,553,691
4,553,692
7 S 4,553,693

CLASS 232

7 4,553,694

CLASS 235

88 R 4,554,442
103 4,554,443
379 4,554,444
472 4,554,445
487 4,554,446

CLASS 236

9 A 4,553,695
49 4,553,696

CLASS 237

12.3 B 4,553,697

CLASS 239

3 4,553,698
183 4,553,699
215 4,553,700
432 4,553,701
690 4,553,702

CLASS 241

24 4,553,703
39 4,553,704

CLASS 242

4 R 4,553,705
18 A 4,553,706
25 R 4,553,707
36 4,553,708
47.01 4,553,709
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55.3 4,553,711
58 4,553,712
78.1 4,553,713
84.1 R 4,553,714
100 4,553,715
107.7 4,553,716
198 4,553,717

CLASS 244

3.15 4,553,718
118.1 4,553,719
137 P 4,553,720
213 4,553,721
219 4,553,722

CLASS 246

167 R 4,553,723

CLASS 248

68.1 4,553,724
221.3 4,553,725
297.1 4,553,726
354.7 4,553,727
452 4,553,728

CLASS 249

40 4,553,729

CLASS 250

216 4,554,447
4,554,448
227 4,554,449
231 SE 4,554,450
237 G 4,554,451
305 4,554,455
310 4,554,452
327.2 4,554,453
4,554,454
370 4,554,456
396 ML 4,554,457
492.2 4,554,458
550 4,554,459
578 4,554,460

CLASS 251

1.3 4,553,730
27 4,553,731
30.01 4,553,732
58 4,553,734
129.16 4,553,735
291 4,553,733
334 4,553,736

CLASS 252

8.5 A 4,554,080
4,554,081
8.55 R 4,554,082
8.57 4,554,083
12.4 4,554,084
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518 4,554,094
522 R 4,554,095
4,554,096
542 4,554,097
547 4,554,098
551 4,554,099

CLASS 254

28 4,553,737
358 4,553,738

CLASS 256

23 4,553,739
33 4,553,740
66 4,553,741

CLASS 260

112.5 R 4,554,100
4,554,101
4,554,102
239 A 4,554,103
245.2 R 4,554,104
397.2 4,554,105
4,554,106
421 4,554,107
455 A 4,554,108
457 4,554,109
463 4,554,110
502.4 R 4,554,111
543 F 4,554,112
927 N 4,554,113

CLASS 261

95 4,554,114

CLASS 264

1.1 4,554,115
1.5 4,554,116
67 4,554,117
73 4,554,118
85 4,554,119
4,554,120
101 Re.32,032
103 4,554,121
130 4,554,122
166 4,554,123
263 4,554,124
266 4,554,125
272.17 4,554,126
324 4,554,127

CLASS 266

156 4,553,742
272 4,553,743

CLASS 267

140.1 4,553,744

CLASS 270

45 4,553,745

CLASS 272

68 4,553,746
118 4,553,747

CLASS 273

1 E 4,553,748
1 R 4,553,749
22 4,553,750
26 A 4,553,751
32 A 4,553,752
67 A 4,553,753
153 S 4,553,754
171 4,553,755
261 4,553,756
369 4,553,757
424 4,553,758

CLASS 277

12 4,553,759
4,553,760
152 4,553,761
4,553,762
153 4,553,763
226 4,553,764

CLASS 279

1 ME 4,553,765

CLASS 280

1.182 4,553,766
11.21 4,553,767
91 4,553,768
276 4,553,769
282 Re.32,031
289 WC 4,553,770
615 4,553,771
628 4,553,772
676 4,553,773
718 4,553,774

CLASS 285

55 4,553,775
212 4,553,776
420 4,553,777

CLASS 294

86.4 4,553,778
147 4,553,779
152 4,553,780

CLASS 296

1 S 4,553,781
4,553,782
31 P 4,553,783
107 4,553,784

CLASS 297

229 4,553,785
440 4,553,786

CLASS 303

6 C 4,553,787
7 4,553,788
54 4,553,789

CLASS 305

12 4,553,790
39 4,553,791

CLASS 307

40 4,554,461
140 4,554,462
252 H 4,554,463
265 4,554,464
269 4,554,465
272 A 4,554,466
279 4,554,467
355 4,554,468
482 4,554,469

CLASS 308

3 R 4,553,792
6 C 4,553,793
4,553,794
4,553,796
6 R 4,553,795

CLASS 310

45 4,554,470
49 R 4,554,471
62 4,554,472
67 R 4,554,473
154 4,554,474
208 4,554,475
239 4,554,476
316 4,554,477

CLASS 313

366 4,554,478
417 4,554,479
446 4,554,480
533 4,554,481
582 4,554,482

CLASS 315

4 4,554,483
4,554,484
169.3 4,554,485
209 R 4,554,486
224 4,554,487
368 4,554,488
399 4,554,489

CLASS 318

130 4,554,490
254 4,554,491
309 4,554,492
444 4,554,493
482 4,554,494
572 4,554,495
600 4,554,496
636 4,554,497
640 4,554,498
696 4,554,499

CLASS 320

31 4,554,500

CLASS 322

29 4,554,501

CLASS 323

208 4,554,502
315 4,554,503
356 4,554,504

CLASS 324

158 F 4,554,505
158 P 4,554,506
158 SC 4,554,507

CLASS 329

101 4,554,508
105 4,554,509

CLASS 330

4.3 4,554,510
9 4,554,511
10 4,554,512
85 4,554,513
149 4,554,514
261 4,554,515

CLASS 331

76 4,554,516

CLASS 332

18 4,554,517

CLASS 333

33 4,554,518
141 4,554,519

CLASS 335

106 4,554,520
125 4,554,521
202 4,554,522

CLASS 336

70 4,554,523

CLASS 337

3 4,554,524
356 4,554,525
379 4,554,526

CLASS 339

9 R 4,553,798
19 4,553,799
22 4,553,797
59 M 4,553,800
4,553,801
74 R 4,553,802
4,553,803
4,553,804
75 MP 4,553,805
94 C 4,553,806
94 R 4,553,807
97 R 4,553,808
275 T 4,553,809

CLASS 340

58 4,554,527
4,554,528
347 DD 4,554,529
365 S 4,554,530
387 4,554,531
501 4,554,532
514 4,554,533
665 4,554,534
689 4,554,535
747 4,554,536
775 4,554,537
799 4,554,538
805 4,554,539
825.44 4,554,540
825.68 4,554,541
825.76 4,554,542
948 4,554,543
953 4,554,544
980 4,554,545

CLASS 343

5 W 4,554,546
7.3 4,554,547
379 4,554,548
700 MS 4,554,549
771 4,554,550
4,554,551
786 4,554,552
4,554,553
895 4,554,554

CLASS 346

1.1 4,554,555
49 4,554,556
74.4 4,554,557
75 4,554,558
76 PH 4,554,559
108 4,554,560
4,554,561
135.1 4,554,562
154 4,554,563
161 4,554,564
201 4,554,565
207 4,554,566

CLASS 350

96.14 4,553,810
96.20 4,553,811
4,553,812
4,553,813
96.21 4,553,814
96.23 4,553,815
166 4,553,816
255 4,553,817
276 R 4,553,818
319 4,553,819
331 R 4,553,820
339 R 4,553,821

377 4,553,822
463 4,553,823

CLASS 351

219 4,553,824

CLASS 354

5 4,553,825

CLASS 355

3 BE 4,553,828
3 DD 4,553,827
4,553,829
3 FU 4,553,826
14 R 4,553,830
26 4,553,831
32 4,553,832
40 4,553,833
53 4,553,834
77 4,553,835

CLASS 356

5 4,553,836
71 4,553,837
237 4,553,838
246 B1 3,777,283
300 4,553,839
333 4,553,840
349 4,553,841
375 4,553,842
4,553,843
376 4,553,844
400 4,553,845
429 4,553,846
445 4,553,847
448 4,553,848

CLASS 357

5 4,554,567
13 4,554,568
15 4,554,569
23.4 4,554,570
24 4,554,571
42 4,554,572
73 4,554,573
74 4,554,574
80 4,554,575

CLASS 358

28 4,554,576
34 4,554,577
65 4,554,578
86 4,554,579
107 4,554,580
120 4,554,581
149 4,554,582
163 4,554,583
165 4,554,584
209 4,554,585
213 4,554,586
228 4,554,587
243 4,554,588
248 4,554,589
4,554,590
256 4,554,591
257 4,554,592
282 4,554,593
283 4,554,594
328 4,554,595
330 4,554,596
335 4,554,597

CLASS 360

14.2 4,554,602
48 4,554,598
69 4,554,599
77 4,554,600
90 4,554,601
94 4,554,603
95 4,554,604
96.1 4,554,605
131 4,554,606

CLASS 361

104 4,554,607
119 4,554,608
4,554,609
144 4,554,610
154 Re.32,035
234 4,554,611
306 4,554,612
386 4,554,613
400 4,554,614
412 4,554,615
424 4,554,616

CLASS 362

61 4,554,617
155 4,554,618
222 4,554,619
269 4,554,620
382 4,554,621

CLASS 363

61 4,554,622
96 4,554,623

CLASS 364

148 4,554,624
4,554,625
200 4,554,626
4,554,627
4,554,628
219 4,554,629
4,554,630
4,554,632
300 4,554,631
414 4,554,633
431.10 4,554,634
475 4,554,635
481 4,554,636
518 4,554,637
521 4,554,638
556 4,554,639
710 4,554,641
716 4,554,640
724 4,554,642

CLASS 365

104 4,554,643
154 4,554,644
189 4,554,645
4,554,646

CLASS 366

134 4,553,849

CLASS 367

48 4,554,647
49 4,554,648
68 4,554,649
154 4,554,650

CLASS 368

201 4,553,850
205 4,553,851

CLASS 369

13 4,554,651
44 4,554,652
45 4,554,653
54 4,554,654
275 4,554,655

CLASS 370

85 4,554,656
4,554,657
4,554,658
88 4,554,659
94 4,554,660

CLASS 371

15 4,554,661
20 4,554,662
4,554,663
25 4,554,664
55 4,554,665

CLASS 372

19 4,554,666
83 4,554,667

CLASS 374

1 4,553,852
25 4,553,853
129 4,553,854

CLASS 375

1 4,554,668
4,554,669
30 4,554,670
4,554,671
40 4,554,672
118 4,554,673

CLASS 376

252 4,554,128
298 4,554,129

CLASS 377

17 4,554,674
60 4,554,675

CLASS 378

170 4,554,676

CLASS 384

95 4,553,859
99 4,553,855
276 4,553,856
398 4,553,857
473 4,553,858

CLASS 400

68 4,553,860
120 4,553,861
121 4,553,862
4,553,863
4,553,864
124 4,553,865
144.2 4,553,866
323 4,553,867
356 4,553,868
568 4,553,869
662 4,553,870

CLASS 401

195 4,553,871

CLASS 403

25 4,553,872
245 4,553,873

CLASS 404

4 4,553,874
6 4,553,875

CLASS 405

50 4,553,876
154 4,553,877
203 4,553,878
270 4,553,879

CLASS 406

23 4,553,880
115 4,553,881
181 4,553,882

CLASS 408

130 4,553,883
143 4,553,884

CLASS 409

201 4,553,885
233 4,553,886

CLASS 410

119 4,553,887
144 4,553,888

CLASS 411

21 4,553,889
318 4,553,890
351 4,553,891

CLASS 414

121 4,553,892
152 4,553,893
331 4,553,894
401 4,553,895
495 4,553,896
559 4,553,897
573 4,553,898
629 4,553,899
745 4,553,900

CLASS 415

138 4,553,901

CLASS 417

34 4,553,902
204 4,553,903
218 4,553,904
222 4,553,905
295 4,553,906
297 4,553,907
310 4,553,908
369 4,553,909
378 4,553,910

CLASS 418

1 4,553,911
54 4,553,912
55 4,553,913
69 4,553,914
102 4,553,915
173 4,553,916

CLASS 419

8 4,554,130

CLASS 420

546 4,554,131

CLASS 422

68 4,554,132
87 4,554,133
100 4,554,134
148 4,554,135
209 4,554,136

CLASS 423

26 4,554,137
53 4,554,138
166 4,554,139
243 4,554,140
245 4,554,141
277 4,554,142
306 4,554,143
321 R 4,554,144
328 4,554,145
329 4,554,146
335 4,554,147
447.1 4,554,148
450 4,554,149
491 4,554,150
551 4,554,151
647 4,554,152
4,554,153

CLASS 424

16 4,554,154
22 4,554,155
81 4,554,156
89 4,554,157
4,554,158
4,554,159
114 4,554,160
115 4,554,161
117 4,554,162
195.1 4,554,163

CLASS 425

6 4,553,917
46 4,553,918
90 4,553,919
267 4,553,920
279 4,553,921
381.2 4,553,922
393 4,553,923

CLASS 426

36 4,554,165
139 B1 4,289,791
276 4,554,166
285 4,554,167
473 4,554,168
576 4,554,169
651 4,554,170

CLASS 427

4 4,554,171
12 4,554,172
44 4,554,174
4,554,175
120 4,554,173
125 4,554,176
130 4,554,177
140 4,554,178
163 4,554,179
248.1 4,554,180
261 4,554,181
304 4,554,182
306 4,554,183
345 4,554,184
385.5 4,554,185
387 4,554,186
4,554,187
393.5 4,554,188

CLASS 428

11 4,554,189
35 4,554,190
4,554,191
4,554,192
40 4,554,193
4,554,194
49 4,554,195
67 4,554,196
113 4,554,197
143 4,554,198
194 4,554,199
207 4,554,200
215 4,554,201
225 4,554,202
229 4,554,203
246 4,554,204
253 4,554,205
261 4,554,206
288 4,554,207
332 4,554,208
334 4,554,209
349 4,554,210
402 4,554,211
413 4,554,212
418 4,554,213
423.1 4,554,214
447 4,554,215
469 4,554,216
4,554,217
567 4,554,218
667 4,554,219
694 4,554,220

CLASS 429

1 4,554,221
19 4,554,222
20 4,554,223
30 4,554,224
34 4,554,225
153 4,554,226
178 4,554,227
242 4,554,228

CLASS 430

17 4,554,229
58 4,554,230
59 4,554,231
106.6 4,554,232
4,554,233
122 4,554,234
138 4,554,235
157 4,554,236
197 4,554,237
258 4,554,238
270 4,554,239
285 4,554,240
301 4,554,241
311 Re.32,033
393 4,554,242
543 4,554,243
552 4,554,244
567 4,554,245
611 4,554,246
622 4,554,247

CLASS 431

12 4,553,924
178 4,553,925
253 4,553,926
264 4,553,927
359 4,553,928

CLASS 432

59 4,553,929
120 4,553,930
246 4,553,931

CLASS 433

4 4,553,932
5 4,553,933
4,553,934
4,553,935
32 4,553,936
37 4,553,937
39 4,553,938
126 4,553,939
144 4,553,942
225 4,553,941
228.1 4,553,941

CLASS 434

22 4,553,943
191 4,553,944

CLASS 435

7 4,554,248
10 4,554,249
172.3 4,554,250
240 4,554,251
4,554,252
288 4,554,253

CLASS 436

86 4,554,254
102 4,554,255
510 4,554,256
519 4,554,257

CLASS 440

51 4,553,945

CLASS 446

327 4,553,946
443 4,553,947

CLASS 455

54 4,554,677
286 4,554,678
303 4,554,679
326 4,554,680

CLASS 464

25 4,553,948
153 4,553,949
176 4,553,950

CLASS 474

148 4,553,951
153 4,553,952
201 4,553,953

CLASS 493

309 4,553,954

CLASS 494

16 4,553,955

CLASS 501

21 4,554,258
67 4,554,259

CLASS 502

61 4,554,260
62 4,554,261
4,554,262
66 4,554,263
112 4,554,264
113 4,554,265
340 4,554,267
344 4,554,266
439 4,554,268

CLASS 514

35 4,554,269
120 4,554,270
179 4,554,271
219 4,554,272
221 4,554,273
239 4,554,274
245 4,554,275
272 4,554,276
277 4,554,277
301 4,554,278
311 4,554,279
338 4,554,280
353 4,554,281
357 4,554,282
364 4,554,283
367 4,554,284
383 4,554,285
4,554,286
387 4,554,287
418 4,554,288
450 4,554,289
487 4,554,290
649 4,554,164

CLASS 518

700 4,554,291
728 4,554,292

CLASS 521

81 4,554,293
93 4,554,294
110 4,554,295
154 4,554,296
178 4,554,297

CLASS 523

115 4,553,940
336 4,554,298
466 4,554,299
4,554,300

CLASS 524

210 4,554,301
233 4,554,302
277 4,554,303
291 4,554,304
321 4,554,305
377 4,554,306
425 4,554,307
591 4,554,308
611 4,554,309
715 4,554,310
808 4,554,311
4,554,312

CLASS 525

28 4,554,317
54.5 4,554,313
67 4,554,314
4,554,315
71 4,554,316
118 4,554,318
155 4,554,319
183 4,554,320
240 4,554,321
245 4,554,322
272 4,554,323
301 4,554,324
326.8 4,554,325
354 4,554,326
356 4,554,327
437 4,554,328
4,554,329
462 4,554,330
478 4,554,331
532 4,554,332

CLASS 526

127 4,554,333
177 4,554,334
249 4,554,335
301 4,554,336

CLASS 527

201 4,554,337

CLASS 528

18 4,554,338
26 4,554,339
77 4,554,340
89 4,554,341
90 4,554,342
274 4,554,343
283 4,554,344
336 4,554,345
363 4,554,346
503 4,554,347

CLASS 534

768 4,554,348

CLASS 536

55 4,554,349

CLASS 544

22 4,554,350
177 4,554,351

CLASS 546

156 4,554,352
208 4,554,353

CLASS 548

110 4,554,354
180 4,554,355
341 4,554,356
461 4,554,357

CLASS 549

229 4,554,358
231 4,554,359
261 4,554,360
264 Re.32,034
302 4,554,361
352 4,554,362

CLASSIFICATION OF PATENTS

415	4,554,363	161	4,554,372	424	4,554,380	870	4,554,390	828	4,554,398	317	4,553,966
453	4,554,364	192	4,554,373		CLASS 568		CLASS 570		CLASS 604		4,553,967
463	4,554,365	204	4,554,374	34	4,554,381	231	4,554,391	9	4,553,956	349	4,553,968
	4,554,366	244	4,554,375	404	4,554,382	254	4,554,392	43	4,553,957	355	4,553,969
	CLASS 556		CLASS 562	428	4,554,383		CLASS 585	67	4,553,958	408	4,553,970
20	4,554,367	554	4,554,376	445	4,554,384	322	4,554,393	96	4,553,959	415	4,553,971
91	4,554,368		CLASS 564	496	4,554,385	474	4,554,394	158	4,553,960	892	4,553,972
418	4,554,369	205	4,554,377	697	4,554,386	500	4,554,395	175	4,553,961		4,553,973
472	4,554,370	332	4,554,378	704	4,554,387	531	4,554,396	198	4,553,962		CLASS 623
	CLASS 560	374	4,554,379	716	4,554,388	638	4,554,397	246	4,553,963	1	4,553,272
52	4,554,371			722	4,554,389			248	4,553,964	14	4,553,271
								286	4,553,965	18	4,553,273

CLASSIFICATION OF DESIGNS

D2—	319	281,370		84.1	281,385		347	281,399		191	281,413	D15—	9.2	281,427		134	281,441
	320	281,371		317	281,386		370	281,400	D13—	2	281,414		21	281,428		141	281,442
		281,372	D8—	13	281,387	D10—	75	281,401		24	281,415		69	281,429		143	281,443
	361	281,373		22	281,388		78	281,402			281,416		123	281,430			281,444
D3—	26	281,374		40	281,389		93	281,403		28	281,417		125	281,431		150	281,445
D4—	104	281,375			281,390		99	281,404	D14—	10	281,418		139	281,432		191	281,446
D6—	344	281,376		61	281,391	D11—	93	281,405		12	281,419	D17—	24	281,433		244	281,447
	362	281,377		90	281,392		153	281,406		13	281,420	D18—	1	281,434	D23—	49	281,448
	379	281,378		373	281,393		181	281,407		52	281,421		7	281,435		58	281,449
	382	281,379		401	281,394	D12—	147	281,408		58	281,422	D20—	43	281,436			281,450
	404	281,380	D9—	307	281,395		179	281,409			281,423	D21—	24	281,437		151	281,451
	471	281,381		309	281,396		182	281,410		83	281,424		63	281,438	D24—	10	281,452
	474	281,382		338	281,397		188	281,411		84	281,425		88	281,439		31	281,453
	572	281,383		341	281,398		190	281,412		100	281,426		108	281,440		49	281,454
D7—	46	281,384															

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,553,718	4,553,843	4,554,516	4,553,360	4,553,475	4,554,001
	4,554,076	4,553,872	4,554,521	4,553,457	4,553,477	4,554,009
04 :	4,553,528	4,553,883	4,554,539	4,553,462	4,553,503	4,554,110
	4,553,710	4,553,890	4,554,545	4,553,535	4,553,523	4,554,302
	4,553,746	4,553,895	4,554,552	4,553,552	4,553,542	4,554,309
	4,554,464	4,553,900	4,554,615	4,553,557	4,553,561	4,554,330
	4,554,466	4,553,917	4,554,616	4,553,723	4,553,563	4,554,414
	4,554,468	4,553,947	4,554,628	4,553,751	4,553,642	4,554,496
	4,554,543	4,553,955	4,554,640	4,553,770	4,553,656	4,554,515
05 :	4,553,887	4,553,963	4,554,644	4,553,778	4,553,691	4,554,530
06 :	4,553,278	4,553,970	4,554,649	4,553,857	4,553,713	4,554,577
	4,553,291	4,553,972	4,554,671	4,553,916	4,553,729	4,554,578
	4,553,300	4,553,973	4,554,676	4,553,961	4,553,733	4,554,588
	4,553,302	4,553,977	3,777,283	4,554,059	4,553,738	4,554,617
	4,553,303	4,553,983	08 : 4,553,386	4,554,069	4,553,760	19 : 4,553,486
	4,553,306	4,554,008	4,553,397	4,554,124	4,553,790	4,553,607
	4,553,325	4,554,010	4,553,451	4,554,139	4,553,801	4,553,921
	4,553,326	4,554,011	4,553,524	4,554,151	4,553,802	4,554,021
	4,553,336	4,554,014	4,553,594	4,554,185	4,553,842	4,554,037
	4,553,347	4,554,024	4,553,695	4,554,547	4,553,904	4,554,431
	4,553,373	4,554,036	4,553,786	4,554,553	4,553,912	20 : 4,553,380
	4,553,393	4,554,038	4,553,892	4,554,558	4,553,928	4,553,448
	4,553,396	4,554,067	4,554,593	4,554,629	4,553,938	4,554,433
	4,553,435	4,554,070	4,554,632	4,554,667	4,553,953	21 : 4,553,374
	4,553,443	4,554,074	09 : 4,553,311	13 : 4,553,400	4,554,023	22 : 4,553,269
	4,553,468	4,554,129	4,553,407	4,553,469	4,554,026	4,553,287
	4,553,474	4,554,130	4,553,629	4,553,725	4,554,159	4,553,438
	4,553,484	4,554,135	4,553,680	4,553,739	4,554,190	4,553,537
	4,553,496	4,554,138	4,553,684	4,553,741	4,554,222	4,553,591
	4,553,497	4,554,144	4,553,728	4,553,747	4,554,337	4,553,637
	4,553,525	4,554,150	4,553,901	4,553,748	4,554,353	4,553,776
	4,553,560	4,554,158	4,553,914	4,553,835	4,554,359	4,553,979
	4,553,587	4,554,168	4,553,944	4,553,975	4,554,418	4,554,005
	4,553,590	4,554,210	4,553,951	4,554,078	4,554,432	4,554,079
	4,553,601	4,554,217	4,553,966	4,554,419	4,554,487	4,554,141
	4,553,626	4,554,257	4,554,000	4,554,420	4,554,491	4,554,352
	4,553,667	4,554,277	4,554,049	15 : 4,553,737	4,554,492	4,554,387
	4,553,671	4,554,283	4,554,205	16 : 4,553,487	4,554,542	4,554,389
	4,553,687	4,554,336	4,554,276	4,553,508	4,554,579	23 : 4,553,635
	4,553,721	4,554,366	4,554,413	4,553,608	4,554,581	4,554,305
	4,553,727	4,554,372	4,554,500	4,553,641	4,554,609	24 : 4,553,753
	4,553,736	4,554,429	4,554,533	4,554,004	4,554,658	4,553,775
	4,553,745	4,554,442	4,554,554	4,554,256	4,554,678	4,553,815
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	4,553,809	4,554,508	12 : 4,553,308	4,553,355	4,553,731	4,289,791
	4,553,827	4,554,510	4,553,315	4,553,378	4,553,949	25 : 4,553,285
	4,553,838	4,554,511	4,553,334	4,553,426	4,553,998	4,553,323

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28 : 4,553,350
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32 : 4,553,632
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34 : Re.32,034
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4,554,149
4,554,440
41 : 4,553,750
4,554,195
4,554,489
4,554,536
4,554,626
42 : 4,553,272
4,553,279
4,553,296
4,553,297
4,553,322
4,553,402
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4,554,666
44 : 4,553,527
4,553,657
45 : 4,553,335
4,553,612
4,554,128
4,554,200
46 : 4,553,898
4,554,039
47 : 4,553,634
4,553,689
4,553,880
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4,554,172
4,554,206
4,554,295
4,554,303
4,554,343
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48 : Re.32,033
4,553,305
4,553,310
4,553,314
4,553,316
4,553,352
4,553,428
4,553,429
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4,553,589
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4,554,072
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4,554,102
4,554,112
4,554,115
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4,554,261
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4,554,383
4,554,467
4,554,494
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4,554,647
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4,554,677
49 : 4,553,271
4,553,333
4,553,613
4,553,960
4,554,165
4,554,294
4,554,483
4,554,493
50 : 4,553,526
4,554,612
4,554,645
51 : 4,553,275
4,553,293
4,553,398
4,553,401
4,553,439
4,553,453
4,553,543
4,553,556
4,553,785
4,553,800
4,553,853
4,554,019
4,554,131
4,554,207
4,554,426
4,554,484
4,554,495
52 : 4,553,722
53 : 4,553,277
4,553,294
4,553,467
4,553,758
4,553,932
4,553,933
4,553,934
4,554,003
4,554,101
4,554,155
54 : 4,553,881
55 : 4,553,338
4,553,356
4,553,357
4,553,368
4,553,418
4,553,461
4,553,668
4,553,678
4,554,020
4,554,106
4,554,531
4,554,613
4,554,633
56 : 4,553,358

DESIGN PATENTS

04 : 281,374
281,437
06 : 281,377
281,389
281,399
281,400
281,403
281,420

281,424
281,452
08 : 281,382
281,421
281,436
09 : 281,401
281,427
281,450

17 : 281,384
281,390
281,419
281,453
20 : 281,376
25 : 281,371
26 : 281,413
281,418

281,446
34 : 281,414
281,444
281,449
36 : 281,373
281,381
281,383
281,394

281,416
281,451
37 : 281,391
39 : 281,430
281,431
40 : 281,412
281,425
42 : 281,404

281,409
281,454
44 : 281,433
48 : 281,379
281,380
281,385
49 : 281,447
50 : 281,378

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Vol. 1060 Number 4

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

November 26, 1985

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PATENT AND TRADEMARK OFFICE
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 26, 1985 Volume 1060 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1060 OG 24
Notice of Maintenance Fees Payable	1060 OG 24
Reissue Applications Filed	1060 OG 24
Requests for Reexaminations Filed	1060 OG 25
Adverse Decisions in Interference	1060 OG 25
PTO Status	1060 OG 26
Patent Certificates of Correction	1060 OG 28
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1060 OG 29
Condition of Patent Applications	1060 OG 30
Reexaminations	1479
Reissue Patents Granted (32,036)	1481
Patents Granted	
General and Mechanical (4,554,681)	1483
Chemical (4,555,246)	1681
Electrical (4,555,585)	1779
Design Patents Granted (281,455)	1859
Index of Patentees	PI 1
Indices of Reissue, Reexamination and Design	PI 43
Classification of	
Patents (Including Reissues and Reexaminations)	PI 47
Designs	PI 49
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 50
Designs	PI 51
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Oct. 21, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 23, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,359,783 through 4,360,929
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,227,829, Re. S.N. 784,631, Filed Oct. 4, 1985, Cl. 405/20, SOIL EROSION PREVENTION BLOCKS, Kossuth J. Landry, Jr., Owner of Record: *Inventor,* Attorney or Agent: Guy E. Matthews, Ex. Gp.: 351

4,436,148, Re. S.N. 778,904, Filed Sept. 23, 1985, Cl. 166/53, CHEMICAL TREATMENT FOR OIL WELLS, Richard Maxwell, Owner of Record: *Inventor,* Attorney or Agent: Robert C. Peterson, et al., Ex. Gp.: 356

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,815,213, Reexam. No. 90/000,881, Requested: Oct. 10, 1985, Cl. 29/446, METHOD OF MAKING AN IMPROVED SLOT DRAINAGE CULVERT, Ralph E. Evans, et al., Owner of Record: *Armco, Inc., Middletown, Ohio,* Attorney or Agent: Frost & Jacobs, Ex. Gp.: 320, Requester: American Corrugated Systems, Redding, Calif.

3,817,362, Reexam. No. 90/000,867, Requested: Sept. 20, 1985, Cl. 192/106.1, TORSION DAMPING DEVICE, Michel Rist, Owner of Record: *Societe Anonyme Francaise du Ferado, Paris, France,* Attorney or Agent: Young & Thompson, Ex. Gp.: 350, Requester: Valeo of Paris, Paris, France

3,943,997, Reexam. No. 90/000,801, Requested: June 14, 1985, Cl. 166/312, ROTARY DRILLING APPARATUS AND METHOD, Haggai D. Davis, Owner of Record: *Haggai D. Davis, Morgan City, La.,* Attorney or Agent: Jennings B. Thompson, Ex. Gp.: 350, Requester: Odeco, Inc., New Orleans, La.

4,038,753, Reexam. No. 90/000,877, Requested: Oct. 7, 1985, Cl. 433/11, ORTHODONTIC APPARATUS INCLUDING UNITARY DISPENSER AND DISPENSED ARTICLES, Paul E. Klein, Owner of Record: *Modcom, Inc., Canby, Oreg.,* Attorney or Agent: Kolisch, Hartwell, et al., Ex. Gp.: 330, Requester: Owner

4,163,923, Reexam. No. 90/000,879, Requested: Oct. 9, 1985, Cl. 315/208, VARIABLE DUTY CYCLE LAMP CIRCUIT, Dennis Herbers & William H. Gibson, Owner of Record: *Inventors,* Attorney or Agent: James D. Liles, Ex. Gp.: 250, Requester: Owners

4,217,686, Reexam. No. 90/000,878, Requested: Oct. 7, 1985, Cl. 29/413, ORTHODONTIC O-RING AND LIGATOR THEREFORE, William B. Dragan, Owner of Record: *Modcom, Inc., Canby, Oreg.,* Attorney or Agent: A. T. Fattibene, Ex. Gp.: 320, Requester: Owner

4,287,015, Reexam. No. 90/000,882, Requested: Oct. 16, 1985, Cl. 156/382, VACUUM BAG USED IN MAKING LAMINATED PRODUCTS, Harold J. Danner, Owner of Record: *Zip-Vac, Inc. Auburn, Wash.,* Attorney or Agent: Roy E. Mattern, Jr., Ex. Gp.: 130, Requester: Cosby M. Newsom, Norwalk, Calif.

4,330,280, Reexam. No. 90/000,880, Requested: Oct. 10, 1985, Cl. 433/90, EJECTOR HOLDER FOR CAPSULE-LIKE CARTRIDGE, Emery W. Dougherty, Owner of Record: *Dentsply Research Development Corp., Milford, Del.,* Attorney or Agent: C. Hercus Just, Ex. Gp.: 330, Requester: Dr. William B. Dragan, Stratford, Conn.

4,359,598, Reexam. No. 90/000,771, Requested: Apr. 26, 1985, Cl. 174/41, OVERHEAD ELECTRIC TRANSMISSION SYSTEMS, Phillip Dey, et al., Owner of Record: *BICC, Ltd., London, England,* Attorney or Agent: John A. Fogarty, Ex. Gp.: 210, Requester: Carl Kustin, Los Angeles, Calif.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,579,193, Donald R. Bernier, EDITING AND REVISION SYSTEM, Interference No. 99,564, decided July 19, 1985, claims 28–40.

Patent No. 4,206,872, Michael R. Levine, ELECTRONIC THERMOSTAT, Interference No. 100,874, decided July 13, 1984, claims 1–5, 7–9, 11–17.

Patent No. 4,261,762, Monroe L. King, METHOD FOR CONDUCTING HEAT TO OR FROM AN ARTICLE BEING TREATED UNDER VACUUM, Interference No. 101,164, decided Sept. 27, 1985, claims 1–4 & 6.

Patent No. 4,267,338, Jorg Stetter, Wilfried Draber, Rudolf Thomas and Winfried Lunkenheimer, N-AZOLYLALKYL-ANILINES, Interference No. 101,332, decided Oct. 7, 1985, claims 5, 15–20.

Patent No. 4,362,653, Delmar W. Robinson, HYDROCARBON CONVERSION CATALYST, Interference No. 101,226, decided Aug. 5, 1985, claims 1 & 2.

Patent No. 4,392,971, Hiroshi Kimura and Junjiro Kai, HEAT STORAGE MATERIAL, Interference No. 101,305, decided Aug. 20, 1985, claims 1 & 2.

Patent No. 4,393,258, Hisato Sato, Haruyoshi Takatsu, Yutaka Fujita, Masayuki Tazume, Kiyohumi Takeuchi and Hiroyuki Ohnishi, 1-CYCLOHEXYL-2-CYCLOHEXYLPHENYLETHANE DERIVATIVES, Interference No. 101,265, decided Sept. 24, 1985, claims 1–8.

Patent No. 4,401,798, Mario Q. Ceprini, Donald Goodman and Samuel Hoch, PROCESS FOR THE PRODUCTION OF VINYL HALIDE POLYMERS THAT USES AN ALKYL-SUBSTITUTED TRISPHENOL AS THE CHAIN-TERMINATING AGENT, Interference No. 101,363, decided Aug. 12, 1985, claims 1–6.

Patent No. 4,448,959, Beat Bohner, CHLOROSULFONYL UREA TRIAZINES, Interference No. 101,370, decided Aug. 12, 1985, claims 1–7.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

Status of PTO Services

The following is an update of the status of PTO services for October 1985:

Service Item	FY 1985 Goal	FY 1986 Goal	Monthly Average
Filing Receipts:			
Patents	22	22	17
Trademarks	30	30	27
Patent/Trademark Copies:			
Special Window Coupons	1	1	99% within 1 day
Window Coupons	5	5	96% within 5 days
Mail Coupons	29	26	99% within 26 days*
Letter Orders	34	26	99% within 26 days*
Date of oldest unfilled order			Oct. 24, 1985
Current Mail Date being processed			Oct. 25, 1985
Certified Copies:			
Trademark Registrations	30	30	25
Applications-As-Filed	20	10	99% within 7 days
File-Wrapper/Contents	N/A	N/A	99% within 7 days
Walk-up Certification	1	1	99% within 24 hours
Trademark Search Library:			
Filing Pending Marks	21	21	25
Filing Reg. Certificates	3	Issue Date	On schedule
Assignments:			
Patents	25	20	20
Trademarks	25	20	17
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	89
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	99% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

*Figures include postal processing and delivery time.

IMPROVEMENTS IN SERVICES

- *Patented Files Access* — We are greatly improving access and turn-around time for retrieval of many patented files. As a result of making additional space and shelving available, we are transferring patented files numbering 4,000,000 through 4,097,902 from the Federal Records Center at Suitland, Md., to our Eads Street File Repository. This should be completed by mid-Nov. Also, henceforth, no additional files will be sent to the Federal Records Center. Files there have been taking from 5 days to 2 weeks to retrieve. We are able to provide them from our File Repository within a day or two, if the file is not already checked out.

  This transition is a first step toward improving file access. We have further plans to bring all active patented files under our control by next spring.

  Slight delays may occur during transition, and we request your patience while these files are made more readily available. If you have any questions or require special assistance, please call Ms. Jacqueline Waldo on (703) 557–6944.

- *Electronic Copy Ordering* — We will introduce an electronic ordering service in Jan. 1986 for ordering copies of patents and trademarks. This will allow orders to be placed electronically to our copy fulfillment contractor, Vanguard Technologies Corp., eliminating the seven day average time for mail orders to be delivered from customers to us.

  The electronic ordering service will be available to deposit account customers who have a standard terminal with a modem. We will offer this service free of charge for a 90 day trial period. During this time, the only cost to the customer will be the standard per copy charge of $1.50 for patents, $1.00 for trademarks, and $6.00 for plant patents. These costs will be charged to the customer's deposit account. Near the end of the 90 day trial period, participants will be asked to complete an evaluation form on this service, and indicate whether or not they would be interested in continuing the service.

  If the trial is successful, those deposit account customers interested in continuing the service will be charged the costs of access and transmission charges for placing subsequent orders, in addition to the per copy charges. We estimate the access and transmission charges to be less than 25 cents per minute of connect time.

  Letters inviting participation in the trial will be sent to each deposit account customer soon. Those customers interested in using the service will be assigned a user identification code and given specific instructions on using the service by Vanguard.

  If you are interested in learning more about the service, please contact Mary Brown or Cathy Kern, Office of Patent and Trademark Services, on (703) 557–3236. They will be happy to assist you.

HELPFUL HINTS FROM THE PTO

- *Extensions of Time in Patent Cases* — Submission of the appropriate extension fee under 37 CFR 1.136(a) is to no avail unless a request or petition for extension is filed. Frequently, the request is omitted, which then requires an additional extension fee to cover the period to the date of the request. Occasionally, the application is held abandoned because the six month maximum statutory period has expired before detection of the omission of the request for extension. It is critical that a paper specifically requesting the extension be filed with late responses. It is also wise to use the Certificate of Mailing practice when requesting extensions.

  Extensions of time by fee payment under 37 CFR 1.136(a) are appropriate for filing of the Brief on Appeal in regular applications. No more than four months may be granted under 37 CFR 1.136(a). Beyond those four months, any further request must show sufficient cause under 37 CFR 1.136(b), and no additional extension fee is appropriate.

  An extension of time is not required in order to hold an interview with the examiner. However, an extension is required for the purpose of filing a follow-up amendment by applicant and/or for the entry of an Examiner's Amendment requiring approval of the applicant.

  Extensions of time are appropriate for the purpose of achieving continuity between parent and continuing applications. A separate paper requesting the extension of time must be filed in the *parent* application. It would be useful to file a *copy* of that request or petition with the papers constituting the filing of the continuing applicaiton.

- *Patent Copies* — The price of a patent copy increased from $1.00 to $1.50 on Oct. 5, 1985. The new $1.50 coupons are available, but we will accept the old ones and provide a $.50 coupon refund as appropriate.

- *Loose Documents in Patent Search Room* — When photocopies are made of patented files, patent applications and patents in the Public Search Room, we have noticed that papers from files and pages of patents have been left on the copy machines. In general, some documents are not returned to files and patents are not stapled and refiled in the bundles. File integrity can be enhanced if special care is taken to return properly all papers to files.

Nov. 5, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 26, 1985

Bl. 4,342,811	4,496,758	4,519,439	4,533,006
4,130,413	4,499,068	4,520,212	4,533,052
4,146,558	4,499,325	4,520,292	4,533,447
4,211,872	4,499,427	4,520,780	4,533,940
4,243,721	4,499,654	4,522,097	4,534,191
4,327,022	4,499,690	4,522,412	4,534,211
4,343,023	4,500,434	4,522,954	4,534,318
4,348,965	4,500,949	4,522,957	4,534,755
4,356,142	4,501,042	4,523,374	4,534,826
4,365,347	4,502,397	4,523,847	4,534,834
4,372,629	4,503,140	4,524,854	4,534,906
4,373,103	4,504,386	4,525,146	4,534,976
4,373,206	4,505,976	4,525,702	4,534,980
4,380,947	4,507,118	4,525,839	4,535,267
4,383,113	4,507,406	4,526,225	4,535,392
4,413,792	4,507,887	4,526,463	4,536,012
4,419,672	4,508,249	4,526,716	4,536,105
4,428,649	4,508,615	4,526,778	4,536,333
4,429,115	4,508,858	4,527,099	4,537,121
4,435,879	4,509,465	4,527,250	4,537,134
4,438,971	4,510,227	4,528,123	4,537,361
4,449,301	4,511,831	4,528,127	4,537,987
4,450,812	4,512,311	4,528,163	4,538,089
4,453,998	4,513,222	4,528,474	4,538,414
4,468,877	4,514,165	4,528,529	4,538,827
4,472,832	4,514,398	4,528,756	4,538,944
4,473,435	4,514,434	4,530,064	4,539,208
4,473,826	4,514,661	4,530,174	4,539,724
4,476,659	4,514,959	4,530,377	4,539,763
4,477,274	4,515,592	4,530,699	4,539,929
4,478,963	4,515,943	4,530,715	4,540,115
4,482,842	4,516,841	4,530,818	4,540,423
4,489,801	4,517,007	4,530,870	4,540,487
4,490,690	4,517,192	4,531,598	4,540,645
4,491,917	4,517,317	4,531,602	4,540,891
4,493,828	4,517,323	4,531,681	4,540,935
4,495,069	4,518,320	4,532,307	4,541,325
4,495,557	4,518,586	4,532,579	4,543,468
4,495,865	4,518,608	4,532,682	
4,495,908	4,518,759	4,532,845	
4,496,553	4,518,904	4,532,964	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 26, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	8-06-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-30-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-14-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,403,406 to 3,408,656, inclusive

Plant Patents ..... Numbers 2,835 to 2,843 inclusive

REEXAMINATIONS

NOVEMBER 26, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,401,624 (426th)

BUFFERED SOLUTIONS WHICH HAVE A REDUCED CORROSIVE NATURE

Charles B. Atwater, Palo Alto, Calif., assignor to Syntex Inc., Palo Alto, Calif.

Reexamination Request No. 90/000,627, Sep. 13, 1984.
Reexamination Certificate for Patent No. 4,401,624, issued Aug. 30, 1983, Ser. No. 355,493, Mar. 8, 1982.
Filed Sep. 13, 1984, Ser. No. 355,493
Int. Cl.[4] A21D *2/14;* **A23B** *4/12;* **C23F** *11/12*
U.S. Cl. 422—12

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1-5** are now disclaimed.

1. A method for reducing the corrosion of metals in contact with an aqueous solution of a carboxylic acid which comprises maintaining said metal in contact with an aqueous solution of:

(a) about one equivalent of a metal salt of a carboxylic acid having the formula $R'C(O)O^-+M$;

(b) about one equivalent of a carboxylic acid having the formula $R''C(O)OH$; and

(c) water to produce an aqueous solution containing about 40 to about 80 percent by weight of a compound having the formula $R'C(O)O^-+M.R.''C(O)OH$

wherein

R′ and R″ are independently selected from the group consisting of methyl, ethyl, propyl, iso-propyl, butyl, iso-butyl, tert-butyl and benzyl; and

M is selected from the group consisting of sodium, potassium, and calcium.

REISSUES

NOVEMBER 26, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

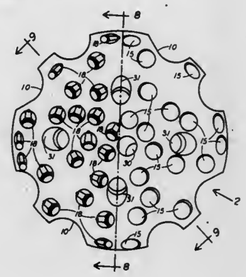
Re. 32,036
DRILL BIT

Mahlon Dennis, Kingwood, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Original No. 4,323,130, dated Apr. 6, 1982, Ser. No. 158,389, Jun. 11, 1980. Application for reissue Mar. 30, 1984, Ser. No. 595,269

Int. Cl.[4] **E21B** *10/46*

U.S. Cl. 175—329 **18 Claims**



18. A cutting element for use in a drill bit of the type comprising a drill body and recess means therein for receiving said cutting element, said cutting element comprising a cylindrical supporting stud of sintered carbide having an angularly oriented supporting surface with a disc-shaped element bonded thereon comprising a sintered carbide disc having a cutting surface comprising a polycrystalline diamond, said disc-shaped element on said cutting element having a peripheral bevel on said diamond cutting surface.

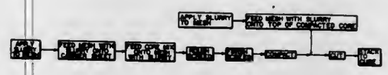
Re. 32,037
METHODS FOR MANUFACTURING CEMENTITIOUS REINFORCED PANELS

Theodore E. Clear, 429 S. Washington Blvd., Hamilton, Ohio 45013

Original No. 4,203,788, dated May 20, 1980, Ser. No. 887,324, Mar. 16, 1978. Application for reissue May 19, 1982, Ser. No. 379,937

Int. Cl.[4] **B32B** *31/12, 13/14;* **B28B** *1/08*

U.S. Cl. 156—44 **2 Claims**



33. A method for manufacturing a cementitious panel web useful for forming cementitious panels of the type having a nailable cementitious aggregate core faced on each major side with a reinforcing element bathed in a slurry comprising hydraulic cement, the method of forming the web comprising the steps of:

running a first elongated indefinite length web of reinforcing material through a slurry bath and depositing said slurry thereto to form a first uncured flexible cementitious element;

metering the amount of slurry deposited on said first web;

dragging an upper surface of said web against a bar to force slurry into said web, while leaving slurry on said upper surface;

depositing cementitious aggregate core material on said uncured flexible cementitious element;

running a second elongated indefinite length web of reinforcing material through a second slurry bath, and depositing slurry thereto to form a second uncured flexible cementitious element;

metering the amount of slurry deposited on said second web;

dragging an upper surface of said second web against a bar to force slurry into said second web, while leaving slurry on said upper surface; and

laying the second element on said core material;

thereby adhering the elements to respective major sides of said aggregate core material to form an uncured web from which individual panels can be thereafter formed.

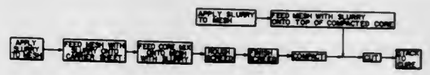
Re. 32,038
METHODS FOR MANUFACTURING CEMENTITIOUS REINFORCED PANELS

Theodore E. Clear, 429 S. Washington Blvd., and Paul E. Dinkel, 645 Hamilton-New London Rd., both of, Hamilton, Ohio 45013

Original No. 4,203,788, dated May 20, 1980, Ser. No. 887,324, Mar. 16, 1978. Application for reissue May 19, 1982, Ser. No. 379,936

Int. Cl.[4] **B32B** *31/12, 13/14;* **B28B** *1/08*

U.S. Cl. 156—44 **28 Claims**



1. A method for manufacturing cementitious panels of the type having a nailable cementitious aggregate core faced on each major side with a reinforcing element bathed in a slurry comprising hydraulic cement, the method comprising the steps of;

running an elongated indefinite length web of pervious reinforcing material through a slurry bath and depositing an amount of slurry thereto to form a first wet uncured flexible cementitious element;

depositing cementitious aggregate core material on said uncured flexible cementitious element;

running a second elongated indefinite length web of pervious reinforcing material through a second slurry bath, and depositing an amount of slurry thereto to form a second wet uncured flexible cementitious element;

laying the second element on said core material;

thereby adhering the elements to respective major sides of said aggregate core material to form an uncured panel web;

thereafter cutting said uncured panel web to form separate uncured cementitious panels; and thereafter curing said panels.

Re. 32,039
THERMAL AND MECHANICAL BARRIER LAYERS FOR OPTICAL RECORDING ELEMENTS

Kenneth R. Hollister, Pittsford, and Harold T. Thomas, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

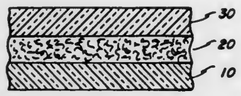
Original No. 4,340,655, dated Jul. 20, 1982, Ser. No. 160,809, Jun. 18, 1980. Application for reissue Aug. 31, 1984, Ser. No. 646,195

Int. Cl.[4] **G03E** *1/76;* **G01D** *15/10;* **G11B** *7/24*

U.S. Cl. 430—14 **18 Claims**

1. In a recording element comprising a support having thereon a heat-deformable optical recording layer and, coated

on said recording layer, a substantially transparent thermal and mechanical barrier layer, the improvement wherein said barrier layer comprises a water-soluble polymer *other than poly(acrylamide)* having a T_g when dry of at least 100° C.



Re. 32,040

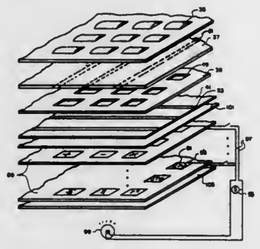
CALCULATOR APPARATUS WITH ELECTRONICALLY ALTERABLE KEY SYMBOLS

Alan S. Bagley, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Original No. 4,078,257, dated Mar. 7, 1978, Ser. No. 716,867, Aug. 23, 1976. Application for reissue Feb. 25, 1980, Ser. No. 124,418

Int. Cl.⁴ G06F *3/02, 7/38*

U.S. Cl. 364—900 **10 Claims**



20. A keyboard having at least one keyboard configuration of alphanumeric symbols disposed as energizeable elements on at least one plane, said keyboard being responsive to means for selecting at least two modes of operation, means for selecting a keyboard configuration by energizing selected ones of the elements and means for displaying the selected configuration, said keyboard comprising:

a cover portion with at least one labeled key and a plurality of transparent unlabeled key regions, the at least one labeled key being disposed for initiating the selection of a configuration of alphanumeric symbols during a first mode, to electronically label the unlabeled key regions;

a conductive portion disposed below said cover portion and having a first transparent portion located below said transparent unlabeled key regions; and

a display portion disposed below said conductive portion and having a second transparent portion located below said first transparent portion, said second transparent portion having at least one substantially transparent plane with the plurality of energizable elements for producing and displaying through said transparent regions and portions at least one configuration of alphanumeric symbols, the electronically labeled key regions and the labeled keys being actuable during a second mode for making keyboard entries indicated by their labels.

Re. 32,041

CONTROL VALVE FOR VISCOUS MATERIAL PUMPS

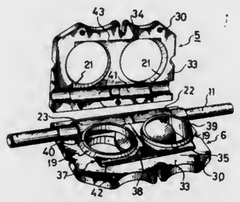
Horst Heckmann, Sprockhövel, and Werner Nawroth, Waltrop, both of Fed. Rep. of Germany, assignors to Friedrich Wilh. Schwing, GmbH, Herne, Fed. Rep. of Germany

Original No. 4,392,510, dated Jul. 12, 1983, Ser. No. 429,020, Sep. 30, 1982. Continuation of Ser. No. 236,568, Feb. 20, 1981, abandoned. Application for reissue Aug. 15, 1984, Ser. No. 641,009

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006542

Int. Cl.⁴ F16K *27/04, 3/00*

U.S. Cl. 137—454.2 **44 Claims**



21. A wear shell for use in a control valve of a viscous material pump which has a flat housing having a pair of generally parallel exterior surfaces and a pair of laterally spaced viscous material channels extending therethrough normal to the exterior surfaces and being formed of two parts abutting along a joinder plane lying parallel to the exterior surfaces, and which has a valve slide in the housing having a valve plate fastened to a valve rod for reciprocal movement within the housing across one or the other of the material channels thereof for controlling the movement of material through the channels, the wear shell comprising:

a pair of generally similar wear shell halves for mounting in the valve housing and containing the valve plate with the valve rod extending therefrom, the wear shell halves being divided along a central plane lying normal to the movement of the valve slide and being assemblable to form the wear shell by threading them on opposite ends of the valve slide, the wear shell being formed for permitting the reciprocal movement of the valve slide and having a pair of openings aligned with the material channels in the housing, and the wear shell being retained in the housing by locking engagement with the interior of the housing and having annular projections around the openings extending into the material channels for lining same.

PATENTS

GRANTED NOV. 26, 1985

ERRATA

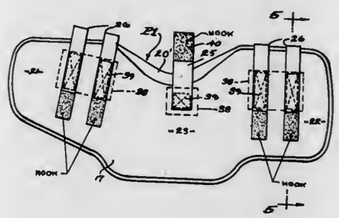
For CLASS	See PATENT NO.
70–312	4,554,809
122–026	4,554,906
604–010	4,554,918
514–017	4,555,403
514–201	4,555,404
514–488	4,555,405
514–605	4,555,406

PATENTS

GRANTED NOVEMBER 26, 1985

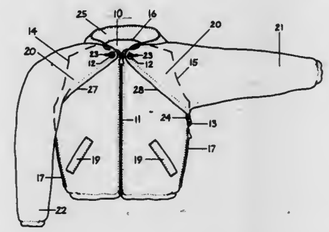
GENERAL AND MECHANICAL

4,554,681
REPLACEABLE SHOULDER PADDING FOR FOOTBALL AND THE LIKE
Alvin E. Kirkland, Playa Del Rey, Calif., assignor to Conlin Bros., Inc., Whittier, Calif.
Filed Jun. 11, 1984, Ser. No. 619,574
Int. Cl.[4] A41D *13/00*
U.S. Cl. 2—2 22 Claims



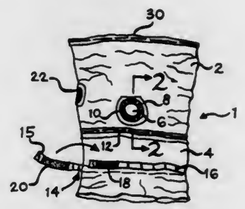
1. Athletic gear and the like with quickly replaceable padding, and including in combination;
a protective structural member formed to overlie a part to be protected and having an edge positioned and shaped to form a bitt,
a protective pad of depressible material formed to be disposed between the interior of the structural member and the part to be protected and engageable therewith,
at least one flexible strap anchored to the pad and having a free end portion turned tightly over the bitt to form a bite and establish a primary securement means to hold the pad,
and the free end portion of the strap having hook-and-loop fastener means releasably holding said portion contiguous to the exterior of the structural member and thereby establishing the securement of a secondary securement means.

4,554,682
CONVERTIBLE JACKET
Paul A. Hillquist, R.D. 2, Box 2760, Bryant Pond, Me. 04219
Filed Apr. 5, 1984, Ser. No. 597,045
Int. Cl.[4] A41B *1/12;* A41D *1/04*
U.S. Cl. 2—70 4 Claims



1. An upper component of an outergarment comprising, as a unit, two sleeve portions connected by a yoke portion incorporating a neckhole, said upper component being adapted to selective external attachment to a sleeveless body garment or vest and being so configured as to substantially cover body areas above the lower edge of the armholes of said vest, whereby said upper component is a means for selectively converting said vest to a jacket with multiple layers of construction substantially covering the upper back and shoulder area of the body.

4,554,683
PROTECTIVE ENCLOSURE HAVING SELF-CONTAINED AIR SUPPLY
Albert H. Wong, Los Angeles, Calif., assignor to Wong Technology, Inc., Los Angeles, Calif.
Filed Jan. 21, 1981, Ser. No. 226,920
Int. Cl.[4] A42B *1/04*
U.S. Cl. 2—202 8 Claims

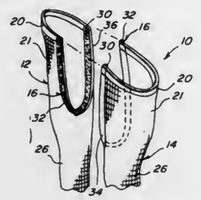


1. A flexible protective enclosure to protect a wearer from suffocation due to the presence of smoke and similar noxious fumes within a contaminated environment, said enclosure being closed at the top end thereof and being opened at the bottom end thereof so that said enclosure can be positioned over the head of the wearer,
said enclosure top end being closed by a relatively rigid closure member comprising a seal by which the top edges of said enclosure are connected together, said seal extending across said enclosure top end, so that the corners thereof are substantially square for separating said top end from the head of the wearer,
said enclosure including a pair of arm ports established therethrough and elastic sleeves aligned with respective arm ports at the interior of said enclosure for receiving the arms of the wearer therepast and for making an airtight seal therearound,
said enclosure extending from above the head to the trunk at a location below the shoulders of the wearer and having fastening means by which to secure said enclosure to the wearer, such that said enclosure is spaced away from the wearer's head and trunk, so as to produce an airspace therearound in which a temporary supply of air is contained, said enclosure operating to prevent fluid communication between the contaminated environment and said airspace so that the wearer may breathe from said airspace while within the contaminated environment.

4,554,684
MEN'S COMBINATION BRIEFS AND HOSE
Genevieve L. Cadoret, c/o Papin, 306 W. 91st St., New York, N.Y. 10024
Filed Oct. 17, 1983, Ser. No. 542,420
Int. Cl.[4] A41D *1/06;* A41B *9/00*
U.S. Cl. 2—227 5 Claims

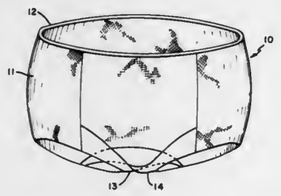
1. A pants garment comprising two identical portions each one of which can be used as a right side portion and a left side portion wherein identical mating fastener means are applied to both said portions such that each portion may mate with the other to form an entire garment but when said right side portion and said left side portion are separated they are identically indistinguishable from each other, wherein said mating fastener means comprises strips of loop fastener material which engage corresponding strips of hook fastener material, said mating fastener means being coupled on each portion along an arcuate path extending along the crotch and seat areas begin-

ning and terminating at the waist, a strip of loop fastener material extending halfway along said arcuate path and a strip of



hook fastener material extending the other halfway along said arcuate path.

4,554,685
UNDERWEAR
Hugh C. Ray, Rte. 1, Box 197, Cusseta, Ala. 36852
Filed Mar. 2, 1984, Ser. No. 585,533
Int. Cl.⁴ A41B *9/02*
U.S. Cl. 2—403 **13 Claims**

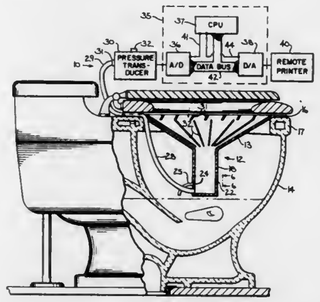


1. In a garment of the type having a waist opening and two leg openings for covering the lower torso of the wearer, the improvement comprising:
- a body member for covering the rear and both sides of the lower torso;
- a first leg shield secured to a first front-most edge of said body member, extending around the inner surface of a first leg of the wearer and secured to the rear bottom portion of said body member;
- a second leg shield secured to a second front-most edge of said body member, extending around the inner surface of a second leg of the wearer and secured to the rear bottom portion of said body member; wherein each leg shield has a straight front edge, concave lower edge, a convex rear edge, and an upper edge having an elongated straight portion and a portion which curves to generally perpendicular to said elongated straight portion; and
- at least one front panel connected to the front-most portions of said body member and connected to the rear bottom edge of said body member, thereby forming a compartment between said leg shields;
- further provided that contact between the inner surface of the wearer's leg and the scrotum and penis is prevented.

4,554,686
POLYMETHYLMETHACRYLATE BONE CEMENTS AND METHODS FOR PREPARING SUCH BONE CEMENTS
Charles D. Baker, Lehi, Utah, assignor to Technical Research Associates, Inc., Salt Lake City, Utah
Filed Feb. 29, 1984, Ser. No. 584,605
Int. Cl.⁴ A61F *1/00*; B05D *3/06*; C08F *6/02*
U.S. Cl. 623—16 **41 Claims**

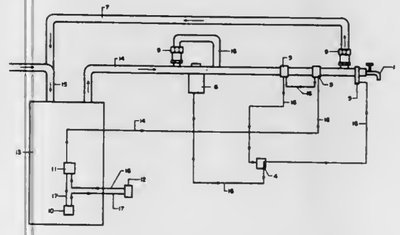
1. A method for preparing polymethylmethacrylate bone cement for use in attaching a surgical prosthesis to prepared bone tissue, the method comprising the steps of:
- mixing a bone cement composition including methylmethacrylate with a composition capable of initiating a polymerization of the methylmethacrylate;
- blending the bone cement composition until a desired degree of partial polymerization has occurred;
- placing substantially free flowing partially polymerized bone cement into syringe means;
- freezing the partially polymerized bone cement in order to substantially arrest polymerization of the methylmethacrylate in the bone cement composition;
- irradiating the frozen bone cement with suitable electromagnetic radiation capable of sterilizing the frozen bone cement without inducing substantial amounts of polymerization of the methylmethacrylate in the frozen bone cement; and
- storing the sterilized, frozen bone cement at a temperature below about −70° C. until use of the bone cement.

4,554,687
TOILET MOUNTED URINE FLOW METER
Garry L. Carter, and Vaughan B. Weeks, both of Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.
Continuation-in-part of Ser. No. 450,677, Dec. 17, 1982, abandoned. This application Nov. 26, 1984, Ser. No. 674,561
Int. Cl.⁴ A47K *11/00*; G01F *1/20*
U.S. Cl. 4—144.2 **4 Claims**



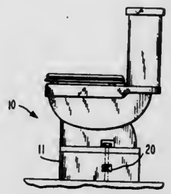
1. A disposable collector to be used in a urine flow meter for measuring the flow rate of a stream of urine as it is voided into the collector, comprising:
- a lower neck portion having an open upper end and a substantially closed lower portion, said lower portion having a first aperture formed therein which is sized and positioned so that a typical urine flow causes urine to accumulate in the neck portion above the first aperture until the pressure at the first aperture causes a urine flow out the neck portion equal to the urine flow into the collector;
- an upper mouth portion having walls which slope downwardly and inwardly from an open upper end to an open lower end, said lower end of the mouth portion being coextensive with the upper end of the neck portion to funnel the stream of urine into the neck portion;
- a pressure sender having a lower end in communication with the lower portion of the neck portion below the aperture and an upper end above the neck portion suitable for connection to a pressure transducer so that urine collected in the neck portion produces an air pressure in the pressure sender which is sensed by the pressure transducer; and
- wherein the collector is dimensioned to be supported within a toilet bowl so that urine collected in the neck portion drains from the aperture into the toilet bowl.

4,554,688
WATER SAVING SYSTEM
Thomas J. Puccerella, 111 Chippewa St., Miami Springs, Fla. 33166
Filed Apr. 17, 1984, Ser. No. 580,789
Int. Cl.⁴ E03C *1/00*
U.S. Cl. 4—191 **4 Claims**



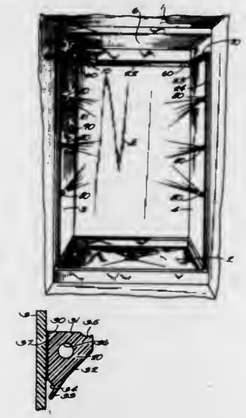
1. A water saving system comprising
- (a) a water treatment apparatus;
- (b) a delivery line extending from said water treatment apparatus to an outlet faucet;
- (c) a recirculating line extending upstream of said faucet from a point closely adjacent thereto back to said water treatment apparatus;
- (d) a recirculating pump interposed in said delivery line;
- (e) temperature sensing means in said delivery line immediately upstream of said faucet;
- (f) control means for operating said pump when the temperature of the water in said delivery line immediately upstream of said faucet, as detected by said sensing means, is below a predetermined desired delivery temperature;
- (g) a thermostatically controlled valve disposed in said delivery line immediately upstream of said faucet;
- (h) said control means also being associed with said thermostatically controlled valve to open said valve only when the temperature in said delivery line immediately upstream of said faucet is at said predetermined temperature.

4,554,689
STRENGTH SAVER COMMODE
Calvin A. Segler, 4110 Loma Alta Rd., Corpus Christi, Tex. 78410
Filed Feb. 8, 1985, Ser. No. 699,943
Int. Cl.⁴ E03D *11/00*
U.S. Cl. 4—254 **1 Claim**



1. A strength saver commode, comprising, in combination, a block and a conventional commode for being mounted upon said block, and means for securement thereof together and for securement of said block upon the floor of a house; said block having a length and width contoured to fit an edge of a flange around a base of said commode, and a vertical opening through said block having a drain pipe therethrough for said commode; and said securement means comprising a recess on each opposite side of said block, each said recess being approximately midway between the top and bottom of said block, a pair of aligned vertical openings communicating through each said recess, an upper of said openings extending to said block top while a lower of said openings extends to said block bottom, a bolt in each said opening, said bolt in said upper opening having a head bearing against the top surface of said flange, a plate mounted in said floor, said bolt is said lower opening extending also through said plate and having its head bearing against an underside of said plate, and a threaded opposite end of each said bolt terminating within said recess and being fitted with a threaded nut.

4,554,690
WATER DISTRIBUTION SYSTEM FOR SHOWERS
Scott R. Knapp, and Paul P. Kolada, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Oct. 18, 1984, Ser. No. 662,318
Int. Cl.⁴ A47K *3/22*
U.S. Cl. 4—601 **3 Claims**



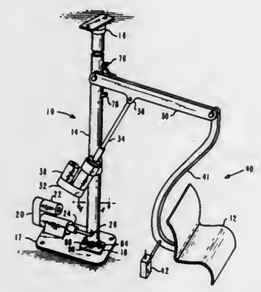
1. A water distribution system for a shower enclosure of the type having a pair of opposed walls connected by a third wall and a shower nozzle inside the enclosure connected to a water supply pipe, comprising in combination:
- (I) at least a pair of water channels attached to interior surfaces of the walls of the shower enclosure,
  - each water channel consisting of an extruded plastic longitudinal element including a longitudinally-extending water passage defined internally thereof and a wall adhesively attached to interior wall surfaces of the enclosure;
- (II) the water channels being arranged at about right angles to each other with one channel positioned horizontally and the other positioned either vertically or horizontally with an end of one channel spaced from an end of another channel at a corner between the channels,
  - a flexible water conduit connected to the water passage of each channel between said spaced ends for conducting water from one channel to the other;
- (III) a covering clip having a pair of legs and arranged to cover said flexible conduit with one leg of the covering clip secured to one channel at the corner and the other leg secured to the other water channel at the corner;
- (IV) conduit means connected to at least one of said channels for supply of water thereto from inside the enclosure; and
- (V) shower attached to at least one of said water channels and communicating with the water passage thereof for direct water onto a bather.

4,554,691

PATIENT LIFTING APPARATUS

Robert O. Daugherty, R.R. #9, Box 46, Nip St., West Acres Addition, Muncie, Ind. 47302

Filed Nov. 2, 1983, Ser. No. 547,981
Int. Cl.[4] B66C *23/16*
U.S. Cl. 5—81 R **17 Claims**



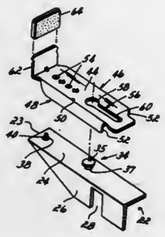
1. Lift apparatus by which invalids are translated into various positions, said apparatus comprising:
a rotatable vertical support member having a vertical longitudinal axis;
a vertically rotatable cantilevered member having a first end and a second end, said first end being rotatably secured to said rotatable vertical support member;
a first linear actuator secured to and between said rotatable vertical support member and said cantilevered member, said first linear actuator being rotatably secured to said cantilevered member at a point between the said first end and the said second end of said cantilevered member;
a remote control apparatus for effecting selective varying of the position of said cantilevered member and said vertical support member; and
a transport apparatus rotatably connected to said second end of said cantilevered member,
whereby said transport apparatus may be elevated and circumferentially translated about the vertical longitudinal axis of said rotatable vertical support member.

4,554,692

ADJUSTABLE BOX SPRING RETAINER BRACKET

Larry W. Whitehead, Lexington, N.C., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Dec. 13, 1984, Ser. No. 681,500
Int. Cl.[4] A47C *19/02*
U.S. Cl. 5—411 **5 Claims**



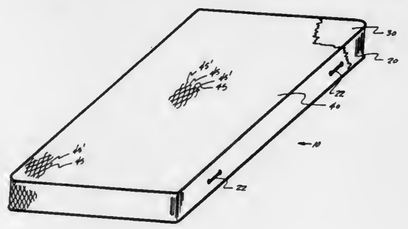
1. An adjustable retainer bracket for retaining bedding foundations on a pedestal bed base, said pedestal bed base including spaced side rails and at least one cross slat mounted to said side rails having a horizontal leg formed with side edges and a bore at each end, said adjustable retainer bracket comprising:
a retainer plate formed with a horizontal web, a pair of spaced vertical legs connected to each side of said horizontal web, an upright end section connected to one end of said horizontal web, and a plurality of spaced locator holes and a keyhole formed in said horizontal web;
an upstanding shouldered rivet mounted to said horizontal leg of said slat;
a spring locking member having a locking pin at one end, said spring locking member being mounted to the underside of said horizontal leg of said slat so that said locking pin extends through said bore therein;
said retainer plate being mounted upon said slat so that said upstanding rivet extends through said keyhole and said locking pin of said spring locking member extends through one of said locator holes to position said retainer plate along said slat, said vertical legs of said retainer plate extending downwardly and capturing said horizontal leg of said slat therebetween to prevent rotation of said retainer plate relative to said slat.

4,554,693

MATTRESS, BOX SPRINGS FABRIC

Brian Calloway, Moore, S.C., assignor to American Fast Print Limited, Spartanburg, S.C.

Filed Dec. 19, 1983, Ser. No. 563,167
Int. Cl.[4] A47C *27/00*
U.S. Cl. 5—448 **21 Claims**



1. A body support element having non-slip surface characteristics comprising:
(a) a frame,
(b) support means within said frame;
(c) ticking fabric secured about at least a portion of said frame, said ticking fabric comprising a base knit structure having adequate strength when on said element to support a human body in a supine position, said base knit structure having a plurality of first yarns laid atop same and secured thereto, said first top yarns residing above said base structure and following a non-linear path therealong and a plurality of second yarns laid atop said base structure and secured thereto, said second yarns residing above said base structure and following mirror image paths to said first lay in yarns whereby frictionally resistive forces are present across the surface of the element.

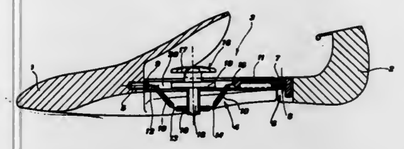
4,554,694

EXTENSIBLE SHOE SHAPER

Angelo Tradigo, and Francesco Tradigo, both of Milan, Italy, assignors to Giovanni Tradigo S.n.c., Italy

Filed Mar. 7, 1984, Ser. No. 586,984
Claims priority, application Italy, Mar. 9, 1984, 19982 A/83
Int. Cl.[4] A43D *3/14, 3/00*
U.S. Cl. 12—136 B **4 Claims**

1. Extensible shoe shaper having a front toe part and a rear heel part, characterized in that, the connection between the front part and the rear part is obtained by means of a kinematic hinge element formed of a single strip of material of varying thickness, wherein the hinge function is performed by portions of reduced thickness of the strip of material, and the configuration of the hinge element can be varied by means of a screw



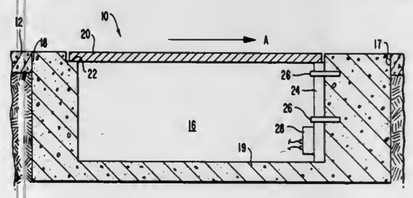
handwheel which is slidably fixed along one of said parts and acting on said hinge element.

4,554,695

VEHICULAR ROAD BLOCK

W. Ross Rowland, 639 River Bend Rd., Great Falls, Va. 22066

Filed Feb. 3, 1984, Ser. No. 576,706
Int. Cl.[4] E01D *1/00;* **E01F** *13/00*
U.S. Cl. 14—69.5 **18 Claims**



1. A road block for preventing the entry of selected vehicles into a secured area via a road, comprising:
a pit defined in part by a trailing wall on a trailing end of the pit with respect to the direction of vehicle access and a leading wall on a leading end of the pit, the pit having a width greater than the width of the selected vehicles;
means for supporting vehicles above the pit at a level even with the surface of the road during normal operating conditions, the supporting means comprising a span of predetermined length and of width narrower than the width of the pit, an abutment support supporting the leading end of the span and at least one collapsible support member supporting the trailing end of the span; and
means for effecting free fall of the vehicle supporting means into the pit by collapsing the support member in response to a selected vehicle approaching the pit, whereby the trailing end of the span falls into the pit, directing the vehicle toward impact against the trailing wall of the pit.

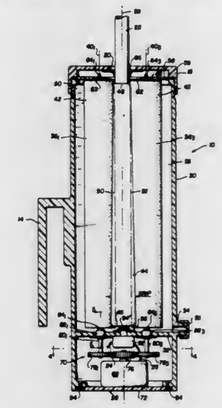
4,554,696

GOLF CLUB GRIP CLEANER

Gerald P. Nye, Jr., 4940 Cloister Dr., Rockville, Md. 20852

Filed Nov. 16, 1984, Ser. No. 672,474
Int. Cl.[4] A63B *57/00;* **A46B** *13/04*
U.S. Cl. 15—21 D **8 Claims**

1. An apparatus for cleaning the grip of a golf club comprising:
an upright elongated housing including a coextensive chamber adapted to be filled with a cleaning liquid to a level substantially completely submerging the hand grip of a golf club inserted into the housing;
circumferentially spaced parallel axis substantially cylindrical rotary golf club grip scrubbing brushes journaled in the housing and being spaced equidistantly from the center of the housing to define a center golf club grip cleaning space in the housing surrounded by said brushes, the brushes extending substantially for the entire depth of the housing and being substantially completely submerged in a cleaning liquid filling the chamber;
power means located in a chamber forming an extension of said housing, said power means being connected with the brushes to rotate them in unison on their parallel axes;
a removable closure cap for the top of the housing having a centr golf club grip insertion and removal opening in



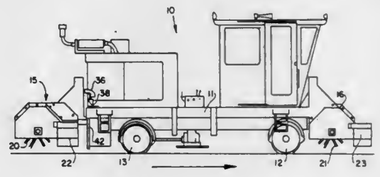
coaxial alignment with said central golf club hand grip cleaning space; and
means secured to said housing for mounting the apparatus in a use position.

4,554,697

BALLAST BROOMS

Calvin L. Coy, Chapin, and Keith T. O'Neal, Columbia, both of S.C., assignors to Canron Corp., West Columbia, S.C.

Filed Nov. 16, 1983, Ser. No. 552,244
Int. Cl.[4] E01H *8/10*
U.S. Cl. 15—55 **3 Claims**



1. A railroad track ballast broom machine comprising a wheeled machine frame; a first broom unit operatively mounted on said frame and spaced rearwardly thereof; a second broom unit operatively mounted on said frame forwardly thereof; said broom units including a substantially cylindrical broom means mounted in each unit so as, in operation, to transversely span the railroad track and a deflector box located forwardly of each said broom means; and means to translate said first broom unit transversely of said machine frame.

4,554,698

DISPENSING ARRANGEMENT FOR AN UPRIGHT VACUUM CLEANER

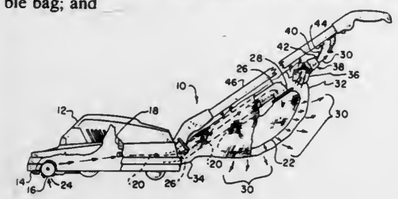
David B. Rennecker, Canton, and Walt S. Taylor, North Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Jul. 9, 1984, Ser. No. 629,108
Int. Cl.[4] A47L *7/04*
U.S. Cl. 15—339 **17 Claims**

1. An upright vacuum cleaner comprising:
a pivoting handle;
a flexible bag formed of air pervious material and extending along said pivoting haandle;

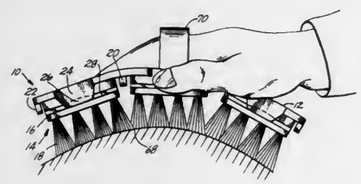
air flow generating means for producing an air flow through said flexible bag;

a cap member attached to said flexible bag and interconnected with said pivoting handle for supporting said flexible bag; and



a dispenser located in said cap member including accommodating means for retaining an odorizing material and means for selectively directing a portion of the air flow through said accommodating means for dispensing an odorizing material being retained thereby.

4,554,699
FLEXIBLE BRUSH
Stanley J. Simmons, 408 Lotone, Monrovia, Calif. 91016
Filed Mar. 26, 1984, Ser. No. 593,718
Int. Cl.⁴ A46B *9/10, 17/02*
U.S. Cl. 15—201 **10 Claims**



1. A flexible brush apparatus comprising:

a plurality of brush elements having bristles embedded in and extending outward from one surface of a rigid backing and having holding means at the sides of the rigid backing; and

a fully flexible brush element holder having a plurality of pair gripping elements extending outward from one surface of the holder, the holder and gripping elements adapted, by virtue of their flexibility, to releasably grip, from the surface of the rigid backing opposite of the bristles, opposite sides of the brush element's rigid backing at the holding means to provide an arrangement of adjacent brush elements which can be manipulated so that the free end of the bristles can apply a brushing action to surfaces with a variety of contours.

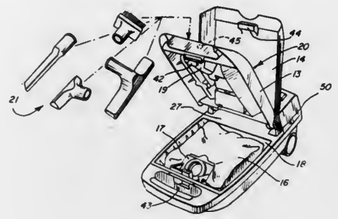
4,554,700
INVISIBLE HINGE MEANS FOR LID AND HOOD OF A CANISTER VACUUM CLEANER
John B. Lyman, Bloomington, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 16, 1984, Ser. No. 641,284
Int. Cl.⁴ A47L *9/00*
U.S. Cl. 15—323 **26 Claims**

1. In an appliance having a body defining a first receptacle and a wall portion at one edge portion of the receptacle, the improvement comprising:

arcuate guide means on said body;

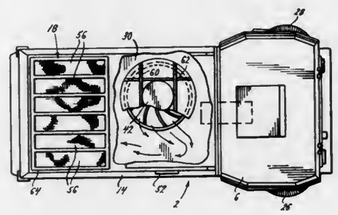
a first lid for covering said receptacle, said first lid defining a second receptacle and having arcuate slide-track means, said slide-track means defining an arcuate first slide slidably received in said arcuate guide for selective swinging of said first lid about an axis defined by said guide means, said slide-track means further defining an arcuate track concentric to said axis; and

a second lid for covering said second receptacle and having an arcuate second slide slidably received in said arcuate



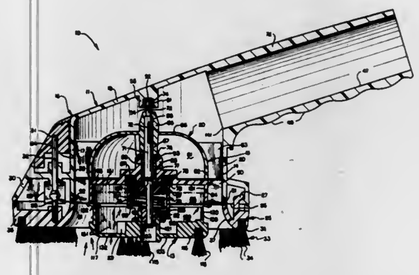
track for selective swinging of said second lid relative to said first lid, whereby said first and second lids may be swung as a unit to uncover said first receptacle and said second lid may be selectively swung away from said first lid to uncover said second receptacle as desired.

4,554,701
VACUUM STREET SWEEPER AND FILTER APPARATUS THEREFOR
Karel W. M. Van Raaij, 1800 AG Alkmaar, Netherlands
Filed Feb. 10, 1984, Ser. No. 579,167
Int. Cl.⁴ E01H *1/08;* **B01D** *50/00*
U.S. Cl. 15—340 **21 Claims**



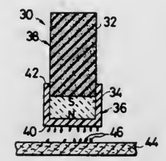
1. A vacuum street sweeper comprising a body, wheels for supporting the body and allowing movement of the sweeper along a street, a hopper within the body for receiving debris, an inlet to the hopper, a hopper outlet from the hopper, an exhaust section within the body communicating with the outlet, an exhaust outlet from the exhaust section, a vacuum system blower means supported within the exhaust section for suctioning debris through the inlet and into said hopper, initial filter means in said hopper upstream of said hopper outlet for filtering relatively coarse debris particles while allowing air carrying relatively fine dust and the like to pass therethrough, secondary filter means in the exhaust section remote from the initial filter means and positioned and arranged to filter dust and the like prior to the air exiting the exhaust outlet, the blower means being in flow communication with the hopper outlet and being positioned and arranged with respect to the exhaust outlet so as to discharge air through the secondary filter means whereby the blower means causes air flow through the initial filter means, through the hopper outlet, the secondary filter means, and the exhaust outlet.

4,554,702
VACUUM DRIVEN TOOL
Werner W. Kochte, Ravenna, and Susan K. Nimon, Cuyahoga Falls, both of Ohio, assignors to The Scott & Fetzer Company, Twinsburg, Ohio
Filed Aug. 10, 1984, Ser. No. 639,956
Int. Cl.⁴ A47L *9/04*
U.S. Cl. 15—372 **8 Claims**



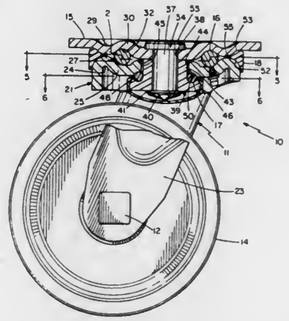
1. A vacuum rotary sweeper comprising a housing having an air inlet and an air outlet, a rotary disc brush having a central axis and supported by the housing adjacent the inlet for rotation about said axis, a turbine wheel rotatably supported in the housing rearwardly of the disc brush for rotation about said axis, means rotationally coupling the disc brush to the turbine wheel, the housing having an interior peripheral surface area encircling a portion of the axial zone from the disc brush to the turbine wheel, a generally annular surface element axially inward of the disc brush and spaced radially inward of said housing interior peripheral surface, said housing interior peripheral surface and annular surface element mutually forming an annular flow passage for air passing between the inlet and outlet, a stator having a plurality of peripherally spaced blades for directing air flow to the turbine wheel in a spiral direction, a hollow cavity generally enclosed by a portion of some of said disc brush, annular surface element and turbine wheel, said disc brush being in telescoped relation with said annular surface element, and means resiliently biasing said disc brush forwardly relative to said annular surface element.

4,554,703
MAGNETIC ERASER DUST COLLECTOR
Shouzo Matuki, Takasaki, Japan, assignor to Taiyo Yuden Co., Ltd., Tokyo, Japan
Filed Jan. 19, 1984, Ser. No. 572,184
Claims priority, application Japan, Feb. 10, 1983, 58-19176[U]; May 31, 1983, 58-82646[U]; Jun. 9, 1983, 58-88697[U]; Jun. 9, 1983, 58-88698[U]
Int. Cl.⁴ B43L *19/00*
U.S. Cl. 15—424 **15 Claims**



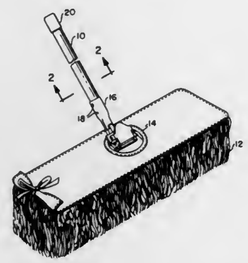
1. A device for collecting magnetic eraser dust comprising a permanent magnet for attracting magnetic eraser dust, a shield normally enclosing the permanent magnet to prevent direct adhesion of the eraser dust thereto and including a dust collecting wall having a thickness allowing the permanent magnet to attract the eraser dust therethrough, the permanent magnet being movable relative to the shield between a working position for attracting the eraser dust through the dust collecting wall of the shield, with the consequent adhesion of the eraser dust to the dust collecting wall of the shield, and a retracted position away from the dust collecting wall for releasing the collected eraser dust therefrom, and an eraser of a rubber composition having magnetic particles uniformly dispersed therein, the eraser being attached to the permanent magnet so as to at least partly project outwardly from the shield.

4,554,704
CORROSION RESISTANT CASTER
Lidio P. Raffaeli, Stratford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Dec. 14, 1983, Ser. No. 560,910
Int. Cl.⁴ B60B *33/00*
U.S. Cl. 16—21 **10 Claims**



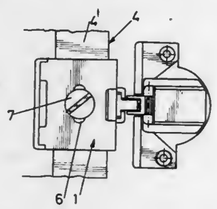
1. A caster assembly specially designed for use in a corrosive environment, comprising: a metallic horn member having an upper generally horizontal supporting portion and a downwardly extending wheel support portion, a wheel rotatably mounted in the wheel support portion of the metallic horn member, a metallic swivel plate pivotally mounted on the horn member horizontal supporting portion, the horizontal supporting portion of the horn member and the swivel plate having cooperating semi-torroidal annular bearing receiving surfaces each being coated with a permanently bonded high lubricity plastic polymer, and a pure torroidal bearing ring having a constant circular cross-section and constructed of a self-lubricating plastic polymer mounted between and engaging the bearing receiving surfaces on the horn member and the swivel plate.

4,554,705
ENCAPSULATED FIBERGLASS MOP HANDLE
John H. Murray, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Aug. 20, 1984, Ser. No. 642,557
Int. Cl.[4] B25G *1/10*
U.S. Cl. 16—110 R **2 Claims**



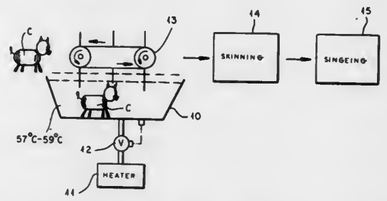
1. A handle for a piece of equipment comprising: a core member, a plurality of fiberglass strands surrounding said core and extending longitudinally thereof and a PVC tube heat shrunk around and contiguous with said fiberglass strands.

4,554,706
MOUNTING PLATE OF A HINGE FOR MOUNTING A DOOR ON FURNITURE FRAMES OF VARYING THICKNESS
Erich Röck, Höchst, and Helmut Rupprechter, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Jun. 28, 1983, Ser. No. 509,231
Claims priority, application Austria, Jul. 8, 1982, 2666/82; Apr. 7, 1983, 1224/83
Int. Cl.[4] E05D *7/04*
U.S. Cl. 16—237 **10 Claims**



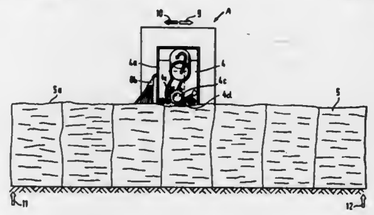
1. A mounting plate assembly of a hinge for mounting on a frame of an article of furniture a door of the article of furniture, said assembly comprising:
- a mounting plate having a U-shaped configuration defined by parallel first and second side flanges and a center flange connecting said side flanges, said first side flange having means for supporting a hinge arm;
- a two-part base plate positioned between said flanges within the U of said mounting plate for supporting said mounting plate on a furniture frame, said base plate including a centering member to be fixed to the frame and a sliding member mounted for longitudinal movement with respect to said centering member in direction parallel to said flanges, means for mounting said mounting plate on said sliding member for movement therewith in said directions, and said centering and sliding members having interengaging means for locking said sliding member with respect to said centering member, said interengaging means capable of being overcome by hand applied pressure to permit said movement; and
- a fastening screw extending through said center flange of said mounting plate and through said centering member for fixing said centering member to the frame and for selectively fixing said mounting plate and thereby said sliding member to said centering member, said movement being permitted upon loosening of said fastening screw.

4,554,707
METHOD OF TREATING PIGSKIN
Fritz Simon; Klaus Körber; Horst Bandelow, all of Berlin; Michael Scherer, Hilbersdorf; Dieter Wilke, Berlin; Werner Thron, Berlin, and Gerhard Preuk, Berlin, all of German Democratic Rep., assignors to VE Fleischkombinat Berlin, Berlin, German Democratic Rep.
Filed Jul. 18, 1984, Ser. No. 631,918
Int. Cl.[4] A22B *5/08*
U.S. Cl. 17—47 **5 Claims**



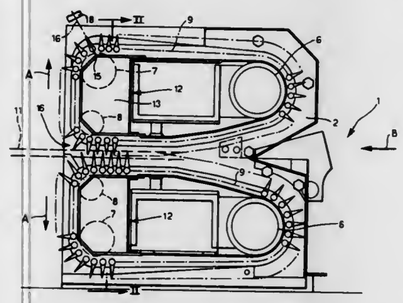
1. A method of producing pigskin, the method comprising the steps of sequentially:
- scalding the unprocessed pig carcass in a liquid bath at a temperature of substantially 57° to 59° C. for about 5.5 minutes;
- removing the carcass from the bath after scalding for 5.5 minutes therein;
- stripping the hide off the carcass; and
- singeing the hide.

4,554,708
METHOD AND APPARATUS FOR SPRAYING TEXTILE FIBER BALES
Ferdinand Leifeld, Kempen; Rolf Coenen, Gronau-Epe; Werner Oelering, Gronau-Epe, and Ludwig Klopp, Gronau-Epe, all of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany
Filed Aug. 16, 1984, Ser. No. 641,258
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330737
Int. Cl.[4] D01C *7/06*; D01B *3/04*
U.S. Cl. 19—80 R **10 Claims**



3. In a bale opener, having a horizontally back-and-forth travelling assembly, including an opening device for progressively removing fiber material from a top surface of the bale during a working pass; the improvement comprising the combination of said bale opener with a spraying means, including a spraying nozzle mounted on said assembly for travel therewith as a unit; said spraying nozzle being oriented downwardly for discharging a downwardly directed fluid on the top surface of the bale during travel of the assembly.

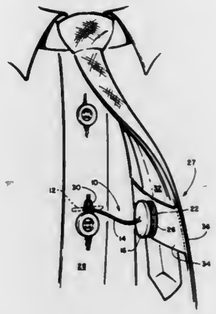
4,554,709
CHAIN-DRIVEN COMB HEAD FOR SLIVERS OF TEXTILE FIBRES, PARTICULARLY FOR DRAWING FRAMES
Angelo Bianchi, Novara, Italy, assignor to Sant-Andrea Novara Officine Meccaniche e Fonderie S.p.A., Italy
Filed Jul. 13, 1984, Ser. No. 630,553
Int. Cl.[4] D01G *19/22*
U.S. Cl. 19—218 **2 Claims**



1. A chain-driven comb head for slivers of textile fibres, particularly for drawing frames, of the type comprising a fixed structure, two series of combs formed by needle-carrying bars and defining two needle fields which intersect in a zone of treatment of the sliver, chains for driving said combs about two superimposed closed paths, and means for directing compressed air jets at said combs, wherein the improvements consist in:
- said means for directing compressed air jets against the combs including means for supplying compressed air to each needle field and means for generating, from the compressed air fed into each needle field, at least one flat jet of compressed air directed outwardly in a predetermined direction which does not intersect said zone of treatment, whereby said flat jet flows successively over the surfaces of the combs of said needle fields during movement of said combs;
- each said needle-carrying bar being rotatably mounted about its axis and having one end out of alignment, and
- said fixed structure of the head including at least two shaped tracks engaged by said non-aligned ends of the needle-carrying bars, said tracks being shaped so as to cause said combs to orient themselves in a predetermined direction when they pass in front of said first jet.

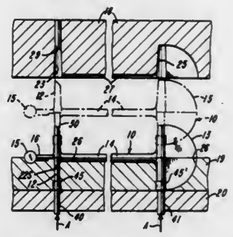
4,554,710
TIE TACK
Charles R. Grant, 7337 Mission Gorge Rd., Santee, Calif. 92701
Filed Jun. 25, 1984, Ser. No. 624,183
Int. Cl.[4] A41D *25/04*
U.S. Cl. 24—49 CF **5 Claims**

1. A tie tack device for holding a tie in position on the wearer thereof, said tie having front and back portions when worn comprising:
- a loop attached to said front portion, said back portion is insertable therethrough for maintaining the two portions in substantial alignment;
- a button hole engagement cross-bar shirt attachment means;
- a first releasable fastening means;
- a flexible member extending between the cross-bar and first fastening means; and
- a second releasable fastening means fixedly attached to the rear surface of said loop adjacent the wearer and for mating with said first releasable fastening means;
- said first and second releasable fastening means comprising fastening elements of the hook and loop type characterized by the property that when placing a surface containing hooks into face-to-face contact with the surface containing loops, a plurality of hooks engage a plurality of



loops which resist separation parallel to the inter facial plane of engagement but are readily separable by peeling forces applied substantially normal to the plane.

4,554,711
FASTENER ASSEMBLY AND MOLD FOR MAKING SAME
Gene R. Derringer, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Sep. 25, 1984, Ser. No. 654,345
Int. Cl.[4] B29C *17/02*; B65D *85/24*
U.S. Cl. 24—150 FP **12 Claims**



1. A one-piece fastener adapted to be molded in a mold with moldable plastics material and having a bar section and a button section joined by a filament section, wherein the bar section has terminal ends and the filament section is joined to the bar section at a location of joinder between the terminal ends, wherein the bar section has a first portion between one terminal end and the location of joinder and a second portion between the other terminal end and the location of joinder, wherein the first portion has a side surface, and means on the side surface of the first portion cooperable with a surface of the mold for providing the first portion with a greater resistance to release from the mold than the resistance to release from the mold of the second portion.

4,554,712

SAFETY HOOKS

Roger M. Le Beon, 7, Bd Louis Nail BP 138, 56103 Lorient Cedex, France

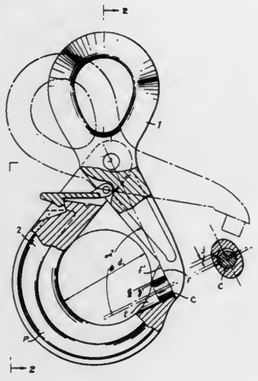
PCT No. PCT/FR83/00166, § 371 Date Apr. 4, 1984, § 102(e) Date Apr. 4, 1984, PCT Pub. No. WO84/00744, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 8, 1983, Ser. No. 604,647

Claims priority, application France, Aug. 6, 1982, 82 14027

Int. Cl.[4] A44B *13/00*

U.S. Cl. 24—241 PP **8 Claims**



1. A safety hook having a hook body (2) with an articulated arm (1) on said hook body top part, and opening externally from the hook and also having a fastening device of the free end of the hook body where it forms a free end of the arm, said fastening device having a flat contact face (f, f') on each part of the arm and body, one of the flat faces having a cylinder-shaped prominence (c) the axis of which is perpendicular thereto; and the other of the faces having a cylinder-shaped hole (t) the axis of which is perpendicular thereto and the dimensions of which are greater than those of the prominence and situated such as to accept the prominence into it when the hook is shut, thus constituting a fastening device of the body of the hook by the arm and preventing the body from any premature bending of the hook by the arm and preventing the body from any premature bending out of shape; and said fastening device further comprising for operation when the hook is not loaded, a loose setting (j) of the fastening device between contact generating parts (g) and (g') of the prominence and of the hold and larger than the normal loose setting required for a good mechanical working of the safety hook and allowing the body of the hook to support by itself the load for which it has been designed without creating any contact between the prominence and the hole of the fastening device; or allowing the arm to support the overloads due to the coming into contact of the prominence and the hold after elimination of the loose setting by means of the elastic flexing of the body of the hook, thereby obtaining a good working of the fastening device with the loose setting being situated between 0.02 and 0.04 times the diameter of the circle inscribable (d) in the interior space defined by the arm and the body of the hook.

4,554,713

APPARATUS FOR DIFFERENTIALLY STRETCHING, ALIGNING AND CUTTING SHEET MATERIAL

Joseph Chabal, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 7, 1982, Ser. No. 415,638

Int. Cl.[4] B29C *17/02;* **B29D** *7/24*

U.S. Cl. 26—51 **7 Claims**

1. Apparatus for stretching, aligning and cutting a continuous web of arcuately shaped, flexible material comprising:

a differential web stretching station having first drive means to move said web at a continuous first speed along a curved path;

a cutting station positioned along said curved path, spaced from said stretching station, said cutting station having a web cutting means;

second drive means;

timer means acting on said second drive means to intermittently drive a given length of web through said cutting station at a second speed greater than said first speed and acting on said web cutting means to cut a piece of a predetermined length from said web; and

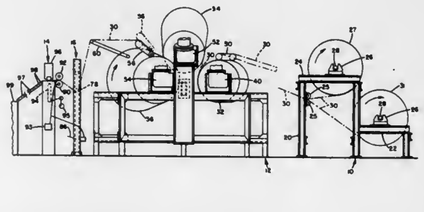
a web aligning device between said stretching station and said cutting station, said aligning device comprising:

a pair of guide posts oppositely disposed on each side of said path;

a rod;

means for slidably mounting an end portion of said rod in each of said posts for movement from a first position in overlying relation to the upper surface of the path defined by the web as said web moves from said stretching station into said cutting station, towards and away from a second position in overlying relation to the upper surface of the path defined by a loop of the web as the web moves from said stretching station toward but not into said cutting station;

stop means mounted at a first level in the path of a first end portion of said rod as the first rod end portion moves from the first position to the second position; and



switch means operatively connected to said second drive means and said timer means and mounted at a second level vertically lower than said first level, in the path of a second portion of said rod as the second rod end portion moves from the first position to the second position;

wherein the length of the loop increases to move said rod from the first position towards the second position when said second drive means is inactivated by said timer means, to move said first rod end portion into engagement with said stop means, to pivot said second rod end portion about said stop means into engagement with said switch means to activate said second drive means, to activate said timer means as said second drive means is activated, to move the web into the cutting station at said second speed to decrease the length of the loop, to pivot the second rod end portion about said stop means away from said switch means, to continue to move the rod toward the first rod postion and thereafter move the first rod end portion away from the stop means as the rod continues to move toward the first rod position wherein the web, as in the loop decreases, engages the second rod end portion, the rod portion between the first and second rod portions and thereafter the first rod end portion to provide tension on the weh and to maintain web alignment as said second drive means moves a predetermined length of web into said cutting station after which said timer means inactivates said second drive means and activates cutting means to cut a piece of web having a predetermined length.

4,554,714

MOVING WEB EXPANDING AND GUIDING APPARATUS

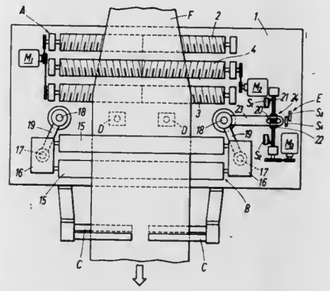
Hideyuki Cho, c/o Toyo Machinery Co. Ltd., 4-4-19 Zuiko, Higashiyodogawa-ku, Osaka-shi, Japan

Filed Mar. 7, 1984, Ser. No. 586,990

Claims priority, application Japan, Mar. 11, 1983, 58-41090

Int. Cl.[4] D06C *3/06*

U.S. Cl. 26—75 **3 Claims**



1. A moving web expanding and guiding apparatus comprising:

an expander device including:

(a) two expanding screw rolls over which the moving web travels,

(b) a first motor means for positively rotating said two screw rolls in the same direction,

(c) a third expanding screw roll interposed between said two screw rolls,

(d) means for adjusting the amount of the push-in of said third expanding screw roll relative to the moving web, and

(e) a further motor means for positively rotating said third screw roll in a direction opposite to that of said two screw rolls;

a guide device including:

(a) tiltable centering rolls rotatably installed at a web delivery side of said expander device,

(b) a tilting means for tilting said centering rolls, and

(c) moving web selvage detector means for detecting deviations of the moving web and for actuating said tilting means to correct this deviation;

emergency screw roll stop means for quickly stopping the rotation of said screw rolls when the moving web excessively zigzag deviates; and

centering roll time-delay stop means for stopping the operation of said centering roll tilting means after the centering rolls are restored to a neutral position subsequent to the stoppage of said screw rolls.

4,554,715

METHOD FOR THE FINISHING OF TEXTILE SHEETS

Ingeborg Reim, Cottbus; Gerhard Pohl, Forst; Wolfgang Götzke, Forst; Dieter Wahnberger, Forst; Lothar Postel, Forst; Irmgard Kindlein, Forst; Rudolf Vatter, and Manfred Greschke, both of Cottbus, all of German Democratic Rep., assignors to VEB Forster Tuchfabriken, Forst, German Democratic Rep.

Filed Feb. 24, 1984, Ser. No. 582,981

Int. Cl.[4] B32B *5/06*

U.S. Cl. 28—107 **3 Claims**

1. Method of producing a fabric comprising feeding to a multiple needling device having closed barbed felting needles the following two materials (a) and (b), (a) a textile web comprising a fabric or array of warp yarns constituted of at least one of rotor-spun yarns, Murata jet-spun yarns, friction-spun yarns, and sirospun yarns and (b) overlying at least a portion of a surface of the textile web a textile of fiber material comprising at least one of a fleece, effect fibers, effect fiber bundles, an array of disordered fibers, a textile sheet, imitation fur and fabric lining material, needling the resultant superimposed layers (a) and (b) from the side of the textile or fiber material (a) by means of the multiple needling device, the needling comprising projecting the needles first into the textile or fiber material (a) so that portions of the fibers thereof are engaged by the needles, then projecting the needles into and through the textile or fiber material (b) so that some fibers from the textile or fiber material (b) are carried together with fibers of the textile web (a) onto the surface of the textile web (a) thereby connecting together the textile web (a) and the textile or fiber material (b) and forming a surface overlying the textile web (a) and constituted of a mixture of fibers and yarns of textile web (a) and textile or fiber material (b).

4,554,716

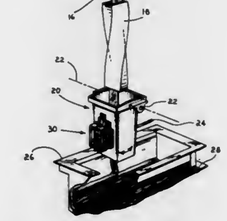
APPARATUS FOR TENSIONING AND FORWARDING TOW

Gary F. Nunn, Summerville, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 21, 1984, Ser. No. 591,847

Int. Cl.[4] D02G *1/12, 1/20*

U.S. Cl. 28—263 **3 Claims**



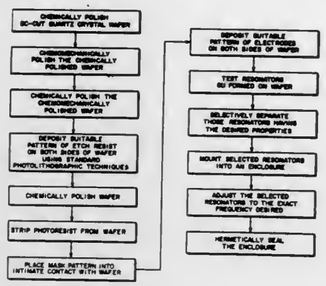
1. In a tow processing apparatus including a stuffing box crimper having crimper rolls to feed tow to the crimper, a J-box operably arranged to receive tow moving in a path from the crimper through an associated piddler spout adapted to oscillate parallel to the nip of the crimper rolls to lay the tow in folds in the J-box and a moving conveyor belt arranged to carry the folded tow from the J-box during normal operation, the improvement in apparatus for tensioning and forwarding the tow as it passes from the crimper through the spout during startup comprising: a jet having separable jet halves located on each side of said path in said spout, each jet half being mounted to said spout for movement by a linkage toward said path to be joined together during startup and away from said path to be separated during normal operation; means connected to each said linkage for movement thereof; means to supply pressurized fluid to each of said jet halves when they are joined together and to discontinue to supply pressurized fluid when they are apart; and control means for actuating the movement of said jet halves and for controlling the supply of pressurized fluid.

4,554,717

METHOD OF MAKING MINIATURE HIGH FREQUENCY SC-CUT QUARTZ CRYSTAL RESONATORS

John R. Vig, Colts Neck, and Arthur Ballato, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 8, 1983, Ser. No. 559,546
Int. Cl.[4] H04R *17/00*
U.S. Cl. 29—25.35 **4 Claims**



1. Method of making miniature high frequency SC-cut quartz crystal resonators that are free of etch channels and etch pits and that exhibit high Q and that are free of process and material defect induced nonlinearities from a plano-plano SC-cut quartz crystal wafer, said method including in the following order the steps of:

(A) chemically polishing the wafer

(B) chemomechanically polishing the chemically polished wafer

(C) chemically polishing the chemomechanically polished wafer

(D) depositing a suitable pattern of an etch resist of the wafer using standard photolithographic techniques

(E) chemically polishing the wafer

(F) stripping the photoresist from the wafer

(G) placing a suitable evaporation mask pattern into intimate contact with the wafer

(H) depositing metallic film electrodes onto the wafer

(I) testing the resonators so formed on the wafer

(J) selectively separating those resonators having the desired properties,

(K) mounting the selected resonators into an enclosure,

(L) adjusting the frequencies of the resonators, and

(M) hermetically sealing the enclosure.

4,554,718

METHOD OF REINFORCING A CEILING RUNNER

James C. Ollinger, and Melvin H. Shaub, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jun. 4, 1984, Ser. No. 616,499
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—155 R **2 Claims**

1. The method of making a ceiling runner comprising the steps of:

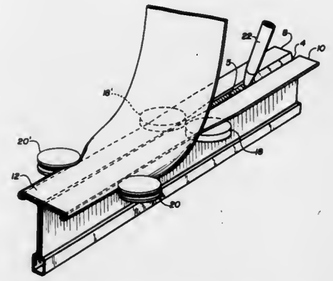
(a) forming an inverted T-shaped runner from one piece of metal with the metal folded in half to form two parts of a vertical web and two horizontal flanges at the base of the web with one horizontal flange disposed perpendicularly on each side of the vertical web,

(b) applying a strip of metal to the underside of both horizontal flanges with the sides of the strip of metal extending beyond the edges of the horizontal flanges,

(c) wrapping each side of the strip of metal around and slightly over each edge of the horizontal flanges whereby the bottom and edges of the horizontal flanges are encased in the strip of metal, and

(d) the improvement comprising the step of:

(1) applying an adhesive material to the interface of the two parts of the vertical web just prior to the time the two parts are placed in contact and held in position by



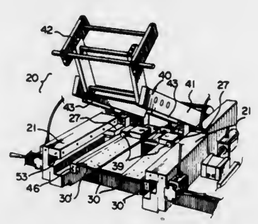
the strip of metal wrapped around the edges of the horizontal flanges.

4,554,719

MACHINE AND METHOD FOR THE MANUFACTURE OF AN AIR-TO-AIR HEAT EXCHANGER

James H. Lewis, London, Canada, assignor to Nutech Energy Systems, Inc., Exeter, Canada

Filed Apr. 1, 1983, Ser. No. 481,244
Int. Cl.[4] B23P *15/26*
U.S. Cl. 29—157.3 R **8 Claims**



1. In a method for forming a heat exchange core from thin metallic sheets having edge flanges projecting peripherally therefrom, a procedure for joining a pair of such sheets together in spaced apart, parallel, aligned orientation by forming joints from flanges of said pair of sheets along a pair of opposite edges thereof, said procedure comprising

(a) clamping each pair of sheet edges to be joined against top and bottom surfaces of a mandrel located between said edges with the flanges projecting in spaced, parallel planes beyond an edge surface of the mandrel into a work area; and

(b) moving a series of tool surfaces along each said work area in the longitudinal direction of said sheet edges;

(c) the leading tool surfaces acting to bend a first flange so that an inner portion thereof is bent to lie at right angles to the sheets against the edge surface of the mandrel and an outer portion thereof lies parallel to and against an inner portion of the second flange;

(d) the subsequent tool surfaces acting to bend an outer portion of the second flange around the end of the outer portion of the first flange to lie against such outer portion of the first flange and hence form an assembly in which said outer portion of the first flange is sandwiched between the two portions of the second flange;

(e) the final tool surfaces acting to bend such assembly to lie against the inner portion of the first flange and thus complete a substantially air tight joint that is mechanically interlocked against relative movement of the sheets in

both directions transverse to the direction of extent of such joint; and

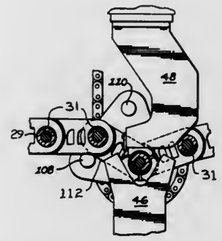
(f) withdrawing from the mandrel the pair of sheets thus joined together along a pair of opposite edges.

4,554,720

APPARATUS AND METHOD FOR TURNING A TRACK BUSHING

James A. Garman, Eureka, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 13, 1984, Ser. No. 640,056
Int. Cl.[4] B25B *13/48;* **B23P** *7/00*
U.S. Cl. 29—402.01 **22 Claims**



21. A method of turning a bushing of a track chain link assembly, said bushing having a set of links press fittedly connected to its opposite ends, comprising the steps of:

clamping said bushing with clamping means capable of exerting a predetermined clamping force on said bushing, said clamping means having at least one deformable insert engageable against said bushing, said insert being of a sufficiently soft material to conform to and have intimate clamping contact with the bushing upon and under application of said clamping force; and

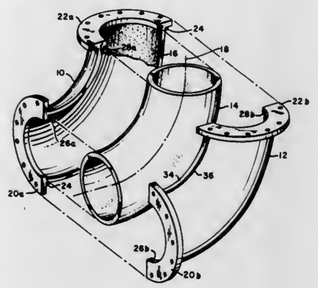
rotating said set of links a predetermined angular distance relative to said bushing.

4,554,721

METHOD OF MANUFACTURING A WEAR RESISTANT PIPE

Michael W. Carty, Narragansett, R.I., and Guenther M. Kraus, Windsor, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 26, 1983, Ser. No. 535,516
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—416 **2 Claims**



1. A method of manufacturing a wear-resistant non-linear tubular pipe segment, comprising the steps of:

fabricating an outer metallic support shell in the shape of a non-linear tubular pipe segment;

fabricating an inner, wear-resistant ceramic non-linear tubular liner in one piece for inclusion wholly within the outer shell;

splitting the outer shell longitudinally into a first half and a second half;

coating the interior of each shell half with a moldable bedding material;

placing the wear-resistant, one piece liner between the coated halves of the outer shell and embedding the liner in the moldable coating therewithin; and

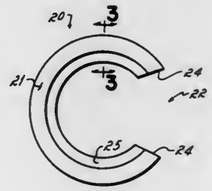
clamping and securing the halves of the outer shell together about the liner.

4,554,722

METHOD FOR REMOVING GUN BARREL EVACUATOR

Tommy J. Derrington, Denton, Tex., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Feb. 3, 1983, Ser. No. 463,643
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—426.5 **1 Claim**



1. The method of removing an evacuator from a gun barrel comprising the steps of,

transversely snapping a resilient plastic ring, having approximately a 90° sector removed, on said gun barrel adjacent the breech side of said evacuator, said ring having an annular recess and said evacuator having an annular projection mounted on the breech side thereof, sliding said ring snugly against said evacuator so that said recess mates with said projection,

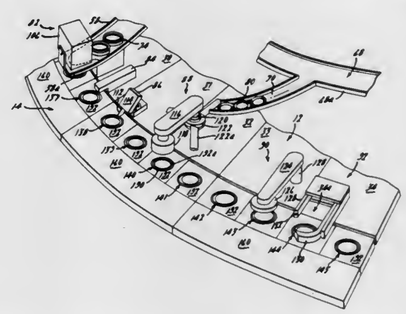
and striking said ring with axial blows to cause said evacuator to slide off said gun barrel.

4,554,723

TRANSFER APPARATUS AND METHOD

James A. Repella, Berkley, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Jul. 26, 1984, Ser. No. 634,825
Int. Cl.[4] B21D *39/03;* **B23P** *21/00;* **B23Q** *15/00;* **B65G** *43/10*
U.S. Cl. 29—430 **27 Claims**



1. A method of advancing a workpiece through a series of successive work stations for successive work operations by

work devices positioned at the work stations, said method comprising the steps of:

A. defining a series of successive work stations on a first carrier member;

B. mounting work devices, in series, on said first carrier member at at least some of said work stations;

C. moving said first carrier member at a given rate of speed in a given direction along a predetermined path;

D. placing the workpiece on a second carrier member;

E. moving said second carrier member at said given rate of speed and in said given direction along a path generally parallelling said predetermined path; and

F. selectively varying the relative speeds of said carrier members to advance the workpiece successively through said work stations for successive work operations by work devices positioned at said work stations.

10. An apparatus for advancing a workpiece through a series of successive work stations for successive work operations by work devices positioned at the work stations, said apparatus comprising:

A. a first carrier member mounted for movement along a predetermined path;

B. means defining a series of successive work stations on said first carrier member;

C. a series of work devices mounted on said first carrier member at at least some of said work stations;

D. a second carrier member mounted for movement along a path generally paralleling said predetermined path;

E. a series of workpiece holder devices mounted on said second carrier member at spaced locations therealong; and

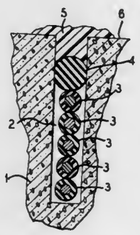
F. control means operative to drive said carrier members in a given direction along said paths and to selectively vary the relative speeds of said carrier members to selectively advance each of said workpiece holder devices successively through said work stations.

4,554,724

METHOD FOR INSTALLING AN AUTOMATIC GUIDED VEHICLE SYSTEM GUIDE PATH

Wesley R. Bantz, Peoria, Ill., assignor to AGVS Installations, Inc., Peoria, Ill.

Filed Jul. 31, 1984, Ser. No. 636,330
Int. Cl.[4] B23P *11/02*
U.S. Cl. 29—451 **8 Claims**



1. A method for installing at least one wire in a floor in a selected pattern comprising the steps of:

cutting a slot in the floor corresponding to said selected pattern;

inserting the wire in said slot;

inserting a mechanical seal in said slot above said wire initially so as to be flush with the surface of said floor;

further inserting said mechanical seal in said slot to a predetermined depth which is uniform for the entire length of said slot;

filling a remainder of said slot above said mechanical seal with thermoplastic material;

smoothing said thermoplastic material flush with said surface of said floor after curing of said thermoplastic material,

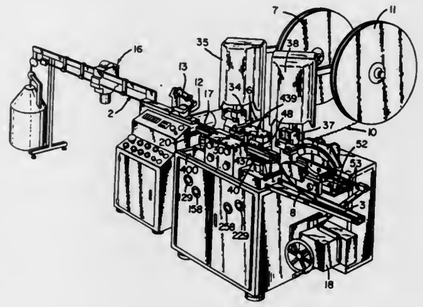
whereby said wire is retained in said slot permitting substantially unimpaired flexing thereof and with substantially no transmission of forces acting on said floor to said wire.

4,554,725

MODULAR LEAD MAKER

William R. Over; Donald A. Wion, both of Harrisburg, and Richard M. Heffner, West Lawn, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 25, 1983, Ser. No. 497,930
Int. Cl.[4] B23P *23/00*
U.S. Cl. 29—564.4 **7 Claims**



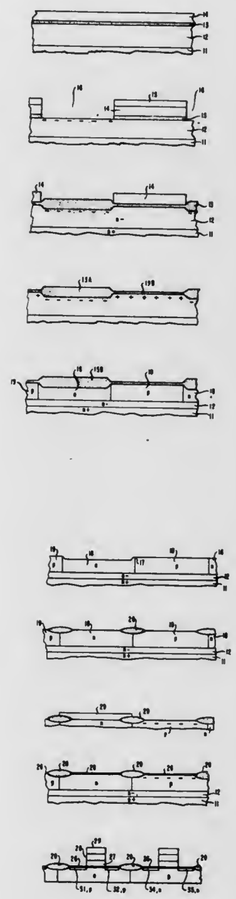
1. Lead making apparatus of the type comprising a pair of normally aligned conductor transfer heads, conductor cutting and stripping means comprising closable blades positioned between said transfer heads, conductor feed means for feeding a predetermined length of wire through said transfer heads and between said blades, a pair of conductor terminating stations remote from said cutting and stripping means, means for rotating the transfer heads from their normally aligned positions to positions adjacent respective terminating stations, a slide member on each of said transfer heads, each said slide member being movable toward and away from said blades when said heads are aligned, and toward and away from said terminating stations when said transfer heads are adjacent the terminating stations, and clamping means on each of said slide members for clamping fed conductor at the conclusion of feeding thereof, characterized in that said apparatus further comprises a pair of arcuate track segments adjacent each transfer head, said track segments of each pair having adjacent ends, said track segments of each pair being mounted on means to be pivotable about a common axis at said adjacent ends, said track segments of each pair being pivotable from a skewed position to a juxtaposed position where they form a continuous arcuate track, each said slide member carrying a follower which rides in the adjacent pair of track segments, whereby pivoting of said track segments effects movement of said slide member toward and away from said blades and toward and away from said terminating stations, rotation of the heads causing movement of the followers through the track segments, movement of a follower between track segments of a pair being effected when the track segments are juxtaposed.

4,554,726

CMOS INTEGRATED CIRCUIT TECHNOLOGY UTILIZING DUAL IMPLANTATION OF SLOW AND FAST DIFFUSING DONOR IONS TO FORM THE N-WELL

Steven J. Hillenius, Bethlehem, Pa., and Louis C. Parrillo, Warren, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 17, 1984, Ser. No. 601,353
Int. Cl.[4] H01L *21/22, 21/265*
U.S. Cl. 29—571 **9 Claims**



1. A process forming a CMOS integrated circuit comprising preparing a silicon wafer which includes a surface layer of relatively high resistivity,

providing a first mask over the surface of said wafer for masking regions where p-tubs are to be formed, leaving exposed regions where n-tubs are to be formed,

implanting said exposed regions with fast and slow diffusing donor ions,

replacing the first mask with a complementary second mask for masking those regions where n-tubs are to be formed,

implanting the exposed regions with acceptor ions,

heating the wafer for driving the implanted ions deeper into the wafer forming contiguous n-tubs and p-tubs over the surface of the wafer,

while maintaining the complementary second mask, shallowly implanting additional acceptor ions into the p-tubs,

removing the complementary second mask,

forming a patterned field oxide over the surface of the wafer, leaving exposed the regions where transistors are to be formed without appreciable movement of the ions previously implanted, and

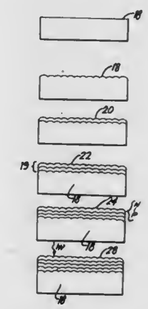
forming transistors in the exposed regions.

4,554,727

METHOD FOR MAKING OPTICALLY ENHANCED THIN FILM PHOTOVOLTAIC DEVICE USING LITHOGRAPHY DEFINED RANDOM SURFACES

Harry W. Deckman, Clinton; Horst Witzke, Flemington; Christopher Wronski, Princeton, and Eli Yablonovitch, Scotch Plains, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 405,075, Aug. 4, 1982, abandoned. This application May 22, 1984, Ser. No. 612,669
Int. Cl.[4] H01L *31/18*
U.S. Cl. 29—572 **15 Claims**



1. A method for producing an optically enhanced thin film photovoltaic semiconductor device having electrical contacts to carry current from said device comprising:

a. producing an active layer of semiconductor material wherein the surface of at least one side of said active layer is textured such that said surface includes randomly spaced, densely packed microstructures of predetermined dimensions of the order of the wavelength of visible light in said semiconductor material, said microstructure being microcolumnar posts having a predetermined profile such that said texture of said active layer results in optically enhancement by incoherent scattering with a randomization fraction, β, greater than 0.75;

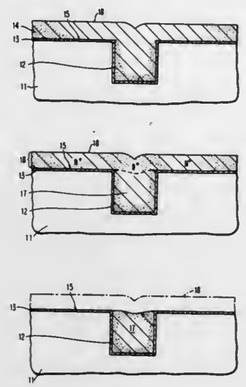
b. forming a reflecting surface directly to either side of said semiconductor material and making an ohmic contact to said material such that the parasitic optical absorption in said electrical contacts and said reflecting surface are less than $1/n^2$, where n is the semiconductor index of refraction, such that the enhancement factor, E, for optical absorption within the active layer of the semiconductor material and the quantum efficiency of collection of photogenerated carriers in increased by a factor greater than 1.5 n^2.

4,554,728

SIMPLIFIED PLANARIZATION PROCESS FOR POLYSILICON FILLED TRENCHES

Joseph F. Shepard, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1984, Ser. No. 624,876
Int. Cl.[4] H01L *21/22, 21/302, 21/76*
U.S. Cl. 29—576 W **8 Claims**



1. A method of forming dielectric isolation in a semiconductor substrate comprising the steps of:

forming a pattern of trenches into one surface of said semiconductor substrate;

forming conformally an insulating layer on said substrate and in said trenches;

forming a single semiconductor layer over the insulating layer thereby filling the trenches and covering the upper surface of the insulated substrate until the top of said semiconductor layer is substantially planar;

introducing in a vertically downward direction an impurity into the semiconductor layer from the top surface of said semiconductor layer to the depth of the upper surface of the insulated substrate whereby the impurity concentration of the semiconductor layer found in the trenches is substantially lower than the impurity concentration of the semiconductor layer found above the level of and on the upper surface of the insulated substrate; and,

selectively removing the semiconductor layer found above the level of and on the upper surface of the insulated substrate by utilizing the difference in impurity concentrations,

whereby is obtained semiconductor-filled trenches having upper surfaces in substantial planarity with the substrate surface,

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4,554,729

METHOD OF MAKING SEMICONDUCTOR MEMORY DEVICE

Nobuyoshi Tanimura, Musashino, and Tokumasa Yasui, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

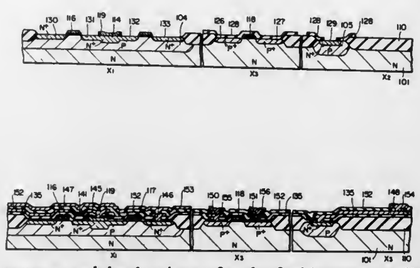
Filed Jan. 22, 1982, Ser. No. 341,623
Claims priority, application Japan, Feb. 6, 1981, 56-15733
Int. Cl.[4] H01L *21/28, 21/26*
U.S. Cl. 29—577 C **23 Claims**

1. A process for fabricating a semiconductor memory device having MIS transistors composing memory cells, the memory cells having load resistors, the load resistors being connected to a power supply line, and peripheral circuits having MIS transistors, with the gate of at least one of the MIS transistors of the peripheral circuit being connected with a protection resistor, comprising the steps of:

forming a first film of an electrically conductive material, which serves as the gate of the MIS transistors composing memory cells of the semiconductor memory device, over a semiconductor substrate, said first film having a first resistivity;

forming an insulation film to cover the semiconductor substrate which is formed with each of the MIS transistors composing said memory cells; and

forming second films, which second films include a layer of polycrystalline silicon, which second films respectively



serve as each load resistor of each of said memory cells, as a wiring for connecting the load resistors with a power supply line and as the protection resistor connected with the gate of at least one of the MIS transistors composing peripheral circuits, over said insulation film covering said semiconductor substrate, the resistivity of the second films serving as said protection resistor and as said wiring being lower than that of the second film serving as said load resistor and higher than that of said first film.

4,554,730

METHOD OF MAKING A VOID-FREE NON-CELLULOSE ELECTRICAL WINDING

Dean C. Westervelt, Acme, and Thomas M. Burke, Whitehall, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,069
Int. Cl.[4] H01F *3/06*
U.S. Cl. 29—605 **17 Claims**

1. A method of constructing an electrical winding insulated with solid resinous insulation, comprising the steps of:

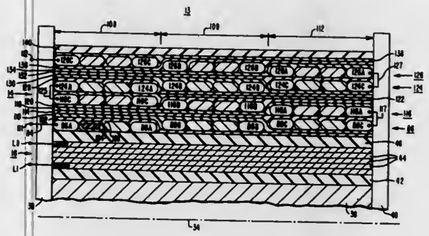
forming conductor turns on a first substrate,

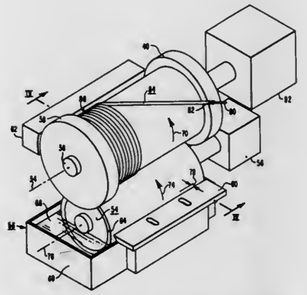
said forming step including the step of wet winding a conductor upon said first substrate,

said wet winding step substantially immersing each conductor turn in liquid resinous insulation, forming a liquid resinous interface between each conductor turn and said first substrate, to provide a void-free liquid intermediate insulative structure,

and building solid insulation, layer upon layer, on the conductor turns and first substrate from the liquid resinous insulation, during the step of forming conductor turns, said building step including the step of controlling the thickness of said layers of solid insulation to eliminate

shrinkage voids and preserve the void-free aspect of the liquid intermediate insulative structure, with said solid





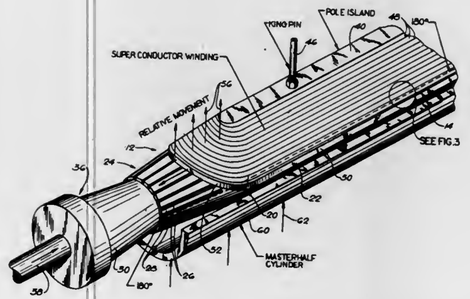
insulation, as it is formed, providing a second substrate upon which subsequent conductor turns may be formed.

4,554,731

METHOD AND APPARATUS FOR MAKING SUPERCONDUCTIVE MAGNET COILS

Albert R. Borden, El Cerrito, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 7, 1983, Ser. No. 549,379
Int. Cl.[4] H01F *7/06*
U.S. Cl. 29—605 **13 Claims**



1. A method of making a curved generally pancake-shaped coil adapted to be mounted around a 180-degree segment of a cylindrical support,

such method comprising the steps of providing a tubular mandrel having a tubular cylindrical substantially rigid mid-portion terminating at both ends in tapered tubular end portions formed with a multiplicity of longitudinal slots providing flexible fingers between said slots,

providing an elongated oval shaped pole island in engagement with the outside of said cylindrical mid-portion and parallel with the axis thereof,

winding an elongated electrical conductor around said pole island to form a multiplicity of generally oval shaped turns in engagement with a 180-degree segment of the outside of said mandrel,

said turns having longitudinal portions with curved portions extending therebetween,

the curved portions of at least some of said turns engaging said tapered end portions of said mandrel,

providing tapered expansion members of circular cross section for expanding said tapered end portions, and

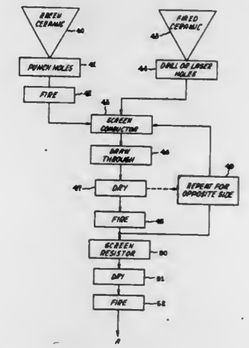
inserting said expansion members into said tapered end portions of said mandrel and thereby displacing said flexible fingers outwardly into a generally cylindrical form so as to displace said curved portions of said turns into a shape conforming to said cylindrical form while also exerting increased tension upon the turns of the coil to minimize draping of the longitudinal portions of said turns and to enhance the mechanical integrity of said coil.

4,554,732

HIGH RELIABILITY ELECTRICAL COMPONENTS

James L. Sadlo, Oakdale, and Gary D. Musil, Minneapolis, both of Minn., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 349,080, Feb. 16, 1982, Pat. No. 4,486,738.
This application Aug. 1, 1984, Ser. No. 617,056
Int. Cl.[4] H01C *17/06*
U.S. Cl. 29—620 **4 Claims**



1. A process for fabricating an array of electrically interconnected spaced electrical circuit components which are separated to form a plurality of individual discrete resistors comprising the steps of

forming a series of through apertures in a substrate of electrically insulating material and aligned in at least two parallel rows, both said rows and apertures in each row being spaced apart from each other,

depositing thick film paste electrical conductor material as a continuous strip on one surface of said substrate to form at least two parallel rows of spaced apart conductor portions surrounding each aperture and serving as terminal conductor pads for an individual resistor, applying a pressure differential across said substrate to draw said deposited conductor material along walls of said apertures to form connector portions extending toward the opposite surface of the substrate,

depositing further thick film paste electrical conductor material as a continuous strip on the opposite surface of said substrate to form at least two parallel rows of spaced apart conductor portions surrounding each aperture on said opposite substrate surface corresponding to said spaced conductor portions on said one substrate surface and also

serving as further terminal conductor pads for an individual resistor and then applying a pressure differential across said substrate to draw said further conductor material along walls of said apertures towards said one substrate surface to form connector strips electrically connecting corresponding conductor portions,

depositing thick film resistor material on one substrate surface to form a pattern of spaced bars between adjoining pairs of said spaced conductor portions aligned in a transverse row and electrically interconnected thereto, and

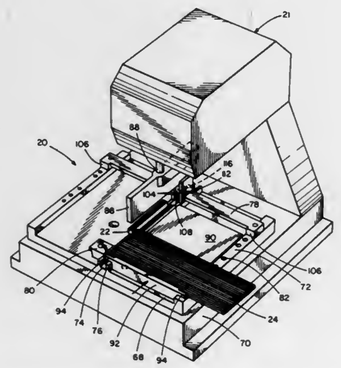
dicing said substrate by scribing a line between and parallel to said spaced resistor bars in one direction and bisecting said conductor portions in the other direction to provide said plurality of individual discrete resistors.

4,554,733

TERMINATION TOOLING FOR APPLYING CONNECTORS TO FLAT CABLE

Jack E. Caveney, Hinsdale, Ill., assignor to Panduit Corp., Tinley Park, Ill.

Filed Feb. 28, 1983, Ser. No. 470,850
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—749 **17 Claims**



1. Termination tooling adapted for use with a prime mover, such as a bench press, for terminating a flat cable in an elongate connector, said connector comprising an insulative base and an insulative cover having a plurality of spaced insulation displacement metallic terminal elements extending toward said cover and corresponding in number and position to the conductors of said flat cable, said tooling comprising:

a termination die for terminating said cable in said connector;

positioning means for holding a connector in place for termination by said die;

stop means disposed spaced from said termination die for engaging one end of said flat cable with the axial direction of said cable being generally normal to the longitudinal direction of said connector to locate said end with respect to said connector; and

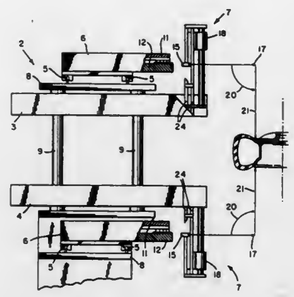
slide means for supporting said cable, said slide means being movable transversely of the axial direction of said cable between a loading position, wherein said cable engages said stop means, and a termination position, wherein said cable is positioned for termination in said connector by said die, whereby said cable is positioned with respect to said connector without said stop means engaging said cable during termination.

4,554,734

APPARATUS FOR AUTOMATIC INSERTION OF BALANCE WEIGHTS FOR USE IN AUTOMOBILE-WHEEL BALANCING EQUIPMENT

Rembrandt Sander, Darmstadt, Fed. Rep. of Germany, assignor to Gebr. Hofmann GmbH & Co. KG Maschinenfabrik, Pfungstadt, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,620
Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316945
Int. Cl.[4] B23Q *7/10, 17/00;* **G01M** *1/16;* **B60B** *1/00*
U.S. Cl. 29—818 **6 Claims**



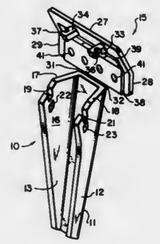
1. An apparatus for automatic insertion of balance weights onto an automobile wheel, said apparatus comprising: balance weight carrier means for receiving and carrying balance weights having through bores, delivery means for taking individual balance weights from the carrying means and applying the weights to the rim flange of the automobile wheels, said carrier means including upper and lower parts having compartments for receiving the balance weights and movable toward the delivery means by a relative movement of the lower part with respect to the upper part, said delivery means including mandrels receivable in the through bores of the balance weights for taking the balance weights out of the carrier means, and an insertion head carried by the delivery means, said insertion head being pivotable to accommodate minor inaccuracies of the automobile wheels when the balance weights are applied to the rim flange of the automobile wheels.

4,554,735

ONE-PIECE DISPOSABLE RAZOR

Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 4, 1984, Ser. No. 607,041
Int. Cl.[4] B26B *21/00*
U.S. Cl. 30—47 **1 Claim**



1. A disposable one-piece plastic razor comprising:

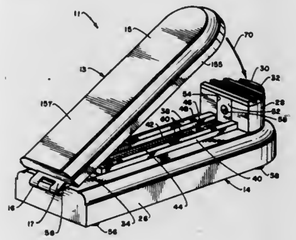
two basic plastic elements, one of said elements defining a handle, the other of said elements defining a cap, hinge means connecting both elements to facilitate relative rotation of said elements from a first or open position to a second or closed position and latch means for retaining the elements in the closed position with a single blade having a single cutting edge fixed to the cap and sandwiched therebetween, said hinge means having an axis parallel to said cutting edge, said handle being formed with a pair of spaced support elements having coplanar surfaces for supporting the blade and fixing the degree of relative rotation of said elements, said latch means defining a pair of claws formed integrally with said cap and a mating pair of slots formed in said spaced support elements, said claws being operative to engage said slots in said closed position, said latch means further defining a pair of lugs depending from the cap cooperating with a pair of mating notches formed in the spaced support elements operative to align the cap and thus the blade edge relative to the handle and to fix and retain the desired degree of relative rotation between the cap and the handle.

4,554,736

NUTCRACKER

David F. Rodriguez, 7537 Paddon Rd., Vacaville, Calif. 95688

Filed Dec. 3, 1982, Ser. No. 446,558
Int. Cl.[4] A23N *5/00;* **A47J** *43/26*
U.S. Cl. 30—120.3 **10 Claims**



1. A nutcracker comprising in combination

a top part and a bottom part hingedly connected to each other at one end of each,

said bottom part comprising an elongated base having a top surface and a bottom surface,

an upstanding stop mounted on the top surface thereof at the appropriate end of said base from the hinge,

a pair of spaced parallel rails extending rearwardly from said stop toward said hinge, and a separate nut receiving plate disposed between said rails.

said top part including a weighted arm having an impact plate adapted to impact a nut placed between the spaced parallel rails of said bottom part.

4,554,737

NUTCRACKER

Willi Bartels, Horster Strasse 109, D-4505 Mönchen-Gladbach 2, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,313
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 8312209[U]
Int. Cl.[4] A47J *43/26*
U.S. Cl. 30—120.3 **11 Claims**

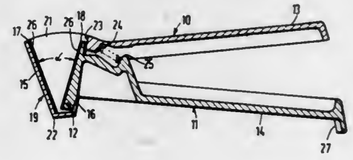
1. A nutcracker for cracking a nut and having an initial position, comprising:

two lever arms having first and second ends;

a hinge pin connecting said two lever arms to each other;

press jaws, each of which are disposed at said first ends of said two levers and have stop surfaces to limit the travel of said two lever arms, said press having an opening angle which is constant in the initial position of the nutcracker regardless of a nut size; and

a press cup forming said press jaws and having an open top and substantially plane press surfaces, said press cup forming a housing having side walls and a closed bottom, said bottom and said side walls being made as one piece with one of said press jaws.

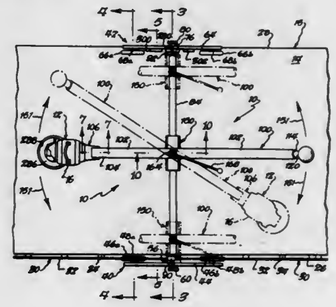


4,554,738

APPARATUS FOR SUPPORTING AND GUIDING MACHINE FOR OPERATING ON SHEET MATERIAL SUCH AS CLOTH

Robert C. Barrett, Angola; John H. Buscher, East Amherst, and William M. Putnam, Buffalo, all of N.Y., assignors to Eastman Machine Company, Buffalo, N.Y.

Filed Sep. 15, 1983, Ser. No. 532,288
Int. Cl.[4] B26B *7/00*
U.S. Cl. 30—275 **37 Claims**



33. In apparatus comprising a machine for operating on sheet material such as cloth during movement of said machine over and along said material while said material lies on a supporting surface and means for supporting and guiding said machine during said movement over and along said supporting surface, said machine comprising a frame, a tool positioned for movement relative to said frame and to said material for operating thereon and motor means carried by said frame and drivingly connected to said tool for causing operating movement thereof, an improved supporting base for said machine for supporting said machine on said supporting surface during movement over and along said surface, said improved supporting base comprising:

(a) a sheet of resilient material having a leading edge portion adapted to contact said supporting surface and facing in the direction of travel of said machine, a trailing edge portion adapted to contact said supporting surface, and an intermediate portion between said leading and trailing edge portions shaped to be spaced from said surface;

(b) said intermediate portion being curved in a concave manner facing said supporting surface and having an opening to receive said tool for operating movement and having means for connecting said sheet to said frame;

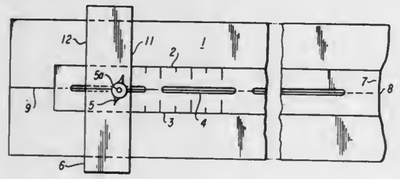
(c) said leading edge portion being shaped in a manner to facilitate movement along said supporting surface and under said material to guide said material over and along said sheet and said trailing edge portion being shaped in a manner such that the rearward edge thereof is spaced

from said surface to facilitate movement of said sheet over and along said surface; and

(d) said leading edge portions and said trailing edge portions providing the sole means of contact with said supporting surface and said base having a streamlined shape and size to reduce cutting resistance

(e) said supporting and guiding means comprising carriage means movable relative to said supporting surface and at least one arm connected at one end to said machine and connected at the other end to said carriage means for pivotal movement about an axis generally parallel to said supporting surface and generally perpendicular to the longitudinal axis of said at least one arm and for translatory movement across said supporting surface.

4,554,739
HEMMING RULE
Albert J. Kirsch, 5540 Wattsburg Rd., Erie, Pa. 16509
Filed Mar. 6, 1984, Ser. No. 586,700
Int. Cl.⁴ A41H *1/00*
U.S. Cl. 33—2 H **1 Claim**



1. A rule for measuring pant legs and the like for shortening and hemming, comprising a lengthwise extending measuring stick having an upper end to be line up with the upper end of the inseam and two longitudinal side edges each provided with graduations in length units with graduations on one edge opposite like graduations on the other edge, said measuring stick further having a center line with elongated slots spaced from each other on said center line with elongated slots spaced from each other on said center line, a cross stick having upper and lower edges, the upper edge of the cross stick being nearer the upper end of the measuring stick, a pivot bearing between said upper and lower edges and offset to one side of the center line of the cross stick, a bolt extending through one of said slots and said pivot bearing, said cross stick by sliding of said bolt and pivoting of said cross stick on said bolt being adapted to be lined up with graduations on said lengthwise stick corresponding to the desired length, the lower edge of said cross stick when so lined up defining a cut line along which a cut should be made to remove surplus material and the upper edge of said cross stick defining a fold line along which material should be folded to produce the desired finished length.

4,554,740
PANTOGRAPHS
David Gill, 3200 25th St., Columbus, Ind. 47203
Filed Feb. 27, 1984, Ser. No. 583,748
Int. Cl.⁴ B43L *13/10*
U.S. Cl. 33—25 R **15 Claims**

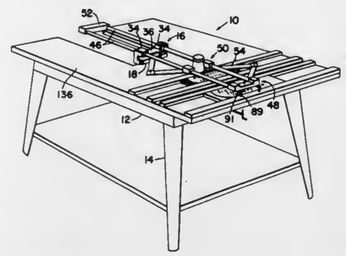
1. A pantograph apparatus comprising:

means for defining at least one elongated support guide;

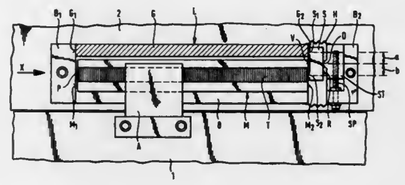
base means for at last pivotally supporting said support guide about a first axis perpendicular to a reference plane;

first and second elements supported by said support guide means on one side of said base means for linear displacement along the longitudinal axis of said support guide means relative to the first axis and for simultaneous rotational displacement in the same direction around said first axis;

means defining an interconnecting assembly for interconnecting said base means and said first and second elements to cause simultaneous linear displacements of said first and second elements in the same direction along said longitudinal axis toward and away from said first axis at a predetermined ratio whereby the two dimensional displacement of said first and second elements relative to said base means are a given ratio relative to one another in said reference plane.



4,554,741
MEASURING SYSTEM
Alfred Affa, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany
Filed Apr. 10, 1984, Ser. No. 598,829
Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316082
Int. Cl.⁴ G01B *11/04*
U.S. Cl. 33—125 C **12 Claims**



1. In a measuring system for measuring the relative position of first and second objects, of the type comprising a scale which is secured to the first object and which defines first and second ends, and a scanning unit which is secured to the second object to scan the scale, the improvement comprising:

an expansion element having a first end coupled to the first object and a second end, said expansion element having a coefficient of thermal expansion which differs from that of the first object;

means for coupling the second end of the expansion element to the second end of the scale such that the expansion element applies a force on the scale which varies as function of temperature to maintain the measuring length of the scale substantially constant over a range of temperatures.

4,554,742
DIMENSIONAL CHECKING TOOL
Otto W. Freitag, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sep. 16, 1983, Ser. No. 533,026
Int. Cl.⁴ G01B *7/14*
U.S. Cl. 33—143 L **4 Claims**

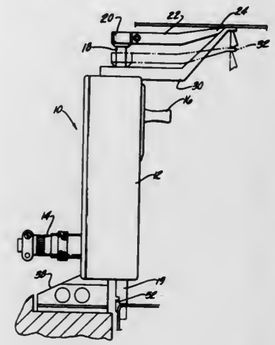
1. A dimension checking tool comprising:

An elongated handle;

a base portion positioned at one end of the handle, and including a curved outer surface;

a measuring rod slidably engaged within the elongated handle for longitudinal movement with respect to the elongated handle and extending from one end of the elongated handle;

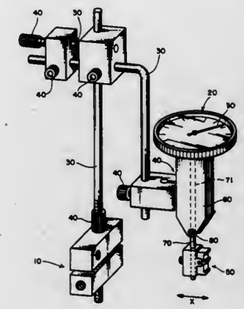
a trigger mechanism directly coupled to the measuring rod and extending transversely outwardly from the elongated handle for permitting manual longitudinal positioning of the measuring rod;



caliper means comprising first finger means fixed for longitudinal movement with the measuring rod and second finger means nestably engageable with the first means and fixed to the one end of the elongated handle, both of said finger means being formed to extend longitudinally and transversely away from the elongated handle; and

wherein the measuring rod also extends from the other end of the elongated handle, terminating in a curved end portion adjacent the base portion.

4,554,743
UNIVERSAL HEAD PROTRUSION GAUGE FOR VIDEO RECORDERS
Wayne B. Graham, San Jose, and John Bonn, Saratoga, both of Calif., assignors to Tentel Corporation, Calif.
Continuation-in-part of Ser. No. 480,515, Mar. 30, 1983, abandoned. This application Mar. 30, 1984, Ser. No. 595,139
Int. Cl.⁴ G01B *3/22*
U.S. Cl. 33—172 R **13 Claims**



1. A gauge for measuring the protrusion of a head from a surface of a drum in a video recorder, comprising:

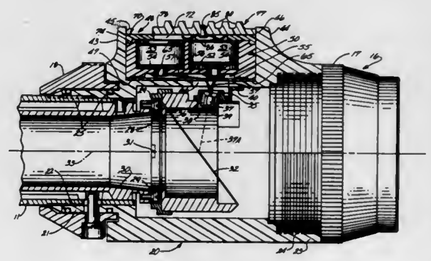
a dial indicator for indicating the amount of protrusion of said head;

a measuring stem cooperating with said dial indicator and rotatably mounted relative to the dial indicator on a first pivot;

a cap mounted rigidly to the measuring stem; and

a leveling block freely mounted relative to the cap on a second pivot, said leveling block having a substantially flat face adapted for engagement with the surface of said drum of the video recorder so that a dial indicator zero position can be determined, said leveling block comprising target zone means for ensuring that the head will contact the leveling block at a point within a known distance of the center of rotation of the second pivot to displace said leveling block at said point a distance equivalent to the protrusion of said head from said surface of said drum thereby rotating said measuring stem.

4,554,744
SWITCH ASSEMBLY FOR RIFLESCOPE
Claus O. Huckenbeck, Tehachapi, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Dec. 30, 1983, Ser. No. 567,043
Int. Cl.⁴ G02B *27/34*
U.S. Cl. 33—241 **13 Claims**



1. In a riflescope having an optical system for viewing a target image, and including a light source, and means for directing light from the source to provide an illuminated aiming point superimposed on the target image, the improvement comprising:

a compartment on the riflescope for supporting a battery to operate the light source;

a cover member fitted over the battery compartment, the cover member having an opening therethrough;

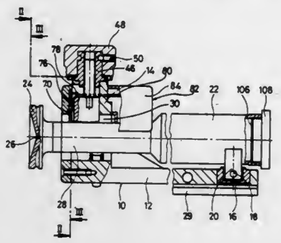
a switch member slidably and captively fitted on the cover member, and having an electrically conductive portion for completing a circuit between the battery and light source when the switch member is in a first position, and for disconnecting the circuit when the switch member is in a second position, the switch member being of resilient construction to be disengageable to enable tool-free removal of the switch and cover members for battery replacement, and the movable conductive portion bearing directly on the battery in the first position; and

the switch and cover members being configured to enclose the battery compartment when the switch member is in either the first or second position.

4,554,745
DEVICE FOR ALIGNING AN ADJUSTABLE SIGHT ELEMENT IN A SIGHT SYSTEM FOR RIFLES
Otto Repa, Oberndorf, Fed. Rep. of Germany, assignor to Carl Walther GmbH, Ulm, Fed. Rep. of Germany
Filed Mar. 7, 1984, Ser. No. 587,056
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308552; Jul. 26, 1983, 3326853
Int. Cl.⁴ F41G *1/02*
U.S. Cl. 33—257 **16 Claims**

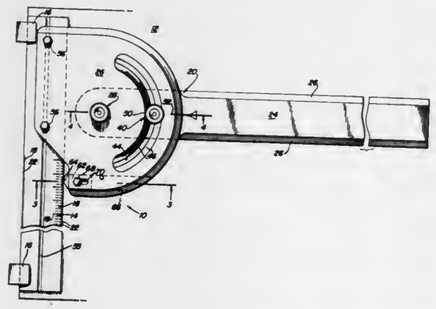
1. In a device for aligning an adjustable sight element in a sight system for rifles and the like, a housing having a vertical portion and adapted to be attached to a rifle, a vertically and horizontally adjustable sight element mounted on said housing,

a printed circuit board electrode on said housing vertical portion and a second electrode on said adjustable sight element to define means responsive to the movement of said adjustable sight element, and digital read-out means connected to said



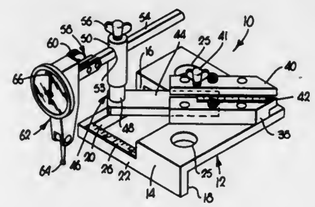
movement responsive means for indicating visually the magnitudes of the horizontal adjustment and vertical adjustment of the adjustable sight element with respect to a predetermined zero setting.

4,554,746
SELF-LOCKING-AND-MEASURING RULER FOR COMPUTER-PRINTOUT FORMS
Luis Echeverria, 1501 Silliker, La Habra, Calif. 90631
Filed Jul. 3, 1984, Ser. No. 627,869
Int. Cl.[4] B43L *13/24*
U.S. Cl. 33—447 **5 Claims**



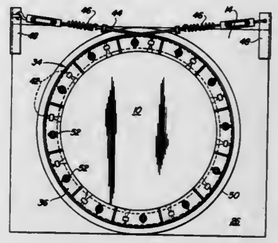
1. A self-locking-and-measuring, straight-edge apparatus, comprising:
- a scaled guide-bar member adapted to be fixedly secured to a substantially flat-surfaced structure;
- a plurality of notches formed along at least one longitudinal edge of said scaled guide-bar member;
- a scale having predetermined measures disposed on said scaled guide-bar member, whereby said notches are spaced apart with respect to said scale;
- a groove formed longitudinally in said scaled guide-bar member and parallel with said notched edge thereof;
- a base-plate member adapted to be slidably mounted to said scaled guide-bar member;
- wherein said base-plate member includes means for adjusting the angular position of said straight edge with respect to said scaled guide-bar members;
- guide means mounted to said base-plate member and adapted to be slidably received in said longitudinal groove for perpendicular movement along said scaled guide-bar member;
- wherein said guide means comprises a pair of aligned guide pins mounted and located in said base plate member, whereby said guide pins are slidably received in said Longitudinal groove of said scaled guide-bar member;
- latching means operably attached to said base-plate member for selective engagement with said notches;
- wherein said latching means comprises:
- a latching tongue adapted to engage selective notches along said edge of said scaled guide-bar member, said latching tongue being slidably attached to said base plate;
- a spring positioned to engage said latching tongue in biased engagement with said notches; and
- a release knob secured to said latching tongue; and
- a straight edge secured to said base-plate member so as to be positioned normal to said scaled guide-bar member, whereby lines may be drawn horizontal to the scaled guide-bar member.

4,554,747
CONVEX RADIUS GAUGE
Robert G. Williams, Rte. 6, Box 206, Sedalia, Mo. 65301
Filed Feb. 19, 1985, Ser. No. 703,190
Int. Cl.[4] G01B *5/20*
U.S. Cl. 33—553 **14 Claims**



1. An apparatus for determining the radius of a convex surface on a workpiece, said convex surface being a junction between a pair of non-parallel, flat surfaces wherein said convex surface and said flat surfaces are perpendicular to a common plane, said apparatus comprising:
- a support;
- stop means connected to said support and engageable with said flat surfaces on said workpiece for aligning the latter relative to said support;
- a member;
- means shiftably mounting said member for selective movement along a line bisecting the angle between said flat surfaces of said workpiece when said stop means is engaged with said flat surfaces;
- a tool having a work contactor; and
- means coupling said tool to said shiftable member,
- said coupling means being operable to pivotally move said work contactor of said tool about an axis parallel to said flat surfaces of said workpiece when said stop means is engaged with said flat surfaces,
- said pivotal axis also being disposed to intersect with said bisecting line,
- said coupling means also having means adjustably fixing the radius of the path swept by said work contactor as the latter is moved about said pivotal axis,
- said tool also having means indicating whether the pivotal axis of the work contactor coincides with the center of curvature of said convex surface on said workpiece,
- whereby said member can be shifted along said line and said work contactor can be moved radially of said pivotal axis until said pivotal axis and said center of curvature coincide,
- whereupon the radius of said convex surface can be determined by measuring the distance orthogonally from either of said flat surfaces on said workpiece to said pivotal axis.

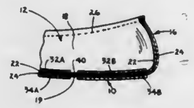
4,554,748
MULTI-SEGMENT SEAL RING FOR ROTARY EQUIPMENT
Robert J. Nixon, Jr., 2112-22nd St., Rock Island, Ill. 61201
Filed Mar. 5, 1985, Ser. No. 708,628
Int. Cl.[4] F16J *15/24*
U.S. Cl. 34—242 **7 Claims**

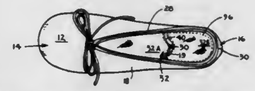


1. Rotary equipment including a cylinder rotatable about a horizontal axis, an upright fixed wall having an opening through which the cylinder extends, said wall having an annular radial surface bordering the opening, a segmented seal ring encircling the cylinder and effecting a seal between the outer circumference of the cylinder and the wall surface, said ring including a plurality of arcuate segments radially disposed about the cylinder and respectively having inner axial sealing surfaces on a radius approximately equal to that of the cylinder, each segment having an inner flat radial surface seating against the wall surface and each pair of neighboring segments having circumferentially overlapping end portions forming a gap and radial interface between the neighboring segments, means for mounting the segments individually on the upright wall and permitting radial displacement of the segments relative to each other during rotation of the cylinder, means for tensioning the segments to hug the cylinder, and sealing means for sealing the gaps, characterized in that the overlapping end portions of each pair of neighboring segments are so configured that the gap has a relatively circumferentially wide mouth opening at the cylinder surface and converging to a relatively narrow channel intermediate the inner and outer circumferences of the ring, said channel extending to an outer open end at said outer circumference of the ring, and the sealing means at each gap includes a resilient element bridging the gap at the junction between the mouth and its channel, and said element is carried in part by one segment and in part by the neighboring segment.

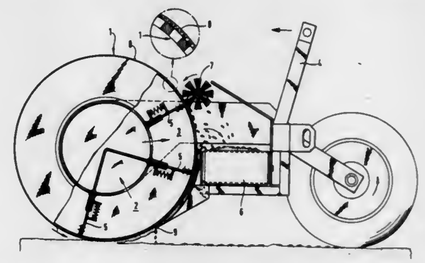
4,554,749
SLIPPER
Charles Ostrander, Middletown, N.J., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.
Continuation of Ser. No. 424,153, Sep. 27, 1982, abandoned. This application Sep. 21, 1984, Ser. No. 653,484
Int. Cl.[4] A43B *1/10*
U.S. Cl. 36—102 **8 Claims**

1. A flexible slipper comprising an upper defining a cover for encompassing the foot of a wearer, said cover including a unitary layer of elastic fabric defining a toe portion, a heel portion, a shank portion and a base portion, said shank portion interconnecting said toe and heel portions, said base portion interconnecting said toe, heel and shank portions and extending throughout the length of the slipper from the toe portion to the heel portion and beneath the foot of a wearer, and a sole comprising discrete fore and aft sections positioned in predetermined, spaced relation overlying sections of said base portion and means securing said fore and aft sections to said base portion.





4,554,750
APPARATUS FOR COLLECTING PEAT FROM A PEAT FIELD
Hannu Jamsa, Eurajoki, Finland, assignor to Satoturve Oy, Eurajoki, Finland
Continuation of Ser. No. 488,143, Apr. 25, 1983, abandoned. This application Nov. 8, 1984, Ser. No. 669,732
Claims priority, application Finland, Jun. 1, 1982, 821929
Int. Cl.[4] E21C *49/00*
U.S. Cl. 37—3 **10 Claims**



1. A mobile vehicular-type apparatus for rolling over and collecting peat from a peat field comprising:
- a body;
- wheels or rollers supporting said body;
- a power machine for propelling said apparatus over a peat field;
- loosening means for loosening a peat layer from a peat field, said loosening means being rotatably journalled to said body and comprising at least one cylindrical drum having perforations and being adapted to exert the force of gravity as it rolls over the surface of a peat field, said drum carrying around its periphery a filter material which bridges said perforations;
- said cylindrical drum having an internal negative pressure chamber formed by radially disposed, movable air tight partitions biased against the interior surface of said drum, said partitions being non-rotatable so that said filter material is sequentially brought into and out of communication with said negative pressure chamber, said negative pressure chamber being maintained in proximity to said peat layer as said drum rolls over the surface of the peat field, said filter material being a fibrous fabric which prevents the suction of peat particles and dust into said negative pressure chamber;

means for establishing a vacuum within said negative pressure chamber, said negative pressure chamber being effective to loosen from the field and fasten a layer of peat to the surface of said filter material by suction exerted on said filter material through said perforations;

means for removing said layer of peat from the surface of said filter material comprising a brush;

a cutter blade mounted in proximity to said filter material for shearing a peat layer fastened to said filter material into an inner and outer layer;

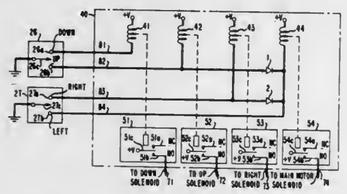
whereby said cutter blade shears the layer of peat held on the filter material so that said outer layer is sheared off and returned to the field and said inner layer is carried into proximity to said means for removing where it is removed from said filter material for recovery.

4,554,751

MULTI-FUNCTION VEHICULAR GEAR SHIFT LEVER FOR SNOWPLOW OPERATION

Carl T. Nicolosi, 191-B Beacon Hill Rd.; Thomas F. Nicolosi, 189-A Beacon Hill Rd., both of Morganville, N.J. 07751, and Ryan D. McCreedy, 46 Tindall Rd., Middletown, N.J. 07748

Filed Oct. 3, 1984, Ser. No. 657,084
Int. Cl.[4] E01H *5/04*
U.S. Cl. 37—234 **4 Claims**



1. Apparatus for substantially simultaneously controlling both a transmission of a vehicle to change the forward and reverse directions of movement of the vehicle, and lateral and/or elevational movement of a snow plow mounted to the vehicle, said apparatus comprising:

a lever for choosing a pre-defined one of a plurality of gears in said transmission to change the forward and reverse directions of movement of the vehicle, wherein one end of said lever is adapted to be grasped by a single hand of a driver of said vehicle, and

a selector for controlling the movement of said snow plow, wherein said selector is attached to said lever and situated in sufficient proximity to the end of the lever so that the driver is not required to substantially release the grasp of said single hand from the end of the lever in order to actuate said selector and thereby cause the snow plow to move in a desired direction.

4,554,752

HEATED CYLINDER IRONER UTILIZING A FLEXIBLE IRONING BED

John Bosshart, Coral Springs, and William W. Allen, Plantation, both of Fla., assignors to Jensen Corporation, Lauderdale, Fla.

Filed Apr. 25, 1985, Ser. No. 727,345
Int. Cl.[4] D06F *65/06*
U.S. Cl. 38—61 **7 Claims**

1. A heated revolving ironer and dryer comprising:

a revolving cylinder the outer surface of which provides a heated ironing surface;

a pair of power cylinders;

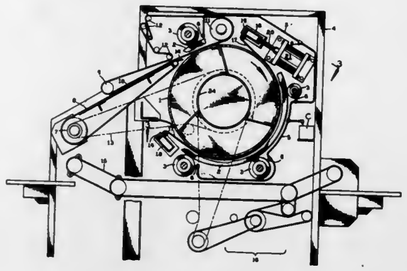
at least one flexible piece of heat resistant material surrounding a portion of the revolving cylinder forming the flexible ironing bed;

said flexible ironing bed reaching across the ironing surface of the revolving cylinder;

said flexible ironing bed having means to be anchored along the length of the revolving cylinder near the bottom of the revolving cylinder in the direction away from the direction of rotation of the revolving cylinder;

said flexible ironing bed having means along its upper edge to be affixed along the length of the revolving cylinder to the piston arms of said two power cylinders;

said power cylinders affixed adjacent to the opposite ends of the rotating cylinder substantially above the anchored lower edge of the flexible ironing bed such that the flexible ironing bed is drawn taut against the cylinder's ironing surface; and



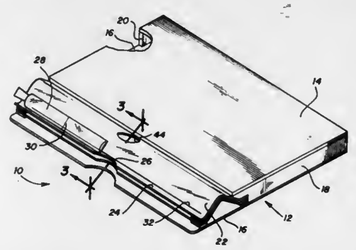
said power cylinders capable of moving said pistons either toward or away from the direction of rotation of the revolving cylinder such that when in position away from the direction of rotation of the revolving cylinder, the flexible ironing bed is drawn taut against the ironing surface of the revolving cylinder thus performing the ironing function as the laundry work pieces are fed between the flexible ironing bed and the rotating cylinder, and when the movable piston is in the position toward the direction of rotation of the rotating cylinder, the flexible ironing bed gently brushes against the ironing surface thus conserving wear and energy when no laundry work pieces are fed into the ironer.

4,554,753

THIN-PROFILE COPY HOLDER

J. Garth Close, P.O. Box 168-6 SH, Malakoff, Tex. 75148

Filed Sep. 9, 1983, Ser. No. 530,194
Int. Cl.[4] B41J *11/38*
U.S. Cl. 40—341 **14 Claims**



1. An apparatus adapted to foster the efficient transfer of data into a computer by reducing the necessary eye travel as an operator switches his attention back and forth between a source of data on a flexible sheet and the entered data that is visible on a monitor screen, comprising;

(a) structural means adapted for supporting a monitor in front of a computer operator such that an operator may visually examine data that appears on a monitor screen after the data has been entered into a memory associated with the computer, and said structural means having a frontal opening through which a flexible sheet of material may be pulled toward the operator, and further including a pair of generally parallel plates arranged one above the other, and the upper plate being configured to receive and support said monitor, and the lower plate being adapted to rest on a generally horizontal surface; and

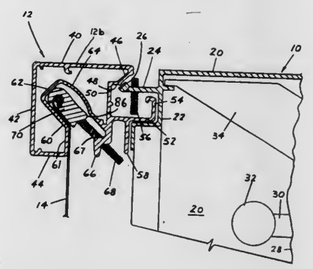
(b) support means for supporting a flexible sheet of material so that the material is folded into a generally U-shape adjacent the front of the structural means, and there being a frontal section of the support means about which the flexible sheet can be wrapped so as to expose to view a transverse portion of the flexible sheet near the bottom of the U, whereby data written on the flexible sheet may be periodically viewed by the operator as said sheet is progressively pulled through the support means and around the frontal section.

4,554,754

SIGN WITH FLEXIBLE FACE

Johann Stilling, Apt. #A1001, 1141 Royal York Rd., Islington, Ontario, Canada

Filed Jul. 6, 1984, Ser. No. 628,222
Int. Cl.[4] G09F *17/00*
U.S. Cl. 40—603 **11 Claims**



1. A face frame for a flexible sign panel the frame having four side members arranged in a generally rectangular shape said frame defining a front and a rear, and inner and outer frame portions, each side member comprising;

frame walls forming a partial enclosure;

channel walls located within the enclosure provided by said frame walls defining a channel having an axis directed with a vector lying from the rear to the front of said frame and a channel opening on the rearward end of said axis;

tension bearing means adjacent said channel opening on one side thereof;

shoulder means adjacent the other side of said channel opening;

clamp means adapted to grip the edge of said flexible sign panel, said clamp means being dimensioned to be slidable within said channel walls so that said clamp means may be slid into and out of said channel walls, and,

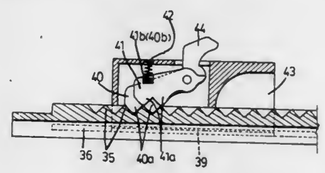
threaded adjustment means extending from said tension bearing means, and adapted to engage a portion of said clamp means, adjustment of said threaded adjustment means forcing said clamp means into said channel walls, whereby to tension said flexible sign panel around said shoulder.

4,554,755

SEATING DEVICE FOR FISHING REEL

Jeng-Hsiung Hsu, 10-11 Floor, No. 283, Tzu-Li I Rd., Kao-Hsiung City, Taiwan

Filed Dec. 1, 1983, Ser. No. 556,990
Int. Cl.[4] A01K *87/06*
U.S. Cl. 43—22 **2 Claims**



1. A reel seat for a fishing reel which has an attachment reel foot comprising;

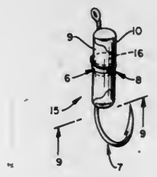
a bar seat having arched attachment surfaces adapted to abut against the fishing rod; a hood member for receiving one end of the reel foot fixedly provided at one end of said seat; first toothed members provided on the upper side of said seat member; slide way means provided lengthwise on both sides of said seat member; and securing means including a casing having engaging surfaces for engaging said slide way means and slidable on said seat member, said casing having a socket for receiving the other end of the reel foot, pawl means pivotedly mounted on said casing, spring means normally biassing said pawl means to engage said first toothed members, and a hand operated means for moving said pawl means against the biassing action of said spring means, said pawl means including two pivoted parallel arms each of which has a second tooth, the distance between the tips of said second teeth in the longitudinal direction relative to the bar seat being half of the pitch of adjacent said first teeth.

4,554,756

FISHING HOOK SYSTEM HAVING A SEALED BAIT CONTAINER, AND METHOD OF MAKING SAME

Mit Thomas, P.O. Box 558, Malakoff, Tex. 75148

Filed Nov. 4, 1983, Ser. No. 548,649
Int. Cl.[4] A01K *97/02*
U.S. Cl. 43—44.99 **3 Claims**



1. A combination fish hook and packaged bait system, comprising:

a. a hook structure assembly having a barb and shank and including

b. a stiff spring action clip installed on said shank, and

c. a packaged bait container installed in said clip, and

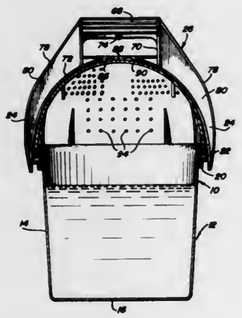
d. an easily punctured section at a selected end of said container, wherein,

e. said clip is adapted to firmly grip and hold said bait container on the side of said shank adjacent to and in the vicinity of, but separate from and not engaging said barb, wherein

f. said container is divided into compartments separated by a rigid block, and

g. wherein said container is tubular in shape and said block is rigid and circular and is snugly fitted into said container, and wherein said block reinforces said package when installed in said clip.

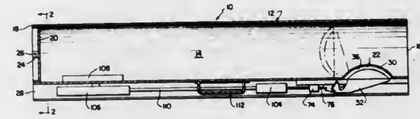
4,554,757
TROLLING BUCKET
Daniel Sakuta, Jr., 560 44th Ave. NE., St. Petersburg, Fla. 33703
Filed May 11, 1983, Ser. No. 493,510
Int. Cl.⁴ A01K *97/04*
U.S. Cl. 43—55 **3 Claims**



1. A bait container including an upwardly opening bucket, a domed cover removably engagingly stationarily supported from and closing the open upper end of said bucket, a pivoted bail-type handle supported from said bucket and swingable between an upstanding position over the upper portion of said domed cover and a generally horizontal position disposed to one side of said cover, said cover being readily removable when said handle is in said horizontal position, said handle and cover including coacting means for releasably latching said handle in said upstanding position, said handle, when in said upstanding position, serving to latch said cover to said bucket against removal therefrom, an upper portion of the side opposite said one side of said domed cover including an access opening formed therein, closure means shiftably supported from said domed cover and movable into and out of position closing said access opening, said one side of said domed cover including water ingress openings formed therein, said bail-type handle including a pair of remote arm end portions pivotally supported from opposite sides of said bucket, the arms of said handle comprising solid web-like portions defining water fin means substantially coincident with the medial plane of said handle, said handle including a central portion defining anchor structure to which one end of a tether line may be releasably anchored; said web like portions extending from either side of said anchor structure substantially to the outer surface of said domed cover in an uninterupted manner, and tapering toward said opposite sides of said bucket so as to establish an effective hydrofoil surface for trolling when in said upstanding position.

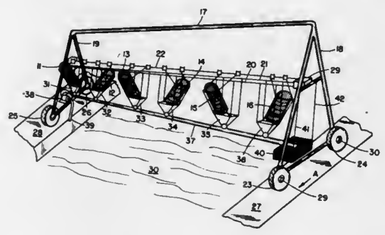
4,554,758
TUNNEL TRAP
Michael P. Molloy, Cedar Park, Tex., assignor to Bobby Lockhart and O. D. Bradsher, Jr., both of Austin, Tex., part interest to each
Filed Sep. 23, 1983, Ser. No. 535,286
Int. Cl.⁴ A01M *23/08, 23/18*
U.S. Cl. 43—61 **15 Claims**

1. A tunnel trap, comprising:
an elongated tubular housing defining an interior space and having front and rear ends, said housing having a lateral side with an opening;
a rear cover coupled to said housing for closing said rear end;
a door pivotally mounted in said housing adjacent said front end for movement between an open position permitting access to said housing interior space through said front end and a closed position closing said housing adjacent said front end, said opening receiving said door in said open position;
spring means, coupled to said door, for biasing said door toward said closed position;
first latch means, releasably engageable with said door, for maintaining said door in said open position against the bias



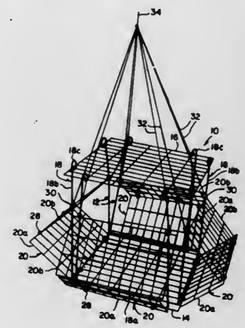
of said spring means, said door comprising support member fixed to said housing lateral side adjacent said opening, a pair of door brackets pivotally coupled to said support member about a first pivot axis, said brackets having a latch member attached directly thereto matable with said first latch means, said latch member extending parallel to and spaced from said first pivot axis, and a door panel mounted on said brackets; and
trigger means, coupled to said first latch means, for moving said first latch means to a release position releasing said door for movement to said closed position under action of said spring means.

4,554,759
METHOD AND MEANS FOR HARVESTING CRAYFISH
Robert J. Edling, Baton Rouge, and Karl L. Morgan, Fort Allen, both of La., assignors to Research Corporation, New York, N.Y.
Filed Apr. 12, 1983, Ser. No. 484,154
Int. Cl.⁴ A01K *69/06*
U.S. Cl. 43—100 **23 Claims**



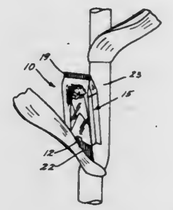
1. An aquatic harvester for attracting and collecting edible decapod crustacean from an aquatic bed, said harvester comprising:
(a) a plurality of one way trap means for attracting and collecting edible decapod crustacean
(b) a support means for raising and lowering said plurality of trap means from a first position in engagement with an aquatic bed to a second position for discharging the collected crustacea;
(c) a collection means for receiving the collected crustacea from each of said one way traps when said traps are discharged;
(d) a means for conveying said collected crustaceans to a single storage means;
(e) a means for intermittently moving said support means along the aquatic bed to enable the traps to be reset on the aquatic bed by said support means during intermittent stationary periods.

4,554,760
CRAB TRAP
Charles Ponzo, 37 Abby La., Shirley, N.Y. 11967
Filed Dec. 12, 1983, Ser. No. 560,339
Int. Cl.⁴ A01K *69/10*
U.S. Cl. 43—105 **1 Claim**



1. A trap for a crab, comprising:
(a) framing means including four U-shaped members;
(b) a wire mesh bottom panel having corners and sides and connected to said framing means by rings;
(c) a wire mesh top panel displaced a distance from said bottom panel, connected to said framing means, and having a size and shape substantially identical to and being parallel to said bottom panel;
(d) a plurality of collapsible doors pivotally and slidably connected by rings to said framing means and to said sides of said bottom panel, said plurality of collapsible doors being pivotally connected to said framing means by said rings that attach said bottom panel to said framing means, said plurality of collapsible doors being slidably connected in an up and down direction to said framing means so that said plurality of collapsible doors are prevented from being fouled either by being pulled into the trap or being forced below the trap, said each collapsible door of said plurality of collapsible doors having a height substantially equal to the distance by which said top panel is displaced from said bottom panel, said each collapsible door of said plurality of collapsible doors comprising a wire mesh lower panel pivotally connected to said side of said bottom panel and said base portion of said U-shaped member and a wire mesh upper panel pivotally connected to said lower panel and being slidably connected to said pair of arms of said U-shaped member with said ends of said flexible hoist line attached thereto so that when said each collapsible door collapses said upper panel will fold outwards onto said lower panel, each U-shaped member of said four U-shaped members comprising a base portion extending along a side of said sides of said bottom panel and onto which a collapsible door of said plurality of collapsible doors is pivotally connected and a pair of arms having free ends extending upwards from two corners of said corners of said bottom panel and onto which a collapsible door of said plurality of collapsible doors is slidably connected and loops disposed on said free ends of said pair of arms for affixing said top panel to said framing means; and
(e) a hoist line having ends connected to each of said plurality of collapsible doors so that when the trap is submerged and said hoist line is slacked said plurality of collapsible doors open flat allowing the crab to enter the trap and when said hoist line is pulled taut said plurality of collapsible doors slide up said framing means and close the trap which entraps the crab within.

4,554,761
POLLINATING BAG
Joseph M. Tell, West Des Moines, Iowa, assignor to Carpenter Paper Company, Des Moines, Iowa
Filed Jun. 1, 1984, Ser. No. 616,246
Int. Cl.⁴ A01G *7/00*
U.S. Cl. 47—1.41 **6 Claims**



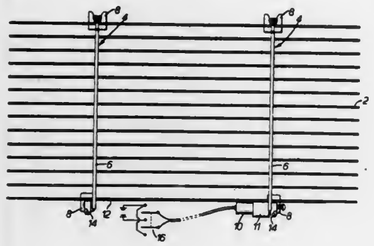
1. A plant reproductive organ antipollination barrier cover comprising:
cover means constructed of a transparent, uncoated, heat sealing, vented polypropylene film for extending over and around a plant reproductive organ for selectively preventing said reproductive organ from pollination, said cover means including:
a front panel;
a rear panel;
first side closure means for sealingly connecting said front and rear panels along one side thereof, said side means including a first and second side panel;
first crease means for biasing said first side panel and said rear wall towards each other;
second crease means for biasing said first and second side panels towards each other;
third crease means for biasing said second side panel and said front panel toward each other;
second side closure means for sealing connecting said front and rear panels along the other side thereof; and
end closure means for sealing one end of said front and rear side panels and said first and second side means with respect to each other whereby said one end will be sealed to prevent the entry of pollen into said one end of said closure means, and wherein said front wall, rear wall, first side panel and second side panel are all secured together along a substantially straight seam oriented transversely with respect to said first, second and third crease means and wherein said first, second and third crease means extend to said seam.

4,554,762
ELECTRICALLY POWERED SUN BLIND
Robert W. Anderson, Hexham House, Shields Rd., Cleadon Village, South Shields, Tyne & Wear, England
Continuation of Ser. No. 472,480, Mar. 7, 1983, abandoned. This application Apr. 12, 1985, Ser. No. 722,418
Int. Cl.⁴ E06B *7/086*
U.S. Cl. 49—76 **8 Claims**

1. An electrically powered sun blind adapted for use in the rear window of a vehicle, comprising:
(a) a plurality of parallel slats;
(b) at least two slat support devices, each of said slat support devices including a pair of rigid parallel side pieces interconnected by a series of slat supporting cross-pieces each supporting a slat and pivotally connected at its ends to said side pieces so that said side pieces are adapted to move relative to one another in parallelogram fashion to establish the angle of said slats, each of said cross-pieces being shaped to cooperate with the next adjacent cross-piece so

as to form an integral abutment means to limit the range of angular movement of the blind; and

(c) an electrically powered motor having a casing and an output shaft rotatably movable with respect to each other,



said casing being fixedly connected with a cross-piece of one of said slat support devices and said output shaft being fixedly connected to a fixed mounting of the blind, said relative rotation being parallel to the movement of said slat support device.

4,554,763

ELECTRIC GLASS-RAISING DEVICE FOR A MOTOR VEHICLE

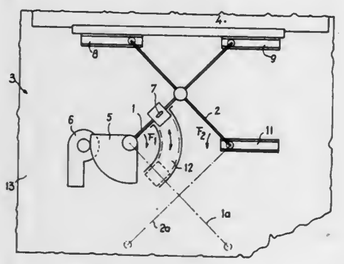
Jean Dauvergne, Sully sur Loire, France, assignor to Compagnie Industrielle de Mechanismes, France

Filed Dec. 14, 1983, Ser. No. 561,428

Claims priority, application France, Dec. 14, 1982, 82 20946

Int. Cl.⁴ E05F *15/08, 11/44*

U.S. Cl. 49—349 **8 Claims**



1. An electric glass-raising device for a door of a vehicle, said device comprising two arms arranged in an X-configuration and disposed inside said door and supporting the glass, one of said arms being a driving arm and the other arm being a driven arm, a support fixed to said driving arm adjacent a first end of said driving arm and rotatably mounted relative to said door, a motor-speed reducer unit drivingly connected to said support for rotating said support, control means for actuating the unit, said driving arm having a second end opposed to said first end, a first slideway, a second slideway and a third slideway, the first and second slideways being connected to the glass and the third slideway being mounted on said door, said second end of said driving arm being slidably mounted in said first slideway, said driven arm having opposed ends respectively slidably mounted in said second slideway and said third slideway, said control means being connected to said driving arm in such manner as to be kinematically related thereto, an inner trimming panel on the door, means defining a slot in said panel, said control means projecting through said slot, said slot having a length allowing travel therein of said control means in movement of said glass between opposed end positions of said glass.

4,554,764

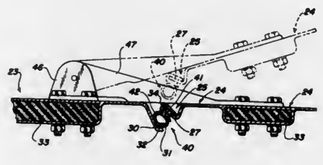
GASKET-SEALED MOLDED DOOR AND FRAMING MEMBER THEREFOR

Donald Jenkins, Louisiana, Mo., assignor to Astoria Fibra-Steel, Inc., Astoria, Ill.

Division of Ser. No. 181,174, Aug. 25, 1980, Pat. No. 4,366,611. This application Sep. 27, 1982, Ser. No. 424,157

Int. Cl.⁴ E06B *3/00*

U.S. Cl. 49—501 **1 Claim**



1. For use as a truck body and the like, the combination comprising

a framing member having a mold-formed outer surface bounded by an inwardly sloping integral flange terminating in a cut edge defining an opening,

a door member having a mold-formed outer surface bounded by a generally V-shaped integral flange having an outwardly and forwardly sloping outer end portion terminating in a cut outer edge,

the inner dimensions of said framing member taken along its said cut edge being so little larger than the outer dimensions of said door member along its cut outer edge as to permit the door member and framing member to be cut from a single intermediate molded article, and

a gasket having a channel portion on one edge thereof and a cushioning portion on an opposite edge,

the door member having mounted, about its said sloping outer end portion, the channel portion of said gasket in a manner so that its said cushioning portion underlies an inner surface of said door outwardly and forwardly sloping outer end portion and, on presenting the door member forwardly of and adjacent to the sloping flange of the framing member, said gasket cushioning portion faces and is compressed against an outer surface of said framing member inwardly sloping flange.

4,554,765

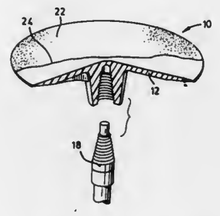
COATED ABRASIVE DISC

Philip M. Grimes, 15 McMurrich St., Toronto, Ontario, M5R 3M6, and John R. Grimes, 33 Harbour Sq., Toronto, Ontario, M5J 2G2, both of Canada

Continuation-in-part of Ser. No. 471,698, Mar. 3, 1983, Pat. No. 4,525,177. This application Mar. 12, 1984, Ser. No. 588,580

Int. Cl.⁴ B24D *11/00*

U.S. Cl. 51—401 **2 Claims**



1. A one-piece coated abrasive grinding assembly for mounting on a shaft to be rotated by a power tool, the grinding assembly having an abrasive grinding face for grinding a workpiece surface and having a periphery useful for grinding a groove in a workpiece, the grinding assembly comprising:

(a) a disc made of thermoplastic material and having a thickened hub portion for receiving said shaft and having an integral flexible workpiece-contour-following disc portion disposed normal to the hub portion and extending to the periphery of the disc, the diameter of the flexible disc portion being great as compared with its thickness;

(b) a layer of thermosetting plastic resin which contains abrasive grit coated directly on the workpiece-contour-following disc portion which comprises said grinding face, the plastic resin being compatible with the thermoplastic material of the disc portion and being bonded and adhesively fused thereto; and

(c) the thermoplastic disc material being smoothly and continuously heat-disintegrated at the same rate as the plastic resin grit-containing layer is abraded away when the periphery of the disc portion is used for edge grinding a workpiece, whereby to present fresh grinding grit to the workpiece as the diameter of the disc portion decreases.

4,554,766

CEILING CONSTRUCTION FOR CLEAN ROOMS

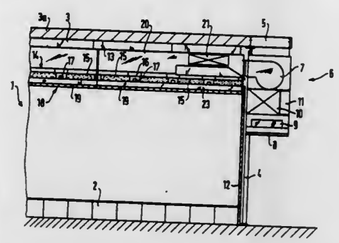
Wolf Ziemer, Berlin, and Wilhelm Hölle, Münzenberg, both of Fed. Rep. of Germany, assignors to Flakt Aktiebolag, Nacka, Sweden

Filed Aug. 20, 1984, Ser. No. 642,426

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330536

Int. Cl.⁴ E04H *5/02*

U.S. Cl. 52—28 **6 Claims**



1. Ceiling construction for clean rooms comprising:

an intermediate ceiling arranged at a spacing beneath a raw ceiling to form a pressure chamber, which intermediate ceiling is formed from heavy duty mechanical filters:

a lower ceiling arranged at a spacing beneath the intermediate ceiling to form an air distribution chamber, which lower ceiling is formed from laminar elements having vertical passages for a vertically downwardly directed air flow: and ceiling lamps,

wherein

the laminar elements of the lower ceiling are formed by a capillary structure which is both air permeable and also light permeable, and

the ceiling lamps are installed above the lower ceiling between the mechanical filters.

4,554,767

EARTHQUAKE GUARDING SYSTEM

Aristarchos S. Ikonomou, 90 Evrou St., Athens 609, Greece

Continuation of Ser. No. 231,754, Feb. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 201,803, Oct. 29, 1980, abandoned. This application May 18, 1984, Ser. No. 611,751

Int. Cl.⁴ E04B *1/98*

U.S. Cl. 52—167 **25 Claims**

1. A structure having a superstructure and isolation means for isolating said superstructure from the ground during an earthquake or other strong oscillations of the ground, said isolation means comprising:

a first load distributing base;

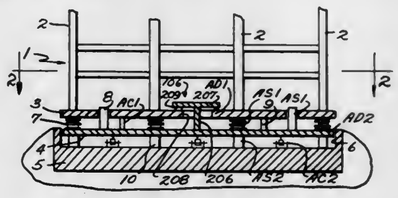
a second load distributing base substantially parallel to said first load distributing base;

one of said load distributing bases supporting said superstructure and the other of said load distributing bases being between said one load distributing base and the ground;

first elastic means;

second elastic means;

said first elastic means connecting said one load distributing base and said other load distributing base and said second elastic means connecting said other load distributing base and the ground;



means substantially preventing shearing movement between the components connected by one of said elastic means without preventing rotational movements, between said components, which are substantially only around a horizontal axis and translational movements, between said components, which are substantially perpendicular to said load distributing bases,

the said structure being constructed and arranged so as to allow, between the components connected by said other elastic means, only translational movements substantially parallel to said load distributing bases and rotational movements around a vertical axis,

whereby the respective elastic means provide isolation.

4,554,768

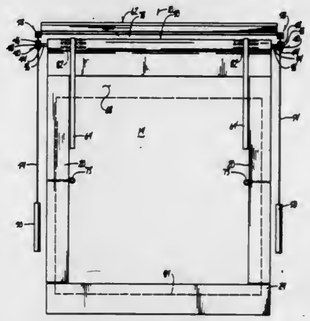
DOCK SEAL WITH ADJUSTABLE TOP SEAL

Reinhard Srajer, Colorado Springs, Colo., assignor to Woodford Manufacturing Company, Colorado Springs, Colo.

Filed Apr. 21, 1983, Ser. No. 487,063

Int. Cl.⁴ E04H *14/00*

U.S. Cl. 52—173 DS **15 Claims**

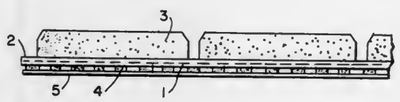


1. A loading dock adjustable top seal for providing a weather-tight seal between the top of a vehicle and the top of a loading access opening of a loading dock associated with a building when said vehicle is in an abutting relationship against said building comprising:

a vertically adjustable horizontal top sealing member having

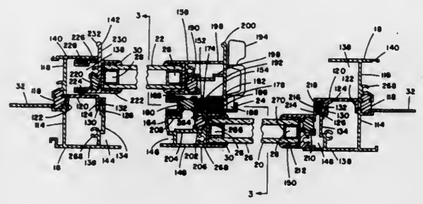
an elongated body extending across the width of said loading access opening;
a curtain means having an upper and a lower edge, said upper edge being attached to an attachment means mounted across and above said loading access opening, said lower edge being attached along said elongated body;
cable drum means mounted to said elongated body;
sheave means mounted above said access opening;
cable means having a first end connected to said cable drum means, said cable means extending over said sheave means and thence downwardly and terminating in a second end;
said cable means being wrapped around said drum means in a first direction and said curtain means being wrapped around said elongated body in a second direction opposite from said first direction;
said sealing member being movable downwardly from a storage position above said access opening to a sealing position spaced below said top of said access opening in response to upward movement of said second end of said cable means, whereby said sealing member will rotate in a first rotational direction during said movement so as to cause unrolling of said curtain member from said elongated body while at the same time causing said cable means to wind up around said drum means;
said sealing member being movable upwardly from said sealing position to said storage position in response to downward movement of said second end of said cable means whereby said sealing member will rotate in a second rotational direction opposite from said first rotational direction so as to cause rolling up of said curtain member around said elongated body while at the same time causing unwinding of said cable means from around said drum means;
said top sealing member being an elongated horizontally positioned cylindrical member;
at least one strap member having a first end attached to said top sealing member and having an opposite second end extending downwardly and freely from said top sealing member into said loading access opening.

4,554,769
ADHESIVE-BACKED TILE PANELS AND METHOD FOR INSTALLATION THEREOF
Morizumi Fujii, Nagoya; Hirofumi Kakimoto, and Shinji Fujino, both of Fukuyama, all of Japan, assignors to Ina Seito Co., Ltd., Tokoname, Japan
Filed Mar. 24, 1983, Ser. No. 478,413
Int. Cl.⁴ E04F *13/08*
U.S. Cl. 52—173 R **11 Claims**



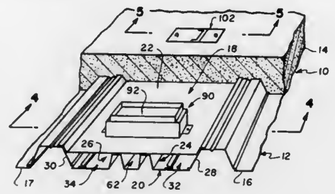
1. A prefabricated title panel having side dimensions of about 300 mm or more which consists essentially of a substrate sheet composed of a core nonwoven fabric and a heat-softening-adherent polymer-modified asphalt material applied to both surfaces of the fabric, the thickness of the substrate sheet being about 0.5 to about 3 mm; an adhesive layer having convex and concave stripe portions with gaps therebetween comprising a heat-melting adhesive which is not flowable but sticky at an ambient temperature in the form of stripes adhered to one surface of the adherent material of the substrate sheet, said convex and concave stripe portions having such a thickness and being arranged at such an interval that the panel can be bonded firmly to a substrate board and air present between the back surface of the panel and a substrate board upon installation thereof can be purged through the gaps between the convex portions and the concave portions of the adhesive layer, an area coverage ratio of the convex stripes being about 30% to about 70%, the width and interval of the stripes being in the range of about 2 to about 8 mm, the convex stripes having a thickness of about 0.5 to about 3 mm; said adhesive layer being protected by a release sheet; and a multiplicity of ceramic or porcelain tiles arranged regularly and secured by heating to the other surface of the adherent material of the substrate sheet.

4,554,770
HORIZONTAL SLIDING WINDOW WITH REMOVABLE FIXED SASH
Dennis F. Anders, Lexington, N.C., assignor to National Gypsum Company, Dallas, Tex.
Filed Jan. 11, 1984, Ser. No. 569,998
Int. Cl.⁴ E05D *15/08*
U.S. Cl. 52—207 **20 Claims**



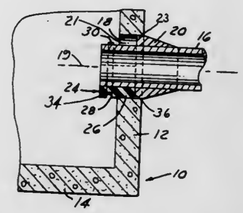
1. A horizontal sliding window comprising a frame sill member, a frame head member and at least two removable, normally side by side, spaced, parallel sashes, said two sashes being mounted in parallel channels in said frame sill member and said frame head member, said frame sill member and said frame head member each having a rigid strip disposed therein which separates said parallel channels in said frame members, said two sashes being removable from respective channels in said frame members by raising of the said sashes out of said frame sill member channels and further up into said frame head member channels followed by tilting of said sashes and lowering of said sashes out of said frame head member channels, said window further comprising an intermediate interlock rail disposed in a plane between said spaced parallel sashes, said interlock rail sealingly engaging two spaced parallel sashes when said two sashes are in normal, side by side positions, said interlock rail having sealing elements on two opposed sides which sealingly engage said two sashes in a sealing relationship which extends completely from said rigid strip in said frame sill member to said rigid strip in said frame head member.

4,554,771
FIELD-ASSEMBLED CELLULAR DECKING UNIT
Ashok K. Marwah, Pittsburgh, and Charles H. Norris, Jr., Wexford, both of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.
Filed Jul. 2, 1984, Ser. No. 626,887
Int. Cl.⁴ H02G *3/28;* **E04B** *5/48*
U.S. Cl. 52—221 **11 Claims**



1. A cellular decking unit comprising:
a lower metal sheet having at least one upwardly projecting rib presenting opposite rib faces, and lower sheet portions extending from said rib faces and terminating in marginal connectors; and
an upper metal sheet engaged with said rib and having upper sheet portions cooperating with said opposite faces and said lower sheet portions to define laterally open channels, each of said channels being adapted to receive and be closed by a side portion of an adjacent decking unit to form an enclosed raceway.

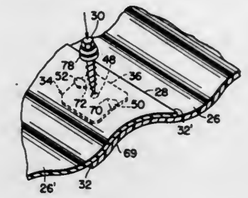
4,554,772
BOOT GUARD FOR SEWER MANHOLE CONSTRUCTION
Gary F. Labenz, 11938 Big Lake Rd., Davisburg, Mich. 48019
Filed Feb. 8, 1984, Ser. No. 578,157
Int. Cl.⁴ E04B *1/62*
U.S. Cl. 52—396 **1 Claim**



1. In a sewer manhole construction including a cylindrical bottom section adapted for placement within the ground at a predetermined depth, said bottom section having a vertically extending side wall and a horizontal bottom wall, an opening having a horizontal axis extending through the side wall and being vertically spaced from said bottom wall, and at least one sewer pipe having an end extending into and through said opening in said vertical side wall, said end of the sewer pipe having the same horizontal axis as said opening and being spaced from the wall surface defining the opening by an annular recess, a flexible annular seal surrounding the sewer pipe and including an annular rim portion which extends into said annular recess adjacent where the end of the sewer pipe enters the opening in the side wall and seals said opening, the improvement comprising a boot guard fitted onto said end of the sewer pipe, said boot guard including a generally half-circle, annular base portion having an undercut peripheral groove therein and a pair of first and second end surfaces, said groove being located near said first end surface, said base portion extending into said annular recess with said second end surface abutting said flexible seal, said guard including a flexible securing band located in said undercut groove and wrapped around the upper periphery of said end of the sewer pipe for holding said base portion in place ins aid side wall prior to concrete being poured into the bottom section of said manhole construction, said boot guard when concrete is poured into said bottom section preventing contact between the concrete and said flexible seal and also preventing contact between the concrete and said end of the sewer pipe for maintaining the flexibility of said flexible seal and permitting easier removal of said sewer pipe for repair or replacement.

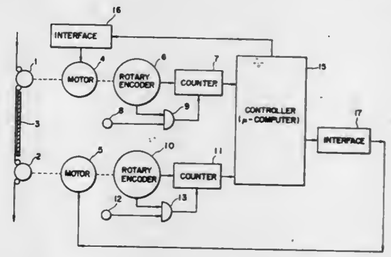
4,554,773
DEVICE AND METHOD FOR SECURING OVERLAPPING CORRUGATED SHEETS
John L. Conley, 3870 Chino Ave., Chino, Calif. 91710
Filed Apr. 30, 1984, Ser. No. 605,295
Int. Cl.⁴ E04B *1/74*
U.S. Cl. 52—521 **17 Claims**

1. Fastening means for joining the edges of corrugated sheets together, said means include:
a fastener plate having:
an arcuate body with:
a first edge;
a second opposite edge; and
a screw receiving orifice positioned between said first and second edges; and
first and second prongs extending at right angles to said



arcuate body from said first and second edges respectively, each prong having:
a piercing point extending away from said arcuate body;
a central portion; and
a connecting portion attaching said central portion to said edge, said connecting portion being narrower than said central portion.

4,554,774
SYSTEM FOR SYNCHRONIZING TWO OR MORE PROCESS UNITS
Yoshikazu Miyashita; Shiaru Muranaka, and Hideo Tanaka, all of Kanazawa, Japan, assignors to Shibuya Kogyo Co., Ltd., Ishikawa, Japan
Filed Apr. 25, 1984, Ser. No. 603,538
Claims priority, application Japan, Apr. 30, 1983, 58-76985; Apr. 30, 1983, 58-76986
Int. Cl.⁴ B65B *57/20*
U.S. Cl. 53—52 **6 Claims**



1. A system for synchronizing the operation of at least first and second process units, comprising:
first driving means for driving said first process unit;
second driving means for driving said second process unit;
first detecting means operatively coupled to said first process unit and said first driving means for supplying a first signal by detecting timing of the operation of said first process unit;
second detecting means operatively coupled to said second process unit and said second driving means for supplying a second signal by detecting timing of operation of said second process unit; and
control means responsive to said first and second signals for controlling the operating conditions of said first and second driving means thereby keeping said first and second process units synchronized,
wherein each of said first and second detecting means includes a rotary encoder driven to rotate by the corresponding motor, a counter for counting the number of step

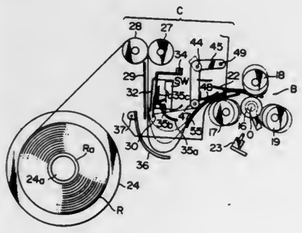
pulses generated by said rotary encoder, a detector for supplying a detection signal upon detection of completion of a unit operation at the corresponding process unit, and an AND gate having its first input connected to receive a zero point pulse generated by said rotary encoder, its second input connected to receive said detection signal and its output connected to a reset terminal of said counter, whereby said counter has its output connected to said control means.

4,554,775

METHOD OF FEEDING A SPECIFIC LENGTH OF WRAPPING PAPER FOR A COIN PACKAGING MACHINE AND DEVICE FOR CARRYING OUT SAID METHOD

Kazuto Asami; Takao Baba; Minoru Nakamura, and Mitsuaki Tanaka, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Japan

Filed Nov. 12, 1982, Ser. No. 441,126
Claims priority, application Japan, Nov. 12, 1981, 56-181392
Int. Cl.⁴ B65B *11/04*
U.S. Cl. 53—64 **18 Claims**



1. A method of feeding wrapping paper, drawn from a roll of wrapping paper, to a packaging section in a coin packaging machine, the packaging section including a plurality of wrapping rollers, cutting a strip of the wrapping paper in accordance with the diameter of coins selected for packaging to provide a length of the wrapping paper sufficient to assure packaging of the selected coins, and packaging the selected coins, said method comprising the steps of:

(a) activating feed rollers to feed the leading edge of the wrapping paper past a cutting knife and past a guide passage which comprises a movable guide wall along which the paper slides to the packaging section;

(b) retaining the wrapping paper in a predetermined position along the guide passage;

(c) displacing the movable guide wall from a guide position to a second position to elongate the guide passage for the web while activating the feed rollers to feed an additional amount of the wrapping paper in accordance with the diameter of the selected coins to provide the sufficient length of the wrapping paper; and subsequently

(d) holding the leading edge of the wrapping paper firmly between the outer cylindrical surface of a stack of the selected coins and the wrapping rollers; and

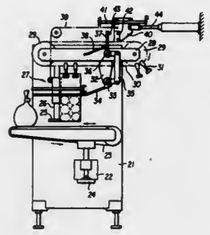
(e) activating the wrapping rollers to wrap the wrapping paper about the stack of the selected coins, pulling the wrapping paper against the cutting knife to cut off the sufficient length of the wrapping paper, thereby packaging the selected coins.

4,554,776

PACKAGE BAG BINDING APPARATUS

Hajime Chikatani, Hachioji, Japan, assignor to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 467,172
Claims priority, application Japan, Feb. 19, 1982, 57-25657; Aug. 7, 1982, 57-137543
Int. Cl.⁴ B65B *57/00*
U.S. Cl. 53—76 **2 Claims**



1. A package bag binding apparatus for binding openings of package bags filled with packages, comprising:

a frame;

means supported by said frame for binding an opening of a package bag;

means supported by said frame for conveying package bags to said means for binding;

means supported by said frame for detecting a filling level of a package bag; and

means responsive to said means for detecting, and operatively connected to said means for binding, for selectively vertically moving said means for bindng to a vertical filling position for filling a package bag having a detected filling level; and

means operatively connected to said means for binding for lifting said means for binding to a lifted position and holding said means for binding in said lifted position,

wherein said means for vertically moving comprise:

(a) means responsive to said means for detecting for releasing said means for binding from said lifted position,

(b) means for lowering said means for binding, and

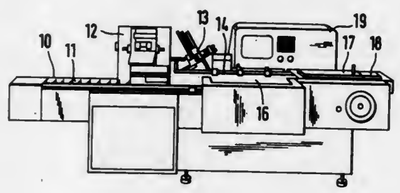
(c) means for stopping said means for binding at said filling position.

4,554,777

CONVERTIBLE-FORMAT PACKAGING MACHINE

Josef Denk, Waiblingen; Walter Dietrich, Weinstadt, and Otto Weller, Waiblingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,624
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339924
Int. Cl.⁴ B65B *59/00*
U.S. Cl. 53—201 **7 Claims**



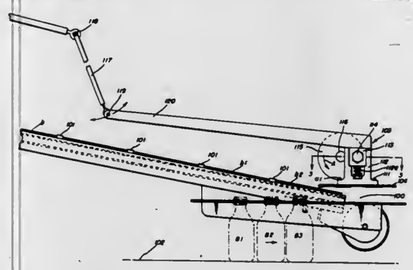
1. A packaging machine having devices for conveying, shaping and handling the packages, and for delivering the products to be packaged in which structural parts which are displaceable with set screws and adjustable to various formats of products and packages are provided at a plurality of change-over locations, characterized in that said set screws each have an identical coupling part arranged to receive a mobile drive mechanism, said mobile drive mechanism further including a coupling counterpart which can be coupled with said set screws, and further that said mobile drive mechanism can be connected with a control unit, in which adjustment values of various package formats are stored for the various structural parts.

4,554,778

PACKAGING MACHINE AND METHOD

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 1, 1984, Ser. No. 636,831
Int. Cl.⁴ B65B *21/24*
U.S. Cl. 53—398 **12 Claims**



1. A machine for packaging a group of bottles in a wrap around carrier blank having a top wall, side walls and bottom lap panels, said top wall having apertures formed therein for receiving the necks of said bottles, said machine comprising means for continuously moving the bottle group along a predetermined path, continuously movable chain means for continusly moving a carrier blank above said predetermined path in downwardly converging relation therewith and into a position immediately above the bottle group, and presser means disposed above the bottle group and including a rotatable shaft whose axis is substantially normal to said predetermined path and a crank fixedly secured to said shaft, the end of said crank remote from said shaft being continuously movable in a circular path, said presser means also including blank engaging means movable downwardly and forwardly in the direction of movement of the bottle group and of the blank during the lower part of its path of movement for engaging and pressing the blank downwardly to cause said apertures to evelope the bottle necks while the bottle group and blank are moved continuously along said predetermined path.

4,554,779

MACHINE FOR STRAPPING PACKAGES AND THE LIKE

Charles Fischer, Wohlen, Switzerland, assignor to Strapex AG, Wohlen, Switzerland

Filed Jun. 19, 1984, Ser. No. 622,290
Claims priority, application Switzerland, Jun. 21, 1983, 3386/83
Int. Cl.⁴ B65B *13/10*
U.S. Cl. 53—589 **15 Claims**

1. A machine for strapping packages with a ligature in the form of a strapping band having a band starting portion, comprising:

a strapping tunnel for receiving the package which is to be tied with the strapping band;

an endless belt movable around said package along a predetermined path;

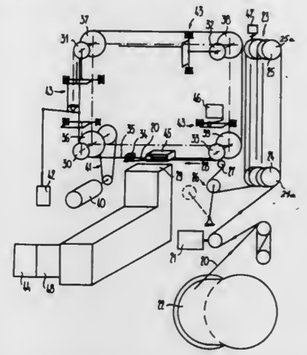
means for continuously moving said belt around the package;

a carriage supported by said endless belt when engaged therewith, a strapping band clamp mounted on said carriage to clamp the band starting portion;

the carriage being moveable along said predetermined path of travel in order to guide the band starting portion around the package for forming a band loop;

a strapping band-supply roll for supplying the strapping band;

band holder means moveable so as to protrude into a plane containing the band loop and moveable out of said plane in order to selectively hold the band loop and to release the same so as to encircle the package;



intermediate storge means containing a return storage capacity for taking-up band slack arranged between the strapping band-supply roll and the path of travel;

a clamping device for fixedly retaining the ends of the strapping band which has been laid about the package;

a releasable coupling device for uncoupling the carriage from the continuously revolving belt;

an actuation device for actuating the releasable coupling device;

a closing device for the strapping band to interconnect the ends of the strap;

said actuation device being arranged at the region of the clamping and closing devices; and

a positioning device for driving and positioning the uncoupled carriage in adjacent to the clamping and closing device.

4,554,780

POWER TRANSMISSION APPARATUS IN MOBILE TYPE LAWN MOWER

Hiroshi Umeno, Higashikurume; Gunji Saito, Tokorozawa, and Morimasa Hayashida, Kodaira, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 543,731
Claims priority, application Japan, Oct. 20, 1982, 57-157488[U]
Int. Cl.⁴ A01D *53/00*
U.S. Cl. 56—11.8 **9 Claims**

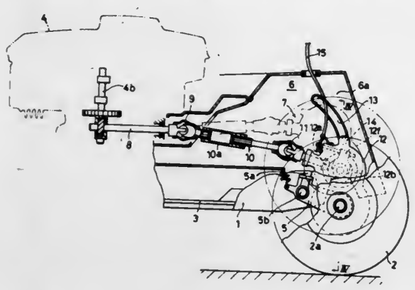
1. A power transmission apparatus for a power driven lawn mower, said mower having a housing, an engine mounted upon said housing, a mowing blade coupled to said engine, and wheel means comprising a shaft and a pair of wheels mounted on said shaft, said wheel means being swingably mounted on said housing, whereby the swinging of the wheel means adjusts the distance of said housing from the surface on which the wheels rest, said power transmission apparatus comprising:

(a) a power transmission chamber formed on one side of a portion of said housing, having a guide means in the form

of an arcuate groove integral with a side portion of said transmission chamber;

(b) a transmission mechanism comprising an input shaft means coupled to said engine, a first gear means coupled to said input shaft, and a second gear means coupled to said first gear means and to said shaft of said wheel means;

(c) a reduction gear means casing for housing said transmission mechanism, said casing comprising an upper portion containing said first gear means and receiving said input



shaft, a lower portion containing said second gear means and receiving said shaft of said wheel means, and a guide pin extending laterally from said top portion and engagable in said guide means; and

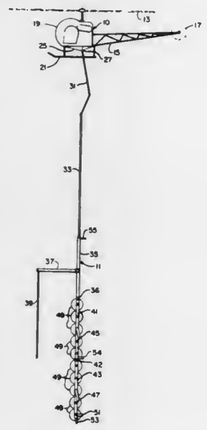
(d) a driving shaft means, connectable to said input shaft of said transmission at one end and to a rotatable output means of said engine at the opposite end, having means for accommodating changes in the distance between said engine and said input shaft.

4,554,781

AIRBORNE TREE TRIMMER

Randall Rogers, deceased, late of Pea Ridge, Ark. (by Mary L. Rogers, administrator), assignor to Aerial Solutions, Inc., New Roads, La.

Filed Jun. 25, 1984, Ser. No. 623,882
Int. Cl.⁴ A01D *55/18*
U.S. Cl. 56—235 **23 Claims**



1. Airborne tree trimmer apparatus for installation on a helicopter or the like comprising

a power source carried by said helicopter,

boom mounting structure attachable to the underside of said helicopter,

a boom pivotally mounted thereto about at least one horizontal pivot axis, saaid boom being restrained from rotation about a vertical axis,

a plurality of wood cutting means mounted on said boom,

at least one motor attached to said boom and connected to drive said cutting means, and

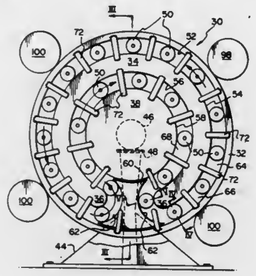
power transmission means connected between said power source and said motor.

4,554,782

MANUFACTURE OF TELECOMMUNICATIONS CABLE CORE UNITS

John N. Garner, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 3, 1984, Ser. No. 637,586
Int. Cl.⁴ H01B *11/04;* **D01H** *1/04;* **D07B** *1/06, 3/12*
U.S. Cl. 57—66 **2 Claims**



1. Apparatus for forming a core unit from telecommunications conductor units, each formed from twisted together insulated conductors and in which the relative positions of the conductor units are changed along the core unit, the apparatus comprising, in order downstream along a feedpath for the conductor units:

guide means for the conductor units to prevent them from being twisted together;

position changing means for conductor units comprising an arcuate member surrounded by a rotatable annulus and an inner member, the position changing means defining an endless guide channel which extends transversely of the feedpath in a plurality of directions, the guide channel having an arcuate outer channel portion defined between the arcuate member and the annulus and an inner channel portion defined between the arcuate member and the inner member, the two portions subtending an angle of less than 360° around the axis of the annulus and interconnected at their ends by interconnecting channel portions extending around the ends of the arcuate member and defined between the arcuate member and a spacing member, the spacing member and inner member being mounted in position to a fixed support, the position changing means also comprising guides for conductor units held in laterally spaced positions in the channel, said guides maintaining the relative positions of the annulus, arcuate member, inner member and spacing member, and means to move the guides along the channel in their spaced positions for a certain distance alternately in each direction so that the guides are moved from channel portion to channel portion with guides in one channel portion changing in their positional relationship to those in the other, said guide moving means comprising a chain and sprocket drive, the chain being continuous and extending around the inner surface of the annulus, around the interconnecting channel portions and then around the inner member, the guide means also comprising a fixed chain provided around the circumference of the arcuate member, and each guide is provided with a sprocket of the guide moving means, which sprocket engages with both chains, and means is provided to drivably rotate the annulus; and

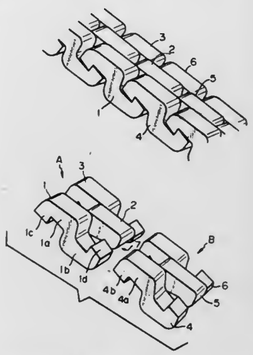
a core unit forming and take-up means to draw the conductor units together to form the core unit.

4,554,783

LINK FOR WATCH BAND AND BRACELET

Eisuke Yokoyama, Tokyo, Japan, assignor to Kawaguchiko Seimitsu Company Limited, Yamanashi, Japan

Filed Jul. 11, 1983, Ser. No. 512,706
Claims priority, application Japan, Jul. 15, 1982, 57-106401[U]; Jul. 17, 1982, 57-108318[U]
Int. Cl.⁴ F16G *13/00*
U.S. Cl. 59—82 **6 Claims**



1. A link for a watch band and bracelet, comprising:

a plurality of link elements each having a substantially S-shaped configuration and including a face arm facing a face of said link and having a hook provided at the end portion thereof, a back arm facing a back of said link and having a hook provided at the end portion thereof and an intermediate connection portion provided between said face and back arms, wherein said link elements are joined together at said intermediate connecting portions of respective link elements with at least one of said link elements being disposed in a direction opposite to that of the other elements, and wherein said hooks of said face and back arms of said link elements are respectively engaged to hooks of back and face arms of adjacent link elements which are included in adjacent links and are longitudinally aligned in line with said link elements of said link for connecting said link and said adjacent links.

4,554,784

EMERGENCY POWER UNIT AND METHOD

Francis K. Weigand, Torrance, and William H. Nickel, Rancho Palos Verdes, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 17, 1983, Ser. No. 524,048
Int. Cl.⁴ F02C *3/20;* **F01N** *3/15*
U.S. Cl. 60—39.02 **14 Claims**

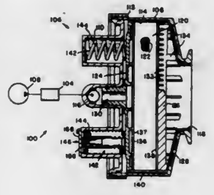
4. A method of generating a controlled, emergency flow of motive gas, comprising:

producing a pressurized, liquid feed flow;

reacting said feed flow with a confined bed of granular catalyst material to generate said emergency flow of motive gas, said feed flow tending to induce vibration of said bed of granular material; and

spring loading a container holding the bed in a confined space in one direction toward a fixed support, the spring loading tending to enhance vibration of said bed;

inhibiting vibration of said bed induced by said feed flow by securing said container against motion in a direction opposing said one direction without impairing said spring loading in said one direction; and



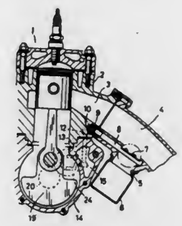
automatically compensating for movement of said container in said one direction to continue prevention of motion of said container in said opposing direction.

4,554,785

ENGINE EXHAUST APPARATUS

Ikuo Oike, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,426
Claims priority, application Japan, Dec. 24, 1982, 57-225925; Dec. 24, 1982, 57-195158[U]
Int. Cl.⁴ F02B *27/02*
U.S. Cl. 60—314 **2 Claims**



1. Exhaust apparatus for a vehicle engine, comprising a sub-chamber connected by a connecting line to an engine exhaust line, said connecting line being located part way along said exhaust line and having thereon an opening and closing valve connected to a motive power source which is responsive to the number of revolutions of said engine and which causes said valve to open and close in correspondence with the number of said revolutions, wherein said motive power source is connected to a shaft mounting said valve by elements inserted through the outer walls of a cylinder of said engine, said exhaust line, and a crank case.

4,554,786

VACUUM SOURCE DEVICE FOR VACUUM BOOSTER FOR VEHICLES

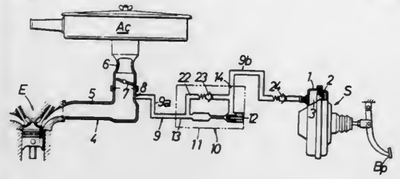
Hiroo Takeuchi, Asashina, and Kazuo Miyazaki, Shiki, both of Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Nagano and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Sep. 16, 1983, Ser. No. 533,023

Claims priority, application Japan, Sep. 16, 1982, 57-161370; Jul. 28, 1983, 58-138443

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60—397 **9 Claims**



1. A vacuum source device including dual check valves in combination with an intake system for a vacuum booster for vehicles said vacuum booster including a shell defining a vacuum chamber, said vacuum source device comprising:

(a) an air ejector including a body having a front surface, a rear surface and a side surface;

(b) an air inlet at the front surface of said body with an air inlet communicating with the atmosphere;

(c) an air outlet on the rear surface to lead to an opposed vacuum pick up port opening to the portion of the engine intake system downstream of a throttle valve;

(d) a suction port formed on the side surface and communicating with the vacuum chamber of the vacuum booster;

(e) a pressure reduction chamber communicating with said air inlet and also communicating with said suction port via a passage and an outlet chamber communicating with said air outlet;

(f) a diffuser connecting between said reduction chamber and said outlet chamber;

(g) a by-pass formed in said body for connecting between said outlet chamber and said suction port while detouring said diffuser of the air ejector;

(h) a first check valve disposed in said by-pass passage;

(i) a second check valve disposed in a valve chamber formed at a juncture between said suction port and said by-pass passage, and being in series flow relationship with said first check valve whereby said air ejector and said first and second check valves together constitute a unit, said suction port serves as an opening of said valve chamber for accommodating said second check valve and said unit is integrally attached to a front surface of the booster shell such that said opening meets an opening formed in the booster shell and that the portion of the booster shell surrounding the booster opening serves as a valve seat for the second check valve.

4,554,787

SUPERCHARGED INTERNAL COMBUSTION ENGINE

Camille Wilhelm, 8, rue du Ruisseau Bleu, 67100 Strasbourg-Neudorf; Camille Wilhelm, 107, rue des Pres, 67380 Lingolsheim, and Robert Wilhelm, 7, rue de Rangen, 67200 Strasbourg-Cronenbourg, all of France

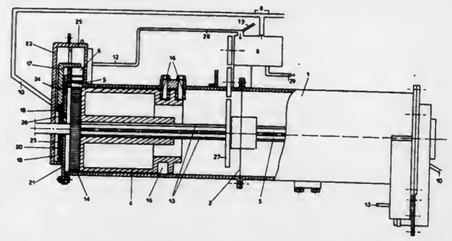
Filed Jun. 3, 1982, Ser. No. 384,658

Claims priority, application France, Jun. 3, 1981, 81 11121; Nov. 23, 1981, 81 22013

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—605 **8 Claims**

1. A supercharged internal combustion engine comprising a cylinder formed of two identical portions assembled together symmetrically about an axis perpendicular to the longitudinal axis of said cylinder portions, an engine shaft extending along said axis, two reciprocating rotating pistons in the cylinder on the engine shaft and slidably but non-rotatably mounted on the engine shaft, an explosion chamber disposed at each end of the cylinder and communicating with the cylinder, carburetor means for injecting a combustible mixture into each explosion



chamber, a turbo-compressor driven by the engine shaft and having air outlets connected to air inlets at each end of the cylinder, and means responsive to explosions in the explosion chamber to rotate the pistons in said cylinder thereby to rotate said engine shaft.

4,554,788

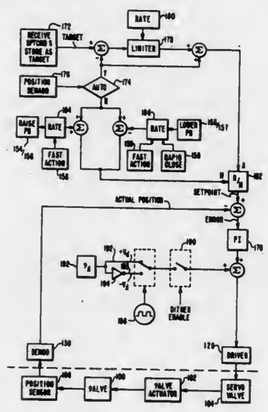
TURBINE VALVE CONTROL SYSTEM

Eddie Y. Hwang, Winter Park, Fla.; Andras I. Szabo, Murrysville, Pa., and Wu-shi Shung, South Windsor, Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 564,062

Int. Cl.⁴ F01K *13/00*

U.S. Cl. 60—646 **17 Claims**



7. An improved steam inlet valve control system for a steam turbine, comprising

(A) control means including a controller for providing a control signal to govern the opening and closing of said valve;

(B) means for providing a valve opening setpoint signal;

(C) sensing means operable to provide a position signal indicative of the actual position of said valve;

(D) said control means being operable to provide said control signal as a function of the difference between said setpoint signal and said position signal; and

(E) means for superimposing an oscillatory signal on said control signal if said difference exceeds a first predetermined value.

4,554,789

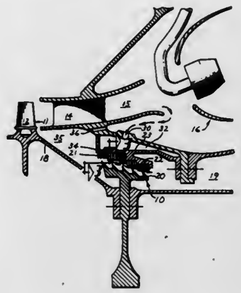
SEAL COOLING APPARATUS

Phillip D. Napoli, Westchester, and William R. Patterson, Maineville, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 224,877, Jan. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 15,578, Feb. 26, 1979, abandoned. This application Apr. 2, 1984, Ser. No. 594,956

Int. Cl.⁴ F01D *25/12, 11/04*

U.S. Cl. 60—751 **4 Claims**



1. An improved gas turbine engine comprising a compressor, a compressor diffuser, and a combustor all in serial flow relation, a pressure seal downstream of said compressor and a cavity forward of said seal in flow communication with compressor discharge air and radially surrounding a portion of a compressor rotor, said cavity being located upstream of an outlet to said compressor diffuser, said pressure seal including an outer stator, wherein the improvement comprises:

means for deriving conditioning air from air discharged from the compressor diffuser and directing said conditioning air onto said stator to improve the thermal response of said stator; and

means to inject a substantially constant portion of said conditioning air into said cavity to purge the region and prevent zero airflow conditions during engine operation for the purpose of discouraging overheating of a portion of the compressor rotor;

wherein a portion of said conditioning air from said cavity is directed to flow through and thereby cool said seal.

4,554,790

MAGNETIC REFRIGERATING APPARATUS

Hideki Nakagome, Yokohama, and Satoshi Yasuda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 13, 1985, Ser. No. 701,303

Claims priority, application Japan, Feb. 13, 1984, 59-22769

Int. Cl.⁴ F25B *21/02*

U.S. Cl. 62—3 **10 Claims**

1. A magnetic refrigerating apparatus comprising:

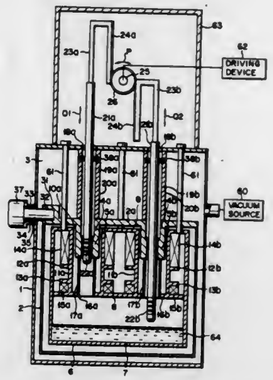
magnetic field generating means for generating a magnetic field;

holding means for holding an object to be cooled;

a heat absorber including a working substance adapted to generate heat when located inside the magnetic field generated by the magnetic field generating means and to absorb heat when located outside the magnetic field; and

driving means for alternately transferring the heat absorber between a first position where the heat absorber is located inside the magnetic field and a second position where the heat absorber is located outside the magnetic field, whereby the object to be cooled is cooled by the heat absorber when the heat absorber is in the second position, the improvement in which

said heat absorber includes a plurality of working substance pieces arranged at regular intervals along the direction of transfer thereof, and a plurality of adiabatic spacers each



interposed between adjacent pieces to prevent direct contact between the pieces.

4,554,791

APPARATUS FOR CONVEYING LIQUIDS

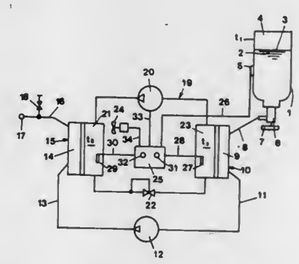
Gustav A. Johansson, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Dec. 30, 1983, Ser. No. 567,416

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300297

Int. Cl.⁴ F17C *13/00*

U.S. Cl. 62—55 **11 Claims**



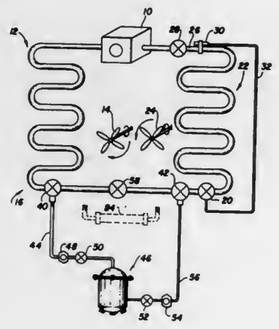
1. Apparatus for conveying liquids of which the vapour pressure is above atmospheric at ambient temperature from a storage container to a delivery point, comprising, a storage container, pumping means, fluid conduit means between said storage container and said pumping means having a heat exchange section, said heat exchange section including cooling passage means for receiving a cooling medium, cooling apparatus for supplying a cooling medium to said cooling passage means, temperature sensor means for sensing temperatures of said storage container and said cooling passage means of said heat exchange section, and temperature regulating apparatus responsive to said temperature sensor means for operating said cooling apparatus to maintain the temperature of fluid in said cooling passage means of said heat exchange section a predetermined amount cooler than said storage container.

4,554,792

METHOD AND APPARATUS FOR REHABILITATING REFRIGERANT

Allen L. Margulefsky, 1038 Peninsula Blvd., Woodmere, N.Y. 11598, and James F. Lutz, 13 John La., Levittown, N.Y. 11756

Division of Ser. No. 271,447, Jul. 8, 1981, Pat. No. 4,480,446. This application Oct. 29, 1984, Ser. No. 665,861
Int. Cl.⁴ F25B *45/00*
U.S. Cl. 62—77 **8 Claims**



1. A method of reconditioning contaminated refrigerant in a refrigeration system of the type having an evaporator, a condensor, and a compressor, the method comprising the steps of:
connecting a first valve in the refrigerant liquid line at the outlet of the condensor;
connecting a filter and tank assembly to the first valve;
causing the contaminated refrigerant to flow into the filter and tank assembly;
retaining the refrigerant in the filter and tank assembly;
interrupting the refrigerant liquid line connecting the condensor coil and the evaporator coil;
performing all necessary repairs and replacements in the refrigeration system;
connecting a second valve in the refrigerant liquid line at the inlet to the evaporator;
connecting the second valve to the filter and tank assembly;
opening the second valve and causing the refrigerant to flow into the system;
opening the first valve;
operating the system for a selected period of time to cause the refrigerant to flow through the filter in the filter tank and assembly, whereby the refrigerant is cleaned;
disconnecting the filter and tank assembly from the first and second valves;
making a fluid connection between the outlet line of the condensor coil and the inlet of the evaporator; and
forming a partial vacuum in the filter and tank assembly prior to connecting it to the output line of the condensor coil.

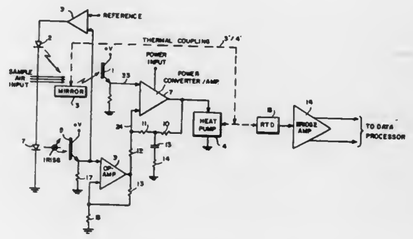
4,554,793

CONTROLLED POWER CONVERTER FOR THERMOELECTRIC HEAT PUMP DRIVE

John C. Harding, Jr., Framingham, Mass., assignor to General Eastern Instruments Corporation, Watertown, Mass.

Filed Jun. 9, 1983, Ser. No. 502,475
Int. Cl.⁴ G10N *31/00*
U.S. Cl. 62—126 **15 Claims**

1. A controlled power conversion system for providing power to a thermoelectric heat pump for controlling the temperature of a device, said power conversion system comprising
means for supplying DC input power;
means responsive to the temperature of said device for providing a control signal representative of changes in the temperature thereof;
pulse width modulation/switching means responsive to said DC input power and to said control signal for providing periodic pulses of said DC input power having a duty cycle controllable in accordance with said control signal;



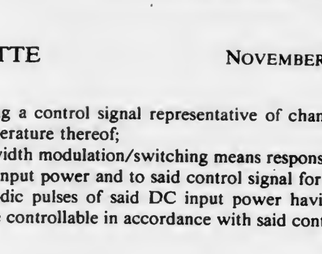
means for providing time averaging of said input power; and
energy storage means responsive to said periodic pulses of DC input power for providing a controllable time averaged DC power output to said heat pump.

4,554,794

CONDENSATE RECEPTACLE SUPPORT FOR DEHUMIDIFIER

Aman U. Khan, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 20, 1984, Ser. No. 622,867
Int. Cl.⁴ F25D *21/00*
U.S. Cl. 62—150 **16 Claims**



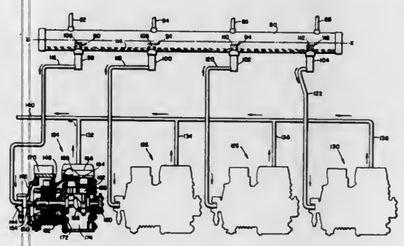
1. An improved support for a condensate accumulating receptacle associated with an apparatus that discharges a liquid during operation and has a shut-off switch to interrupt its operation, said receptacle having a top portion and an opening for admitting condensate from the apparatus, said support comprising:
pivot means associated with the receptacle for guiding pivoting movement of said receptacle relative to said apparatus; and
spring clip means on said apparatus engaging said receptacle top portion to at least partially support said receptacle and simultaneously provide controlled resistance to said pivoting movement,
said receptacle pivoting in response to a buildup of condensate in said receptacle and upon pivoting a predetermined amount with said condensate at a desired level causing said shut-off switch to interrupt operation of said apparatus.

4,554,795

COMPRESSOR OIL RETURN SYSTEM FOR REFRIGERATION APPARATUS AND METHOD

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Nov. 14, 1983, Ser. No. 551,430
Int. Cl.⁴ F25B *43/02*
U.S. Cl. 62—175 **18 Claims**



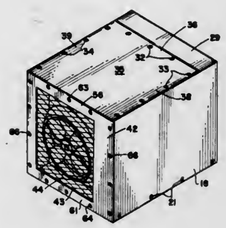
1. In a refrigeration system having multiple compressors for compressing a refrigerant fluid, an oil return system for conveying oil entrained in circulating refrigerant fluid back to the compressors, comprising
a suction manifold common to the compressors, in which the entrained oil is trapped;
suction lines connecting a suction port on each compressor in fluid communication with the common suction manifold; and
a plurality of oil pick-up means for drawing oil trapped in the common suction manifold into the suction line connected to any compressor that is in use and thereby operative to return the trapped oil to an operating compressor in the refrigeration system, while avoiding oil return to an inactive compressor.

4,554,796

SPLIT SYSTEM AIR CONDITIONER

James M. Stankard, Mentor, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 456,819, Jan. 10, 1983, abandoned. This application Aug. 14, 1984, Ser. No. 640,544
Int. Cl.⁴ F25B *27/66*
U.S. Cl. 62—326 **6 Claims**



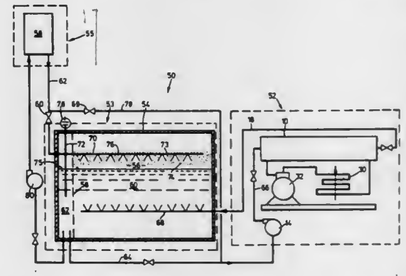
1. A convertible housing for a refrigeration compressor and condenser unit having a compressor, condenser, a motor driven fan, and a fan associated venturi member, said housing comprising a rectangular base, a pair of vertically extending parallel sidewalls extending upwardly from one pair of opposite sides of said base to the top of said unit and defining opposed vertical end wall positions therebetween, the compressor being mounted on said base, the condenser being mounted at one of said end wall positions, a top panel mounted on top of said sidewalls adjacent said condenser and extending a predetermined distance from said condenser toward the other of said end wall positions, an imperforate closure panel, and a fan panel assembly including the venturi member and the motor-driven fan both secured to the fan panel assembly, said closure panel and said fan panel assembly being interchangeably mounted on said sidewalls by removable fasteners in either of two positions, a first of said positions being horizontal on top of said sidewalls and parallel to said base, the second of said positions being the other of said end wall positions, said condenser and compressor unit having fixed exterior dimensions regardless of the relative positions of said interchangeable closure panel and fan panel assembly, said rectangular base always being the lowermost portion of said housing when the housing is in an installed, operating, position.

4,554,797

THERMAL STORAGE HEAT EXCHANGER SYSTEMS OF HEAT PUMPS

Vladimir Goldstein, 18 Killaloe Rd., Unit 4, Concord, Ontario, Canada (L4K 1C8)

Continuation-in-part of Ser. No. 459,747, Jan. 21, 1983, Pat. No. 4,480,445. This application Oct. 1, 1984, Ser. No. 656,246
Int. Cl.⁴ F25D *17/02*
U.S. Cl. 62—434 **11 Claims**



1. In a heat pump having a heat source, a heat sink and a thermal storage heat exchanger in which heat energy is cyclically accumulated and discharged by circulation of a secondary refrigerant therethrough, the improvement wherein:
(i) the secondary refrigerant is an aqueous soluation having a concentration which is below its eutetic concentration,
(ii) the heat sink is adapted to cool or super-cool the aqueous solution to generate cooled secondary refrigerant, which, when cooled is a liquid and when super-cooled, is partially frozen and contains fine ice particles in suspension,
(iii) the thermal storage heat exchanger has a storage chamber,
(iv) a first input communicating between said storage chamber and the heat sink for admitting said cooled secondary refrigerant, such that when super-cooled secondary refrigerant is admitted the ice particles will separate from the liquid phase refrigerant to form a porous ice bed and a substantially ice free liquid bath, and when the cooled liquid is admitted it will be directed into intimate contact with the ice bed in a manner such that it may pass through the pores of the porous ice bed prior to its return to the bath,
(v) a first output communicating with said storage chamber for discharging liquid phase refrigerant from said storage chamber for circulation to said heat sink and/or said heat source.

4,554,798

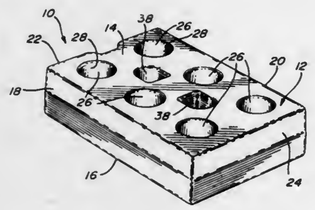
BOTTLE COOLING DEVICE

Richard D'Amour, 1625 des Merisiers, Côte Ste. Catherine, Quebec, Canada (J0L 1E0), and Ronald D'Amour, 5 Belanger, St. Constant Quebec, Canada (J0L 1X0)

Filed Feb. 14, 1984, Ser. No. 580,010
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **19 Claims**

1. A device for cooling a plurality of liquid-filled bottles, comprising a container made of a rigid pressure-expandable plastic material and having therein a refrigerant material, said

container having top and bottom surfaces and being formed with a plurality of through-holes which extend between said top and bottom surfaces and are each associated with a respective one of said bottles to be cooled, each said through-hole adapted to receive the neck of its associated bottle therein and having an inner peripheral wall with at least a surface portion



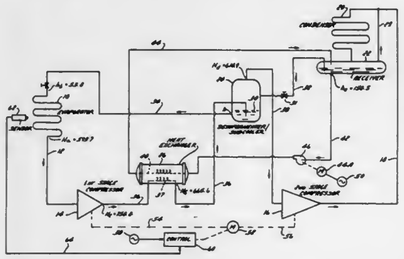
thereof adapted to rest on and in contact with an upper portion of said associated bottle for the cooling thereof, and said container being dimensioned to fit in a receptacle containing said bottles disposed in an upright position, whereby to be positioned in relationship to said bottles while resting upon only the upper portion thereof and not supported by the receptacle.

4,554,799

MULTI-STAGE GAS COMPRESSOR SYSTEM AND DESUPERHEATER MEANS THEREFOR

Francis T. Pallanch, Minneapolis, Minn., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Oct. 29, 1984, Ser. No. 665,565
Int. Cl.⁴ F25B *1/10*
U.S. Cl. 62—509 **10 Claims**



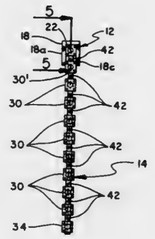
7. A refrigeration system comprising:
a first compressor stage;
an evaporator which feeds uncompressed vapor to said first compressor stage;
a condenser;
a second compressor stage which receives compressed vapor from said first stage and feeds liquid to said condenser;
a receiver which receives liquid from said condenser and ultimately feeds it to said evaporator;
and desuperheater apparatus comprising a pressure vessel and a heat exchanger to remove heat from said compressed vapor fed by said first stage to said second stage to thereby improve thermal efficiency of said system and to reduce the mass of refrigerant to be handled by said second stage;
said pressure vessel containing a bath of liquid which is supplied from said receiver and then fed to said evaporator and through which compressed vapor from said first stage is forced and cooled before being fed to said second stage along with vapor from said bath of liquid;
said heat exchanger having one side through which said compressed vapor from said first stage passes and is cooled on its way to said pressure vessel;
said heat exchanger having another side through which liquid is fed from said receiver and then returned to said receiver as a liquid/vapor mixture.

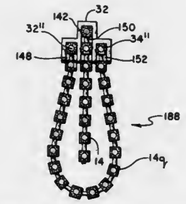
4,554,800

JEWELRY ARRANGEMENT

Richard D. Moon, 2419 Fallen Dr., Rowland Heights, Calif. 91748

Filed Nov. 3, 1983, Ser. No. 548,353
Int. Cl.⁴ A44C *25/00, 7/00*
U.S. Cl. 63—23 **13 Claims**





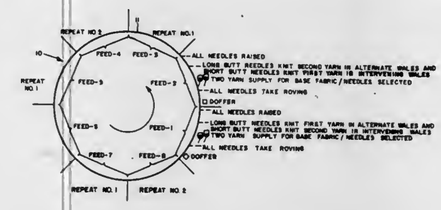
1. An improved jewelry arrangement, comprising, in combination:
a base means;
said base means having a back plate means having a first predetermined geometric configuration, and a side wall means comprising a plurality of side wall portions upstanding from said back plate means, and defining a generally "U" shape having an opening at one end thereof, and said side wall means having a second predetermined geometric configuration;
ear attaching means coupled to said back plate means and extending outwardly therefrom in a direction opposite said side wall means;
a first chain-like jewelry member, having a plurality of links, at least one end link and the next adjacent link thereto of said plurality of links each having a box-like structure means comprising a link back plate member and a link side wall member upstanding therefrom, and said link back plate member having said first predetermined geometric configuration, and said link side wall member having said second predetermined goemetric configuration;
said at least one end link coupled to said base means, and said link back plate of said one end link being adjacent said back plate means, and said link side wall of said one end link being adjacent said side wall means;
said chain-like jewelry member extending through said opening of said "U" shaped side wall means;
said back plate means of said bse means being adjacent at least a portion of said link back plate of said next adjacent link, and said side wall means of said base means being adjacent at least a portion of said link side wall of said next adjacent link;
and adhesive means for coupling said box-like structure means of said at least one end link to said base means, and at least a portion of said box-like structure means of said next adjacent link to said base means.

4,554,801

PILE FABRIC METHOD AND APPARATUS

Thomas J. Thore, Tarboro, N.C., assignor to Glenolt Mills, Inc., Tarboro, N.C.

Filed Aug. 13, 1982, Ser. No. 407,935
Int. Cl.⁴ D04B *9/14*
U.S. Cl. 66—9 B **8 Claims**



1. The method of knitting sliver high pile fabric on a circular knitting machine having a plurality of feed stations, a circle of independent selectively positionable needles and sinkers, and sliver and yarn feeds at each feed station, said circle of needles being made up of long butt needles alternating with short butt needles, comprising the steps of:
(a) providing at each feed station a sliver feeding device adapted to deliver an individual roving of sliver fibers to the needle circle to be taken by all the needles rotating past such device;
(b) providing a first and second yarn feed at each feed station, each yarn feed being adapted to feed a separate yarn to the needles after having said fibers taken thereon and being spaced from the other yarn feed; and
(c) positioning said needles at each feed station such that all needles take said roving fibers and thereafter in the direction of rotation of the needles, said needles are selected and said sinkers positioned such that in a repetitive knitting cycle:
(i) at each of selected feed stations long butt needles knit the first yarn in alternate wales with such first yarn being floated in intervening wales whereas the short butt needles knit the second yarn in intervening wales with such second yarn being floated in alternate wales;
(ii) at each of other selected feed stations long butt needles knit the second yarn in the said alternate wales with such second yarn being floated in the said intervening wales and short butt needles knit the first yarn in the said intervening wales with such first yarn being floated in said alternate wales; and
(iii) said sliver fibers are caught in each float stitch intersection in said fabric.

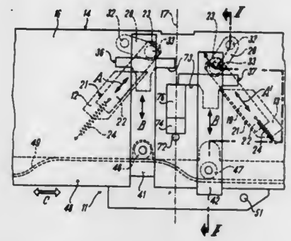
4,554,802

ADJUSTMENT OF STITCH CAMS IN A KNITTING MACHINE

Ernst Goller, Reutlingen; Jürgen Ploppa, Pfullingen, and Fritz Walker, Kusterdingen, all of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Company, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,247
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310671
Int. Cl.⁴ D04B *7/00, 15/36*
U.S. Cl. 66—71 **19 Claims**

1. In a knitting machine having a carriage movable along a needle bed through successive strokes, a pair of stitch cams adjustably supported by said carriage to trail behind a needle cam, mounted on said carriage, during alternate ones of said carriage strokes, respectively, and an adjusting mechanism including a stepping motor operative to adjust each of said stitch cams relative to said carriage at a beginning of the respective carriage stroke, the improvement comprising said



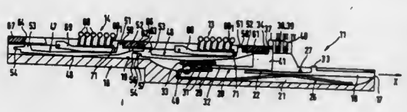
adjusting mechanism including said stepping motor also being operative during the stroke of said carriage to adjust the trailing one of said stitch cams.

4,554,803

FLAT-BED KNITTING MACHINE HAVING ELECTRO-MECHANICAL SELECTION

Hermann Schmodde, Albstadt, and Hans-Günter Haltenhof, Pfullingen, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Fed. Rep. of Germany

Filed Feb. 19, 1985, Ser. No. 702,757
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1984, 3406870
Int. Cl.⁴ D04B *15/66*
U.S. Cl. 66—75.2 **35 Claims**



1. A flat-bed knitting machine, comprising:
a plurality of needle beds in each of which longitudinally extending needle tricks are formed;
cam track means operatively associated with the needle beds;
an intermediate plate located in each needle bed and situated to move longitudinally in the needle track to control the longitudinal movement of the needle associated with the respective needle bed;
a first and second selector plate located in each needle bed; and
an electro-magnetic selecting devide operatively associated with the selector plates, wherein:
the electro-magnetic selecting device controls the location of the selector plates, as a function of the knit pattern, relative to the cam track means and their associated intermediate plate; and
the longitudinal movement of the intermediate plates extend from a nominal or first operating position immediately to one of at least three further operating positions as a function of the location of the associated selector plates.

4,554,804

APPARATUS AND METHOD FOR THE PRODUCTION OF TEXTILE SURFACE CONFIGURATIONS

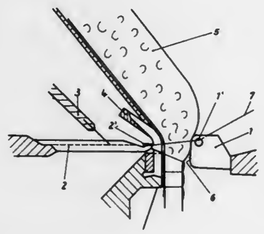
Siegfrid Ploch; Sonja Rössler; Peter Zeisberg, and Horst Heilmann, all of Karl-Marx-Stadt, German Democratic Rep., assignors to VEB Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Jan. 5, 1983, Ser. No. 455,691

Claims priority, application German Democratic Rep., Jan. 25, 1982, 236926

Int. Cl.⁴ D04B *27/02*

U.S. Cl. 66—214 **12 Claims**



1. An apparatus for producing textile surface configurations of both fleece fiber and thread, by forming stitches composed of both fiber and thread, comprising a movable guiding element, said guiding element having a contact edge on its side facing said fleece fiber, and having at least one guiding hole or eyelet for guiding said thread, together with an opposed sliding needle for forming said stitches, said sliding needle having a terminal hook portion, and means to alternately extend said sliding needle transversely through said fleece fiber in opposite directions, so that said hook portion initially engages said thread at said guiding hole or eyelet, and then, when withdrawn to the opposite side of said fleece fiber, engages and pulls both the grasped thread and grasped fibers, so as to form a combined stitch deposited as a long stitch on the side of said fleece fiber opposite to said guiding element.

4,554,805

AGITATING TYPE WASHING MACHINE

Hiroshi Hirooka, Tokyo; Yoshio Yoshida, Ayase; Toshio Fukushi, Hiratsuka; Yasuo Takeya, Yokohama, and Satoshi Nagai, Fujisawa, all of Japan, assignors to Kaisha, Kentetsuco., Ltd., Tokyo, Japan

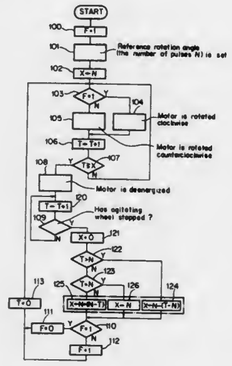
Filed Feb. 17, 1984, Ser. No. 581,155

Claims priority, application Japan, Feb. 21, 1983, 58-27458; Feb. 21, 1983, 58-27459

Int. Cl.⁴ D06F *17/08, 33/02*

U.S. Cl. 68—12 R **4 Claims**

1. An agitating type washing machine in which a washing drive motor is run in opposite directions to rotate an agitating wheel within a washing tank alternatively in one and the other directions to perform intended washing, comprising rotational angle detecting means for detecting an angle of rotation of said agitating wheel, and control means for controlling said motor in response to a detection signal from said rotational angle detecting means so that the angle of rotation of said agitating wheel by energization of said motor during running under a load is made smaller than the angle of rotation during no load running and so that changing over between running under a load and no load running is automatically effected in response to a detection signal from said rotational angle detecting means, said control means further controlling rotation of said agitating wheel to an angle equal to or less than 360 degrees



including rotation by energization of said motor and rotation by inertia whether during running under a load or no load.

4,554,806

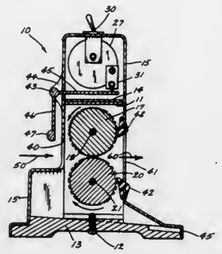
MOTOR DRIVEN MINI-WRINGER

Doris J. Hewins, 835 Oak Hills Dr., Monument, Colo. 80132

Filed Feb. 16, 1984, Ser. No. 580,738

Int. Cl.⁴ D06F *45/02, 45/24, 45/26*

U.S. Cl. 68—257 **1 Claim**



1. A motor driven wringer unit for use in combination with a kitchen counter and sink or the like comprising:

a frame;

a first roller rotatably attached to said frame;

a second roller operably rotatably attached to said frame;

means attached to said frame and to said second roller for biasing said roller towards and against said first roller;

said first and second rollers having serrated surfaces on the exterior thereof;

motor means operably connected to said first roller for selectively rotating said first roller, whereby rotation of said first roller will squeeze liquid out of a wet cloth or the like disposed between said rollers;

liquid catching means attached to said frame below said first and second rollers for catching liquids which have been forced out of a wet cloth or the like;

spout means connected to said liquid catching means for directing the flow of liquids from said liquid catching means into a sink or the like;

a housing attached to said frame, said housing including an inlet opening on one side thereof adjacent to the place where the first and second rollers touch each other; and an exit opening on the other side of the housing adjacent to the place where the first and second rollers touch each other whereby a wet cloth or the like may be placed in the inlet opening, and will be automatically squeezed through

and between the rollers and out through the exit opening of the housing, said housing enclosing said first and second rollers, said biasing means and said motor means;

base means connected to said frame for permitting said wringer unit to be set on a counter adjacent to a sink wherein the spout means will direct liquids into the sink, said base means being rigidly connected to the frame and rigidly connected to the housing, said spout means being formed in the top of said base means and extending to an outlet opening in the housing whereby liquids flowing from said spout means will flow through said outlet opening in the housing;

safety means having an abutment portion thereof disposed towards the top of and adjacent to said inlet opening for turning off said motor means and thereby the rotation of said rollers when said safety means is pushed toward said rollers whereby if a user's hand is in danger of becoming caught between said rollers, said safety means will automatically be actuated to turn off the motor and permit the user's hand to be retracted, said safety means comprising a normally closed micro-switch having an actuator thereon which opens the circuit to said motor means when said actuator is depressed, said safety means further comprising an L-shaped member pivotally attached to said housing and having one leg thereof adjacent to the micro-switch actuator whereby when said abutment portion thereof is pushed toward said rollers, said one leg of the L-shaped portion depresses said micro-switch actuator;

on/off switch means connected in the circuit to control said motor means and attached to said housing for selectively turning the motor means on or off; and

means disposed on housing adjacent to the bottom part of said exit opening having a downwardly sloping surface thereon for guiding a cloth or sponge out of said exit opening to prevent it from catching on the housing surface which forms said exit opening.

4,554,807

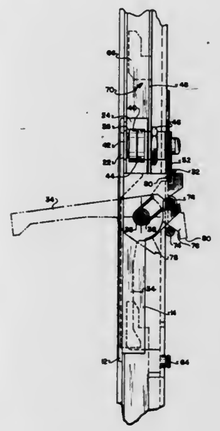
DOOR LATCH MECHANISM

Anthony H. Dolejs, Bedford Heights, Ohio, assignor to ARDAC, Inc., Eastlake, Ohio

Filed Oct. 12, 1983, Ser. No. 541,113

Int. Cl.⁴ B60R *25/02*

U.S. Cl. 70—208 **11 Claims**



1. A latch assembly, comprising:

a latch housing;

a handle received within a recess within said latch housing, said handle being pivotal about the axis;

a spring in engagement with said handle and urging said handling from said recess;

means for engaging said handle and maintaining said handle within said recess at a position whereat said handle is entirely recessed with respect to a front surface of said latch housing,

said means comprising a slot within said latch housing, securing means adapted for selective positioning in said slot; and

a lock cylinder housing connected to and extending from said latch housing, said lock cylinder housing having a cavity therein between first and second flanges for receiving a lock cylinder.

4,554,808

EXTERIOR CONTROL FOR A VEHICLE DOOR PROVIDED WITH AN ELECTRIC LATCH

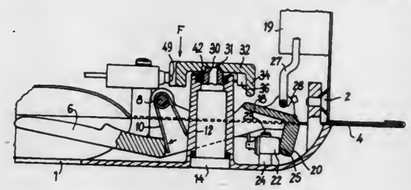
Gérard Escaravage, Valentigney, France, assignor to Aciers et Outillage Peugeot, Audincourt, France

Filed Jul. 13, 1983, Ser. No. 513,494

Claims priority, application France, Jul. 29, 1982, 82 13276

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 70—279 **6 Claims**



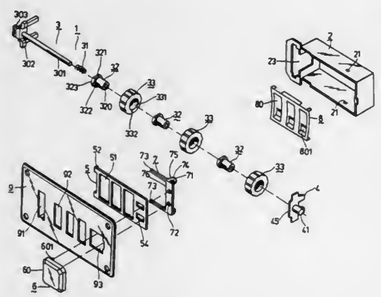
1. An exterior control structure in combination with a vehicle door, a latch for the door, electric shifting means combined with the latch for selectively opening and closing the latch, an electric circuit including switching means for electrically controlling the electric shifting means, a linkage for mechanically opening the latch in the event of breakdown of said electric circuit or electric shifting means, said control structure comprising an actuating element mounted on the door to be movable between a first position and a second position, means for resiliently returning the actuating element to said first position for closing the latch, and a rotatable barrel actuatable by a key and having an inner end, means for locking and preventing operation of the latch and cooperative with said inner end of the barrel, the actuating element having an end which defines a lug cooperative with said switching means of the electric circuit for controlling said electric shifting means for the latch and a heel cooperative with the linkage, the means for locking the latch comprising a locking cam which is fixed to the barrel and carries an abutment cooperative with the heel of the actuating element, said abutment being movable with said cam by said key between a first position in which the abutment lies in a path of movement of the heel and thereby prevents the actuating element from moving to said second position of the actuating element and a second position in which the abutment is clear of said path of movement and allows the actuating element to move to said second position of the actuating element and open the latch by means of said linkage.

4,554,809

COMBINATION LOCKING DEVICE FOR SUITCASES

Yaw Kuen Yang, 190-30 Chang Shiu Rd., Chang-Hua City, Taiwan

Filed Oct. 11, 1983, Ser. No. 540,507
Int. Cl.[4] E05B *37/02*
U.S. Cl. 70—312 **12 Claims**



1. A combination locking device comprising:
a housing body;
code latch means mounted within the housing body, the code latch means comprising: a frame head movable between a locked and an unlocked position; a spindle connected to and extending from the frame head; sleeves rotatively mounted on the spindle, each sleeve having a shank, an annular protrusion on the shank with a dent portion thereon, and a toothed portion; a wheel axially mounted about the shank of each sleeve, each wheel having a toothed portion engageable with the toothed portion of the sleeve and numbers thereon for code setting; a coupling head having a hollow stub for slidably receiving therein the free end of the spindle; and biasing means normally urging the sleeves and wheels into toothed engagement and the frame head into the locked position; and
manual operating means comprising: a latch sliding member connectable to the frame head and adapted to move the frame head against the action of the biasing means into the unlocked position; coupling means for disengaging the toothed portions of each sleeve and its corresponding wheel respectively so that the wheels can freely rotate about the shank of the sleeve to permit changing of the code setting; and push block means connected to both the latch sliding member and the coupling means so that each can be independently operated by the push block means.

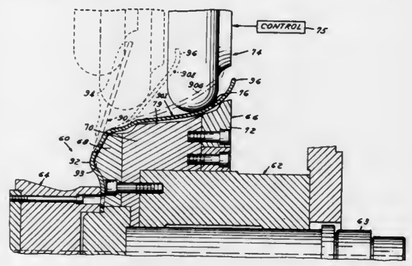
4,554,810

DRAW-SPINNING OF INTEGRAL VEHICLE WHEEL RIM AND DISC SEGMENTS

Kevin D. Jurus, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Apr. 2, 1984, Ser. No. 596,143
Int. Cl.[4] B21D *22/16*
U.S. Cl. 72—70 **9 Claims**

1. A method of forming an annular article of preselected cross sectional geometry and thickness contours from a circular blank of greater thickness than said preselected thickness contour comprising the steps of
(a) clamping the central portion of said blank in a spinning chuck having a convex mandrel surface which corresponds to said preselected geometry contour, such that the peripheral portion of said blank is spaced from said surface,
(b) draw spinning said peripheral blank portion by engaging said peripheral portion with a draw spinning roller while said peripheral portion remains spaced from and unsupported by said mandrel surface so as to obtain controlled thickness reduction in said unsupported peripheral blank portion to said preselected cross sectional thickness contour, and then



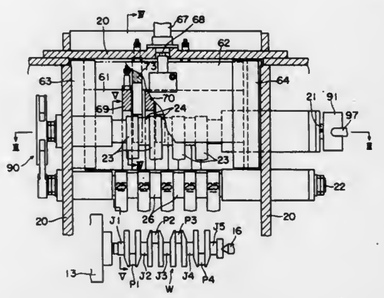
(c) spin-forming said peripheral portion against said surface with a second roller without substantially altering the thickness contour thereof so as to obtain said preselected geometry contour.

4,554,811

CRANKPIN ROLLING APPARATUS

Takehiko Hayashi, Toyota; Hiroyuki Ikuta, Nagoya, and Takanori Ohta, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 4, 1983, Ser. No. 520,341
Int. Cl.[4] B21H *7/00*
U.S. Cl. 72—110 **7 Claims**



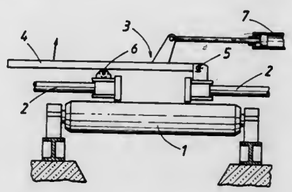
1. A crankpin rolling apparatus comprising in combination:
a frame;
workpiece support means mounted on said frame for rotatably supporting a crankshaft to be processed;
plural pairs of arms spaced at the same intervals as crankpins of said crankshaft in an axial direction of said crankshaft;
a plurality of hinge pins extending in parallel relation with the rotational axis of said workpiece support means and respectively pivotably carrying said plural pairs of arms each for permitting a corresponding one pair of said arms to effect open and close motions;
a plurality of pressuring actuators respectively connected to said plural pairs of arms for independently effecting open and close motions of said plural pairs of arms;
a pair of roller holders fixedly mounted respectively on each pair of said arms and rotatably carrying burnishing rollers, said pair of roller holders being capable of engaging one of said crankpins aligned radially therewith and pressuring said burnishing rollers thereof upon said one of said crankpins when said each pair of arms are closed by a corresponding one of said pressuring actuators;
an arm support mechanism mounted on said frame for independently supporting each of said hinge pins for movement toward and away from the rotational axis of said workpiece support means so that said pair of roller holders engaging a corresponding one of said crankpins are rotated together with said corresponding one of said crankpins when said crankshaft is rotated, said arm support mechanism comprising a support shaft carried on said frame in parallel relation with the rotational axis of said workpiece support means, and
a plurality of rocking members pivotably carried on said support shaft and respectively supporting said hinge pins for permitting the same to move independently in a direction toward and away from the rotational axis of said workpiece support means;
drive means for rotating said crankshaft on said workpiece support means about the axis thereof so that said burnishing rollers of said pair of roller holders effect roll finishing upon said corresponding one of said crankpins being engaged by said pair of roller holders;
first position control means mounted on said frame for regulating positions of said hinge pins in a direction toward and away from the rotational axis of said workpiece support means and the pivot positions of said plural pairs of arms about said hinge pins prior to the loading of said crankshaft onto said workpiece support means;
second position control means mounted on said frame and operable selectively with said first position control means for regulating positions of said hinge pins in a direction toward and away from the rotational axis of said workpiece support means and pivot positions of said plural pairs of arms about said hinge pins prior to the loading onto said workpiece support means of another crankshaft which is different from said crankshaft in kind; and
means for selectively disabling at least one of said plural pairs of arms such that said at least one pair of arms does not obstruct loading and unloading of said another crankshaft on said workpiece support means.

4,554,812

HEAT SHIELD FOR A ROLLING MILL

Franz Hirschmanner, Leonding; Rudolf Buchegger, St. Florian, and Franz Brettbacher, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 10, 1984, Ser. No. 639,582
Claims priority, application Austria, Sep. 8, 1983, 3200/83
Int. Cl.[4] B21B *27/06*
U.S. Cl. 72—202 **8 Claims**



1. In a hot-rolling plant comprising
at least one roller conveyor for transporting stock to be rolled, which roller conveyor has two mutually opposite side edges extending along said roller conveyor and
a pair of side guards, which are disposed on said roller conveyor adjacent to and extend along respective ones of said side edges and are adapted to be moved on said roller conveyor transversely to said side edges and to guide said stock along said roller conveyor,
the improvement residing in
the combination with said side guards of heat-shielding covering means, which are provided over said roller conveyor and are adapted to be opened so as to expose said roller conveyor to inspection from above,
said covering means being supported by said side guards and connected to at least one of said side guards so as to be movable in unison with said one side guard.

4,554,813

LIVE-ROLLER FEED BED FOR CONVEYING INDIVIDUAL LENGTHS OF ROLLED STOCK IN CLOSE SUCCESSION TO COOLING BEDS

Hugo Feldmann, Alsdorf; Theodor Gipperich, Dusseldorf; Hans Kirchhoff, Krefeld, and Rolf Stodt, Kaarst, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 557,838
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244766
Int. Cl.[4] B21B *43/00*
U.S. Cl. 72—251 **11 Claims**



1. In a roller feed bed, for conveying cut lengths of a rolled product along a travel path and to a cooling bed disposed laterally adjacent to one side of the roller feed bed and travel path, including
a conveying roller table for conveying the lengths to the cooling bed and having a fixed longitudinal guide channel, a braking section parallel and laterally adjacent to the guide channel and provided with vertically displaceable braking means for braking the cut lengths, and vertically displaceable separating means between the guide channel and braking section, the braking section having an operative position lower than the guide channel and the cooling bed being laterally adjacent the braking section for receiving the cut lengths therefrom, and switching means disposed upstream of the conveying roller table for directing the cut lengths into selected laterally adjacent paths, the improvement comprising:
a guide trough disposed between the switching means and the roller table having an entry end adjacent the switching means and an exit end adjacent the roller table;
means mounting said guide trough for horizontal pivotal movement transversely to the travel path of the cut lengths about a vertical axis at said exit end;
a first longitudinal section on said guide trough having a fixed base aligned with the guide channel of the roller table;
a second longitudinal section on said guide trough laterally adjacent said first longitudinal section aligned with the braking section and having a vertically movable base so that said second longitudinal section is movable between a lower and a raised operative position lower and higher respectively than said first longitudinal section;
said guide trough in cross-section being laterally inclined downwardly from said first section to said second section towards the side of the travel path of the cut lengths at which the cooling bed is disposed;
drive means operatively connected to said second longitudinal section for moving said second section vertically between said raised and lowered positions;
further drive means operatively connected to said guide trough and switching means for simultaneously moving the entry end of said guide trough and the adjacent end of said switching means laterally transversely to the travel path of the cut lengths to selectively direct by the switching means the cut lengths into said first longitudinal section in a direction diverging obliquely from said second section or in a substantially straight line;
and drive means operatively connected to said switching means for moving said switching means independently of said guide trough for selectively aligning the switching means with said first and second longitudinal sections of said guide trough.

4,554,814

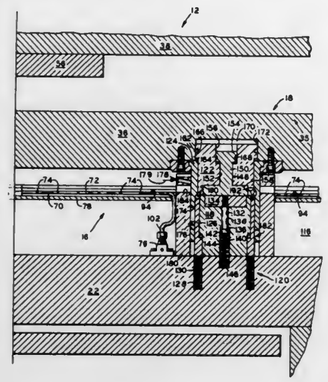
AIR TRANSFER SYSTEM AND METHOD FOR A SHELL PRESS

Arthur L. Grow, Versailles; Charles J. Gregorovich, St. Marys, and Donald N. Seyfried, New Bremen, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Continuation of Ser. No. 434,046, Oct. 13, 1982, abandoned. This application Nov. 1, 1984, Ser. No. 666,144

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—345 **28 Claims**



1. A shell press for making shells for beverage cans and the like, comprising:

a slide assembly including a blanking and forming die station and a curling die station, both of said die stations being operated by said slide assembly, and a pair of reciprocative slide members,

a pair of first tooling members being mounted in said blanking and forming die station for blanking and forming a shell, one of said first tooling members being operably connected to a first slide member in said slide assembly,

first means for reciprocating said first slide member,

a pair of second tooling members being mounted in said curling die station for curling a blanked and formed shell, one of said second tooling members being operably connected to a second slide member in said slide assembly,

second means for reciprocating said second slide member,

means for ejecting a blanked and formed shell from said blanking and forming die station, and

fluid conveyor means extending between said die stations for conveying an ejected shell from said blanking and forming die station to said curling die station, said fluid conveyor means including a pair of opposed side walls defining a track and a hollow tube member, said tube member connected to a source of air located remotely from said track, said tube located in a bottom portion of said track contiguous with and extending substantially the distance between said die stations, said hollow tube member having a diameter much less than the transverse distance between said opposed side walls and further having a plurality of openings therein, said openings being shaped to provide air flow velocity components directed both upwardly and toward said curling die station when a flow of air is supplied therethrough.

4,554,815

TOOL PACK ASSEMBLY

Gale F. Weishalla, Maple Grove, Minn., assignor to Pride Machine, Inc., Fridley, Minn.

Filed Sep. 21, 1983, Ser. No. 533,867

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—349 **9 Claims**

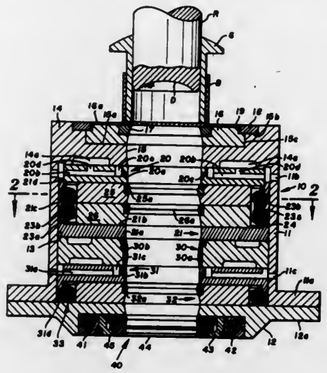
1. A tool pack assembly for use in an ironing press which press is provided with a ram moveable along an axial path of the tool pack assembly to reduce the thickness of the wall of a cup, said tool pack assembly including:

a. a longitudinally extending housing providing a longitudinally extending cavity therein for the housing of the tool pack components;

b. a re-draw die assembly arranged on one end of said housing for initial sizing of a cup blank as the same is driven therethrough by the ram of the press;

c. at least one ironing die assembly arranged in said cavity and of a diameter to permit radial shifting thereof, said die assembly including a circular die support member and an ironing die mounted generally centrally thereof;

d. a plurality of centering means arranged within said cavity



and being spaced arcuately therein about said ironing die assembly, said centering means including a plurality of individually acting longitudinally extending pin members having their longitudinal axis parallel to the axial path of the tool pack assembly and pin biasing members each of which is arranged and constructed to provide a centering force against said ironing die assembly entirely along the longitudinal dimension thereof; and,

e. a stripper die assembly arranged on the other end of said housing permitting the formed container to pass therethrough in one direction and preventing return of the container upon return of the ram through said tool pack assembly whereby the formed container is removed from the ram.

4,554,816

METHOD FOR THE MANUFACTURE OF A PIPE BEND

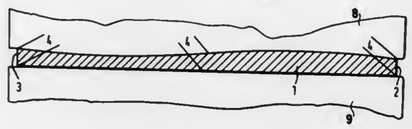
Erich Stender, Ratingen, and Wilhelm G. Fuesers, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft A.G., Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,274

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3127199

Int. Cl.⁴ B21C *37/08;* **B21D** *21/00, 5/10;* **B21H** *1/22*

U.S. Cl. 72—368 **2 Claims**



1. A method for the manufacture of a pipe bend from a longitudinally seam welded pipe comprising rolling a slab ingot to form a sheet, bending the resulting sheet to form a butted tube having a longitudinal slit, welding the slit, and bending the pipe about an axis which is substantially perpendicular to a longitudinal plane passing through the axis of the pipe,

characterized in that said slab ingot is rolled in such manner that the thickness of the resulting sheet varies, from one side edge to the other, by first decreasing continuously from the thickness at one edge to a minimum thickness, then increasing continuously from said minimum to a maximum, and then decreasing continuously from said maximum to the thickness at said one side edge, and

said pipe is aligned for bending so that the thinner portion of the pipe is toward the bending axis and the thicker portion is away from the bending axis,

whereby a pipe having substantially uniform wall thickness along a circumference at the bend is obtained.

4,554,817

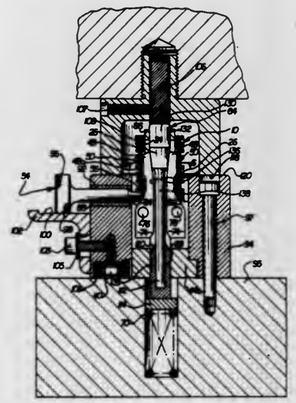
VALVE SLEEVE SHAPING METHOD

Stephen A. Dier, Fraser, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed May 10, 1983, Ser. No. 493,154

Int. Cl.⁴ B21D *53/00, 53/10*

U.S. Cl. 72—370 **4 Claims**



1. A method of shaping at least a portion of a groove edge of a groove on an internal surface of a valve sleeve, said groove edge being defined by the intersection of a groove defining surface and the internal surface of the valve sleeve, including the steps of:

mounting the valve sleeve in a surrounding relation to a tool having a working surface for shaping the groove edge,

locating the groove edge in alignment with the working surface and fixing the valve sleeve in a predetermined aligned angular position with respect to the tool,

moving the tool radially outwardly of the internal surface of the valve sleeve and into engagement with at least a portion of the groove edge to thereby effect shaping of said at least a portion of the groove edge, and

moving the tool radially inwardly of said internal surface to return the tool to its initial position after shaping said at least a portion of said groove edge.

4,554,818

MANUAL CABLE CLAMP CLOSURE

Guenter F. Kuehling, Berwyn, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 1, 1983, Ser. No. 528,676

Int. Cl.⁴ B21D *7/06, 53/36*

U.S. Cl. 72—410 **5 Claims**

1. An apparatus for applying a clamping force to a cable clamp of an electrical connector, comprising:

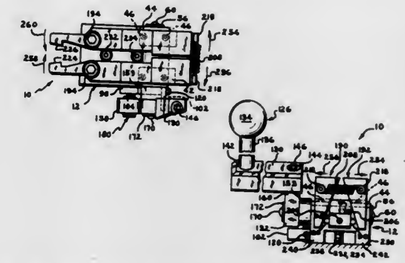
a base means, said base means having at least first and second surfaces meeting along a common line, a first channel defined in said first surface parallel to said common line and extending to a first end of said base means, a second channel transverse to said first channel and extending between two sides of said base means, said second channel receiving a shaft therein;

said shaft having a first portion being received in said second channel and bridging said first channel and being restrained from movement transverse to said shaft by retaining means affixed to said first surface and bridging portions of said second channel;

camming means affixed to a portion of said shaft disposed within said first channel and rotating therewith, said camming means having an actuating portion extending from said first channel and beyond a third surface of said base means, said third surface being transverse to said first and second surfaces;

first and second jaw means pivotably mounted to said first surface distal to said third surface for movement parallel to said first surface to clamp said cable clamp;

said first jaw means having a first cam surface, and said



second jaw means having a second cam surface, said first and second cam surfaces being disposed facing each other and in contact with and being resiliently urged against said actuating portion and being adapted to be moved apart by said actuating portion when said shaft is rotated to move said actuating portion towards said first surface;

said first jaw means and said second jaw means including respective first and second clamping surfaces, said first and second clamping surfaces being disposed facing each other and being moveable towards each other when said first and second cam surfaces are moved towards said first surface to provide said clamping force;

handle means affixed to said shaft for rotating said shaft;

stop means adjustably affixed to said second surface adjacent said second channel for limiting the motion of said handle means and including detent cavity means;

said handle means including mounting means for affixing said handle means to said shaft;

said mounting means including detent means adapted to cooperate with said detent cavity means and retain said handle means in a first position for releasably maintaining said clamping force.

4,554,819

METHOD OF AND APPARATUS FOR MEASURING IN SITU, THE SUBSURFACE BEARING STRENGTH, THE SKIN FRICTION, AND OTHER SUBSURFACE CHARACTERISTICS OF THE SOIL

Muhammad A. Ali, 10507 Odessa Dr., Sugar Land, Tex. 77478

Filed Sep. 28, 1983, Ser. No. 536,679

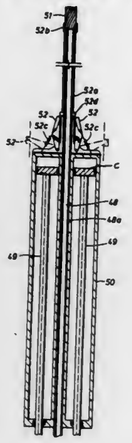
The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.

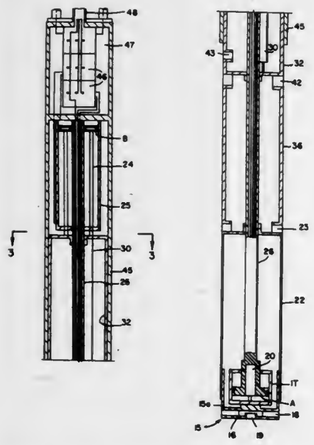
Int. Cl.⁴ G01N *3/42, 19/02*

U.S. Cl. 73—9 **10 Claims**

1. A method of determining the mobilized unit end bearing capacity of a soil in situ, comprising the steps of pushing a

probe into the soil to the desired depth, said probe having a plunger for exerting a downward force on the soil, determining the effective vertical stress in the soil, raising the plunger until the pressure acting on the face of the plunger equals the total vertical stress in the soil to remove the stress created in the soil by the insertion of the plunger, measuring the net upward





movement of the plunger, moving the plunger downwardly into the soil a preselected distance, measuring the force required to move the plunger said preselected distance to obtain a force vs distance curve for the plunger, and plotting mobilized unit end bearing of the soil against the distance the plunger is moved through the soil.

4,554,820

METHOD AND APPARATUS FOR OBTAINING THE COMBINED AROMA OF SEVERAL SUBSTANCES

Ira Litman, 41 Holiday Park Dr., Hauppage, N.Y. 11788

Division of Ser. No. 369,846, Apr. 19, 1982, Pat. No. 4,520,651.
This application Oct. 4, 1984, Ser. No. 657,581
Int. Cl.⁴ G01N *31/00*
U.S. Cl. 73—23 **14 Claims**

1. An apparatus for obtaining the combined aroma of several volatile substances comprising:

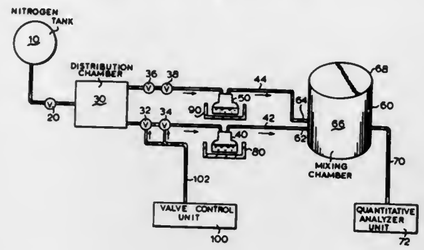
a source of odorless gas;

a plurality of closed containers with the volatile substances disposed therein, said containers being only partially filled so that each container contain said volatile substance in liquid and vapor form;

a first plurality of connecting means for supplying odorless gas from the source to each of said containers;

a blending chamber; and

a second plurality of connecting means connecting said containers to the blending chamber;



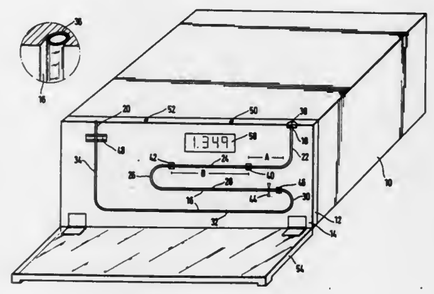
whereby the odorless gas supplied by the first connecting means mixes with the vapors contained in each container to form gas mixtures and whereby said gas mixtures flows via said second plurality of connecting means to the blending chamber where the mixtures form a gas composite with a determinable aroma.

4,554,821

APPARATUS FOR DETERMINING THE VISCOSITY OF FLUIDS, IN PARTICULAR BLOOD PLASMA

Holger Kiesewetter; Friedrich Jung, both of Stockwiese 44, 6650 Homburg-Kirrberg, and Hans-Günther Roggenkamp, Kullenhofstr. 36, 5100 Aachen, all of Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,203
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230246
Int. Cl.⁴ G01N *11/04*
U.S. Cl. 73—55 **25 Claims**



1. Apparatus for measuring the viscosity of fluids comprising:

an outer housing including a front surface having a groove therein:

a disposable capillary tube means removably mounted in said groove and including at least one loop, each said loop having two substantially horizontal branches including an upper branch and a lower branch for flowing said fluid under the influence of gravity along a predetermined path; and

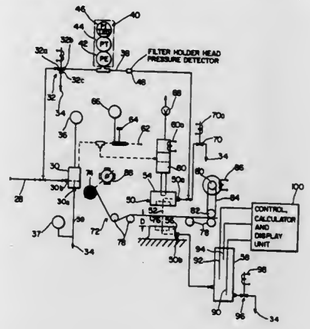
means for measuring the rate of flow of said fluid along said path in one of said horizontal branches.

4,554,822

PLUGGING FACTOR MONITOR UNIT

Roy J. Eisenhauer, Lakewood; Cary A. Loeser, Evergreen, both of Colo., and Charles G. Goodner, Jr., Yuma, Ariz., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 7, 1983, Ser. No. 502,034
Int. Cl.⁴ G01N *15/00*
U.S. Cl. 73—61 R **18 Claims**



1. A continuous automatic plugging factor testing and monitoring system, said system comprising:

means for receiving water samples and for raising the pressure of a sample to be tested to a predetermined test pressure;

means for continuously monitoring the pressure of the test sample;

filter holder means for receiving a test sample at said predetermined test pressure;

means for automatically supplying a filter membrane to said filter holder means, said filter holder means including a base member, and a movable member between a first, inoperative position and a second, operative position in engagement with said base member wherein said filter membrane is held in a test position between said movable member and said base member, said filter holder means further including means defining a flow path through said movable member, a filter membrane in the test position thereof and the base member;

collector tank means, connected to the outlet of the flow path of said filter holder means, for collecting the test sample flowing through the membrane under test and for measuring the filling time required for the test sample flow to reach a predetermined volume;

discharge valve means for controlling discharge of the contents of the collector tank means; and

automatic control means for monitoring the operation of said collector tank means and controlling the operation of said discharge valve means such that the discharge valve means is closed until a first said predetermined volume is measured out by said collector tank means and the filling time required to produce the first volume is measured, the discharge valve means is then opened so that the contents of the collector tank means are discharged through said discharge valve means, and after a predetermined time period set by said said automatic control means, the discharge valve means is closed so that a second said predetermined volume is measured out by said collector tank means and the filling time required to produce the second volume is measured,

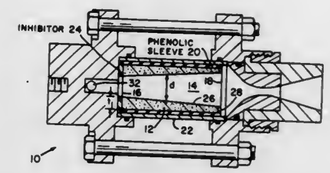
said filter membrane supplying means comprising means for providing raising of the filter membrane a predetermined distance from the base member of the filter holder when the movable member is moved to the first, inoperative position thereof.

4,554,823

METHOD FOR BURNING RATE CHARACTERIZATION OF SOLID PROPELLANTS

Jay S. Lilley, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1984, Ser. No. 624,063
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—116 **7 Claims**



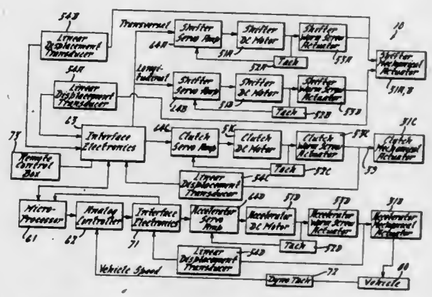
1. A system for providing characterization of burning rate of solid propellant motors from a single motor firing, comprising: a tapered solid propellant motor for providing a variable burning rate output, an analog to digital converter having an input and an output, a single pressure transducer coupled between said motor and said converter input for sensing variable head gas pressure output from said motor and coupling an output signal indicative thereof to said converter, means coupled to said converter output and responsive to the output therefrom for providing an output signal that defines the burning rate of said motor in response to output pressure.

4,554,824

AUTOMATED MANUAL TRANSMISSION SHIFTER WITH ELECTRONIC CONTROL ACTUATORS EXTERNAL OF THE VEHICLE

Francis G. King, Bloomfield Hills, and Stewart V. Gable, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1984, Ser. No. 682,524
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—117 **11 Claims**



1. A transmission gear and clutch shifting apparatus for the automatic operation of a manual gear shift mechanism in an automotive vehicle, the automotive vehicle having a gear shift lever with a plurality of manual shift positions, said gear and clutch shifting apparatus including:

a gear shift mechanical actuation means mounted in the vehicle and coupled to the gear shift lever having a first flexible cable for causing actuation of the gear shift lever along the longitudinal axis of the vehicle, and a second flexible cable for causing actuation of the gear shift lever along the transverse axis of the vehicle,

said gear shift mechanical actuation means including a first

coupling slot means having an elongated slot generally aligned with the transverse axis of the vehicle for passing the gear shift lever and being coupled to said first flexible cable by a rotation means so that motion of said first flexible cable along the transverse axis of the vehicle causes motion of the slot of said first coupling slot means along the longitudinal axis of the vehicle,

said gear shift actuator further including a second coupling slot means having an elongated slot generally aligned with the longitudinal axis of the vehicle for passing the gear shift lever and being coupled to said second flexible cable for causing motion of the gear shift along the transverse axis of the vehicle;

a first cable electronic actuator means mounted outside the vehicle and coupled to said first cable;

a second cable electronic actuator means mounted outside the vehicle and coupled to said second cable;

a clutch mechanical actuation means mounted in the vehicle and coupled to the clutch pedal, and including a third flexible cable for causing movement of the clutch; and

a third cable electronic actuator means mounted outside the vehicle and coupled to said third cable.

4,554,825

DAMPING DEVICE OF AN AIR FLOW RATE METER DISPOSED IN THE AIR INTAKE TUBE OF AN INTERNAL COMBUSTION ENGINE

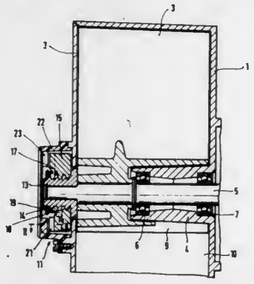
Eberhard Biermann, Uhldingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,041

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315706

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—118 **1 Claim**



1. A damping device for an air flow rate meter disposed in an intake tube of an internal combustion engine, a bearing shaft, means for applying a restoring force on said bearing shaft said air flow rate meter is supported on said bearing shaft and rotated in accordance with a quantity of air flowing through said intake tube counter to a restoring force, a guide bushing connected with one end of said bearing shaft, with thread-like grooves on its circumference, a blocking body provided with inner thread-like grooves that matches said thread like grooves on said bearing shaft, a compression spring supported on said blocking body, said blocking body is rotatable on the guide bushing and is supported such that said blocking body is axially displaceable counter to said compression spring in a direction toward a detent body attached to a housing, said detent body and said blocking body each have latch protrusions oriented toward one another, which upon an axial movement of said blocking body toward the detent body, said latch protrusions mesh with one another to damp said air flow rate meter.

4,554,826

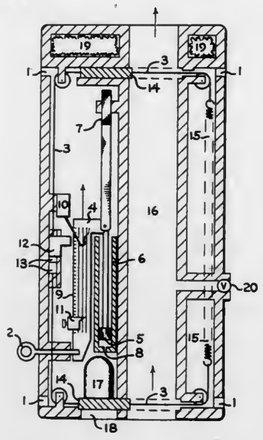
AUTOMATIC DEPTH-DETERMINING AQUATIC SAMPLING DEVICE

Judith A. Barry, 4515 W. 15th Ave., Vancouver, B.C., Canada (V6R 3B3)

Filed Jan. 28, 1982, Ser. No. 343,397

Int. Cl.⁴ G01N *1/00*

U.S. Cl. 73—170 A **4 Claims**



1. An apparatus for collecting water at predetermined depths in water comprising: the means for the apparatus to continually monitor its depth in water through the relation of velocity to time, where velocity is known from the constant and predictable rate with which the apparatus undergoes free-fall descent, and time is measured from the rate and distance of travel of a piston operating under constant force, where the piston's constant and predictable rate of travel is governed by the diameter of the metering orifice located in the bottom base of the cylinder housing the piston, the orifice controlling the rate at which the piston is able to draw water into the cylinder; means to pre-program sampling depth prior to descent of the apparatus by setting an adjustable triggering stop or series of stops onto a calibrated depth scale, the calibrations derived from the constant and predictable time of travel of the piston; means by which the travel of the piston causes motion of the depth scale relative to an inscriber on a standard temperature sensor, causing a continuous plot of temperature as a function of depth to be inscribed on the depth scale; means to vary the range of depths in which collection occurs by varying the time in which the piston travels its maximum distance by modifying the rate at which either the piston or the apparatus travels, these variations effected by modifying such parameters as the amount of ballast or the diameter of the metering orifice, where each depth range has a corresponding interchangeable depth scale; a sampling chamber or assembly of chambers equipped at both ends with gate valves which seal a chamber for sample collection, these gate valves urged into the post-sampling position by spring force; a mechanical device which restrains the gate valves in their pre-sampling position until released at the time of sample collection; means to collect a water sample by attaching the calibrated depth scale to the piston so that the depth scale and its attached triggering stops or series of stops travel at the same constant and predictable rate as does the piston, this travel causing a triggering stop to impinge on the mechanical device restraining the gate valves in their pre-sampling position, this impingement releasing the restraint on the valves so they assume their post-sampling position and seal the sample chamber which corresponds to that sampling depth; means for releasing a ballast following completion of the final collection, the release being pre-programmed on the depth scale in the same manner as that to pre-program the collection of water samples; a sufficient amount of very low density material as to render the apparatus positively bouyant upon release of the ballast, compelling the apparatus to ascend to the surface unaided by forces external to the apparatus.

4,554,827

WIND INDICATORS

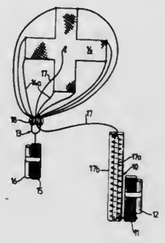
Trevor R. Kirby-Smith, Woking, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 9, 1984, Ser. No. 598,433

Claims priority, application United Kingdom, Apr. 14, 1983, 8310177

Int. Cl.⁴ G01P *13/00*

U.S. Cl. 73—189 **15 Claims**



1. A wind indicator comprising:

a datum element carrying a datum marker,

a status element including a status marker and a parachute having shroud lines,

a cord store, and

a cord in said store linking said datum element and said parachute,

the arrangement being such that said wind indicator is portable by a parachutist and droppable so that initially said parachute inflates and said cord pays out from said cord store, wherein said parachute is collapsed by the action of said cord when said cord becomes taut, and wherein said parachute reinflates following landing of said datum element when said cord becomes slack, and said status element then floats to the ground, the ground distance and direction of said status marker from said datum marker providing to the said parachutist an indication of wind speed and direction.

4,554,828

MEASURING DEVICE FOR THE MAGNETO-INDUCTIVE MEASURING OF THE FLOW RATE OF A LIQUID MEDIUM

Friedhelm Doll, Wermelskirchen, Fed. Rep. of Germany, assignor to Turbo-Werk Messtechnik GmbH, Cologne, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,647

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236909

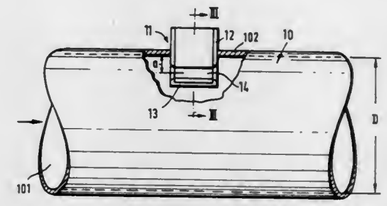
Int. Cl.⁴ G01F *5/00, 1/58*

U.S. Cl. 73—202 **8 Claims**

1. A device for measuring the magneto-inductive flow rate of a flowing liquid medium in a flow channel, comprising:

a probe extending into the flowing liquid medium, said probe containing a continuous measuring channel therethrough, the probe including an electromagnet having a coil generating a magnetic field in the measuring channel, and at least two electrodes disposed at the wall of the measuring channel within the range of the magnetic field,

wherein the measuring channel extends transversely through a casing of the probe projecting into the flow channel and wherein said portion of the casing projecting into the flow channel is substantially of cylindrical shape; wherein the measuring channel is substantially of cylindrical shape and is disposed near the wall of the flow channel



and wherein the electromagnet is mounted inside the casing and comprises a core that passes through the coil and is affixed to pole members which extend in proximity to both sides of the measuring channel.

4,554,829

DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

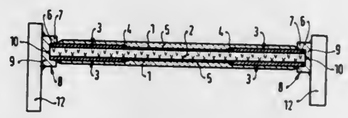
Jaihind S. Sumal, Vaihingen-Enz, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,092

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 3328852

Int. Cl.⁴ G01F *1/68*

U.S. Cl. 73—204 **5 Claims**



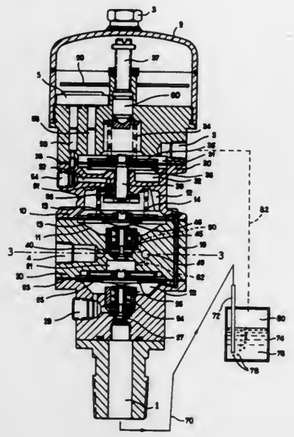
1. A device for measuring the mass of a flowing medium comprising a rectangular carrier, at least one temperature-dependent resistor layer supported on at least one surface of said rectangular carrier along a middle portion thereof and, electrically conductively joined to at least two electrical connectors, each of said electrical connectors contacts a respective end face of the carrier, connecting electrical conductive layers having low electrical resistance on opposite ends of said at least one carrier surface in electrical contact with opposing ends of the temperature-dependent resistor layer with an end portion of said electrical conductive layers overlapping adjacent ends of the temperature-dependent resistor layer supported on the carrier, and the remainder of said electrical conductive layers directly on said carrier surface, each of said connecting electrical layers including a contact end section oriented in the direction of said electrical connectors and in electrical contact therewith, and the temperature-dependent resistor and the connecting layers are covered with a thin layer of glass except for one contact section on the ends of each of the connecting layers remote from the temperature-dependent resistor layer, and the contact sections are overlapped by securing sections of said connectors bent at an angle in the form end grips, each comprising a respective electrical connection, and are joined to said electrical conductive layers in an electrically conductive manner in said contact section.

4,554,830

LEVEL DETECTION HEAD FOR HYDROSTATIC EFFECT WITH PROTECTION

Danny J. Khoi, Saint Cloud, France, assignor to Materiel et Auxiliaire de Signalisation et de Controle pour l'Automation-Auxitrol, Courbevote, France

Filed Mar. 2, 1983, Ser. No. 481,351
Claims priority, application France, Mar. 3, 1982, 82 03505
Int. Cl.[4] G01F *23/14*
U.S. Cl. 73—299 5 Claims



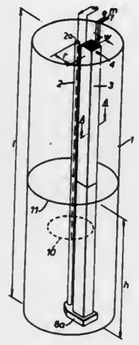
1. A head for detecting a level of a liquid in a tank by hydrostatic action, said head being connected with a probe that is immersed into the liquid, the level of which is to be measured, said head comprising:
- a main enclosure subdivided into an upper chamber and a lower chamber,
- an elastically adjustable membrane separating said upper chamber from said lower chamber,
- probe means communicating with the upper chamber,
- an inlet pipe for gas under pressure communicating with the lower chamber,
- a valve connected to the membrane to control the pressure above the membrane in relation to the pressure below the membrane,
- means for diverting the flow of gas to the upper chamber from the lower chamber,
- a member sensitive to gas pressure for measuring the gas pressure that corresponds to a given flow of gas introduced through said inlet pipe compared to gas pressure from the tank to determine the height of the liquid in the tank, and
- a connection of the lower chamber with the probe means comprises
  - an auxiliary chamber subdivided in an upper auxiliary chamber and a lower auxiliary chamber,
  - another membrane separating said upper auxiliary chamber from said lower auxiliary chamber, the upper auxiliary chamber communicating with the lower chamber and the inlet of the gas under pressure when said valve is open, and the lower auxiliary chamber communicating with the upper chamber and the probe means when said probe means is open to gas flow,
  - a calibrated elastic means of adjustment, and
  - a probe valve being mounted to close said probe means without receipt of gas under pressure in said upper auxiliary chamber, which will prevent a rising of the liquid of the tank through the probe means.

4,554,831

ARRANGEMENT AND METHOD FOR LIQUID LEVEL MEASUREMENT

Graham P. Sealey, Auckland, and Andrew C. Corney, Wellington, both of New Zealand, assignors to Tru Test Distributors Limited, Auckland, New Zealand

Filed Dec. 30, 1983, Ser. No. 567,320
Claims priority, application New Zealand, Aug. 4, 1982, 201498
Int. Cl.[4] G01F *23/28*
U.S. Cl. 73—304 R 16 Claims



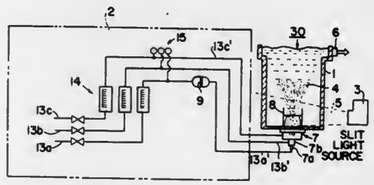
1. A liquid level measuring arrangement comprising:
- at least first and second spaced apart electrodes;
- at least one elongate electrical coil;
- said electrodes and said coil being adapted to be at least partially immersed in an electrically conductive liquid;
- means being provided to pass an alternating current through and between said first and second electrodes, by way of said electrically conductive liquid, so as to create an electro-magnetic field about at least said first electrode;
- said elongate coil being shaped and located so that said electro-magnetic field induces a current in said coil;
- means being provided to convert said electro-magnetic field into a substantially linear function of the depth of said electrically conductive liquid.

4,554,832

SIMULATOR OF FLUID FLOW IN FIELD OF FLOW ENTAILING COMBUSTION OR REACTION

Toshiaki Hasegawa, Saitama, and Yasuo Hirose, Kanagawa, both of Japan, assignors to Nippon Furnace Kogyo Kaisha, Ltd., Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,005
Claims priority, application Japan, Nov. 10, 1982, 57-196098
Int. Cl.[4] G01F *13/00*
U.S. Cl. 73—432 R 11 Claims



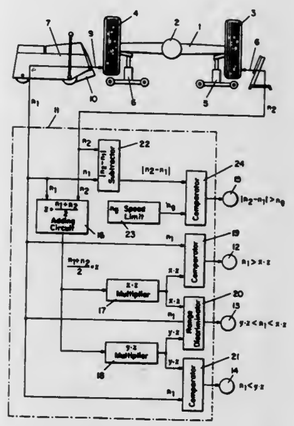
1. A simulator for the flow of a fluid in the field of flow entailing a combustion or reaction, which comprises a visualizing device provided with a model water tank, a compressed water source, a conduit interconnecting said model water tank and said compressed water source, an orifice inserted in said conduit and having at least one small hole not more than 3 mm in diameter pierced therethrough such that local pressure drop of the compressed water during the passage thereof through said orifice may induce a phenomenon of deaeration resulting in release of a large volume of fine, substantially uniform air bubbles into the flow of water and consequent production within said water tank of a simulated field of flow by the portion of water flow containing said fine, substantially uniform air bubbles, and a slit light source for projecting a slit light upon said field of flow and thereby making visible said flow of water in a given cross section of said flow by virtue of the irregular reflection of said slit light by the air bubbles.

4,554,833

METHOD AND APPARATUS FOR DETERMINING THE UNBALANCE OF WHEELS MOUNTED ON THE DRIVE AXLE OF AN AUTOMOBILE

Eickhart Goebel, Pfungstadt, Fed. Rep. of Germany, assignor to Gebr. Hofmann GmbH & Co. KG Maschinenfabrik, Pfungstadt, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,213
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3234043
Int. Cl.[4] G01M *1/28*
U.S. Cl. 73—457 14 Claims



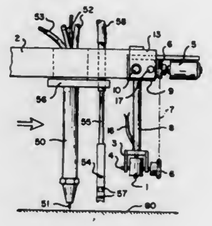
1. A method of determining the unbalance of two wheels mounted on a drive axle, said two wheels being operatively connected by a differential gear, said method comprising:
- rotating said two wheels within a predetermined speed of rotation range;
- changing the speed of rotation of one of said two wheels while said two wheels are being rotated within said predetermined speed of rotation range and thereby inversely changing the speed of rotation of the other of said two wheels in proportion to the change in speed of rotation of said one of said two wheels due to the connection of said two wheels by said differential gear;
- measuring the difference in speed of rotation between said two wheels;
- comparing said difference in speed of rotation with a predetermined difference in speed of rotation range; and
- measuring the unballance of each of said two wheels in turn when said two wheels are rotating within said predetermined difference in speed of rotation range.

4,554,834

ACOUSTIC SENSOR AND METHOD OF USING SAME FOR DETERMINING THE POSITION OF A TOOL RELATIVE TO A WORKPIECE

Friedrich B. Prinz; James F. Hoburg, and Kristjan Gunnarsson, all of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Oct. 28, 1983, Ser. No. 546,519
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—597 8 Claims



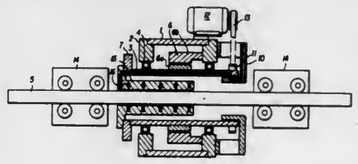
1. A method for sensing the position of a tool relative to a workpiece comprising the steps of:
- (a) placing a piezoelectric transducer having a curved surface with a single focal point above the workpiece so that the workpiece will be not more than six inches from the focal point of the curved surface;
- (b) moving the transducer relative to the workpiece;
- (c) applying a voltage to the transducer in a manner so as to cause the transducer to emit sound waves toward the workpiece while the transducer is at different positions relative to the workpiece;
- (d) allowing each sound wave to be reflected back from the workpiece to the transducer and to strike the transducer at some time period after the sound wave was emitted;
- (e) measuring the time period between emission of each sound wave and the striking of the transducer by that sound wave, and
- (f) converting each measured time period into a distance thereby obtaining a surface profile of the workpiece.

4,554,835

AUTOMATIC FLAW DETECTION DEVICE

Toshio Sakuragi, Kobe; Kazuo Nakayama, Hyogo; Masaaki Sato, Kamakura, and Mitsuhiro Koike, Yokohama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1984, Ser. No. 590,449
Claims priority, application Japan, Mar. 19, 1982, 57-45091
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—640 3 Claims



1. An ultrasonic automatic flaw detection apparatus comprising:
- (a) a supporting frame;
- (b) a hollow shaft journaled in said supporting frame by axially spaced bearings located near the axial ends of said hollow shaft;
- (c) a signal transmission device disposed within said supporting frame between said axially spaced bearings, said signal

transmission device comprising a rotor section mounted on and circumferentially surrounding said hollow shaft and a stator section mounted on said supporting frame and operatively connected to said rotor section;

(d) a flaw detection signal repeater mounted on said hollow shaft axially downstream of the downstream one of said bearings with reference to the direction the material to be inspected passes through said hollow shaft during use of the apparatus;

(e) a holder for ultrasonic searching units coaxially disposed within said hollow shaft and rotatable therewith, said holder extending through said flaw detection signal repeater and extending axially upstream from said flaw detection signal repeater in said hollow shaft to a point upstream of said signal transmission device, said holder having an axial through bore through which, during use of the apparatus, the material being inspected passes with a clearance between the outer periphery of the material being inspected and the inner periphery of said holder;

(f) a plurality of ultrasonic searching units mounted in said holder for ultrasonic searching units at axially spaced intervals within said hollow shaft;

(g) a water supply means mounted on said supporting frame for supplying water to the clearance between the said holder for ultrasonic searching units and the material being inspected; and

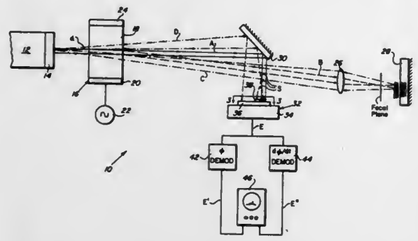
(h) drive means for rotating said hollow shaft, said rotor section, and said flaw detection signal repeater.

4,554,836

LASER VIBROMETER

Michael J. Rudd, Concord, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1984, Ser. No. 645,888
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 73—657 **8 Claims**



1. Apparatus for interferometrically measuring ultrasonic vibration on an object surface comprising:

means for propagating a beam of monochromatic light, said propagating means having a mirror at its emitting end;

light modulating means disposed in the path of the light beam for frequency shifting a portion thereof such that the frequency shifted portion is deflected toward the object surface to be measured;

adjustable means disposed in the path of the deflected beam portion for directing only the frequency shifted beam portion onto the object surface being measured and for focusing the reflected portion of the light scattered by the surface onto the end mirror of said propagating means from which it is divergingly reflected; and

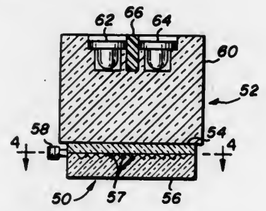
photoelectric means disposed in the paths of both the divergingly reflected light beam and the unshifted portion of the propagated light beam and responsive to both said beams, for generating a phase modulated electrical signal indicative of the amplitude and velocity of ultrasonic vibration on the object surface.

4,554,837

REFLECTIVE OPTICAL FLUID PRESSURE SENSOR

Hal C. Danby, Palo Alto, and Carl Ritson, San Jose, both of Calif., assignors to Anatros Corporation, San Jose, Calif.

Filed May 4, 1984, Ser. No. 607,060
Int. Cl.⁴ G01L *7/00*
U.S. Cl. 73—705 **11 Claims**



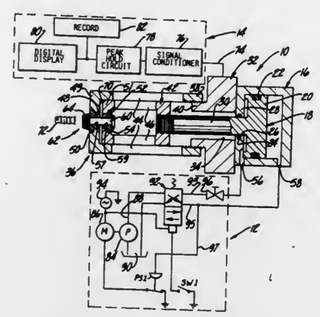
1. An optical fluid pressure sensor comprising a light source, a capillary passageway containing a gas and formed in a transparent solid, the capillary passageway having a reflective surface positioned in the light path of light from the light source, and a light detector positioned in the path of light reflected by the reflective surface, the capillary passageway having an inlet end means for receiving liquid from an external source under fluid pressure to be monitored and an outlet end, the outlet end thereof having a closure means for preventing escape of gas therefrom.

4,554,838

FASTENER TESTER

Lloyd L. Paus, Tustin, Calif., assignor to Huck Manufacturing Company, Irvine, Calif.

Filed Feb. 2, 1984, Ser. No. 576,120
Int. Cl.⁴ G01N *3/08*
U.S. Cl. 73—761 **21 Claims**



1. A fastener tester for testing fasteners for securing a plurality of workpieces together with such fasteners including a pin member having an elongated shank, said fastener tester comprising:

a first housing member,

a second housing member,

said first and second housing members having first and second plate portions respectively, located at one end and adjacent to each other,

said first and second plate portions having first and second fastener openings, respectively, axially aligned with each other along a preselected axis and adapted to receive the pin member,

a load cell operatively connected to said first housing member,

said first and second housing members adapted for relative movement along said axis,

load means operatively connected to said second housing member and being selectively actuable for providing said relative movement whereby said adjacent plate portions can be move axially towards or away from each other,

said load means connected to said load cell,

adjustment means for selectively adjusting the distance between said first and second plate portions to simulate a desired grip increment for the fastener to be tested, said adjustment means providing movement of one of said first and second housing members relative to the other for adjusting the closest distance between said first and second plate portions to simulate said desired grip increment,

said first and second housing members having first and second access openings, respectively, permitting internal access for locating the fastener pin member in said aligned fastener openings whereby the fastener can be installed to urge said first and second plate portions together,

load transfer means for transferring the relative force between said first and second plate portions to said load cell whereby said load cell will provide a signal having a magnitude varying in accordance with variations in the magnitude of the installation load on the fastener urging said first and second plate portions together,

said load means actuable to move said first and second plate portions away from each other whereby the installed fastener can be subject to tensile loading varying in magnitude,

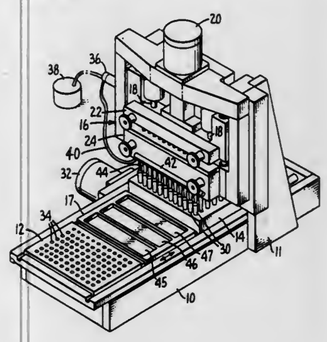
said load transfer means transferring the relative force between said first and second plate portions to said load cell whereby said load cell will provide a signal having a magnitude varying in accordance with variations in the magnitude of the tensile load applied to the fastener as said first and second plate portions are urged to move away from each other.

4,554,839

MULTIPLE TROUGH VESSEL FOR AUTOMATED LIQUID HANDLING APPARATUS

Gary E. Hewett, San Francisco; Brian G. Atwood, Walnut Creek, and Timothy J. Wennberg, San Francisco, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Oct. 14, 1983, Ser. No. 542,114
Int. Cl.⁴ G01N *35/06*
U.S. Cl. 73—864.16 **4 Claims**



1. In a machine for automatically transferring at least a portion of a liquid supply to one row of wells to fill or mix with liquid samples in said one row or with another row of wells which includes:

a head assembly translatable between upper and lower positions along a vertical axis;

means for moving said head assembly along said vertical axis; and

a plunger assembly mounted on said head assembly for movement therewith, said plunger assembly including a row of pipette nozzles, each having a depending end to receive a tip, a row of plungers respectively disposed within said pipette nozzle, and means for moving said plungers within said pipette nozzles to vary their internal volumes to aspirate liquid into or discharge liquid from said tips,

the combination of a table mounted beneath said head for translation along a horizontal bed, said table having a plurality of work stations spaced along said bed for respectively accommodating at least one row of a plurality of rows of wells in at least one tray at each of said work stations and a vessel having a plurality of troughs parallel to said plurality of rows of wells to accommodate a second plurality of said work stations;

means for moving said table along said horizontal bed selectively to place any one of said rows of wells in said at least one tray or one of said plurality of troughs at said work stations in register with said pipettes,

means for controlling each of said moving means for said head assembly, plungers and said table to effect liquid transfer between said one trough and said one row of wells in a tray at said work stations, and

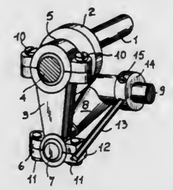
receptacle means for storing a plurality of rows of replaceable tips for the ends of said pipettes nozzles at a third plurality of work stations on said table to permit disposal and replacement of said tips on said depending ends of said pipette nozzles with other tips disposed in at least some of the receptacles of said receptacle means between predetermined steps of a liquid transfer process.

4,554,840

ANTI-WOBBLE DEVICE FOR A CONNECTING ROD

Franco Marchesi, Pavia, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Aug. 23, 1984, Ser. No. 643,574
Claims priority, application Italy, Feb. 28, 1984, 19823 A/84
Int. Cl.⁴ F16H *21/52;* **D05B** *57/02*
U.S. Cl. 74—42 **5 Claims**



1. An anti-wobble device for a connecting rod that joins a crankshaft to an arm fixed to an oscillating driven shaft whose axis is oriented 90° with respect to the axis of the crankshaft, the joints at each end of the crankshaft having spherical mating surfaces, said anti-wobble device comprising a rigid element secured at one end for oscillation with the driven shaft and contacting the joint connecting the connecting rod to the arm at the other end, and means for adjusting said rigid element both radially and axially with respect to the driven shaft.

4,554,841

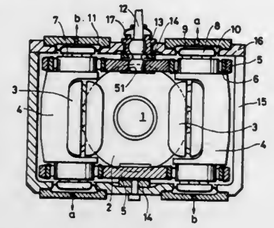
SPEED CONTROL DEVICE OF A TORIC TYPE INFINITELY VARIABLE TRANSMISSION

Hideo Okoshi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 548,834
Int. Cl.⁴ F16H *15/08*
U.S. Cl. 74—200 **10 Claims**

1. A speed control device of a toric type infinitely variable transmission having a housing, an input and an output shaft rotatably and coaxially supported by said housing, an input and an output disc fitted on said input and output shafts, respectively, and engaged with said shafts for rotation therewith, the

opposed surfaces of said discs cooperating with each other to form a toroidal cavity, left and right traction rollers disposed in said toroidal cavity symmetrically with respect to the axis of said input and output shafts, trunnion devices rotatably supporting said traction rollers and supported by said housing for rotation about pivot axes perpendicular to the axes of rotation of said traction rollers, and pressing means for urging said input and output discs on said traction rollers into engagement with each other and causing a traction force, characterized by



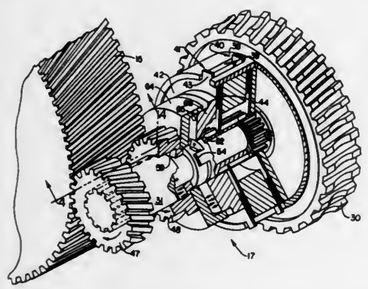
a support device for supporting respective pivot shaft ends so that the pivot shafts of said left and right trunnion devices are slightly tiltable, and a tilting device for slightly moving said support device leftward and rightward and tilting said trunnion devices by a predetermined amount, said support devices including a support link member for connecting the upper and lower pivot shaft ends of each of said left and right trunnion devices using bearing means, said support link members being supported in said housing for slight leftward and rightward movement.

4,554,842

ANTI-BACKLASH MECHANISM FOR MACHINE DRIVE

David B. Wood, III, West Chester, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 25, 1983, Ser. No. 487,962
Int. Cl.⁴ F16H *55/18, 57/00*
U.S. Cl. 74—409 **5 Claims**



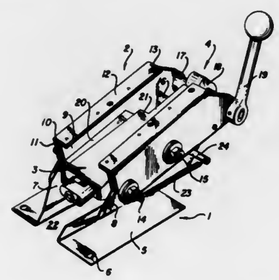
1. An anti-backlash mechanism for a machine drive, comprising:
(a) a machine base;
(b) a drive mechanism carried by said base;
(c) a support shaft, rotatably carried by said base;
(d) a torque input member rotatably carried by said shaft, in driving connection with said drive mechanism;
(e) first and second clutch units, each coupled to said torque input member;
(f) first and second helical gears carried coaxially on said shaft, said first gear torsionally and axially fixed with respect to said shaft, and said second gear torsionally and axially free to slip with respect to said shaft;
(g) means for keying said first gear to said first clutch unit;
(h) means for keying said second gear to said second clutch unit;
(i) a first linear actuator interposed between and reacting against, said first and second gears;
(j) a second linear actuator interposed between and reacting against, said second gear and said clutch units;
(k) means for powering said first and second actuators; and
(l) an output gear, rotatably carried by said base in mesh with said first and second gears.

4,554,843

ADJUSTABLE STEERING COLUMN SUPPORT

Henry Andersson, Saltsjoboo, Sweden, assignor to Affarsverket FFV, Eskilstuna, Sweden

Filed Feb. 17, 1984, Ser. No. 581,059
Claims priority, application Sweden, Feb. 23, 1983, 8301001
Int. Cl.⁴ B62D *1/18*
U.S. Cl. 74—493 **5 Claims**



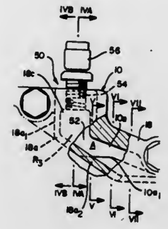
1. A vehicle steering column support that provides for adjustment of an elongated steering column lengthwise in opposite axial directions and angularly in opposite swinging directions that are transverse to said axial directions, said steering column support comprising:
A. a plurality of flatwise adjacent plates, each having a flat friction surface that opposes the friction surface on an adjacent plate, said surfaces being oriented parallel to said axial directions and said swinging direction, and said plates comprising
(1) a relatively stationary support plate securable to a vehicle, and
(2) a relatively movable carrier plate to which the steering column is secured, one of said plates being flatwise flexible into surface-to-surface frictional engagement with the other but being normally out of such engagement to permit shifting of the carrier plate in said directions relative to the support plate;
B. means on said one plate, at the side thereof remote from said other plate, defining a slide surface against which a flexing force can be applied that holds said one plate in said engagement with said other plate;
C. a wedging member disposed adjacent to said one plate and confined to motion relative to said one plate in a pair of opposite sliding directions that are parallel to said friction surfaces of the plates, said wedging member having a wedging surface at one side thereof that forces obliquely towards said friction surfaces of the plates and diverges from then in one of said sliding directions, said wedging surface being slidingly engaged with said slide surface so that movement of said wedging member in said one siding direction applies said flexing force to said slide surface;
D. spring means biasing said wedging member in said one sliding direction with a biasing force high enough to normally maintain said flexing force on said slide surface; and
E. release means comprising a lever which has a connection with said wedging member and which is manually swingable away from a normal position to move said wedging member in the other of said sliding directions and thus relieve said flexing force, said lever, through its connection with the wedging member, being biased by said spring means towards its said normal position to return thereto upon being released.

4,554,844

AIR BREATHER FOR POWER TRANSMISSION UNIT

Hideo Hamano, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 21, 1983, Ser. No. 477,399
Claims priority, application Japan, Mar. 31, 1982, 57-53434
Int. Cl.⁴ F16H *57/04*
U.S. Cl. 74—606 R **6 Claims**



1. An air breather apparatus for a transmission, comprising:
a transmission casing for containing a transmission, the casing having formed on an open end thereof an upright peripheral seating face and an upright wall portion;
a cover for sealably closing said open end, the cover having;
an upright peripheral seating face sealably engaging said casing seating face to seal the periphery of said transmission casing;
a rib laterally protruding from an inner face of the cover and sealably engaging said casing wall portion along an upper portion of the length of said rib, at least a portion of said rib extending substantially diagonally downwards from an upper portion of said cover towards a lower side portion of said cover, and a lower portion of said rib being exposed to an interior of said casing;
an air chamber in an upper portion of said cover, one wall of said air chamber being formed by said casing wall portion and at least one additional wall being formed at least partially by said rib; and
a vent communicating between an upper end of said air chamber and an exterior of said cover, said vent having an air breather plug assembly inserted therein;
wherein said rib, said cover innerface, said cover seating face and said casing seating face define therebetween an air passage communicating between said casing interior and a lower portion of said air chamber, an upper portion of said passage being substantially narrower than a lower portion of said passage, and said air chamber having a substantially greater cross-sectional area than said air passage.

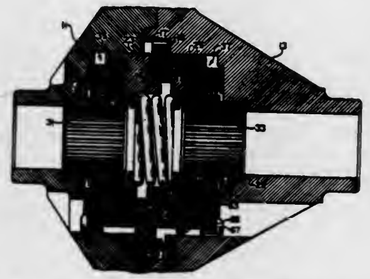
4,554,845

POSITIVE DRIVE AND SECONDARY CLUTCH MEANS THEREFOR

Edward J. Goscenski, Jr., 2267 Gethings Rd., Battle Creek, Mich. 49017

Continuation-in-part of Ser. No. 432,192, Oct. 1, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 538,030
Int. Cl.⁴ F16H *35/04;* **F16D** *19/00*
U.S. Cl. 74—650 **17 Claims**

1. In a positive drive of the type including an input member adapted to be driven by input driving torque transmitted from a power source, first and second output members adapted to drive first and second output shafts, first and second clutch means operably associated with said first and second output members, respectively, each of said clutch means having a disengaged mode which allows its respective output member to rotate relative to said input member when said respective output member is rotating at an angular velocity in the direction of torque transmittal that is greater than one predetermined angular velocity condition of the output members, and an engaged mode which maintains a predetermined rotational relationship between said respective output member and said input member when said respective output member is rotating at an angular velocity in the direction of torque transmittal that is equal to or less than another predetermined angular velocity condition of the output members, first and second means operably associated with said first and second clutch means, respectively, to move the respective clutch means from said disengaged mode to said engaged mode, characterized by:
(a) at least one of said first and second clutch means including a primary clutch operable, in the engaged mode, to transmit torque from said input member to the respective output member, and a secondary clutch operable, in either the engaged or disengaged mode of said primary clutch, to transmit torque from said input member to the respective output member during relative rotation between said input and the respective output member;



(b) means for exerting a torque preload on said secondary clutch; and
(c) the net rotational clearance of said secondary clutch, relative to said input member, being selected such that the product of said torque preload and said net rotational clearance provides a predetermined rotational dampening between said input member and each of said output members in response to relative rotational movement therebetween.

4,554,846

TWO-PIECE RETAINER FOR EPICYCLIC TRANSMISSIONS

Robert G. Distin, Jr.; Thomas J. Lang, both of Louisville, and David E. Smith, Lafayette, all of Colo., assignors to Advanced Energy Concept '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,933
Int. Cl.⁴ F16H *1/28*
U.S. Cl. 74—805 **16 Claims**

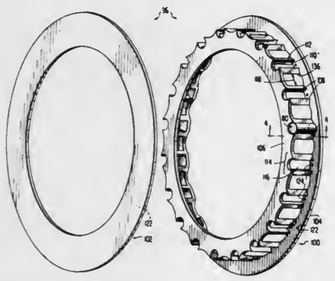
1. An epicyclic speed reducing transmission, comprising:
first gear means (**70**) having a first surface region (**72**);
second gear means (**50**) having a second surface region (**53**) which confronts said first surface region;
cam means (**10, 30**) for orbitably driving one of said gear means and said corresponding confronting surface regions;
a set of cylindrical rollers (**80**) disposed between said first and second confronting surface regions for transmitting torque therebetween;
said first and second confronting surface regions each comprising a series of lobes (**126**) and recesses (**128**) shaped and arranged such that a first recess (**128'**) on said first confronting surface region confronts a second recess (**128''**) on said second confronting surface region and also

such that a first lobe (126') on said first confronting surface region confronts a second lobe (126") on said second confronting surface region;

said first and second confronting recesses being on a substantially diametrically opposite side (130, 132) of said first and second confronting surface regions, respectively, than said first and second confronting lobes;

said first and second confronting surface regions being further shaped and arranged such that only one of said cylindrical rollers can be contained between said confronting recesses and only one of said cylindrical rollers can be contained between said confronting lobes;

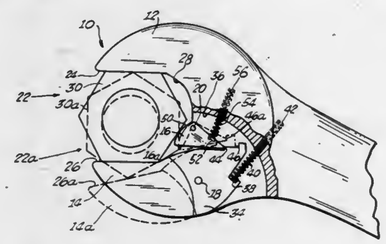
a retainer (96) for retaining said plurality of cylindrical rollers in spaced relationship between said first and second confronting surface regions, said retainer comprising:



a first retainer piece (100) including a top (106) and a bottom (104) surface interconnected by a plurality of bars (108), said bars being shaped and arranged into a pluarlity of pairs (114) each of which includes first and second bars having confronting first curved surfaces between which one of said cylindrical rollers can be rotatably retained;

said first and second bars of each of said pairs each having further second and third surfaces (112) extending from opposite ends of said respective curved surface thereon and which continuously taper inwardly towards one another and meet at an apex (136) so that each bar has a wedge-like shape, respective apexes of said first and second bars of each of said pairs of bars facing and being separated from respective apexes of bars of adjacent pairs of bars so that adjacent pairs of bars are separated by empty space.

4,554,847
OPEN END RATCHET WRENCH
Ercele A. DeSantis, 1759 Terr. Dr. West, Lake Worth, Fla. 33460
Filed Mar. 2, 1984, Ser. No. 585,524
Int. Cl.⁴ B25B *13/28*
U.S. Cl. 81—111 **20 Claims**



1. An open end wrench used to secure a nut comprising:

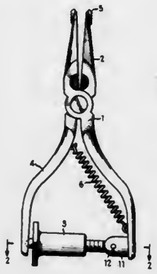
a main body integrally forming an upper jaw and a back;

a lower jaw pivotably connected to said main body to pivot between first and second positions respectively displacing said lower jaw from said upper jaw by first and second distances, said lower jaw including a cam having a tooth therein;

said first distance allowing said wrench to rotate said nut as it is rotated and said second distance allowing said wrench to rotate around said nut as said wrench is rotated; and

release means for releasing said lower jaw to pivot from said first position to said second position, said release means including a pawl extending from said body to between said jaws, said pawl being pivotally connected to said body to pivot between a first cam position engaging said tooth and a second cam position disengaged from said tooth.

4,554,848
INTERNAL PLIERS
Joseph L. Galleto, 4759 N. Maplewood, Apt. 108, Chicago, Ill. 60625
Filed Aug. 27, 1984, Ser. No. 644,575
Int. Cl.⁴ B25B *7/14*
U.S. Cl. 81—447 **5 Claims**



1. Internal pliers comprising:

A. a pair of pliers having jaws suitable for internal gripping;

B. a pin-yoke attached to the inside of one handle of said pliers, the second handle having a notch in it toward the inside;

C. a pin passing through the pin-yoke; and

D. a removable expander means which comprises: a threaded adjuster having at one end a fork that is engaged by and removable from the pin that passes through the pin-yoke, and an internally-threaded thumbscrew having a rounded pin at its end that engages the notch in the pliers' handle, said thumbscrew screwing in and out on the threaded adjuster to adjust the spread of the pliers' handles.

4,554,849
METHOD AND APPARATUS FOR PUNCHING HOLES IN POLYMER TUBES
Thomas Benham, Lake Jackson, Tex., assignor to Mallinckrodt, Inc., St. Louis, Mo.
Filed Dec. 29, 1983, Ser. No. 566,901
Int. Cl.⁴ B26F *1/38*
U.S. Cl. 83—40 **14 Claims**

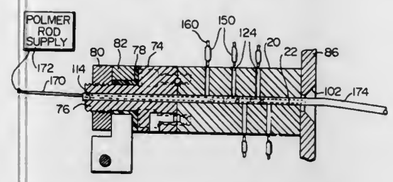
1. A method of punching a hole in a wall of a section of a polymer tube, comprising

inserting the polymer tube section into a guideway extending through a punch mount,

inserting an end section of a continuous supply of monofilament polymer rod into the tube section,

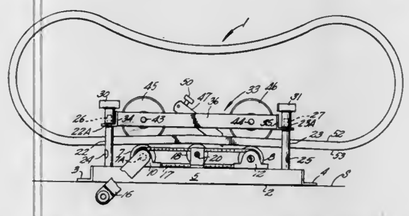
driving a tubular punch through the wall of the tube section in the guideway and into the polymer rod end section to sever a hole piece from the tube wall and to force the severed hole piece into the tubular punch,

withdrawing the tubular punch and hole piece to form a hole in the wall of the tube section, and



severing the end section of the monofilament so as to present an unmarred polymer rod end section for a subsequent punching.

4,554,850
MACHINE FOR CUTTING V-BELTS FROM A V-BELT BAND
James W. Edgar, and Edward J. Edgar, both of 55 Ayers Rd., Eugene, Oreg. 97401
Filed Jul. 19, 1984, Ser. No. 632,394
Int. Cl.⁴ B29H *7/22, 3/06;* **B26D** *1/02*
U.S. Cl. 83—178 **10 Claims**



1. A machine for cutting a V-belt from a band of V-belts wherein adjacent belts are joined by a severable web, said machine comprising,

a base,

rolls journalled on said base and on which a V-belt may be supported,

drive means for imparting rotation to said rolls,

a frame,

support means on said base movably mounting said frame above said base, and

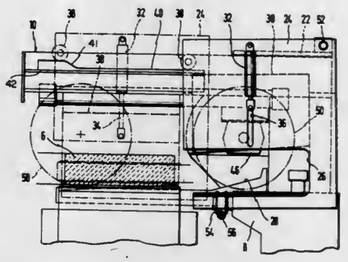
a carriage slidably carried by said frame for travel along a path parallel to the axes of said rolls transversely of a band of V-belts thereon, said carriage having radially aligned belt engaging wheels for rolling engagement with adjacent V-belts and spaced above the web joining the said V-belts, a knife body on said carriage body having a blade for disposition in the path of the last mentioned web.

4,554,851
APPARATUS FOR SEVERING EXTRUDED LIGHT SECTIONAL MEMBERS
Friedrich W. Elhaus, Dorfstrasse 21, 7761 Moos, Fed. Rep. of Germany
Filed Jul. 30, 1984, Ser. No. 635,533
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328032
Int. Cl.⁴ B23D *81/00*
U.S. Cl. 83—213 **9 Claims**

1. Apparatus for severing extruded light sectional members formed of an aluminum alloy or the like produced along an extruder runout path (2), comprising

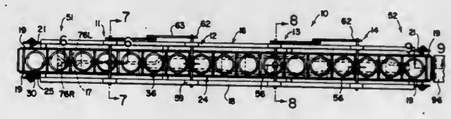
(a) a machine frame (8) mounted adjacent the extruder runout path, said frame including a cantilever (10) that extends horizontally over the runout path;

(b) saw means connected with said cantilever for transverse movement between operative and retracted positions relative to said runout path, said saw means including a saw carriage (46), a motor (48) mounted on said carriage, and a saw blade (50) driven by said motor; and



(c) shear means connected with said cantilever for movement between operative and retracted positions relative to said runout path, said shear means including a shear frame (24), and a pair of relatively movable shear knives (28,30) mounted on said shear frame.

4,554,852
CUTTING MACHINE FOR SLICING CIRCULAR ARTICLES INTO WEDGES
Robert L. Sauer, Hudson; Charles G. Morrissette, Shaker Heights; Stanley J. Garbaczik, Sr., and Stanley J. Garbaczik, Jr., both of Maple Heights, all of Ohio, assignors to Food Equipment Manufacturing Corporation, Maple Heights, Ohio
Filed Jul. 26, 1983, Ser. No. 517,467
Int. Cl.⁴ B26D *3/24*
U.S. Cl. 83—407 **3 Claims**



1. A rotary cutting machine comprising:

an endless conveyor;

a product holding carrier adapted to be transported by said conveyor;

a cam track adjacent said conveyor and longitudinally parallel thereto;

a plurality of rotary blade cutting means positioned at stations longitudinally along said conveyor to intercept said carrier as it is sequentially conveyed past said cutting means;

said carrier comprising an outer frame portion drivingly secured to said conveyor and an inner portion rotatable within said frame portion; and

a pair of cam followers secured to said inner portion and adapted to engage said cam track, whereby said inner portion may be angularly turned responsive to the location of said cam followers along said cam track, said cam track alternating between a single track and a double track, and including means to switch said pair of cam followers from said single track to one follower on each track of said double track whereby said inner portion is angularly shifted responsive to the shifting of said cam followers from said single track to said double track, one of said cutting means being positioned to intercept said inner portion after each angular shift, the relative spacing between the tracks of the double track varying at different stations of the cutting means in a manner which causes the product to be cut at angles of less than 90 degrees.

4,554,853

SAFETY ARRANGEMENT FOR A SAW CHAIN OF A POWER-DRIVEN CHAIN SAW

Karl Nitschmann, Schorndorf; Hans Dolata, and Günter Dietzsch, both of Waiblingen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

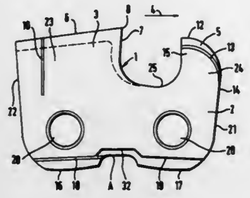
Continuation-in-part of Ser. No. 226,731, Jan. 21, 1981, Pat. No. 4,409,874. This application Oct. 12, 1983, Ser. No. 541,301

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002138

The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.

Int. Cl.⁴ B27B *17/00, 33/14*

U.S. Cl. 83—522 **16 Claims**



1. A safety arrangement for the saw chain of a chain saw such as a power-driven chain saw or the like, the saw chain including a plurality of cutting links, a plurality of connecting links, and a plurality of driving links pivotally interconnected to define the saw chain, each of the cutting links being a body including: a rearward wall having an upwardly-extending portion and a bent-over top portion defining the blade of the cutting link, the top portion extending in a direction transversely to the upwardly-extending portion to conjointly define therewith an inside angle, the upwardly-extending wall portion and the top portion having respective outside surfaces facing away from said inside angle; and, a forward upwardly-extending wall defining the depth limiter of the cutting link, the depth limiter having a top engaging edge for engaging the work to be cut by the saw chain, the top edge of the depth limiter being at an elevation lower than the blade whereby the depth limiter limits the depth of cut of the blade and the cutting load which can be applied to the blade and the upwardly-extending portion of the rearward wall; the walls conjointly defining a notch formed in the body thereby placing the blade in spaced relationship to the depth limiter; the body being bounded by a leading edge defined by the foremost edge of the depth limiter and a trailing edge defined by the rearmost edge of the rearward wall, the leading and trailing edges facing respectively into and away from the direction of travel of the cutting link; the safety arrangement comprising:

a first safety mark formed in the outside surface of said upwardly-extending portion and across said bent-over top portion of said rearward wall, said first safety mark defining a line disposed at a predetermined distance from said trailing edge and extending in a direction substantially parallel thereto;

a second safety mark formed in the wall of the depth limiter and extending from the leading edge to the notch at a predetermined distance below said engaging edge;

said first safety mark defining the rearmost position to which said blade and said upwardly-extending portion can be safely worn provided that the engaging edge of the depth limiter has not been worn down to an elevation below said second safety mark whereby said marks provide positive visual indications to an operator when further use of the saw chain would be unsafe; and,

visual accentuating means formed on said safety marks for marking the same easily recognizable by the operator of the chain saw equipped with said saw chain.

4,554,854

AUTOMATIC RHYTHM PERFORMING APPARATUS

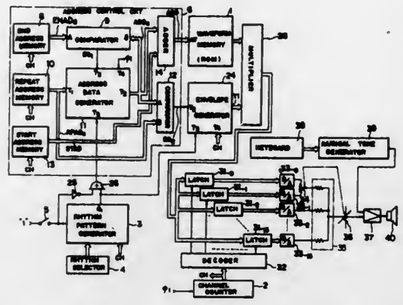
Mitsumi Kato, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 31, 1983, Ser. No. 546,892

Claims priority, application Japan, Nov. 8, 1982, 57-169087[U]

Int. Cl.⁴ G10H *1/40*

U.S. Cl. 84—1.03 **8 Claims**



1. An automatic rhythm performing apparatus capable of producing a rhythmic tone corresponding to a single certain rhythmic musical instrument which is constituted by a plurality of distinct, constituent tone sources, comprising:

(a) a plurality of means each for producing a rhythmic tone signal corresponding respectively to each of said plurality of constituent tone sources of said single certain rhythmic musical instrument;

(b) means for individually controlling the signal levels of the respective rhythmic tone signals of said plurality of producing means;

(c) means for combining respective outputs of said plurality of producing means at signal levels controlled by said control means thereby to provide a combined signal corresponding to a rhythmic tone of said single certain rhythmic musical instrument;

(d) means for varying the signal level of said combined signal; and

(e) means for detecting the signal level of said combined signal,

wherein said control means controls the ratio of the signal levels of the respective rhythmic tone signals of said plurality of producing means in accordance with the detected signal level of said combined signal.

4,554,855

PARTIAL TIMBRE SOUND SYNTHESIS METHOD AND INSTRUMENT

Sydney A. Alonso, Stafford, and Cameron W. Jones, Wilder, both of Vt., assignors to New England Digital Corporation, White River Junction, Vt.

Continuation of Ser. No. 358,096, Mar. 15, 1982, abandoned, which is a continuation of Ser. No. 163,439, Jun. 7, 1980, abandoned. This application Jan. 24, 1984, Ser. No. 572,625

Int. Cl.⁴ G10H *1/06*

U.S. Cl. 84—122 **1 Claim**

1. Apparatus for synthesis of acoustical notes in an electronic instrument, comprising:

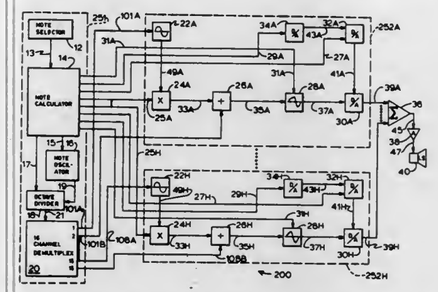
means for generating and storing in digital form a plurality of separate electrical signals each having components that can be selected by a user of the instrument from a plurality of fundamentals, harmonics. and non-harmonics independently of the other signals and each having parameters that can be adjusted by the user independently of the parameters of the other signals such that said signals,

when combined in analog form, have the pitch, loudness, and timbre characteristics of a designated note;

means controlled by the user for designating from a plurality of acoustical notes an acoustical note for synthesis;

means responsive to the selection of said note for reading out the stored signals; means for combining the read out signals; and

means for reproducing the combined signals acoustically to synthesize the selected note; said means for generating comprising a digital oscillator having clock means for generating pulses at a predetermined repetition rate, adder means having a first adder input and a second adder input respectively to receive a first binary input signal formed of binary bits having whole number significance and a second binary input signal formed of binary bits of fractional increment number significance, said adder means being



operable to add periodically the first binary input signal and the second binary input signal to produce a sum output and to produce a carry output whenever the capacity of the adder means is exceeded, selected binary bits of the fractional increment number being aligned within the adder means to have a lower order of significance than the bits forming the first binary input signal; accumulator means having an accumulator input and an accumulator output and connected to receive the clock pulses from the clock means and to receive the sum output at the accumulator input and operable to store the sum output and to provide the stored sum output at the accumulator output, the accumulator output being connected to provide the first binary signal input to the first adder input, so that an oscillator output is provided in the form of carry pulses having a rate proportional to the fractional increment number received by the second adder input.

4,554,856

MUSIC BOX WITH INDICATOR HOIST MECHANISM

Hiroshi Esaki, Tokyo, Japan, assignor to Kunio Kasai, Tokyo, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,123

Claims priority, application Japan, Jun. 1, 1983, 58-081872

Int. Cl.⁴ G10F *1/06*

U.S. Cl. 84—95 C **8 Claims**

1. A music box with an indicator hoist mechanism, comprising:

a housing of said music box;

an upright pole attached to extend upright from said housing;

a powered rotatable shaft supported substantially within and by said housing;

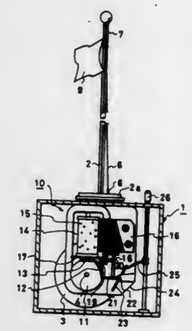
a pulley mounted on and rotatable with said shaft;

a string extending from said pulley, through an opening in said housing to an upper portion of said pole;

a rotating member provided with surface projections;

gear means for coupling together said shaft and said rotating member;

a vibration plate, portions of which are intermittently engaged by said projections as said rotating member rotates; and



an indicator attached to said string externally of said housing and moving with said string during rotation of said pulley.

4,554,857

ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF VARYING A TONE SYNTHESIS OPERATION ALGORITHM

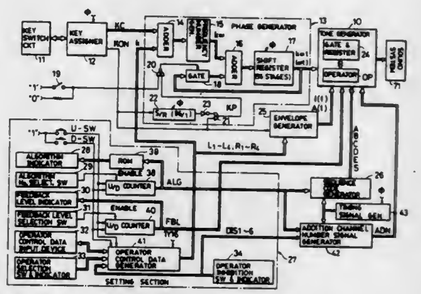
Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 31, 1983, Ser. No. 499,225

Claims priority, application Japan, Jun. 4, 1982, 57-94692

Int. Cl.⁴ G10H *1/057, 7/00*

U.S. Cl. 84—1.19 **23 Claims**



1. An electronic musical instrument comprising:

a plurality of operation units respectively performing a predetermined waveform generation operation using a phase signal or a waveform signal applied to one or more inputs thereof as a parameter;

setting means for variably setting a combination of input and output connections between said respective operation units;

connection switching means for switching connections between said respective operation units in response to the combination of connections set by said setting means; and

which further comprises indication means for visually indicating the combination of connections set by said setting means.

4,554,858

DIGITAL FILTER FOR AN ELECTRONIC MUSICAL INSTRUMENT

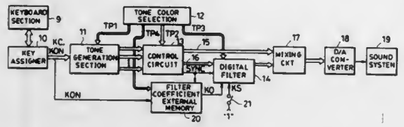
Masatada Wachi, and Mitsumi Katoh, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 4, 1983, Ser. No. 520,232

Claims priority, application Japan, Aug. 13, 1982, 57-140551; Sep. 14, 1982, 57-158871

Int. Cl.⁴ G10H *1/12*

U.S. Cl. 84—1.19 **20 Claims**



1. A digital filter for an electronic musical instrument comprising:

A digital type pole filter capable of controlling a peak in an amplitude-frequency characteristic; and

a digital type zero filter coupled with said pole filter and capable of controlling a valley in an amplitude-frequency characteristic,

a digital tone signal being applied to said digital filter imparting the tone color determined by the amplitude frequency characteristics of both said pole filter and said zero filter.

4,554,859

BOW STROKE SIMULATOR

Leo D. V. Hanly, 30 Peebles Rd., Floreat Park, Western Australia, Australia

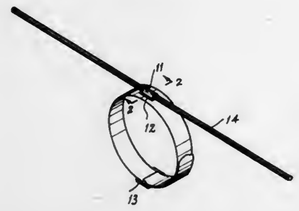
PCT No. PCT/AU83/00119, § 371 Date Apr. 27, 1984, § 102(e) Date Apr. 27, 1984, PCT Pub. No. WO84/01046, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 29, 1983, Ser. No. 609,565

Claims priority, application Australia, Oct. 5, 1982, PF5586

Int. Cl.⁴ G10G *7/00*

U.S. Cl. 84—283 **6 Claims**



1. A bow stroke simulator for a stringed musical instrument including a top plate supporting a finger board and a bridge, and strings interconnecting said bridge and said finger board and being spaced from said top plate, said bow stroke simulator comprising:

a short length of tube; and

fastening means for fastening the tube to the top plate of said stringed musical instrument between said bridge and said finger board and below said strings with the longitudinal axis of the tube extending parallel to the longitudinal axis of the bridge, said tube being adapted to slidably receive a length of rod simulating a bow for the instrument.

4,554,860

PRESSURE DAMPER FOR RECOILLESS WEAPONS

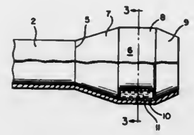
Börje Johansson; Torbjörn Pramskog, both of Eskilstuna, and Jan-Erik Sandberg, Torshälla, all of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

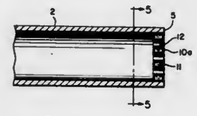
Filed Oct. 20, 1982, Ser. No. 435,504

Claims priority, application Sweden, Oct. 21, 1981, 8106212

Int. Cl.⁴ F41F *17/14, 17/12, 3/02*

U.S. Cl. 89—1.7 **2 Claims**





1. The combination of a pressure damper and a recoilless weapon having a barrel and a muzzle, the pressure damper designed to reduce the pressure in the area around and immediately to the rear of the muzzle of the barrel and comprising at least one container filled with a liquid which is so located in the muzzle region of the barrel that, when the recoilless weapon is fired, the at least one container bursts and as a result explosively releases the said liquid, so that said liquid is mixed with powder gases to reduce the pressure of the powder gases, said at least one container is cylindrically shaped and defines a plurality of apertures aligned parallel to a longitudinal axis of the barrel when said at least one container is located in the barrel, said plurality of apertures permitting gases to leak from the muzzle ahead of a projectile being fired from said barrel before said projectile reaches said at least one container to prevent bursting of the container by other than contacting said projectile.

2. The combination of a pressure damper and a recoilless weapon having a barrel and a muzzle, the pressure damper designed to reduce the pressure in the area around and immediately to the rear of the muzzle of the barrel and comprising at least one container filled with a liquid which is so located in the muzzle region of the barrel that, when the recoilless weapon is fired, the at least one container bursts and as a result explosively releases the said liquid, so that said liquid is mixed with powder gases to reduce the pressure of the powder gases, said barrel is of uniform diameter except for a forward extension section of the barrel which defines an enlargement that terminates at the muzzle, the muzzle having a diameter greater than the diameter of the barrel, the portion of the barrel extending from the uniform diameter portion being of conical shape tapered outwardly, the portion of the barrel extending from the muzzle being of conical shape and tapered outwardly, the two conical shaped portions being interconnected by a portion of cylindrical shape, said at least one container being in the form of a flattened toroid having a complementary shape to the cylindrical portion of the enlargement to fit snugly therein and having an opening diameter greater than the uniform diameter of the barrel.

4,554,861

PNEUMATIC NAILER

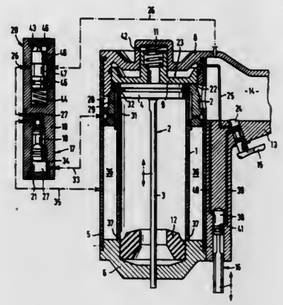
Theo Gassner, Triesenberg, Liechtenstein; Bruno Hann, Nenzing, Austria, and Edwin Kindle, Triesen, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jul. 21, 1983, Ser. No. 516,139

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1982, 3227855

Int. Cl.⁴ F15B *13/042*

U.S. Cl. 91—446 **5 Claims**



1. Pneumatic nailer using compressed air for drivihg nails comprises an axially extending closed working cylinder having a first end and a second end spaced apart in the axial direction, a drive piston slidably supported in said working cylinder for movement in a driving direction from the second end toward the first end of said working cylinder, means for forming a storage chamber, means forming a supply source for conveying compressed air into said working cylinder for driving said drive piston, said storage chamber being in communication with said working cylinder adjacent the first end thereof so that air compressed ahead of said drive piston as it moves in the driving direction toward said first end enters from said working cylinder into said storage chamber, duct means connecting said means forming a supply source to said storage chamber and said duct means forming an independent flow of the operating compressed air to said storage chamber from the flow supplied to said working cylinder for driving said drive piston, a valve unit located in said duct means between said supply source means and said storage chamber for controlling the flow of operating compressed air through said duct means from said supply source means into said storage chamber, and a switching element located in said duct means in the path of the operating compressed air flow to said valve unit and arranged to control the flow of operating compressed air to said valve unit so that when a predetermined operating compressed air pressure is exceeded flow of the operating compressed air to said valve unit is blocked by said switching element.

4,554,862

ROOF RIDGE VENTILATOR FOR RETARDING MICROBE GROWTH IN SHINGLE ROOFS

Clarke K. Wolfert, Peoria, Ill., assignor to Air Vent Inc., Peoria, Ill.

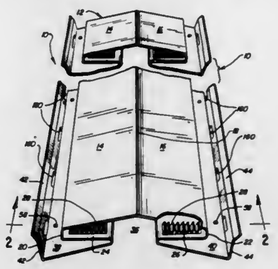
Filed Jun. 21, 1984, Ser. No. 623,092

Int. Cl.⁴ F24F *7/02*

U.S. Cl. 98—42.21 **4 Claims**

1. In a roof ridge ventilator adapted to be installed overlying the open ridge of and along the shingled roof of a building, said ventilator including a pair of flashing parts adapted to be anchored to the roof, and a pair of baffles each upstanding from the ends of one of the pair of flashing parts to which it is joined and spaced from the outer side walls of the ventilator,

the improvement comprising forming said ventilator essentially of zinc sheet metal, and providing at the juncture between said baffles and said flashing parts, a series of drain openings in a straight line along the horizontal extent of each said baffle, wherein the number and size of said drain openings is sufficient that moisture passing through the drain openings from the space between the



baffles and the outer side walls on each side of the ventilator will spread downwardly and diffuse outwardly, to form on the shingled roof a substantially uniform, single sheet of biostatic ionic zinc solution.

4,554,863

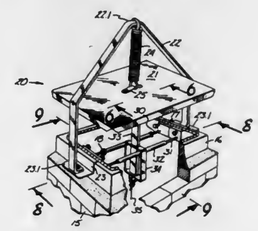
CHIMNEY DAMPER

Bernard L. Dalsin, Edina, Minn., assignor to Bernard Dalsin Manufacturing Company, Bloomington, Minn.

Filed May 7, 1984, Ser. No. 607,785

Int. Cl.⁴ F23L *17/10*

U.S. Cl. 98—59 **8 Claims**



1. A chimney damper attachable to a chimney flue having an upwardly facing, generally planar peripheral surface defining an upwardly open flue opening, comprising:

(a) a frame mountable to the open periphery of a chimney flue and having a superior portion oriented to extend above said flue opening;

(b) flue cover means comprising a thin, generally rectangular metal plate having a generally planar peripheral portion to seal against the upwardly facing surface of a flue opening;

(c) mounting means for mounting the flue cover means to the chimney flue;

(d) spring means extending between the flue cover means and the superior portion of the frame for spring biasing the flue cover means upwardly away from the flue opening, the flue cover means serving to protect the spring means from heated gases emanating from the flue opening; and

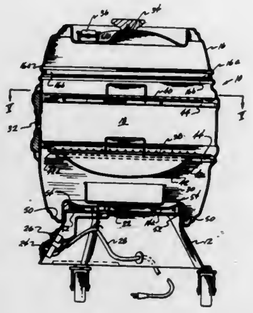
(e) control means for urging the flue cover means downwardly, in opposition to the spring means, into sealing contact with a flue opening, the control means including lock means for maintaining the flue cover in its sealing position.

4,554,864

FOOD COOKER

Terry W. Smith, N. Miami Beach, Fla., and Timothy R. Fallon, Spartanburg, S.C., assignors to Draft Systems, Inc., Spartanburg, S.C.

Filed Jun. 8, 1984, Ser. No. 618,888
Int. Cl.[4] A47J *37/04*
U.S. Cl. 99—340 **9 Claims**



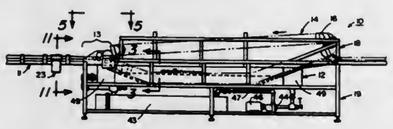
1. A food cooker comprising a support pedestal having an upper surface portion with periphery, a heating unit centrally mounted on the upper surface portion of the pedestal, an open-ended wall section removably supported with one open end on said pedestal and extending upwardly therefrom, a removable cover for closing the upper open end of the wall section and defining with the pedestal and wall section a cooking compartment, at least one food support grill located at an elevation within the cooking compartment, a pan having a periphery and located in the compartment below the grill and above the heating unit to catch and contain material falling from food on the grill during cooking, said wall section including a lower portion surrounding the periphery of the upper surface of the pedestal and defining a reservoir for collection of material falling into the lower portion of the cooking compartment, and said wall section and cover being separately removable from the pedestal to facilitate cleaning of the interior of the cooker.

4,554,865

TACO SHELL FORMING AND COOKING APPARATUS

Andrew A. Caridis, Foster City; Clark K. Benson, Millbrae, and Lawrence F. Klein, Hillsborough, all of Calif., assignors to Heat and Control, Inc., San Francisco, Calif.

Division of Ser. No. 332,743, Dec. 21, 1981, abandoned, which is a continuation of Ser. No. 578,323, Dec. 21, 1981, Pat. No. 4,510,165. This application Feb. 10, 1984, Ser. No. 578,319
Int. Cl.[4] A47J *37/12*
U.S. Cl. 99—353 **14 Claims**



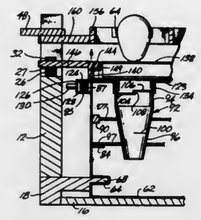
1. Apparatus for forming and cooking a food product comprising, a frame, means on said frame to contain a cooking medium through which such food product may be passed for cooking, endless conveyor means on said frame for carrying such food product through said cooking medium, a product forming station on said frame, means for conveying and positioning individual product pieces at said forming station, said conveyor means including a procession of product forming elements mounted thereon for motion between a closed nested position to an open position, each element having complementary convex and concave molding surfaces configurated so that when adjacent forming elements are disposed in a nesting relationship the mold surfaces are spaced apart such that the product interposed therein is restrained, shaped and carried thereby through the cooking medium, said conveyor means including means adjacent to said forming station serving to move the forming elements individually from the nested to the open position thus to present to such product positioned at said forming station said convex molding surface serving to urge such product towards said concave molding surface of the preceding forming element; means at said forming station serving to restrain the product movement on its path towards the concave molding surface, guide means co-acting with said conveyor means for maintaining said forming elements in a nested relationship when moving through said cooking medium, unloading station means on said frame, said conveyor means including means adjacent to said unloading station means serving to move the forming elements individually from the nested to the open position thereby exposing the product for removal, and supporting means at said unloading station serving to receive product from said forming elements for removal from said apparatus.

4,554,866

MECHANICAL EGG BREAKER AND SEPARATOR

Ernestine Hampton, 400 Mt. Washington Dr., Los Angeles, Calif. 90065

Filed Oct. 21, 1983, Ser. No. 544,222
Int. Cl.[4] A23J *1/09*
U.S. Cl. 99—499 **23 Claims**



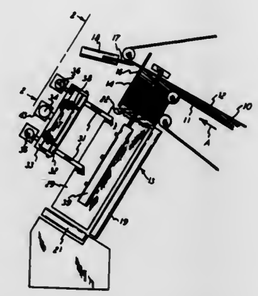
1. An apparatus for breaking eggs comprising:
egg-holding means for holding a plurality of eggs in an array;
egg-breaking means comprised of a plurality of knife means positioned beneath the egg-holding means, each knife means comprised of a pair of horizontally disposed, vertically oriented knife blades, said knife blades being movable between a first contiguous position and a second spaced-apart position, and movable vertically from a lower position spaced from eggs held by the egg-holding means to an upper position towards the egg-holding means to enable simultaneous breaking of the shells of a plurality of eggs held by the egg-holding means when the knife blades are in the first position, said knife blades having openings therein to allow substantially complete discharge of the contents of the eggs when the knife blades are moved to the second position and while in the upper position; and
means for collecting the discharged contents of eggs broken by the knife means.

4,554,867

METHOD AND APPARATUS FOR HANDLING A STACK OF SHEETS

Klaus A. Thumm, Phillipsburg, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Mar. 19, 1984, Ser. No. 591,279
Int. Cl.[4] B65B *13/20*
U.S. Cl. 100—3 **12 Claims**



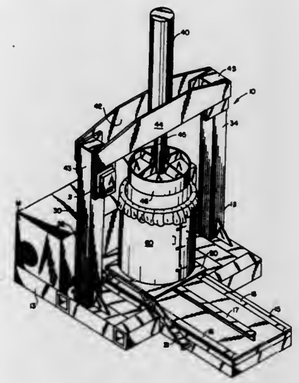
1. A method of handling a stack of sheets, comprising the steps of collecting the sheets into an inclined upright stack on its back on a stacker and on a first endboard, compressing the stack along its length and moving the stack sidewise off the stacker and while the stack is still compressed, supporting the stack and releasing stack compression and then placing a second endboard at the top of the stack while the stack is off the stacker, pressing the second endboard downwardly onto the stack, and again compressing the stack while binding the stack.

4,554,868

APPARATUS FOR COMPACTING REFUSE WITH STABILIZERS

John C. Zimmer, 502 Estate Dr., New Iberia, La. 70560

Filed Jan. 12, 1983, Ser. No. 457,429
Int. Cl.[4] B30B *15/06*
U.S. Cl. 100—229 R **6 Claims**



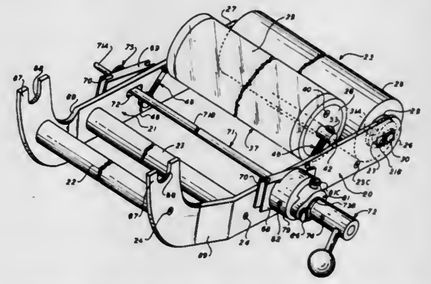
1. A refuse compacting apparatus, comprising:
a. a frame, said frame providing a horizontal base and an upwardly extending superstructure, rigidly attached to said base;
b. a hydraulic cylinder having a movable driven ram portion and being mounted on said superstructure and being vertically oriented for extending said ram portion of said cylinder in a downward direction;
c. a compaction disk rigidly attached to a lower most end of said ram portion and being movable with said ram portion from an upper idle position to a lower operating position;
d. a movable compaction platform securedly mounted on said base beneath said cylinder during a compaction operation and slidably removable from said base during an unloading operation;
e. an open-ended cylindrical jacket assembly adapted to receive the refuse to be compacted, said jacket assembly being at least in part fixedly attachable to said compaction platform, said jacket having hinges at least on one side of a sidewall and latches on diametrically opposite side of a sidewall for assembling said jacket in the cylindrical operational position and disassembling it in an open-wall position during a non-operation;
f. a compaction container insertable inside said jacket assembly with an external wall of said container at least in part being contacted and supported against lateral movement and deformation by stabilizing means mounted on an interior wall of said jacet assembly;
said stabilizing means comprising a plurality of straps connected together in an open-frame manner and curved to follow cylindrical form of said jacket assembly and said compaction container;
g. a runway portion extending outwardly from said frame to facilitate movement of said compaction platform and said jacket assembly attached thereto between an operating position when said platform is beneath said cylinder and a non-operating position laterally removed from said frame, said runway portion being provided with a pair of parallel spaced-apart rails and an I-beam fixedly attached midway betwen said rails, said platform being provided on its underside with a plurality of castors slidably engaging said rails and a t-shaped groove for slidable engagement with said I-beam of said runway portion, this combination of the rails, the castors, the I-beam and the groove facilitating back and forth movement of said platform along said runway.

4,554,869

AUXILIARY FORM ROLLER APPARATUS FOR ROTARY OFFSET LITHOGRAPHIC DUPLICATING MACHINES

Edward N. Ranno, Sr., 245 Ellen Dr., Park Ridge, N.J. 07656

Filed Mar. 1, 1984, Ser. No. 585,113
Int. Cl.[4] B41L *17/00*
U.S. Cl. 101—145 **13 Claims**



1. Auxiliary form roller apparatus for attachment to rotary offset lithographic duplicating machines of the type having a bed, a pair of spaced-apart main frame members extending upwardly and outwardly from the bed, a main frame support rod extending laterally between the frame members adjacent the tops thereof, a master cylinder and at least one machine form roller contacting the master cylinder at a first point on the periphery thereof, said apparatus comprising
an auxiliary form roller;
an auxiliary oscillator roller, said auxiliary oscillator roller

being oscillatable laterally along its axis of rotation in response to rotation thereof;

an auxiliary frame having

guide means at one end thereof adapted to pivotally engage the main frame support rod for support thereof,

first mounting means at the other end thereof for rotatably mounting said auxiliary form roller thereon, and

second mounting means disposed between the ends thereof for rotatably mounting said auxiliary oscillator roller thereon with the auxiliary oscillator roller in rolling contact with said auxiliary form roller; and

third mounting means disposed between the ends of said auxiliary frame for mounting said auxiliary frame on the main frame members with said guide means engaging the main frame support rod, said auxiliary form roller contacting the master cylinder at a second point on the periphery thereof which is spaced a peripheral distance from the first point and said auxiliary oscillator roller engaging the machine form roller, so that ink from the machine form roller is transferred to the master cylinder via said auxiliary oscillator roller and said auxiliary form roller,

said auxiliary frame comprising

a pair of arcuately-shaped spaced-apart support arms having an arcuate length substantially corresponding to the arcuate distance between the main frame support rod and said second point on the periphery of the master cylinder, and

support means extending laterally between said support arms for support thereof;

said guide means comprises a substantially U-shaped groove in one end of each of said support arms, said U-shaped groove pivotally engaging the main frame support rod; and

said first mounting means is disposed at the other end of each of said support arms;

said apparatus further comprising

control means disposed between said auxiliary frame and said third mounting means for causing relative movement therebetween, such that said support arms pivot about the longitudinal axis of the main frame support rod to thereby cause said auxiliary form roller to engage and disengage the master cylinder.

4,554,870

INK METERING DEVICE FOR A PRINTING MACHINE HAVING AN INK TROUGH-INK ROLLER COMBINATION

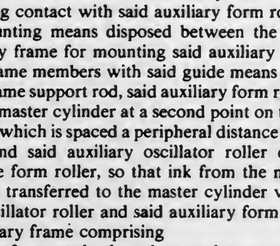
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,689

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308066

Int. Cl.⁴ B41F *31/12*

U.S. Cl. 101—365 **12 Claims**



1. In a printing machine, an ink metering device for an ink trough—ink roller combination of an inker, especially for an inker of a flat-bed or a high-pressure rotary printing machine, for controlling application of ink from the ink trough (1) to the ink roller (2) in axial zones having

a plurality of rotatable metering elements (9) which are located close to each other, and each extends over the width of an ink zone, wherein

said metering elements are formed as circular-cylindrical bodies, tangentially engageable against the ink roller (2);

each metering element (9) has an essentially planar end face which faces the ink roller (2), and at least one raised projection (17) extending across from one end portion to a second end portion of the planar end face and acting as a metering ridge;

and means (4, 5) are provided for supporting each of the metering elements for rotation about an axis of rotation (R) which is approximately perpendicular to a theoretical line which extends tangentially (T) with respect to the ink roller (2).

4,554,871

DISPENSED GUIDED SUBMUNITION

Richard G. Nixon, Cedar Knolls, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 21, 1983, Ser. No. 553,677

Int. Cl.⁴ F42B *13/50*

U.S. Cl. 102—489 **17 Claims**



1. Missile with a plurality of submunitions which are dispensed from the missile during the flight of the missile, wherein each submunition has a center axis, a forward end, and an aft end, said forward and aft ends defined by the general trajectory of the submunition after being dispensed, characterized in that:

said forward end on at least one of said submunitions has a forward surface which is slanted so that its relationship to that submunition's side wall is an acute angle on one side of the submunition and an obtuse angle on an opposite side of the submunition;

means are provided to induce the submunition to spin about its axis;

said submunition comprises a guidance system which includes a sensor, the spin of the projectile and the forward surface causing a movement of the projectile with the sensor and thereby establishes a scan pattern for the sensor.

4,554,872

ARRANGEMENT FOR REDUCING THE BASE DRAG IN PROJECTILES

Ulrich Schleicher, Hersbruck, Fed. Rep. of Germany, assignor to Diehl, GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,664

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246380

Int. Cl.⁴ F42B *13/00*

U.S. Cl. 102—490 **6 Claims**

1. An arrangement for reducing base drag of an artillery projectile comprising:

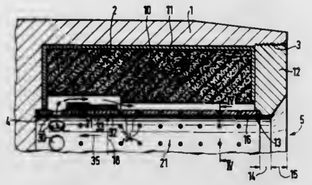
a body including an annular chamber and a discharge aperture in communication therewith;

an axially extending tube located in the chamber and separating the chamber into an outside region radially outside the tube and an inside region radially inside the tube, said inside region being in fluid communication with the discharge aperture; and

an annularly-shaped detonatable gas generating charge located in the outside region;

the tube including

(i) a plurality of inlet nozzles for conducting gas radially outward from the inside region to the outside region to detonate the gas generating charge, and



(ii) a plurality of outlet nozzles for conducting gas from the outside region into the inside region;

the tube restricting the flow of gas from the outside region to the inside region after detonation of the gas generating charge to facilitate maintaining a low pressure in said inside region;

further comprising flow control means connected to the tube and selectively opening and closing the inlet nozzles to control the flow of gas therethrough.

4,554,873

MATERIAL HANDLING AND SORTING SYSTEM

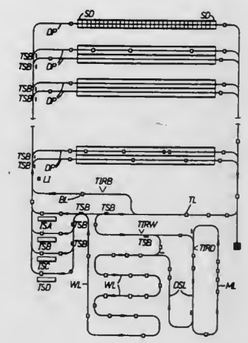
Michael P. Rex, Wimborne, England, assignor to Plessey Overseas Limited, Illford, England

Filed Sep. 3, 1982, Ser. No. 414,922

Claims priority, application United Kingdom, Sep. 4, 1981, 8126882

Int. Cl.⁴ B61J *3/12*

U.S. Cl. 104—88 **17 Claims**



1. A material handling and sorting system comprising:

a tracking network including a plurality of loading and induction sidings and en-route track-side signpost means;

a plurality of destination paths including a plurality of associated discharge containers representing particular destinations;

a plurality of self-powered trolleys which co-operate with the tracking network and which are capable of carrying a particular material load requiring transportion to a particular destination, each trolley incorporating controllable steering means;

each induction siding incorporates an induction station, the induction station including input means arranged for entering coded data indicative of a particular destination into said induction stations, said coded data is transmitted from said induction stations to a central control system which is arranged to translate said coded data into routing data for programming a trolley;

an optical communication-channel is provided between the induction station and the trolley, said routing data being transferred to said trolley over said communication channel, said communication channel being a two-way channel comprising receiver/transmitter pairs incorporating photo-diodes and light-emitting diodes respectively which are optically coupled to optical sensor means on said trolley;

said signpost means includes signpost information with a serial data track and two clock-tracks, said serial data and clock tracks comprising physical bars mounted in apertures on a mounting plate wherein each bar is arranged to pass through an infra-red beam passing between a light emitting diode transmitter and photo-diode receiver in said optical sensor means thereby casting a shadow on said photo-diode to detect a signal; and

each said trolley incorporates a micro-processor and first and second data storage means, said routing data being entered in said first data storage means and a trolley operator program being stored in the second data storage means, wherein, upon the program being run, the routing data is compared with said signpost information read from said signpost means by said optical sensor means to control the trolley appropriately around the tracking network;

wherein the sorting system is so arranged that each trolley is programmed at any loading and induction siding with data relating to the route to be taken to a particular destination whereby the trolley so programmed co-operates with said en-route track-side signpost means thereby enabling the steering means to be controlled, to guide said relevant trolley through said tracking network and through its programmed destination, at which destination any accompanying material load is automatically discharged into the associated discharge container.

4,554,874

ROLLER GUIDE DEVICE FOR USE ON A VEHICLE

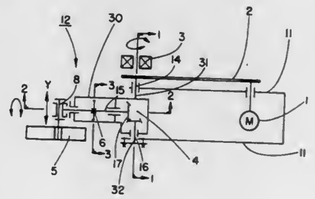
Hubert Thudt, Puchheim, Fed. Rep. of Germany, and Harald Winkler, Graz, Austria, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,801

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151410

Int. Cl.⁴ B62D *1/26*; B61F *9/00*

U.S. Cl. 104—247 **8 Claims**



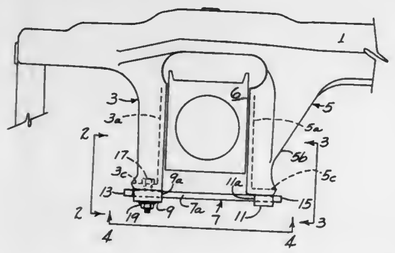
1. Roller guide for use on a vehicle; comprising a contact roller biased into contact with and rolling along a stationary guide track; including a roller retaining mechanism consisting of a retaining lever connected to the steering linkage of the vehicle and of a pivotable lever which is rotatable about its longitudinal centerline and is pivotally connected to a foward end of the retaining lever; the contact roller being freely rotat-

ably supported on the free end of said pivotable lever and the pivotable lever adapted to be pivoted from a retracted position in which it essentialy coincides with the axis of the retaining lever into an essentially straight-line operatively extended position; said pivotable lever including a pivotable shaft; a primary drive including a geared DC motor mounted on said retaining lever including a chain drive for actuating said pivotable shaft; a torque lock on said pivotable shaft for latching the pivotable lever in the retracted or the extreme extended positions and for unlatching the pivotable lever upon actuation of the primary drive.

4,554,875
PEDESTAL TIE BAR ARRANGEMENT

Dallas L. Schmitt, Fairview Heights, and Kenneth E. Spencer, Granite City, both of Ill., assignors to Lukens General Industries, Inc., Coatesville, Pa.

Filed Jul. 23, 1984, Ser. No. 633,220
Int. Cl.⁴ B61F *5/26*
U.S. Cl. 105—221 R **7 Claims**



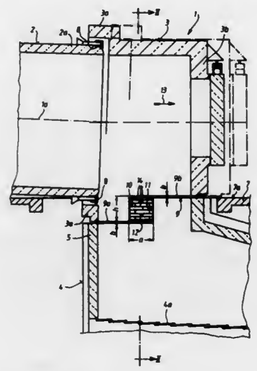
1. In combination with a railway truck pedestal having longitudinally spaced vertical legs defining between them a vertical opening and terminating in downwardly facing horizontal feet, means on said pedestal legs forming separate longitudinally extending relatively wide and narrow apertures beneath the respective feet, said separate aperture-forming means being spaced from each other at least as far as the width of said opening in said pedestal, a pedestal tie bar slidably mounted in said apertures and extending across the opening in said pedestal and having a shank portion narrower than both of said apertures and permanently affixed enlarged end portions wider than said narrow aperture to prevent removal of said tie bar in either direction from said narrow aperture, said enlarged end portions forming transverse shoulders adjoining said shank, said wide aperture being wider than both said tie bar end portions to permit said tie bar to be moved longitudinally from its normal tying position across said opening in said pedestal to an open position clear of said opening in said pedestal, and removable means for retaining said tie bar in tying position across said opening in said pedestal.

4,554,876
ROTARY KILN WITH COOLER

Heinz Grachtrup, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,051
Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3316974
Int. Cl.⁴ F23G *5/06*
U.S. Cl. 110—246 **8 Claims**

1. In a rotary kiln and cooler assembly having a rotatable cylinder, a stationary kiln outlet head associated with the outlet end of the cylinder and capable of limited displacement relative to the outlet end of the cylinder, and an inlet shaft connecting the kiln outlet head to the cooler, and wherein a sealable separating gap is provided at the connection between the kiln outlet head and the inlet shaft, the improvement wherein said kiln outlet head and said inlet shaft have side walls at said connection provided with approximately vertical interengaging steps of equal height, adjacent ones of said steps lying opposite one another and being movable toward and away from one another a distance to form a closable side

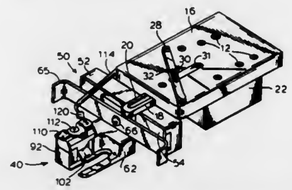


opening at each side of said kiln outlet head, and wherein the separating gap is divided by said steps into at least two horizontal sections of different heights which open into the side openings.

4,554,877
ALIGNMENT SYSTEM FOR A GARMENT ACCESSORY-HOLDING JIG

Salvatore V. Cusumano, Moscow, and Aaron Glassman, Scranton, both of Pa., assignors to P.S.R., Incorporated, Lake Ariel, Pa.

Continuation-in-part of Ser. No. 486,799, Apr. 20, 1983, Pat. No. 4,524,704. This application Dec. 6, 1984, Ser. No. 679,021
Int. Cl.⁴ D05B *3/18*
U.S. Cl. 112—105 **15 Claims**

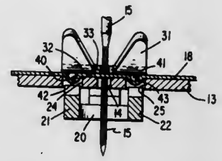


1. A jig for holding an accessory having at least two thread holes while being stitched on a sewing machine comprising:
attachment means attachable to the sewing machine in predetermined relationship with respect to the needle of the sewing machine;
a first positioning means held in movable relationship with the attachment means; a holding means attached to and extending from the first positioning means to a location below the needle of the sewing machine, permitting the alignment of at least two thread holes on the accessory with the needle of the sewing machine when the first positioning means is moved to a desired location; and
an alignment system comprising a guide means affixed to the holding means and an indicator means, affixed to the attachment means, which is aligned with a desired location on the guide means in order to indicate alignment of the needle of the sewing machine with a desired location on said accessory, wherein the guide means is moved relative to the indicator means upon movement of the first positioning means.

4,554,878
SEWING MACHINE PRESSER DEVICE WITH FEED DRIFT CONTROL

Manfred R. Laidig, Whippany, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 10, 1984, Ser. No. 680,209
Int. Cl.⁴ D05B *29/06*
U.S. Cl. 112—235 **8 Claims**

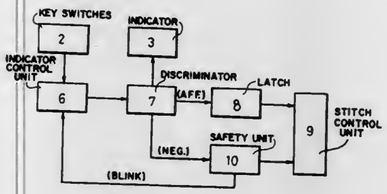


1. In a sewing machine having stitch forming mechanism including an endwise reciprocatory thread carrying needle, a work fabric supporting throat plate formed with an aperture accommodating passage of said thread carrying needle, a four-motion drop feed mechanism including a feed dog, said throat plate being formed with at least one feed dog accommodating slot, means actuating said feed dog to partake of work feed strokes in an extended position through said throat plate feed dog accommodating slot and return strokes in a retracted position within said throat plate feed dog accommodating slot, and a presser foot including a sole plate biased toward said throat plate for engaging a work fabric in opposition to said feed dog during said work feed strokes and for engaging a work fabric in opposition to said throat plate during said return strokes, said presser foot sole plate and said throat plate being formed one with a protruding rib and the other with recess aligned with and complemental to said rib; said rib acting to press a wale of work fabric into said recess only during each return stroke of said work feed dog.

4,554,879
ELECTRONIC SEWING MACHINE

Yasukata Eguchi, Tokyo, Japan, assignor to Janome Sewing Machine Industry Co. Ltd., Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,328
Claims priority, application Japan, Apr. 22, 1983, 58-70003
Int. Cl.⁴ D05B *3/02, 35/12*
U.S. Cl. 112—445 **5 Claims**



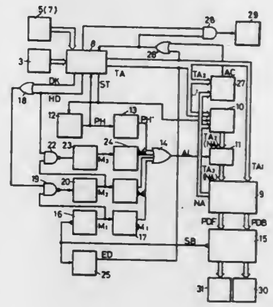
1. An electronic sewing machine comprising,
an electronic memory for storing stitch control data for a plurality of stitch patterns to be selectively and sequentially read out, to control the formation of a selected pattern by the sewing machine, each of said plurality of stitch patterns corresponding to a different pattern number to be indicated upon selection of a pattern by an operator;
selecting means for selecting a stitch pattern by designation of a pattern number, said selecting means including a plurality of operating switches;
digital indicator means for indicating said pattern number in the form of two digits when selected by operation of said operating switches of said selecting means;
discriminator means for detecting if said selected pattern number corresponds to a stitch pattern the control data for which is stored in said electronic memory, and for producing either an affirmative or a negative signal according to the detection result;
stitch control means coupled to said discriminator means and responsive to said affirmative signal, for controlling needle lateral amplitude and fabric feed amount in accordance with the selected pattern; and
safety means coupled to said discriminator means, said digital indicator means and said stitch control means, and responsive to said negative signal to cause said digital indicator means to make a cautionary operation, and to cause said stitch control means to remain inoperative.

4,554,880
ELECTRONIC SEWING MACHINE

Takeshi Kongoh, Tokyo, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1984, Ser. No. 604,745
Claims priority, application Japan, Apr. 30, 1983, 58-74927
Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—454 **4 Claims**

SEÑOR



1. In an electronic sewing machine having an upper drive shaft and stitch forming instrumentalities operatively connected to the upper drive shaft and including a needle which is swingable transversely of a fabric feeding direction and is vertically reciprocated per rotation of the upper drive shaft to penetrate a fabric to form stitches thereon, and a fabric feeding device operated in timed relation with the needle to transport the fabric with respect to the needle, the improvement comprising, in combination,
a pulse generator operated in association with said upper drive shaft to produce a timing pulse per rotation of the upper drive shaft;
an electronic memory for storing at successive addresses stitch control data for controlling a needle position and a fabric feeding amount to produce a number of different stitch patterns, said stitch control data including data for producing stitches of different characters some of which require a supplemental mark to provide specific meaning to a word, data for providing a predetermined space between the characters to be stitched in sequence, data for producing stitches of the supplemental mark to be associated with a character, data for positioning the stitches of the supplemental mark with respect to the associated

character, and for discriminating the presence of said character requiring the supplemental mark to be stitched, said memory being responsive when addressed, to said timing pulse of said pulse generator to read out sequentially said stitch control data;

first switch means including a number of switches each selectively operated to produce a pattern signal to select a desired one of said patterns stored in said memory;

pattern signal control means responsive to said pattern signal to latch the same and for addressing said memory to read out the corresponding stitch control data;

second switch means alternatingly operated with said first stitch means to memorize in said pattern signal control means a desired number of pattern signals as selected by operation of said first switch means, wherein said pattern signal control means is operated to address said memory and adapted to produce an indicating signal during a stitching operation of the machine indicating the presence of a character requiring the supplemental mark to be subsequently stitched when the pattern signals of such a character are memorized;

discriminator means arranged to receive said stitch control data from said memory and to produce a discriminating signal; and

circuit means coupled to said discriminator means and said pattern signal control means, and responsive to said discriminating signal for designating the next address of said memory, said circuit means responsive to said indicating signal from said pattern signal control means immediately after issuance of said discriminating signal to produce a signal to designate the address immediately after said next address of said memory during one rotation of said upper drive shaft for reading out from said memory in combination the data of said supplemental mark and the data for positioning the stitches of said supplemental mark with respect to its associated character.

4,554,881

TRAPEZE SYSTEM

Leonard A. Lane, Lennox Heads, Australia, assignor to Illirrie Holdings Pty Ltd., Australia

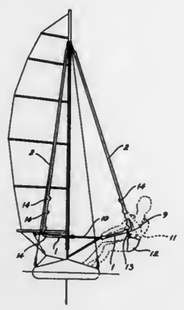
PCT No. PCT/AU82/00021, § 371 Date Oct. 27, 1982, § 102(e) Date Oct. 27, 1982, PCT Pub. No. WO82/03051, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 3, 1982, Ser. No. 441,533

Claims priority, application Australia, Mar. 3, 1981, PE7818

Int. Cl.⁴ B63H *9/08*

U.S. Cl. 114—39 **14 Claims**



1. A trapeze system adapted for use on a sailing vessel having a substantially vertical mast, such trapeze system comprising a pair of substantially rigid hanging members connected at their upper extremities to an upper extremity of a mast in such a manner that the hanging members are respectively in port and starboard positions relative to the mast and each is capable of movement on its respective side of the mast, and means for releaseably connecting said hanging members to a trapeze harness.

4,554,882

FENDER SYSTEM

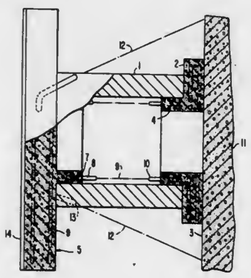
Rudolphus P. M. Lemmens, Dieren, Netherlands, assignor to Vredestein N.V., Velp, Netherlands

Filed Dec. 16, 1982, Ser. No. 450,411

Claims priority, application Netherlands, Dec. 23, 1981, 8105818

Int. Cl.⁴ B63B *21/00*

U.S. Cl. 114—219 **2 Claims**



1. A fender system for mounting on a quay or jetty comprising

at least one absorbing body of elastomer material adaptable for attachment to the quay or jetty,

a front plate which is parallel in essentially a vertical plane to a vertical wall of the quay or jetty attached to said absorbing body on its end away from the quay or jetty where it can come into touch with an object such as a ship moving towards the quay or jetty,

said front plate being made of cast reinforced concrete and being shaped and located for distributing and transferring the loads exerted by the object on the absorbing body,

at least one other part being connected with the cast reinforced concrete of said front plate by having a portion of said at least one other part cast in said reinforced concrete of said front plate,

one said parts being a gliding strip having a low friction coefficient of non-corrosive material with a back side connected to said front plate by a dove-tailed surface cast in the reinforced concrete of said front plate,

another of said parts being an anchor means embedded in said reinforced concrete for connection to the quay or jetty by a chain means to support at least a portion of the weight of said cast reinforced concrete front plate, and

a concrete flange plate connected with the quay or jetty and having an annular projecting portion projecting within said at least one absorbing body.

4,554,883

MODULAR FLOATING STRUCTURE

Wallace W. Lane, 579 Auwina Ave., Kailua, Hi. 96734

Filed Jun. 10, 1983, Ser. No. 503,038

Int. Cl.⁴ B63B *35/38*

U.S. Cl. 114—266 **19 Claims**

19. For use in a modular floating structure having a multiplicity of vertical support beams thereunder in a recirculated pattern, a submerged bridging network comprising:

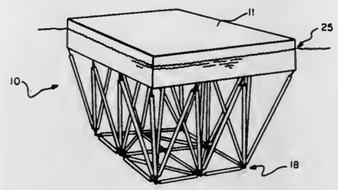
bridging beams arranged in an inverted pyramidal lattice;

bridging connectors for connecting said bridging beams to said support beams;

bottom beams forming a horizontal geometric lattice with intersections corresponding to the vertices of said bridging beam pyramidal lattices; and

bottom connectors for connecting said bottom beams to one another and to said bridging beams;

said bottom connectors including members aligned to connect both to bottom beams in a horizontal lattice and to bridging beams in said inverted pyramidal lattice;



said bridging connectors including two members aligned to connect one submerged corner of a support beam to one bridging beam connected to a bottom connector.

4,554,884

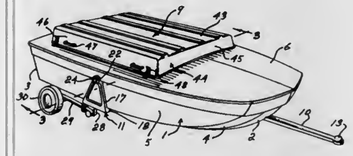
TRAILER GEAR FOR SMALL CRAFT

Daniel Bouliane, 10,710 Olympia Blvd., Montreal, Canada (H2C 2W5)

Filed Mar. 8, 1984, Ser. No. 587,687

Int. Cl.⁴ B63B *7/02*

U.S. Cl. 114—344 **10 Claims**



1. A trailer gear for water craft, said craft including a hull having side walls, a bottom, a stern, a bow, and a generally horizontal and flat marginal portion formed between each said side wall and said bottom intermediate said stern and said bow, said trailer gear comprising a tow bar and two independent separate wheel assemblies, said tow bar being elongated and rigid, having one end adpated to be rigidly and detachably secured to the bow of said hull and having means at its opposite end for hitching the same to a towing vehicle, each of said wheel assemblies including a rigid frame conforming to the cross-sectional profile of each side wall, means to detachably secure each said frame to a respective side wall externally of said hull, each frame having a lower lateral flange adapted to underlap the said marginal portion of said hull and support the same thereat, a ground-engaging wheel and a spring suspension connecting said ground-engaging wheel to said frame in a nonadjustable manner whereby said wheels support said craft in upside-up position above ground level when said craft is being towed by a towing vehicle through said bar.

4,554,885

ROTATABLE FLAG SUPPORT

Camille J. Burny, Jr., 706 Waukegan Rd., Suite 7C, Glenview, Ill. 60025

Filed Oct. 15, 1984, Ser. No. 660,649

Int. Cl.⁴ G09F *17/00*

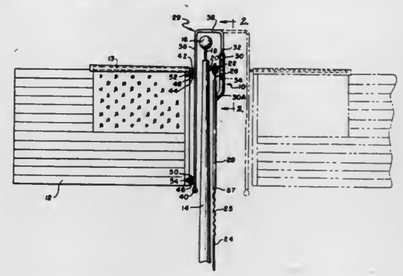
U.S. Cl. 116—174 **13 Claims**

1. Apparatus for supporting a flag on a flagstaff to which is mounted a pulley and halyard combination for raising and lowering the flag, said apparatus comprising:

a coupling member coupled at a first end thereof to a first section of the halyard engaging the pulley;

an offset tubular sleeve coupled to said coupling member;

pivot means coupled to the flag and positioned within said offset tubular sleeve and extending along a portion of the length thereof and freely rotatable therein, said pivot means extending above and adapted to be positioned over the flagstaff with the flag in a fully raised position for maintaining the flag in spaced relation and downwind from the flagstaff; and



variable tension means coupling a second end of the coupling member to a second section of the halyard for applying increased tension to the halyard in orienting said pivot means generally vertically with the flag in the fully raised position and for reducing the tension applied to the halyard during the raising and lowering of the flag whereby said pivot means is maintained in spaced, offset relation from the flagstaff.

4,554,886

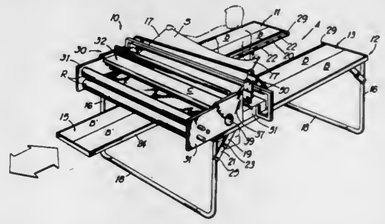
APPARATUS FOR COATING AND CUTTING SHEET MATERIAL

Carlos R. Carter, 6648 Wealthy Ct., Riverdale, Ga. 30274

Filed Feb. 27, 1984, Ser. No. 583,707

Int. Cl.⁴ B05C *3/18, 5/02*

U.S. Cl. 118—42 **9 Claims**



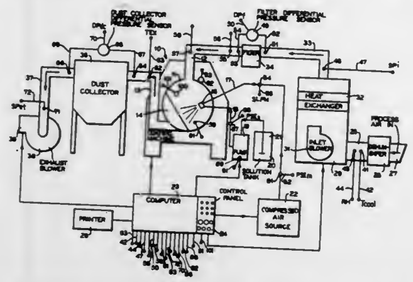
1. A machine for applying adhesive to a strip of wall covering material while the strip is being payed from a supply roll of the material to form a coated strip of desired length ready for hanging and for cutting such strip transversely to the desired length, said machine comprising a pair of elongate, generally horizontal and transversely spaced table portions defining an aisle into one end of which a person may enter to walk toward the opposite end of the aisle, support means adjacent said opposite end of the aisle for rotatably supporting a supply roll of wall covering material, means also adjacent said opposite end of the aisle for coating the upper side of said strip with adhesive as it is payed from the supply roll in response to a person grasping an end of the strip and transporting it while walking within the aisle toward said one end thereof, and movable table means bridging said aisle for allowing a person to enter the aisle and progress toward said opposite end thereof and for progessively filling in and bridging the aisle as a person progresses from said opposite end to and through said one end of the aisle.

4,554,887

APPARATUS FOR COATING TABLETS WITH COMPUTER CONTROL

David Yoakam; Robert Campbell, both of Cedar Rapids, and Robert Pehkonen, Lisbon, all of Iowa, assignors to Vector Corporation, Marion, Iowa

Filed May 22, 1984, Ser. No. 612,845
Int. Cl.[4] B05B *15/00*
U.S. Cl. 118—666 **10 Claims**



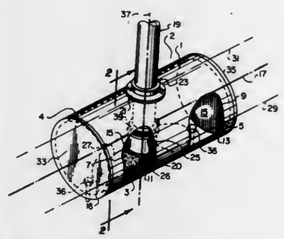
1. Apparatus for coating objects comprising, a machine with a rotating drum in which said objects to be coated are placed, drum driving means connected to said rotating drum, a spray head mounted in said rotating drum for supplying spray to said objects to be coated, air inlet means connected to said machine to supply inlet air to said drum, air outlet means connected to said machine to remove air from said drum, means for supplying spray to said spray head, a computer connected to supply inputs to control said drum driving means and said spray supplying means, and a plurality of sensors for detecting inlet air humidity, temperature and flow rate, drum air temperature and outlet air temperature connected to supply inputs to said inputs to said computer so that it can monitor and control said coating machine, and wherein said means for supplying spray to said spray head includes a fluid reservoir and a pump, said computer connected to control said pump and sensors for measuring pressure and quantity of said fluid supplied to said spray head supplying inputs to said computer so that said computer controls the spray head so as to the time of application of fluid, quantity of fluid applied, the rate of fluid applied to said objects, and time of drying.

4,554,888

COMPACT ANIMAL FEEDER TROUGH

Tony H. Gross, Rte. 1, Box 40, Hawley, Minn. 56549

Filed Mar. 21, 1984, Ser. No. 591,927
Int. Cl.[4] A01K *5/00*
U.S. Cl. 119—53 **10 Claims**



1. An animal feeding trough comprising, in combination, an elongate feeder housing with a longitudinal central axis, having a wall enclosing a feeding chamber, said housing having a top bounded by a top line and a bottom bounded by a bottom line, both lines being parallel to the central axis and lying in the same plane; the housing wall having a rounded front side and a rounded rear side opposite each other between the top and bottom boundary lines, said wall having a feed opening midway along the top boundary line and a pair of longitudinally spaced access openings in a sidewall defining a pair of feeding ports and providing feeding access to said chamber, said feeding ports having a lower edge above the chamber bottom so that the rounded bottom of the chamber serves as a feed holding trough; and

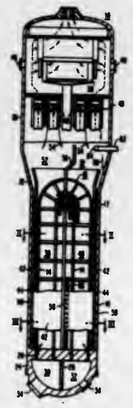
feed delivery means coupled to said housing and extending through said feed opening below the central axis a spaced distance above the chamber bottom for discharging animal feed into the middle of the feeding chamber trough midway between the feeding ports, said feed delivery means including barrier means in the chamber between said feeding ports to restrict physical or visual contact between animals feeding at adjacent ports.

4,554,889

HYBRID PREHEAT/RECIRCULATING STEAM GENERATOR

Gerard P. Lilly, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1984, Ser. No. 623,682
Int. Cl.[4] F22B *1/02*
U.S. Cl. 122—32 **4 Claims**



1. A vapor generator comprising:

a vertical shell portion;

a plurality of U-shaped tubes forming a tube bundle for transferring heat from a primary fluid to a secondary fluid, to vaporize said secondary fluid, said tube bundle being so disposed within said vapor generator that the primary fluid flows through the tubes to create a hot leg portion and a cold leg portion;

a tube sheet disposed adjacent to one end of said vertical shell portion, for receiving the ends of the tubes;

a wrapper, generally enclosing said tube bundle, and disposed within said shell portion to form an annular downcomer passage;

means for separating liquid from the vapor produced from said secondary fluid and for directing said separated liquid into said annular downcomer passage;

a divider plate extending longitudinally along said annular downcomer passage for dividing said annular downcomer passage into a first section adjacent to said cold leg portion of said tube bundle and a second section adjacent to said hot leg portion of said tube bundle; and

means for introducing feedwater into said first section of said downcomer passage, wherein said feedwater mixes with said separated liquid, said wrapper being cooperatively associated with said shell portion such that the mixture of feedwater and separated liquid flows into said cold leg portion of said tube bundle;

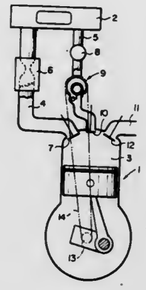
wherein a top edge of said divider plate is offset toward said feedwater introducing means to limit the quantity of said separated liquid which mixes with said feedwater.

4,554,890

ENGINE INTAKE SYSTEM

Haruo Okimoto, and Ikuo Matsuda, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 8, 1984, Ser. No. 638,686
Claims priority, application Japan, Aug. 10, 1983, 58-146848
Int. Cl.[4] F02B *29/00, 33/00*
U.S. Cl. 123—26 **8 Claims**



1. An engine intake system including intake passage means, rotary type timing valve means located in said intake passage means and including rotatable means having inlet port means communicating with said intake passage means at an upstream portion of the intake passage means and outlet port means connected with said inlet port means through valve passage means formed in said rotatable means, means for rotating said rotatable means, said outlet port means being arranged so that it is cyclically communicated with said intake passage means at a downstream portion of the intake passage means as the rotatable means rotates, the improvement comprising passage port means provided in said downstream portion of the intake passage means for cooperation with said outlet port means in said rotatable means, said passage port means including at least two ports which are arranged so that one of the ports is communicated with said outlet port means in said rotatable means earlier than the other port, shut-off valve means provided in said one port and movable between a closed position and an open position, valve actuating means for actuating said shut-off valve means for changing opening period of said timing valve means.

4,554,891

COOLANT LEVEL CONTROL ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 26, 1984, Ser. No. 593,289
Claims priority, application Japan, Mar. 31, 1983, 58-53786
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.21 **6 Claims**

1. In an internal combustion engine;

means defining a coolant jacket into which coolant is introduced in liquid form and discharged in gaseous form;

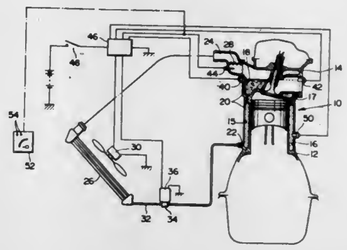
a pump for recirculating liquid coolant from a radiator into which gaseous coolant from said coolant jacket is introduced and condensed to a liquid form, to said coolant jacket;

a first level sensor disposed in said coolant jacket for detecting the presence of liquid coolant at a predetermined level therein;

a control circuit responsive to said level sensor for energizing said pump when said sensor indicates said level is below said predetermined one;

a low level sensor for sensing the presence of liquid coolant at a predetermined low level; and

a temperature sensor disposed in said coolant jacket for sensing the temperature prevailing in said coolant jacket at a level above said predetermined one,



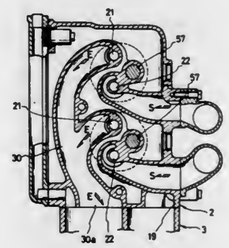
said control circuit being responsive to said temperature sensor for energizing said pump in a manner to pump liquid coolant from said coolant jacket into said radiator until said low level sensor detects the absence of liquid coolant and maintains the level of liquid coolant at this level until said temperature sensor indicates the temperature of said engine has risen to a predetermined value.

4,554,892

WATER-COOLED DIESEL ENGINE FOR USE AS OUTBOARD ENGINE

Koichi Amemori, and Toshihiko Kawabe, both of Takatsuki, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

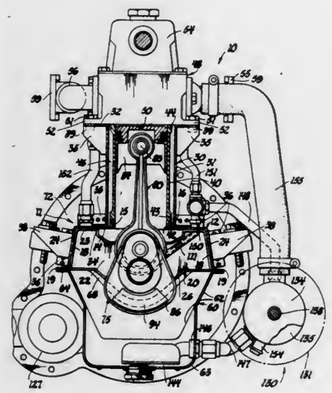
Filed Nov. 22, 1983, Ser. No. 554,403
Claims priority, application Japan, Jun. 21, 1983, 58-110190; Jun. 22, 1983, 58-111053; Jul. 26, 1983, 58-136526
Int. Cl.[4] F01P *3/14, 3/16*
U.S. Cl. 123—41.82 R **6 Claims**

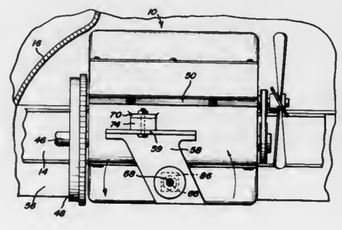


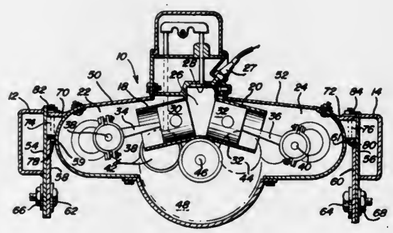
1. A water-cooled diesel engine for use as a marine outboard engine, including a cylinder block and a cylinder head formed as an integral unit from a lightweight alloy of aluminum and having a combustion chamber, a corner position of said combustion chamber formed by said cylinder block and said cylinder head being rounded to have an arcuate cross-section; at least one dry liner integrally cast in said cylinder block and provided with a honed inner peripheral surface, a radially outwardly recessed honing relief portion being formed in an end portion of said inner peripheral surface of said dry liner adjacent to the end of said combustion chamber, the end of said dry liner being positioned below said rounded corner portion of said combustion chamber and extending above the location of a top ring on a piston positioned at top dead center in said liner whereby honing of said cylinder block is avoided; and intake ports and exhaust ports formed in said cylinder head,

said exhaust ports being in communication with an exhaust manifold formed integrally with said cylinder block and said cylinder head.

4,554,893
LIGHTWEIGHT ENGINE
Anthony M. Vecellio, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 1, 1984, Ser. No. 656,519
Int. Cl.[4] F02F *7/00*; F16C *3/10*
U.S. Cl. 123—41.83 **12 Claims**







1. A lightweight internal combustion engine including a main cylinder and crankcase assembly having an open top closed by a cylinder head and a closed bottom, said main assembly comprising

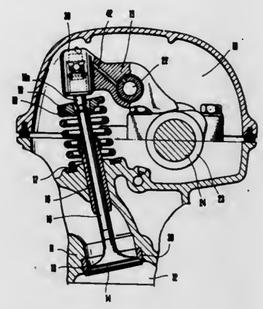
a fabricated frame including a base member of stiff sheet material formed to define an upper crankcase wall having a plurality of longitudinally spaced upwardly flanged cylinder opening means each having an upper edge, a plurality of longitudinally spaced stiffening and crankshaft supporting webs formed of stiff sheet material and secured to said base member upper wall, said webs including main bearing opening means aligned longitudinally for rotatably supporting a crankshaft, and an upstanding continuous water jacket having a lower edge secured to said base member peripherally around said cylinder opening means and having an upper edge secured to said cylinder head, and

a plurality of removable cylinder liners within said water jacket, each liner having a lower portion sealingly engaging and extending within the upper edge of one of said flanged cylinder opening means and having an upper end sealingly engaging said cylinder head.

4,554,894
TWIN PISTON-PER-CYLINDER ENGINE
Wilfred B. Johnson, Star Rte., Box 3289A, Manistique, Mich. 49854
Filed Nov. 2, 1983, Ser. No. 548,975
Int. Cl.[4] F02B *25/12*
U.S. Cl. 123—53 AA **2 Claims**

1. In an internal combustion engine comprising opposed cylinders defining a common centrally disposed combustion chamber therebetween, the improvement wherein the cylinders are mutually inclined to define a substantially V-shaped combustion chamber when pistons associated the respective cylinders are at their top dead center positions, the engine including crank shafts for the respective pistons located outwardly of the cylinders by a distance sufficient to allow the pistons and connecting rods when disconnected from the crank shafts to be withdrawn from the bottoms of the respective cylinders without interference from the crank shafts, wherein the cylinders are substantially horizontally opposed, wherein the engine includes removable crank case covers at the top of the engine for obtaining access to the pistons and connecting rods and for removal thereof, wherein the engine includes a mounting bracket on each side for providing 2-point mounting of the engine in a vehicle engine compartment in a manner promoting pivoting of the engine in the event of a collision rather than projecting the engine against a fire wall of the vehicle, wherein each mounting bracket includes a generally vertically extending bracket member having its upper end attached to the side of an engine intermediate the ends thereof with the lower end of the bracket member depending from the point of attachment with the engine, and a vertically extending support member attached to a vehicle frame at its upper end and depending alongside said bracket member, and means securing the bracket member and support member together to enable pivotal movement about a transverse axis upon application of force to the forward end of the engine above the transverse axis as would occur in the event the front end of the vehicle collided with another vehicle or a stationary object, wherein said means pivotally connecting the bracket member and support member includes a pivot bolt and a shim member interconnected the bracket member and support member to prevent pivotal movement of the engine until predetermined force has been applied to the engine sufficient to rupture the shear member after which the engine may pivot about a transverse axis defined by the bolt, and wherein said shear member is a polygonal projection rigidly affixed to the bracket member, said support member including a correspondingly shaped recess receiving the projection, said projection and recess being concentrically arranged with respect to the pivot bolt to prevent rotational movement of the bracket member and engine with respect to the support member until the polygonal projection has been broken away from the bracket member.

4,554,895
HYDRAULIC LIFTER FOR INTERNAL COMBUSTION ENGINES
Takuro Ono, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Feb. 8, 1984, Ser. No. 578,095
Claims priority, application Japan, Feb. 17, 1983, 58-25951
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.55 **1 Claim**



1. A hydraulic lifter for internal combustion engines, comprising:

a valve train including a rotation cam, a rocker arm and a valve stem, said rocker arm receiving the load from said rotating cam by one end and operating said valve stem by the other end;

a cylinder formed as an open-lower-end hole in said one end of said rocker arm;

a plunger slidably inserted into the lower portion of said cylinder and contacting an upper end of said valve stem;

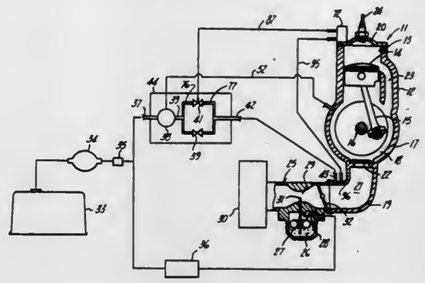
valve means arranged in said cylinder and dividing the internal space of said cylinder into a pressure chamber of the lower portion and an oil reservoir chamber of the upper portion, said valve means including means for allowing said oil to flow from said reservoir chamber into said pressure chamber;

a spring positioned within said pressure chamber and biasing said plunger to said valve stem; and

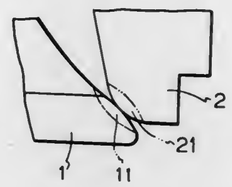
oil inlet means opened at the upper end portion of said reservoir chamber.

4,554,896
FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Masafumi Sougawa, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan
Filed Apr. 22, 1983, Ser. No. 487,697
Claims priority, application Japan, May 1, 1982, 57-72573
Int. Cl.[4] F02M *1/16*
U.S. Cl. 123—179 G **17 Claims**

1. A cold enrichment device for an internal combustion engine comprising a charge forming device having a main nozzle for delivering a fuel/air mixture to said engine for running, a fuel pump, a discharge nozzle downstream of said main nozzle, means responsive to starting of the engine for delivering fuel under pressure from said fuel pump to said discharge nozzle for a predetermined period of time for starting enrichment, and temperature responsive means for delivering fuel under pressure from said fuel pump to said discharge nozzle independently of said charge forming device when the temperature of the engine is below a predetermined amount for cold running enrichment.



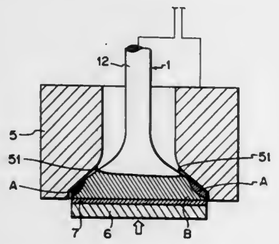
4,554,897
EXHAUST VALVE FOR DIESEL ENGINE AND PRODUCTION THEREOF
Takemi Yamada, Tokyo; Tamataro Satoh, Yokohama; Masaaki Mizushina, Fujisawa; Koji Toyota, and Hiromi Okamoto, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 315,666, Oct. 28, 1981, Pat. No. 4,530,322.
This application Feb. 25, 1985, Ser. No. 705,216
Claims priority, application Japan, Oct. 31, 1980, 55-152264; Sep. 24, 1981, 56-149620
Int. Cl.[4] F01L *3/04*
U.S. Cl. 123—188 AA **15 Claims**



1. Exhaust valve for Diesel engine, wherein a seat face thereof is formed with at least one coated layer comprising ceramics and metals, the coated layer increasing substantially constantly in density of said ceramics towards an upper surface thereof, wherein the coated layer comprises ceramics at an uppermost layer.

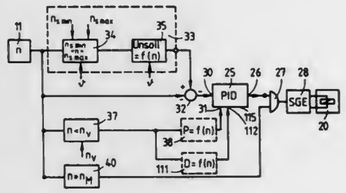
3. Exhaust valve for Diesel engine, wherein a seat face thereof is formed with at least one coated layer comprising ceramics and metals, the coated layer increasing substantially constantly in density of said ceramics towards an upper surface thereof, wherein the coated layer comprises a ceramic and metal complex layer at an uppermost layer.

4,554,898
EXHAUST VALVE FOR DIESEL ENGINE AND PRODUCTION THEREOF
Takemi Yamada, Tokyo; Tamataro Satoh, Yokohama; Masaaki Mizushina, Fujisawa; Koji Toyota, and Hiromi Okamoto, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 315,666, Oct. 28, 1981, Pat. No. 4,530,322.
This application Feb. 25, 1985, Ser. No. 705,323
Int. Cl.⁴ F01L *3/04*
U.S. Cl. 123—188 AA **16 Claims**



1. An exhaust valve for a Diesel engine, wherein a seat face thereof is formed with coated layer comprising ceramic and metal, the coated layer increasing in density of ceramic toward an upper surface thereof, wherein the coated layer comprises a plurality of layers which each vary in ceramic density.

4,554,899
SPEED GOVERNING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH SELF-IGNITION
Gerhard Engel, Stuttgart, and Wolf Wessel, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 19, 1984, Ser. No. 632,552
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329800
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—357 **16 Claims**

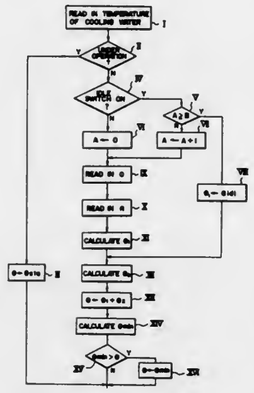


1. A speed governing electronic system for an internal combustion engine with self-ignition, having an electromagnetic final control element affecting the quantity of fuel to be injected and having a control unit for forming the control signal for said final control element by means of a governor amplifier having PID behavior and further in accordance with the deviation of an actual rpm value from a set-point rpm value, wherein said set-point value which is raised with the rpm, after a threshold has been exceeded, only drops in a delayed manner upon an ensuing abrupt drop in rpm, and wherein upon a drop below a predetermined value dependent on said actual value, a nonlinear elevation of the component of the amplification of said governor amplifier can take place, said governor amplifier having means combining at least one of

(1) a means defining a high dynamic amplification behavior in the range of the drop of the engine rpm, and a means defining a flattened characteristic curve in the vicinity of at least one of the ends of the regulated range of said governor amplifier from a threshold value on, and

(2) a means defining a dynamic amplification dropping from a higher value to a lower value in the range of an undercutting of an engine drop of rpm caused by cold starting of the engine.

4,554,900
METHOD FOR CONTROLLING IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE
Takao Komoda, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Continuation of Ser. No. 361,788, Mar. 25, 1982, abandoned.
This application Aug. 13, 1984, Ser. No. 640,220
Claims priority, application Japan, Nov. 20, 1981, 56-186328
Int. Cl.⁴ F02P *5/08*
U.S. Cl. 123—418 **13 Claims**



2. A method for controlling ignition timing of an internal combustion engine using an electronic ignition timing control apparatus, comprising the steps of:

setting ignition timing to an appropriate value in a loaded operation in accordance with the amount of intake air flow and the rotational speed of the engine;

setting ignition timing in an idling operation to an idling operation value retarded with respect to the value in the loaded operation irrespective of the amount of intake air flow; and

setting ignition timing at a transition from loaded operation to idling operation to said idling operation value after an invariable delay time has elapsed since the start of the idling operation.

4,554,901
FLUID DISTRIBUTING APPARATUS
Dennis H. Gibson, Edelstein; Alan R. Stockner, Chillicothe, and Donald J. Waldman, Brimfield, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 27, 1984, Ser. No. 594,040
Int. Cl.⁴ F02M *41/06*
U.S. Cl. 123—450 **7 Claims**

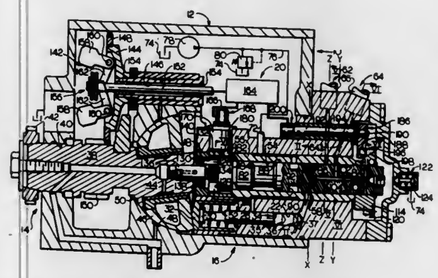
1. A fluid distributing apparatus, comprising:

a housing defining a bore, a pumping chamber, and a low pressure fluid inlet passage communicating with the bore;

a piston reciprocatingly disposed within said pumping chamber for movement in one direction to provide an intake stroke and movement in a second direction to provide a pressure stroke;

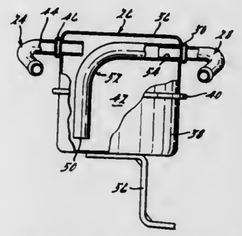
a rotor having a fluid passageway defined therein, said passageway having a portion thereof in communication with a peripheral surface of said rotor, said rotor being rotatably disposed within said bore;

a single, dual flow delivery passage communicating the pumping chamber with the bore and being in alternate communication with the low pressure fluid inlet passage and the fluid passageway in the rotor; and



means for directing fluid from said single, dual flow delivery passage to the first radial ports to minimize directional changes of fluid, said directing means opening onto the peripheral surface of the rotor and includes a relief positioned on the leading edge of the opening to intersect the opening at an acute angle with respect to the peripheral surface of the rotor.

4,554,902
FUEL CONDITIONING DEVICE
Walter J. Atkins, Wayne, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Jun. 21, 1984, Ser. No. 622,910
Int. Cl.⁴ F02M *31/00*
U.S. Cl. 123—557 **3 Claims**

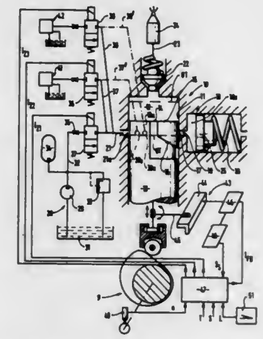


1. In a vehicle with a carbureted internal combustion engine positioned within a substantially enclosed engine compartment, the upper walled surface of which is defined by an engine compartment hood means, the compartment characterized by limited air circulation through the engine compartment for cooling when a hot engine is de-energized resulting in a high engine compartment temperature increase, wherein the improvement comprises a fuel heat conditioning device and system for restarting the engine, comprising:

a source of liquid fuel including a carburetor bowl within the engine compartment and a fuel tank outside the engine compartment and a fuel line extending therebetween;

a hollow, thin-walled enclosure means within the engine compartment having a sufficient volume for engine starting and located beneath the upper walled surface of the hood means and adjacent the engine carburetor, the fuel passing through said fuel line and said enclosure being heated by no other heat source other than the air circulating in the engine compartment.

4,554,903
FUEL INJECTION APPARATUS FOR INJECTING A FUEL MIXTURE COMPRISING AT LEAST TWO COMPONENTS
Max Straubel, Stuttgart, and Klaus-Dieter Zimmermann, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Mar. 2, 1984, Ser. No. 585,464
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3310049
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—575 **6 Claims**



1. A fuel injection apparatus for injecting a fuel mixture comprising at least two components, wherein at least one additional fluid or additional fuel is admixed with a main fuel to a desired ratio,

an electrical control unit;

at least one pump piston having a longitudinal axis, said pump piston is guided in a pump cylinder of a fuel injection pump, acts upon a pump work chamber between said piston and a fuel supply pressure valve, and said piston is linearly actuatable by a cam drive along said longitudinal axis;

a first metering valve delivering a main fuel via a first inflow conduit, the opening duration of which said first inflow valve determines the quantity of the main fuel pre-stored in the pump work chamber;

at least one second metering valve supplying the pump work chamber with an additional fluid, which said second metering valve is inserted in a second inflow conduit and enables the flow of the additional fluid admixed with the main fluid;

said pump piston is rotatable by means of an adjusting device that serves to shift the instant of supply onset and that is provided with an electromechanical adjusting member that is triggerable by the electrical control unit, said pump piston has a first control edge formed by its end face oriented toward the pump work chamber and a second control edge inclined relative to the longitudinal axis of the pump piston for determining the end of supply; by means of said second control edge, an overflow opening of an overflow conduit leading to a fuel reservoir is openable, and that the fuel reservoir is embodied as a refill reservoir receiving the entire return-flow fuel quantity diverted after the end of supply and returning the fuel to the pump work chamber prior to the next subsequent supply stroke, said reservoir including a reservoir piston, said reservoir piston including a bottom facing toward said pump work chamber when in its non-displaced position filling an end portion of said reservoir facing said pump work chamber, and wherein the overflow conduit represents the sole and direct connection between the refill reservoir and the pump work chamber and the overflow opening located at the mouth of the overflow con-

duit into the pump work chamber is openable by both control edges of the pump piston;

said fuel supply pressure valve being inserted into a pressure line connecting the pump work chamber with an injection nozzle;

in which the pump work chamber is exclusively embodied by a section of the pump cylinder defined on the supply side by the pressure valve and on the drive side by the pump piston, to which chamber at least one of the inflow conduits is directly connected, that the at least two metering valves inserted into separate inflow conduits are electromechanically actuatable, and said electrical control unit emits control pulses (I_{z1}, I_{z2}, I_{z3}) dependent on operating characteristics (n, T, S, L) to the metering valves, the opening duration of which fixes the mixture ratio of the fuel components directed to the pump work chamber prior to each injection stroke of the pump piston.

4,554,904

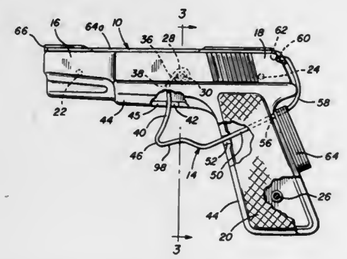
TRIGGER ASSEMBLY FOR RUBBER BAND GUN

Mitsuo Endo, 1120 S. State, Clearfield, Utah 84015

Filed Jan. 15, 1985, Ser. No. 692,070

Int. Cl.[4] F41B *7/02, 7/08*

U.S. Cl. 124—18 **10 Claims**



8. A toy rubber band gun comprising a gun body defining an imitation barrel, a stock at the back of the barrel, and a handle depending from the stock, the gun further including a trigger element of elongate resilient material having a forward end formed as an eye secured on a pin in the stock of the gun, a trigger portion extending downwardly through a slot in the bottom of the stock for accommodating back and forth movement of the trigger portion, an elongate portion extending rearwardly from the trigger portion through a further slot in the front of the handle for accommodating up and down movement of the elongate portion up through the handle and out through a slide bearing in back of the handle for accommodating lengthwise movement of the elongate portion, and a loop portion extending upwardly from the elongate portion behind the handle and terminating in a hooked tip biased into engagement against the back of the stock whereby rearward pressure on the trigger portion of the trigger element disengages the hooked tip from the back of the stock and release of said rearward pressure on the trigger portion reengages the hooked tip with the back of the stock.

4,554,905

SPACE PROBE/SATELLITE EJECTION APPARATUS FOR SPACECRAFT

Harold M. Smyly; Charles D. Miller; Richard A. Cloyd, and Clarence Heller, all of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Wshington, D.C.

Filed Apr. 5, 1984, Ser. No. 596,959

Int. Cl.[4] B64G *1/64;* **F41B** *7/00*

U.S. Cl. 124—56 **7 Claims**

5. An apparatus for ejecting an object, comprising:

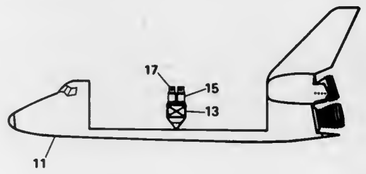
a cradle member adapted to support thereon the object to be ejected,

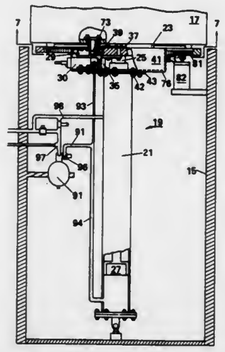
means for quickly moving said cradle member from a nested position a predetermined distance along an axis, and then stopping so said object thereon will continue to move outwardly from said cradle member,

release mechanism for holding said object to said cradle member and for releasing said object from said cradle member after movement of said cradle along said axis a distance shorter than said predetermined distance,

said release means comprising a retractable pin means attached to said cradle member that is adapted to engage the object to be ejected,

a fixed barrier member that does not move relative to said cradle member,





said retractable pin means having a pin that contacts at one end said barrier means when said cradle is in a nested position so as to be held in a position that engages the object to be ejected,

said retractable pin means being spring loaded so when said cradle to which it is attached is moved along said axis a short distance it will clear said barrier member and snap back disengaging from the object and thus allow it to move outwardly from said cradle member,

means for rotating said cradle member,

said barrier member being circular so the pin of said retractable pin means will continually contact it as said cradle member rotates until such time it is moved along said axis a sufficient distance to clear the barrier member.

4,554,906

TANKLESS FRICTION BOILER SYSTEM

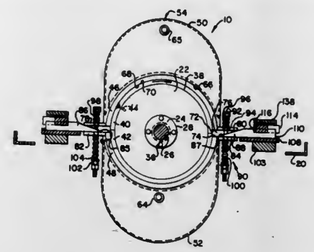
William E. Newman, Sr., 207 Doncaster Rd., Joppa, Md. 21085, and Desmond J. Farrow, Sr., 546 Mechanics Valley Rd., North East, Md. 21901

Filed Oct. 12, 1984, Ser. No. 660,525

Int. Cl.[4] F22B *3/06*

U.S. Cl. 122—26 **13 Claims**

1. In a system for heating fluent material by heat caused by the biased contact of a rotor and and assembly fixed relative thereto; the improvement comprising: the rotor being cylindrical, the fixed assmebly including: a first member with a hemi-cylindrical bore portion, a second member with a hemi-cylindrical bore portion and a plurality of elements for adjustably holding the first member relative to the second member, said plurality of elements compensating for wear caused by frictional contact between the rotor and the first and second hemi-cylindrical bore portions by resiliently suspending the second



member below the first member with the hemi-cylindrical bore portions opposed to form a substantially cylindrical bore and causing said hemi-cylindrical bore portions to be urged toward said rotor, means for rotating the rotor in the substantially cylindrical bore in contact with the first and second members, means affixing said assembly against rotation, and means associated with the first and second member for exposing fluid for heating by said assembly.

4,554,907

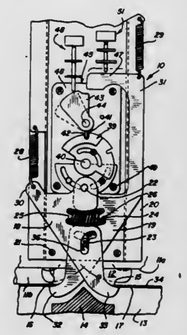
LATCH FOR SELF-CLEANING OVEN DOOR

Ronald V. Overley, Bloomfield Township, Morrow County; Michael H. Tedhams, Columbus, and Carl L. Atzbach, Pleasant Township, Hardin County, all of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 12, 1983, Ser. No. 560,856

Int. Cl.[4] F23M *7/00;* **E05C** *7/00*

U.S. Cl. 126—191 **18 Claims**



1. In a self-cleaning oven structure having wall means defining an oven cavity and a door movably mounted to said wall means for selectively closing said cavity in a closed position thereof, an improved latching and locking device for maintaining the door releasably in said closed position, comprising:

a pair of latch arms each having a distal portion, and defining overlapping, divergent kidney-shaped slots;

pivot means for pivotally mounting said latch arms on said wall means in a scissorlike arrangement, said distal portions of the latch arms defining a pair of selectively positionable latch bolts;

means on said door defining an opening having a pair of catches at spaced portions thereof disposed to be engaged by said latch bolts as an incident of said latch arms being projected through said opening while in a closed arrangement and said latch bolts being urged apart into juxtaposition with said catches in an opened arrangement;

means biasing said latch arms to said closed arrangement;

means including a guide pin on said wall means extending through said overlapping slots and means on the door for urging said latch arms to said opened arrangement as a result of the projection of said latch arms through said opening, said latching and locking device being free of overcenter means; and

locking means for locking said latch arms in said opened arrangement in engagement with said catches to define means for mounting the door in said closed position as an incident of said oven cavity being heated to a preselected high temperature with said door in said closed position, whereby said door may be effectively releasably latched and locked in said closed position during operation of the oven structure.

4,554,908

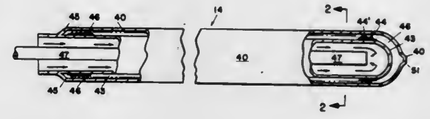
ELECTROMAGNETIC ENERGY ABSORBER

Jacques M. Hanlet, Lake Worth, and Elia R. J. Tarantino, Palm Beach, both of Fla., assignors to Alpha-Omega Development Inc., Loxahatchee, Fla.

Continuation of Ser. No. 70,606, Aug. 29, 1979, abandoned. This application Jul. 26, 1984, Ser. No. 634,827

Int. Cl.[4] F23J *3/02*

U.S. Cl. 126—443 **6 Claims**



1. An energy absorber system for heating fluid therein responsive to impingement by energy within the electromagnetic spectrum, comprising:

(a) a rigid outer tube member substantially transparent to predetermined bandwidths within said electromagnetic spectrum, said outer tube member having an outer tube member axis line;

(b) a first inner tube member containing said fluid to be heated, being mounted internal said outer tube member substantially coincident with said outer tube member axis line, said outer and first inner tube members being spaced each from the other defining an evacuated chamber therebetween, said first inner tube member having grooves formed on an external surface thereof, and a substantially smooth inner surface for providing substantially linearly directed fluid flow in said axis line direction, said grooves defining an included angle within the approximate range between 3.0° to 30.0°, said grooves having a metallic coating formed thereon adapted to provide a plurality of reflections of said energy within said grooves; and,

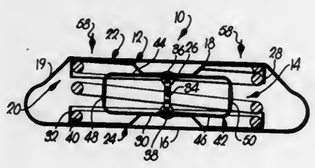
(c) a second inner tube member mounted internal said first inner tube member, said first and second inner tube members being spaced each from the other, said fluid to be heated entering said energy absorber system within an annular space defined by said substantially smooth inner surface of said first inner tube member and a substantially smooth external surface of said second inner tube member between said first and second inner tube members and exiting through said second inner tube member in a linearly directed manner.

4,554,909
VAGINAL APPLICATOR
Jose L. Pino y Torres, 918 Versailles Cir., Maitland, Fla. 32751
Filed May 27, 1983, Ser. No. 498,919
Int. Cl.[4] A61J *1/00*
U.S. Cl. 128—1.2 **16 Claims**



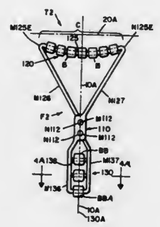
1. An instrument for irradiative treatment of the genital tract, comprising:
an elongated uterovaginal tandem having a curved proximal end, and a distal end;
an enlarged intravaginal applicator elongated in a dimension of elongation, and a tandem-receiving bore formed therein along said dimension of elongation, said applicator also including a proximal end, a distal end, an anterior portion and a posterior portion;
means for operatively interconnecting said tandem and said intravaginal applicator during use with said tandem received by said tandem-receiving bore so that relative rotational movement therebetween is prevented;
means defining at least one cavity in said applicator adjacent the proximal end thereof, and means defining a passageway extending from said cavity to the distal end of said applicator, said passageway and cavity for receipt of a container of irradiative treatment material; and
means defining suture receiving openings at said distal end of said intravaginal applicator.

4,554,910
CARDIO PULMONARY RESUSCITATION PRESSURE INDICATOR
James J. Lally, Shawnee Mission, Kans., assignor to Health Education Publication Company, Inc., Kansas City, Mo.
Filed Feb. 28, 1983, Ser. No. 470,609
Int. Cl.[4] A61H *31/00*
U.S. Cl. 128—28 **7 Claims**



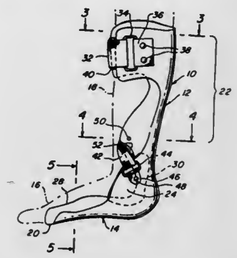
1. A cardio pulmonary resuscitation pressure indicator comprising:
force-transmitting structure including a first surface for placement on a patient's chest region, a second surface for engagement by the hands of a person treating said patient, and means for transmitting force applied by said person through said first surface to the chest region of said patient,
said force-transmitting means being positioned between said first and second surface and comprising upper and lower plate means oriented in an opposed, spaced apart relationship and means operably coupling said upper and lower plate means for movement of the upper plate means relative to the lower plate means when said force is applied, including biasing means interposed between said upper and lower plate means for resisting said movement of said upper plate means,
said biasing means comprising a coil spring in engagement with the adjacent faces of said upper and lower plate means,
said coupling means including flexible connector means for interconnecting said upper and lower plate means and for limiting the maximum spacing between the plates; and
signal means operably coupled with said force-transmitting structure for giving a perceptible signal when a predetermined force has been transmitted to said patient's chest region.

4,554,911
MASSAGING TOOL AND METHOD FOR LOWER-EYELIDS AND ZYGOMATIC SKIN
Margaret J. Nielsen, 2918 S. 121st St., Omaha, Nebr. 68144
Filed Oct. 13, 1983, Ser. No. 541,457
Int. Cl.[4] A61H *15/00;* **A45D** *40/26*
U.S. Cl. 128—57 **2 Claims**



1. Massaging tool for treating the lower-eyelid and adjacent zygomatic skin areas and during such usage being adapted to reciprocatably rollably traverse along said skin areas in both the general up-down and the general right-left areal directions, said massaging tool comprising:
A. a frame member including a handle extending along a longitudinal-axis and a primary and a secondary mounting means for rotatable members, said frame member comprising two removably connected unitary sub-parts, each sub-part providing substantially one-half of a generally concave shaft primary mounting means extending abruptly to said longitudinal-axis, and each sub-part also providing substantially one-half of a said handle that also includes a said secondary mounting means having a plurality of short-axles respectively consecutively spaced along said longitudinal-axis;
B. a plurality of rotatable members individually revolvably surrounding said concave shaft primary mounting means; and
C. a rotatable member revolvably surrounding each of said short-axles of the secondary mounting means.

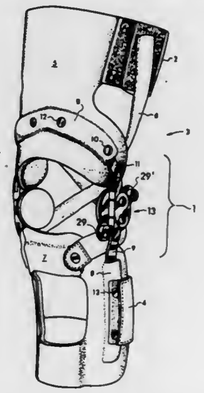
4,554,912
PLASTIC ORTHOTIC THERAPEUTIC DEVICE
Louis J. Haberman, c/o Long Hill Medical Ctr., 9 Post Rd., Oakland, N.J. 07436
Filed Jan. 18, 1984, Ser. No. 571,821
Int. Cl.[4] A61F *3/00*
U.S. Cl. 128—80 E **7 Claims**



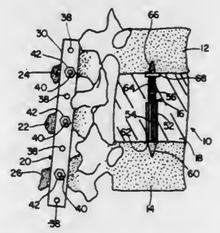
1. A plastic orthotic therapeutic device comprising in combination greave or leg section, a plantar or foot section, said greave or leg section and said plantar or foot section being integral and rigidly formed of unitary construction, means for providing forces to correct the deforming components of equinus or foot drop, simultaneous means for providing forces to correct the deforming components of varus or foot inversion, means for providing for comfort to a wearer when said plastic orthotic device is worn and means for allowing the wearer of said orthotic device to easily don and doff said device, wherein said means for providing forces to correct the deforming components of equinus or foot drop consist of a three point pressure system including a foot plate, a broad proximal posterior section, and the shoe of the wearer, and wherein said means for providing forces to correct the deforming components of varus or foot inversion consist of a three point pressure system including an appropriately relieved malleolar area, a high medial wall, an extended projection proximal to the medial malleolus, and an extended trim line over the first tarsal bone of said wearer.

4,554,913
ADJUSTABLE JOINT FOR A KNEE BRACE
Darryl L. Womack, Lakewood; Ralph B. Noell, Denver, and Larry R. Bradshaw, Arvada, all of Colo., assignors to Scott Orthopedics, Inc., Denver, Colo.
Filed Nov. 7, 1983, Ser. No. 548,932
Int. Cl.[4] A61F *3/00*
U.S. Cl. 128—80 C **27 Claims**

1. A knee brace comprising:
a thigh engaging component, a calf engaging component, and means for securing said components respectively to the thigh and calf of a person,
means for mounting said thigh and calf engaging components to each other, said mounting means including a polycentric pivot having first and second members with mating gear teeth, means for securing one of said membes to said thigh engaging component and the other of said members to the calf engaging component, and means for mounting said first and second members for rotation about respective first and second axes with the respective gear teeth of said first and second members mating whereby rotation of the first member about the first axis causes the second member to rotate about the second axis and rotation of the second member about the second axis causes the first member to rotate about the first axis, said first member further having an elongated portion extending outwardly of the first axis and moving along a first path as said first member rotates about the first axis, and,
means for restricting the movement of said first member about the first axis, said restricting means including a stop member and means for selectively supporting a portion of said stop member at first and second locations spaced from one another along said first path whereby said first member of said polycentric pivot can rotate about said first axis until said elongated portion thereof abuts said portion of said stop member at either said first or second location, said means for selectively supporting said portion of said stop member including a support member, means for mounting said support member in a fixed position relative to said first and second axes of said polycentric pivot, and means for mounting said portion of said stop member to said support member for selective rotation about a third axis, said portion of said stop member extending eccentrically about said third axis, and said mounting means further including means for selectively affixing said portion of said stop member in fixed non-rotating relationship to said support member at first and second positions about said third axis with said first position defining said first location of said portion of the stop member along said first path and said second position defining said second location of said portion along said first path.



4,554,914
PROSTHETIC VERTEBRAL BODY
John P. Kapp, 1933 Petit Bois N., and Robert R. Smith, 2574 Lake Cir., both of Jackson, Miss. 39211
Filed Oct. 4, 1983, Ser. No. 538,911
Int. Cl.[4] A61F *5/04, 5/00, 1/04*
U.S. Cl. 128—92 C **16 Claims**



1. A prosthetic vertebral body for use in a cavity left by the removal of a defective vertebral body located between adjoining healthy vertebral bodies comprising:
an adjustable support means which is locatable totally within the cavity between the two adjoining vertebral bodies for supporting the adjoining vertebral bodies axially and for adjusting the axial spacing of the adjoining vertebral bodies;

a cast material which is poured in the cavity and which hardens such that said adjustable support means is embedded therein; and

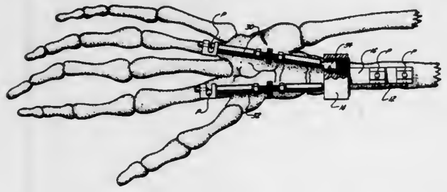
an attaching means for rigidly attaching the spinous process of the defective vertebral body to the spinous processes of the adjoining vertebral bodies.

4,554,915

BONE FIXATION FRAME

David L. Brumfield, Nesbit, Miss., assignor to Richards Medical Company, Memphis, Tenn.

Filed Mar. 8, 1983, Ser. No. 473,199
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 A **12 Claims**



1. An orthopedic immobilization device for immobilizing bone sections on opposite sides of a fracture or joint, comprising:

a. a fixation block;

b. a pair of arms connected to the block and extending from it for connecting with one of the bone sections;

c. universal movement means for providing universal movement between one end of the arms and the fixation block;

d. means for tightening the universal movement means for rigidly connecting the fixation block and arms;

e. length adjustment means for adjusting the length of the arms;

f. an open ended slot at the other end of the arms for receiving pins connected to said one bone section;

g. means for rigidly connecting the pins and arms;

h. the fixation block including pin receiving means for rigidly connecting the block to a second set of pins connected to another bone section on the other side of the fracture or joint.

4,554,916

ROTARY PROPORTIONING INHALATOR

James Watt, 211 W. 56th St., Suite 18M, New York, N.Y. 10019

Filed Jul. 27, 1983, Ser. No. 517,846
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—203.12 **29 Claims**

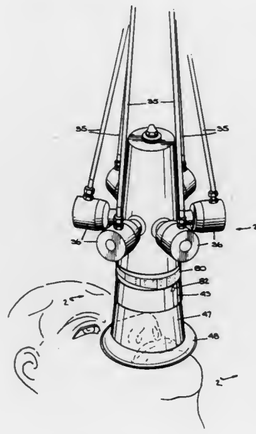
1. A proportional mixing inhalator for mixing and supplying a mixture of at least three therapeutic gases to a patient while maintaining the proportion of at least one of the gases at a life-sustaining level, the inhalator comprising:

first body means comprising a wall surface penetrated by at least three inlet portals;

demand valve means having outlets coupled, respectively, to each inlet portal and having inlets for receiving, respectively, one of the gases to be mixed, each demand valve means responsive to a decrease in pressure level at its outlet to deliver gas through the outlet;

second body means comprising a wall surface conformably fitted to the wall surface of the first body means and movable relative thereto, the second body means comprising a mixing chamber;

aperture means in the wall surface of the second body means, the aperture means communicating with the mixing chamber and movable with the wall surface of the second body to close off inlet portals in the first body means, the aperture means and the portals being so disposed that at least one inlet portal to which the one gas is coupled can not be completely closed off, while the portals to which the remaining gases are coupled can be partially or fully closed off; and



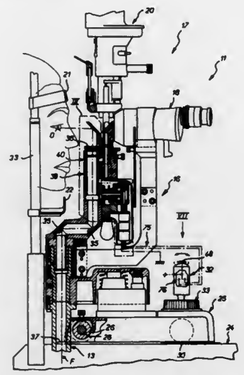
means for delivering mixed gas from the mixing chamber to the nose and mouth of the patient.

4,554,917

LASER OPHTHALMOLOGICAL SURGICAL DEVICE

Luc Tagnon, Saint Mande, France, assignor to Essilor International Cie Generale d'Optique, Creteil, France

Filed Mar. 29, 1983, Ser. No. 480,106
Claims priority, application France, Apr. 1, 1982, 82 05654
Int. Cl.⁴ A61N *5/02*
U.S. Cl. 128—303.1 **13 Claims**



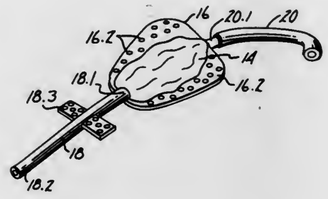
1. An ophthalmological surgical device comprising a laser means for generating at least one laser beam along a path and an operating means for focusing the one laser beam on an aiming point; said operating means including a base, a support chassis adjustably mounted on said base, first control means for adjusting the position of said chassis on said base, a focusing lens and a mirror on an exit side of said lens arranged along the path of the laser beam when in operation, a support assembly supporting said lens and said mirror and adjustably mounted on said chassis, and second control means, independent of said first control means, for adjusting the position of said support assembly on said support chassis toward and away from said base.

4,554,918

OCULAR PRESSURE RELIEF DEVICE

Thomas C. White, 1127 Holly Dr., Sioux Falls, S. Dak. 55705

Filed Jul. 28, 1982, Ser. No. 402,774
Int. Cl.⁴ A61M *27/00*; A61F *1/00*
U.S. Cl. 604—10 **13 Claims**



1. A prosthetic device for the relief of high intraocular pressure associated with glaucoma comprising:

(a) a limp, expandable, compressible reservoir adapted to be positioned within or adjacent to the exterior eye surface; said reservoir being constructed so that when so positioned, said reservoir does not resiliently regain its shape and is maintained at about atmospheric pressure;

(b) a proximal conduit having one end extendable into the anterior chamber of the eye and fastenable to the wall of the eye, and having its other end in communication with said reservoir whereby eye fluid may escape into said reservoir;

(c) unidirectional flow means restraining liquid flow within said proximal conduit to a direction toward said reservoir; said flow means further including pressure relief means adapted to open when the pressure in the eye exceeds the pressure in said reservoir by a pre-set threshold pressure; and

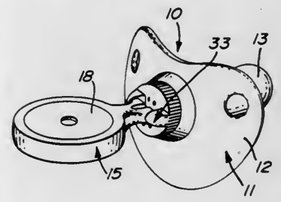
(d) means communicating said reservoir with surrounding liquid-receptive tissue and having valve means permitting only unidirectional flow therethrough, whereby said reservoir may be manipulated to a high reservoir pressure needed to expel eye fluid outwardly therefrom through said distal conduit.

4,554,919

MUSICAL PACIFIER

Claudette Hubert, St-Bruno, Canada, assignor to CX Packaging Inc., Ste-Julie, Canada

Filed Dec. 4, 1984, Ser. No. 677,993
Int. Cl.⁴ A61J *17/00*
U.S. Cl. 128—360 **10 Claims**



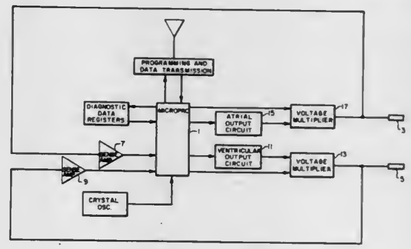
1. A musical pacifier comprising a mouthpiece having a nipple portion, a casing secured to said mouthpiece and housing an electronic programmed circuit capable of generating signals to produce a programmed sound, sound generating means associated with said circuit to audibly reproduce said signals, and switch means to actuate said circuit.

4,554,920

MICROPROCESSOR CONTROLLED CARDIAC PACEMAKER AND METHOD FOR AVOIDING PACER SUSTAINED TACHYCARDIA

Ross G. Baker, Jr., and Richard V. Calfee, both of Houston, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Nov. 22, 1982, Ser. No. 443,830
Int. Cl.⁴ A61N *1/36*
U.S. Cl. 128—419 PG **28 Claims**



1. A pacemaker for monitoring cardiac activity of a heart and for pacing the heart, comprising:

means for sensing electrical signals in the ventricle of a heart;

means for sensing electrical signals in the atrium of the heart;

timing means for timing an atrial refractory period having a first preselected duration when an electrical signal occurs in the ventricle while connective tissue between the atrium and ventricle is refractory and a second greater duration when an electrical signal occurs in the ventricle while said connective tissue is operative to allow retrograde conduction of the signal from the ventricle to the atrium, said second greater duration ensuring that a signal transmitted from the ventricle to the atrium by retrograde conduction will fall within the atrial refractory period when it reaches the atrium; and

means for pacing the ventricle at a predetermined time period after an electrical signal is sensed in the atrium outside said atrial refractory period.

4,554,921

DUAL CHAMBER PACEMAKER WITH AUTOMATIC HIGH RATE LIMIT MODE DETERMINATION

Wim Boute, Doesburg; Frederik H. M. Wittkampf, Brummen, and Gerrit W. van Arragon, Dieren, all of Netherlands, assignors to Vitafin N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 465,890, Feb. 11, 1983. This application Dec. 27, 1983, Ser. No. 566,059
Int. Cl.⁴ A61N *1/36*
U.S. Cl. 128—419 PG **11 Claims**

1. A dual chamber pacemaker system having means for sensing atrial heartbeat signals and means for delivering ventricular stimulus signals in response to said sensed atrial signals, characterized by:

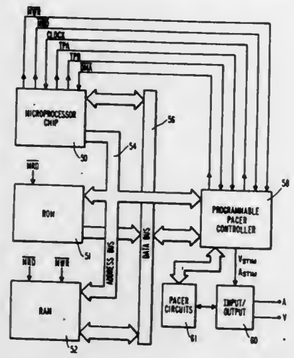
high rate means for detecting when sensed atrial signals have a high rate greater than a predetermined normal maximum rate;

delay means selectively operative when a said high rate is detected for delaying said ventricular stimulus signals relative to the preceeding sensed atrial signals so that the rate of said ventricular signals does not exceed said normal maximum rate;

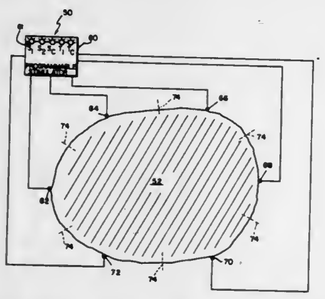
block means selectively operative when a said high rate is detected for providing n:1 block rate

selection means for automatically selecting when said delay means or said block means is operative, said selection means including means for detecting atrial heartbeat signals occurring at rates corresponding to a predetermined

examination rate range below said normal maximum rate and logic means for selecting said delay means as a predetermined function of said heartbeat signals detected within said examination rate range.

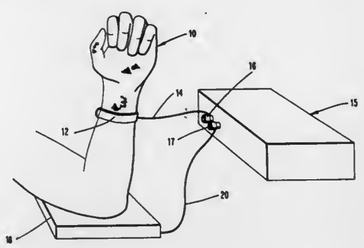


4,554,922
METHOD OF INHIBITING CARDIAC ARRHYTHMIAS
Eric N. Prystowsky, 9013 Sweetbay Ct., and Douglas P. Zipes, 2113 Brewster Rd., both of Indianapolis, Ind. 46260
Filed Sep. 30, 1982, Ser. No. 429,827
Int. Cl.⁴ A61N *1/36*
U.S. Cl. 128—419 PG **12 Claims**



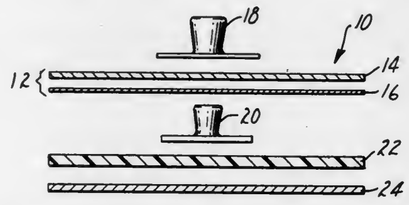
1. In a method of pacing a heart, which includes the step of applying electrical stimuli to the heart to propagate rhythmic responses, the improvement comprising the steps of determining a characteristic refractory time period between a patient's rhythmic responses within which an electrical stimulus can be applied to the patient's heart without propagating a heart response, sensing each rhythmic heart response, determining a time within the refractory time period after each sensed rhythmic heart response for the application of an electrical stimulus to the heart, after each rhythmic heart response, generating a conditioning electrical stimulus having an amplitude which is a function of the determined time so that it will not propagate a heart response, and applying the conditioning electrical stimulus to the patient's heart at the determined time during the refractory time period after the sensed rhythmic heart response to inhibit a subsequent spontaneous arrhythmic response before the next rhythmic heart response.

4,554,923
ELECTRICAL THERAPEUTIC ASSEMBLY AND METHOD FOR REDUCING PAIN AND EDEMA IN A HAND
Robert C. Batters, 3125 Boulder Way, Eastpoint, Ga. 30344
Filed Aug. 30, 1982, Ser. No. 413,103
Int. Cl.⁴ A61N *1/32, 1/04*
U.S. Cl. 128—421 **14 Claims**



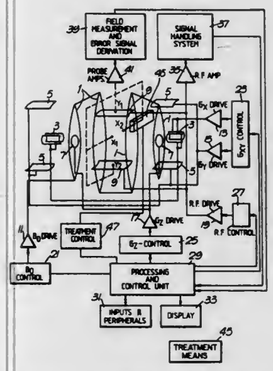
1. A method of reducing pain in the hand of a human body, said method comprising the steps of:
(a) enveloping the hand of the body to be treated with a glove composed of an electrically conducting, woven, metal mesh material contiguously disposed with respect to the skin of the hand,
(b) said skin being free from any externally applied medium so that there is a substantially dry contact between the skin and the electrically conducting material,
(c) electrically connecting the electrically conducting mesh material to a source of electric current,
(d) passing a substantially uniform electric current throughout the entire conducting material to apply said current to said hand,
(e) applying said current at a shock pulse rate sufficient to reduce pain in said enveloped hand without causing heat buildup within the tissue of the hand area.

4,554,924
CONDUCTIVE ADHESIVE AND BIOMEDICAL ELECTRODE
Michael R. Engel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 114,565, Jan. 23, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,570
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—640 **12 Claims**



1. In an ECG electrode comprising an electrode plate having an upper surface and a lower skin-directed surface, means for electrically-connecting said electrode plate to the lead wire of an electrocardiograph, and a layer of an electrically-conductive pressure-sensitive adhesive on the lower surface of electrode plate, the improvement wherein said adhesive comprises a nonionic swellable, conformable, cohesive, dermally-non-irritating hydrophilic synthetic cross-linked acrylic acid polymer; polyhydric alcohol which is liquid at about 20° C.; and an ionizable salt in an amount effective to render said adhesive electrically-conductive; said polymer being polymerized and cross-linked after formation into said layer to form a continuous covalently-bonded network throughout said layer.

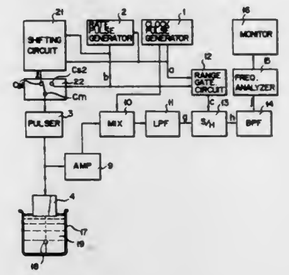
4,554,925
NUCLEAR MAGNETIC RESONANCE IMAGING METHOD
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International, Ltd., Wembley, England
Filed Jun. 27, 1983, Ser. No. 508,480
Claims priority, application United Kingdom, Jul. 7, 1982, 8219628
Int. Cl.⁴ A61B *5/05*
U.S. Cl. 128—653 **5 Claims**



1. A method for treating animal tissue, in vivo, said method comprising the steps of:
(a) changing the temperature of tissue in an internal region of an animal body relative to temperature of tissue in an adjacent region;
(b) operating a nuclear magnetic resonance imaging apparatus substantially simultaneously with performance of said temperature changing step to produce a continuous spatial mapping representation of temperature within said body over a portion of said body at least partially including a part of said internal region upon which said temperature changing step is performed;
(c) controlling said temperature changing step as a function of temperature indication produced in said nuclear magnetic resonance operating step.

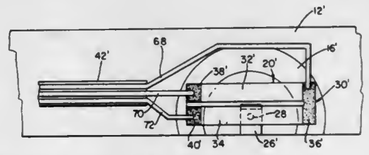
4,554,926
ULTRASONIC PULSE DOPPLER BLOOD FLOW METER WITH PROVISION TO CREATE ULTRASONIC TEST WAVES WHICH, WHEN REFLECTED FROM A STATIONARY OBJECT, RESULT IN ECHOES SIMILAR TO THOSE PRODUCED BY A MOVING OBJECT
Toshio Shirasaka, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 30, 1982, Ser. No. 430,003
Claims priority, application Japan, Oct. 23, 1981, 56-168644
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—663 **5 Claims**

1. An ultrasonic pulse Doppler blood flow analyzer including a testing circuit comprising:
rate pulse generating means for producing rate pulses of predetermined periods;
drive pulse generating means responsive to the rate pulses for producing drive pulses;
transducer means responsive to the drive pulses for transmitting an ultrasonic waves toward a stationary object to be detected and responsive to the echoes thereof for converting the received echoes into an electrical signal;
range gate circuit means for producing a range gate pulse after each of the rate pulses for sampling only echo signals from the stationary object;



frequency analyzing means for frequency analyzing the sampled echo signals; and
shifting circuit means for shifting the rate pulses and the range gate pulses relative to each other by a predetermined time at every individual period of the rate pulses to change the sampled echo signals into quasi Doppler-shifted signals.

4,554,927
PRESSURE AND TEMPERATURE SENSOR
Theodore J. Fussell, Bridgewater, N.J., assignor to Thermometrics Inc., Edison, N.J.
Filed Aug. 30, 1983, Ser. No. 527,742
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—670 **15 Claims**



1. A pressure and temperature sensor comprising:
a piezoresistive element having first and second legs electrically interconnected at one end thereof;
pressure imparting means for imparting pressures to be measured to only said first leg;
resistor means exhibiting a predetermined value of resistance;
first means for sensing resistance exhibited by said first and second legs of said piezoresistive element such that temperature variations in said first leg are compensated by corresponding temperature variations in said second leg to thereby provide an inherently temperature independent output signal corresponding to said pressure to be measured; and
second means for sensing resistance exhibited by said second leg and said resistor means, said second means for providing a pressure independent output signal corresponding to environmental temperature.

4,554,928
ELECTROPHYSIOLOGICAL SWITCHING UNIT
Wilton W. Webster, Jr., 1388 Crest Dr., Altadena, Calif. 91001
Filed Sep. 16, 1983, Ser. No. 533,266
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—709 **17 Claims**

1. A switching unit for interconnecting multiple-electrode

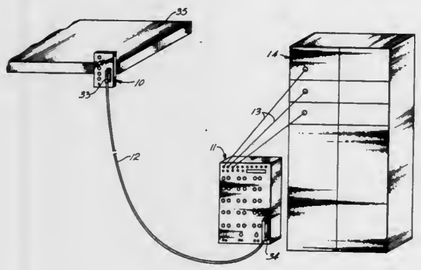
catheter leads, stimulator leads and recorder channel leads comprising:

at least one column of switches comprising:

at least two electrode switch pairs each comprising first and second electrode switches, each electrode switch having a pole and multiple selector positions;

first and second stimulator row-selector switches each comprising a pole and selector positions designating each electrode switch pairs of that column;

means for electrically connecting the poles of the first and second electrode switches of an electrode switch pair to separate leads of a recorder channel;



means for electrically connecting the selector positions of both electrode switches of a switch pair to the electrode leads of a multiple electrode catheter;

means for electrically connecting the poles of the stimulator row-selector switches to separate leads of a stimulator;

means for electrically connecting each selector position of the first stimulator row-selector switch to the pole of the first electrode switch of the electrode switch pair designated by that selector position; and

means for electrically connecting each selector position of the second stimulator row-selector switch to the pole of the second electrode switch of the switch pair designated by that selector position.

4,554,929

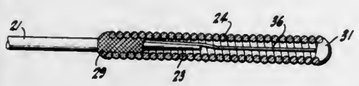
CATHETER GUIDE WIRE WITH SHORT SPRING TIP AND METHOD OF USING THE SAME

Wilfred J. Samson, Saratoga, and Ronald J. Solar, Palo Alto, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed Jul. 13, 1983, Ser. No. 513,222

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—772 **16 Claims**



1. In a guide wire for use in the placement of a catheter in the cardiovascular system, an elongated shaft of relatively rigid material having proximal and distal ends and a cross-sectional area subtantially smaller than the luminal opening in the catheter, a relatively flexible helical coil having proximal and distal ends, said coil having an outer diameter slightly smaller than the diameter of the luminal opening and a length substantially less than the length of the shaft, the distal end portion of the shaft extending into the coil but terminating short of the distal end of the coil, the portion of the shaft extending into the coil being tapered to provide a gradual transition in flexibility of the shaft, means for bonding the proximal end of the coil to the shaft and a flexible safety wire disposed interiorally of the coil and having one end bonded to the distal extremity of the shaft and having the other end bonded to the distal extremity of the coil.

4,554,930

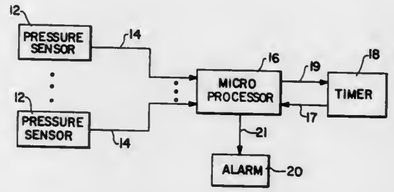
PRESSURE SENSING DEVICE AND METHOD FOR PREVENTING ULCER FORMATION

Donald W. Kress, 27 Forest Rd., Wheeling, W. Va. 26003

Filed Jun. 28, 1984, Ser. No. 625,651

Int. Cl.⁴ A61B *9/00*

U.S. Cl. 128—774 **17 Claims**



1. A pressure sensing device for monitoring the pressure on a patient's skin in order to prevent damage thereto comprising means for continuously measuring the pressure on the skin at the interface between the skin and a surface exerting the pressure on the skin, means associated with said pressure measuring means for monitoring the pressure exerted on the skin and the elapsed time period during which the skin has been exposed to said measured pressure, and means associated with said monitoring means for indicating when the combination of the pressure measured by said pressure measuring means and the elapsed time is approaching a previously determined level.

4,554,931

APPARATUS FOR SEVERING ROD-SHAPED ARTICLES OF THE TOBACCO PROCESSING INDUSTRY

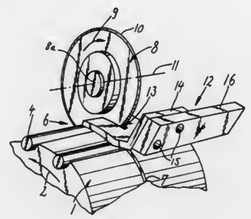
Siegfried Born, Geesthacht, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,586

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238233

Int. Cl.⁴ A24C *5/00, 5/60*

U.S. Cl. 131—84.4 **7 Claims**



1. Apparatus for severing rod-shaped articles of the tobacco processing industry, comprising a conveyor arranged to advance the articles along a predetermined path and in a predetermined direction at right angles to the axes of the conveyed articles; a rotary disc-shaped knife having a marginal cutting edge and being disposed in a plane extending at right angles to the axes of the conveyed articles, said cutting edge extending into said path to sever the oncoming articles on said conveyor: guide means for said knife, said guide means having a channel for said cutting edge adjacent to the location of penetration of the cutting edge into the oncoming articles; and a stationary support for said guide means.

4,554,932

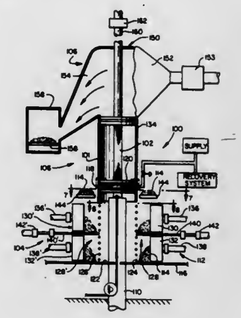
PRESSURE VESSEL AND METHOD OF USING SAME

Lucas J. Conrad, Winston-Salem, and Jackie L. White, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Mar. 3, 1983, Ser. No. 471,580

Int. Cl.⁴ A24B *3/18*

U.S. Cl. 131—296 **43 Claims**



1. A system for use in a process for increasing the filling power of tobacco comprising:

(a) a pressure vessel including a cylindrical tubular shell and a spool assembly means movable between at least a first position outside the shell and a treating position within the shell, said spool assembly including first and second circular end members, connecting rod extending between and securing said first and second end members together and sealing means with at least one sealing member circumscribing each end member, said sealing members contacting the inner surface of said shell when the spool assembly means is in the treating position so that said shell, end members and seal members form a pressure chamber and said connecting rod acts as a tension member to carry loads applied to said end members when such chamber is pressurized;

(b) means for moving the spool assembly means between at least a first position outside said tubular shell and the treating position;

(c) means for loading and unloading material to and from said spool assembly means when said spool assembly means is outside the tubular shell; and

(d) means for introducing a processing fluid into said pressure vessel when said spool assembly means is in said treating position, whereby said material contained therein is impregnated with said processing fluid.

4,554,933

TOBACCO OPENING AND CONDITIONING APPARATUS

Richard E. Neville, Salisbury, England, assignor to AMF Incorporated, White Plains, N.Y.

PCT No. PCT/GB81/00272, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02324, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 16, 1981, Ser. No. 420,221

Claims priority, application United Kingdom, Jan. 15, 1981, 8101201; Oct. 1, 1981, 8129689; Nov. 24, 1981, 8135442

Int. Cl.⁴ A24B *3/06*

U.S. Cl. 131—304 **16 Claims**

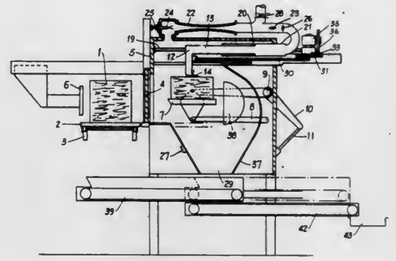
1. An opener and conditioner of a body of tobacco lamine comprising:

a chamber for receiving a body of tobacco laminae;

a jet box having

a strip jet means for emitting a jet of air and moisture in a direction oblique to the surface of the body of tobacco laminae; and

means for reciprocating said jet box with respect to the body of tobacco within a plane parallel to and in close proximity to the surface plane of the tobacco laminae,



said strip jet preconditioning the tobacco laminae while separating one or more laminae progressively from the body of tobacco with each reciprocating stroke of said jet box.

4,554,934

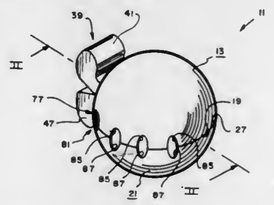
HAIR CLAMP DEVICE

Betty F. Mooneyhan, 278 Sunflower, Clarksdale, Miss. 38614

Continuation-in-part of Ser. No. 613,777, May 24, 1985, abandoned. This application Oct. 15, 1984, Ser. No. 661,096

Int. Cl.⁴ A45D *2/00, 24/36*

U.S. Cl. 132—40 **13 Claims**



1. A device for being clamped to a strand of hair, said device comprising:

(a) a first bowl member having an opened cavity defining an interior surface and having a rim;

(b) a second bowl member having an opened cavity defining an interior surface and having a rim;

(c) hinge means for pivotally attaching said first and second bowl members to one another and for normally urging said rims of said first and second bowl members substantially against one another to allow said opened cavities of said first and second bowl members to define a substantially closed cavity;

(d) a first plate member having a substantially flat obverse face and having a reverse face;

(e) a first spring member having a first end attached to said reverse face of said first plate member and having a second end attached to said interior surface of said cavity of said first bowl member to normally urge said obverse face of said first plate member outwardly of said rim of first bowl member;

(f) a second plate member having a substantially flat obverse face and having a reverse face; and

(g) a second spring member having a first end attached to said reverse face of said second plate member and having a second end attached to said interior surface of said cavity of said second bowl member to normally urge said obverse face of said second plate member outwardly of

said rim of said second bowl member and substantially against said obverse face of said first plate member to securely hold a strand of hair between said obverse faces of said first and second plate members when said rims of said first and second bowl members are urged substantially against one another.

4,554,935

ARTIFICIAL FINGERNAIL WITH HOLES TO RECEIVE LIQUID ADHESIVE

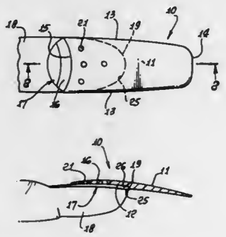
Yosh Hokama, Torrance, Calif., assignor to International Beauty Distributors, Inc., Gardena, Calif.

Filed Feb. 9, 1984, Ser. No. 578,511

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.⁴ A45D *29/00*

U.S. Cl. 132—73 **7 Claims**



1. In an artificial fingernail attachable to a natural fingernail having a forward edge and a rearward edge, the artificial nail comprising:

(a) a thin plastic sheet element sized to provide a forward extension of the natural nail,

(b) the said element having a rearward portion with its underside shaped to fit over and attach to the natural nail by means of liquid adhesive, said element rearward portion also having an upper side,

(c) said rearward portion having multiple openings between said under and upper sides to receive liquid adhesive when said underside is pressed downwardly upon the natural nail, whereby the liquid adhesive when cured substantially fills the openings and locks the natural nail to the walls of the openings, said openings being of pin-hole size and extending through said sheet element, said openings having diameters between 0.01 and 0.05 inches,

(d) said element forming a recess in said rearward portion to receive and conform generally to the shape of the forward extent of said natural nail, all of said openings intersecting said recess,

(e) said element also forming a rearwardly presented crescent shaped distal edge forwardly bounding said recess, all of said openings spaced rearwardly of said distal edge, said element rearwardly of said recess being thinner than said element forwardly of the recess,

(f) said upper side having roughening to receive and adhere to nail polish applied to said upper side, said openings communicating with said roughening,

(g) said recess opening downwardly throughout the entire length between said rearward edge and said distal edge.

4,554,936

WASHING MACHINE CONTAINER COUPLING APPARATUS

James E. Tingley, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Mar. 16, 1984, Ser. No. 590,408

Int. Cl.⁴ B08B *3/04*

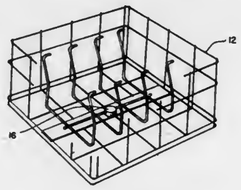
U.S. Cl. 134—146 **6 Claims**

1. Apparatus for selectively coupling a source of pressurized fluid to washing machine containers which hold items during wash cycles where there are first containers adapted to prevent the flow of fluid and second containers adapted to receive the fluid when the respective containers are placed in their normal positions in the washing machine, comprising:

a member having a contoured passage therethrough, said member defining an inlet and an outlet;

said passage having a first bore, a second bore having a greater width than said first bore and a shoulder formed between said first and second bores;

means slidably disposed within said member for controlling the flow of the fluid through said outlet to the container, said flow control means having a first portion structured to permit such engagement with the contours of said passage that said flow control means can assume a first position for preventing the flow and a second position for permitting the flow, and said flow control means having a second portion structured to permit such engagement with the container that said flow control member assumes said first position when said second portion engages the first container and assumes said second position when said second portion engages the second container;



said first portion of said flow control means having a body and a flange;

said second portion of said flow control means having an elongate pin extending from said body through said outlet for engagement with the container;

said first position being one in which said pin is in such engagement with the first container that said body is disposed entirely within said first bore and said flange is in such sealing engagement with said shoulder that fluid cannot flow through said outlet;

said second position being one in which said pin is in such engagement with the second container that the flow of fluid can so move said flange out of engagement with said shoulder and can move so much of said body into said second bore that the fluid can flow through said outlet into said second container, each of said bores being proportioned to permit the flow of fluid in such volume and at such pressures when said body is in said second position that a predetermined sufficient rate of can be maintained; and

means for sealing the coupling.

4,554,937

PORTABLE SHELTER

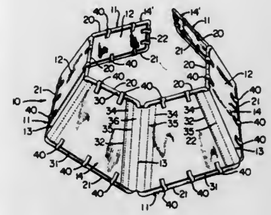
Dennis V. Irwin, 4630 Macky Way, Boulder, Colo. 80303

Filed Mar. 4, 1983, Ser. No. 472,029

Int. Cl.⁴ A45F *1/16*

U.S. Cl. 135—100 **13 Claims**

1. A portable, free-standing shelter of generally frusto-conical configuration having a base and upwardly inclined sidewalls terminating in an open top, said sidewalls defined by a plurality of flexible sheet panel members, each panel member of generally polygonal configuration having top and bottom edges interconnected by upwardly convergent opposite sides; connecting means interconnecting adjoining sides of said panel members in hinged together relation, the bottom edges of said panel members defining the base of said shelter and the top edges of said panel members defining the open top of said shelter; a plurality of frame members to hold said flexible sheet panel members in a stretched, taut condition, each of said frame members being formed in a trapezoidal configuration



and each of said panel members includes a releasable fastening means for releasably securing each of said panel members to the top and bottom edges of its respective frame member.

4,554,938

DEVICE FOR CONVERTING ELECTRIC SIGNALS INTO PNEUMATIC SIGNALS

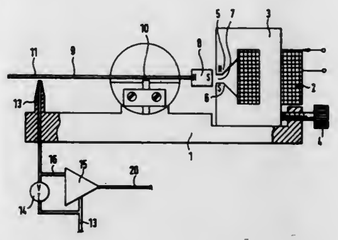
Lorenz Twisselmann, Prisdorf, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 27, 1983, Ser. No. 461,367

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205576

Int. Cl.⁴ G05D *16/00*

U.S. Cl. 137—82 **16 Claims**



1. In a device for converting electric signals into pneumatic signals of a pneumatic system, the device having a coil and a permanent magnet which are moveable relative to each other in response to a current flowing within the coil, said device having a mechanical means of adjustment for influencing the pneumatic system, the improvement comprising

a stationary core which is closed by an air gap and includes two pole shoes, the core passing through the coil to form said electromagnet;

a permanent magnet of highly coercive material disposed for movement within the field of attraction of the two pole shoes,

means for mechanically connecting said permanent magnet to said adjustment means such that movement of said permanent magnet actuates said adjustment means, the moving mass of said permanent magnet and said connecting means and said adjustment means being minimized; and wherein

said connecting means includes means for freely pivoting said connecting means such that movement of said permanent magnet operates said adjustment means in response to forces of said electromagnet upon said permanent magnet; and

said pivoting means is located away from said air gap so as to preserve substantially a perpendicular relationship between a magnetization axis of said permanent magnet and a magnetic flux in said air gap.

4,554,939

METERING APPARATUS

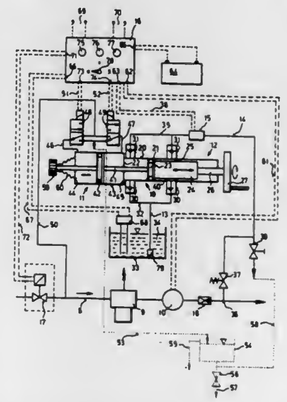
Hans Kern, Vachendorf, and Richard Haslberger, Hufschlag, both of Fed. Rep. of Germany, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed Sep. 20, 1983, Ser. No. 533,934

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236488

Int. Cl.⁴ G05D *11/02*

U.S. Cl. 137—99 **16 Claims**



1. A metering apparatus for metering into a liquid flow an agent which is to be metered in a proportional relationship, comprising:

a liquid meter for delivering signals representative of the throughflow of the liquid flow;

means defining a metering location where said agent is delivered to said liquid flow;

a reservoir holding said agent to be metered;

a metering pump having an input side and an output side;

said metering pump being connectable to said reservoir at said input side and to said metering location at said output side;

said metering pump metering said agent from said reservoir into said liquid flow as a function of said signals delivered by said liquid meter;

said means defining a metering location including a conduit portion provided with an inflow connection and an outflow connection;

said liquid meter being operatively associated with said conduit portion;

a supporting frame;

said conduit portion, said liquid meter and said metering pump being mounted at said supporting frame; and

said supporting frame enclosing essentially at all sides said conduit portion, said liquid meter and said metering pump.

4,554,940

PRESSURE REDUCING AND REGULATING VALVE

Ronald L. Loup, Clarkson, Mich., assignor to Koomey, Inc., Brookshire, Tex.

Continuation-in-part of Ser. No. 339,554, Jan. 15, 1982, Pat. No. 4,444,216. This application Sep. 9, 1983, Ser. No. 531,302

Int. Cl.⁴ F16K *3/18;* **G05D** *16/00*

U.S. Cl. 137—116 **9 Claims**

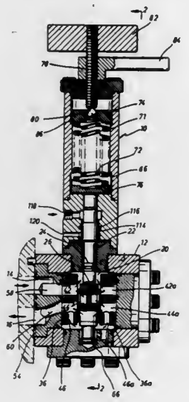
1. In a pressure reducing and regulating valve having a body cavity, a plunger having a piston movable in the body and connected to a seal container having a plurality of openings having circular sliding seals therein, and an inlet, outlet, and vent port connected to the body wherein one of the circular sliding seals controls flow between the inlet and the outlet, the improvement comprising,

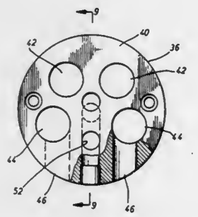
said body including a porting plate having a flat face for mounting to a subplate, said body connected to the subplate by blots, a gland seal between the outer edge of said porting plate and said body,

said porting plate includes inlet and outlet ports communicating between the subplate and said body cavity,

face seals about each of the inlet and outlet port for mating with the subplate, whereby the force of the inlet and outlet pressure acting to separate the port plate from the subplate is compensated by the force of the inlet and outlet pressure in the body cavity acting in a direction to hold the port plate on the subplate, and

the area of the one circular sliding seal in the seal container having substantially the same area as the area enclosed by the face seal about the inlet port.





4,554,941

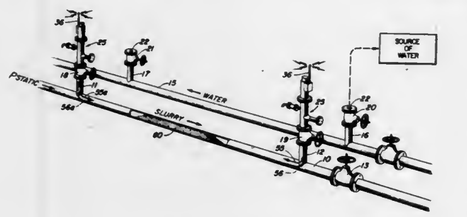
FLUID VIBRATION APPARATUS

Julian B. Coon, Ponca City, Okla., and Eston F. Petry, Barrackville, W. Va., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 11, 1984, Ser. No. 619,745

Int. Cl.⁴ F15C *1/08*

U.S. Cl. 137—240 **4 Claims**



1. Apparatus for generating a pressure pulse in a pipeline comprising a vibrator having a mechanical output, means for controlling the phase and frequency of said vibrator mechanical output, a pipe, a piston attached to said vibrator mechanical output and mounted inside said pipe, means for attaching said pipe to said pipeline, a source of fluid coupled for controlled filling of said pipe, and vent means to bleed displaced air out of said pipe.

4,554,942

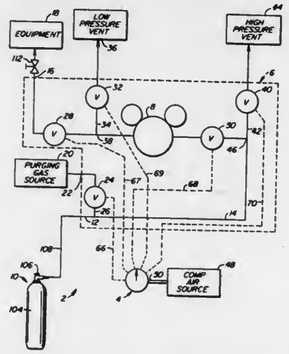
PROCESS GAS CONTROLLER

Todd E. Williams, San Jose, and Steven M. Desch, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 6, 1983, Ser. No. 529,898

Int. Cl.⁴ F17D *3/00*; B08B *9/06*

U.S. Cl. 137—240 **18 Claims**



1. A process gas controller of the type for connection to a purging gas source and a process gas source for supplying process gas to equipment, the controller comprising:

a main gas line having a main inlet and a main outlet, said main inlet fluidly connected to the process gas source and said main outlet fluidly connected to the equipment;

a first valve positioned between the purging gas source and said main inlet;

a pressure regulator positioned along said main gas line for providing the process gas to the equipment at a regulated pressure;

a second valve positioned along said main gas line between said main outlet and said regulator;

a third valve positioned along said main gas line between said regulator and said main inlet;

a fourth valve having a fourth valve inlet, fluidly connected to said main gas line between said regulator and said second valve and a fourth valve outlet fluidly connected to a first vent region;

a fifth valve having a fifth valve inlet fluidly connected to said main gas line between said inlet and said third valve and a fifth valve outlet fluidly connected to second vent region, said first through fifth valves being operable to isolate the process gas source from the equipment, to vent gas to said first and second vent regions and to purge the main gas line with gas from the purging gas source; and

a valve controller having a plurality of user selected operating positions and being coupled to a plurality of said first through fifth valves, said valve controller arranged and adapted to control the opening and closing of said plurality of valves according to the operating position chosen by the user.

4,554,943

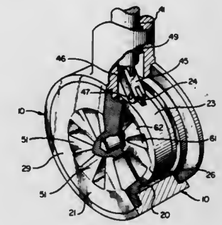
SINGLE DISC ROTARY VALVE

Robert L. Claney; Herbert H. Walton; Steven D. Kehoe, and Kimball R. Barron, all of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Marshalltown, Iowa

Filed Dec. 2, 1983, Ser. No. 557,716

Int. Cl.⁴ F16K *3/08*

U.S. Cl. 137—242 **3 Claims**



1. A throttling valve having an ON and an OFF position adapted for use in a high pressure bidirectional flowpath comprising:

a cylindrical valve body defining a cavity;

a pair of circular end retainers, each defining at least one port, positioned at opposite ends of said cavity with said ports in alignment, and each having a flat inner surface;

a rotatably mounted disc, having oppositely disposed flat surfaces, defining at least one substantially similar shaped port, positioned for rotational movement between said end retainers for varying the relationship between the port of said disc and the ports in said end retainers to control the flow in said flowpath between said OFF and said ON positions, the thickness of said rotatable disc being less than the thickness of either end retainer to assure that the disc flexes more than said end retainers for equal amounts of pressure and the thickness of said rotatable disc being less than the distance between said end retainers to provide for lateral movement of said rotatable disc therebetween;

an operating rod movably mounted in said body;

link means coupled between said operating rod and said rotatable disc for translating linear movement of said operating rod into rotational movement of said disc, said operating rod and said link means being located outside said flowpath; and

bearing shaft means for supporting said disc for rotational movement and for permitting slight lateral movement thereof in the direction of said flowpath, said flat inner surfaces of said end retainers and the corresponding surface of said rotatable disc cooperating, under the force of fluid pressure, to seal said flowpath when said valve is in said OFF position, said end retainers extending beyond the confines of said body to facilitate installation of said valve in a pipeline exerting clamping pressure on said end retainers.

4,554,944

OPERATING WRENCH FOR TAMPERPROOF HYDRANTS

Joseph L. Daghe; Dennis W. Humes, both of Decatur, and Mervin D. Stanley, Stonington, all of Ill., assignors to Mueller Co., Decatur, Ill.

Filed May 22, 1985, Ser. No. 736,831

Int. Cl.⁴ F16K *35/06*; F03B *9/06*

U.S. Cl. 137—296 **9 Claims**

1. A tamperproof fire hydrant comprising:

barrel means having an open upper end portion;

valve means in a lower portion of said barrel means;

valve stem means extending from said valve means upwardly within said barrel means;

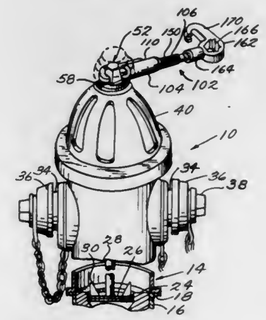
a top closure member secured to the upper end portion of said barrel means, said top closure member having an aperture therethrough;

a rotatable operating nut operatively connected to said valve stem means for reciprocating the same, said rotatable operating nut having a polygonal end portion projecting out of the aperture of said top closure member;

a tubular hold-down nut carried by said top closure member for positioning said rotatable operating nut against axial movement;

a dome shaped cap covering the polygonal portion of said operating nut, said cap having a lower edge spaced from said hold-down nut to provide a limited access space to the polygonal end portion of said operating nut;

means supporting said dome shaped cap on said polygonal end portion of said operating nut for relative free rotation with respect thereto; and



operating means for rotating said polygonal end portion of said operating nut in said limited access space between said dome shaped cap and said hold-down nut, said operating means including a handle assembly having a fixed flat hook-shaped jaw part projecting axially of the same, said fixed flat jaw part having cooperating surfaces spaced from and facing said handle assembly for engaging at least two sides of the polygonal end portion of said operating nut, said fixed flat jaw part having a thickness no greater than said limited access space between said dome shaped cap member and said hold-down nut, said handle assembly further having a movable flat jaw part of a thickness no greater than the thickness of said fixed jaw part and having a surface opposing said surfaces of said fixed jaw part, means to move said movable jaw part toward said fixed jaw part to engage another surface of said polygonal end portion.

4,554,945

LIQUID METERING APPARATUS

Michael L. McKay, Willeton, Australia, assignor to Orbital Engine Company Proprietary Limited, Balcatta, Australia

PCT No. PCT/AU82/00225, § 371 Date Aug. 26, 1983, § 102(e) Date Aug. 26, 1983, PCT Pub. No. WO83/02319, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 30, 1982, Ser. No. 532,035

Claims priority, application Australia, Dec. 31, 1981, PF2123

Int. Cl.⁴ G01F *11/38*; F02M *67/00*

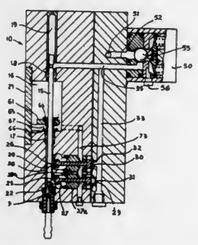
U.S. Cl. 137—312 **15 Claims**

1. Apparatus for delivering metered quantities of fuel to an internal combustion engine, said apparatus comprising:

a rigid body having a metering chamber and a gas supply chamber therein;

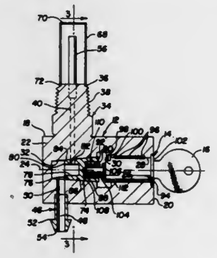
a metering member supported in the body for linear movement relative thereto and adapted to selectively provide gas flow communication between the gas supply chamber and the mtering chamber;

said metering member extending into the metering chamber in the direction of said linear movement;
control means to control the linear movement of the metering member in the body to regulate the extent of projection thereof into the metering chamber;
means communicating said with metering chamber and connectable to a fuel source to permit supply of fuel to the metering chamber;
means carried by the metering member and operable to selectively establish said gas flow communication between



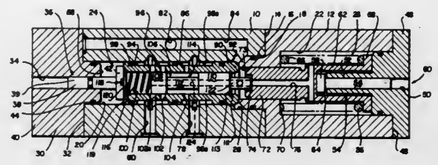
the metering and gas supply chambers, whereby fuel is displaceable from the metering chamber by gas from the gas supply chamber; and
leakage collection means in said body and interposed between said gas supply chamber and said metering chamber, with said metering member extending therethrough, for collection in a separate chamber of leakage from said metering chamber and said gas supply chamber, said separate chamber being isolated from said metering chamber and said gas supply chamber.

4,554,946
DEVICE TO PREVENT FUEL FLOW FROM A FUEL TANK TO AN ENGINE
Michael R. Poole, 4801 Peachtree Rd., Balch Springs, Tex. 75180
Filed Mar. 9, 1984, Ser. No. 587,944
Int. Cl.[4] F16K *35/00*
U.S. Cl. 137—384.2 **11 Claims**



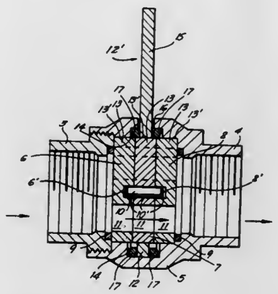
1. A device to control the passage of fuel from a fuel tank to an engine, comprising: an elongated body including first and second ends and a passageway extending from the first end toward the second end, the passageway having first, second and third sections, the third section forming a chamber and having surfaces tapering toward one another when moving toward the second end; an inlet member connected to said body including an inlet passageway for placing the fuel tank in fluid communication with the chamber; an outlet member connected to said body including an outlet passageway for placing the chamber in fluid communication with the engine; an element disposed within said body and movable between a position placing the inlet passageway in fluid communication with the chamber and a position preventing fluid communication between the inlet passageway and the chamber, said element having tapered shoulders adapted to engage the tapering surfaces in the third section to form a surface-to-surface seal which prevents fluid flow between the valve element and the body, said element being in the the shape of a truncated cone with side walls to prevent fluid communication between the passageways in the inlet and outlet members formed by a pocket extending inwardly from the truncated end of said element, a port extending through the side walls into the pocket for placing the inlet passageway in fluid communication with the outlet passageway in the outlet member, said element including a base shoulder formed by a pocket extending inwardly from the base of said element; means for urging said element toward the second end of said body and into engagement with the third section of the passageway extending into said body; locking means disposed in the first section of the passageway extending into said body for securing said element in the position preventing fluid communication between the inlet passageway and chamber and for preventing movement of said element to the position placing the inlet passageway in fluid communication with the chamber; said means for urging including a spring disposed between an end of said locking means and the base shoulder in said element; and means disposed within said body for connecting said locking means to said element to move said element when said locking means moves and to prevent movement of said element until said locking means moves.

4,554,947
LOAD RECALL VALVE
Jasper E. Cobb, III, Gainesville, Tex., assignor to Armco Research and Technology, Middletown, Ohio
Filed Oct. 29, 1984, Ser. No. 666,186
Int. Cl.[4] F15B *13/042*
U.S. Cl. 137—596.18 **35 Claims**



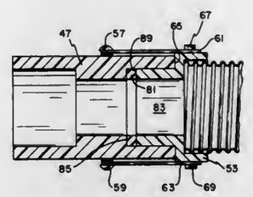
1. A load recall valve, comprising:
(a) a hollow valve body having a first pressure inlet, a second pressure inlet, a pilot pressure inlet and a pilot pressure outlet;
(b) said pilot pressure inlet is proximate said pilot pressure outlet;
(c) sleeve means slidably disposed in said body and including means for selectively isolating said pilot pressure inlet from said pilot pressure outlet and further including a longitudinally extending aperture therethrough communicating with a plurality of generally transverse orifices for connecting said aperture to said pilot pressure inlet;
(d) spool means slidably disposed in said aperture and including means for interconnecting said orifices for thereby permitting selective interconnection of said pilot pressure inlet with said pilot pressure outlet;
(e) first pressure receiving means slidably disposed within said body communicating with said first pressure inlet and engagable with said spool means and said sleeve means whereby application of pressure to said first pressure receiving means causes sliding thereof in a first direction and associated sliding of said spool means and subsequently causes sliding of said sleeve means for thereby establishing interconnection between said pilot outlet and said pilot inlet;
(f) resilient means associated with said first pressure receiving means for causing sliding of said first pressure receiving means in a second direction opposite to said first direction upon cessation of application of pressure thereto;
(g) second pressure receiving means slidably disposed within said body and communicating with said second inlet and adapted for sliding in said first direction upon engagement with said sleeve means and for being displaced in said second direction by application of pressure to said second pressure inlet; and
(h) biasing means associated with said second pressure receiving means and said spool means for displacing said spool means in said second direction whereby application of pressure to said first pressure receiving means causes at least said spool means to slide in said first direction to a position associated with the amount of pressure applied for thereby interconnecting said pilot pressure inlet with said pilot pressure outlet and whereby cessation of application of pressure to said second pressure receiving means prior to cessation of application of pressure to said first pressure receiving means causes said sleeve means to remain in said position while said biasing means causes said spool means to slide a distance sufficient to isolate said pilot inlet from said pilot outlet and thereby provide a stored memory position and further whereby cessation of pressure application to said second pressure means after cessation of pressure application to said first pressure receiving means causes said sleeve means to slide in said second direction and thereby erase said stored memory position.

4,554,948
STRAIGHT-WAY VALVE
Konrad Bergmann, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Jun. 22, 1984, Ser. No. 623,642
Int. Cl.[4] F16K *3/08*
U.S. Cl. 137—625.31 **4 Claims**



1. A straight-way valve comprising:
a valve body having a longitudinal passageway extending therethrough and a circumferential slot formed between the ends of said passageway;
said valve body having an annular recess formed between the ends of said passageway and being aligned with said circumferential slot;
regulating elements, operably mounted in said valve body, which include a plurality of discs, one of which is mounted for rotation, at least one of said other discs being statically mounted in said valve body and actuating means disposed in said slot and coupled to said rotatable disc;
said rotatable disc having a plurality of flow ports which correspond with flow ports formed in said at least one static disc;
said at least one static disc being arranged in face-to-face contact against said rotatable disc to form a fluid tight, mechanical seal;
said actuating means including an annular part positioned in said annular recess and a lever part which extends outwardly through said circumferential slot, and said rotatable disc being immovably mounted in said annular part;
a pair of resilient bearing rings, being spaced in said annular recess, and positioned around opposed faces of said annular part to provide spring pressure in the axial direction and to absorb transverse forces with respect to said annular part and to provide vent openings therebetween to vent said straight-way valve; and
an axle mounted through an axial bore formed in said rotatable disc, at least one end of which, is disposed in a corresponding recess of said at least one static disc for rotation therein so that said actuating means is rotatable from a first operable flow position to a second inoperable non-flow position.

4,554,949
SEWER OUTLET CONNECTING AND CAPPING ARRANGEMENT
James Sell, R.R. #3, Box 157, Muncie, Ind. 47302
Filed Aug. 3, 1984, Ser. No. 637,552
Int. Cl.[4] F16K *27/12*
U.S. Cl. 137—899 **8 Claims**



1. In recreational vehicle of the type having a self-contained sewage system, a coupling arrangement for selectively connecting the vehicle sewage system to a sewage disposal location when the vehicle is parked at a camp site, service station facility or the like while sealingly closing the vehicle sewage system when the vehicle is in transit comprising:
an open ended recreational vehicle sewer outlet fixed to the vehicle at a sufficiently low location on the vehicle to drain the vehicle sewage system, the outlet having an exposed threaded portion near the open end thereof;
a closure cap having a threaded region matable with the outlet threaded portion to sealingly close the outlet open end;
a tether connecting the outlet and closure cap to prevent the closure cap being lost or mislaid when not threadedly engaged with the outlet;
a flexible sewer drain hose having a threaded connector at one end thereof matable with the outlet threaded portion to sealingly connect the drain hose to the outlet open end whereby the drain hose end opposite the threaded connector may be connected to a sewage disposal location and the vehicle sewage system drained thereinto;
both the threaded connector and the closure cap being provided with diametrically opposed portions which may be selectively engaged to aid turning relative to the threaded portion for facilitating threaded coupling and decoupling of the threaded connector and closure cap with the threaded portion.

4,554,950

WEAVING MACHINE, ESPECIALLY A TERRY CLOTH WEAVING MACHINE

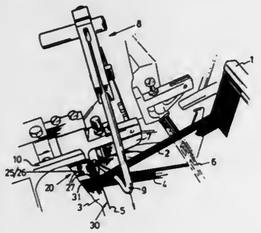
Aldo Sancini, and Miguel A. Stacher, both of Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed May 29, 1984, Ser. No. 614,680

Claims priority, application Switzerland, Jun. 9, 1983, 3161/83

Int. Cl.⁴ D03D *39/22*

U.S. Cl. 139—25 **4 Claims**



1. In a weaving machine, especially a terry cloth weaving machine, wherein:

a horizontal translation of both warp thread systems of an upper shed and of a lower shed together with the already woven fabric takes place for forming loops;

an apparatus for laying-in laid-in edges arranged at each side of the machine for fabricating laid-in edges in the woven fabric;

said apparatus for laying-in laid-in edges having laying-in needles for laying free ends of inserted weft threads back into the weaving shed; the improvement which comprises:

an apparatus for fixing the position of an apex line of the weaving shed over at least the width of an associated laid-in edge region of the fabric fixedly arranged at each side of the weaving machine;

each said apparatus for fixing the position of the apex line of the weaving shed comprising two straight-edges extending substantially parallel to the fabric fell and to the apex line of the weaving shed;

one of said two straight-edges engaging the laid-in edge from above and the other straight-edge engaging the laid-in edge from below;

the two straight-edges mutually overlapping in a prescribed spaced relationship in a direction extending transverse to a plane of the already woven fabric;

the two straight-edges being arranged sequentially in relation to the length of the fabric in a prescribed spaced relationship in a longitudinal direction of the already woven fabric; and

one of the two straight-edges being arranged nearer to a weaving reed of the weaving machine and approximately coincident with the apex line of a selvedge portion of the weaving shed and with a point of weft beat-up of the weaving reed.

4,554,951

METHOD OF REGULATING WARP YARN TENSION IN A WEAVING MACHINE

Hideo Hirano, Kariya, and Masahiko Kimbara, Okazaki, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 10, 1983, Ser. No. 550,752

Claims priority, application Japan, Nov. 16, 1982, 57-200794

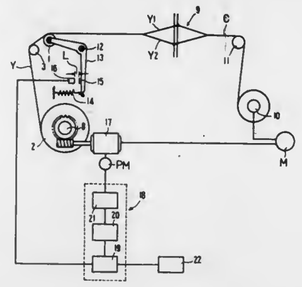
Int. Cl.⁴ D03D *49/06*

U.S. Cl. 139—105 **10 Claims**

1. A method for regulating the tension of warp yarns with reference to a predetermined permissible range thereof spanning a reference point corresponding to an optimum tension of said warp yarns, in a weaving machine which includes a means for tensioning said warp yarns delivered from a warp beam, said tensioning means being movable with a change in tension of said warp yarns in contact therewith, and a means for driving said warp beam at variable speed, said method comprising the steps of:

converting the mechanical movement of said tensioning means into an electrical signal which is proportional to the magnitude of displacement of said tensioning means from a position thereof corresponding to said reference point;

sampling said electrical signals successively in synchronism with the operation of the weaving machine to determine successive instantaneous magnitudes of displacement of



said tensioning means from its said reference point position;

comparing the difference between successive ones of said electrical signal samples with the time difference between the sampling of said successive ones of said samples, to determine a rate of change of said displacement of said tensioning means from said reference point position; and

varying the speed of said warp beam driving means depending upon the magnitude of said displacement and said rate of change of said displacement of said tensioning means to change the tension in said warp yarns in a compensating manner, whereby said tensioning means moves towards its said reference point position.

4,554,952

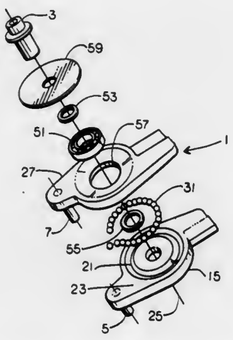
SEVERING APPARATUS FOR A LOOM

Gerald E. Coleman, 918 Devenger Rd., Greer, S.C. 29651

Filed Dec. 30, 1983, Ser. No. 567,275

Int. Cl.⁴ D03D *49/70*

U.S. Cl. 139—302 **3 Claims**



1. A severing device for the weft thread of a loom, comprising:

an axle;

a stationary scissor section fixed to said axle, said stationary scissor section defining a generally circular groove about and concentric with the axis of said axle;

a rotable scissor section rotably mounted on said axle, said rotable scissor section defining a circular groove to mate with said circular groove of said stationary scissor section whereby adjacent grooves define a raceway; and

ball bearings within said raceway between said scissor sections to act as thrustbearing to minimize wear at adjacent inner scissor faces.

4,554,953

COMPOSITE FABRIC FOR USE AS CLOTHING FOR THE SHEET FORMING SECTION OF A PAPERMAKING MACHINE

Georg Borel, and Hartmut Waldvogel, both of Reutlingen, Fed. Rep. of Germany, assignors to Hermann Wangner GmbH & Co., Reutlingen, Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,419

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305713

Int. Cl.⁴ D03D *23/00*

U.S. Cl. 139—383 A **6 Claims**



1. A composite fabric for use as clothing for the sheet forming section of a papermaking machine comprising at least two fabric layers formed by transverse and longitudinal threads and interconnected in that at least part of the transversely extending and, in addition, at least part of the longitudinally extending threads are woven into the upper and into the lower fabric layer, thereby limiting relative movement between the upper and lower fabric layers.

4,554,954

LOOM FOR WEAVING FLAT FABRIC

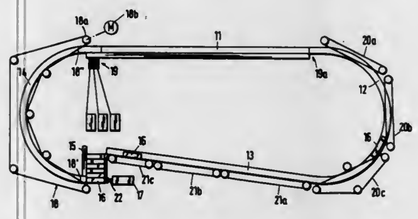
Bernhard Krenkel, and Heinz Joos, both of Heidenheim, Fed. Rep. of Germany, assignors to F. Oberdorfer, Heidenheim, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,863

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242121

Int. Cl.⁴ D03D *47/24*

U.S. Cl. 139—439 **20 Claims**



1. In a loom for weaving flat fabric, the combination of a track defining an endless path for gripper shuttles, said track including a reed having a first side for entry of shuttles into and a second side for exit of shuttles from the shed and said track further including an arcuate section at the first side of said reed; a magazine disposed upstream of said arcuate section, as considered in the direction of travel of shuttles along said path, said magazine including means for accumulating a stack of shuttles adjacent to said path ahead of said arcuate section, as considered in said direction; a supply of shuttles in said magazine; means for delivering successive shuttles from said magazine into said arcuate section; means for accelerating successive shuttles at least in the major part of said arcuate section so that the shuttles reach the first side of said reed and enter the shed while moving at a predetermined speed and thereupon return into said magazine; and cooperating first and second guide means respectively provided on said reed and on said shuttles to maintain the shuttles in said path during travel through the shed.

4,554,955

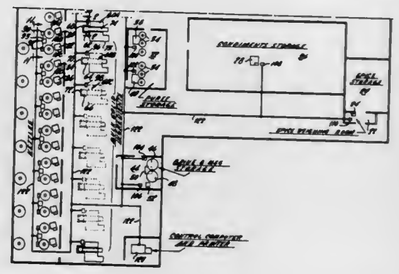
METHOD AND APPARATUS FOR ASSEMBLING FOOD INGREDIENTS

Wolf A. von Lersner; Edward W. Cheeseman, both of Cherry Hill; Thomas K. Simpson, Merchantville, and George R. Weaver, Maple Shade, all of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed May 25, 1983, Ser. No. 498,018

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 141—1 **19 Claims**



1. The method of verifying the delivery of the proper container of a group of containers from a product-dispensing station to a particular product-receiving station, comprising:

providing respectively different machine-readable container-identifying means secured to said containers;

presenting one of said group of containers at said product-dispensing station;

machine-reading said container-identifying means of said one container at said product-dispensing station to produce first signals representative of said container-identifying means of said one container;

thereafter delivering said one container to said product-receiving station;

at said product-receiving station, machine-reading said container-identifying means of said one container to produce second signals representative of said container-identifying means secured to said one container; and

comparing said first and second signals to produce at said delivery station third signals indicating that said one container presented at said product-receiving station is said proper container.

7. Apparatus for enhancing the reliability of delivery of an ingredient into a particular blending kettle at a kettle station, from an ingredient-dispensing station remotely positioned with respect to said kettle, comprising:

a transport container having container-identifying machine-readable indicia means secured thereto;

first indicia-reading means at said ingredient-dispensing station for reading said machine-readable indicia means to produce first signals representative thereof;

second indicia-reading means at said kettle station for reading said machine-readable indicia means to produce second signals representative thereof;

means for storing said first signals and for comparing them with said second signals to produce third signals only if said first and second signals represent the same machine-read indicia;

transfer inhibiting means for inhibiting the transfer of ingredients from said transport container to said blending kettle; and

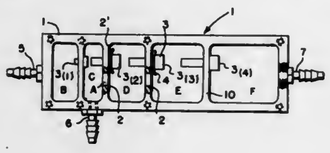
control means for controlling said transfer inhibiting means to permit said transfer upon the occurrence of said third signals.

4,554,956

EJECTOR DEVICE AND METHOD FOR PRODUCING SAME

Dan Greenberg, 4 Rehov Haganim, Kiryat Bialik, Israel

Filed Oct. 12, 1983, Ser. No. 541,060
Claims priority, application Israel, Oct. 18, 1982, 67012
Int. Cl.⁴ B65B *31/04;* B21D *53/00;* F16K *1/00*
U.S. Cl. 141—65 **8 Claims**



1. A method for producing an ejector device with plural ejector chambers provided in a common ejector housing having inlet and outlet ports for a pressure medium and an evacuation inlet port communicating with one of the chambers, and plural ejector nozzles positioned coaxially in respective housing partitions separating relatively adjacent ejector chambers for interconnecting such chambers, said method comprising the steps of:

producing the housing with ejector chambers of substantially rectangular shape being formed therein in a coaxial and successive arrangement with adjacent chambers being separated by a respective common transverse partition;

forming communication openings in the transverse partitions between adjacent chambers;

drilling holes through end walls of the housing and co-axial holes through the transverse partitions between adjacent chambers for accommodation of ejector nozzles;

inserting ejector nozzles into the holes in respective transverse partitions;

installing valve flaps to cover respective communication holes;

closing the housing by securing and sealing with a top cover; and

providing at respective operative positions in the housing pressure medium inlet and outlet ports in communication with respective different chambers and an evacuation inlet port in communication with one of the chambers.

8. An ejector device made in accordance with the method of claim 1.

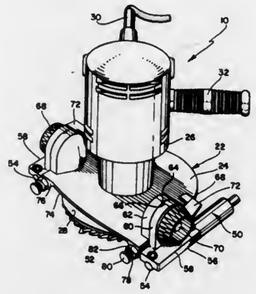
4,554,957

ROTARY RESURFACING TOOL

Charles Zayat, 100 New Hampshire St., Cranston, R.I. 02920

Filed Feb. 10, 1984, Ser. No. 578,855
Int. Cl.⁴ B27C *9/02*
U.S. Cl. 144—2 R **5 Claims**

1. A rotary tool for resurfacing a work surface such as a painted shingle or clapboard wall defining a generally flat vertically oriented major surface and an adjacent overlying horizontally oriented minor surface, said tool comprising a housing, a rotatable cutting disc having a generally planar face and a peripheral edge surface, said disc rotatably supported by said housing and means for rotating said disc at high speed about an axis substantially perpendicular to said major work surface, said generally planar disc face having upwardly extending first cutting surfaces provided thereon and said disc peripheral edge surface having radially outwardly extending second cutting surfaces provided thereon such that said rotation permits simultaneous cutting of said major surface by said first cutting surfaces and said minor surface by said second cutting surfaces, said housing further including first and second



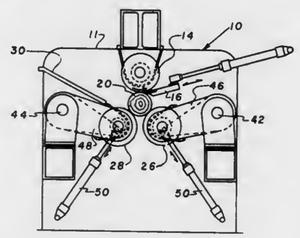
adjustable guide means adapted to respectively and simultaneously engage said major and minor surfaces so as to regulate the depth to which said disc cuts said major and minor surfaces.

4,554,958

APPARATUS FOR ROUNDING THE CIRCUMFERENCE OF A LOG

Charles J. Schmidt, Diboll, Tex., assignor to Arthur Temple, III, Austin, Tex., a part interest

Filed May 17, 1984, Ser. No. 611,250
Int. Cl.⁴ B27L *1/00;* B27C *9/04*
U.S. Cl. 144—4 **17 Claims**



1. An apparatus for rounding the circumference of a wood log comprising,

first and second rotatable rollers adapted to engage the outside of a wood log at two spaced points between the ends of the log,

a knife positioned adjacent the first and second rollers and extending the length of the log for cutting off an amount of material from the outer circumference of the log for making the outer circumference of the log more uniformly round,

third and fourth movable rollers positioned below the first roller, and movable toward and away from the first roller and each other,

fifth and sixth movable rollers positioned below the second roller, and movable toward and away from the second roller and each other, and

means for rotating all of said rollers thereby rotating a log positioned between the rollers allowing the knife to cut off predetermined portions of the log extending outwardly for rounding the circumference of the log.

4,554,959

SURFACE TREATMENT OF SHEET MATERIAL

Olof R. Smedberg, Halmstad, Sweden, assignor to RY AB, Fack, Oskarstrom and AB Wilh. Becker, Fack, Stockholm, both of, Sweden

Continuation-in-part of Ser. No. 396,028, Jul. 7, 1982, abandoned. This application May 9, 1984, Ser. No. 608,368
Claims priority, application Sweden, Jul. 10, 1981, 8104317
Int. Cl.⁴ B05D *1/36;* B27M *1/00*
U.S. Cl. 144—380 **7 Claims**

1. A method of providing a pore-sealed surface on sheet material comprising the steps of:

(a) coating a surface of said sheet material with a first layer of pore-sealing and surface forming lacquer;

(b) heating said lacquer at a first temperature providing drying and curing of said lacquer; and,

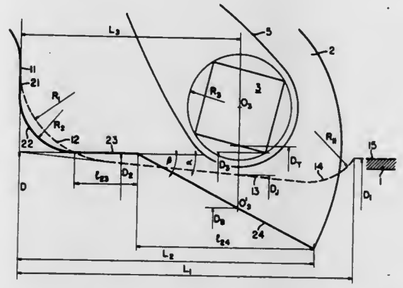
(c) heating said lacquer at a second temperature to the depth of the lacquer layer and limiting the heating of the remainder of the sheet material, while compressing said coated sheet to cause at least said lacquer to flow sufficiently to seal the pores of said lacquer and sheet surface and effect a smooth surface finish without damaging said sheet material.

4,554,960

RADIAL CARCASS TIRE WHICH CAN BE PARTICULARLY USED WITHOUT AN INDEPENDENT INNER TUBE

Jean-Pierre Pompier, Enval, France, assignor to Compagnie Generale des Etablissments Michelin, Clermont-Ferrand, France

Filed May 3, 1984, Ser. No. 606,753
Claims priority, application France, Jun. 23, 1983, 83 10543
Int. Cl.⁴ B60C *15/02, 15/00*
U.S. Cl. 152—450 **6 Claims**



1. A tire without an independent inner tube, having a radial carcass reinforcement, a crown reinforcement formed of at least two plies of cables which are parallel in each ply and crossed from one ply to the next, and two beads each reinforced by at least one bead ring around which the carcass reinforcement is anchored, which can be mounted on a standard rim provided, between the well base and the frustoconical bead seat, with a circumferential hump having radially a cylindrical generatrix, characterized by the fact that,

on the one hand, the base of the beads, of an axial width L_2, has, seen in radial section and from the equatorial plane towards the outside of the tire, a profile comprising a frustoconical zone having an axial width l_{24} of between 0.45 L_2 and 0.65 L_2, the generatrix of which forms with the axis of rotation of the tire an angle β such that the value of the tangent of the angle β is between 0.5 and 0.6; a cylindrical zone having an axial width l_{23} of between 0.15 L_2 and 0.25 L_2 and having a diameter D_2 equal to the diameter D_1 of the cylindrical hump of the rim; and a circular arc connecting zone between the cylindrical zone and the vertical wall of the bead;

and on the other hand, the reinforcing bead ring, seen in radial section, has an interior diameter D_3 at least equal to the diameter D_1 of the cylindrical hump of the rim but at most equal to 1.004 times said diameter, and a cross section, the circumscribed circle of which has its center located, axially with respect to the vertical wall of the bead, at a distance away L_3 such that the ratio

$$s = \frac{D_J - D_B}{D_T - D_B}$$

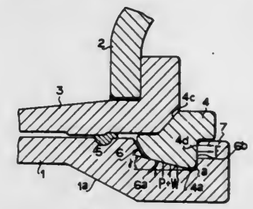
is at least equal to 0.45, D_J, D_B, D_T being the diameter of the rim, the diameter of the base of the bead and the diameter of the bead ring, respectively, measured in a plane parallel to the equatorial plane of the tire and passing through said center.

4,554,961

WHEEL RIM WITH SPLIT LOCKING RING

Shigeru Osawa, Tokyo, and Hisayoshi Yamoto, Yamato, both of Japan, assignors to Topy Industries Limited, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,573
Claims priority, application Japan, Dec. 11, 1981, 56-199551
Int. Cl.⁴ B60B *25/04*
U.S. Cl. 152—410 **5 Claims**



1. A wheel rim assembly comprising

an annular rimbase for a pneumatic tire,

a bead seat band,

a lockring groove defined by the rimbase,

a lockring located in said lockring groove interconnecting said annular rimbase and said bead seat band,

said lockring groove having a first bottom surface inclined at a predetermined angle of between 5° and 20° with respect to the axis of said annular rimbase and a vertical side wall portion,

said lockring having a second bottom surface substantially abutting said first bottom surface and an outer side wall portion substantially abutting said vertical side wall portion,

said bead seat band having a first inclined conical surface,

a second inclined conical surface defined by said lockring abutting said first inclined conical surface,

a first edge portion defined by said lockring groove located between said first bottom surface and said vertical side wall portion, and

a second edge portion defined by said lockring located between said second bottom surface and said outer side wall portion,

said second edge portion being spaced from said first edge portion for dividing a force between axial side pressure forces transferred from said outer side wall portion to said vertical wall portion and radial pressure forces transferred from said second bottom portion to said first bottom portion when said pneumatic tire is inflated, the spacing between said first edge portion and second edge portion prevents movement of said lockring out of said lockring groove by rolling when said force is divided.

4,554,962

METHOD AND APPARATUS FOR FORMING AN INTERNALLY SCREW-THREADED ARTICLE

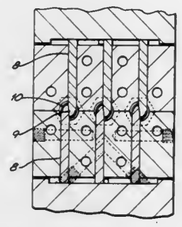
David E. Wright, Evesham, England, assignor to Dynacast International Limited, Alcester, England

Filed Aug. 10, 1984, Ser. No. 639,393

Claims priority, application United Kingdom, Aug. 20, 1983, 8322468

Int. Cl.⁴ B22D *29/00*

U.S. Cl. 164—132 **8 Claims**



1. A method of casting or moulding an article having an internally screw-threaded hole in a mould cavity which is shaped to define the exterior contour of the article comprising introducing casting or moulding material into the mould cavity around a thread forming core consisting of two withdrawable flat core members which have a width which, measured in the same direction as the axis of the screw-threaded hole to be formed, is less than the dimension of the cavity in the said direction and which project towards one another into the cavity and meet in a transversely offset partially overlapping relationship, each said core member having a leading end face formed to present a segment of a screw thread which is a male image of a segment of the female internal screw thread to be formed in the article so that the two segments of screw thread form two diametrally opposite segments of a male image of the female internal screw thread to be formed in the article, withdrawing the core members from the mould cavity when the casting or moulding material has set and removing the article from the mould cavity.

4,554,963

METHOD AND APPARATUS FOR A FLUIDIZED BED HEAT EXCHANGER

Alton C. Goodwin, Northport; Mark T. Junglen, Irondale, and John S. Kent, Birmingham, all of Ala., assignors to Baker International Corporation, Orange, Calif.

Filed Aug. 19, 1983, Ser. No. 524,520

Int. Cl.⁴ F28C *3/16*; **F28D** *13/00*

U.S. Cl. 165—1 **21 Claims**

1. An improved fluidized material heat exchanger comprising:

a. a plurality of substantially parallel tubes for passing a primary medium, each tube having respective upper and lower open end portions joined by a hollow intermediate portion;

b. a collection chamber enclosing said upper open end portions of the tubes and having an outlet conduit for passing said primary medium from the collection chamber;

c. a middle chamber enclosing the intermediate portions of the tubes for passing a secondary medium about the tubes, the middle chamber having at least one inlet conduit and at least one outlet conduit for said secondary medium, and the middle chamber being physically separated in a leak proof manner from the collection chamber;

d. a fluid chamber enclosing said lower open end portions of the tubes, the fluid chamber physically segregated in a leak-proof fashion from the middle chamber; and, said fluid chamber being adapted to contain a quantity of particulate matter which is inert with respect to said primary medium and which is of a size and shape such that said particulate matter can be fluidized by said primary medium and passed upwardly through the tubes without clogging the tubes and capable of descaling the interior surfaces of the tubes;

e. at least one side inlet conduit and a base inlet conduit at predetermined locations in the walls and base, respectively, of said fluid chamber for concurrently receiving and passing said primary medium to the interior of said fluid chamber;

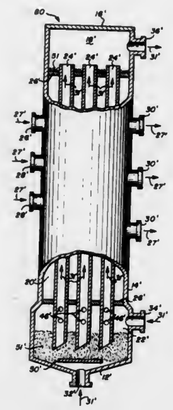
f. at least one of said second end portions of the tubes is a tube inlet device having a side wall with at least two apertures, one at an elevation above the other, said apertures being of a size and shape so as to permit unrestricted passage of said particulate matter and said primary medium through the apertures, and the tube inlet device has a hollow tip portion through which said primary medium and said particulate matter may pass; and

g. the size and location of said apertures is determined by the equations:

$$\tfrac{1}{2}D_N \leqq A_N \leqq [L-\tfrac{1}{2}D_N];$$

and

$$0.004[OD^2\pi \leqq [D_1{}^2+D_2{}^2+D_3{}^2+\ldots D_N{}^2] \leqq 3[OD^2]$$



with

N = the number of apertures;

D_N = the diameter of the Nth aperture;

OD = the overall diameter of the tube inlet devices;

L = the overall length of the tube inlet devices; and

A_N = the distance from the lower edge of the tube inlet device to the center point of the Nth aperture.

2. A method for descaling tubes and regulating the amount of fluidized particulate matter in a fluidized bed heat exchanger having a plurality of hollow parallel tubes for passing a primary medium into a collection chamber through a middle chamber from a fluid chamber while a secondary medium is passed through the middle chamber and bathes said tubes, said collection chamber incorporating at least one outlet conduit for passing said primary medium, said fluid chamber being subdivided into a primary region and a secondary region by a partition wall such that said two regions are physically isolated from each other in a leak proof manner, said primary region having a side inlet conduit mounted in the side of said fluid chamber, said secondary region having a base inlet conduit mounted in the base of said fluid chamber, said tubes extending through said primary region and terminating in said secondary region, the portion of the tube in said primary region having portions defining at least two apertures aligned parallel to the central axis of the tube such that primary medium entering the primary region via side inlet conduit can pass into the tubes via the apertures and in said secondary region is a bed of particulate matter for cleaning the interior surfaces of the tubes which is capable of being fluidized by the primary medium and passing into the tubes from said secondary region, comprising the steps of:

introducing said primary medium simultaneously into the side and base inlet conduits under pressure when descaling is desired, and substantially filling the primary region with said primary medium passing through the side inlet conduit to cause said primary medium to pass into said tubes through the tube inlet device apertures, and causing the primary medium passing through the base inlet conduit to fluidize said particulate matter residing within the secondary region;

passing said fluidized particulate matter in said secondary region up into the tubes to comingle with said primary medium entering said tubes through the tube inlet device apertures located in the primary region, passing said commingled medium through said tubes to said collection chamber to descale said tubes;

discharging said commingled medium from said collection chamber;

flowing a secondary medium through said middle chamber and bathing the outer surfaces of the tubes so as to heat or cool the tubes as desired; and

reducing the flow of said primary medium to the base inlet conduit to prevent particulate matter from said secondary region from being fluidized and entering said inlet devices while maintaining the flow of the primary medium entering the heat exchanger via the side inlet conduit when descaling is not desired.

4,554,964

METHOD FOR CONTROLLING TEMPERATURE OF WATER TO BE FED INTO WATER COOLING TOWER

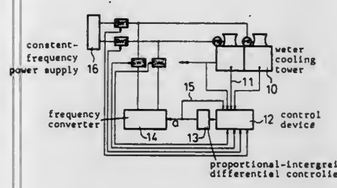
Koichi Awano, Kasukabe; Yoshifumi Nitta, Ibaraki, and Satoshi Ibe, Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Niigata Kisetsu Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 579,018

Claims priority, application Japan, Feb. 24, 1983, 58-28458

Int. Cl.⁴ F25B *39/04*

U.S. Cl. 165—39 **1 Claim**



1. A method for controlling temperature of water fed into a water cooling tower by regulating the rotational speeds of cooling fans which comprises detecting a sum of actual rotational speeds of a plurality of motors which drive a plurality of cooling fans, comparing the detected sum of the rotational speeds with a predetermined rotational speed which is substantially equal to a sum of rotational speeds of said motors when said motors are driven in parallel by a frequency converter with its maximum power capacity, driving some of said motors by a constant-frequency power supply and driving the other of said motors by said frequency converter when the sum of the actual rotational speeds is in excess of said predetermined speed, and carrying on parallel operation of all of said motors by said frequency converter when the sum of the actual rotational speeds is less than said predetermined rotational speed, whereby a frequency conversion rate of the frequency converter is continuously controlled so that the frequency applied to said motors is varied so as to control the actual rotational speeds of said motors, thereby regulating the amount of air generated by said plurality of cooling fans and thus maintaining the temperature of water to be fed into said water cooling tower at a constant level.

4,554,965

BALL-MEASURING SYSTEM FOR SELF-CLEANING HEAT EXCHANGER

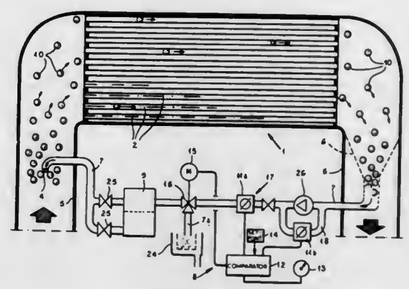
Rolf Bochinski, Duisburg; Klaus Elmer; Alois Lange, both of Ratingen, and Xuan L. Nghiem, Krefeld, all of Fed. Rep. of Germany, assignors to Taprogge Gesellschaft mbH, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,280

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309509; May 3, 1983, 3316020

Int. Cl.⁴ F28G *1/12*

U.S. Cl. 165—95 **10 Claims**



1. A method of operating a tube-type heat exchanger having intake and output conduits and tubes connected therebetween, and a return conduit extending from the output to the inlet conduit, the method comprising the steps of:

passing a coolant liquid from the intake to the output conduit through the tubes;

releasing balls into the intake conduit from the return conduit and passing the balls with the coolant through the tubes to clean same;

trapping balls in the output conduit and introducing them into the return conduit;

measuring the momentum of each of the balls in the return conduit and generating respective outputs corresponding thereto;

comparing the outputs with a set-point signal corresponding to minimum acceptable ball momentum; and

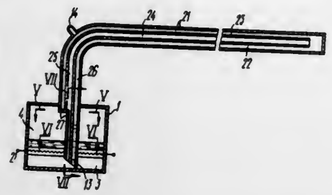
withdrawing from the return conduit a ball whose momentum is below the minimum momentum and replacing the withdrawn ball in the conduits with a fresh ball.

4,554,966

HEAT-TRANSFER DEVICE

Leonard L. Vasiliev, ulitsa Kulman, 13, kv. 48.; Vladimir G. Kiselev, ulitsa Koltsova, 32, kv. 137.; Valery A. Morgun, ulitsa Slavinskogo, 35, Kv. 40.; Anatoly M. Marchenko, Leninsky prospekt, 72a, kv. 73., all of Minsk; Evgeny A. Rudnev, ulitsa Krasnoarmeiskaya, 8/10, kv. 23., Kharkov; Vasily A. Nesvit, ulitsa Sverdlova, 119, kv. 49., Kharkov; Leonid M. Dunaevsky, ulitsa Dzerzhinskogo, 59, kv, 50., Kharkov; Nikolai F. Tverdokhleb, Merfyanskoe shosse, 30, kv. 50., Kharkov; Vladimir M. Bogdanov, Leninky prospekt, 127, kv. 89., and Mikhail I. Rabetsky, ulitsa P. Glebki, 84, kv. 204., both of Minsk, all of U.S.S.R.

Filed Jun. 2, 1983, Ser. No. 500,254
Int. Cl.[4] F28D *15/00*
U.S. Cl. 165—104.21 7 Claims



1. A heat-transfer device, comprising an evaporation chamber; a space of said evaporation chamber having a liquid zone and a vapor zone; at least one heating source for said evaporation chamber; a condensation chamber made in the form of a pipeline and installed essentially horizontally along an object to be heated; a space of said condensation chamber; a tube used for supplying vapor into the space of said condensation chamber and for returning the condensed liquid into the space of said evaporation chamber arranged in the space of said condensation chamber along its longitudinal axis, the space of said tube being communicated with the spaces of said evaporation chamber and condensation chamber; at least two branch pipes, fluid-flow and vapor-flow; one of said branch pipes being communicated with the vapor zone of said evaporation chamber and the other of said branch pipes being communicated with the liquid zone of said evaporation chamber, the space of the tube is communicated with the vapor zone of the evaporation chamber through the vapor-flow branch pipe, while the space of the condensation chamber is communicated through the fluid-flow branch pipe with the liquid zone of the evaporation chamber; dividing means being mounted inside of the fluid-flow branch pipe for directing a heat carrier, flowing from said condensation chamber, away from said vapor zone of the evaporation chamber into the liquid zone thereof; the vapor-flow branch pipe being located inside of the fluid-flow branch pipe; said dividing means being formed as a half-ring closing an annular gap between walls of the vapor-flow branch pipe and the fluid-flow branch pipe through which the condensed heat carrier being returned into the evaporation chamber, said half-ring being mounted at an angle to the plates closing longitudinal gaps between said walls of the branch pipes.

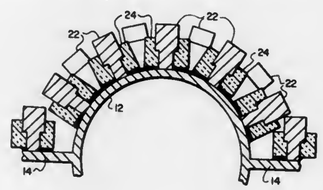
4,554,967

EROSION RESISTANT WATERWALL

Richard C. Johnson, and Leigh B. Egbert, both of Dansville, N.Y., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 10, 1983, Ser. No. 550,700
Int. Cl.[4] F28F *19/00*
U.S. Cl. 165—134.1 4 Claims

1. A waterwall comprising a plurality of water tubes extending in a spaced, parallel relationship; a plurality of continuous fins extending between adjacent tubes for the length thereof and connected to the outer surfaces of said tubes for forming a gas-tight structure, one surface of which is exposed to erosion-causing particulate material; and a plurality of erosion resistant stud members welded to said exposed surface of said structure, each stud member comprising a cylindrical member, a projecting portion extending from said cylindrical member and having a diameter less than that of said cylindrical member for



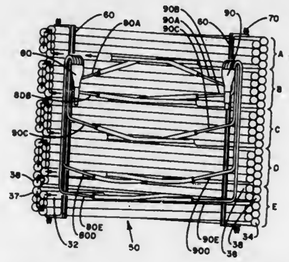
melting during said welding, and a ceramic sleeve extending around said cylindrical member and said projecting portion; the size of said stud members relative to said tubes being such that a plurality of said stud members extend around the periphery of each exposed tube surface in a spaced relationship.

4,554,968

WRAPPED FIN HEAT EXCHANGER CIRCUITING

Rudy E. Haas, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 29, 1982, Ser. No. 344,141
Int. Cl.[4] F28F *9/26, 17/00;* F25B *13/00*
U.S. Cl. 165—144 1 Claim



1. A refrigerant carrying circuit forming a portion of an air to refrigerant heat exchanger having a plurality of refrigerant carrying circuits connected to a first header means and a second header means in parallel which portion comprises:

a plurality of loops of tubing, each loop extending about the perimeter of the heat exchanger and the tubing being a wrapped fin tubing having a refrigerant carrying tube and fin material wrapped about the exterior of the tube;

an outer portion of the circuit formed from a set of loops located to form an outer set of loops including a top, a bottom and a plurality of intermediate loops;

an inner portion of the circuit formed from a set of loops located within said outer set of loops to form an inner set of loops including a top, a bottom and a plurality of intermediate loops and spaced inwardly from the outer set of loops;

said first header means connected to one of said intermediate loops of said inner set of loops;

said second header means connected to one of said intermediate loops of said outer set of loops; and

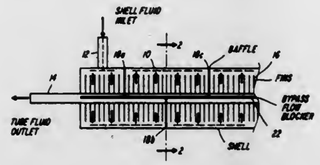
transition means connecting the outer set of loops to the inner set of loops at the top, at the bottom and at an intermediate loop of each set of loops wherein refrigerant is supplied from the first header means to said one intermediate loop of said inner set of loops first and then flows downwardly through the inner set of loops to the transition means connecting said bottoms and then upwardly through the outer set of loops to the transition means connecting said intermediate loops of each set of loops and then upwardly through a portion of the inner set of loops to the transition means connecting said tops and then downwardly through the outer set of loops to the connection to the second header means.

4,554,969

COAXIAL FINNED TUBE HEAT EXCHANGER

Theodore C. Carnavos, Bethel, Conn., assignor to Noranda Metal Industries, Inc., Newton, Conn.

PCT No. PCT/US82/01784, § 371 Date Aug. 20, 1984, § 102(e) Date Aug. 22, 1984, PCT Pub. No. WO84/02572, PCT Pub. Date Jul. 5, 1984
PCT Filed Dec. 22, 1982, Ser. No. 648,571
Int. Cl.[4] F28D *7/10;* F28F *9/22, 13/06*
U.S. Cl. 165—154 8 Claims



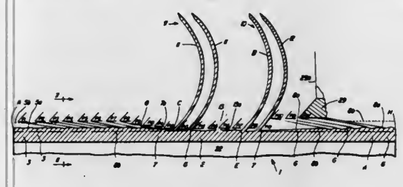
1. A coaxial finned tube heat exchanger comprising a hollow shell, a tube mounted coaxially within such shell and having radially extending outer fins of substantially large radial dimension in relation to the tube diameter, means for passing a first heat exchanger fluid in said tube, and means for passing a second heat exchanger fluid through said shell, characterized in that a plurality of segmental cut baffles are mounted between adjacent fins at a predetermined spacing within said shell so as to achieve a cross-flow pattern for said second fluid between the fins of said tube, and in that a pair of bypass flow blockers are mounted longitudinally on the tip of the fins to block circumferential flow of said second fluid between said shell and the tips of the fins and so force the fluid flow between the fins.

4,554,970

HEAT EXCHANGERS AND METHOD OF MAKING SAME

Stephen F. Pasternak, Palm Harbor, Fla., and Franz X. Wohrstein, Chicago, Ill., assignors to Peerless of America, Inc., Chicago, Ill.

Filed Jun. 10, 1982, Ser. No. 386,950
Int. Cl.[4] F28F *1/26*
U.S. Cl. 165—181 4 Claims



1. A heat transfer element comprising

a. an elongated tubular member having a horizontal center line therein,

b. said tubular member having a top and bottom wall integral therewith, said top wall and said bottom wall each having a substantially rectangular-shaped facing thereon,

c. at least two groups of fins spaced from each other longitudinally along both of said top and bottom walls, each group comprising a plurality of cut fins, said cut fins spaced from each other longitudinally therealong, with said at least two groups of fins along both of said top and bottom walls having a spacing therebetween formed by predetermined severing of the cut fins and providing fin stubs thereon, with the outer surface of said spacing therebetween defined by said severed fin stubs presenting substantially a horizontal outer plane surface with respect to said horizontal center line of said tubular member,

d. each of said fins in each of said groups

(1) being spaced from the next adjacent fin a predetermined distance longitudinally along both said top and bottom walls, and

(2) projecting outwardly from said face, said groups of fins being spaced from each other a distance greater than said predetermined distance longitudinally along said wall,

e. said tubular member further having two oppositely disposed end portions adjacent one of said group of fins on both said top and bottom walls,

f. each of said end portions having

(1) an inner surface portion sloping upwardly and outwardly from the respective adjacent group of said fins, and

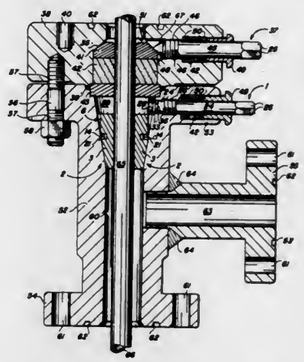
(2) an outer surface portion extending outwardly from said inner portion thereof in substantially parallel relation to the center line of said tubular member.

4,554,971

TUBING ANCHOR ASSEMBLY

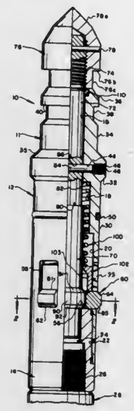
William O. Cobb, Rte. 4, Box 327, Haughton, La. 71037

Filed Oct. 26, 1983, Ser. No. 545,530
Int. Cl.[4] E21B *19/10*
U.S. Cl. 166—88 25 Claims



1. A tubing anchor assembly for supporting tubing in a well comprising tubing support means having an internal bore and a tapered slip bowl in said bore; a plurality of retainer means threadably and radially deployed in said tubing support means in spaced relationship and shaped ends on said retainer means, said shaped ends projecting into said slip bowl; a plurality of slip means disposed in said slip bowl and dove tail slot means provided in said slip means, said slot means engaging said shaped ends on said retainer means, respectively, whereby said slip means are suspended on said shaped ends in a first selected orientation and are released from said shaped ends and dropped into supporting contact with the tubing responsive to threadable rotation of said retainer means in said tubing support means, in a second selected orientation.

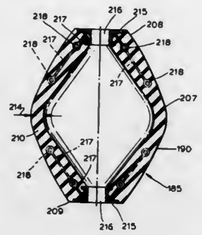
4,554,972
WELL TOOL LOCKING DEVICE
David T. Merritt, Celina, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 30, 1984, Ser. No. 605,215
Int. Cl.[4] E21B *23/02*
U.S. Cl. 166—137 **8 Claims**



1. A locking device for releasably locking a well tool in a receptacle in a well conduit, said receptacle having a bore with a locking recess providing a downwardly facing lock shoulder, said locking device comprising:
a. tubular housing means having means at its uppper end for attachment to a running tool and means at its lower end for attachment of a well tool, said housing means having window means intermediate its ends;
b. lug means in said window means movable between expanded locking and retracted released positions, said lugs being also movable between upper and lower positions in said window means;
c. core means having an enlarged diameter portion and slidably carried in said tubular housing means and movable between an initial lower position in which said enlarged diameter portion supports said lug means in expanded position and an upper position in which said lug means is permitted to move to retracted position, said lug means when in their upper position in said window means being above said enlarged diameter portion of said core means and able to be moved to retracted position, and
d. means biasing said lug means to their lower positions in said window means.

4,554,973
APPARATUS FOR SEALING A WELL CASING
Clinton O. Shonrock, Stafford, and John O. Wambaugh, Houston, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Oct. 24, 1983, Ser. No. 544,658
Int. Cl.[4] E21B *33/128*
U.S. Cl. 166—192 **9 Claims**

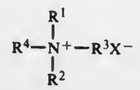
1. An elastomeric sealing element for a bridge plug for use within a well casing and production tubing, the diameter of the production tubing being smaller than the diameter of the well casing, comprising:
a generally tubular-shaped elastomeric member having first and second ends and a unitary wall portion therebetween;
the elastomeric member having a normal, unstressed configuration, wherein the diameter thereof varies along the longitudinal axis of the elastomeric member, with the diameter intermediate the ends of the elastomeric member being larger than the diameter at the ends of the elastomeric member;
the elastomeric member being elongatable along its longitudinal axis whereby the diameter intermediate the ends of the elastomeric member is substantially the same as the diameter of its ends so that the elastomeric member may pass through the production tubing; and



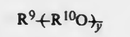
the elastomeric member being compressible along its longitudinal axis to a configuration where said ends of said elastomeric member are in contact with each other whereby said unitary wall portion sealingly conforms to the well casing.

4,554,974
METHOD OF ENHANCED OIL RECOVERY EMPLOYING THICKENED AMPHOTERIC SURFACTANT SOLUTIONS
Bayram Kalpakci, Sagamore Hills, and Keng S. Chan, South Euclid, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Filed Dec. 8, 1983, Ser. No. 559,524
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—273 **14 Claims**

1. A method for recovering petroleum from a subterranean reservoir penetrated by injection well means and spaced production well means comprising
injecting into said reservoir through said injection well means a surfactant slug comprising an aqueous solution containing: about 0.001 to about 5% by weight of an amphoteric surfactant of the formula

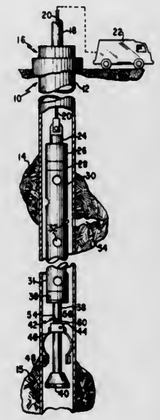


wherein R^1 is a hydrocarbon-based group of 1 to about 14 carbon atoms, R^2 is a hydrocarbon-based group of 1 to about 5 carbon atoms, R^3 is a divalent hydrocarbon-based group of 1 to about 3 carbon atoms, and R^4 is represented by the formula



wherein R^9 is a hydrocarbon-based group of about 6 to about 26 carbon atoms, R^{10} is a divalent hydrocarbon-based group of about 2 to about 18 carbon atoms and y is an integer of 1 to about 4, and X is SO_3— or COO—; and an effective amount of a high molecular weight homopolysaccharide gum thickener derived from fungus strains of the genus Schlerotium to provide said surfactant slug with a viscosity exceeding the viscosity of said petroleum in said reservoir, and
recovering fluid from said production well means.

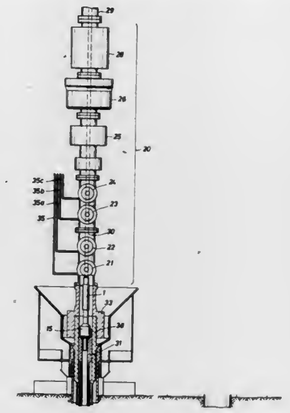
4,554,975
HOLD DOWN APPARATUS FOR WIRELINE OPERATED GUN
Roy R. Vann, Houston, and Flint R. George, Katy, both of Tex., assignors to GEO VANN, Inc., Houston, Tex.
Filed Jun. 7, 1982, Ser. No. 385,528
Int. Cl.[4] E21B *43/119*
U.S. Cl. 166—297 **12 Claims**

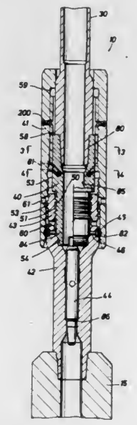


12. Apparatus for releasably anchoring a wireline operated perforating gun within a cased and substantially dry borehole, comprising:
an elongate member depending from said gun;
a support member reciprocably disposed on said elongate member;
a plurality of drag springs having one end affixed to said support member;
slip means affixed to the other end of said drag springs movable from a first position where said slip means anchors against the cased borehole to a second position where said slip means does not engage the cased borehole;
cooperable reciprocable means disposed on said support member and said member for reciprocating said slip means between said first and second positions;
cooperable means disposed on said elongate member for actuating said reciprocable means; and
a conical member disposed on said elongate member for moving said means into engagement with the cased borehole.

4,554,976
TEST TOOL FOR SUBSEA BLOWOUT PREVENTER STACK
Joseph H. Hynes, Houston; Charles D. Morrill, Humble, and George D. Hall, Bellaire, all of Tex., assignors to Hydril Company, Los Angeles, Calif.
Filed May 12, 1983, Ser. No. 494,038
Int. Cl.[4] E21B *23/00*
U.S. Cl. 166—341 **26 Claims**

1. A test tool adapted for use during testing of a subsea blowout preventer stack attached to a wellhead comprising,
upper body means having means at its upper end for connection to the end of a drill pipe, the upper body means having an axial bore communicating with the interior of the drill pipe,
lower body means having an axial bore therein and having at its lower end means for connecting to a wellhead sealing tool means for sealing between the lower body means and the wellhead, and
releasable and reconnectable coupling means for connecting the lower body means to the upper body means in a first connection, the axial bore of the upper body means being in fluid communication with the axial bore of the lower body means, for disconnecting the lower body means from the upper body means by turning the drill pipe in a direction tending to tighten drill pipe joints while axially





moving the drill pipe solely in one direction, and for reconnecting the upper body means to the lower body means in a seconnd connection without removing the drill pipe from the well by turning the drill pipe in the same direction.

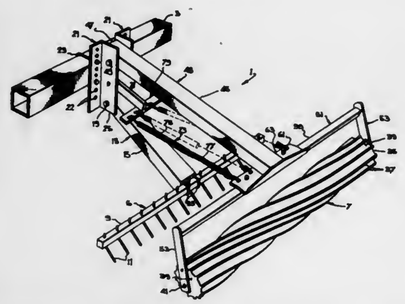
4,554,977
COMBINED HARROW AND HARROW BAR
Bertrand Vachon, Thetford Mines, Canada, assignor to Ber-Vac Inc., Thetford Mines, Canada
Filed Mar. 16, 1984, Ser. No. 590,266
Int. Cl.[4] A01B *49/02*
U.S. Cl. 172—177 **1 Claim**

1. A cultivator comprising:
a main frame;
a first support means pivotally mounted on the frame and extending rearwardly therefrom, said first support means carrying an upwardly and rearwardly extending arm adjacent the frame;
a harrow bar mounted rearwardly on the first support means;
a second support means pivotally mounted on the frame and

extending rearwardly therefrom above the first support means;

a cylindrical harrow mounted rearwardly on the second support means and spaced rearwardly from the harrow bar, said cylindrical harrow having helical blades thereon; and

at least one resilient means connecting the harrow bar to the



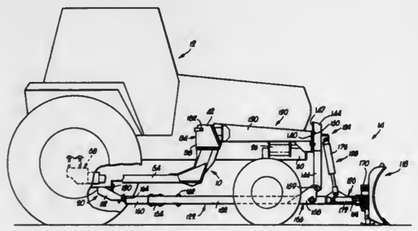
cylindrical harrow in a manner whereby movement of the harrow bar in an upward direction automatically increases the downward pressure applied by the cylindrical harrow, said resilient means being fastened at one end to the arm carried by said first support means and at its other end to the second support means near the cylindricai harrow, said resilient means comprising a spring attached at one end to one end of a length of chain.

4,554,978

QUICK ATTACH TRACTOR MOUNTING ASSEMBLY FOR AGRICULTURAL DOZER AND LOADER IMPLEMENT

David E. Schneider, Great Bend, Kans., assignor to Great Bend Manufacturing Co., Inc., Great Bend, Kans.

Filed Mar. 27, 1984, Ser. No. 593,885
Int. Cl.⁴ E02F *3/76*
U.S. Cl. 172—247 **6 Claims**



1. In combination:

an assembly adapted to be affixed to a tractor and operable for quickly and alternately mounting first and second, different types of implements to the tractor, said assembly including

a pair of elongated rails for securement to the forward end of said tractor on opposed sides thereof and extending fore and aft of the tractor; and

bracket means for securement to the underside of said tractor in a position adjacent the rearward end of said tractor and approximal to the center thereof;

first and second, different implements each including a material handling element, a pair of elongated, laterally spaced apart connecting arms oriented for straddling the forward end of said tractor and engaging said rails, said connecting arms being in the form of respective channels for telescopically receiving corresponding adjacent rails, and means operatively connecting said arms to said element; and

means for alternately and releasably coupling said first and second implements to at least certain portions of said assembly, including structure for releasably securing each of said arms to a corresponding adjacent rail,

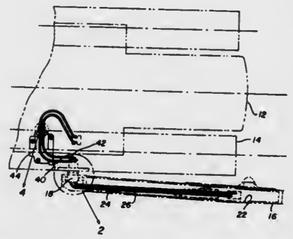
said second implement being a dozer, said element forming a part of said dozer comprising a dozer blade, said dozer including an elongated connection leg positioned between and below said connecting arms, the rearmost end of said leg being adapted for securement to said bracket means, said coupling means including structure for releasably securing said leg to said bracket means.

4,554,979

CONDUIT ARRANGEMENT FOR TILT CYLINDER OF A BULLDOZER

Robert W. Foley, Addison; Robert C. Storck, Wheaton, both of Ill.; Donald J. Mickus, deceased, late of Chicago, Ill., and by Debbie Pastors, executrix, Oak Park, Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 11, 1984, Ser. No. 619,083
Int. Cl.⁴ E02F *3/76*
U.S. Cl. 172—813 **3 Claims**



1. A conduit arrangement for a tilt cylinder of a bulldozer having a track frame and a push arm connected to said track frame for operating the blade of the bulldozer, said arrangement comprising:

a trunnion for pivotally connecting the push arm to the track frame and including a pair of spaced bores defining a pair of spaced fluid passages provided therethrough;

first conduit means having one end coupled to said tilt cylinder and the other end connected to said fluid passages, said first conduit means passing through an internal bore provided through said push arm;

the inboard end of said trunnion extending into the interior of said track frame, with said fluid passages extending through said trunnion into the interior of said track frame;

second conduit means passing inwardly through said track frame towards the main frame of said bulldozer and having one end connected to said fluid passages and the other end extending into said bulldozer main frame, said track frame being spaced from said bulldozer main frame;

a generally hollow coupling spanning the space between said main frame and said track frame and defining a protective housing for the second conduit means passing therethrough;

flexible mounting means for connecting the ends of said coupling to said track and main frames to permit relative motion between said two ends in the vertical, horizontal and lateral planes, said flexible mounting means including resilient means circumferentially surrounding the coupling including a first resilient member provided at the coupling track frame end, and a second resilient member provided at the coupling main frame end; and

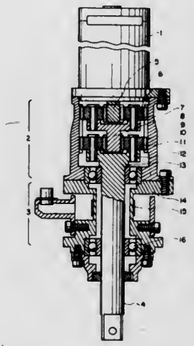
a hydraulic control valve connected to the other end of said second conduit means for controlling the flow of fluid through said first and second conduit means to and from said tilt cylinder.

4,554,980

NUT RUNNER USING INDUCTION MOTOR

Tabito Doniwa, Hachioji, Japan, assignor to Daiichi Dentsu, K.K., Chofu, Japan

Filed Jul. 19, 1983, Ser. No. 515,364
Claims priority, application Japan, Oct. 13, 1982, 57-178562
Int. Cl.⁴ B23Q *5/12*
U.S. Cl. 173—12 **4 Claims**



1. In a nut runner for tightening screwed objects comprising:

a driving motor,

a driving shaft to be coupled to said screwed objects for driving the same,

a reduction gear mechanism provided for transferring the revolution of said driving motor to said driving shaft,

a torque detector for detecting a torque applied to said driving shaft, and

a control circuit for controlling said driving motor by the use of the detected output of said torque detector,

said driving motor being a two-phase induction motor having a rotor and field coils, and said control circuit comprising means to control the magnitudes, repetition frequency and phase relations of intermittent currents supplied to field coils of said two-phase induction motor so that the torque of the two-phase induction motor is controlled by control of the magnitude of the intermittent currents, the revolution speed of the two-phase induction motor is controlled by control of the repetition frequency of the intermittent currents and the forward and backward driving directions are switched by the switching of phase relations of the intermittent currents,

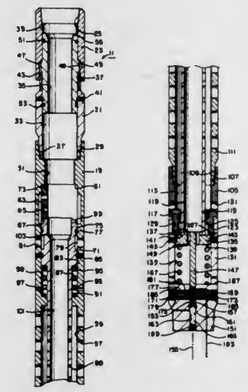
said control circuit comprising means operating said motor at high speed during a first stage of tightening said screwed object, decelerating and quickly stopping said motor when the torque detected by said torque detector reaches a first pre-set reference value, immediately restarting said motor and operating it in the same direction at a lower speed during a second stage of tightening said object, and braking said motor to a sudden stop when the torque detected by said torque detector reaches a second pre-set reference value higher than said first reference value.

4,554,981

TUBING PRESSURIZED FIRING APPARATUS FOR A TUBING CONVEYED PERFORATING GUN

David L. Davies, Abu Dhabi, United Arab Emirates, assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 518,910, Aug. 1, 1983, abandoned. This application Jul. 5, 1985, Ser. No. 751,999
Int. Cl.⁴ E21B *43/11*
U.S. Cl. 175—4.52 **23 Claims**



1. A tubing pressurized firing apparatus for a tubing conveyed perforating gun of the type used to perforate a cased well bore, comprising:

a tubular body having an upper end with upper connecting means for connecting said body in a well tubing string and having a lower end with lower connecting means for connecting said body to a well perforating gun;

actuator means located within said tubular body and responsive to changes in pressure within said well tubing string above said tubular body; and

cocking means located below said actuator means within said tubular body, said cocking means including a lockout member initially positioned between a detonating pin and a percussion detonator, said cocking means being actuable by said actuator means to move said lockout member from between said detonating pin and percussion detonator as tubing pressure is increased by a predetermined amount whereby subsequent release of tubing pressure exposes said detonating pin to said percussion detonator to actuate said detonator and fire said perforating gun.

4,554,982

APPARATUS FOR FORMING BOREHOLES

James A. Burton, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Aug. 3, 1984, Ser. No. 637,523
Int. Cl.⁴ E21B *7/08*
U.S. Cl. 175—75 **10 Claims**

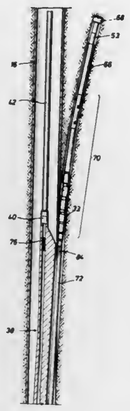
1. A drilling assembly adapted for drilling a borehole in an earth formation comprising,

a drill motor assembly having a drill bit driven by a shaft of a drill bit mud pressure driven motor means, and

a force on bit assembly connected in series with said drill motor assembly and having

an anti-rotation assembly means for preventing rotation with

respect to the borehole of said mud pressure driven motor means, and



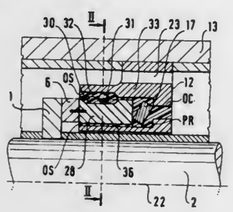
an axial drive mud motor means for applying axial force to said drill bit as it turns against the formation in the borehole.

4,554,983

OSCILLATING FRICTION RING ASSEMBLY FOR APPLYING AXIAL THRUST TO A SHAFT

Georges Obrecht, Pont de Claix, France, assignor to Alsthom-Atlantique, Paris, France

Filed Jun. 27, 1984, Ser. No. 625,157
Claims priority, application France, Jun. 27, 1983, 83 10569; Aug. 3, 1983, 83 12808
Int. Cl.⁴ E21B *4/02*
U.S. Cl. 175—107 **9 Claims**



1. An oscillating friction ring assembly for applying axial thrust to a shaft, the assembly comprising:

a first subassembly comprising rotary parts which are rotatable relative to an outer body and which are driven by a shaft which is itself rotatable about a shaft axis, the shaft axis defining an axial direction, and the first subassembly being suitable for transmitting axial thrust to the shaft; and

a second subassembly comprising non-rotary parts connected to the said outer body in such a manner as to prevent the non-rotary parts from rotating about the said axis while enabling the non-rotary parts to transmit axial thrust to the said outer body, the said first and second subassemblies co-operating with each other to prevent large axial displacement of the shaft relative to the body while allowing the shaft to rotate relative to the body;

the said first subassembly and the said second subassembly each including a respective friction ring having a plane friction surface lying in a plane substantially perpendicular to the said axis, each friction surface being in the form of a circular annulus disposed coaxially about the shaft and being made of a hard material, and the friction surface of each subassembly being disposed to bear against the friction surface of the other subassembly, with each friction ring of the second subassembly including only one friction surface located at an axial end face of the friction ring referred to as a "front" end face, and with the axially opposite end face of the friction ring being referred to as a "rear" end face;

the friction ring of the said second subassembly being mounted in co-operation with a corresponding resilient thrust member engaging the rear face thereof to urge the friction ring axially forwardly to bear continuously against the friction ring of the said first subassembly, thereby enabling small axial displacements of the said friction rings relative to the said outer body;

a frame constituting a rear thrust point for the resilient thrust member;

means being provided to prevent the friction ring of the second subassembly from rotating about the said shaft axis relative to the said frame, and to guide axial displacement of the friction ring;

the improvement wherein the said second subassembly further includes:

a moving guide sleeve which is movable relative to the frame, the moving sleeve being coaxial with the said shaft and having the friction ring of the second subassembly rigidly fixed thereto; and

a fixed guide sleeve which is fixed relative to the frame, the fixed sleeve being coaxial with and axially co-extensive with the moving sleeve, radial play being provided between the pair of sleeves to enable the moving ring to tilt slightly about an axis which is perpendicular to the said shaft axis, which intersects the shaft within the axial extent of the sleeves, and which may rotate about the shaft, where such tilting could be due, in particular, to the possibility of the surface of first subassembly friction ring being out-of-true, such that permanent axial thrust between the pair of friction rings transmits a wobble to the second subassembly friction ring;

the pair of sleeves including a plurality of pairs of adjacent ball-receiving housings hollowed out in their facing surfaces, with at least one of the housings in each pair being in the form of an axially extending groove;

a ball being placed in each of the said pairs of ball-receiving housings with sufficient play to enable easy axial sliding of the moving sleeve relative to the fixed sleeve by means of the balls rolling on the walls of the said grooves, but with the said play being small enough to prevent angular movement of the moving sleeve relative to the fixed sleeve about the axis of the said shaft, thereby constituting the said means for preventing the second subassembly friction ring from rotating, while additionally facilitating the said periodic tilting of the moving sleeve relative to the fixed sleeve;

ball-centering means being provided to cause the balls to be disposed around a circle which is coaxial with both the moving sleeve and the fixed sleeve when said sleeves are themselves coaxial, thereby enabling the moving sleeve to tilt about any tilt axis by appropriate movement of the balls in their housings.

4,554,984

DRILL BOX SUPPORT MECHANISM FOR MINING BOLTER MACHINES

Gary A. Hakes, Bristol, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

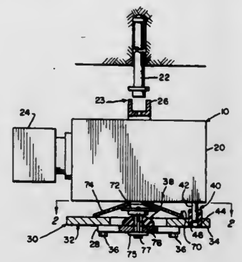
Filed Nov. 26, 1984, Ser. No. 674,781
Int. Cl.⁴ E21C *11/00*
U.S. Cl. 175—170 **14 Claims**

1. A drilling mechanism for a mining bolter machine comprising:

a support plate connected to a mining bolter machine,

a spring washer mounted on the support plate,

a drill box resting on the spring washer, and



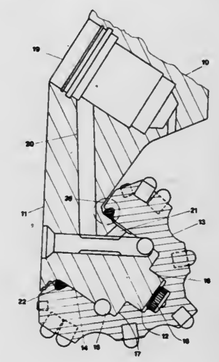
a means for preventing rotation of the drill box relative to the support plate.

4,554,985

ROTARY DRILL BIT

Lars K. Bäcklund, Sandviken, Sweden, assignor to Santrade Limited, Sandviken, Sweden

Filed Dec. 6, 1984, Ser. No. 678,776
Claims priority, application Sweden, Jan. 3, 1984, 8400015
Int. Cl.⁴ E21B *10/22*
U.S. Cl. 175—371 **8 Claims**



1. In a rotary drill bit of the type comprising a head, at least one roller cutter rotatably mounted on said head by means of bearings for rotation about an axis, a chamber defined by a first sealing surface in said roller cutter and a second sealing surface in said head, and a radially oriented annular resilient seal disposed in said chamber in sealing engagement with said first and second sealing surfaces for isolating said bearings from ambient fluid, the improvement wherein:

said first sealing surface is generally V-shaped in cross-section as formed by first and second spaced apart side portions interconnected by an intermediate portion,

said side portions and intermediate portion pressing against said seal with sealing engagement being uninterrupted along said intermediate portion, said first and second side portions mutually diverging in a direction toward said second sealing surface and forming an acute angle therebetween and each oriented at an acute angle relative to the plane of said seal to define a region between said side portions which is smaller than a section of said seal disposed in said region when said seal section is measured in a relaxed state, so that said side portions pinch the corresponding sides of said seal section to impart a sealing pressure to said sides of said seal section which is greater than the maximum sealing pressure at said intermediate portion and resists movement of said seal section relative to said first sealing surface in directions within and laterally of said plane of said seal, and to produce a bulging of said seal toward a section of said second sealing surface located intermediate said side portions of said first sealing surface to produce a sealing pressure at said section of said second sealing surface which is greater than a maximum sealing pressure at said side portions of said first sealing surface.

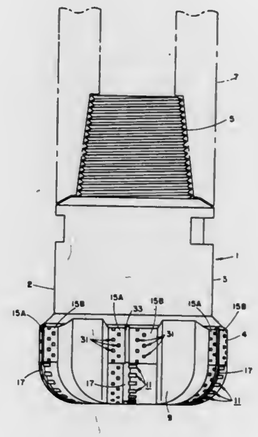
4,554,986

ROTARY DRILL BIT HAVING DRAG CUTTING ELEMENTS

Kenneth W. Jones, Kingwood, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

Filed Jul. 5, 1983, Ser. No. 510,693
Int. Cl.⁴ E21B *10/54*
U.S. Cl. 175—397 **3 Claims**





1. A rotary drill bit for drilling a well bore comprising:

a bit body having a threaded pin at its upper end adapted to be detachably secured to drill pipe or the like for rotating the bit and for delivering drilling fluid under pressure to the bit body, an exit port in the bottom of the bit body for exit of drilling fluid under pressure from the bit body, and first and second ridges on the bottom of the bit body extending from adjacent the center to adjacent the periphery of the bottom of the bit body in spaced relation to each other thereby forming a watercourse therebetween in flow communication with said exit port;

a plurality of drag cutting elements mounted in side-by-side relation on the second ridge, each element being spaced from the elements adjacent thereto and projecting below the bottom of the second ridge to cutting edges engageable with the formation at the bottom of the well bore to form gaps between the cutting elements in fluid communication with the watercourse for flow of drilling fluid therethrough, each element further being of relatively

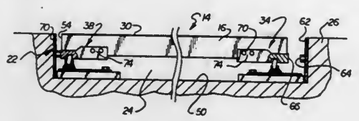
rigid material and immovably mounted on the second ridge so as to maintain its cutting edge at a relatively fixed position beneath the bottom of the second ridge, the bottom of the first ridge being spaced below the bottom of the second ridge but above the bottom of the cutting edges of the cutting elements, whereby the first ridge is adapted to engage the formation at the bottom of the well bore to limit the depth of penetration of the cutting elements into the formation and to block fluid flow between the first ridge and the formation, thereby causing the drilling fluid to exit said watercourse via said gaps for enhanced cleaning and cooling of the cutting elements by the drilling fluid.

4,554,987

SELF-ALIGNING SCALE ASSEMBLY AND METHOD

Benny N. Dillon, 6541 Plesenton Dr., Worthington, Ohio 43085

Filed Aug. 29, 1983, Ser. No. 527,325
Int. Cl.⁴ G01G *19/02, 21/24*
U.S. Cl. 177—134 **48 Claims**



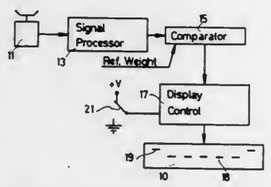
1. An assembly comprising a load receiving means for receiving a load to be weighed, a plurality of force-transmitting assemblies for transmitting the load to a base, each of said force transmitting assemblies including a force measuring transducer, a slider slidable relative to said load receiving means or base, and a self-restoring force-transmitting member for vertically transmitting a force component between said slider and force measuring transducer when said slider and force measuring transducer are aligned, and means for effecting relative sliding movement between said slider and load receiving means or base to align said force measuring transducer and slider in response to sideways movement of said load receiving means.

4,554,988

METHOD AND SYSTEM FOR DISPLAYING RELATIVE VALUES ON A MULTI-SEGMENT DISPLAY

Peter Ludwig, Mönchaltorf, and Meinrad Steiner, Greifensee, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland

Filed Feb. 3, 1984, Ser. No. 576,550
Claims priority, application Switzerland, Mar. 3, 1983, 1158/83
Int. Cl.⁴ G01G *23/30*
U.S. Cl. 177—178 **15 Claims**



1. In a measuring instrument having analog-to-digital converter means and digital processing means postcoupled to said analog-to-digital converter means for generating a signal signifying a measured value, display means comprising a display and first and second sets of elements for creating symbols signifying said measured value on said display upon selective energization by said signal, and means for temporarily deactivating said first set of elements and selectively energizing only said second set of elements to create a measurement mark at a position on said display indicative of a range of values including said measured value, the improvement comprising

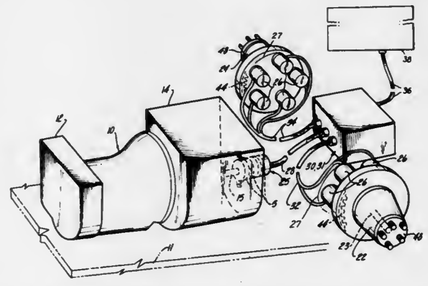
reference mark supplying means connected to an input of said digital processing means for furnishing a reference mark processed by said digital processing means for positioning said reference mark relative to said measurement mark so as to indicate the value of said range of measured values relative to a reference value, and simultaneously with said reference value on said display, whereby readout from said display is so as to be readable over a large angle of view of said display.

4,554,989

MULTIMOTOR MODULAR ELECTRIC DRIVE POWERTRAIN SYSTEM FOR TURBINE POWERED VEHICLES

Peter Gruich, 31432 Schoenherr, Apt. #5, Warren, Mich. 48093, and J. Lawrence Stopke, 4121 Buckingham St., Royal Oak, Mich. 48073

Filed Jan. 20, 1983, Ser. No. 459,439
Int. Cl.⁴ B60L *11/08*
U.S. Cl. 180—65.4 **4 Claims**



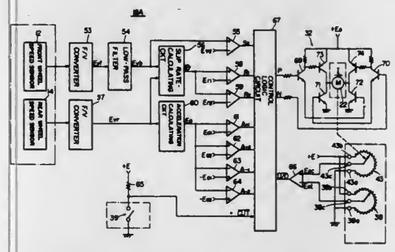
1. A turbine engine powered, self-propelled vehicle driven by a multiple electric motor powertrain, the powertrain having a low speed high torque output when compared to the speed and torque characteristics of the individual motors comprising: a vehicle chassis; a vehicle drive means adapted to support and move the vehicle chassis in the desired direction, said drive means having a power drive shaft connected at one end of the drive means and adapted to provide the power to move the drive means in the desired direction and having a sun gear on the other end of the power drive shaft; a gas turbine power source mounted in said vehicle chassis; an electrical power generating set consisting of a plurality of alternator units appropriately mounted to be commonly driven by the turbine's effective output shaft, said alternators producing an alternating current; a power controller means to control the alternator output; a plurality of electrical A.C. drive motors, said drive motors being electrically connected to and driven by the power controller, each motor having an output shaft driving a planet gear engaged with the sun gear of the power drive shaft, the motors being mounted with the planetary gears equispaced about the sun gear; a plurality of speed reducers interposed between the electric motors and the motors' output shafts; and a bracket means to functionally mount the plurality of electrical motors and their respective reducer units to a mounting plate so that their respective output shafts project through the mounting plate to provide a suitable sub-assembly which may be bolt-mounted in further assembly with the drive means power-drive shaft, permitting the planet gears to engage the sun gear of the power-drive shaft.

4,554,990

ANTI-SLIP SYSTEM FOR WHEELED VEHICLE

Tadashi Kamiya, Niiza, and Kiyotaka Hayashi, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 540,427
Claims priority, application Japan, Oct. 12, 1982, 57-178692; Oct. 12, 1982, 57-178693
Int. Cl.⁴ B60K *27/00*
U.S. Cl. 180—197 **5 Claims**



1. In a wheeled vehicle having a drive wheel, a driven wheel, a controllable throttle member, and an engine for driving said driven wheel, said engine throttling amount being responsive to at least said controllable throttle member, an anti-slip system comprising:

a drive wheel speed sensor for sensing a rotational speed of the drive wheel to produce a first sensing signal;

a driven wheel speed sensor for sensing a rotational speed of the driven wheel to produce a second sensing signal;

a throttle position sensor for sensing an operating position of said throttle member for outputting a third sensing signal;

an engine throttling sensor for sensing said engine throttling amount for outputting a fourth sensing signal;

a controller comprising a control unit responsive to said first and second sensing signals for outputting a signal representative of a slip rate of the drive wheel and further responsive to said slip rate signal and said third and fourth sensing signals for outputting a control signal; and

drive control means responsive to said control signal for controlling a drive force of the drive wheel to prevent a predetermined slip thereof.

4,554,991

AUXILIARY HYDRAULIC DRIVE SYSTEM FOR ROAD GRADERS AND THE LIKE

Brent E. Eden, Wolcott, Ind., assignor to Mud Hog Corporation, Brookston, Ind.

Filed Feb. 23, 1984, Ser. No. 582,913
Int. Cl.⁴ B60K *3/00;* **F16D** *31/02*
U.S. Cl. 180—243 **25 Claims**

1. A hydraulic auxiliary drive system for driving the normally non-driven wheels of a vehicle, comprising

(a) at least one variable displacement motor having a tiltable swash plate operable between zero and full displacement positions, respectively, said motor driving at least one of said non-driven wheels;

(b) variable displacement pump means for supplying said motor with a constant pressure fluid;

(c) spring means normally biasing said swash plate toward its zero displacement position;

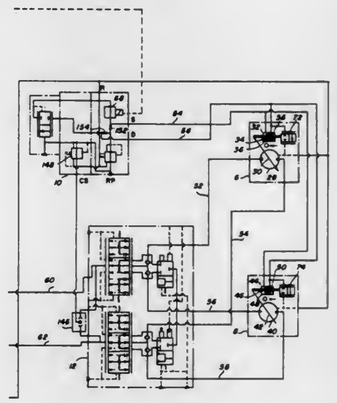
(d) servo means connected with said swash plate for tilting the same between its zero and full displacement positions, respectively;

(e) first supply means for supplying pressure fluid to said servo means to tilt said swash plate toward its full displacement position;

(f) pressure control means connected with said first supply means for controlling the pressure thereof;

(g) second supply means for supplying pressure fluid to said servo means to tilt said swash plate toward its zero displacement position;

(h) pressure responsive valve means operable when the pressure of the fluid supplied to said motor exceeds a given value to deactivate said second means, whereby said swash plate is tilted by said first supply means toward its full displacement position; and



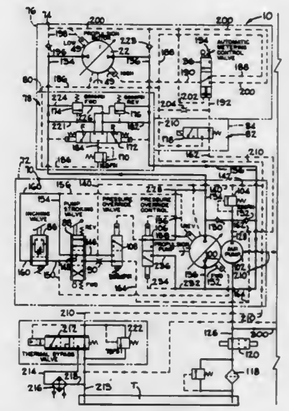
(i) destroke limiting valve means operable by said servo means for controlling said second supply means to maintain said swash plate in a destroke position adjacent said zero displacement position, thereby to protect said motor against reaching an undesirable overspeed condition.

4,554,992

HYDRAULICALLY OPERATED FOUR WHEEL SWEEPER

Denes P. Kassai, Chino, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Sep. 9, 1983, Ser. No. 530,833
Int. Cl.⁴ B60K *26/00*
U.S. Cl. 180—307 **3 Claims**



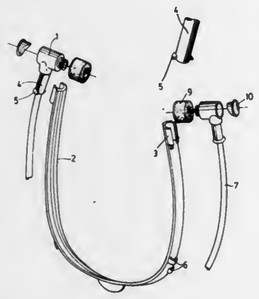
1. A hydrostatic propulsion drive system for driving a vehicle having a pair of drive wheels and at least one steerable wheel supported on a support surface, comprising:

an engine in said vehicle,

means defining a variable displacement hydrostatic motor on said vehicle and connected in driving engagement to said drive wheels,

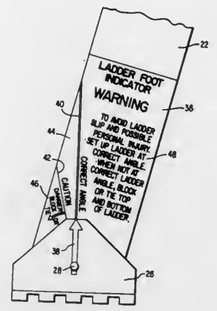
means defining a variable displacement hydrostatic pump connected in driven engagement to said engine and in driving engagement to said motor,
means defining an adjustable inching valve,
shifting means for enabling an operator to shift said pump between a neutral position and reverse, low speed and high speed driving positions,
accelerator means connected to said inching valve for enabling the operator to vary the capacity of fluid directed by said pump to said hydrostatic motor,
a two-position valve means for selectively positioning the hydrostatic motor in a low speed position and in a high speed position, and
means defining a metering control valve responsive to variations in reaction torque between the drive wheels and said support surface for varying the displacement and speed of said motor when said two position valve means is in the high speed position,
said metering control valve means having a low speed driving position and a high speed driving position and being maintained in its low speed driving position in response to said two position valve means being positioned in its low speed position, said shifting means being in one of its driving positions, and said inching valve being at least partially closed.

4,554,993
INFLIGHT HEADSET FOR CIVIL AIRCRAFT
Huang-Kiang Houng, No. 138, Chung-Hsing St., Kaohsiung City, Taiwan
Continuation-in-part of Ser. No. 544,267, Oct. 21, 1983, Pat. No. 4,472,607. This application Jul. 11, 1984, Ser. No. 629,603
Int. Cl.⁴ H04M *1/05*
U.S. Cl. 181—130 **3 Claims**



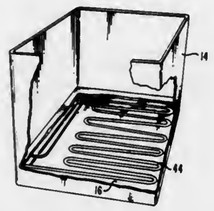
1. An inflight headset for civil aircraft comprising:
a pair of main body portions each having a cylindrical member formed integrally therewith,
said cylindrical member having one end connected to said body portion and the other end being provided with a semi-circular protuberance;
a pair of covers each connected to one of said main body portions;
a headband each end of which is provided with a collar having a protuberance at one end thereof, said cylindrical member of said main body portion being fitted in said collar in such a way that the protuberance of said collar in association with the semi-circular protuberance of said cylindrical member enables said main body portion to rotate through 90° with respect to a plane perpendicular to the length of said headband;
a pair of ear cushions each connected with one of said main body portions; and
a pair of acoustic pipes each connected to one of said main body portions.

4,554,994
LADDER SAFETY INDICATOR
Robert I. Weiner, 305 Chesapeake Ave., Towson, Md. 21204
Filed Feb. 5, 1985, Ser. No. 698,456
Int. Cl.⁴ E06C *7/00, 5/34, 5/36*
U.S. Cl. 182—18 **3 Claims**



1. A safety indicator for use with a straight or extension ladder of the type having a pair of side rails and a foot pivotally connected to each side rail at the lower end thereof and having a bottom surface for engaging the ladder supporting surface comprising:
a first indicator element adapted to be affixed to the side rail of the ladder intermediate the ends thereof and including means for indicating the angle of the principal axis of the side rail relative to the vertical; and
a second indicator element including a label adapted to be affixed to the side rail of the ladder in close proximity to the foot, said label having at least two zones defined by lines radiating from the pivotal axis of the foot, and a pointer adapted to be affixed to the foot and extending perpendicular to the bottom surface thereof, said pointer cooperating with said label to indicate the angular relation of the foot to the side rail.

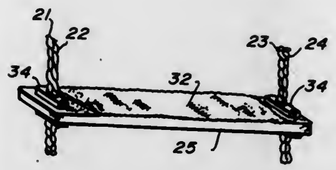
4,554,995
ARRANGEMENT FOR PROVIDING HEAT TO A PERSONNEL BUCKET OF AN AERIAL LIFT VEHICLE
Ronald A. Schlack, R.D. #2, Box 2266, Orwigsburg, Pa. 17961
Filed Feb. 28, 1985, Ser. No. 706,845
Int. Cl.⁴ B66F *11/04*
U.S. Cl. 182—129 **7 Claims**



1. An arrangement for providing heat to a bucket associated with an aerial lift vehicle, the arrangement comprising
a tubing arrangement located at the bottom of said bucket, said tubing arrangement including an input coupler and an output coupler, said input coupler for receiving heated hydraulic fluid from an external source for circulation through said tubing arrangement, said heated hydraulic fluid circulating through said tubing arrangement thus providing a source of radiated heat to said bucket and

subsequently exits said tubing arrangement though said output coupler.

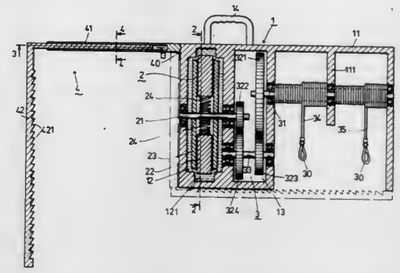
4,554,996
ROPE LADDER WITH MOLDED HARD ELASTOMER STEPS AND REPLACEMENT STEPS AND COLLARS THEREFOR
Robert M. Salvarezza, 110 Braemar Dr., Hillsborough, Calif. 94010
Filed Apr. 12, 1985, Ser. No. 722,859
Int. Cl.⁴ E06C *1/56*
U.S. Cl. 182—199 **21 Claims**



1. In a rope ladder of the type having a series of ladder steps, and two spaced-apart pairs of ropes,
a metal step frame with a pair of longitudinal members joined by a pair of shorter transverse members spaced in from the ends and strengthened by a pair of diagonal members, and having at each end a metal bracket bridging across the pair of longitudinal members and having vertical portions leading to an upper plate portion, which defines a generally rectangular opening,
a molded hard elastomer body molded around said frame and having a collar portion at each end molded around a said bracket, said body having a through opening through each collar portion and the body therebelow and in line with the openings through said brackets, each said through opening being narrow at its upper end for closely confining said pair of ropes and widening out toward its lower end each through opening tapering inwardly from bottom to top, each said step having vertical bolt openings therethrough adjacent each said through opening, and
a pair of separate wedge collars for each said step, one at each end of and below said step and bearing up against it, each said wedge collar having a through opening whose upper end is approximately the same width as said step's through opening where it emerges from its lower surface, said collar's through opening tapering inwardly therefrom down to a narrow portion at the lower end for closely confining the two ropes, each said wedge collar having vertical bolt passages therethrough aligned with the bolt openings through said step,
a generally diamond-shaped wedge heart in between the said ropes of each pair of ropes, in said through openings, said wedge heart providing two rope-engaging side grooves for locking the pair of ropes in place and preventing relative movement between them and said step, and
fastening means extending through said bolt passages and bolt openings and tightened in place to hold said wedge collar and wedge heart in place and lock said ropes in fixed position relative to said step.

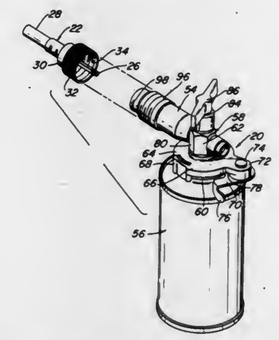
4,554,997
EMERGENCY DESCENT DEVICE
Por-Jiy Sheu, No. 111, Chien-Chen La., Chien-Chen District, Kaohsiung, Taiwan
Filed Mar. 7, 1985, Ser. No. 709,211
Int. Cl.⁴ A62B *1/12, 1/16*
U.S. Cl. 182—238 **4 Claims**

1. An emergency descent device comprising a rotating spool on which is wound a cable to hold a person or a load, and a rotation-retarding means for controlling the rotation of the spool, said retarding means including a fluid-filled chamber, a plurality of vane members mounted for rotation in said chamber, each of said vane members having a vane shell receiving a vane core which is normally biassed in a radially inward direction, said vane core capable of extending outward from said



vane shell by a centrifugal force to provide more vane surface to act on the fluid, and a gear assembly which transmits the motion of said spool to said vane members with a high speed ratio.

4,554,998
SPEEDOMETER CABLE LUBRICATING DEVICE
John Kenny, 524 Horseshoe Dr., Media, Pa. 19063
Filed Sep. 19, 1984, Ser. No. 652,368
Int. Cl.⁴ F16N *7/00*
U.S. Cl. 184—15.1 **6 Claims**



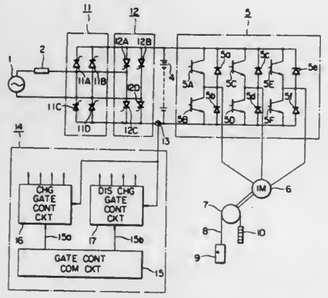
1. A device for lubricating a conventional elongated cable disposed within a tubular sheath, said sheath having a fitting at one end thereof, said apparatus comprising coupling means adapted for releasable securement to said fitting and including a cavity having an outlet in communication with the interior of said sheath when said fitting is secured to said coupling means, said fitting including an end portion adapted to be disposed within said cavity and wherein said coupling includes clip-connector means for releasably holding said end portion of said fitting within said cavity, container means having a relatively thin lubricating liquid disposed therein under gas pressure, and valve means having an outlet connected to said cavity and an inlet connected to said container, said valve means being arranged to selectively connect its inlet and outlet, whereupon said lubricating liquid is carried as an aerosol from said container into said cavity and from there through the length of said cable sheath under the pressure applied by said gas.

4,554,999

CONTROL APPARATUS FOR A.C. ELEVATOR

Hiroshi Kamaike, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 26, 1984, Ser. No. 604,010
Claims priority, application Japan, May 4, 1983, 58-78057
Int. Cl.⁴ B66B *5/00*
U.S. Cl. 187—29 R **15 Claims**



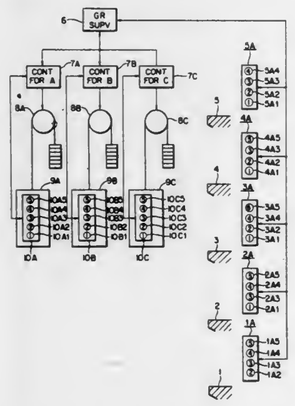
1. A control apparatus for an A.C. elevator including an A.C. power source, an induction motor, a charging device connected to the A.C. power source, batteries connected to the output of the charging device, an inverter connected to invert the output of the batteries and supply said induction motor with a variable-voltage and variable-frequency alternating current, said induction motor being connected to operate a cage, a charging rate control circuit means, and circuit means included in said control circuit means producing an output connected to control said charging device in response to changes in the load and the running direction of the cage to vary the charging rate of said batteries in correspondence with the discharging rate thereof.

4,555,000

APPARATUS FOR OPERATING AN ELEVATOR

Yasukazu Umeda, Kasugai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 616,803
Claims priority, application Japan, Jun. 7, 1983, 58-101300
Int. Cl.⁴ B66B *1/18*
U.S. Cl. 187—29 R **5 Claims**



1. An apparatus for operating a plurality of elevators for serving a plurality of floors on the basis of cage calls under group supervision comprising:

(a) a plurality of destination buttons provided in the hall of each of a plurality of floors to be operated for registering the calls in the hall and the calls for the destination from the hall;

(b) assignment means receiving signals generated by the operation of said destination buttons for assigning the calls in the hall for any one of said plurality of cages;

(c) a plurality of destination buttons provided in each of said plurality of elevators to be operated for registering destination floors for the respective cage; and

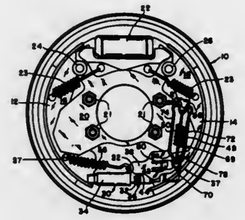
(d) registering means for registering the calls of said destination floors from both the hall buttons and the cage buttons as cage calls, the cage calls from the cage buttons being registered immediately and the cage calls from the hall buttons being registered at different registering times according to the running state of said plurality of cages.

4,555,001

OVERTRAVEL DEVICE FOR AN AUTOMATIC BRAKE ADJUSTER

James K. Roberts, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Dec. 16, 1983, Ser. No. 562,127
Int. Cl.⁴ F16D *65/56*
U.S. Cl. 188—79.5 GE **9 Claims**



5. A combination spring and spring cage comprising a continuous wireform construction including a cantilever spring section constructed integrally from the wireform at one end of the cage, two normally diverging limbs of the wireform projecting from the, camtilavered spring section, said limbs terminating in complementary hook sections brought into superimposed relation when the limbs are biased together against the resistance of the integral spring section, and thereby to form an open-ended hook construction, and an elongatable spring stretched between and fastened to the open-ended hook construction and said integral cantilever spring section, respectively.

4,555,002

COMBINED SPRING MOUNT AND SECTIONED CAGE CONSTRUCTION

Peter J. Baker, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 15, 1984, Ser. No. 620,952
Int. Cl.⁴ F16D *41/06*
U.S. Cl. 192—45 **3 Claims**

1. An improved cage for retaining the lock up elements of a one way clutch or the like, said cage having a connecting means to both structurally join together adjoinable parts of the cage and to mount to the cage an energizing spring biasing one of the lock up elements, said connecting means comprising;

at least two structural elements, one provided on each adjoinable cage part, and adapted to be in abutting relation to each other when the cage parts are adjoined, said structural elements when in abutting relation, being spaced a predetermined distance from said lock up elements,

and an energizing spring with a tail portion having a length sufficient to interconnect said structural elements in sufficiently tight abutting relation with each other to thereby structurally join the adjoinable cage parts together, as



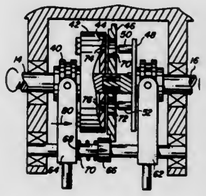
well as to thereby mount said energizing spring to the cage, said energizing spring having a bias portion extending from said tail portion substantially said predetermined distance toward said lock up element to bias said lock up element when said lock up element is retained in said cage.

4,555,003

SPLIT ENGINE CLUTCH

Howard L. Phillips, P.O. Box 392, Safford, Ariz. 85546

Filed Sep. 19, 1983, Ser. No. 533,421
Int. Cl.⁴ F02B *75/32*; F16D *11/04, 23/04*
U.S. Cl. 192—53 B **11 Claims**



1. In a split crankshaft engine of the type which includes a main crankshaft section and a least one auxiliary crankshaft section, a synchronizing clutch comprising:

an input section coupled to a first end of said main crankshaft section;

a clutch plate fixedly coupled to said input section;

a first engagement plate rotatably coupled on said input section;

a second engagement plate rotatably coupled on said input section and in frictional engagement with said first engagement plate;

a pin plate fixedly coupled to an adjacent end of said at least one auxiliary crankshaft section;

a first actuation means coupled to said input section which, when placed in a first condition, disengages said first engagement plate from said second engagement plate and substantially reduces the speed of said second engagement plate, and when placed in a second condition, causes said first engagement plate to engage said second engagement plate causing said second engagement plate to rotate producing a relative angular velocity between said first and second engagement plates; and

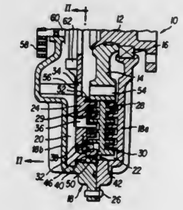
second actuation means coupled to said pin plate which, when placed in a first condition disengages said pin plate from said first and second engagement plates so as to disengage said main crankshaft section and said auxiliary crankshaft section, when placed in a second condition, causes said pin plate to engage said second engagement plate, and when placed in a third condition, causes said pin plate to engage said first engagement plate to couple, in phase, said main and auxiliary crankshaft sections.

4,555,004

TEMPERATURE RESPONSIVE FLUID COUPLING DEVICE

Ryuji Nakamura, Okazaki, and Masaharu Hayashi, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 14, 1983, Ser. No. 474,962
Claims priority, application Japan, Mar. 17, 1982, 57-40756
Int. Cl.⁴ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **8 Claims**



1. A temperature responsive fluid coupling device, comprising:

a power input coupling member having a rotatable rotor mounted thereon;

a power output coupling member for rotating relative to said power input member;

a dividing plate dividing an interior portion of said power output coupling member into a reservoir chamber for a viscous fluid and a working space accommodating said rotatable rotor;

a first operating chamber formed between said rotatable rotor and said power output coupling member;

a second operating chamber formed between said rotatable rotor and said dividing plate;

said dividing plate having first and second fluid return openings formed therein so as to supply said viscous fluid from said reservoir chamber to said first and second operating chambers;

a first pumping mechanism located in said first operating chamber for discharging said viscous fluid from said first operating chamber;

a second pumping mechanism located in said second operating chamber for discharging said viscous fluid from said second operating chamber into said reservoir chamber independent of said first pumping mechanism;

a temperature responsive member operatively associated with said power output coupling member;

a valve plate connected to said temperature responsive member and which is slidingly and rotatably mounted on said dividing plate via said temperature responsive member for selectively opening and closing only said first and second fluid return openings thereby controlling the amount of viscous fluid transferred from said reservoir chamber to said first and second operating chambers in response to changes of ambient temperature of said power output coupling member and independent of operation of said first and second pumping mechanisms;

said dividing plate and said rotatable rotor having a clearance formed therebetween so as to prevent said first and second pumping mechanisms from interfering with each other in operation; and

a partition wall, formed as a unitary part of said dividing plate, for preventing said viscous fluid from being transferred from said first operating chamber to said second operating chamber.

4,555,005

FRICTION CLUTCHES

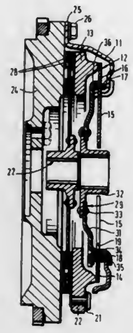
Alan G. Dixon, Wellesbourne, England, assignor to Automotive Products plc, Leamington Spa, England

Filed Jan. 18, 1984, Ser. No. 571,725

Claims priority, application United Kingdom, Jan. 19, 1983, 8301425

Int. Cl.⁴ F16D *13/50*

U.S. Cl. 192—70.27 **5 Claims**



1. A friction clutch comprising a cover member, a pressure plate, mounting means mounting the pressure plate with respect to the cover member for axial movement relative thereto, a diaphragm spring having an outer annular belville portion, inwardly directed fingers and mounting apertures defined between adjacent fingers at roots thereof, the diaphragm spring being disposed between the cover member and the pressure plate so as to urge the pressure plate in a direction away from the cover member towards and into frictional engagement with a driven plate to provide a primary drive from the clutch through the driven plate, tabs for locating the diaphragm spring with respect to the cover member, said tabs passing through said mounting apertures and having portions thereof bent over to hold the diaphragm spring in position, and a secondary drive member for a secondary drive from the clutch incorporating further tabs engaged in said mounting apertures and having portions bent over to locate said secondary drive member with respect to the cover.

4,555,006

AUTOMATIC ENGINE STOP AND START SYSTEM

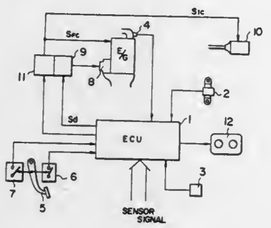
Shigekatsu Uchida; Takao Akatsuka, and Takahide Kawamura, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 23, 1982, Ser. No. 360,973

Claims priority, application Japan, Jul. 28, 1981, 56-117999

Int. Cl.⁴ B60K *41/02*

U.S. Cl. 192—0.084 **3 Claims**



1. A system for automatically stopping and restarting a motor vehicle engine having, a starter with a starter relay and a clutch pedal operatively associated therewith, in response to predetermined conditions comprising:

detecting means coupled to said motor vehicle for detecting various conditions of said motor vehicle;

control means coupled to said detecting means for judging whether or not predetermined conditions for automatic starter energization are fulfilled to generate a drive signal wherein said predetermined conditions include at least a full and a slight depression of said clutch pedal;

first connecting means coupled to said control means for outputting said driving signal to said starter relay when said predetermined conditions are met;

clutch switch disposed between said first connecting means and said starter relay, mechanically connected with said clutch pedal and closed in response to the full depression of said clutch pedal; and

second connecting means coupled to said switch means for energizing said starter relay.

4,555,007

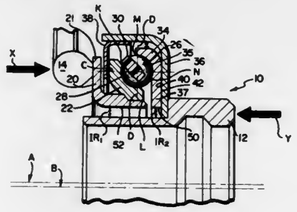
SELF ADJUSTING THRUST, LOW ANGULAR CONTACT BEARING

Richard F. Harrington, Lincolnwood; Richard T. Dagiel, Elk Grove Village, and Villy Brown, Chicago, all of Ill., assignors to Aetna Bearing Company, Chicago, Ill.

Filed Dec. 15, 1983, Ser. No. 561,642

Int. Cl.⁴ F16D *19/00*

U.S. Cl. 192—98 **8 Claims**



1. A clutch release bearing assembly for use in combination with a carrier sleeve, which carrier sleeve defines a first axis, said bearing assembly adapted to be brought into engagement with the rotating clutch fingers, or the like of a clutch mechanism, which clutch fingers are rotating about a second axis which may not be coincidental with said first axis, the rotational components of said bearing assembly being adapted to adjust their rotational orientation to coincide with the second axis of rotation of said clutch fingers, said bearing assembly comprising; an annular thrust face member for engaging said clutch fingers, an annular cone raceway member affixed to the thrust face member, an annular cup raceway member rotatable relative to the cone raceway member, a plurality of bearing elements disposed between the raceway members, an annular shell housing member adjacent the cup raceway member and adapted to be mounted to a cylindrical carrier sleeve in surrounding relation to said raceway members, said cup raceway member having an outer diameter less than the inner diameter of the shell housing member, and said thrust face member and said cup raceway member each having an inner diameter greater than the outer diameter of carrier sleeve to which the bearing assembly is mounted, and the cup raceway member and shell housing member being movable relative to one another, such that the thrust face member, the cone raceway member and the cup raceway member are free to float in a radial direction and thereby adjust their respective positions to the axis of rotation of the clutch fingers which will engage said thrust face member.

4,555,008

DAMPER DISC SUITABLE FOR AUTOMOBILE CLUTCH

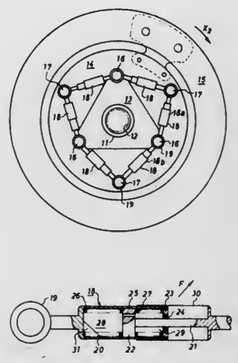
Tamio Nagano, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Jun. 27, 1983, Ser. No. 508,094

Claims priority, application Japan, Jun. 29, 1982, 57-113656

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.1 **3 Claims**



1. A hydraulically dampened clutch plate having a central hub with a spline on its inner peripheral surface and an integral flange extending radially therefrom, said radial flange having a plurality of pins equally spaced radially from said hub and equally spaced circumferentially around said hub and extending parallel to the axis of said hub, a friction disc plate extending radially outwardly of said hub, parallel to said hub flange, and rotatably supported on the outer peripheral surface of said hub, said friction disc plate having mounted on at least one of its faces, outwardly of said radial hub flange and said hub flange pins, a friction facing, a plurality of friction disc plate pins equally spaced on said disc radially from said hub and equally spaced circumferentially around said hub on said friction disc plate, said friction disc plate pins being each spaced equidistant from the adjacent pair of radial flange pins when such clutch plate is at rest and a plurality of shock absorbers interconnecting each of said friction disc plate pins with the adjoining each of said pair of flange pins, each of said shock absorbers including a fluid tight cylinder pivotally connected to one of an adjoining disc plate pin and flange pin, a piston rod pivotally connected to the other of said adjoining disc plate pins and flange pin, a piston on said piston rod and slidable in said fluid tight cylinder and forming chambers in said cylinder at the opposite sides of said piston, a port through said piston interconnecting said chambers in said cylinder at the opposite sides of said piston, a compression spring in each of said chambers for compression between the piston face and the end wall of said cylinder as said piston is moved therein and a hydraulic fluid sealed in said cylinder for flow through said piston in a first direction when said hub flange pins and said friction plate pins are rotated about said hub toward each other and for flow in the opposite direction when said hub flange pins and said friction plate pins are rotated away from each other.

4,555,009

MINIMUM COMPLEXITY VIBRATION DAMPER

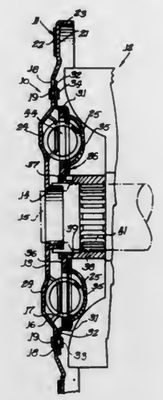
Paul A. Habel, and Elaine S. Kulczycki, both of Troy, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 22, 1983, Ser. No. 564,151

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **7 Claims**

1. A vibration damper assembly for a torque converter lock-up clutch, friction clutch or torsional coupling, comprising a pressure plate, a generally cylindrical hub barrel operatively connected to a transmission input shaft, a hub plate operatively connected to the hub barrel and having a pair of diametrically oppositely disposed spring windows, and a pair of oppositely disposed damper springs received in said window, said pressure plate and hub plate forming spring pockets enclosing said damper springs and providing reaction surfaces contacting the ends of the springs.



4,555,010

JUNCTION DIVERTER FOR A TRANSPORT SYSTEM

Jorgen Solund, Haslev, Denmark, assignor to ITS-Intern Transport System A/S, Haslev, Denmark

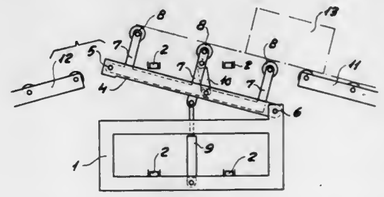
PCT No. PCT/DK83/00044, § 371 Date Dec. 13, 1983, § 102(e) Date Dec. 13, 1983, PCT Pub. No. WO83/03592, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 15, 1983, Ser. No. 566,137

Claims priority, application Denmark, Apr. 16, 1982, 1707/82

Int. Cl.⁴ B65G *47/57*

U.S. Cl. 198—361 **8 Claims**



1. A junction diverter for a transport system having a main conveyor path (2) extending through or terminating at the junction, and a pair of lateral conveyor paths (11,12) extending obliquely downwards from the junction at their respective sides of the main conveyor path (2), the junction diverter comprising means (8) providing a movable supporting surface which, in an inoperative position, is disposed below the main conveyor path (2), and in an operative position, is lifted above the main conveyor path (2) to an inclined position in which it is flush with one or the other of the lateral conveyor path (11,12), characterized in that said means (8) providing a movable supporting surface are secured to and extend upwardly from a first carrier frame (3), which is journalled on a second carrier frame (4) for pivotal movement about a first axis (5) disposed substantially in parallel with the main conveyor path (2) and at one side of the center thereof, and that said second carrier frame (4) is journalled on a frame (1) for the main conveyor path (2) for pivotal movement about a second axis (6) disposed substantially in parallel with the main conveyor path (2) and at the other side of the center thereof.

4,555,011

CONVEYING ROD-LIKE ARTICLES

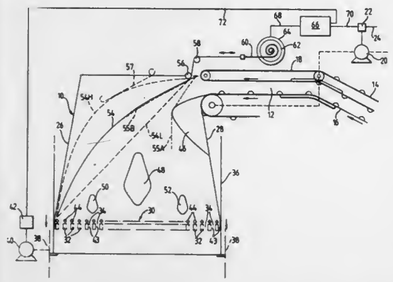
Anthony R. Brown, Milton Keynes, England, assignor to Molins PLC, London, England

Filed Jul. 26, 1983, Ser. No. 517,408

Claims priority, application United Kingdom, Jul. 29, 1982, 8221951

Int. Cl.⁴ B65G *43/00*

U.S. Cl. 198—444 **26 Claims**



22. A conveyor system for rod-like articles, comprising at least one conveyor for moving articles in stack formation to or from a transition zone, a flexible membrane at least partly confining the articles at the transition zone, means for extending and retracting the membrane under tension in response to pressure of articles in the transition zone, detector means responsive to the longitudinal position of the membrane, and means for controlling said conveyor in response to signals from the detector means.

4,555,012

METHOD AND DEVICE FOR SEPARATING AND CONNECTING TRANSFER BAR OF THREE UPRIGHT TYPE TRANSFER PRESS

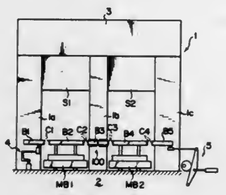
Kiyokazu Baba, Komatsu, and Kenji Nishida, Matsuto, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,553

Claims priority, application Japan, Dec. 10, 1982, 57-215542; Dec. 10, 1982, 57-185956

Int. Cl.⁴ B65G *25/00, 37/00*

U.S. Cl. 198—621 **3 Claims**



2. A device for separating a transfer bar of a three-upright type transfer press having first and second movable bolsters and a set of transfer bars each capable of being separated into five bar pieces, that is, an inlet side bar piece, first and second central bar pieces respectively positioned above said first and second movable bolsters, an intermediate bar piece positioned between the central bar pieces and an outlet bar piece, characterized by comprising a locking mechanism for temporarily locking said intermediate bar piece to a central upright of the transfer press body; a support means for supporting said first and second central bar pieces respectively on said first and second movable bolsters so that the first and second bar pieces are respectively movable a predetermined distance longitudinally outwards thereof; a first separating means for separating said first and second central bar pieces from said intermediate bar piece positioned therebetween; and a second separating means for separating said inlet and outlet side bar pieces respectively from said first and second central bar pieces, said second separating means being adapted to operate in synchronism with said first separating means.

4,555,013

CONVEYOR BELT HAVING VACUUM SYSTEM FOR RETAINING ARTICLES THEREON

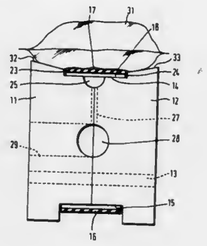
Kenneth W. Franklin, Knightcote, England, assignor to Bishopbarn Limited, Leamington Spa, England

Filed Oct. 11, 1983, Ser. No. 540,409

Claims priority, application United Kingdom, Oct. 28, 1982, 8230777

Int. Cl.⁴ D65G *17/46*

U.S. Cl. 198—689.1 **5 Claims**



1. A conveyor comprising an endless belt, means mounting the belt for travel of the belt in an endless path including an upper generally horizontally extending reach in which the belt travels in a forward direction for conveying forward items on the belt, and means for drawing a vacuum along said reach for vacuum gripping the items to the belt to avoid shifting of the items relative to the belt, said belt having transverse teeth on its underside, the belt mounting means has a groove through which said reach of the belt travels, the groove being wider than the belt and the belt travelling through the groove with gaps between its side edges and the sides of the groove, and said vacuum means comprising means for drawing a vacuum in the groove to draw a vacuum through the gaps via the spaces between the teeth of the belt for vacuum gripping the items to the upper face of said reach of the belt.

4,555,014

CONVEYOR CHAIN LINK STRUCTURE

James F. Krempa, Milford, Mich., assignor to Chain Supply Company, Detroit, Mich.

Continuation of Ser. No. 404,632, Aug. 2, 1982, abandoned. This application Dec. 12, 1984, Ser. No. 680,749

Int. Cl.⁴ B65G *17/38*

U.S. Cl. 198—852 **10 Claims**



1. A conveyor drive and guide chain comprising a plurality of consecutive socket links and trunnion links, each of said socket and trunnion links comprising a pair of half-links interconnected at a pivotal connection about a first pivot axis, said half-links being bifurcated at an end and the bifurcated end of one of said half-links being disposed within the bifurcated end of the other at said pivotal connection, a guide roller mounted at said pivotal connection about said first pivot axis for rolling engagement with one or the other of a pair of parallely disposed guide rails, a cylindrical socket at each end of said socket links and a cylindrical trunnion member at each end of said trunnion links for pivotal connection of each socket link to an adjacent trunnion link about a second pivot axis substantially at a right angle to said first pivot axis, said cylindrical socket comprising a first socket member integrally formed at each end of said socket links and having a partially circular cylindrical recess, a separate second socket member attachable to said first socket member, said second socket member having a segment circular recess portion forming with said partially circular cylindrical recess of said first socket member a cylindrical concave surface extending over an arc of more than about 180°, each said cylindrical trunnion member being integrally formed at each end of said trunnion links and having a peripheral cylindrical convex surface extending over more than about 180° in engagement with said socket cylindrical concave surface, wherein said consecutive socket links and trunnion links are pivotably interconnected about said second pivot axis by engagement of each trunnion member between said first and second socket members and attaching said second socket member to said first socket member.

4,555,015

ANIMAL REPELLENT BAG PACKAGE AND METHOD OF PREPARING THE SAME

Donald A. Haase, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,763

Int. Cl.⁴ B65D *85/84*

U.S. Cl. 206—0.5 **3 Claims**

1. Package containing a plurality of folded bags, comprising a sealed package containing therein a plurality of folded bags, each of said bags having, over comparatively broad surfaces of both the inside and outside thereof, an effective proportion of an animal repellent comprising methyl nonyl ketone which emanates from a comparatively small area of at least one surface of said bag, said small area containing an unconfined amount of said repellent which is applied thereto prior to introduction of said bag into said package to permit said emanation, said emanation occurring during the time said bag is folded and within said sealed package, said sealed package having walls defining said package which are impervious to said repellent.

4,555,016

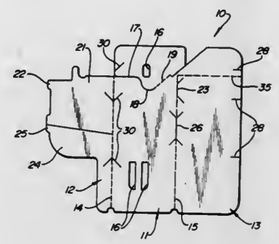
THREE-PANEL NEEDLED SUTURE HOLDER

Jorge L. Aday, Lambertville, and Robert J. Cerwin, Pittstown, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 14, 1985, Ser. No. 744,856

Int. Cl.⁴ A61L *17/02*

U.S. Cl. 206—63.3 **7 Claims**



1. An improved retainer for needled surgical sutures comprising:

(a) a center panel;

(b) a pair of side panels;

(c) said center panel being substantially rectangular in shape;

(d) a side panel foldably connected to each of the longitudinal edges of the center panel;

(e) at least one upper aperture located adjacent one transverse edge of said center panel through which a pin may protrude on which the suture may be wound;

(f) at least one lower aperture located adjacent the opposite transverse edge of said center panel through which a pin may protrude on which the suture may be wound;

(g) one of said side panels being configured so that when it is folded upon the center panel it is substantially coextensive with the center panel in the central portion thereof but does not cover the apertures;

(h) said side panel being sectioned transversely so that the needle of the needle surgical suture may be placed on the center panel adjacent the upper aperture and the first section of said side panel folded over on to the center panel to cover and enclose a portion of the needle without covering the entire needle or said upper aperture, whereby when the suture is wound about the pins protruding from the apertures the initial winding of the suture will hold the needle in place while the suture is being wound about the pins;

(i) the second section of said side panel being foldable over the center panel to contain the lower portion of the wound sutures;

(j) the other side panel being substantially coextensive with the center panel and foldable about the longitudinal edge thereof connecting said side panel to the center panel;

(k) said center panel including at least one slit extending from a longitudinal edge of said panel towards the center of said panel, said slit being positioned below but in close proximity to said upper aperture;

(l) a scored line extending from the end of said slit towards the opposite longitudinal edge of said center panel, whereby a portion of said center panel can be folded back to expose a needled surgical suture within the retainer;

(m) said other side panel having a fold line extending across the width of the panel, said fold line being spaced from a transverse edge of said panel so as to be adjacent said upper apertures when the panels are folded together, whereby when the portion of the center panel is folded back to expose the needled suture a portion of the side panel may also be folded back to fully expose the needled suture and allow for adjustable accessing of the needled suture in an appropriate needle holding instrument; and

(n) said folder including locking means to maintain the folded panels in place and maintain the needled surgical suture in the desired configuration.

4,555,017

BALES OF BAGGED BATTS

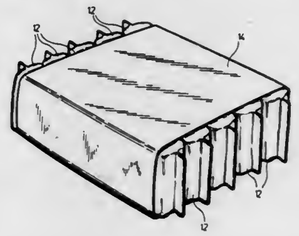
Phillip W. Blackmore, Camlachie, Canada, assignor to Fiberglas Canada Inc., Toronto, Canada

Continuation-in-part of Ser. No. 555,846, Nov. 28, 1983. This application Dec. 3, 1984, Ser. No. 677,261

Claims priority, application Canada, Sep. 14, 1983, 436628

Int. Cl.⁴ B65D *85/16, 85/62, 71/06*

U.S. Cl. 206—83.5 **4 Claims**



1. A bale comprising elongated flexible bags of generally

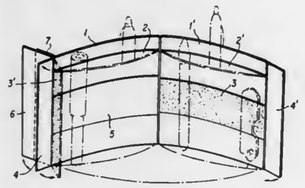
rectangular section, each containing one or more batts of fibrous heat insulating material, each bag retaining the fibrous heat insulating material therein in a low compressed state, the bags being aligned in a row with larger faces in mutual contact, and a sleeve of flexible relatively non-extensible wrapping material having a width which is a substantial proportion of the length of the batts, the wrapping sleeve extending around the row of bags and compressing the bags to retain the fibrous heat insulating material in a further compressed state in which the volume of the fibrous heat insulating material is further reduced but which is insufficient to prevent substantially full recovery of the fibrous heat insulating material to its uncompressed volume when the fibrous heat insulating material is removed from the bags after the wrapping sleeve has been removed.

4,555,018

PORTABLE FOLDER TYPE PENCIL CASE

Hyon M. Cho, Room No. 1002, 105-dong, Woosung Apartment 239-1, Banpo-dong, Kangnam-ku, Seoul, Rep. of Korea

Filed Jan. 27, 1984, Ser. No. 574,516
Int. Cl.⁴ B65D *85/28*
U.S. Cl. 206—214 **1 Claim**



1. A portable folder type case for holding writing utensils or the like, comprising:

a cover sheet panel being foldable in half and including first and second half panels each respectively having an inner half panel overlaid and joined at opposite ends thereof on a front face of said cover panel so as to form a first and second pocket for said utensils, said first inner half panel having a non-adhesive lateral mid-portion and said second inner half panel having an adhesive lateral mid-portion for supporting said writing utensils;

a first and second guard strip panel wherein an outer end portion of said first half cover panel is joined with said first guard strip panel and an outer edge end portion of said second half cover panel is joined with said second guard strip panel; and

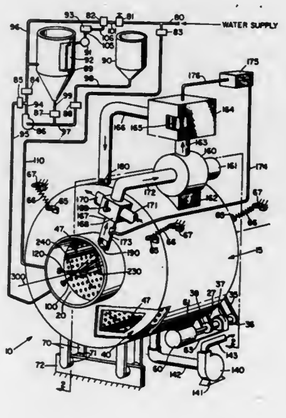
a single-face adhesive panel strip connected to said cover sheet panel adjacent said second guard panel strip and including a panel strip for reinforcement of said single-face adhesive panel strip and being foldable backward to support said case on a surface, said second guard strip panel having an adhesive back face for being selectively securely engaged with a front face of said first guard strip panel wherein said second guard strip panel is foldable along fold lines away from said single face adhesive panel strip and toward said first guard strip panel.

4,555,019

PACKAGED DETERGENT COMPOSITION WITH INSTRUCTIONS FOR USE IN A LAUNDERING PROCESS

Wolfgang U. Spendel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 548,265, Nov. 3, 1983, Pat. No. 4,489,455, which is a continuation-in-part of Ser. No. 436,169, Oct. 28, 1982, Pat. No. 4,489,574, which is a continuation-in-part of Ser. No. 320,155, Nov. 10, 1981, abandoned. This application Jun. 22, 1984, Ser. No. 623,809
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.⁴ B65D *85/00*
U.S. Cl. 206—223 **1 Claim**



1. A granular, paste, gel or liquid detergent composition packaged in association with instructions for use in a process for laundering a discrete wash load of assorted soiled textiles, the instructions comprising:

(a) produce a quantity of concentrated aqueous wash liquor comprising from about 40% to about 99.9% water and from about 1000 ppm to about 600,000 ppm of the packaged detergent composition;

(b) distribute substantially evenly and completely onto said textiles in their substantially dry state a quantity of said wash liquor ranging from about just enough to distribute said wash liquor substantially evenly and completely onto said textiles to a quantity of said wash liquor which is about 5 times the dry weight of the textiles, said wash liquor containing from about 5 grams to about 200 grams of said detergent composition per kilogram of said textiles;

(c) allow said wash liquor to remain in contact with said soiled textiles for a period of time during which, if there is more than a minimal amount of free liquor in excess of the absorption capacity of said textiles, only limited amounts of mechanical energy are applied to said textiles so as to prevent oversudsing;

(d) rinse said textiles with a quantity of an aqueous liquid, rinse liquor sufficient to produce enough free water on the surface of said textiles to adequately suspend the soil and the detergent composition; and

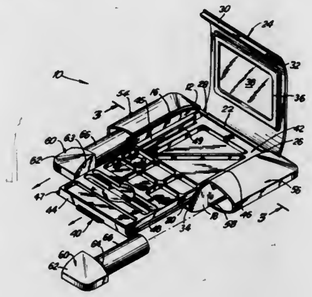
(e) separate said rinse liquor containing said wash liquor and said soil from said textiles.

4,555,020

COMPACT

Ugo Campello; Enrico Racca, both of Miami, Fla.; Pierluigi Sosta, and Deris Baggiolini, both of Concesio, Italy, assignors to New High Glass, Miami, Fla.

Filed Aug. 23, 1984, Ser. No. 643,819
Int. Cl.⁴ A47B *67/00*
U.S. Cl. 206—235 **11 Claims**



1. A multicompartment compact comprising:

a center compartment including a base wall and spaced apart upstanding side walls connected to and extending from said base wall;

a bottom tray removably mounted in said center compartment;

a top tray slideably mounted to said bottom tray such that in a first position said top tray covers said bottom tray and such that in a second position said top tray enables access to said bottom tray, said top and bottom trays including means for preventing separation of said top tray from said bottom tray;

a top hingedly connected to and adapted to enclose said center compartment;

a pair of side housings connected respectively to the side walls of said center compartment, each said side housing defining an enclosure having at least one opened end;

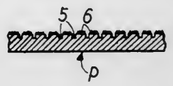
and at least one side compartment frictionally retained in each said side housing, each said side compartment including a handle portion and a container portion attached to said handle portion, said container portion being slidably disposed in the respective side housing, said handle portion of each said side compartment including a wall engaging the respective side wall of the center compartment and preventing rotation of said handle relative to said side wall when said side compartment is in one of said side housings.

4,555,021

CASING FOR MAGNETIC TAPE CASSETTE

Tatsuo Fujii, and Shigetomo Takeda, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,187
Claims priority, application Japan, Jun. 1, 1983, 58-81837[U]
Int. Cl.⁴ B65D *55/02, 85/67*
U.S. Cl. 206—387 **4 Claims**



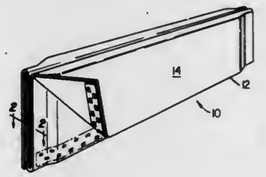
1. A casing for holding a magnetic tape cassette which is formed into a box shape by bending and joining a blank of a transparent plastic plate material which has one surface, constituting the inner surface of a casing, on which grooves and a minutely roughened area are provided except for on a predetermined portion including at least one transparent window and the other surface, constituting the outer surface of said casing, on which printing and/or an uneven surface pattern is provided in a predetermined portion except for said transparent window.

4,555,022

PEEL PACKAGE STERILE SANITARY PADS

Vicki L. Eagon, 5762 Haney Dr., Watauga, Tex. 76148, and Towanda S. Showers, High Meadow Dr., Lt. 40, Fort Worth, Tex.

Filed Feb. 6, 1984, Ser. No. 577,375
Int. Cl.⁴ B65B *83/00;* **B65D** *75/00*
U.S. Cl. 206—440 **2 Claims**



1. A sanitary pad package comprising:

a sterilizable, single layer backing sheet;

a dry sterilizable absorbent sanitary pad secured on a first side of the backing sheet, the backing sheet extending beyond the edges of the sanitary pad, the backing sheet and sterilizable absorbent sanitary pad being sterilizable for use of the sanitary pad package within a sterile field;

a continuous strip of peelable adhesive secured on the first side of the backing sheet and extending about the periphery of the sanitary pad so that the backing sheet can be folded to bring portions of the strip of peelable adhesive into facing relationship to form a continuous seal about the periphery of the sanitary pad to enclose the sanitary pad in the backing sheet so that the sterility of the sanitary pad can be maintained prior to enduring opening of the sanitary pad package, the peelable adhesive eliminating the need to tear the backing sheet to open the sanitary pad package, thereby reducing the time and effort needed to open the sanitary pad package while maintaining the sterility of the sterilizable absorbent sanitary pad; and

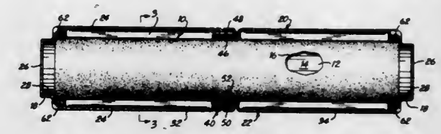
strips of peelable adhesive secured on the opposite side of the backing sheet and the backing sheet is folded along intermediate fold lines outward from the continuous seal to form a compact package.

4,555,023

DRUM CONTAINERS

Donald J. Sykes, Upper Saddle River, N.J., and Gary E. Gendron, Boiceville, N.Y., assignors to Marpac Industries, Inc., Waldwick, N.J.

Filed May 14, 1985, Ser. No. 734,082
Int. Cl.⁴ B65D *85/20, 85/30, 81/02*
U.S. Cl. 206—446 **10 Claims**



1. A container for containing a drum, the drum having a longitudinally-extending sensitive cylindrical outer surface and opposite end journals, the container comprising:

a longitudinally-extending, relatively thin-walled container body having opposite end walls and a plurality of essen-

tially flat side walls extending longitudinally between the end walls to define a container interior, with adjacent side walls intersecting one another to establish reinforcing corners and a polygonal cross-sectional configuration having apexes located at the reinforcing corners;

support means in the end walls for supporting the end journals of the drum so as to support the drum in a suspended position within the interior of the container body with the cylindrical outer surface of the drum spaced from the side walls of the container body;

the container body including an opening for admitting the drum into the container, and at least a first body portion and a second body portion, the first body portion being selectively engageable with the second body portion for closing the opening to contain the drum within the container body;

securing means associated with at least one of the first and second body portions for securing the drum in said suspended position upon engagement of the first body portion with the second body portion to close said opening; and

sealing means associated with the first and second body portions for sealing the opening with an air-resistant seal so as to establish an air cushion within the interior of the container body upon engagement of the first body portion with the second body portion to close said opening;

said air cushion and said reinforcing corners being effective to maintain the spacing between the cylindrical outer surface of the drum and the side walls of the container body so as to preclude damaging contact between the side walls of the container and the sensitive cylindrical outer surface of the drum.

4,555,024

PACKAGING UNIT FOR SEMICONDUCTOR WAFERS

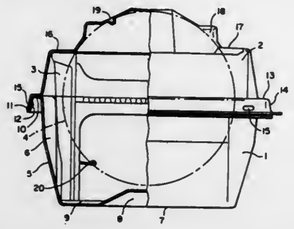
Jürgen Voss, Burghausen; Otto Dombkowski, Kirchdorf; Walter Kudlich, Burghausen, and Jan Stodulka, Tittmoning, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,405

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413837

Int. Cl.⁴ B65D *85/30, 57/00, 81/00*

U.S. Cl. 206—454 **7 Claims**



1. In a packaging unit for semiconductor wafers of the type including a wafer carrier for receiving the wafers which is open at the top and bottom and has guide ribs on both longitudinal sides and a crossbar at one open end face thereof, a generally tub-shaped container for receiving the wafer carrier, and a matching lid having a cross-sectional generally polygonal profile configured to generally conform to the circumference of the wafers, the improvement comprising:

said container having a plurality of lateral surface portions arranged to fix the wafer carrier in the longitudinal and transverse directions with predetermined close tolerances;

snap lock means for connecting said container and said matching lid to each other;

said wafer carrier having a plurality of spring tongues arranged on both longitudinal sides thereof such that they are each disposed between a pair of adjacent guide ribs on the same level corresponding to about one fifth to one third of the lateral height of said carrier, said tongues having a free end extending downwardly into the interior of the wafer carrier at an angle deviating from 0° to 30° from the horizontal, with the length of said tongues being selected such that, upon loading of a wafer, the points of support of a wafer on said tongues and the center point of the wafer enclose an angle of from 75° to 120°; and

said lid having a plurality of retention cones arranged on the inner side thereof in at least one row, said cones projecting inwardly and abutting each other at their bases with the spacing between the center points of adjacent cones being equal to the spacing of the guide ribs in the wafer carrier and the conical surfaces of adjacent retention cones cooperatively defining an included angle of from 60° to 90°, said cones being positioned such that, when a wafer is received within the packaging unit and the lid is closed, their points of contact on the edge of the wafer form an angle of from 0° to 50°, with respect to the center of the wafer, said lid also having a step-like ledge for fixing the wafer carrier within said matching lid and container which aligns a top edge of said wafer carrier with said lid such that corresponding and oppositely-disposed guide ribs and retention cones are arranged in one plane, whereby when the wafers are received within the packaging unit and the lid is closed, the wafers come into contact only with the conical surfaces of adjacent holding cones and the free end of the spring tongues.

4,555,025

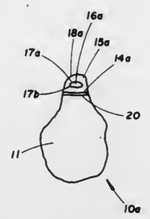
SHRINK BAG WITH INTEGRAL HANDLE

Alan S. Weinberg, Greenville; B. Gary Wofford, Spartanburg, both of S.C., and Philip T. Voso, Tryon, N.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation of Ser. No. 510,108, Jul. 1, 1983, abandoned. This application Mar. 13, 1985, Ser. No. 733,405

Int. Cl.⁴ B65D *30/02, 33/02, 33/08*

U.S. Cl. 206—497 **10 Claims**



1. A shrink bag comprising an integral carrying handle, a rear bag panel, a corresponding front bag panel which is shorter than the rear bag panel, the front and rear bag panel forming an extended lip bag of a heat shrinkable thermoplastic material and having an unsealed bag mouth at one end of said bag and a carrying hole in said lip with a continuous fused bead around the periphery of said hole, said carrying hole being spaced sufficiently below a top of said lip such that upon heat shrinking said bag about a product sealed therein enhanced thickening along a load-bearing portion of said hole periphery occurs relative to a non load-bearing portion of said hole periphery.

4,555,026

ENVELOPE

Edward G. Hewitt, Auburn, and William D. Pasquale, Northboro, both of Mass., assignors to New England Mfg. Co., Worcester, Mass.

Continuation-in-part of Ser. No. 613,457, May 24, 1984. This application Apr. 26, 1985, Ser. No. 727,818

Int. Cl.⁴ B65D *27/00, 85/30*

U.S. Cl. 206—521 **4 Claims**



1. Envelope, comprising:

(a) a rectangular front panel,

(b) a rectangular rear panel attached to the front panel along a bottom edge fold line,

(c) an end flap attached to each of two opposed end edges of the front panel,

(d) a narrow gum strip located on the inner surface of the rear panel adjacent each of two opposed end edges to permit attachment to the inner surface of the front panel adjacent its said end edges, and

(e) a narrow gum strip located on the inner surface of each end flap adjacent an end edge to permit attachment of each end flap to the outer surface of the rear panel at a position spaced inwardly a substantial distance from the said end edges of the rear panel, wherein a bulky package inserted centrally between the front and rear panels separates a central portion of the rear panel from the front panel, while the narrow gum strip located on the inner surface of the rear panel adjacent the end edge maintains the adjacent portion of the rear panel against the front panel, so that the rear panel buckles into an ogee shape due to the stiffness of the material from which the panel is formed, thus forming a cylindrical cell at each end extending parallel to the end edge and lying between the two adjacent gum strips.

4,555,027

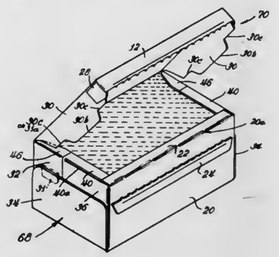
CARTON FOR PACKAGING ICE CREAM OR LIKE FROZEN, INITIALLY LIQUID OR SEMI-SOLID MATERIAL

Thomas W. Froom, 10 Burncoat Way, Pittsford, N.Y. 14534

Filed Sep. 19, 1983, Ser. No. 533,454

Int. Cl.⁴ B65D *5/54*

U.S. Cl. 206—626 **14 Claims**



1. In a filled package comprising a completely closed, rectangular carton made from a single unitary sheet of carton stock having cut portions and fold lines defining a front panel, a bottom panel, a rear panel, a cover panel, and a front cover flap which are articulated one to the other in the order named; said front cover flap having a skirt portion overlying said front panel but not adhered thereto and a sealing portion sealed to said front panel to form said panels into a carton having a rectangular transverse cross section; said front and rear panels having front and rear inner end-wall-forming flaps articulated thereto by fold lines and being folded in, to form inner end walls, and said bottom panel having outer end wall-forming flaps articulated to the sides thereof by fold lines and bent up to a position to overlie the inner end-wall-forming flaps; said cover panel having side cover flaps articulated to the side edges thereof by fold lines and folded down to overlie said end walls; said front cover flap skirt portion having glue-tabs articulated to the side edges thereof by fold lines, which tabs are glued to said side cover flaps to form, with said cover panel, a skirted cover hinged to said rear panel;

the improvement in which

said end walls have inturned end lips which are articulated thereto by lip-flap fold lines and which underlie and contact the underside of the cover panel at least along the free edge of each lip, but without being adhered thereto and,

the front panel has a front lip which is articulated thereto by a panel-lip fold line and is in a position such that it underlies the underside of the cover panel and contacts the same at least along its free edge, but without being adhered thereto;

said lips having complementary shaped adjacent ends and being of such width that the inner edges of the end lips meet the inner edge of the front lip in right angle corners and provide a U-shaped line of contact between the edges of said lips and the under surface of said cover panel.

4,555,028

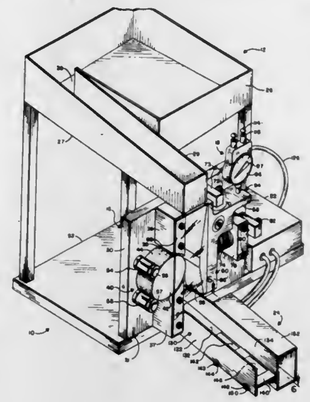
APPARATUS FOR COMPRESSION TESTING AND SORTING GOLF BALLS

Emil M. Valehrach, Phoenix, Ariz., assignor to Karsten Solheim, Phoenix, Ariz.

Filed May 1, 1984, Ser. No. 605,907

Int. Cl.⁴ B07C *5/34;* **G01N** *3/08*

U.S. Cl. 209—599 **40 Claims**



1. An apparatus for testing the compressibility of a golf ball comprising:

(a) drive means for defining at least a portion of one side of a golf ball movement path and for driving the golf ball to be tested through at least that portion of the golf ball movement path;

(b) lever means in spaced relationship with said drive means and including a load arm having a bearing surface which defines the opposite side of the golf ball movement path, said lever means further including a fulcrum means about which it is pivotably movable toward and away from said drive means;

(c) biasing means in engagement with said lever means for yieldably biasing said lever toward said drive means;

(d) stop means for limiting the biased movement of said lever means toward said drive means to form a restricted gap in the golf ball movement path which is smaller than the diameter of the golf ball to be tested so that upon driving of the golf ball through the restricted gap said lever means will be deflectingly moved away from said drive means an amount indicative of the compressibility of the golf ball being tested; and

(e) sensing means in engagement with said lever means for detecting and providing indications of the amount of deflected movement of said lever means when the golf ball to be tested is driven through the restricted gap defined by said drive means and said lever means.

13. An apparatus as claimed in claim **1** wherein the indications provided by said sensing means includes a first electrical indication for amounts of deflected movement between a relatively low predetermined value and a relatively higher predetermined value and a second electrical indication for amounts of deflected movement above the relatively higher value.

16. An apparatus as claimed in claim **13** and further comprising:

(a) a control circuit means coupled to receive the first and second electrical indications from said sensing means for producing a first control signal in response to a received first electrical indication and a second control signal in response to a received second electrical indication; and

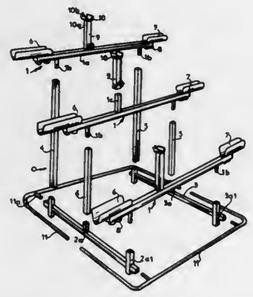
(b) golf ball sorting means for receiving the golf ball to be tested subsequent to the testing thereof and having first, second and third golf ball outlet openings, said golf ball sorting means having means coupled to receive the first and second control signals from said control circuit means for selectively directing the receivable golf ball to said first golf ball outlet opening upon receipt of the second control signal, to said second golf ball outlet opening upon receipt of the first control signal and to said third golf ball opening in the absence of the receipt of the first and the second control signals.

4,555,029

APPARATUS FOR THE DISPLAY OR THE STORAGE OF BICYCLES OR LIKE VEHICLES

James Fiol, rue Jules Ferrier, 42140 Chazelles sur Lyon, France

Filed Mar. 30, 1983, Ser. No. 480,316
Claims priority, application France, Jul. 26, 1982, 82 13294
Int. Cl.⁴ A47F *2/00*
U.S. Cl. 211—22 **12 Claims**



1. A readily portable and adjustable apparatus for the display and storage of bicycles or similar vehicles, comprising:

a plurality of support elements having a plurality of tubular elements that are provided with a plurality of receiving means for holding a plurality of bicycles vertically; and

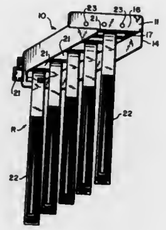
a ground abutting framework having two independent elements abutting the ground on which said support elements are removably received, said framework further comprising at least one pair of posts which are received on and cooperate freely with said independent elements and freely rotates with said tubular elements of said supporting elements, wherein said supporting elements cooperate freely with said framework so that said supporting elements can be readily positioned angularly in various configurations for displaying bicycles and folded together for storing and transport of said apparatus.

4,555,030

DISPOSABLE RAZOR RACK

David S. Byrne, Atlantic Highlands, N.J., and Evan N. Chen, Fairfield, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 17, 1984, Ser. No. 581,403
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—49.1 **2 Claims**



1. A reusable bracket device or rack for containing, stacking and dispensing a plurality of articles such as disposable razors, each razor having a head and a handle defining a T-shaped configuration comprising in combination:

a unitary molded plastic frame having a flat rear wall spaced from a flat front wall, said front wall being intercepted by a diagonal slot terminating in a stop, a side wall and a bottom wall joining said front and rear walls, a ramp parallel to said slot joining said side wall and said bottom wall, a first razor access opening intersecting said slot dimensioned to receive razor heads, said first opening serving dually as a dispensing outlet, a second access opening at said bottom wall operative to receive a portion of at least one of said heads and a plurality of razors contained in said frame, each said razor head having been received at said first access opening and having traversed said ramp and said slot in response to gravity, said bottom wall, said second access opening and said stop cooperating to stack the razors on the ramp automatically and to align all heads in horizontal, parallel tiers within said frame and said handles in vertical, parallel array outside said frame.

4,555,031

VEHICULAR CRANE OF HIGH CARRYING CAPACITY HAVING AN EXTENSIBLE ARM

Helmüt Blase, Sande, and Peter Eiler, Oldenburg, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,115
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237706
Int. Cl.⁴ B66C *23/78, 23/04*
U.S. Cl. 212—189 **4 Claims**

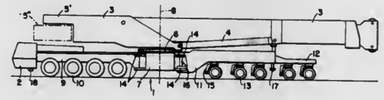
1. A vehicular crane of high carrying capacity, said crane having an extensible arm which is equipped with luffing cylinders and drive units, and is connected with a first undercarriage via a frame part which carries a pivot mounting for said arm, with said undercarriage having a longitudinal axis as well as a front portion and a rear portion, and said frame part having a first drive side and a second side; said crane in combination further comprising:

two carrier supports, in the form of wheeled swivel supports, which are connected to said second side of said frame part in such a way that they can swivel relative thereto; with said drive side of said frame part being rigidly connected with said front portion of said undercarriage;

vertically adjustable first ground support elements connected with said wheeled swivel supports;

swiveling first undercarriage wheels connected with said wheeled swivel supports, said first undercarriage wheels forming a plurality of wheel sets, each of which comprises at least one pair of wheels; the wheels of a given wheeled swivel support having direction thereof adjustable in common as to direction of travel parallel to the longitudinal axis of the undercarriage;

respective swivel connections, one for effecting the mounting of each wheel set with its wheeled swivel support; said first undercarriage wheels and said swivel connections being disposed below their wheeled swivel support;



at least one vertically adjustable second ground support element provided on said front portion of said undercarriage;

second undercarriage wheels connected with said front portion of said undercarriage, with the diameter of said first undercarriage wheels of said wheeled swivel supports being less than the diameter of said second undercarriage wheels of said front portion of said undercarriage, all of said wheels being effective simultaneously and together with the extensible arm having a sufficient stroke length and a maximum crane carrying capacity of greater than 250 metric tons for which at least three-point support of the undercarriage can be realized; and

a wheel support detachably connected with said rear portion of said undercarriage, and which is located accordingly relative to the longitudinal axis of said undercarriage; said drive side of said frame part being provided with connections to which can be attached additional swivel supports in the operating position of said crane.

4,555,032

HEAVY LIFT CRANE

Jon L. Mick, Cedar Rapids, Iowa, and Marvin L. Wolf, Houston, Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 24, 1983, Ser. No. 478,193
Int. Cl.⁴ B66C *23/78, 23/72*
U.S. Cl. 212—189 **1 Claim**

1. A heavy lift crane or the like adapted to be moved along a substantially flat surface comprising:

means defining a boom supporting unit mounted on the flat surface for movably supporting a crane superstructure including;

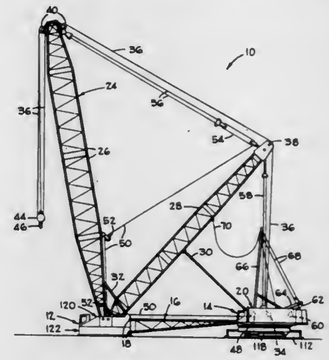
means defining a single rigid annular foot for supporting and stabilizing said unit on said substantially flat surface and being centered about a vertical axis and being of sufficient external dimension to encompass said unit,

means cooperating with said annular foot and a portion of the flat surface that is encompassed within said annular foot for defining a low volume large area pressure chamber,

controllable fluid supply means for directing fluid under pressure into said pressure chamber at least during movement of said boom supporting unit relative to said flat surface with sufficient pressure for supporting a substantial portion of the weight acting on the boom supporting unit but insufficient to raise the annular foot from the surface;

means defining a substantially horizontally elongated connecting link rigidly connected to said boom supporting unit and having a longitudinal axis lying in a vertical plane containing said vertical axis; and

means defining a powered steerable propelling unit connected to said link and controllable to selectively drive



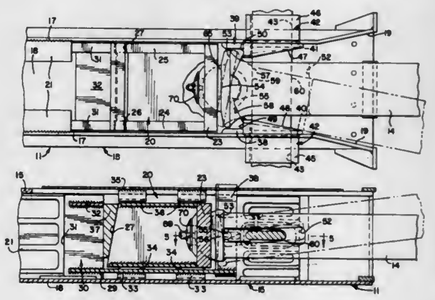
said heavy lift crane along a linear path parallel to said vertical plane, and to pivot the boom supporting unit horizontally about said vertical axis when said fluid supply means provides sufficient pressure within said low volume large area pressure chamber for supporting a sufficient portion of the weight acting on the boom supporting unit to slide said annular foot along said flat surface in response to movement of said powered steerable propelling unit from one position to another position.

4,555,033

SLACKLESS NON-CUSHIONED DRAWBAR ARRANGEMENT FOR RAILWAY CAR UNDERFRAME

Roy W. Miller, Highland, Ind., assignor to Pullman Standard, Inc., Chicago, Ill.

Filed Oct. 3, 1983, Ser. No. 538,549
Int. Cl.⁴ B61G *5/02*
U.S. Cl. 213—51 **17 Claims**



1. In a railway car underframe including a sill structure comprising spaced vertical sill walls and horizontal upper and lower sill walls connected to said vertical walls,

a pocket assembly having a stop end,

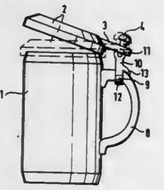
a housing structure supported in said pocket assembly, said housing structure including

laterally spaced side walls,

a front transverse wall connecting said side walls,

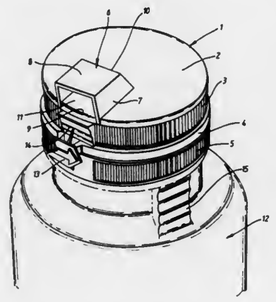
said sill structure including at a forward end a bell mouth diverging portion spaced from said housing structure,
said forward end of said sill structure including laterally spaced cheek plates supported on said vertical sill walls and including draft key openings in lateral alignment,
the improvement comprising
a drawbar assembly having at a rearward portion thereof a transversely extending elongated slot,
a draft key supported in the laterally aligned openings of said cheek plates and projecting through said slot,
said drawbar having an impact head including laterally spaced impact projections,
an impact reaction member supported on said transverse wall of said housing structure,
said reaction member being pivotally supported on said transverse wall for multiple pivotal movement, and,
keeper means engaging and preventing longitudinal translation of the drawbar and providing for pivotal movement of said drawbar in multiple directions while maintaining contiguous contact between said reaction member and said impact head.

4,555,034
BEER MUG
Ludwig Gerhards, Ransbach-Baumbach, Fed. Rep. of Germany, assignor to Clemens Gerhards Holzwarenfabrik KG, Ransbach-Baumbach, Fed. Rep. of Germany
Filed Nov. 18, 1983, Ser. No. 553,472
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242567
Int. Cl.⁴ B65D *23/12*
U.S. Cl. 215—100 R **2 Claims**



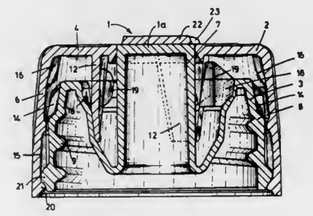
1. A beer mug, comprising a mug body having a handle, a lid hingedly connectable to said body, said lid being made of wood; connecting hinge means formed of water-and-rinsing-medium-resistant material and pivotally supported on said handle, said connecting means including snapping means, said snapping means including a first portion rigidly connected to said lid and a second portion connected to said handle, one of said first and second portions being of elastic plastics and being snappingly connectable to another of said portions to connect said lid to said body and being disconnectable from another of said portions to instantly release said lid from said body; and an operating knob rigidly connected to said one elastic portion and operated to attach or release said one elastic portion from said another portion, said second portion being a pivoting arm formed of water-and-rinsing-medium-resistant elastic material and including a fork-like portion formed with a slot and with opposite holding projections in said slot, said lid having a connecting extension forming said first portion and provided with a hole, said fork-like portion being adapted to be releasably snapped into said extension so that said projections are snapped into said hole.

4,555,035
CONTAINER CLOSURE WITH TUNNEL MEMBER
Eugene E. Davis, Ilford, England, assignor to Johnsen & Jorgensen (Plastics) Limited, England
Filed Nov. 26, 1984, Ser. No. 674,670
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 215—215 **26 Claims**



1. A child-resistant closure for a container which, when in operative position, closes the mouth of the container and which is adapted to be removed from said container to open said mouth without mutilation of said closure by turning said closure relatively to said container into a predetermined position from which said closure may be removed upwardly, said closure being adapted to repeatedly and resealably open and close said mouth of said container, said closure including tunnel means defined by side walls, a top wall and a bottom wall all extending substantially horizontally across said closure, and said tunnel means side, top and bottom walls defining an opening for insertion of ordinary household objects such as the handle of a spoon, a key or the like to aid in manipulating said closure while at the same time not interfering with the use of said closure without the use of any such inserted household object at the option of the user.

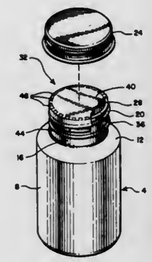
4,555,036
SAFETY CLOSURE
Henricus A. M. Bekkers, Mierlo, and Tjerk Reyenga, Oostvoorne, both of Netherlands, assignors to Technoplast B.V., Monster, Netherlands
Filed Nov. 16, 1984, Ser. No. 671,944
Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417184
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 215—220 **3 Claims**



1. In a safety closure, particularly safe in the hands of children to safely close containers, which closure comprises an assembled combination of an inner cap housed in and surrounded by an outer cap and whereby the inner cap is provided at its top side with a closed cylindrical portion and a skirt portion having at its inner side a threaded portion to screw

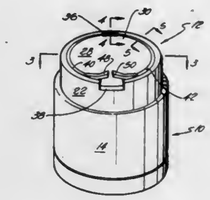
upon the mouth of a container, an intermediate wall portion comprising a conical part integrally interconnecting said skirt portion and said cylindrical portion, the outer cap being provided with a top wall end portion having a central opening and also a cylindrical skirt portion which extends from the edge of the top wall end portion, the outer cap being in sliding engagement with and guided by the cylindrical portion of the inner cap, the top wall end portion of the outer cap further having inwardly extending resilient lips which point into the space created between the cylindrical portion and the intermediate wall portion of the inner cap, said lips cooperating with the conical portion of the intermediate wall portion in such manner that when the closure is in repose the upper part of the cylindrical portion on the inner cap and the top end wall portion of the outer cap lie substantially in the same plane and when a downward pressure is exerted on the outer cap said lips are guided along the conically shaped intermediate wall portion on the inner cap and create a restoring force, the skirt portion of said inner cap being provided with a first set of radial rib shaped teeth, the cylindrical skirt portion of the outer cap being provided with a second set of radial rib shaped teeth, said first and second sets of rib like teeth interengaging only when the outer cap is pressed downwardly a predetermined distance, the improvement comprising a third set of radial rib shaped teeth provided on the surface of the intermediate wall portion of the inner cap facing the cylindrical portion, and tangentially extending protrusions provided on the resilient lips, said third set of teeth and protrusions being constructed and dimensioned axially for interengagement when the outer cap is in repose and when it is pressed down to interengage the first and second sets of teeth.

4,555,037
TAMPER EVIDENT INNER SEAL FOR CONTAINERS
John T. Rhees, 795 Southampton, Farmington, Utah 84025
Filed Jun. 7, 1984, Ser. No. 618,073
Int. Cl.⁴ B65D *23/00*
U.S. Cl. 215—232 **17 Claims**



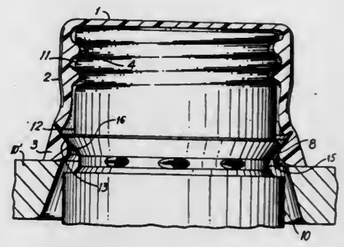
1. A tamper-evident seal for use on a container which includes a hollow body for holding material, a neck at one end extending from the body to terminate in a lip and circumscribing an opening through which material is inserted into and retrieved from the container, and a cap for placement over the opening onto the neck, said seal comprising a sheet of material secured over the opening of the container onto the lip, with the peripheral portions of the material extending downwardly about and adhering to the exterior of the side walls of the neck, said sheet of material being weakened at locations generally over the lip of the container.

4,555,038
TAMPER-EVIDENT RESEALABLE CAP
James H. Nagel, Jr., 7131 Cambria Cir., Orange, Calif. 92669
Filed Jul. 20, 1984, Ser. No. 632,947
Int. Cl.⁴ B65D *41/48*
U.S. Cl. 215—235 **8 Claims**



1. A resealable container cap for readily indicating when a container has been previously opened, comprising:
a skirt portion adapted for permanent attachment to a container about an opening in the container;
a plug portion integrally formed with and disposed within the skirt portion for selectively engaging a wall of the container to sealingly close the container opening;
two score lines joined by a tear strip disposed therebetween and separating said skirt and plug portions;
wherein initial removal of the plug portion from the skirt portion to unseal the container opening requires removal of the tear strip that irrevocably disjoins the skirt and plug portions along the score lines to form means for indicating that the container has been previously opened upon repositioning the plug portion into the skirt portion to sealingly close the container opening.

4,555,039
PILFER-PROOF CAP
Vincent N. Conti, West Hempstead, N.Y., assignor to American Safety Closure Corp., Farmingdale, N.Y.
Filed Jul. 13, 1982, Ser. No. 397,761
Int. Cl.⁴ B65D *41/34*
U.S. Cl. 215—252 **11 Claims**



1. The improvement in a plastic pilfer-proof cap molded on an internal mold member and adapted for use with a container having a threaded neck portion and a radially inwardly extending shoulder disposed below the threaded neck portion and facing axially away therefrom, the cap having a top wall, a depending skirt with internal threading for engagement with the threaded neck portion of the container and a pilfer-proof ring connected to the lower end of the skirt by fragible means and having radially inwardly extending locking means adapted to slide over the shoulder upon threading the cap onto the container and to engage against the shoulder upon unthreading of the cap to cause the frangible means to break and the ring to separate from the skirt of the cap, the improvement wherein:
(a) the frangible means is aligned axially with the skirt and ring;

(b) the locking means includes a radially inwardly directed protrusion extending around the internal periphery of the ring; and

(c) the protrusion, in axial cross-section, has a generally conical shape with the radially inwardly facing surface having multiple circumferentially spaced areas disposed radially outwardly of remainder of said surface, said areas each defining a radially inwardly facing curved portion and the remainder of said surface defining chordal portions.

4,555,040

GLASS WITH STEM, PARTICULARLY A WINE GLASS

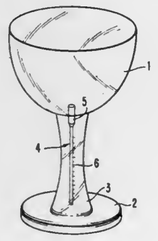
Rolf Butenschön, Hamburg, Fed. Rep. of Germany, assignor to GIVAG Gastro-Installationen-Vertrieb (Deutschland) GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 5, 1984, Ser. No. 647,434

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1983, 3332012

Int. Cl.⁴ B65D *23/16*

U.S. Cl. 215—365 **4 Claims**



1. A receptacle for holding a liquid, comprising:

a bowl for holding the liquid;

a stem attached to said bowl; and

a thermometer having a bulb located in the proximity of said bowl and a calibrated capillary tube extending along said stem.

4,555,041

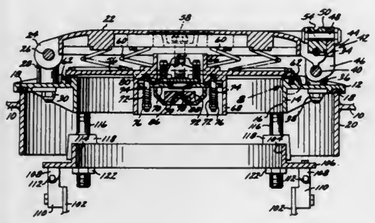
TANK VALVE APPARATUS

Herman D. Muehl, 10851 Drury La., Lynwood, Calif. 90262

Filed Jul. 20, 1984, Ser. No. 632,714

Int. Cl.⁴ F16K *17/196, 17/36*

U.S. Cl. 220—204 **8 Claims**



1. A tank valve apparatus for a tanker truck or the like, said apparatus comprising:

dome mounting means for securement to a tank to define a dome opening into said tank, and including a dome bridge pivotable into and out of overlying relation to said dome opening;

a dome cap carried by said dome bridge and having a closed position seated across said dome opening, said dome cap being movable relative to said dome bridge to an open position away from said dome cap opening for excessive pressure venting of said tank, said dome cap including a negative pressure opening;

bias means interposed between said dome bridge and said dome cap and urging said dome cap into said closed position of said dome cap;

a vacuum valve carried by said dome cap and having a closed position seated across said negative pressure opening, said vacuum valve being movable relative to said dome cap to an open position away from said negative pressure opening for entry of air into said tank under negative tank pressures, said vacuum valve including a positive pressure opening;

bias means interposed between said dome cap and said vacuum valve and urging said vacuum valve into said closed position of said vacuum valve;

a pressure valve carried by said vacuum valve and having a closed position seated across said positive pressure opening, said pressure valve being movable relative to said vacuum valve to an open position away from said positive pressure opening for venting of air from said tank under positive tank pressures;

an inertia valve carrier carried by said vacuum valve and defining vent passages from said tank to said positive pressure opening, said valve carrier including first guide surfaces directed toward said positive pressure openings; and

an inertia valve carried by said valve carrier and including second guide surfaces slidable upon said first guide surfaces, upon tilting of said inertia valve carrier, to a closed position sealing off said positive pressure opening.

4,555,042

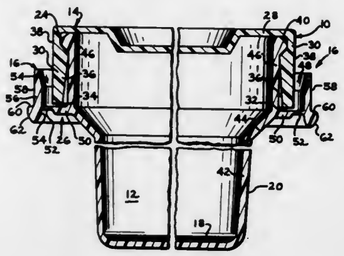
TAMPER RESISTANT CONTAINER AND CLOSURE ASSEMBLY

Willard J. Rathbun, 3721 Gary Dr., Castalia, Ohio 44824

Filed Jan. 28, 1985, Ser. No. 695,711

Int. Cl.⁴ B65D *17/42*

U.S. Cl. 220—277 **4 Claims**



1. A tamper resistant container and closure assembly comprising a container, a lid and a tamper resistant protective band, said container having a base and a sidewall which terminates in an open end, said annular protective band being positioned about and spaced apart from said container sidewall near said open end, said annular protective band being attached to said container sidewall by a continuous annular transverse projection extending horizontally from the exterior of said container sidewall, said continuous annular transverse projection being of a non-tearable thickness, whereby such transverse projection must be severed with a cutting tool to detach said protective band from said container; said lid having a top and an annular lip depending from said top, said lip having an interior surface, an exterior surface and a bottom edge, said container sidewall, said continuous annular transverse projection and said annular protective band forming a channel about the exterior of said container adapted to receive said bottom edge of said depending lip of said lid thereby preventing unauthorized removal of said lid prior to removal of said annular protective band, whereby removal of said annular protective band is accomplished by using a cutting tool to sever said continuous annular transverse projection thereby causing said annular protective band to be separated from said container and exposing said bottom edge of said depending annular lip of said lid.

4,555,043

ANTI-SPILL RECLOSEABLE CONTAINER

Daniel Bernhardt, P.O. Box 681, Rutland, Vt. 05701

Filed Nov. 29, 1984, Ser. No. 676,737

Int. Cl.⁴ B65D *43/02*

U.S. Cl. 220—306 **10 Claims**

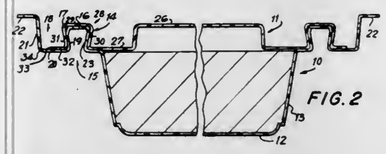


FIG. 2

1. A resealable, spill-resistant container of deformable polymeric material comprising a bottom, upwardly directed side walls extending therefrom, the uppermost ends of said walls defining an open mouth, a rim configuration extending outwardly from said side walls and surrounding said mouth, a perimetrical lid receiving portion formed on said rim configuration outwardly adjacent said mouth, a lid member including a perimetal seal portion sealingly received in said receiving portion and a lid lock assembly integrally formed on said rim configuration, said lock assembly including a branch portion extending laterally outwardly beyond said seal portion at a level below said seal portion, a leg member extending upwardly from said branch portion, the uppermost end of said leg member being disposed at a height above said seal portion, the area between said leg member and seal portion being flexible, said leg member being positioned to be shifted into upwardly lapping position of said seal portion responsive to pressure exerted thereagainst in the direction of the interior of said container.

4,555,044

TAMPER-PROOF PILL DISPENSER

John M. Pearo, 7653 S. Arbory La., Laurel, Md. 20707

Filed Aug. 8, 1983, Ser. No. 521,340

Int. Cl.⁴ B65D *83/04*

U.S. Cl. 221—19 **8 Claims**

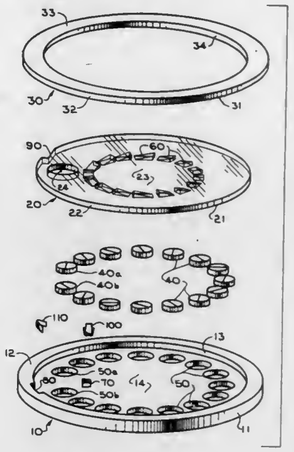
1. A tamper-proof pill dispenser comprising:

a base having means for holding pills in a plurality of serial positions in generally circular arrangement;

a cover supported above said base for rotary motion and including a dispensing hole through which pills are dispensed;

attachment means for affixing said cover to said base while permitting rotary motion of said cover with respect to said base; and

stop means for permitting rotation of said cover with respect to said base in only one direction to place said dispensing hole in serial register with the serial positions and for preventing further rotation of said cover in either direction after said dispensing hole has been placed in register with the last serial position.



4,555,045

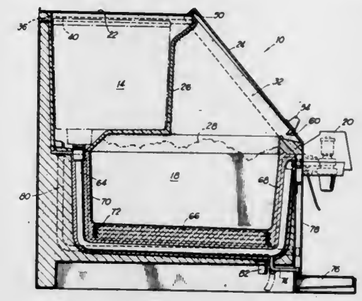
ICE-COOLED DISPENSING SYSTEM

Joseph J. Rodth, Barkhamsted, Conn.; Ira A. Smith, Jr., Marietta, and Donald F. Cornett, Cartersville, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Sep. 30, 1983, Ser. No. 537,925

Int. Cl.⁴ B67D *5/56*

U.S. Cl. 222—1 **22 Claims**



1. An ice-cooled gravity beverage dispenser comprising:

(a) a housing;

(b) a syrup compartment in said housing and having an opening for providing access thereto, said syrup compartment being adapted to receive at least one syrup tank therein;

(c) at least one syrup tank located in said syrup compartment and having a removable lid thereon;

(d) an ice bin in said housing and having a cold plate wall and an opening for providing access thereto, said ice bin being adapted to receive cooling ice therein, said syrup compartment including wall means for completely separating said syrup compartment from said ice bin;

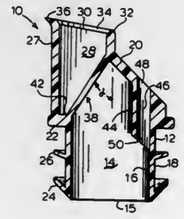
(e) at least one dispensing valve mounted on said housing;

(f) a syrup tube having an I.D. of from about ⅜ inch to about 1¼ inch for feeding syrup from said syrup tank to said dispensing valve;

(g) a water conduit for feeding water to said dispensing valve;
(h) said syrup tube and said water conduit being embedded in said cold plate wall of said ice bin for cooling any syrup and water in said tube and conduit, respectively;
(i) a syrup compartment cover fitting over and closing said syrup compartment opening;
(j) said syrup compartment cover being movable back and forth between a first position covering said syrup compartment opening and a second position covering said ice bin opening; and
(k) means for preventing said syrup compartment cover from being removed from said housing and for preventing said syrup tank lid from being removed from said syrup tank except when said syrup compartment cover is in said second position, such that access to said syrup tank is provided when said syrup compartment cover is in said second position covering said ice bin.

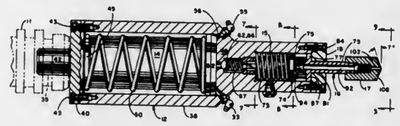
18. A method for using the ice in an ice-cooled gravity beverage dispenser also as potable ice in a drink comprising the steps of:
(a) providing said dispenser with a housing having a syrup compartment and an ice bin completely separated from each other by a wall;
(b) providing a syrup tank with a removable lid in the syrup compartment;
(c) cooling syrup by feeding the syrup from the syrup tank to a dispensing valve mounted on the housing through a syrup tube having an I.D. of from about ⅜ inch to about 1¼ inch embedded in a cold plate wall of said ice bin;
(d) cooling water by feeding the water to said dispensing valve through a water conduit embedded in said cold plate wall of said ice bin;
(e) providing a cover on the syrup compartment adapted to move back and forth between a first position covering the syrup compartment and a second position covering the ice bin;
(f) providing means for preventing said cover from moving off of said dispenser and for preventing said syrup tank lid from being removed from said syrup tank except when said syrup compartment cover is in said second position; and
(g) providing access to said syrup tank in said syrup compartment by moving said cover from said first position covering said syrup compartment to said second position covering said ice bin.

4,555,046
POURING SPOUT FOR A CONTAINER AND A CONTAINER ASSEMBLY INCLUDING SAME
Michael C. Bennett, Summit, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed Jul. 25, 1980, Ser. No. 172,309
The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.
Int. Cl.⁴ B65D *5/72*
U.S. Cl. 222—189 **11 Claims**



1. A pouring spout for use with a container for the withdrawal of a liquid from the container under conditions of controlled flow, which comprises:
a body side wall enclosed at one end by a top wall and defining a first fluid channel;
a spout member integrally formed with said top wall extending outwardly from said top wall and defining a second fluid channel having a fluid outlet orifice, said channels being in fluid communications with each other and defining a fluid passageway for said liquid;
screen means disposed in said fluid passageway at the interface between said first and said second fluid channels for removal of solids from said liquid; and
vent means for providing pressure equalization between said passageway and ambient atmosphere.

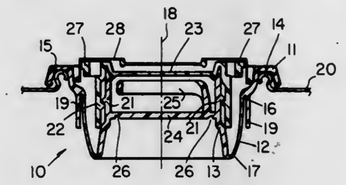
4,555,047
AUTOMATIC TOOLCHANGER TAPPING LUBRICANT DISPENSER
Harry E. Ackley, Sardinia, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Aug. 19, 1983, Ser. No. 524,756
Int. Cl.⁴ B67D *5/40*
U.S. Cl. 222—192 **11 Claims**



1. An apparatus for applying a tapping lubricant from a dispenser into a hole to be tapped comprising a machine tool with a revolvable spindle, a tool store for storing a plurality of tools each having a toolholder, said dispenser being a tool in said store, and a numerically controlled automatic toolchanger;
said numerically controlled automatic toolchanger having means to remove said dispenser from said tool store, insert it in said spindle, manipulate it to dispense tapping lubricant and thereafter return said dispenser to the tool store;
said dispenser comprising toolholder means at one end of said dispenser for connection with said spindle;
pump plunger means at the other end of said dispenser with a dispensing end outermost;
an elongated housing extending between said toolholder and plunger that has walls defining therewithin a reservoir adjacent said toolholder means, a pump chamber adjacent said other end, and an exit passage between said reservoir and said pump chamber;
first valve means responsive to pressure increase in said pump chamber to close said exit passage;
reload biasing means for urging material out of said reservoir past said valve means through said exit passage and into said pump chamber;
said pump plunger means extending into said pump chamber through said housing for said dispensing end supported for rotation and reciprocation relative to said housing and having a length sufficient to permit reciprocation relative to said chamber while maintaining outside of said housing a portion of such length that includes said dispensing end at said other end;
that end of said pump plunger means within said pump chamber forming a pump piston to reciprocate with said plunger within said pump chamber;
a pump conduit within said plunger establishing communication between said dispensing end and said chamber upstream of said piston;
plunger biasing means for urging said pump plunger away from said toolholder; and
second valve means disposed in said pump conduit, normally closed but openable in response to fluid pressure increase within said chamber.

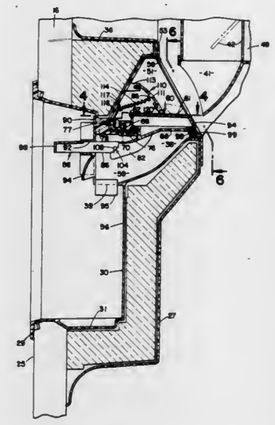
6. An apparatus for applying tapping lubricant into a hole to be tapped by using a numerically controlled automatic toolchanger system to remove such apparatus from a tool store, insert it in a revolvable spindle, manipulate it to dispense tapping lubricant, and then return the apparatus to the tool store wherein the apparatus comprises:
toolholder means at one end of said apparatus for connecting with a toolholder which is insertable in the revolvable spindle of a machine tool;
elongated housing assembly secured to said toolholder and defining therewithin a reservoir adjacent said toolholder and a pump chamber at that end of the housing most remote from said toolholder and having a partition separating said pump chamber from said reservoir;
a reload passage through said partition connecting said reservoir to said pump chamber;
first check valve means disposed within said reload passage to prevent flow from said pump chamber into said reservoir;
a pump plunger means extending out of said pump chamber through said housing assembly;
a pump piston mounted on said pump plunger means within said pump chamber and engaging slidably the walls of said pump chamber;
a thrust bearing means engageable with the end of said pump plunger means disposed within said chamber that moves with said plunger means;
a dispensing tip secured on the outermost portion of said pump plunger means and outside of said chamber;
said pump plunger means having therewithin an exit passage communicating within said pump plunger means on the upstream side of said piston to the exit passage in said tip.

4,555,048
VENTED NESTABLE POURING SPOUT
Martin E. Hamman, and Gary M. Baughman, both of Auburn, Ind., assignors to Rieke Corporation, Auburn, Ind.
Filed May 16, 1984, Ser. No. 610,688
Int. Cl.⁴ B67D *3/00*
U.S. Cl. 222—478 **12 Claims**



1. A pouring spout for use with a container, comprising:
a spout having means for alternately disposing said spout in a nested orientation or in an extended pouring orientation, means for securing said pouring spout to said container; and
a plurality of circumferentially spaced ears, said ears being movably attached with respect to said spout and extendng therefrom without interference with said spout when said spout is in its nested orientation, and said ears extending inwardly substantially perpendicular to the longitudinal axis of said spout and cooperating to define a restricted flow aperture for the outflow of liquid and a plurality of peripheral vent openings for the inflow of air when said spout is in its extended pouring orientation.

4,555,049
ICE DOOR MECHANISM
Harold S. Mawby, and Carl W. Frisbie, both of Belding, Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 18, 1984, Ser. No. 571,679
Int. Cl.⁴ F25C *5/18*
U.S. Cl. 222—517 **8 Claims**

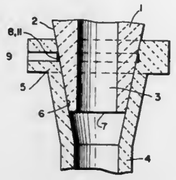


1. A refrigerator having a cabinet defining an opening;
a main door mounted on said cabinet to close said opening;
an ice dispensing apparatus in said chamber;
a delivery chute in said main door;
an inner door movable to a first substantially horizontal closed position to block said delivery chute against the passage of ice pieces therethrough and pivotably mounted to allow the inner door to be placed in a second open position allowing the passage of ice through said delivery chute;
joining means pivotably joining the inner door to a support member within said delivery chute;
an ice guard comprising a sweeper member which is pivotably mounted on a bracket within said delivery chute, the sweeper member having a portion extending substantially the width of and resting on said inner door movable relative to said inner door, and the sweeper member being resiliently biased against said inner door to sweep along the inner door as the inner door is moved between the first and second position.

4,555,050
CLOSURE MECHANISM WITH GAS SEAL
Bernhard Schiefer, Viersen, Fed. Rep. of Germany, and Herbert Bumberger, Linz, Austria, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany and Voest-Alpine AG, Linz, Austria
Filed Jul. 8, 1983, Ser. No. 512,127
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1982, 3226047
Int. Cl.⁴ B22D *41/08*
U.S. Cl. 222—597 **8 Claims**

1. In a closure mechanism of the type operable alternately for discharging molten metal from a molten metal containing vessel and for blocking such discharge, said closure mechanism being of the type including a conical discharge nozzle and a shielding tube fitted over the exterior of said discharge nozzle, the improvement of means for preventing exterior air from entering between said discharge nozzle and said shielding tube into the interior of said shielding tube, said preventing means comprising:

a conical joint formed by conical surfaces of said discharge nozzle and said shielding tube, said conical surfaces of said discharge nozzle and said shielding tube being closely complementary and in abutment, thereby forming a snug said conical joint; and



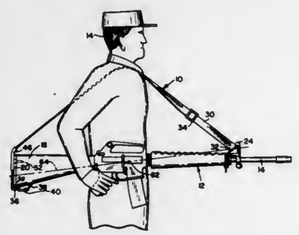
at least one ring-shaped seal in said joint, said ring-shaped seal comprising an annular recess formed in one of said conical surfaces, thereby defining an annular chamber, and an inert gas filling said chamber.

4,555,051

SLING FOR SHOULDER WEAPON

David A. Johnson, Salem, Oreg., assignor to J.F.S., Inc., Salem, Oreg.

Continuation of Ser. No. 561,316, Dec. 14, 1983. This application Mar. 18, 1985, Ser. No. 713,094
Int. Cl.⁴ F41C *27/00*
U.S. Cl. 224—150 **13 Claims**



1. A sling assembly for carrying a weapon of the type having a front portion and a butt stock located rearwardly from said front portion and including a butt end and a bottom portion, the sling assembly comprising:

(a) a flexible sling strap member having a pair of opposite end portions and an intermediate portion;

(b) sling swivel means attached to a first one of said pair of opposite end portions for connecting said first one of said pair of opposite end portions to said butt stock;

(c) attachment means for fastening the other one of said pair of opposite end portions to said front portion of said weapon;

(d) detachable mechanical fastener means, including a pair of cooperatively mating portions; and

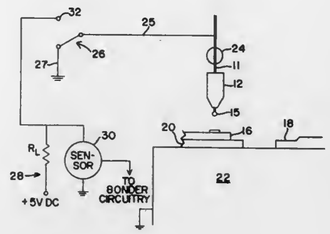
(e) a sleeve surrounding a portion of said sling strap member intermediate said opposite end portions thereof, a first one of said cooperatively mating portions being mounted on said sleeve and said sleeve being movable along said sling strap member intermediate said opposite end portions thereof and a second one of said cooperatively mating portions being fixedly located on said butt end of said butt stock, for selectively detachably holding said intermediate portion of said sling strap member in a position rearwardly adjacent said butt end of said butt stock and extending upwardly therealong while said opposite end portions are fastened to said butt stock and said front portion by said sling swivel means and said attachment means.

4,555,052

LEAD WIRE BOND ATTEMPT DETECTION

John A. Kurtz, Gorham; Donald E. Cousens, Saco, and Mark D. Dufour, Portland, all of Me., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Feb. 28, 1983, Ser. No. 470,217
Int. Cl.⁴ H01L *21/90*
U.S. Cl. 228—104 **17 Claims**



1. Apparatus for sensing and detecting bond attempts and weld attempts during bonding and welding of lead wire respectively to a microcircuit chip and to the lead frame on which the chip is mounted, said lead wire held during bonding and welding in the capillary wire holding and bonding tool of a bonding machine, comprising:

means isolating the lead wire from ground potential while the lead wire is held in the bonding tool and bonding machine;

first circuit means comprising ground coupling means, ground isolated voltage source means, and switching means for electrically switching and coupling the lead wire held in the bonding tool to the ground coupling means or to the ground isolated voltage source means:

second circuit means comprising current sensing means for sensing the electrical condition of the lead wire when the lead wire is electrically coupled to the ground isolated voltage source means, said sensing means operatively responsive to the electrical condition of the lead wire for detecting the effective resistance in the lead wire:

indicator means coupled to said second circuit means, for indicating the detection of high resistance in the lead wire after a bond attempt, said indicator means further operative to indicate the detection of low resistance in the lead wire after a weld attempt;

said second circuit means comprising operational amplifier means having inputs coupled in series respectively with the lead wire and the ground isolated voltage source means, shunt resistance means connected across the inputs to said operational amplifier means for sensing current in the lead wire, and a first pair of transistor means (Q5,Q6) coupled in parallel with each other to the output of said operational amplifier means, said first pair of transistor means being in alternately opposite conducting states in response to the output of said operational amplifier means after the ball bonding operating mode and the wedge bonding operating mode respectively for controlling said indicator means according to the current level and therefore the resistance in the lead wire;

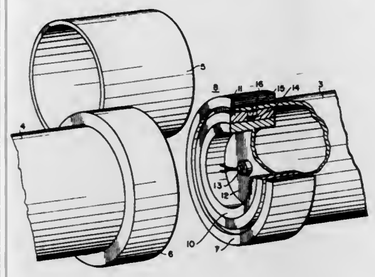
and third circuit means for determining whether the lead wire bond being sensed and detected is a ball bond or a wedge bond and alternately controlling which of said first pair of transistor means is conducting and which is non-conducting.

4,555,053

METHOD OF JOINING TOGETHER TWO PIPE ENDS TO FORM A PIPE OF METAL

Per I. Persson, Nora, and Bengt Persson, Olofström, both of Sweden, assignors to Nitro Nobel AB, Gyttorp and AB Volvo, Gothenburg, both of, Sweden

Filed Jun. 8, 1984, Ser. No. 618,516
Claims priority, application Sweden, Jun. 9, 1983, 8303263
Int. Cl.⁴ B23K *20/08*
U.S. Cl. 228—107 **10 Claims**



1. Method of joining together two pipe ends to form a pipe, said pipe ends being opposite each other and fixedly located at a distance from each other making conventional welding impossible, characterised in that a splicing tubr or intermediate section (5) is prepared, having a length substantially corresponding to the distance between said two pipe ends (3 and 4), the length of the splicing tube (5) can be joined to an opposing pipe end (3 or 4) by means of explosive welding, placing said splicing tube (5) between said pipe ends (3 and 4) and locating two inner peripheral bodies to bridge the gaps between the ends of the splicing tube (5) and the opposite pipe ends (3 and 4), providing outer peripheral support means (6 and 7) functioning as support and igniting an inner explosive charge (10) at each end of the splicing tube (5) to to produce an explosive weld so that each inner peripheral body (11) forms a bond between each pipe end and each splicing tube end.

4,555,054

PROCESS AND APPARATUS FOR FABRICATING OPTICAL FIBER CABLES

Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 413,846, Sep. 1, 1982, Pat. No. 4,508,403, which is a continuation-in-part of Ser. No. 324,242, Nov. 23, 1981, abandoned. This application May 24, 1983, Ser. No. 497,535
Int. Cl.⁴ H04B *9/00*; B23K *3/06*
U.S. Cl. 228—148 **24 Claims**

17. A process for fabricating an optical fiber cable, said process comprising:

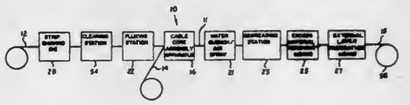
forming a tube having a seam formed by spaced apart tube portions from a metal or metal alloy strip material;

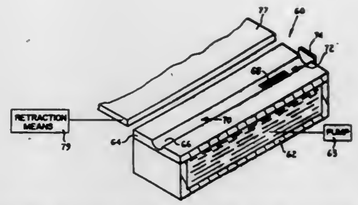
inserting at least one optical fiber into said tube;

providing a source of molten, metallic sealing material and a plate having a groove with slotted and unslotted portions over said source;

applying pressure to said sealing material in said source with a pump, said pressure creating a wave of flowing molten sealing material; and

placing said tube seam in contact with said wave of flowing molten sealing material so that said sealing material contacts and substantially fills said seam, said placing step comrising aligning said tube and seam with said moving molten sealing material to minimize the likelihood of said sealing material flowing about and adhering to portions of said tube other than said seam by passing said tube





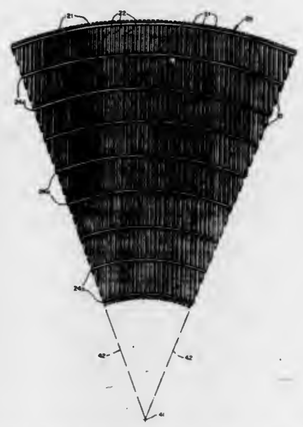
through said groove so that said seam contacts said slotted portion of said groove.

4,555,055

METHOD OF MAKING CENTRIFUGE SCREEN BASKETS

James D. Connolly, P.O. Box 1238, Princeton, W. Va. 24740

Division of Ser. No. 405,928, Aug. 6, 1982. This application Aug. 8, 1984, Ser. No. 638,855
Int. Cl.⁴ B23K *31/02*
U.S. Cl. 228—155 **3 Claims**



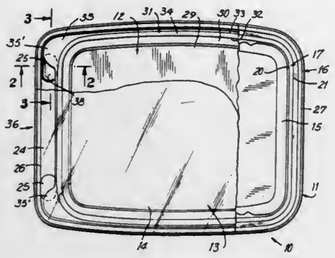
1. A method of making a frusto-conical centrifuge screen basket of side-connected segments formed of wedge-shaped screen wires connected and backed by tie bands welded thereto, comprising fabricating each segment in the flat by clamping laterally spaced screen wires to a flat work surface and fusion welding laterally spaced tie band sections to said screen wires, and so precurving and during welding positioning said tie band sections as to form in the finished basket a plurality of laterally spaced continuous circumferential tie bands each centered on and perpendicular to the basket's axis.

4,555,056

TAMPERPROOF FOOD PACKAGE

Daniel Bernhardt, P.O. Box 681, Rutland, Vt. 05701

Filed Oct. 14, 1983, Ser. No. 542,138
Int. Cl.⁴ B65D *5/64, 43/06*
U.S. Cl. 229—45 R **4 Claims**



1. A food package or the like formed of resilient polymeric material comprising a receptacle including a bottom, side wall portions and an integral peripheral rim assembly extending laterally outwardly from the uppermost end of said side wall portions, said rim assembly including a circumferential rib member projecting upwardly from the uppermost edge of said wall portions, said rib member being of the general configuration of a dovetail having downwardly directed converging legs, a generally horizontally directed bridge portion connecting the uppermost ends of said legs, a horizontal land portion extending outwardly from the outermost of said legs, a circumferentially extending inverted U configuration defining an outward extension of said land portion, said U configuration including an uppermost generally planar horizontally directed anchor surface, said surface being disposed in a plane proximate to and above the plane of said bridge portion, said land portion including at least one shallow depression, a cap member snapfittedly mounted to said rim assembly, said cap member including a central portion, a circumferential, downwardly concave bead formed in said cap member, said bead encompassing said dovetail configuration therewithin, the concave surfaces of said bead being in stressed engagement with said legs of said dovetail configuration, thereby to urge said cap member downwardly toward said bottom, at least one horizontally directed flange extending outwardly from said bead, said flange being disposed in partial registry with said depression, and a membrane sealingly connected to said anchor surface along a continuous circumferential connection line, said membrane being disposed intimately adjacent the uppermost surface of said bead, thereby to prevent inadvertent disengagement of said bead from said dovetail configuration, all portions of said cap member being disposed beneath a plane tangent to said anchor surface.

4,555,057

HEATING AND COOLING SYSTEM MONITORING APPARATUS

James O. Foster, Falls Church, Va., assignor to JFEC Corporation & Associates, Oakton, Va.

Filed Mar. 3, 1983, Ser. No. 471,930
Int. Cl.⁴ G05D *23/00*
U.S. Cl. 236—94 **6 Claims**

1. Apparatus for monitoring operation of a heating and cooling system, the apparatus comprising in combination:

a plurality of sensors, each sensor constructed and arranged to detect a malfunction in a corresponding operational condition of the heating and cooling system and to provide a signal in response thereto;

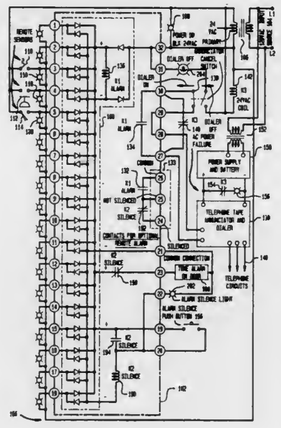
local alarms, each of a plurality of said local alarms being coupled to a corresponding sensor, and constructed and arranged to be activated in response to a malfunction detection signal from said corresponding sensor;

a common alarm system including a telephone having means for dialing a predefined number and conveying a pre-recorded message on said telephone;

means for isolating each sensor from signals directed by other sensors to the common alarm system;

means responsive to any malfunction signal from one of said sensors, for automatically actuating said dialing means to call said predefined telephone number and for conveying a pre-recorded message in response to an off-hook signal received by said means immediately following said call;

wherein upon cessation of said malfunction signal, said means responsive to said malfunction signal automatically releases, resetting said common alarm system including said means for dialing a predefined number and conveying a pre-recorded message;



wherein said common alarm includes a relay coil coupled to receive the signal provided by each sensor detecting a malfunction; and

wherein the isolating means comprises:

four terminal rectifier bridge means for confining current from the primary power source to only local alarms coupled to sensors that detect malfunctions, the relay coil extending across two opposite terminals of the bridge means with alternating current from the primary power source being applied across the other two opposite terminals;

the rectifiers in the bridge means being biased so that the signal from each sensor that detects a malfunction activates the common alarm and the local alarm coupled thereto without activating a local alarm coupled to another sensor.

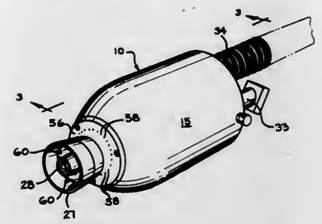
4,555,058

ROTARY ATOMIZER COATER

Richard Weinstein; James W. Davis, both of Toledo, Ohio, and Robert K. Campbell, Temperance, Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Oct. 5, 1983, Ser. No. 539,283
Int. Cl.⁴ B05B *3/10;* **F16J** *15/16*
U.S. Cl. 239—223 **9 Claims**

1. A coating applicator comprising, in combination, a rotary atomizer mounted on a shaft, drive means operatively connected to said shaft to rotate said shaft at high speeds, means for supplying coating material to said rotary atomizer, a pair of spaced bearings rotatably mounting said shaft and a seal assembly between said rotary atomizer and one of said bearings, said seal assembly including a cylindrical bearing cover, said bearing cover including a circular cutting edge adjacent said shaft, and a mating cap member surrounding said shaft adjacent said bearing cover, said cap member defining a circular sealing shoulder, said cutting edge of said bearing cover engaging and abraiding into said sealing shoulder, whereby coating material is sealed from said one of said bearings, said bearing cover including a circular surface extending outwardly and said cap member including a cylindrical outer wall having a tapered rear end, said tapered rear end engaging said circular surface of said bearing cover.

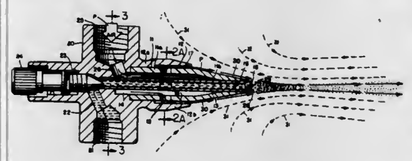


4,555,059

FLOW-AMPLIFYING LIQUID-ATOMIZING NOZZLE

C. Neal Collins, Goshen, and Joseph E. Peter, Cincinnati, both of Ohio, assignors to Vortec Corporation, Cincinnati, Ohio

Filed Aug. 6, 1984, Ser. No. 638,230
Int. Cl.⁴ B05B *7/00*
U.S. Cl. 239—425 **12 Claims**



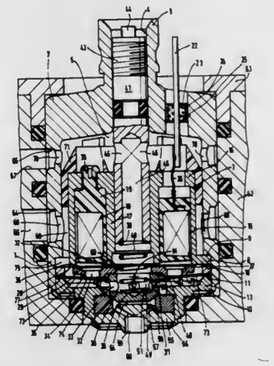
1. A flow-amplifying liquid-atomizing nozzle comprising a tubular body having a generally cylindrical section with an axial bore and a conical, inwardly-tapered nose section at one end of said cylindrical section; said tapered nose section having liquid outlet means for the external discharge of liquid from said nose section; conduit means extending through said bore to said liquid outlet means for delivering liquid to said outlet means; said cylindrical section having a plurality of circumferentially-spaced radial openings communicating with said bore; a collar extending about said cylindrical section; said collar having a flow-directing section and an attachment section; said flow-directing section having a bore sufficiently greater in diameter than the outside of said cylindrical section to define an annular flow-directing passage communicating with said openings and facing towards said nose section; said attachment section being secured to said cylindrical section in fluid-tight sealing relation along the surface of said cylindrical section remote from said nose section; whereby, primary air under pressure supplied to said flow-directing passage through said bore is directed along the surface of said conical nose section to strip liquid from said liquid outlet means as said primary air is being amplified by ambient secondary air entrained thereby.

4,555,060

ELECTROMAGNETICALLY ACTUATED VALVE, IN PARTICULAR A FUEL INJECTION VALVE FOR FUEL INJECTION SYSTEMS

Heinrich Knapp, Leonberg; Rudolf Sauer, Benningen; Rudolf Krauss, Stuttgart, and Udo Hafner, Lorch, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 376,463, May 10, 1982, abandoned. This application Jul. 25, 1984, Ser. No. 633,677
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118898
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.⁴ F02M *51/00*
U.S. Cl. 239—585 **4 Claims**



1. An electromagnetically actuatable valve for fuel injection valves for fuel injection systems of internal combustion engines, having a valve housing, a magnetic winding applied on a core or ferromagnetic material, and an armature which is firmly connected with a valve element said valve element arranged to cooperate with a fixed valve seat, said valve element adapted to freely pass through a guide diaphragm formed of spring-metal and guided by said guide diaphragm, said guide diaphragm having a circumference which is fastened to said housing, said guide diaphragam has an annular fastening zone and an annular inner guide zone of smaller diameter, each of said zones being interconnected by means of radially extending struts which are offset relative to each other arcuately and radially in each of said zones and thereby provided arcuate flowthrough openings, said inner guide zone of said guide diaphragm arranged to rest under spring tension on a concentric guide ring of said armature, said armature further having a surface oriented toward the valve seat whereby said guide diaphragm retains said armature parallel to said valve seat and to an end face of said core of ferromagnetic material, said guide diaphragm further including a centrally disposed annular zone supported by radial struts, which form arcuate flowthrough openings, said centrally disposed annular zone providing an opening through which said value element is guided.

4,555,061

MANURE SPREADER EXPELLER FLAIL

Gilbert W. Linde, Oxford, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 12, 1983, Ser. No. 531,116
Int. Cl.⁴ A01C *15/16*
U.S. Cl. 239—675 **1 Claim**

1. A manure spreader comprising:

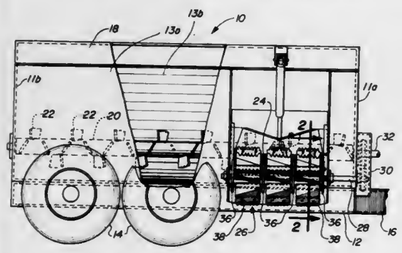
a tank for containing manure, said tank having a front end wall, a rear end wall and side walls;

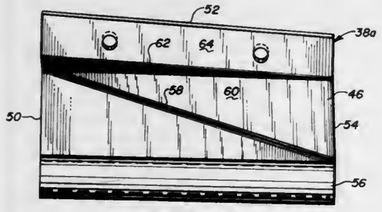
an auger mounted in said tank for moving manure toward an opening formed in one of the side walls of said tank;

expeller means disposed at said opening to throw manure away from said tank;

said expeller means including a plurality of blades connected to and rotatable about a central shaft;

each of said blades having a first edge facing toward said front end wall of said tank, a second edge facing toward said rear end wall of said tank, and first and second planar portions disposed between said first and second edges,





said first and second planar portions being canted in substantially the same direction toward said rear end wall of said tank and angled in substantially the same direction relative to each other and to the longitudinal axis of said central shaft;

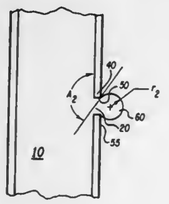
each of said blades being bent along first and second generally straight lines extending between said first and second edges to provide said first and second planar portions, respectively, in order to cause said expeller means to throw manure in a lateral and rearward direction with respect to the direction of travel of the manure spreader.

4,555,062

ANTI-WETTING IN FLUID NOZZLES

Young S. You, Fremont, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 5, 1983, Ser. No. 482,123
Int. Cl.⁴ E01D *15/18*
U.S. Cl. 239—690 **9 Claims**



1. A nozzle for ejecting a fluid, said nozzle comprising:

a surface in contact with the fluid, which surface is composed substantially of an oxide material; and

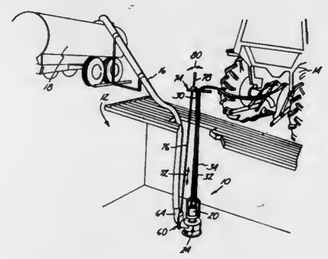
ions imbedded in at least a part of the oxide material surface of said nozzle to ionically activate the oxide material surface in the inner region of the nozzle adjacent to the end of the nozzle from which the fluid is ejected.

4,555,063

LIQUID WASTE AGITATING AND PUMPING APPARATUS

Michael R. Goettsch, Glenwood, Minn., assignor to Glenwood Manufacturing Corporation, Glenwood, Minn.

Filed Feb. 3, 1984, Ser. No. 576,908
Int. Cl.⁴ B02C *23/36*
U.S. Cl. 241—46.04 **5 Claims**



1. An improved liquid waste agitating and pumping apparatus for pumping and agitating liquid waste contained in an enclosure, the apparatus comprising:

an impeller housing having an inlet for fluid communication with the liquid waste in the enclosure and an outlet for discharge of the liquid waste out of the housing;

impeller means disposed within the housing;

motor means mounted on the housing for rotation of the impeller means and including a shaft assembly connected to the impeller for rotation thereof;

sliding gate valve means externally mounted with respect to the impeller housing, having a stationary guide plate with an opening in fluid communication with the outlet of the housing, fixedly attached to the housing, and a sliding gate member in sliding cooperation with the stationary guide plate and having a discharge conduit means with a fluid passage for discharging the liquid waste from the enclosure, the sliding gate member being slidable between a pump position wherein the opening of the stationary guide plate is positioned for fluid communication with the fluid passage of the discharge conduit and an agitating position wherein the opening of the stationary guide plate is in direct fluid communication with the liquid waste contained in the enclosure and the lowermost portion of the sliding gate member is above the uppermost portion of the opening of the stationary guide plate; and

handle means attached to the sliding gate member for moving the sliding gate member between the pumping position and the agitating position.

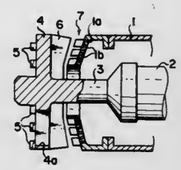
4,555,064

PEBBLE-STONE CRUSHING DEVICE FOR USE IN EXCAVATOR FOR LAYING PIPELINES UNDERGROUND

Juichi Asano; Yasuo Okubo, both of Chigasaki; Hiroshi Saito, Isehara, and Shigeru Harada, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,888
Int. Cl.⁴ B02C *18/16*
U.S. Cl. 241—89.3 **5 Claims**

1. A pebble-stone crushing device for use in an excavator for laying pipeline underground comprising an excavator body having an annular front face plate, a cutter head mounted in front of said excavator body and said front face plate for excavating a working face in front of said body and said cutter head, a plurality of rotor teeth formed integrally with the rear face of said cutter head and a plurality of stator teeth formed



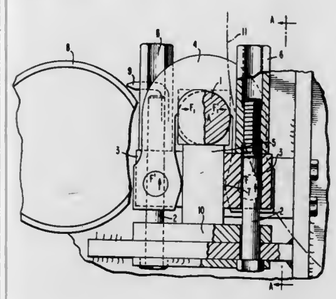
radially on and integrally with said front face plate of said excavator body and facing said rotor teeth, said stator teeth comprising plural groups of radially spaced apart tooth members having different length.

4,555,065

CHOPPING ARRANGEMENT

Berthold Binder, and Josef Pürrer, both of Gottmadingen, Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Gottmadingen, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,347
Claims priority, application Fed. Rep. of Germany, May 24, 1983, 3318752
Int. Cl.⁴ B02C *18/16*
U.S. Cl. 241—241 **2 Claims**



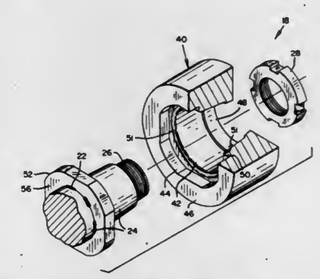
1. A chopping arrangement for a chopper, in particular a drum chopper having a chopping drum with several cutting blades spaced apart along its periphery which are attached to at least one rotating round anchor plate of the drum and cooperate with a counter blade having an adjustable position for chopping a stream of material fed between a gap between the cutting blades and counter blade, wherein the counter blade has longitudinal structure with mounting positions at each end, means clamping the counter blade at each said mounting position against a horizontally oriented stationary anvil with planar side walls, with an essentially U-shaped clamp clip which presses it against a horizontal surface of the anvil by means of tension screws fastened to the clamp clip and cooperating with tension adjusting nuts, extensions to the two arms of the clamp clip comprising articulation pieces having a convex side lying against the planar side walls of the anvil at only one point thereby to permit vertical displacement of one arm of the clamp clip by adjusting its nut to cause a corresponding, essentially horizontal displacement of the counter blade on said anvil to adjustably change the cutting gap between the blades.

4,555,066

REPLACEABLE ROLL FOR ROLLER MILL

William D. Gibson, P.O. Box 345, Troutdale, Oreg. 97060, assignor to William D. Gibson, Portland, Oreg.

Continuation-in-part of Ser. No. 214,207, Dec. 8, 1980, abandoned. This application Jul. 12, 1983, Ser. No. 513,151
Int. Cl.⁴ B02C *15/08*
U.S. Cl. 241—293 **5 Claims**



1. A roll assembly for a roller mill comprising:

a generally cylindrical roll member having an axial bore,

the bore being defined by a central bore wall portion and a first bore end wall portion of greater radial dimension than said central bore wall portion so as to form an annular shoulder between said first bore end wall portion and said central bore wall portion, said first bore end wall portion intersecting an end face of said roll member to define a recess within said end face,

a generally annular end insert adapted for nonrotatable mounting within said recess and in abutment with said shoulder to positively engage said roll, said insert having an axial bore defined by a tapered bore wall,

a tapered shaft having a taper corresponding to the taper of the bore wall of said insert, said shaft being insertable through the axial bores of said roll member and said insert and into abutment with the bore wall of said insert to determine the position of the roll member along said shaft, said shaft terminating in a threaded end portion,

and a threaded nut member for threading on said threaded end portion and thereby forcing said roll member into secure abutment against said insert,

said annular shoulder comprising an annular tapered surface and said end insert including a mating annular tapered face in abutment against said tapered surface to provide lateral interference therebetween when said nut is threaded onto said threaded end portion and firmly against said roll member, thereby to restrain said roll member against lateral and axial movement relative to said insert.

4,555,067

TEXTILE DOFF SERVANT

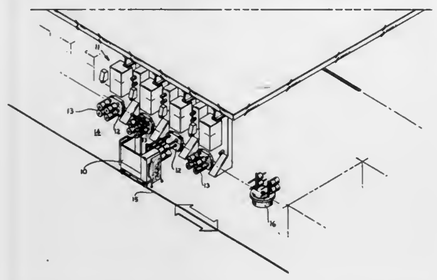
Richard J. Angelucci, Springfield, Pa.; Andrew P. Cope, Wilmington, Del.; Donald E. Hallam, Wilmington, Del., and Harry E. Ladd, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1984, Ser. No. 613,648
Int. Cl.⁴ B65H *54/20, 54/26, 67/06*
U.S. Cl. 242—35.5 A **2 Claims**

1. In a winding apparatus having a plurality of windups, each windup being located on one side of a service aisle and including a rotatable chuck and a push-off device mounted to the windup for moving yarn packages from the chuck, an apparatus for receiving yarn packages from the chucks as they are doffed from the windups by said push-off devices and delivering said packages to an unload station, said apparatus comprising:

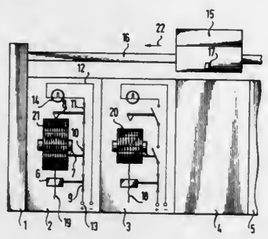
(a) a carriage mounted for movement into a spaced relationship on the other side of the service aisle opposite a respective windup;

(b) means to align said carriage with a respective windup;
(c) an extendable and retractable frame mounted to said carriage, said frame having rods attached thereto, said rods being directed into alignment with the chucks of said respective windup when said frame is extended;



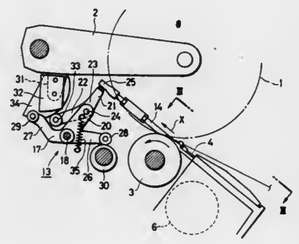
(d) a retractable push-off mechanism mounted on said frame and associated with said rods; and
(e) means for extending and retracting said frame across said service aisle toward and away from said respective windup.

4,555,068
METHOD FOR CALLING A BOBBIN-CHANGING DEVICE
Heinz Kamp, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany
Filed Mar. 9, 1984, Ser. No. 587,941
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308454
Int. Cl.⁴ B65H *63/00*
U.S. Cl. 242—36 **3 Claims**



1. Method for calling a travelling bobbin-changing device to a winding station of a bobbin winding machine, each winding station having a thread presence monitor for monitoring the presence of a thread, a bobbin-stoppage indicator for indicating stoppage of rotation of the bobbin, and a bobbin filling indicator for indicating a predetermined fullness of the bobbin, which comprises continuously checking for the presence of a thread connected to the bobbin with the thread presence monitor, continuously checking for a stoppage of the rotation of the bobbin with the bobbin-stoppage indicator, continuously checking for the predetermined fullness of the bobbin with the bobbin filling indicator, issuing a signal when simultaneously the thread is present, the rotation of the bobbin has stopped and the predetermined fullness of the bobbin has been reached, and stopping the bobbin-changing device at the winding station for exchanging the bobbin with an empty bobbin tube when the signal is issued.

4,555,069
YARN WINDING APPARATUS AND METHOD
Yoshiyasu Maeda, Nara; Akira Ueura; Kazuyoshi Sato, both of Kyoto, and Katsunori Watanabe, Shiga, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan
Filed Nov. 1, 1982, Ser. No. 438,414
Claims priority, application Japan, Nov. 2, 1981, 56-175896; Nov. 2, 1981, 56-176190; Dec. 2, 1981, 56-194789
Int. Cl.⁴ B65H *54/32*
U.S. Cl. 242—43 R **11 Claims**

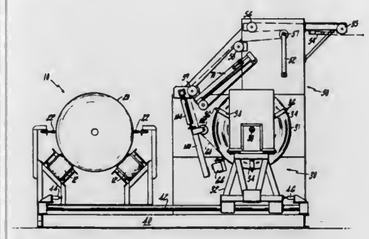


1. A method of winding a yarn on a package, comprising the steps of:
(a) taking out a loose end of a yarn from a yarn supply and fixing the loose end to an empty package, the empty package having a width along an axis of rotation, thereafter maintaining a substantially uniform tension on the yarn throughout the subsequent steps;
(b) rotating the package about its axis of rotation so as to wind the yarn therearound, and continuing the rotation throughout the following steps:
(c) simultaneously, uniformly traversing the yarn across the width of the package from its point of attachment to the package to a first traverse limit corresponding to a first end of the package;
(d) reversing the direction of traverse of the yarn and uniformly traversing the yarn from the first limit of traverse of the yarn to a second limit of traverse of the yarn corresponding to a second end of a package;
(e) reversing the direction of traverse of the yarn and uniformly traversing the yarn from the second limit of traverse to the first limit of traverse;
(f) continuously sensing the radius of the package to establish when a full package has been formed, and when a full package is sensed, proceeding to step (j);
(g) progressively reducing the first and the second limits of traverse of the yarn so as to produce tapering ends on the package;
(h) repetitively performing steps (d) through (g) while further reducing the extent of traverse of the yarn by a creeping ratio, α, defined by:

$$\alpha = t/(T+t)$$

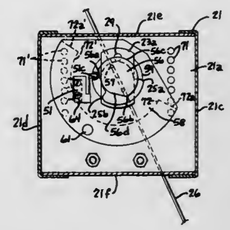
where t is a time during which the traverse of the yarn is reduced to be less than the extent between the first and second traverse limits, and where T is a time during which the traverse of the yarn is at its full extent between the first and the second traverse limits, the creeping ratio being initially established to be significantly less than 1.0;
(i) progressively increasing the creeping ratio α to asymptotically approach 1.0 as the winding process proceeds; and
(j) stopping the winding on reaching a condition of a fully wound package, removing the fully wound package, and introducing a fresh empty package.

4,555,070
METHOD AND APPARATUS FOR UNWINDING AND SPLICING SUCCESSIVE ROLLS
Christopher Pali, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.
Filed Jun. 4, 1984, Ser. No. 617,292
Int. Cl.⁴ B65H *19/12, 19/18*
U.S. Cl. 242—58.1 **15 Claims**



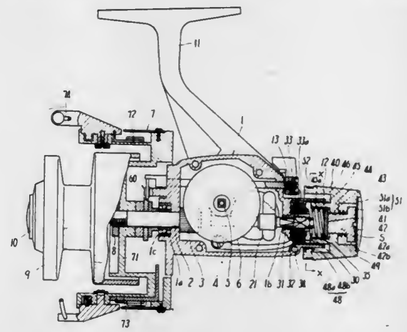
1. A roll payoff unit for unwinding rolls of ribbon material having a central annular core and an outside diameter which comprises:
a retractable core chuck upon which the roll of material is mounted, said chuck having a first position wherein the roll is secured through the core and a second position wherein the chuck is retracted releasing the roll;
a drive belt assembly including an endless drive belt engaging the exterior surface of the roll, said assembly being pivotally mounted to continuously engage the outside diameter of the roll as the roll diameter decreases during unwinding of the roll;
pulley means for guiding the ribbon being unwound from the roll;
dancer means connected to the ribbon to sense and control ribbon tension by regulating the speed of the endless drive belt; and
a paster arm assembly for use in joining the trail end of the ribbon from a consumed roll to the beginnng end of the ribbon from a new roll including means for clamping the ribbon and means for cutting the ribbon, said assembly being mounted to pivot between several positions including a cutting position in registration with the ribbon when the roll is almost completely consumed and an unwinding position not in registration with the ribbon.

4,555,071
STOCK REEL DANCER
Richard D. Nordlof, 3312 Crest Rd., Rockford, Ill. 61107
Filed Oct. 30, 1984, Ser. No. 666,502
Int. Cl.⁴ B65H *75/02, 59/38*
U.S. Cl. 242—75.5 **11 Claims**



1. A stock reel comprising, a reel support, stock reel means for mounting a coil of stock on the reel support for rotation about a generally horizontal axis, an electric reel drive motor for driving the stock reel, a dancer arm mounted on the reel support for swinging movement about a generally horizontal dancer arm axis, the dancer arm being adapted to engage a loop of stock extending from the stock coil to be angularly displaced thereby through a range of dancer arm positions as the loop of stock increases and decreases, motor control means connected to said reel drive motor and having an input signal controller, said motor control means being operated to actuate the reel drive motor in response to a preselected input signal from the input controller, rotary actuator means for said input signal controller operative to control the input signal produced by the input controller in accordance with the relative angular position of the input controller and the rotary actuator means, means mounting said rotary actuator means for turning with said dancer arm about the dancer arm axis through said range of dancer arm positions, means mounting said input signal controller on said reel support for angular adjustment relative to the reel support about the dancer arm axis to vary the angular position of the dancer arm at which said input signal controller produces said preselected input signal.

4,555,072
DRAG MECHANISM FOR A SPINNING REEL
Yasuhiro Hitomi, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Mar. 6, 1984, Ser. No. 586,717
Claims priority, application Japan, Mar. 10, 1983, 58-35034
Int. Cl.⁴ A01K *89/01, 89/02*
U.S. Cl. 242—84.5 R **6 Claims**



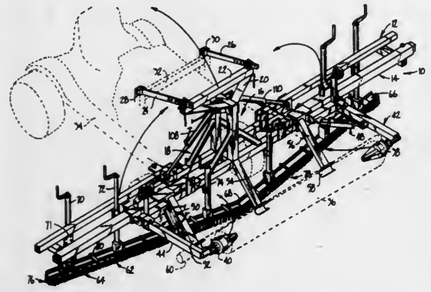
1. A drag mechanism for a spinning reel comprising a reel body, a spool and a spool shaft rotatable and movable longitudinally of said reel body, said drag mechanism for applying a resistance against rotation of said spool shaft and comprising: at least one first friction plate supported non-rotatably to said spool shaft, at least one second friction plate disposed adjacent to said first friction plate and supported non-rotatably to said reel body, an adjusting knob screwed with said reel body such that said adjusting knob is rotatable relative to said reel body, a drag spring, a restriction means for restricting a range of rotation of said adjusting knob with respect to said reel body, said adjusting knob including a spring holder for holding said drag spring, said drag spring being interposed between said first and second friction plates and an initial load adjuster, said initial load adjuster being movable toward or away from said friction plates to adjust an initial rotational resistance load applied against rotation of said spool shaft by said adjusting knob, said initial load adjuster including a display means for displaying an indication of said initial load set by said initial load adjuster.

4,555,073

APPARATUS FOR LAYING PAVING FABRIC

Mounque Barazone, 22141 Buckeye Pl., Cottonwood, Calif. 96022

Filed Sep. 6, 1983, Ser. No. 529,627
Int. Cl.⁴ E01C *19/48*
U.S. Cl. 242—86.5 R **10 Claims**



1. A vehicle mounted apparatus for laying paving fabric from a roll on a surface comprising:

a. a first, member having a lateral dimension;

b. a second member having a lateral dimension said second member being transversely spaced and distinct from said first member, said first and second members being capable of connection to the vehicle for movement therewith;

c. means for supporting the roll from said second member, for permitting the roll to unwind with vehicle movement and for laying the fabric over the surface, said means for supporting the roll from said second member including at least one arm appending from said second member;

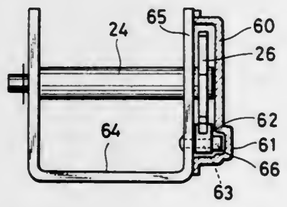
d. means for applying a downward force on the unwound paving fabric on the surface; said means including means for adjusting said lateral dimension of said second member independently of said first member, thus permitting said at least one arm appending from said second member to move along said lateral dimension of said second member without impediment by said at least one element of said means for applying a downward force.

4,555,074

WEBBING RETRACTOR

Osamu Kawai, and Katsuyasu Ono, both of Fujisawa, Japan, assignors to NSK-Warner K.K., Japan

Filed Jul. 12, 1983, Ser. No. 513,071
Claims priority, application Japan, Jul. 19, 1982, 57-108999[U]
Int. Cl.⁴ A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A **3 Claims**



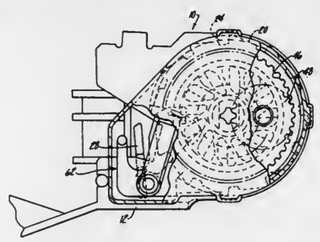
1. A webbing retractor comprising a casing equipped with a pair of side plates, a take-up spindle rotatably supported by the side plates and having a webbing fastened to the take-up spindle at one end thereof, a cog wheel provided outside one of the side plates in such a way that it is allowed to rotate together with the take-up spindle, a lock member having a portion extending in the axial direction of the take-up spindle and supported by at least one of the side plates in such a manner that the lock member is displaceable between a first position where the lock member is kept in engagement with the cog wheel and a second position where the lock member is out of engagement with the cog wheel, an auxiliary plate having a radially extending substantially flat surface disposed outside the cog wheel substantially as an integral unit with the one of the side plates said plate including an axially outwardly extending swollen portion on said substantially flat surface, said swollen portion having a shoulder which extends in the axial direction of the take-up spindle and overlaps at a part thereof with the portion of the lock member which portion extends in the axial direction of the take-up spindle, and means mounting the auxiliary plate in such a manner that the shoulder of the auxiliary plate is normally kept out of engagement with the portion of the lock member, which portion extends in the axial direction of the take-up spindle, but when a tensile force is applied to the webbing and the lock member is thus deformed or displaced in a direction parallel to the radial direction of the take-up spindle, the portion of the lock member which portion extends in the axial direction of the take-up spindle is thereby correspondingly brought into contact and engagement with the shoulder of the auxiliary plate whereby to support the lock member.

4,555,075

DUAL MODE SEAT BELT RETRACTOR ASSEMBLY

Timothy J. Schmidt, Troy, and Ronald A. Heintzleman, Sterling Heights, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Filed Mar. 13, 1985, Ser. No. 711,319
Int. Cl.⁴ A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A **10 Claims**



1. A seat belt retractor which may be operated either as an emergency locking retractor which prevents seat belt webbing from being withdrawn when said retractor is subjected to deceleration above a predetermined level, or as an automatic locking retractor which acts to retract said webbing but inhibits webbing withdrawal, comprising;

a retractor frame,

a spool rotatably attached to said frame for winding said webbing, said spool having at least one toothed sprocket,

a locking bar mounted to said frame and movable between a position of engagement with said toothed sprocket thereby inhibiting withdrawal of said webbing to a position of disengagement with said toothed sprocket thereby permitting withdrawal of said webbing,

an inertia sensitive actuator acting upon said locking bar in response to a deceleration level above a predetermined threshold,

an actuator cam rotatable with said sprocket, said actuator cam defining a plurality of teeth extending generally radially with respect to the axis of rotation of said sprocket,

an actuator lever having a pair of arms, a first arm engageable with said locking bar and a second arm engageable with said actuator cam teeth, and

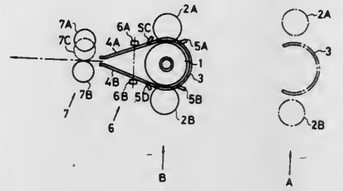
means for moving said actuator lever between a position wherein said second arm is disengaged with said cam teeth causing said first arm to be disengaged from said locking bar whereby said retractor functions as an emergency locking retractor, to a position wherein said second arm is engaged with said cam teeth, said cam teeth acting on said second arm, causing said first arm to engage with said locking bar and urge said locking bar into engagement with said toothed sprocket when said webbing is withdrawn whereby said retractor functions as an automatic locking retractor.

4,555,076

FILM HANDLING DEVICE

Kaoru Uchiyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 10, 1984, Ser. No. 629,399
Claims priority, application Japan, Jul. 11, 1983, 58-126323
Int. Cl.⁴ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—195 **4 Claims**



1. In a film handling device which comprises rotatable holding means for receiving and holding a film removed from a film cartridge thereof, guide members for guiding said film while being forwarded, and air flow supplying means for urging said film in a film forwarding direction to forward said film beginning at a front end portion thereof, the improvement wherein: said holding means is made rotatable in both a film winding and said film forwarding directions, and film retaining means movable into and out of engagement with said film held by said holding means and detecting means for detecting when a chance for forwarding said film held by said holding means occurs said holding means turning in said film winding direction when said film is retained by said film retaining means and turning in said film forwarding direction when said detecting means detects said front end portion of said film.

4,555,077

TAPE CARTRIDGE

Sanford Platter, Boulder; Charles A. Durand, Aurora, and Larry R. Gadsby, Littleton, all of Colo., assignors to Electronic Processors, Inc., Englewood, Colo.

Filed Nov. 25, 1983, Ser. No. 554,929
Int. Cl.⁴ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—198 **2 Claims**

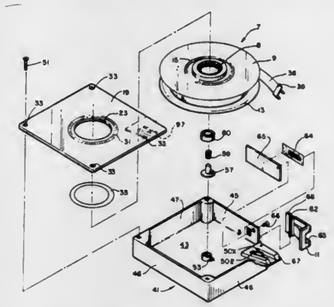
1. A single reel magnetic tape system including in combination:

a cartridge, said cartridge having at least a first and second opposed base, side walls connected between said bases and defining an opening, and a door, said door being mounted at said opening defined by said side walls in a manner which allows it to close said opening or to be swung away from said opening;

a reel, said reel having a first and second spaced apart flange connected by a circular winding hub, one said flange carrying clutch means located on its external surface concentric to said hub;

a floating shaft mounted on one of said cartridge bases to support said reel for rotation of said reel around said shaft;

substantially circular clutch means on said other base said circular clutch means located in stacked registration with said clutch means carried by said reel flange; and



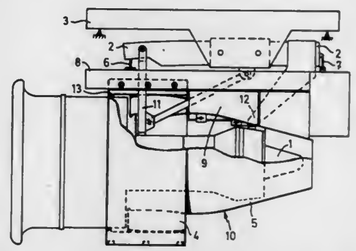
means for biasing said clutch means carried by said reel flange and by said base into engagement with one another to prevent rotation of said reel within said cartridge.

4,555,078

APPARATUS FOR THE SUSPENSION OF AN AIRCRAFT ENGINE COWLING

Léon L. Grognard, Wezembeek-Oppem., Belgium, assignor to Société Belge d'Exploitation de la Navigation Aérienne (SABENA), Brussels, Belgium

Filed Dec. 27, 1983, Ser. No. 565,581
Int. Cl.⁴ B64D *27/00*
U.S. Cl. 244—54 **10 Claims**



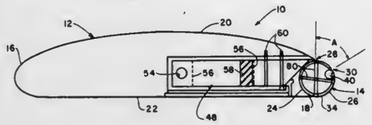
1. An apparatus for the suspension of an aircraft turbo-fan engine cowling to a supporting structure, said cowling including a fan duct and a core cowl, the apparatus comprising a flexmount member to be attached to the supporting structure and a pylon, said pylon including an upper pylon element suspended to the flexmount member and a lower pylon element, the lower pylon element having attachment means; a suspension device arranged in the upper pylon element and having first hook means arranged to cooperate with said attachment means on the lower pylon element, and second hook means for suspension of the fan duct, said suspension device having a first operating state in which said first hook means are coupled with said attachment means on the lower pylon element thereby to suspend the lower pylon element to the upper pylon element and a second operating state in which said first and second hook means are disengaged from the corresponding attachment means; locking means arranged when it is operated, to lock the lower pylon element to the core cowl; and drive means to actuate the suspension device and the locking means from one operating position to the other.

4,555,079

MULTIPLE JET BLOWING AROUND THE BLUNT TRAILING EDGE OF A CIRCULATION CONTROLLED AIRFOIL

John K. Harvell, Huber Heights, and Milton E. Franke, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 28, 1983, Ser. No. 566,753
Int. Cl.[4] B64C *21/04*
U.S. Cl. 244—207 **5 Claims**



1. In a circulation controlled airfoil including a body structure and an elongated cylindrical member, said body structure having leading and trailing ends with an upper suction surface and a lower pressure surface extending between said ends, said cylindrical member being disposed along said trailing end of said body structure between said upper and lower surfaces thereof and having an outer cylindrical surface which provides a rounded, blunt trailing edge surface, the improvement which comprises:

a. said outer surface of said cylindrical member and said trailing end of said body structure adjacent said upper surface defining a first elongated blowing jet slot;

b. said cylindrical member including a tubular wall having a second elongated blowing jet slot defined therein; and

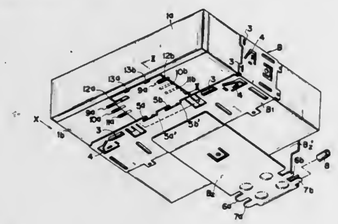
c. said cylindrical member being rotatable relative to said trailing end of said body structure whereby the distance between said first and second jet slots is selectable to optimize lift generation for said airfoil at a predetermined flight condition.

4,555,080

AUTO DEVICE MOUNTING STRUCTURE

Hirotoshi Nara, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,589
Claims priority, application Japan, Apr. 28, 1983, 58-63134
Int. Cl.[3] G12B *9/00*
U.S. Cl. 248—27.1 **7 Claims**



1. An auto device mounting structure for mounting an auto device in position in a car, comprising:

bracket means having a caliber corresponding to the outer dimension of said auto device;

a plurality of grooves formed in an outer case of said auto device, said grooves being elongated in a direction transverse to a direction of insertion of said auto device into said bracket means and said grooves being spaced in said direction of insertion;

at least one cut formed in said bracket means; and

a slide plate having at least one engagement claw engageable with any selected one of said grooves and having at least one fixture claw engageable with said cut;

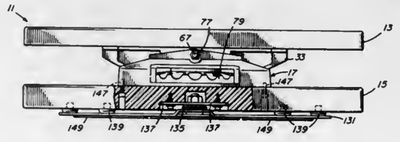
wherein said bracket means includes a sleeve-shaped bracket member and a rear frame which is connected to and extends coplanarly and rearwardly from said bracket member, said rear frame terminating at an end plate and having one or more tongues thereon which are frontwardly spaced from said end plate and can contact a back face of said auto device when bent vertically.

4,555,081

TILTABLE AND SWIVABLE MOUNTING ASSEMBLY FOR A VIDEO DISPLAY TERMINAL

Albert G. Ermanski, Auburn, Mass., assignor to Wright Line, Inc., Worcester, Mass.

Filed Oct. 19, 1982, Ser. No. 435,571
Int. Cl.[4] F16M *11/12*
U.S. Cl. 248—183 **17 Claims**



15. A tiltable mounting assembly comprising:

a. a top member,

b. a base assembly,

c. an intermediate assembly disposed between said top member and said base assembly,

d. said intermediate assembly including:

i. a bridge housing,

ii. a first rocker seated on said bridge housing for rocking movement relative to said bridge housing and fixedly attached to said top member, and

iii. a second rocker seated on said bridge housing for rocking movement relative to said bridge housing and fixedly attached to said top member, and

e. means for rocking said first rocker relative to the bridge housing whereby said rocking will cause tilting movement of said top member relative to said base assembly, said means for rocking comprising a lever arm coupled to said first rocker and to said bridge housing, and rotatable means including a thumbwheel coupled to said lever arm and adapted and configured so that rotation thereof will cause a movement of said lever arm and thereby rocking of said first rocker.

4,555,082

SHELF ASSEMBLY AND A SUPPORT BRACKET FOR USE THEREIN

Michael C. Sack, 400 E. 71st St., Apt. 5E, New York, N.Y. 10021; Donald E. Henson, Dearborn Heights, and Russell M. Sack, Sterling Heights, both of Mich., assignors to Michael C. Sack, New York, N.Y.

Filed May 21, 1984, Ser. No. 612,476
Int. Cl.[4] A47B *5/00*
U.S. Cl. 248—220.1 **13 Claims**

1. An integrally molded plastic corner shelf support bracket consisting essentially of:

(a) a left wing having at least one means for connection to a first wall;

(b) a right wing having at least one means for connection to a second wall;

(c) a hinge portion integrally connecting the left and right wings together and permitting relative flexing movement of said wings in a plane extending therebetween;

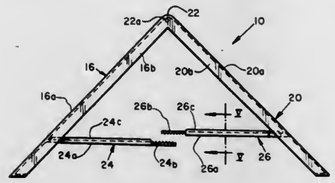
(d) a left cross brace member

(i) integrally connected to the left wing and extending therefrom toward the right wing and flexibly moveable in the plane extending between the wings, and

(ii) including a first serrated section having a plurality of triangular shaped teeth; and

(e) a right cross brace member

(i) integrally connected to the right wing and extending therefrom toward the left wing and also flexibly moveable in the plane extending between the wings, and



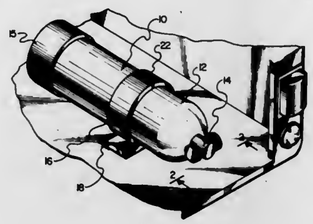
(ii) including a second serrated section having a plurality of triangular shaped teeth overlapping the first serrated section whereby the cross brace members may be flexed in said plane to force the left and right wings into pressure engagement with the first and second walls, and the serrated sections may be pressed together in cooperative engaging relationship to hold the wings temporarily in the pressure engagement position.

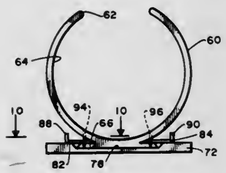
4,555,083

SCUBA TANK POSITIONER

Frank D. Carter, 23 N. Ellis Pl., Newbury Park, Calif. 91320

Continuation-in-part of Ser. No. 445,159, Nov. 29, 1982, abandoned. This application Jun. 21, 1984, Ser. No. 622,981
Int. Cl.[4] B60P *7/12*; A47G *23/02*
U.S. Cl. 248—313 **4 Claims**





1. In combination with a scuba tank, said scuba tank having a substantially cylindrical wall, a scuba tank positioner for preventing rolling movement of said scuba tank, said positioner comprising:

a ring shaped band formed of a rigid material defining an interior area, said ring shaped band including expanding means for varying the size of said interior area, said expanding means comprising a slit formed within said band extending the entire width through said band;

a substantially planar supporting plate, said plate being constructed of sheet material, said plate having a length and a width, said band being attached by connecting means to said plate, said connecting means comprising a dovetail slot assembly, said band being removable and separable from said plate; and

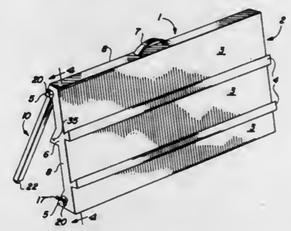
a latching assembly mounted on said plate, said latching assembly comprising at least one latching member, said latching member being pivotally movable on said plate between a latching position and an unlatching position, said band including a pin, said latching member to engage with said pin when in said latching position to thereby fixedly secure said band to said plate.

4,555,084

BINGO CARD SUPPORT

Clifford E. Anderson, 1610 Alabama St.; Clarence E. Simon, 3606 Dick Taylor St., both of Monroe, La. 71202, and Phillip E. Barnes, 104 High Cir., West Monroe, La. 71291

Filed Mar. 2, 1984, Ser. No. 585,922
Int. Cl.[4] A47G *1/24*; A47B *97/08, 85/06*; A63F *3/06*
U.S. Cl. 248—460 **10 Claims**



1. A bingo card support comprising:

(a) a substantially flat frame surface, a border extending aroung the periphery of said frame surface and leg flanges extending from said border;

(b) at least four legs adjustably and removably carried by said leg flanges in spaced relationship;

(c) three slots provided in spaced relationship in said frame surface;

(d) spring biased boards carried by said slots in said frame surface; and

(e) spring means in association with said spring biased boards, whereby said spring biased boards are normally biased against said frame surface.

5. A Bingo card support comprising:

(a) a support frame having a substantially flat frame surface and a border extending around the periphery of said frame surface;

(b) at least four leg flanges extending from said border in spaced relationship and four primary legs adjustably carried by said leg flanges;

(c) a pair of dovetail strips attached to said frame surface in spaced relationship; and

(d) a top guide carried by each of said leg flanges, a middle guide carried by each of said leg flanges in spaced relationship with respect to said top guide and a bottom guide carried by each of said leg flanges in spaced relationship with respect to said middle guide, whereby said legs are selectively positioned between said top guide and said middle guide and between said middle guide and said bottom guide, respectively.

4,555,085

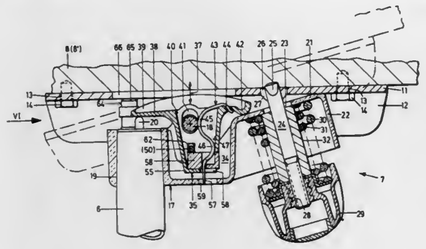
LOCKABLE TILTING APPARATUS FOR CHAIR SEATS

Fritz Bauer, Schulzstrasse14, D-8503 Altdorf; Hans-Peter Bauer, Altdorf, and Hans Jürgen Bauer, Altdorf-Röthenbach, all of Fed. Rep. of Germany, assignors to Fritz Bauer and Söhne oHG, both of Altdorf, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,190

Int. Cl.⁴ F16M *13/00*

U.S. Cl. 248—561 **20 Claims**



1. A lockable tilting apparatus for the seats of chairs, said apparatus comprising a base plate securable to a chair seat, said tilting apparatus comprising a stationary body member adapted to be supported by the pedestal of the chair, spring means supported by said stationary body member, means supported by said stationary body member mounting said base plate for tilting pivotal movement relative to said stationary body member, link means engaging and movable with said base plate against the restoring force of said spring means whereby said base plate is tiltably movable relative to said body member against the restoring force of said spring means; and wherein a locking appratus which is actuatable by displacement of an operating lever between two terminal positions is provided for selectively locking the base plate against tilting movement or for releasing the base plate for tilting movement, characterized by a slide member mounted in said body member for sliding movement relative to said base plate, said slide member being selectively movable between said two terminal positions, said slide member having receptacle means, said operating lever engaging said receptacle means, and defining means for selectively moving said slide member between said two terminal positions, said receptacle means being accessible for engagement by said operating lever from either of two laterally opposite sides of said body member,

said body member being operatively connected to the body of said chair via a longitudinally adjustable gas spring, said operating lever being pivotably disposed in said body member for operating said longitudinally adjustable gas spring, and said slide member being displaceable by means of axial displacement of said operating lever.

4,555,086

PLASTIC MOLDING APPARATUS

Tsutomu Kiyotomo, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 10, 1984, Ser. No. 569,602

Claims priority, application Japan, Jan. 13, 1983, 58-3823

Int. Cl.⁴ B29C *1/00, 7/00;* **B29D** *3/00;* **B29F** *1/14*

U.S. Cl. 249—67 **7 Claims**

1. A plastic molding apparatus for molding semiconductor elements on a frame, comprising:

upper and lower heater plates symmetrically disposed about said frame, said lower heater plate having a plurality of apertures extending substantially perpendicular to said frame;

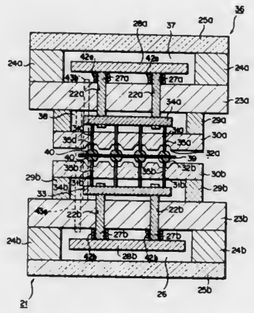
upper and lower molds mounted between said heater plates for movement therewith, said lower mold having bores and molding cavities, said bores being connected individually to each of said mold cavities;

first spacer means for rigidly connecting said upper heater plate to said upper mold;

second spacer means for rigidly connecting said lower heater plate to said lower mold;

lower support rods extending through and being individually slidable within said apertures of said lower heater plate;

a first lower ejector plate connected at one end of said rods and being movable therewith;



a second lower ejector plate detachably connected at an opposite end of said rods and being movable witih said first lower ejector plate;

lower ejector pins mounted on said second lower ejector plate and extending individually through each of said bores, said lower ejector pins and said lower support rods being movable together with said lower ejector plates; and

means for movably positioning said second lower ejector plate toward said heater plate.

4,555,087

SPLIT MOLD FOR MULTI-COMPONENT PLASTICS, ESPECIALLY POLYURETHANES

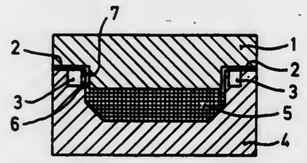
Josef Wallner, Holzkirchen, and Manfred Kelterbaum, Strasslach, both of Fed. Rep. of Germany, assignors to Elastogran Maschinenbau GmbH, Strasslach, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,713

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310677

Int. Cl.⁴ B29C *1/00;* **B29G** *1/00*

U.S. Cl. 249—78 **4 Claims**



1. In a split mold for multi-component plastics, especialy polyurethanes which react within the mold and which reaction may be accelerated by the application of heat, the mold having venting channels, the improvement comprising: heating means located only immediately adjacent some or all of the said channels said heating means briefly heating said channels to a sufficiently high temperature to accelerate reaction of said plastics whereby to prevent entry of said plastics into said channels.

4,555,088

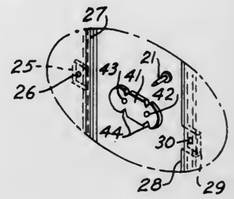
ARCHITECTURAL CONSTRUCTION AND EQUIPMENT FOR CONCRETE

Shih-Chieh Chang, 29-10, Ta-Pun Rd., Taichung, Taiwan

Division of Ser. No. 530,606, Sep. 9, 1983, abandoned. This application Sep. 24, 1984, Ser. No. 653,487

Int. Cl.⁴ B28B *7/28*

U.S. Cl. 249—192 **3 Claims**



1. A reusable panel system for making concrete form structures comprising at least two adjacent panels, each of said panels having a facing for shaping the concrete material thereagainst and a one-piece extruded rib on two opposite side edges of the panel joined with said facing, one of the two ribs having a tongue projecting toward the adjacent panel and extending substantially the full length of the rib, the other rib having a groove therein extending substantially the full length of said other rib and extending into said rib from the direction of the adjacent panel whereby the tongue of one panel extends into the groove of the second panel when said panels are positioned adjacent and abutting each other, said tongues and said grooves each having at least two recesses extending thereinto in the plane of the panels and into said ribs, a connector for each pair of adjoining recesses in said ribs inserted into said panel recesses, each panel and each end of each connector having holes in alignment for reception of a pin in said aligned holes for maintaining said connectors in said recesses and for maintaining adjacent panels connected to each other.

4,555,089

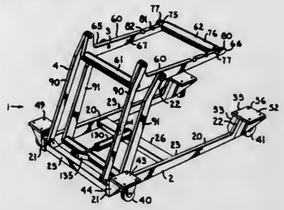
WHEEL LIFT DEVICE

Leonard F. Eck, McPherson, Kans., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Mar. 12, 1984, Ser. No. 588,390

Int. Cl.⁴ B60P *1/48*

U.S. Cl. 254—10 B **5 Claims**



1. A wheel lift device for raising and lowering a vehicle by engagement with a vehicle wheel, said vehicle wheel having an outer rolling surface and opposite generally parallel sidewalls; said device comprising:

(a) a lower support frame having an open end and two substantially parallel support members;

(i) said support members laterally spaced and having a cross-member extending therebetween;

(ii) said lower support frame being movable and adapted to approach said wheel and receive a portion of said wheel therein with said support members extending on opposite sides of said wheel and generally parallel to the sidewalls of said wheel and with a portion of said rolling surface received within said open end;

(b) casters mounted on said lower support frame for movement of said wheel lift device over a floor surface;

(c) an upper generally rectangular carriage movable generally above said support frame;

(d) a lifting mechanism including support means extending between said support frame and said carriage;

(i) said support means including a first pair of links and a second pair of links;

(ii) said first and second pair of links pivotally connected to and extending between said support frame and said carriage;

(iii) said first and second pair of links forming a substantially parallelogram structure and maintaining said carriage substantially parallel to said support frame during said raising and lowering;

(e) longitudinal force means for selectively actuating raising and lowering of said carriage relative to said support frame;

(f) said rectangular carriage having two substantially parallel legs forming two sides thereof and laterally spaced for extending on opposite sides of said wheel and generally parallel to said sidewalls of said wheel when said wheel lift device is in use; said carriage having arm members extending between said legs, said arm members forming two opposing generally parallel sides of said rectangular carriage;

(i) said carriage engageable with said wheel outer rolling surface to cradle said wheel between said arm members and lift said vehicle;

(ii) said arm members including elongate rollers upon which said wheel rolling surface is supported during lifting of said vehicle;

(iii) said arm members being first and second arm members;

(g) gate means including said second arm member;

(i) said gate means permitting said carriage to approach said wheel while said vehicle is standing on said floor with a portion of said rolling surface entering said carriage and with said carriage legs straddling said wheel and extending on opposite sides thereof and generally parallel to said wheel sidewalls;

(ii) said gate means being closable to reform said generally rectangular carriage.

4,555,090

FENCE POST DRIVING AND PULLING APPARATUS

Wil W. Averhoff, Rte. 2, Box 309, Hwy. 171, South, Hubbard, Tex. 76648

Filed Sep. 23, 1983, Ser. No. 535,322

Int. Cl.⁴ E21B *9/00*

U.S. Cl. 254—29 R **9 Claims**

1. A device connectable to a vehicle for driving a fence post comprising:

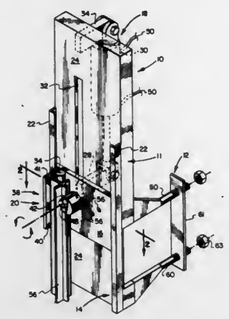
a frame;

a track formed on said frame by an I-beam having a web and flanges, said web having a vertical slot therein;

means for mounting said frame to said vehicle;

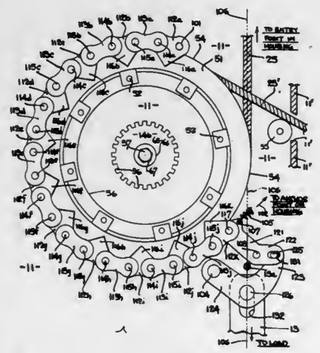
a substantially planar slide mounted adjacent said web of the track and slidably engaged on either side by the flanges of said track;

a traveling cylinder mount projecting from said traveling slide and passing through said slot;
a fixed cylinder mount connected to said frame;



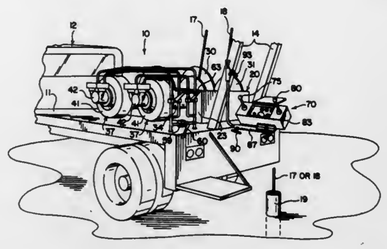
a hydraulic cylinder connected to said frame; and
means for selectively securing said fence post to said traveling slide.

4,555,091
EFFICIENT LIGHTWEIGHT HOIST WITH MULTIPLE-CABLE-SIZE TRACTION AND SAFETY SYSTEMS
Marvin M. May; Robert C. Billings, both of Los Angeles; Harry A. Kendall, Granada Hills, and Jeffrey T. Bayorgeon, Walnut, all of Calif., assignors to Power Climber, Inc., Los Angeles, Calif.
Filed Jun. 23, 1983, Ser. No. 508,074
Int. Cl.[4] B66D *5/18, 5/20*; F16H *1/28*
U.S. Cl. 254—267 **10 Claims**



1. An efficient, lightweight power transmission system for a hoist that is particularly adapted for raising and lowering cable-suspended scaffolds and the like and that has a housing, such housing comprising two generally parallel walls each having defined in it an aperture to snugly receive one respective section of an output drive shaft of the transmission system; said system comprising:
a speed-reducing power transmission mechanism having:
a transmission-mechanism case that has two sides disposed between such two walls of the housing,
an input drive shaft rotatably mounted in the transmission-mechanism case,
mechanical means, within the case, connected to receive torque from the input drive shaft and to produce torque with an increased mechanical advantage and reduced speed,
an output drive shaft, connected to receive said torque with increased mechanical advantage and reduced speed from the said mechanical means, and which when driven rotates relative to the case,
the output drive shaft being secured to such hoist housing so that in use the case rotates relative to such hoist housing, and the output drive shaft being effectively split in two sections, one extending axially outward from the transmission-mechanism case at each side thereof, and
only one of the two output-drive-shaft sections being secured against rotation relative to the corresponding housing wall;
drive means, mounted to such housing, for applying torque to the input drive shaft of the transmission mechanism; and
a cable-driving sheave secured to and rotated by the case of the transmission mechanism.

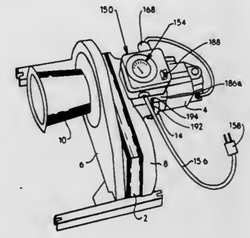
4,555,092
SYSTEM FOR OPERATION OF A DIRECT DRIVE DUAL DRUM WINCH
Mark Overholt, 6867 Wooster Pike, Medina, Ohio 44256
Filed May 27, 1983, Ser. No. 498,787
Int. Cl.[4] B66D *1/08*
U.S. Cl. 254—291 **5 Claims**



1. A system for operation and use of a dual drum line and cable winch mounted for use as a mobile well tending rig, each said drum being driven by a direct connected hydraulically powered motor, said system comprising:
a variable displacement, axial piston, reversing swashplate hydraulic pump unit powered by an engine;
a first actuator for controlling the horse power transmitted from said engine to said pump unit;
a second actuator for controlling the tilt angle and tilt direction of the swashplate in said pump unit;
dual fluid supply or exhaust piping running from said pump unit toward said dual drum drive motors;
a network of piping, with two pairs of open or closed fluid control valves, communicating with said dual fluid supply or exhaust piping, said network having two pairs of pipes, each said pipe pair connecting both of said fluid supply and exhaust pipes to one of said drum drive motors through one pair of said open or closed fluid control valves;
two-position control means for actuating all of said open or closed network control valves in unison so that as said pair of control valves in one said pipe pair are being opened, said pair of control valves in the other said pipe pair are being closed, or vice versa;
said dual fluid supply or exhaust piping being cross-connected through a lateral pipe section before reaching said two network pairs of pipes, said lateral pipe section having an open or closed fluid control valve, there also being a two-position control means for opening or closing said lateral pipe section control valve;
a first remote control means for said first actuator and a second remote control means for said second actuator;

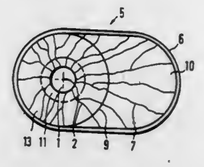
whereby, a user of said system can select either of said drum drive motors to be powered by movement of said two-position control means for all of said network control valves in unison, can also control the direction of rotation for the selected drum drive motor by said second remote control means, can also control the power output from the selected drum drive motor by said first remote control means, and can also free fall the drum connected to the selected drum drive motor by movement of said two-position control means for opening or closing said lateral pipe section control valve.

4,555,093
CABLE PULLING DEVICE WITH FORCE INDICATOR AND OVERLOAD PROTECTION
Jeffrey J. Plummer, Rockford, Ill., assignor to Ex-Cell-O Corporation, Troy, Mich.
Continuation of Ser. No. 435,172, Oct. 19, 1982, abandoned.
This application Aug. 21, 1984, Ser. No. 642,916
Int. Cl.[4] B66D *1/12, 3/16, 3/20*
U.S. Cl. 254—362 **2 Claims**



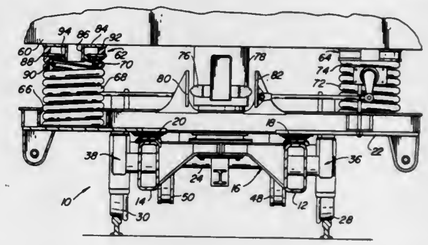
1. A cable pulling device comprising a support frame, a capstan means rotatably mounted on the support frame, driving means for rotating the capstan means to exert a cable pulling force, said driving means including an electric motor means mounted on the support frame and a control unit connected in the hot line to the electric motor means for monitoring the cable pulling force and interrupting power to the electric motor when cable pulling force approaches an overload level where damage could occur to the cable pulling device, said control unit including a control box, an ammeter means on the control box calibrated to visually display cable pulling force in response to a given amperage drawn by said motor, circuit breaker means on the control box for automatically interrupting power to said motor when overload is approached and on-off switch means on the control box for manually interrupting power to said motor means and for resetting said circuit breaker means in the event it is actuated by overloading pulling forces, and a pair of spaced apart flanges on the control box spaced sufficiently to supportingly straddle the electric motor means including chain means having one end fixedly connected to one flange and another end removably connected to the other flange with the chain means extending around the electric motor between said flanges for releasably and rotatably mounting the control box on the electric motor means so that an operator can detach and move the control box for monitoring and controlling the cable pulling device close to the operator when said operator is remote from the cable pulling device and so that the operator can adjust viewing angle of said control unit when it is mounted on the cable pulling device.

4,555,094
PROCESS FOR THE REPAIR OF SLIDE PLATES
Egon Evertz, Vorlander Strasse, 5650 Solingen, and Jorg Pirdzun, Mulheim, both of Fed. Rep. of Germany, assignors to Egon Evertz, Solingen, Fed. Rep. of Germany
Filed Jan. 11, 1984, Ser. No. 569,854
Int. Cl.[4] C21C *5/46*
U.S. Cl. 266—45 **10 Claims**



1. A method for repairing lower and upper slide plates of closures in metallurgical containers, in particular in casting ladles and intermediate containers for continuous casting, the slide plate able to release a stream of liquid metal by means of a passage opening or interrupting it by means of a closed section, according to its position, and undergoing damage, in particular erosion and radial cracks, originating at its passage opening, in which method a bore is made in the area of the opening of the slide plate concentrically with respect to its passage opening, and when the passage opening is released, a refractory casting mass is poured directly without intervening materials into the bore and is solidified therein, wherein the bore, which is concentric with respect to the passage opening, as far as the edge of the rim of the slide plate, and wherein the grain sizes of the solid bodies of the refractory casting mass are predominantly smaller than the average cross-sectional pore sizes of the retained refractory material of the slide plate.

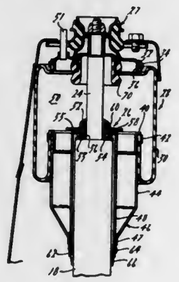
4,555,095
ISOLATOR FOR A SPRING IN A RAILWAY CAR
William W. Dickhart, III, Ft. Washington, Pa.; Dante J. Graziani, Jr., W. Berlin, N.J.; James M. Herring, Jr., Merion Station; Michael J. Pavlick, Norristown, both of Pa., and Edward J. Renn, Churchville, Pa., assignors to The Budd Company, Troy, Mich.
Filed Mar. 12, 1984, Ser. No. 588,617
Int. Cl.[4] F16F *1/12*
U.S. Cl. 267—4 **5 Claims**



1. In combination with a vertical mechanical spring mounted to a railway truck for supporting a car body,
mounting means disposed on one end of said spring comprising:
(a) top and bottom plates spaced to receive an elastomeric ring therebetween;
(b) spaced cylindrical pieces attached to said top and bottom plates to receive an elastomeric ring therebetween;

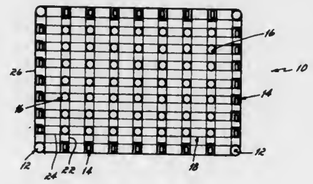
(c) said cylindrical pieces with said second elastomeric ring extending into said vertical mechanical spring;
(d) a first elastomeric ring connected between said top and bottom plates to provide vertical compliance between said spring and said car body; and
(e) a second elastomeric ring connected between said spaced cylindrical pieces to provide lateral compliance between said spring and said car body.

4,555,096
PNEUMATIC SPRING AND STRUT ASSEMBLY
Marc I. Pryor, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 208,765, Nov. 20, 1980, abandoned. This application Nov. 18, 1983, Ser. No. 553,412
Int. Cl.⁴ F16F *9/04*
U.S. Cl. 267—8 R **6 Claims**



1. A hydraulic suspension strut for a motor vehicle having sprung and unsprung telescopically related hydraulic shock absorber components,
said sprung shock absorber component being constructed to be connected to a sprung vehicle structure;
said unsprung shock absorber component being constructed to be connected to a support structure for supporting a steerable road wheel that is adapted to be angularly displaceable about a generally verticle steering axis;
said unsprung shock absorber component being angularly displaceable relative to said sprung shock absorber component about the longitudinal axis of said components to accommodate angular displacement of said road wheel about said steering axis;
a pneumatic spring constructed to be operatively interposed between said sprung vehicle structure and said unsprung shock absorber component whereby a portion of the mass of said sprung vehicle structure is resiliently supported on said unsprung shock absorber component;
said pneumatic spring comprising a flexible annular member that is folded over upon itself to thereby define a rolling lobe portion between its ends;
said flexible annular member being generally concentrically arranged with respect to said shock absorber components and having one of its ends nonrotatably fixed relative to said sprung shock absorber component;
elongated annular means surrounding said unsprung shock absorber component;
bearing means rotatably securing the upper end of said annular means to said unsprung shock absorber components;
said flexible annular member having its other end secured to said elongated annular means with said rolling lobe portion being supported on said elongated annular means;
said bearing means being constructed to transfer the load of said portion of the mass of said sprung vehicle structure from said pneumatic spring to said unsprung shock absorber component;
said bearing means being further constructed to prevent the imposing of a torsional load on said flexible annular member in the event said unsprung shock absorber component is angularly displaced relative to said sprung shock absorber component.

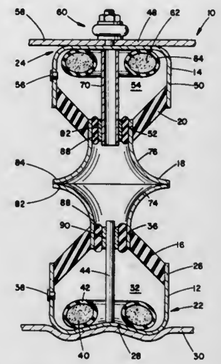
4,555,097
COMBINATION ROUND COIL SPRING AND RECTANGULAR TORSION COIL SPRING ASSEMBLY
Sidney A. Hiatt, Carthage, Mo., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed May 16, 1983, Ser. No. 494,713
Int. Cl.⁴ A47C *23/02*; F16F *1/08*
U.S. Cl. 267—100 **9 Claims**



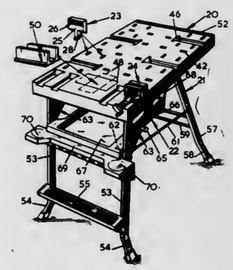
7. A bedding spring assembly comprising,
a rectangular wire grid formed of a rectangular border wire and two series of parallel grid wires extending between the border wire, said two series of wires being located in a common top plane of said spring assembly and intersecting one another,
a first and second series of coil springs, each of said coil springs of both said first and second series of coil springs having a top convolution connected to said wire grid,
each of said coil springs having a coil shaped body section, the coil shaped body section of said first series being generally round so as to form compression coil springs and the coil shaped body section of said second series being generally rectangular and formed by a succession of straight lengths of wire bent at right angles to the adjacent straight lengths to form rectangular torsion bar coil springs,
said first and second series of compression and torsion bar coil spring cooperating to form a compressible spring assembly having substantial resistance to side-sway of the wire grid top surface of said spring assembly,
said coil springs being arranged in lateral and longitudinal spring rows, and
all of said rectangular torsion bar coil springs being located at the end of either a lateral or a longitudinal spring.

4,555,098
SELF-STABILIZING DRY VISCOUS SPRING DAMPER
Emile M. Shtarkman, Cleveland, Ohio, assignor to Imperial Clevite Inc., Glenview, Ill.
Filed Nov. 25, 1983, Ser. No. 554,906
Int. Cl.⁴ F16F *5/00*
U.S. Cl. 267—140.1 **10 Claims**

1. A viscous spring damper for damping and leveling structural agitation which is resistant to nonaxial deformation comprising:
a first outer housing and a second outer housing;
an elastomeric shear spring associating said first outer housing with said second outer housing;
a selectively pressurizable gas chamber and a subchamber within said gas chamber contained within at least one of said first and second housings; and,
a rigid structural member in which one end is mounted in one of said housings and said other end is received in a bearing which is mounted to the other housing by an elastomeric bushing whereby said bushing and said structural member allow and control nonaxial deformation within said damper.

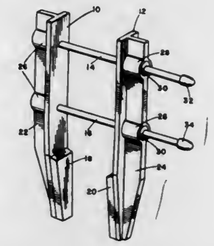


4,555,099
WORKBENCHES
Allan R. Hilton, Bolton, England, assignor to Hilton (Products) Limited, Bolton, England
Filed Jun. 17, 1983, Ser. No. 505,204
Int. Cl.⁴ B23Q *3/02*
U.S. Cl. 269—88 **8 Claims**



1. A workbench comprising:
a worktop of unitary construction formed with parallel rows of spaced elongate locating apertures and at least one elongate recess extending inboard from an edge of the worktop, the recess having its long axis parallel with a locating aperture row and terminating in an elongate slot normal to the recess, the slot being defined by a wall downwardly inclined towards the worktop edge and presenting spaced lateral faces and
a vice comprising
a fixed vice jaw having a depending flat hook-like formation adapted to engage in a selected locating aperture non-rotatably to position the fixed vice jaw on the worktop and
a movable vice jaw separate from the fixed vice jaw comprising
an elongate body adapted to be located in a selected elongate recess aligned with a locating aperture selected to receive the fixed vice jaw and having two ends, the elongate body having a depending formation at one end which engages in the elongate slot of the elongate recess and which has lateral inclined extensions which bear against the spaced lateral faces of the slot wall;
a screw arrangement rotatably supported by the elongate body; and
a gripping jaw proper slidably supported on the elongate body and coupled to the screw arrangement whereby rotation of the latter causes the sliding movement of the gripping jaw proper.

4,555,100
FRICTION LOCKING HAND CLAMP
Joseph R. Ditto, 3440 Helix St., Spring Valley, Calif. 92077
Continuation of Ser. No. 385,929, Jun. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 266,664, May 26, 1981, abandoned. This application Feb. 24, 1984, Ser. No. 583,319
Int. Cl.⁴ B25B *1/02*
U.S. Cl. 269—166 **6 Claims**



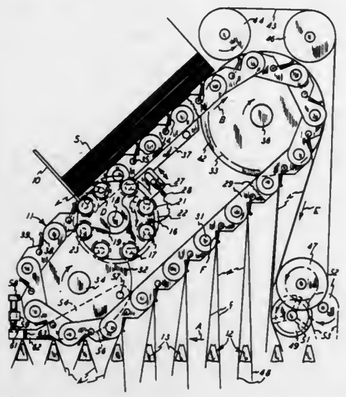
1. A friction locking hand clamp for objects, comprising:
a plastic base member,
a plastic arm member,
a pair of rigid rods,
said base member and said arm member having substantially identical elongated planar confronting surfaces, said confronting surfaces having correspondingly positioned holes therethrough for receiving said rods, and object clamping portions extending beyond the holes;
said object clamping portions being inclined toward one another;
reinforcing means for providing strength and rigidity to said base member and said arm member confronting surfaces;
said base member reinforcing means including means in cooperative relationship with said base member holes for securing the first ends of said rods in said base member in a parallel spaced relationship;
said arm member reinforcing means including bearing means in cooperative relationship with said arm member holes for permitting slidable movement of said arm member on said rods and rotation of said arm member on said rods equal to the combined angular inclination of said clamping portions toward one another;
means mountable on the second ends of said rods for preventing the removal of said arm member from said rods and protecting the hand of the clamp user from injury by said rod ends,
said preventor and protection means being in cooperative operational relationship with said arm member bearing means to permit maximum opening of the clamp, and
means for increasing the frictional characteristics of said base member and said arm member.

4,555,101

METHOD AND APPARATUS FOR SEPARATING SIGNATURES FROM A STACK

Anton R. Stobb, deceased, late of Pittstown, N.J. (by Walter J. Stobb, executor), assignor to Stobb, Inc., Clinton, N.J.

Filed Mar. 13, 1984, Ser. No. 588,934
Int. Cl.[4] B65H *39/02*
U.S. Cl. 270—58 **16 Claims**



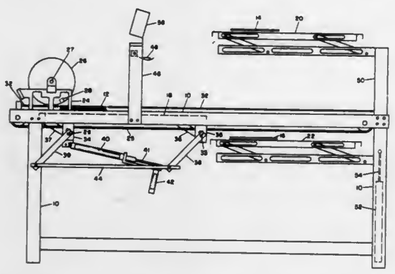
1. A method of collating signatures, comprising the steps of positioning a stack of folded signatures relative to a moving signature collector, said signatures having flaps extending in a plane in said stack, placing said signatures onto a pickup device in signature-movement communication with said stack and said collector, said pickup device moving completely along said flaps and supporting said stack while removing said signatures, singly removing said signatures from said stack with the free edges of said signatures opposite the folds being in a leading movement position, separately depositing the removed signatures onto said collector in spaced-apart locations along said collector while said collector is moving in a direction transverse to the direction of the folds in said signatures when said signatures are deposited onto said collector.

4,555,102

APPARATUS FOR SEPARATING STACKS OF CLOTH

Elbert Engle, Ashville, Ala., assignor to Chesebrough-Pond's, Inc., Greenwich, Conn.

Filed May 11, 1983, Ser. No. 492,721
Int. Cl.[4] B65H *5/22*
U.S. Cl. 271—4 **92 Claims**



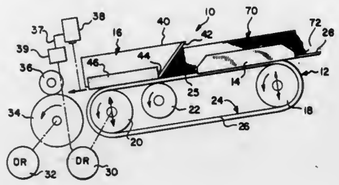
1. Apparatus for removing a single ply of fabric from a stack of fabric plies, comprising a fabric ply transport mechanism arranged for relative motion with respect to said stack and arranged to engage the top fabric ply of said stack and a fabric engaging mechanism mounted on and carried by said transport mechanism, said fabric engaging mechanism comprising an elongated rod mounted to said transport mechanism, and pivotable with respect thereto about a longitudinal axis, pins mounted to said rod and extending therefrom in a direction transverse to said axis, means interconnecting said rod and said transport mechanism for pivoting said rod said axis to rotate said pins from a first orientation substantially perpendicular to the top of said stack, when said transport mechanism engages the top of said stack, to a second orientation substantially parallel to the top of said stack, whereby said engaging mechanism engages the top fabric ply of said stack, said rod further including a plurality of openings, said openings facing said stack when said rod is in said second orientation, and wherein there are provided means for emitting a gas from said openings for a selected period following pivoting of said rod from said first to said second orientation.

4,555,103

BOTTOM LEVEL SHEET FEEDING APPARATUS

Bradley W. Larson, Garland, Tex., assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 529,455, Sep. 6, 1983. This application May 7, 1984, Ser. No. 607,851
Int. Cl.[4] B65H *3/04, 7/02, 3/56*
U.S. Cl. 271—35 **6 Claims**



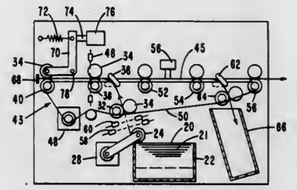
1. A bottom level sheet feeding apparatus comprising:
means for receiving a stack of paper sheets and having a floor for supporting a stack of sheets;
endless belt conveyor means including an upstream roller positioned beneath said receiving means, a downstream roller, an idler roller intermediate said upstream and downstream rollers, means for driving said rollers and belt means entrained about said rollers, said belt means having a coefficient of friction with paper greater than a coefficient of friction between sheets of paper and an upper run defined by said rollers and extending into said receiving means for conveying sheets therefrom;
lead surface means extending upwardly from said upper run and terminating above said idler roller to form a pinch point with said upper run which approximates a thickness of a sheet of paper;
retard strip means superposed to said upper run and said downstream roller downstream of said lead surface means and having an outer surface with a coefficient of friction with paper less than that of said conveyor means;
a pair of driven puller rolls located downstream of said retard strip means and said endless belt conveyor means and forming a nip positioned to receive a sheet conveyed from a downstream end of said conveyor means, said puller rolls being driven independently of said conveyor means;
means for selectively raising and lowering said upstream roller relative to said floor independently of said downstream roller so that an upstream end of said upper run may be raised into contact with a lowermost sheet in said receiving means to convey that sheet to said pinch point, or lowered to disengage sheets in said receiving means;
means for selectively raising and lowering said downstream roller independently of said upstream roller so that a downstream end of said upper run may be moved downwardly from said retard strip means such that a sheet therebetween is not conveyed thereby, or upwardly substantially against said retard strip means such that a sheet therebetween is held against said upper run and is conveyed thereby;
means for sensing a gap in sheets occurring between said downstream end of said conveyor means and said puller rolls; and
means responsive to said sensing means for stopping said roller driving means, thereby stopping said conveyor means, and actuating said downstream raising and lowering means to lower said upper run from said retard strip means to allow a sheet to be pulled from between said upper run and said retard strip means by said puller rollers when said sensing means not does detect a gap at a predetermined time interval.

4,555,104

OVERLAPPING DOCUMENT FEED APPARATUS

Osamu Fukuju, Yokohama; Yasuhiro Inagaki, Kanagawa, and Katsuji Minoshima, Oiso, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 24, 1984, Ser. No. 653,812
Claims priority, application Japan, Sep. 30, 1983, 58-180964
Int. Cl.[4] B65H *7/02*
U.S. Cl. 271—228 **11 Claims**



1. A document transport system for transporting documents from a stack of documents to a remote distribution station, comprising;
means for feeding a document from the stack along a feed path;
means positioned adjacent said feed path for generating a first control signal upon detecting a plurality of documents in an overlapped condition;
stop means positioned in said feed path;
oppositely positioned drive rollers positioned adjacent said feed path for driving the lead document of the overlapped document against the stop means;
means responsive to the generation of said first control signal for disabling one of said oppositely-positioned drive rollers enabling the other drive roller to move each of the remaining overlapped documents against the stop means superimposed on the lead document;
and means for feeding the superimposed documents from the stop means to a remote distribution station permitting removal of the documents from the system.

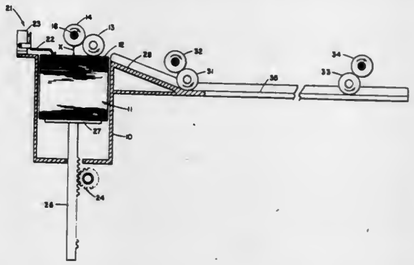
4,555,105

METHOD AND APPARATUS UTILIZING MAGNETICALLY COUPLED ROLLERS TO FEED SHEETS

Kenneth L. Wyatt, Oklahoma City, Okla., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,147
Int. Cl.[4] B65H *3/06, 5/06*
U.S. Cl. 271—264 **15 Claims**

1. An apparatus for feeding a sheet, which comprises:
a first magnetized drive roller;
a shaft for rotatably mounting the first roller with the nadir of its periphery at a predetermined distance from a sheet to be fed; and
a freely supported second roller constructed of paramagnetic material and interposed between the sheet and the first roller and in magnetic contact coupling with the first roller, said second roller having a diameter greater than said predetermined distance so that it rests on the sheet to be fed, magnitude of the magnetic coupling force between



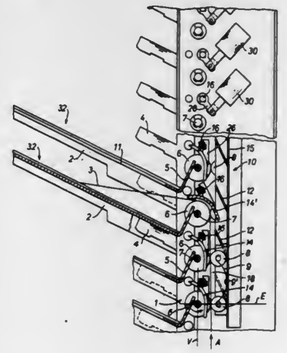
the rollers being selected to maintain driving contact therebetween during the feeding of the sheet by the second roller and to enable separation of the second roller away from the first roller in the presence of any object in the nip between said rollers.

4,555,106

APPARATUS FOR COLLATING SHEETS OF PAPER

Kurt Ruenzi, Kuesnachterstrasse 59, CH-8126 Zumikon, Switzerland

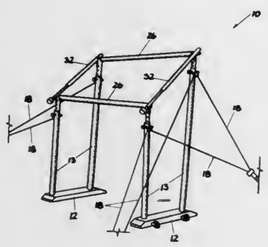
Filed Oct. 20, 1983, Ser. No. 543,984
Claims priority, application Switzerland, Oct. 27, 1982, 6266/82
Int. Cl.[4] B65H *29/58*
U.S. Cl. 271—297 **7 Claims**



1. An apparatus for collating sheets of paper, comprising frame means, sheet feeding channel means including sheet feeding roller means defining a vertically extending sheet feeding path in said frame means, a plurality of collating compartments held by said frame means in a vertical compartment stack, sheet deflecting means including guide flaps for each compartment and operatively arranged in said channel means above a respective sheet feeding roller means, operating means connected to said guide flaps for moving a respective guide flap into a passive position in which a sheet may pass the guide flap and into an active position in which a sheet is deflected into a respective collating compartment, support means in said frame means for holding each collating compartment at an upward slant so that a lower compartment end reaches into a position for cooperating with a respective one of said sheet feeding roller means and for cooperation with a respective

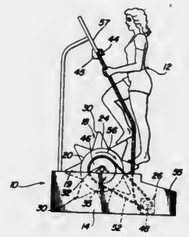
guide flap, said operating means for said guide flaps supporting said guide flaps above the respective sheet feeding roller means in such a manner that each guide flap reaches in its passive position into a space between adjacent feeding roller means and so that each guide flap extends on both sides of a horizontal plane passing through a rotational axis of the respective feeding roller means, each guide flap having a cross-sectional shape at least a portion of which is curved for deflecting a sheet into a respective compartment when the guide flap is in said active position, wherein said curved portion of each guide flap is arranged on one side of the respective flap for said deflecting, and wherein each guide flap comprises rear guide surface means on its back side for guiding a sheet along said sheet feeding channel means when the respective flap is in said passive position, wherein said rear guide surface means of each guide flap extend approximately in parallel to the longitudinal extension of said sheet feeding path when said guide flaps are in said passive position, said guide flaps (**14**) having on their upper rear part projections (**24**) carrying said rear guide surface means, wherein each of said collating compartments comprises a lower stop member (**5**) extending upwardly and reaching into a space between said sheet feeding roller means so that the upper ends of said guide flaps (**14**) reach over the respective stop member (**5**), wherein said curved portion of each guide flap is substantially circular and extends for about 90° and wherein each guide flap also comprises a flat portion extending substantially tangentially relative to said curved portion and away from a hinging axis of the respective guide flap, wherein said operating means comprise a square drive rod and means for releasably and flexibly securing said guide flaps to the respective square drive rod, and wherein said securing means comprise elastically yielding clamping elements for clamping the guide flaps to the respective square rod.

4,555,107
UNEVEN BARS
Lance M. Otto, 309 South Rd., Mile End, South Australia, Australia
Filed Sep. 12, 1983, Ser. No. 531,226
Claims priority, application Australia, Sep. 10, 1982, PF5842
Int. Cl.⁴ A63B *3/00*
U.S. Cl. 272—63 **6 Claims**



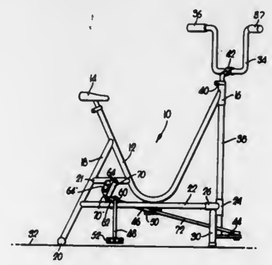
1. Gymnastic apparatus of the type known as "uneven or asymmetric" bars comprising support means, four uprights supported by said support means and arranged in a rectangular configuration, each upright having a slidable post extension extending upwardly therefrom so as to provide bar height adjustment means, and a pair of spaced longitudinally extending parallel working bars supported by the uprights, the ends of each working bar being coupled to respective mounting means carried by the upper free ends of said post extensions, characterised by:
a pair of link bars extending between respective laterally aligned pairs of said uprights, pivot attachment means pivotally connecting each end of each said link bar to a respective one of said post extensions in proximity to the axis of the corresponding one of said working bars, each link bar comprising length adjustment means operable to effect length adjustment of said link bar and in turn adjustment of the spacing or width between the working bars.

4,555,108
EXERCISING AND PHYSICAL-CONDITIONING APPARATUS
Frank G. Monteiro, 599 Marquette Cir., Costa Mesa, Calif. 92626
Filed Mar. 12, 1984, Ser. No. 588,804
Int. Cl.⁴ A63B *23/06*
U.S. Cl. 272—69 **7 Claims**



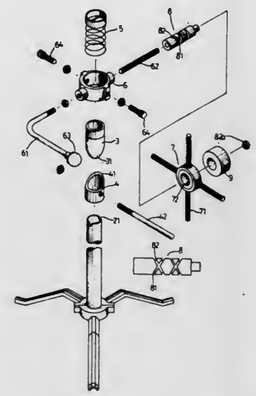
1. An exercising and physical-conditioning apparatus that provides a means for simulating the climbing of stairs, the apparatus comprising:
a base-support structure;
a rotatable stair means supported on said base-support structure for rotation about a horizontal axis;
a hydraulic-control means operably connected to said rotatable stair means, whereby the rotation thereof is selectively operable;
drive means interconnecting said rotatable stair means and said hydraulic-control means, said hydraulic-control means being activated by the rotation of said stair means, and the rotation of said stair means being provided by the treading action of the operator engaged thereon;
wherein said rotational stair means comprises:
a rotatable structural member having extending horizontal shaft members defining said horizontal axis thereof;
bearing means mounted to said base-support structure, and adapted to receive said shaft members for rotation therein; and
a plurality of step members fixedly secured to said rotatable structural member, and positioned to extend radially outward from said horizontal axis thereof.

4,555,109
EXERCISING MACHINE
Joseph C. Hartmann, 4030 N. Tracy, Kansas City, Mo. 64116
Filed Sep. 14, 1983, Ser. No. 532,223
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—73 **18 Claims**



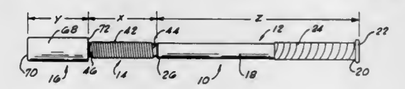
1. An exercising machine for permitting physical exertion and bodily movements comparable to the normal, human acts of walking, running or jogging for the sake of developing and maintaining physical fitness, said machine comprising:
a frame having base means, presenting a bottom by which the frame is supported and stabilized in an immobile condition on an underlying surface;
a handlebar having a pair of spaced portions adapted to be grasped by the hands;
means intermediate the ends of the handlebar between said portions pivotally mounting the same on the frame for oscillatory movement about an essentially upright axis extending upwardly from the frame;
a pair of elongated cranks, one on each side respectively of the frame and disposed downwardly and rearwardly of the handlebar above said surface;
means for each crank respectively pivotally attaching the same to the frame for limited oscillatory movement about a substantially horizontal axis transversely of the frame;
means operably intercoupling the cranks for simultaneous oscillation;
a foot pedal pivotally secured to each crank respectively at one of the ends of the cranks; and
means operably interconnecting one of the cranks and said pivotally mounting means for synchronizing the oscillatory movements of the handlebar and the cranks whereby said movements may be powered by a human operator's legs, arms or both.

4,555,110
BALL-HITTING TRAINING DEVICE
Kuo Hai-Ping, No. 528-10, Jen-Ai Village, Jen-Teh Hsiang, Tainan Hsien, Taiwan
Continuation-in-part of Ser. No. 462,333, Jan. 31, 1983, abandoned. This application Jun. 8, 1984, Ser. No. 618,840
Int. Cl.⁴ A63B *69/40*
U.S. Cl. 273—26 E **5 Claims**



1. A practice device for ball hitting, comprising:
a ball;
a vertically supported shaft;
a first rotor means to receive said ball at a horizontal distance from said shaft to allow said ball to co-rotate with the rotor to revolve horizontally around said shaft;
characterized by that a damping mechanism is provided to decelerate the revolution of said rotor, comprising a second rotor mounted to make rotation around a horizontal axis extending from said shaft, and hampering means not at the same height as the rotating center of said second rotor;
said second rotor having at least a protruding portion having a relatively large distal extension extending from its rotating center in the radial direction of said horizontal axis, said distal extension being such that when the second rotor revolves around said shaft, the protruding portion can impact upon said hampering means, yet the revolution of the second rotor is not stopped thereby, and the protruding portion can then pass over said hampering means by making rotation about said horizontal axis.

4,555,111
PRACTICE BAT
Manuel R. Alvarez, 3052 Nevada St., El Monte, Calif. 91731
Filed Aug. 26, 1983, Ser. No. 526,602
Int. Cl.⁴ A63B *69/40*
U.S. Cl. 273—26 B **2 Claims**

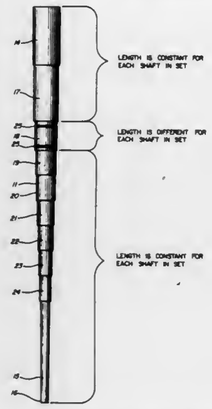


1. A baseball practice bat capable of being adjusted to the individual needs of a particular person during warmup to assist the person in snapping both wrists upon follow through during a swing of the arms comprising:
an elongated handle portion of a length to receive both hands of a person and the handle portion has inner and outer ends with a hand stop formed at said outer end;
a replaceable weighted end portion including outer and inner ends wherein said weighted end portion is annular and of a lesser length than said handle portion, and the hands are not to engage said weighted end portion when said practice bat is swung;
a replaceable enlongated coil spring of at least several convolutions and having opposed ends, said spring interposed by releaseable securing means between said weighted end portion and the inner end of said handle portion;
said releaseable securing means including plug means with a threaded bore in said inner end of said handle portion and a threaded bore in the inner end of said weighted end portion and threaded shafts projecting from each end of said coil spring ends engageable with said threaded bores for releaseable maintaining the handle portion, coil spring and weighted end portion together in an in line arrangement; and
said in line arrangement creating a bat wherein all the parts have an elongated axis extending therethrough when in an at rest position, but upon swinging the same flexing at least a part of the coil spring and the weighted end portion rearward and forward of said axis due to the momentum of the weight in relation to the hands during said swing whereby both wrists of said person will snap.

4,555,112
GOLF CLUB SHAFTS WITH MATCHED FREQUENCIES OF VIBRATION
Mohammad Masghati, Addison, Ill., assignor to Wilson Sporting Goods Company, River Grove, Ill.
Filed Sep. 22, 1983, Ser. No. 534,809
Int. Cl.⁴ A63B *53/12*
U.S. Cl. 273—77 A **8 Claims**

1. A set of golf club shafts comprising a plurality of shafts, each shaft having a butt portion and a tip portion and a fixed number of stepped portions of decreasing diameter between the butt portion and the tip portion, the number of stepped portions of each shaft being the same for each shaft of the set, the length of the butt portion and the length of the tip portion being the same for each shaft of the set, the length of one of the stepped portions of each shaft being different for each shaft and the length of each of the other stepped portions of each shaft being the same as the length of the corresponding stepped

portion of each of the other shafts, the overall length of each shaft being different for each shaft, the difference in overall



length between any two shafts being the same as the difference in the lengths of said one stepped portion of the two shafts.

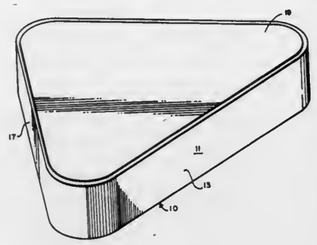
4,555,113
SHAFT AND A METHOD FOR PRODUCING THE SAME
Fumio Shimazaki, Tokyo; Koji Asai, and Jiro Ohno, both of Saitama, all of Japan, assignors to Komei Shibata, Columbus, Miss.
Filed Jul. 11, 1983, Ser. No. 512,653
Claims priority, application Japan, Apr. 6, 1983, 58-50258; Apr. 6, 1983, 58-50259
Int. Cl.[4] A63B *53/10*
U.S. Cl. 273—80 B **5 Claims**



1. A shaft consisting of:
a shaft body consisting of inorganic fiber cloth and plastic resin; and
two sets of tapes made of carbon cloth and spirally wound around said shaft body for its entire length, said two sets of tapes being in opposite directions from each other, and each one of said sets of tapes including at least two tapes wound in parallel, whereby said sets of tapes comes across on said shaft body to form crossing portions at least every 90 degrees of rotation about said shaft body.

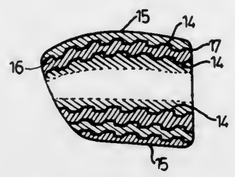
4,555,114
TABLE GAME PUCK
William Dozier, Rte. 1, Siloam Springs, Ark. 72761
Filed Oct. 31, 1983, Ser. No. 547,013
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—128 R **14 Claims**

1. A parlor game puck comprising a body of plastic foam material having a density of less than ten pounds per cubic foot, a height of from one-quarter inch to one inch, a horizontal surface outline for which an inscribed circle is less than two inches diameter and a circumscribed circle is greater than two inches diameter, a flat bottom, at least one side with a flat surface at a right angle to said flat bottom, and a surface on the



bottom of said body having a sliding friction coefficient on clean, dry window glass between 0.3 and 0.9.

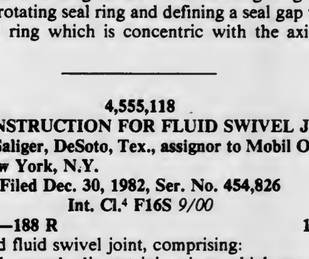
4,555,115
GOLF CLUB HEAD CONSTRUCTION
Chin-San You, No. 3, La. 1029, Fong-Shih Rd., Fong Yuan City, Taiwan
Filed Jun. 7, 1984, Ser. No. 618,028
Int. Cl.[4] A63B *53/04*; B32B *3/30*
U.S. Cl. 273—167 R **5 Claims**



1. A golf club head comprising a body and a throat adapted for connection to a shaft, the body and the throat being of unitary construction and the body defining a strike face for the head, the body and the throat being constructed of a plurality of wooden laminations and a plurality of resin impregnated fiber layers disposed between the wood laminations and securing the wood laminations to each other, opposing surfaces of adjoining wood laminations defining a plurality of interlocking tongues-and-grooves extending generally in the direction substantially parallel to the strike face and distributed across the opposing wood lamination surfaces from an edge of the laminations proximate the strike face to another edge of the laminations.

4,555,116
GO GAME EMPLOYING HEXAGONALLY SHAPED SPACES
F. Herbert Fields, 1691 Annie St., Colma, Calif. 94015
Filed Jun. 10, 1982, Ser. No. 387,091
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—236 **14 Claims**

14. Game apparatus for playing GO, comprising:
a game board having a playing surface and first indicia thereon defining an area of play formed from a number of equi-dimensional hexagons arranged in a substantially rectangular configuration of horizontal rows;
second indicia denoting nine substantially identical predetermined points of play on the playing surface and within the defined area of play, a first one of the denoted points of play being located generally in the center of a substantially central hexagon; and
two sets of game pieces for disposition on the playing surface, the game pieces being substantially identical to one another in size and shape and having third indicia for



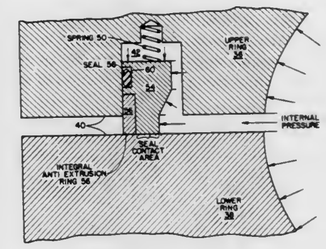
distinguishing the game pieces of the first set from the game pieces of the second set.

4,555,117
LIQUID SHAFT PACKING HAVING A REDUCED SLIDE RING TEMPERATURE
Joachim Kotzur, Oberhausen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg AG, Fed. Rep. of Germany
Filed Jul. 30, 1984, Ser. No. 635,905
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329034
Int. Cl.[4] F16J *15/34, 15/40*
U.S. Cl. 277—173 **1 Claim**

1. A liquid packing for a rotating shaft, comprising a seal ring adapted to be connected to the shaft for rotating with the shaft at the same speed thereof, and a housing accommodating said shaft, a non-rotating seal ring tightly fitted to said housing and being axially displaceable under stress, said rotating seal ring being made of a material of high thermal conductivity and high strength having a high sealing surface with high surface hardness, and including at least one floating ring disposed around said rotating seal ring and defining a seal gap with said rotating seal ring which is concentric with the axis of said shaft.

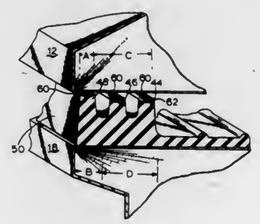
4,555,118
SEAL CONSTRUCTION FOR FLUID SWIVEL JOINTS
Kenneth C. Saliger, DeSoto, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 30, 1982, Ser. No. 454,826
Int. Cl.[4] F16S *9/00*
U.S. Cl. 277—188 R **18 Claims**

1. A sealed fluid swivel joint, comprising:
a. first and second adjacent joint rings which are rotatable relative to each other about a common central longitudinal axis and defining a small annular, ring-shaped clearance gap therebetween to allow relative rotational movement between the first and second joint rings, said first adjacent ring defining an annular seal housing groove adjacent to said clearance gap;
b. an annular seal positioned in said annular seal housing groove and adapted to provide a seal between said first joint ring and said second joint ring, said annular seal including an annular, pliant sealing member, and a relatively stiff annular antiextrusion ring to prevent the pliant sealing member from being deformed into said clearance gap by the fluid pressure differential existing across said annular seal, and means for biasing said annular sealing member against an adjacent annular sealing surface to



provide an effective fluid seal therebetween, said biasing means being responsive to the pressure differential existing across said annular seal to pressure bias said annular sealing member against a sealing surface, and said annular sealing member including a V-shaped, concave slot therein extending along its annular length.

4,555,119
CASKET SEALING GASKET
Joseph R. Semon, Dalton, Pa., assignor to Casket Shells, Inc., Eynon, Pa.
Filed Jul. 22, 1981, Ser. No. 285,786
Int. Cl.[4] A61G *17/00*
U.S. Cl. 277—207 R **13 Claims**



1. An improved casket sealing gasket which comprises:
a gasket body of deformable material adapted to form a continuous seal within the joint defined by a casket body and its lid;
a plurality of sealing ridges atop the gasket body said sealing ridges disposed parallel to the gasket body periphery;
a plurality of contact points formed by small continuous protuberances in at least one of said sealing ridges uppermost surface; and
the uppermost surface of at least one sealing ridge being concave forming two substantially parallel contact points.

4,555,120
POSITION SENSOR
John S. Fralt; Clark E. Lowman, both of Ann Arbor, Mich.; George W. Morris, III, Greenville, S.C., and Leonard T. Tribe, Seal Beach, Calif., assignors to Kelsey-Hayes Co., Romulus, Mich.
Filed Oct. 7, 1983, Ser. No. 540,083
Int. Cl.[4] B60G *11/26*
U.S. Cl. 280—6.1 **30 Claims**

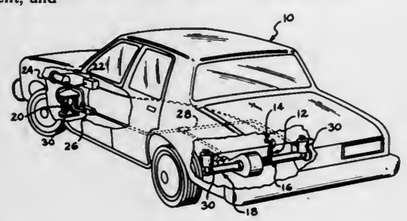
1. A position sensor for determining the relative position

between two members relatively movable with respect to one another, said sensor comprising:

an assembly including a first component slidable relative to a second component;

means for attaching said first component to one of the relatively movable members and said second component to the other one of the relatively movable members;

magnet means carried by said first component for generating a first magnetic field having a first polarity and extending along a first portion of said first component and for generating a second magnetic field having an opposite polarity and extending along a second portion of said first component; and



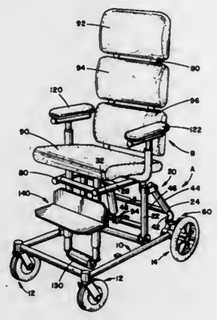
detector means including a pair of spaced apart detector devices carried by said second component and responsive to the first and second magnetic fields for generating a position signal representative of the position between the two members, one of said detector devices generating a first logic signal at a high level when proximate said first magnetic field and at a low level when proximate said second magnetic field, and the other one of said detector devices generating a second logic signal at a low level when proximate said first magnetic field and at a high level when proximate said second magnetic field.

4,555,121

INVALID'S CHAIR TO FACILITATE TRANSFER TO AN AUTOMOBILE

Walter G. Lockard; Nathalal G. Patel, and Allen J. Boris, all of Elyria, Ohio, assignors to Invacare Corporation, Elyria, Ohio

Filed Sep. 20, 1984, Ser. No. 652,289
Int. Cl.⁴ B62B *11/00*
U.S. Cl. 280—30 **18 Claims**



1. A stroller for facilitating access to motor vehicles, the stroller comprising:

(a) a base including:

(i) a lower frame portion,

(ii) wheels for supporting the lower frame portion such that at least a forward end of the lower frame portion is able to be rolled beneath an undercarriage of the motor vehicle,

(iii) an upper frame portion operatively connected with the lower frame portion,

(iv) a seat supporting structure operatively connected with the upper frame portion for supporting a detachable seat structure;

(b) the detachable seat structure including:

(i) a patient supporting portion for supporting a patient,

(ii) a seat frame which is selectively detachable with the base seat supporting structure, the seat frame being operatively connected with the patient supporting portion,

(iii) a vehicle floor engaging means extending forward and downward from the patient supporting portion for selectively engaging a floor of the motor vehicle to support a forward portion of the detachable seat structure during entry into and departure from the motor vehicle,

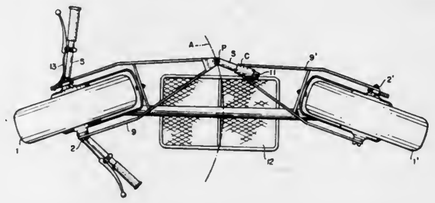
(iv) manual grasping means operatively connected with a rearward portion of the seat frame to facilitate lifting the rearward seat structure portion during entry into and departure from the motor vehicle.

4,555,122

TRACKING SCOOTER AND THE LIKE AND METHOD OF OPERATION

Kenneth C. Harvey, P.O. Box 42, 316 Wilester Lake Rd., West Franklin, N.H. 03235

Filed Nov. 17, 1982, Ser. No. 442,320
Int. Cl.⁴ B62K *21/00*
U.S. Cl. 280—87.04 R **2 Claims**



1. A scooter and the like having, in combination, a longitudinally extending central platform having integrally connected forwardly and rearwardly extending upward arcuate support bars; a forward vertically mounted yoke provided with upper steering means for manual engagement by a user and a lower transverse axle mounting the front wheel and rotatably mounted through the forward end of the forward support bar to enable the steering means to turn the front wheel about the vertical axis of the forward yoke said vertical axis intersecting said axle; a rearward vertically mounted yoke rotatably mounted at its upper end through the rearward end of the rearward support bar and provided at its lower end with a transverse axle mounting the rear wheel, said rearward yoke having a vertical rotational axis that intersects the last-mentioned axle; a forward horizontally mounted yoke connected to the front wheel axle and converging to a pivot point below the central region of the platform; a rearward horizontally mounted yoke connected to the rear wheel axle and converging to a sleeve slidable along a slide cylinder pivoted at said pivot point, wherein steering of the scooter may be achieved by rotation of the steering means by the user for turning the forward vertically mounted yoke, the forward horizontally mounted yoke, and the forward wheel turn about the first-mentioned vertical axis to an angle with respect to the longitudinal axis of the central platform and causing the pivot point to move to the sides of the central platform axis, with the rear wheel yoke sleeve sliding upon the slide cylinder thereby turning the rearward vertically mounted yoke, the rearward horizontally mounted yoke, and the rear wheel about the second-mentioned vertical axis by an equal angle in the opposite direction with respect to the central platform axis.

4,555,123

PROTECTIVE FLANGE FOR WHEEL CASTOR HOUSING

Houston Rehrig, 4539 Gorham St., Corona Del Mar, Calif. 92625

Filed Jan. 5, 1983, Ser. No. 455,739
Int. Cl.⁴ B60B *33/00*
U.S. Cl. 280—160 **2 Claims**



1. A wheeled cart comprising:

a frame having two corners;

a pair of wheels connected to and extending downwardly from said frame adjacent said corners; and

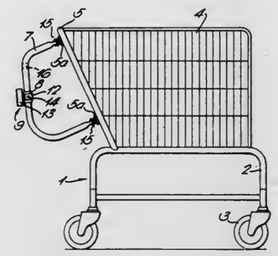
flange means for each wheel of said pair of wheels connected to said frame for protecting said wheels, each of said flanges being located adjacent its respective wheel and extending rearwardly with respect to said cart and downwardly and laterally outwardly with respect to said frame to prevent said wheels from damaging adjacent objects and to shield said wheel from lateral and upwardly directed impacts, wherein said flange means is attached to said frame in a manner that prevents said flange means from damaging adjacent objects due to impacts with said cart.

4,555,124

TROLLEY FOR USE WITH A WHEELCHAIR

Michael J. Millington, Eastleigh, England, assignor to Handicart Limited, New Malden, England

Filed Sep. 6, 1983, Ser. No. 529,699
Claims priority, application United Kingdom, Sep. 7, 1982, 8225515
Int. Cl.⁴ A61G *5/02*
U.S. Cl. 280—289 WC **12 Claims**



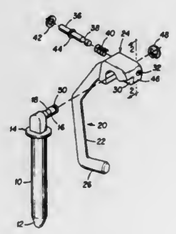
1. A trolley for attachment to a wheelchair comprising a frame, a plurality of jockey wheels attached to said frame which are rotatable about a horizontal axis and are capable of swinging about a vertical axis, a load carrying portion supported on said frame, and two clamping arms, one of said clamping arms being positioned at each side of said trolley, and a clamp attached to each of said clamping arms for attaching said trolley to the frame of the wheelchair, and means adjustably attaching at least one of said clamping arms to a frame member of said trolley whereby said trolley may be attached to any one of a plurality of wheelchairs of different widths, and means in the form of a single control member, which is adjustable by using one hand only to adjust at least one of said two clamping arms in a lateral direction relative to the other of said two clamping arms to completely and securely attach said clamps of said trolley to a wheelchair.

4,555,125

SAFETY HITCH PIN

Gerol L. Goodlove, R.R. #1, Palo, Iowa 52324

Filed Jun. 24, 1983, Ser. No. 507,479
Int. Cl.⁴ B60D *1/00*
U.S. Cl. 280—515 **4 Claims**



1. A safety hitch pin for connecting a towing vehicle to a towed vehicle, said hitch pin comprising a pin having a collar near its upper end, a handle mounting member extending transversely of the upper end of said pin above the collar and having a transverse opening formed therein, a handle having an enlarged portion at its upper end mounted on said mounting member for pivotal movement from an upper unlocked position to a lower locked position, the enlarged portion of the handle having an opening therein extending transversely to the mounting member, the handle being formed so that its lower end engages the pin near the lower end of the pin when the handle is in the lower locked position, a manually-operated positive-locking member combined with the upper end of the handle and moveable within the opening in said handle into and out of the opening in the handle mounting member so as to maintain the handle in its lower locked position until manually unlocked, and means to normally maintain the handle and pin in assembled condition.

4,555,126

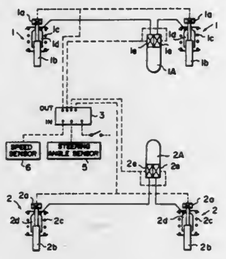
VEHICLE SUSPENSION SYSTEM

Ikuo Ishimitsu; Toshimichi Tokunaga; Takeshi Tanaka, and Yoshiaki Anan, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Oct. 17, 1983, Ser. No. 542,652
Claims priority, application Japan, Oct. 18, 1982, 57-182367; Oct. 18, 1982, 57-182368
Int. Cl.⁴ B60G *17/00*
U.S. Cl. 280—707 **18 Claims**

1. A vehicle suspension system comprising a set of front wheel suspension assemblies for resiliently suspending the front wheels of a vehicle, a set of rear wheel suspension assemblies for resiliently suspending the rear wheels of the vehicle, at least one of said set of front wheel suspension assemblies and said set of rear wheel suspension assemblies having a variable suspension characteristic, an adjusting means for changing the suspension characteristic of the at least one of said sets of

wheel suspension assemblies, a steering angle sensor operable to detect the angle of steering for generating a steering signal upon detection of a steering angle exceeding a predetermined level, and a controller adapted to send out, upon receipt of the steering signal from said steering angle sensor, a control signal



to said adjusting means so as to change the suspension characteristic of the at least one of said sets of wheel suspension assemblies in a manner such that the steering characteristic of the vehicle during steering operation is changed in a direction toward an oversteer characteristic as compared with the steering characteristic during non-steering operation.

4,555,127

PASSIVE SEAT BELT SYSTEM

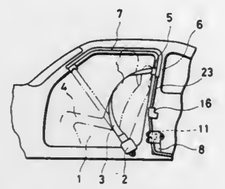
Osamu Kawai, Fujisawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Feb. 28, 1984, Ser. No. 584,318

Claims priority, application Japan, Mar. 17, 1983, 58-38838[U]

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—806 **12 Claims**



1. A passive seat belt system comprising:
a guide rail provided on the body of a vehicle;
a runner movable along the guide rail so as to guide a webbing between an occupant-restraining position and an occupant-releasing position;
a force-transmitting member connected with the runner and driven along the length of the guide rail by drive means;
an inertia-sensing member movable in response to changes in speed of the vehicle; and
a pawl operable by the inertia-sensing member in the case of an emergency of the vehicle so that the pawl is brought into engagement with the force-transmitting member to restrain any further movement of the runner along the guide rail.

4,555,128

FOLDABLE SUPPORT STAND

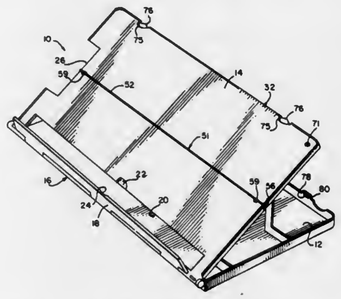
Stephen R. White, 3 Florence Ave., Binghamton, N.Y. 13905, and Jeffrey N. Feinberg, 6 Brookside Rd., Binghamton, N.Y. 13903

Filed Jan. 31, 1984, Ser. No. 575,699

Int. Cl.⁴ B42D *9/00*

U.S. Cl. 281—45 **9 Claims**

1. A support device which can be used as a reading stand or a writing support surface, comprising:
a base portion;
an upper support panel having upper and lower surfaces;
a hinge connecting said base portion to one edge of said support panel; and
page holder means for holding the pages of a book open against the upper surface of said support panel, said page holder means comprising an elastic band having opposite



ends attached to the lower surface of said support panel, said elastic band being sufficiently long to stretch over the upper surface of said support panel and being movable between two positions, in one of said positions said elastic band being stretched along said upper surface to hold a book thereon and in said other position being disposed along said lower surface for storage when said support device is used as a writing support surface.

4,555,129

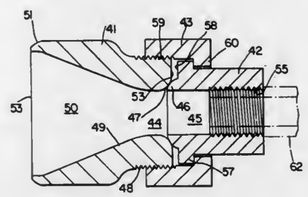
ADAPTER UNION AND IMPROVED ADAPTER MEMBER THEREFOR

Irwin H. Davlin, 714 S. Court St., Opelousas, La. 70570

Continuation of Ser. No. 214,959, Dec. 9, 1980, abandoned. This application Aug. 15, 1984, Ser. No. 614,215

Int. Cl.⁴ F16L *37/10*

U.S. Cl. 285—3 **20 Claims**



1. An adapter union comprising an adapter member having inner and outer termini, the adapter member having an opening extending longitudinally between the said outer terminus thereof and the said inner terminus thereof to thereby provide a passageway for fluid to flow longitudinally therethrough, the said longitudinally extending opening in the adapter member having a markedly larger internal diameter at the outer terminus than at the inner terminus and tapering gradually from the said larger internal diameter to the said smaller internal diameter at an angle of about 20°–30° with the longitudinal axis of the said opening therein and then increasing in internal diameter adjacent the inner terminus to thereby form an annular convex sealing surface thereon, the wall of the said adapter member increasing markedly in thickness between the said outer and inner termini thereof to thereby greatly increase the initial strength of the adapter member in the vicinity of the transition from the said larger internal diameter to the said smaller internal diameter, a conduit receiving member having inner and

outer termini, the conduit receiving member having an opening extending between the said inner terminus thereof and the said outer terminus thereof to thereby provide a passageway for fluid to flow longitudinally therethrough, the said inner terminus of the adapter member including first pressure sealing means around the said opening therein comprising said annular convex sealing surface thereon, the said inner terminus of the conduit receiving member including second pressure sealing means around the opening therein comprising an annular convex sealing surface thereon the said first and second pressure sealing means cooperating to form a fluid tight seal therebetween with the opening in the conduit receiving member being in communication with the opening in the adapter member when force is applied to the adapter member and conduit receiving member longitudinally in directions toward their respective inner termini, releasable force applying means carried by the adapter member and the conduit receiving member for releasably applying force thereto longitudinally in directions toward their respective inner termini, the said first and second pressure sealing means being urged into a fluid tight sealing relationship and the opening in the conduit receiving member being in communication with the opening in the adapter member when the said force is being applied thereto, the said first and second pressure sealing means including said annular convex sealing surfaces whereby the resultant minimized surface area, the said first and second pressure sealing means being rendered ineffective to form a fluid tight seal therebetween and the opening in the conduit receiving member being out of assured communication with the opening in the adapter member when the said force is no longer being applied thereto, the adapter member including contoured surface means adjacent the outer terminus thereof for adapting it to be permanently installed by welding around an opening in the wall of a container for fluids with the said opening in the adapter member being in communication with the interior of the said container for fluids, and the conduit receiving member including means adjacent the outer terminus thereof for attaching a conduit for fluids thereto whereby the interior of the said conduit is in communication successively with the said opening in the conduit receiving member and the said opening in the adapter member.

4,555,130

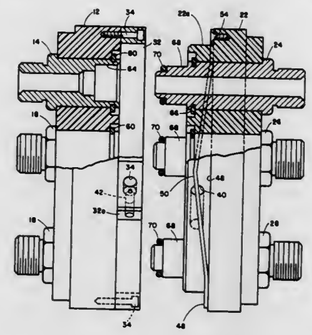
DIVER'S UMBILICAL QUICK-DISCONNECT DEVICE

D. Wayne McClain, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,174

Int. Cl.⁴ F16L *35/00*

U.S. Cl. 285—26 **8 Claims**



1. A diver's life support umbilical quick-disconnect device for coupling and uncoupling a plurality of first hoses and a like plurality of second hoses, said device comprising:
a first generally rectangular body;
a plurality of first hose coupling elements extending through said first body and disposed in spaced, side-by-side parallel relation along the long axis of said first body with their corresponding coupling element engaging ends located on one side of said first body;
means defining a rim around the peripheral portion of said one side of said first body;
a second generally rectangular body having a main portion and a reduced portion defining therebetween a peripheral shoulder extending about said second body, said reduced portion being received in said rim;
a plurality of second hose coupling elements extending through said second body and disposed in spaced, side-by-side parallel relation along the long axis of said second body with their corresponding coupling element engaging ends engaged with the coupling element engaging ends of said first hose coupling elements;
a plurality of sealing means, each operative to provide a seal between corresponding ones of said first and second coupling elements;
spring means, disposed between and compressed by said shoulder and said rim for urging said bodies away from one another; and
retainer means, cooperating with said first and second bodies for holding said bodies together against the urging of said spring means, said retainer means being actuable to release said bodies for movement away from one another under the influence of said spring means so as to disengage said coupling elements.

4,555,131

COUPLING FOR CONNECTING HOSE OR PIPE ENDS

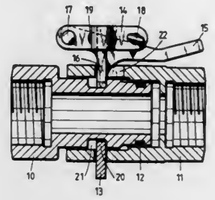
Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Fed. Rep. of Germany

Filed Feb. 7, 1985, Ser. No. 464,264

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204048

Int. Cl.⁴ F16L *21/08*

U.S. Cl. 285—91 **17 Claims**



1. A coupling for connecting conduit ends to each other, comprising in combination:
(a) a sleeve portion having first and second opposed ends and adapted to be secured, via said first end, to a first conduit end;
(b) a generally cylindrical insert portion having an outer periphery, said insert portion being adapted to be secured to a second conduit end, being insertable axially into said sleeve portion, and being provided with means defining at least one recess extending radially inwardly from the outer periphery of said insert portion;
(c) sealing means carried by one of said portions for establishing a seal between said portions when said insert portion is inserted into said sleeve portion;
(d) a yoke member surrounding, and movable relative to, said sleeve portion;
(e) a pivotal locking element having a first bolt, and means supporting said locking element on said yoke member for pivotal movement relative to said yoke member about a pivot axis between a coupling locking position and a coupling unlocking position; and
(f) a second bolt generally integral with said yoke member;

(g) means on said sleeve portion engageable by said first and second bolts;

(h) said pivotal locking member being movable into said coupling locking position for causing both said first and second bolts to engage both said means on said sleeve portion and said at least one recess at diametrically opposite locations, when said insert portion is inserted into said sleeve portion, to prevent removal of said insert portion from said sleeve portion, and said coupling unlocking position in which said first bolt is disengaged from said at least one recess and said yoke is movable to disengage said second bolt from said at least one recess to permit removal of said insert portion from said sleeve portion.

4,555,132

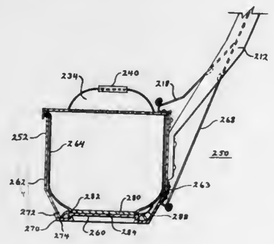
PORTABLE CANINE COMMODE

John Takoushian, 741 Rutland Ave., Teaneck, N.J. 07666

Continuation-in-part of Ser. No. 030,603, Apr. 16, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,455

Int. Cl.⁴ A01K *29/00*

U.S. Cl. 294—1.5 **14 Claims**



1. A portable pet toilet comprising:

(a) a receptacle member having a side wall element, said receptacle member defining a top mouth portion and a bottom mouth portion, and further comprising a bottom wall element and a top lid member that are pivotably mounted on said receptacle member, said top lid member closing said top mouth portion and said bottom wall element closing said bottom mouth portion,

(b) an elongated handle member fixedly connected at a first end thereof to an outer wall area of said receptacle member, said handle member having a free second end and being angularly disposed with respect to the horizontal,

(c) top lid actuating means and bottom wall actuating means located at said handle member, said actuating means permitting said top lid member and said bottom wall element to be moved from respective first positions at said mouth portions to a second position whereby the interior of said receptacle member is accessible,

(d) an insert receptacle disposed within said receptacle member, said insert receptacle having openings at, respectively, its top and bottom, and

(e) said bottom wall element comprising an inside surface cover element removably disposed at said bottom wall inside surface, said insert receptacle bottom opening being closable by said bottom wall element, with said inside surface cover element disposed partly between said insert receptacle and said bottom wall element such that said inside surface cover element is disposed only at the said bottom opening of said receptacle member, said inside surface cover element comprising a generally concave lower portion and said bottom wall element comprising a raised portion that is received by and engages said concave lower portion of said inside surface cover element, whereby said inside surface cover element is retained in position.

4,555,133

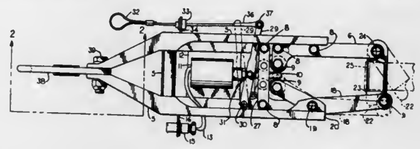
CONTAINER RESTRAINT RELEASE

Donald P. Danielsen, Long Beach, and Lewell M. Lively, Jr., Anaheim, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 27, 1983, Ser. No. 565,640

Int. Cl.⁴ B66C *1/38*

U.S. Cl. 294—82.24 **12 Claims**



1. A retainer/release mechanism for air dropped cargo restrained by straps comprising:

a frame;

a fixed arm attached to said frame;

a release arm, having first and second ends, pivotally attached to said frame at a point intermediate said first and second ends and having a cam mating surface near said second end and oriented generally opposite and spaced from said fixed arm;

means to restrain and release said release arm;

a restraint arm, adapted to receive said strap, pivotally attached at one end of said fixed arm and having the free end terminating in a cam surface which engages said cam mating surface on said release arm when said release arm is restrained so as to bridge between said fixed arm and said release arm and not engage said cam mating surface when said release arm is released; and

means to provide a side load on said second end of said release arm tending to rotate said second end of said release arm away from said fixed arm.

4,555,134

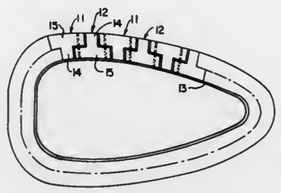
CRUSH RESISTANT MOTOR VEHICLE BODY

Leo Gruna, P2-5B Panther Valley, Hackettstown, N.J. 07840, assignor to Leo Gruna, Hackettstown, N.J.

Filed Jul. 20, 1983, Ser. No. 515,516

Int. Cl.⁴ B62D *25/02, 29/04*

U.S. Cl. 296—189 **8 Claims**



1. A crush resistant motor vehicle body comprising an inner shell of substantially incompressible material surrounding the vehicle, at least one layer of panels facing outwardly from the shell, adjoining panels having vertical edges overlapping in a horizontal direction outwardly from the inner shell, each panel having a plate of impact-resistant material on its shell face, an outer skin adapted to receive a paint finish, and impact-absorbing material occupying the space therebetween and means affixing said panels to said inner shell so as to permit removal and replacement of individual panels.

4,555,135

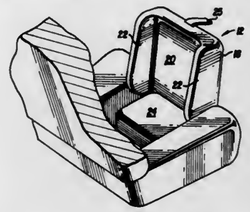
BUILT-IN CHILD'S SAFETY SEAT FOR VEHICLES

Verne L. Freeland, Box 693652, Miami, Fla. 33169

Filed Feb. 28, 1984, Ser. No. 584,402

Int. Cl.⁴ A47C *13/00*

U.S. Cl. 297—105 **6 Claims**



1. A vehicle seat combined with a child's safety seat, comprising:

a first vehicle seat;

a first back rest mounted to the rear end of the first seat;

a child's seat mounted within an opening in the first vehicle seat and having a sitting surface recessed from the sitting surface of the first vehicle seat; and

a second back rest mounted at its lower end for pivotal movement only with respect to the forward end of the child's seat;

the second back rest being pivotable from a storable position overlaying said child's seat wherein a top surface thereof is substantially coplanar with the first seat thereby forming a continuation of the first seat to a usable position wherein the second back rest is substantially upright;

wherein said seat structure rotates in a direction away from the back-rest surface of said vehicle seat such that the child's seat user would face the rear of the vehicle.

4,555,136

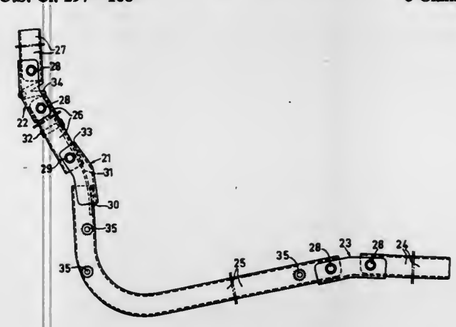
FURNITURE CONSTRUCTION

Jan Dranger, 7, Carl Milles väg, S-181 34 Lidingö, Sweden

Filed Mar. 30, 1983, Ser. No. 480,435

Int. Cl.⁴ A47C *7/36, 7/50*

U.S. Cl. 297—108 **8 Claims**



1. An article of furniture comprising a pair of vertical side members disposed in horizontally spaced relation to one another and interconnected to one another by a plurality of horizontal cross bars to form a stable ground engaging frame of fixed configuration, a pair of elongated side rods connected respectively to said pair of side members, said side rods being supported entirely by said frame in spaced relation to all of said cross bars and being free of any cross bars extending therebetween, each of said side rods including a generally horizontal seat rod portion which is connected to said frame, one end of said seat rod portion extending forwardly of said frame and being attached to a foot rest rod portion of said side rod, and the other end of said seat rod portion being smoothly curved upwardly to a generally vertically extending back rest rod portion, and an elongated unitary sheet of foldable support material connected along its opposing elongated edges to each of said rod portions of said pair of side rods respectively, said side rods forming together with said sheet of support material a generally horizontally extending seat, a foot rest at the front edge of said seat, and a back rest extending upwardly in a generally vertical direction from said smoothly curved rod portion adjacent the rear edge of said seat, said foot rest rod portion and seat rod portion of each of said side rods being separate rod portions which are interconnected to one another by a hinge adjacent said front edge of said seat, said hinges on said pair of side rods being operative to hold and support said foot rest in a first generally horizontal position wherein said foot rest extends away from said seat and outwardly of said ground engaging frame in freely spaced relation to the ground, said hinges also being operative to permit said foot rest to be pivoted to a second generally horizontal position wherein said foot rest overlies said seat, said ground engaging frame comprising the sole support of said article of furniture in all positions of said foot rest, all portions of said sheet of foldable material being held by said side rods above and in spaced relation to all of said horizontal cross bars at all times and in all positions of said foot rest, seat and back rest, and both opposing ends of each of said side rods being free ends which are freely spaced from the corresponding free ends of the other of said side rods and from both of said side members and all of said cross bars, said sheet of support material being free of engagement with any cross bar throughout the entire extent of said sheet between the opposing ends of said side rods, and the body of a user of said furniture article being free of engagement with any cross bar and in engagement with only said sheet of support material in all positions of said foot rest, seat and back rest.

4,555,137

BACK REST FOR A VEHICLE SEAT, PARTICULARLY A MOTOR VEHICLE SEAT

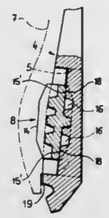
Walther Göldner, Denkendorf, Fed. Rep. of Germany, assignor to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 505,921

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222951

Int. Cl.⁴ A47C *7/46*

U.S. Cl. 297—284 **22 Claims**



1. A back rest for a vehicle seat, comprising:

an upholstery support having a support surface;

a shaping body; and

upholstery supported by the upholstery support which has an adjustable longitudinal profile on a side facing a seat user, which profile is adjusted by the shaping body;

said shaping body having a first profile on a first abutment surface and a second profile on a second abutment surface;

said shaping body adapted to be placed selectively in defined positions between the upholstery support and the upholstery;

means in the support surface for selectively cooperating with the profiles of the abutment surfaces,

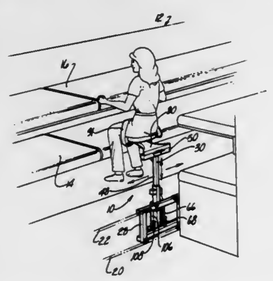
whereby when the first abutment surface contacts the support surface of the upholstery support, a first longitudinal profile is formed by the second abutment surface of the shaping body and the support surface and when the second abutment surface contacts the support surface of the upholstery support a second profile is formed by the first abutment surface of the shaping body and the support surface.

4,555,138

NURSE'S SEAT

Robert S. Hughes, Imlay City, Mich., assignor to R. S. Hughes Ind. Inc., Capac, Mich.

Filed Oct. 19, 1983, Ser. No. 543,393
Int. Cl.[4] B60N *1/08, 1/02*
U.S. Cl. 297—346 **4 Claims**



1. A nurse's seat for a vehicle having an elongated passageway with two sides and patient stations on both sides of said passageway comprising:

a pair of elongated tracks,

means for attaching said tracks along one side of the passageway so that said tracks are vertically spaced from each other,

a frame,

means for slidably mounting said frame to said tracks so that said frame is wholly positioned closely adjacent said tracks and said one side of the passageway, said frame having a vertically extending tube open at its top,

a seat assembly comprising an elongated support member, a lower end of said support member being telescopically received within said vertically extending tube, a plate having one end secured to an upper end of said support member, said plate having a second end positioned substantially centrally in said passageway, a seat, and means for swivelly mounting said seat to said second end of said plate,

means for selectively locking said frame to said tracks at a plurality of longitudinally spaced predetermined positions therealong,

means for selectively locking said seat assembly support member between a lowered position and a raised position,

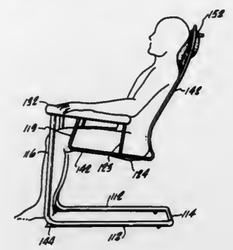
means for pivotally securing said plate to said support member for movement between an in use position and a storage position.

4,555,139

PATIENT'S DEFINED-MOTION CHAIR

Roger K. Leib, 1064 Crescent Heights Blvd., Los Angeles, Calif. 90053

Continuation-in-part of Ser. No. 368,521, Apr. 15, 1982, which is a continuation-in-part of Ser. No. 248,852, Mar. 30, 1981, which is a continuation-in-part of Ser. No. 110,340, Jan. 7, 1980, abandoned. This application Mar. 30, 1983, Ser. No. 480,357
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.[4] A47C *3/02*
U.S. Cl. 297—460 **21 Claims**



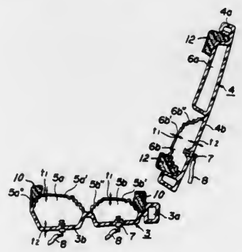
1. A chair capable of a lilting motion comprising a pair of spaced apart, parallel seat-supporting members and a pair of spaced apart, converging back-supporting members continuous and extending upwardly from the rear of the seat-supporting members, the seat-supporting and back-supporting members defining in elevation a seat and a back for the chair, the seat-supporting members and the back-supporting members being cantilevered rearwardly to deflect about a horizontal axis above the seat, the back-supporting members being generally S-shaped in elevation and having a lower section convex relative to the seat plane and an upper section concave relative to the seat plane, the convex section having a radius of curvature at its apex of from about 4 to about 7 inches and the concave section having a radius of curvature at its apex of from about 30 to about 50 inches, the apex of the convex section being from about 5 to about 8 inches above the seat plane and the apex of the concave section being from about 16 to about 21 inches above the seat plane, the apex of the concave section being rearward of the apex of the convex section.

4,555,140

VEHICLE SEAT

Akira Nemoto, Akishima, Japan, assignor to Japan, Japan

Filed Feb. 23, 1984, Ser. No. 583,033
Int. Cl.[4] A47C *7/02*
U.S. Cl. 297—452 **6 Claims**



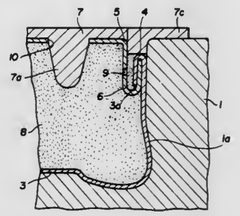
1. A vehicle seat frame of the type for supporting a cushion pad thereon comprising a bottom section and adjustment means integrally formed with said bottom section to permit for selective displacement adjustment of a portion of the pad relative the bottom section of said seat frame, said adjustment means including a top wall and side walls integrally formed with one another and with said bottom section of the seat frame and together defining an interior closed hollow chamber, said side walls including means defining plural pleated portions for permitting expansion and contraction of said chamber in response to introduction and exhaustion of a pressurized fluid into and from said chamber, respectively, to displace said top wall relative said bottom section which, in turn, is capable of displacing the pad portion to selectively adjust the same.

4,555,141

VEHICLE SEAT

Akira Nemoto, Tokyo, Japan, assignor to Tachikawa Spring Co. Ltd., Japan

Filed Aug. 5, 1983, Ser. No. 520,644
Int. Cl.[4] A47C *7/02*
U.S. Cl. 297—452 **11 Claims**



1. A vehicle seat comprising:

a frame including a bottom wall and a peripheral wall integral with said bottom wall, said peripheral wall including means defining an exterior recessed insertion portion adjacent said peripheral wall;

a top layer having its peripheral edge inserted into said exterior recessed insertion portion, said top layer also defining, together with said interior area of said frame, an interior pad space;

said peripheral wall also including means defining plural apertures to establish communication between said interior pad space and said exterior recessed insertion portion; and

a foamed pad disposed in said interior pad space between said frame and said top layer, portions of said pad in the vicinity of said peripheral wall extending through said apertures defined therein and into said exterior recessed insertion portion, said pad portions extending into said recessed insertion portion also being in contact with said top layer peripheral edge to secure said top layer to said frame.

4,555,142

SUPPLY OF LIQUID MEDIA FOR A HYDRAULIC-MECHANICALLY OPERATING MINE WORKING MACHINE WITH SWORD

Joachim Holz, Dortmund; Wolfgang Meier, Oer-Erkenschwick; Karl-Heinz Schwarting, Voerde; Heinrich Goris, Hamminkeln, and Kurt Ogorek, Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg AG, Fed. Rep. of Germany

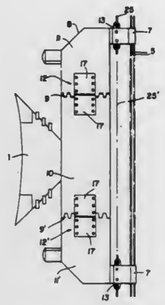
Filed Dec. 9, 1983, Ser. No. 559,764
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245792
Int. Cl.[4] E21C *35/12, 35/22*
U.S. Cl. 299—43 **8 Claims**

1. A mine apparatus for use with a longwall conveyor having a stowing side facing away from a longwall to be mined, comprising:

a working machine (1) movable along a longwall (50) and having a sword (8) with a first part (10) carrying cutting tools to cut the longwall, and at least one second part (11) having a tractor hookup block (14) with a plurality of bores (15) therein for supplying high pressure liquid medium to said cutting tools for cutting and control purposes, said first and second part being shaped to receive a longwall conveyor thereon and being connected to each other for relative movement therebetween;

duct means defining separate upper and lower tractor ducts (3, 3') and a drag line duct (4) extending parallel to each other and at a stowing side of a longwall conveyor, said duct means including a slot (52) communicating said drag line duct with said lower tractor duct, said tractor hookup block being movable in said lower tractor duct;

tractor means (13,25) movable in said lower tractor duct and



connected to said tractor hookup block for pulling said tractor hookup block and said sword back and forth along the longwall;

a hose hookup (7) which is separate from said tractor hookup block (14), fixedly connected to said tractor hookup block, said hose hookup block movable in said drag line duct (4) and extending through said slot for connection to said tractor hookup block, said hose hookup block having a plurality of bores (15) communicating respectively with said bores of said tractor hookup block; and

a plurality of high pressure liquid media carrying lines (5) connected to said hose hookup block (7) and movable in and confined by said drag line duct for supplying high pressure liquid media to said bores and to said cutting tools for cutting and control purposes.

4,555,143

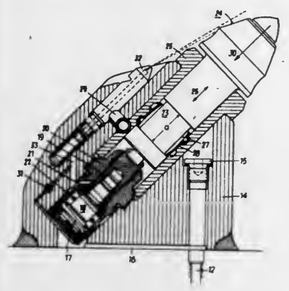
APPARATUS FOR CUTTING ROCK

Herwig Wrulich; Otto Schetina, both of Zeltweg; Gottfried Siebenhofer, Fohnsdorf, and Wilfried Maier, Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Mar. 29, 1984, Ser. No. 594,524
Claims priority, application Austria, Apr. 11, 1983, 1281/83
Int. Cl.[4] E21C *35/22, 37/06*
U.S. Cl. 299—81 **13 Claims**

1. A cutting assembly for a rock cutting machine comprising; a bit shaft inserted into and supported by a bit holder capable of limited axial movement; a valve positioned coaxially

with the bit shaft whereby an axial cutting pressure on the bit shaft tends to open the valve; a means to intermittently supply



fluid pressure to the valve thereby exerting an axial force on the bit shaft to urge the bit shaft against the cutting pressure.

4,555,144

METHOD AND APPARATUS FOR CONTROLLING AND MONITORING HYDRAULIC BRAKE SLIP

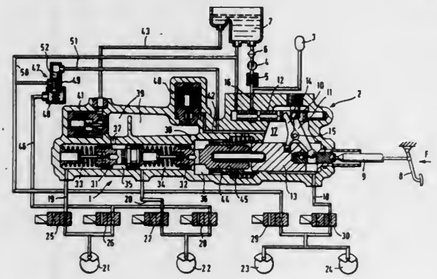
Juan Belart, Walldorf; Jochen Burgdorf, Offenbach; Dieter Kircher, Frankfurt am Main; Hans-Wilhelm Bleckmann, Obermoerlen, and Lutz Weise, Mainz, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,501

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232052

Int. Cl.⁴ B60T *8/02, 8/04*

U.S. Cl. 303—92 **16 Claims**



1. A method for controlling and monitoring brake slip control devices for a vehicle hydraulic braking system having a plurality of brake wheel cylinders, comprising the steps of:

introducing braking pressure into said brake wheel cylinders energizable from an external source, said pressure being transmitted via at least one static brake circuit and one dynamic brake circuit;

controlling a fluid flow return from static brake circuit in reaction to pressure differential between said return and dynamic circuit fluid pressures;

said controlling being capable of carrying out and operating despite the failure of brake valve inner elements to operate and while said external source maintaining continues supply of fluid flow to said dynamic brake circuit.

4,555,145

ANTI-LOCK SYSTEM FOR VEHICLES

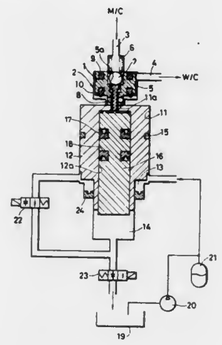
Toshifumi Maehara, Hanazono, and Hiroyuki Yoshizawa, Hasuda, both of Japan, assignors to Akebono Brake Industry Company Ltd., Japan

Filed May 23, 1984, Ser. No. 613,378

Claims priority, application Japan, May 24, 1983, 58-91209

Int. Cl.⁴ B60T *17/18*

U.S. Cl. 303—92 **3 Claims**



1. A vehicular anti-lock system comprising:

a valve mechanism disposed in a passage connecting a master cylinder and a brake system and including a valve seat member made movable in a valve chamber, a valve seat formed on said valve seat member, and a valve member made engageable with said valve seat;

a fail-safe piston made movable in a cylinder and having its one end engaging with said valve seat member and its other end connected with a liquid pressure source which is independent of said master cylinder;

a control piston made movable in said fail-safe piston and having its one end operationally engaging with said valve member and subjected to the pressure of said brake system and its other end facing a control chamber;

a first valve connected between said liquid pressure source and said control chamber and adapted to be closed in response to a brake releasing signal;

a second valve connected between said control chamber and a reservoir and adapted to be opened in response to said brake releasing signal; and

a bypass passage disposed in parallel with said valve mechanism and adapted to be closed when said fail-safe piston is caused to bring said valve seat member into engagement with the wall of said valve chamber by the pressure of said liquid pressure source.

4,555,146

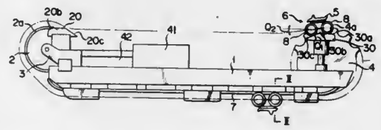
TRACK-TYPE VEHICLE UNDERCARRIAGE

Yukio Tamura, and Masashi Kaminishi, both of Hiratsuka, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,510

Int. Cl.⁴ B62D *55/12*

U.S. Cl. 305—10 **3 Claims**



1. A track-type vehicle undercarriage, comprising:

(a) a track frame;

(b) recoil means mounted on said track frame, said recoil means having a piston slidabley mounted therein and means for biasing said piston forwardly;

(c) a support member fixedly connected at its rearward end to said piston;

(d) an idler rotatably mounted on said support member at the forward end thereof;

(e) a sprocket rotatably mounted on the rear of said track frame;

(f) a lower rail mounted on said track frame underneath thereof, said track frame having a front end terminating adjacent and below said idler and a rear end terminating adjacent and below said sprocket, both ends of said lower rail being upwardly curved;

(g) an endless track of linked together track shoes mounted around said idler, said sprocket and said lower rail;

(h) a front support rail vertically, movably mounted on said support member adjacent to said idler, said front support rail having a flat top surface positioned slightly below the uppermost point of said idler and a downwardly inclined rear top surface to permit a smooth travel of said endless track when advancing the vehicle forwardly; and

(i) a rear support rail resiliently mounted on said track frame adjacent to said sprocket, said rear support rail having a flat top surface positioned slightly below the uppermost point of said sprocket and a dowanwardly inclined front top surface to permit a smooth travel of said endless track when advancing the vehicle rearwardly.

4,555,147

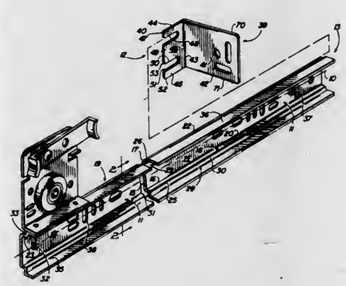
DRAWER SLIDE MOUNTING BRACKET

David L. Jackson, 4025 E. Madison, Phoenix, Ariz. 85034

Filed Sep. 6, 1984, Ser. No. 647,921

Int. Cl.⁴ F16C *29/00*

U.S. Cl. 308—3.8 **2 Claims**



1. In combination with the mounting rail of either of a pair of drawer rail assemblies, said mounting rail of each of said drawer rail assemblies having a rear end and including

an elongate panel having

planar front and back surfaces,

a longitudinal axis, and

a pair of opposed edges generally parallel to one another and said longitudinal axis, the shortest distance between said opposed edges being different for each of said drawer rail assemblies,

first and second opposed flanges attached to said elongate panel along said edges thereof and outwardly extending from said front surface thereof, said flanges each having generally planar parallel upper and lower surfaces, and an outer edge spaced away from and

generally parallel to said elongate panel, the shortest distance between said upper and lower planar surfaces of each of said first and second flanges comprising the thickness of each flange, third and fourth flanges each attached to one of said outer edges of said first and second flanges, said third and fourth flanges each having generally planar parallel forward and rear surfaces generally parallel to said elongate panel, and extending outwardly away from said first and second flanges and said panel member,

said rear surfaces of said third and fourth flanges generally lying in the same imaginary plane, an imaginary plane passing through said front surface of said elongate panel being generally parallel to and spaced apart from said imaginary plane passing through said rear surfaces of said third and fourth flanges,

said elongate panel and first, second, third and fourth flanges terminating at said rear end of said mounting rail,

a one piece mounting bracket for slidably frictionally engaging and supporting said mounting rail and including a mount plate for cabinet attachment and a toothed panel to slidably frictionally interfit with said drawer rail assembly mounting rail, said toothed panel being integrally joined with said mounting plate along a generally linear juncture and having a mounting rail receiving end spaced away from said linear juncture and including

(a) a first tooth having front and back planar surfaces and upper and lower generally linear peripheral edges;

(b) a second tooth having front and back planar surfaces and upper and lower generally linear peripheral edges;

(c) a tongue between said first and second teeth and having front and back planar surfaces and upper and lower generally linear peripheral edges;

said lower peripheral edge of said first tooth and upper peripheral edge of said tongue generally being parallel and defining a first slot through said toothed panel opening at said mounting rail receiving end thereof, the shortest distance between said lower peripheral edge of said first tooth and said upper peripheral edge of said tongue being greater than said thickness of said first flange,

said upper peripheral edge of said second tooth and said lower peripheral edge of said tongue being generally parallel and defining a second slot through said toothed panel opening at said mounting rail receiving end thereof, the shortest distance between said upper peripheral edge of said second tooth and said lower peripheral edge of said tongue being greater than said thickness of said second flange,

said mounting bracket being sized and dimensioned such that when said rear end of one of said mounting rails engages said mounting rail receiving end of and slidably frictionally interfits with said mount bracket,

(d) said back planar surface of said tongue contacts said front planar surface of said elongate panel of said mounting rail; and,

(e) said front planar surfaces of said first and second teeth contact said rear surfaces of said third and fourth flanges.

4,555,148

RECTILINEAR GUIDE COMPRISING FIRST AND SECOND MEMBERS WHICH ARE MOVABLE ONE WITHIN THE OTHER

Hans C. de Willigen, and Johannes E. Kokken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1984, Ser. No. 675,683

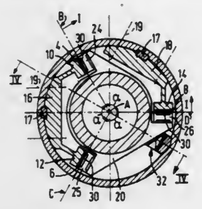
Claims priority, application Netherlands, Dec. 1, 1983, 8304140

Int. Cl.⁴ F16C *29/04, 29/12*

U.S. Cl. 308—6 R **3 Claims**

1. A rectilinear guide comprising first and second members arranged one within the other and of which one is movable rectilinearly relative to the other, the two members having coinciding central axes extending in the direction of the relative movement between the members, and at least two clusters of bearing elements which are arranged between said members, the clusters being spaced from one another in the direc-

tion of said axes and at least one of the members comprising guide surfaces which extend in the direction of said axes and on



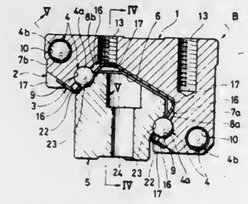
which the bearing elements are movable, characterized in that the guide surfaces are situated in planes which contain said coinciding axes.

4,555,149

LINEAR SLIDE BEARING AND LINEAR SLIDE TABLE USING THIS BEARING

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo 158, Japan

Filed Sep. 1, 1983, Ser. No. 528,588
Claims priority, application Japan, Sep. 20, 1982, 57-162113
Int. Cl.⁴ F16C *29/06*
U.S. Cl. 308—6 C **14 Claims**



1. A linear slide bearing comprising:

a slide block of substantially C-shaped cross section having a obliquely downward opened recess defined between arms thereof, one of the arms having an upwardly facing inclined surface on the inner side thereof, the other arm having a downwardly facing inclined surface on the inner side thereof, the upwardly and downwardly facing inclined surfaces each having only a single load ball groove semicircular in cross section extending longitudinally thereon, the load ball groove in one of said arms being positioned such that there is clear access thereto, for grinding purposes, with respect to the other of said arms, from a direction generally perpendicular to a chord drawn across the edges of said load ball groove, and the load ball groove of the other of said arms being positioned such that there is clear access thereto, for grinding purposes, with respect to said one arm, and each of said arms further having no-load ball hole bored longitudinally therethrough;

a pair of side covers attached to right and left side surfaces of said slide block, each side cover having guide grooves each interconnecting both end portions of the load ball groove and the no-load ball hole formed in each arm;

a ball retainer formed from a thin plate material into a shape substantially conforming to the recess of said slide block, said ball retainer having a downwardly facing inclined surface and an upwardly facing inclined surface, facing the upwardly and downwardly facing inclined surfaces formed on both arms of said slide block respectively, said downwardly end upwardly facing inclined surfaces having slots confronting their mating load ball grooves formed in said upwardly and downwardly facing inclined surfaces respectively, said ball retainer being mounted in the recess of said slide block, with both end portions thereof secured by said pair of side covers respectively;

a large number of balls running through endless tracks formed by the load ball grooves and the no-load ball holes formed in the arms of said slide block and the guide grooves in said pair of side covers interconnecting both end portions of these grooves and holes respectively, the balls forming load-carrying ball trains running through said load ball grooves while partly projecting from the slots in said ball retainer and no-load ball trains running through said no-load ball holes; and

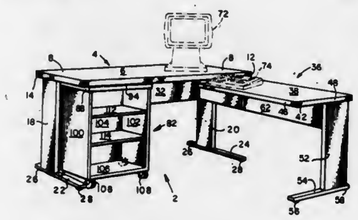
a guide rail having at least the upper portion thereof formed into a shape substantially similar in cross section to that of the recess of said slide block, said guide rail further having a downwardly facing inclined surface and an upwardly facing inclined surface, facing the upwardly and downwardly inclined surfaces of said slide block respectively, said downwardly and upwardly facing inclined surfaces having ball-rotating grooves semicircular in cross section through which the balls forming the load-carrying ball trains and partly projecting from the respective slots in said ball retainer run.

4,555,150

WORK STATION

Clyde D. Turnbull, Chicago, Ill., assignor to Hunt Manufacturing Co., Philadelphia, Pa.

Filed Jan. 16, 1984, Ser. No. 570,948
Int. Cl.⁴ A47B *83/04*
U.S. Cl. 312—250 **4 Claims**



1. A work station comprising:

a first table having a substantially rectangular top with upper and lower surfaces and means for supporting the top adjacent the ends of the top,

a second table having one end secured to the first table at a substantially right angle thereto having a substantially rectangular top with upper and lower surfaces and with the rear edge of the second table top being substantially aligned with the edge of one end of the first table top, and the upper surface of the second table top lying in a plane below the plane of the lower surface of the first table top, and

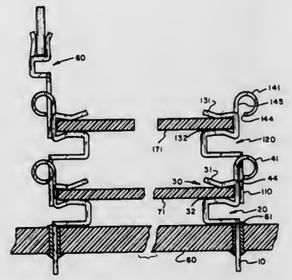
a movable storage cabinet having a top which has a height substantially equal to the height of said second table top and a depth substantially equal to the depth of the second table top respectively for alternatively serving as an extension of the second table by positioning the storage cabinet so it is adjacent to the end of the second table top opposite the end that is secured to the first table or nesting under the first table top adjacent the end thereof remote from the second table.

4,555,151

CONTACT TERMINAL DEVICE FOR CONNECTING HYBRID CIRCUIT MODULES TO A PRINTED CIRCUIT BOARD

Wayne E. Neese, Hoffman Estates, and William E. Stepan, Clarendon Hills, both of Ill., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Aug. 6, 1984, Ser. No. 638,174
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 339—17 CF **4 Claims**



1. A contact terminal device for electrically interconnecting and physically attaching at least first and second planar hybrid circuit modules in a stacked and substantially parallel relationship to the other and to a printed circuit board connected to a source of electrical signals, said contact terminal device comprising:

male terminal means arranged to be accepted and electrically connected to said printed circuit board and said source of electrical signals;

a buffer means including first and second legs and having said first leg extending from said male terminal means;

accepting means including a resilient tongue section and a rigid vertically oriented surface extending from said buffer means second leg forming a compliant mouth for accepting an edge of said first hybrid circuit module therein, electrically connecting said first hybrid circuit module to said printed circuit board and said source of electrical signals; and,

connecting means comprising first and second open-ended loops of conductive material spaced parallel to each other and having one end of each of said first and second loops extending from a top edge of said accepting means surface, each of said first and second loops connected to the other's opposite end by a horizontal member defining a male terminal accepting area between the front edge of said horizontal member and a rear side of said accepting means surface, the male terminal means of a second contact terminal device installed on said second hybrid module is inserted between said first and second loops, and said horizontal member front edge applies a compressive force against said male terminal means of said second terminal device thereby, retaining said second hybrid circuit module to said first hybrid circuit module in a stacked and parallel relationship, connecting said second hybrid module to said printed circuit board and said source of electrical signals.

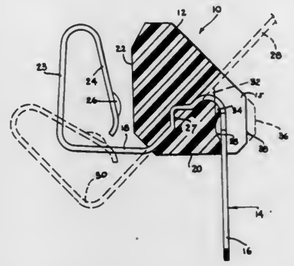
4,555,152

LEADLESS INTEGRATED CIRCUIT CONNECTOR

Donald L. Johnson, Olivenhain, and Lowell R. Lingenfelter, La Jolla, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 26, 1983, Ser. No. 535,849
Int. Cl.⁴ H01R *23/70*
U.S. Cl. 339—17 L **3 Claims**

1. A device for connecting a leadless flat circuit to a circuit board comprising an elongated body of insulating material having a first surface adapted to fit flush against a circuit board, a second surface adjacent the first surface having a series of parallel grooves, and a third surface; and a series of parallel conductors each molded into a central portion of the body of insulating material and bent to fit into one of the grooves in a manner that the insulating material underlying the bend is forced tightly thereagainst and the portion of the body which is grooved is forced tightly against the remaining portion of the conductor, the conductors protruding at one end



from the first surface for connection to a circuit board and at the other end lying alongside the third surface and being bent to provide a spring to hold and make contact with the leadless flat circuit interposed between the conductors and the third surface, and

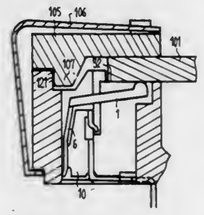
in which each of the parallel conductors has a portion adjacent the end lying alongside the third surface which lies in the same plane as the first surface when the leadless flat circuit is held in place against the third surface.

4,555,153

CONNECTOR COMPRISING AT LEAST ONE CONTACT HAVING A RESILIENTLY DEFORMABLE ARM

Hervé Bricaud, Plaisir, and Patrick L'Henaff, Thiais, both of France, assignors to Socapex, Suresnes, France

Filed Feb. 21, 1984, Ser. No. 581,709
Claims priority, application France, Feb. 25, 1983, 83 03131
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 339—17 CF **25 Claims**



1. In a connector comprising at least one contact having a resiliently deformable arm exterting a bearing force in the direction opposite the direction of insertion of a substantially planar substrate having contact pads on the planar surface facing said insertion direction, said contact being inserted longitudinally substantially parallel to the direction of insertion of said substrate in a socket formed in an insulating block, said contact having longitudinal generatrices, and comprising: a body cooperating with at least one edge of the socket so that, once the contact has been inserted, it has a longitudinal axis essentially parallel to the direction of the generatrices of the socket; said body having in section the general shape of a U defined by a bottom and two substantially planar legs, at least one of the legs being guided longitudinally over at least a part

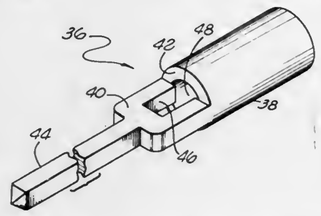
of its length by at least one lateral wall of the socket; an output terminal disposed at one longitudinal end of the body of the contact and extending from said socket; an extension forming an abutment for the contact against a surface of said insulating block to limit movement of the contact in the direction of insertion of the contact; a resilient retention tongue connected to said body, extending essentially in the longitudinal direction of said body, and cooperating with a stopping face of a retention cavity disposed in said socket so as to form an abutment in the direction opposite the direction of insertion of the contact; a spring arm connected to the other longitudinal end of said body and extending in a direction substantially parallel to the longitudinal axis of said body; said resiliently deformable arm extending from said socket for engagement with said substrate and comprising a lever projecting beyond the socket and extending from said spring arm the lever extending in a direction that is substantialy from one leg of the body towards and through the plane of the other leg.

4,555,154

ELECTRICAL CONNECTOR CONTACT RETENTION ASSEMBLY

John A. Sugars, Ogden, Utah, assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Dec. 21, 1983, Ser. No. 563,855
Int. Cl.⁴ H01R *11/00*
U.S. Cl. 339—59 R **8 Claims**



1. An electrical connector member comprising:
an insulator having at least one passage extending therethrough from a front face to a rear face thereof;
an electrical socket contact in said passage insertable therein from the front of said insulator;
said socket contact having a forward hollow section and a rear section;
said forward hollow section of said contact having a close sliding fit within said passage;
said forward section having a bore therethrough communicating with an opening in said rear section;
the rear of said opening providing a forwardly facing shoulder;
a laterally movable contact retention element extending rearwardly and inwardly from the wall of said passage, the end of said retention element engaging said shoulder for restricting forward movement of said contact in said passage; and
said retention element being deflected outwardly to remove said end thereof out of engagement with said shoulder by inserting a tool from the front of said insulator rearwardly through said bore into said opening.

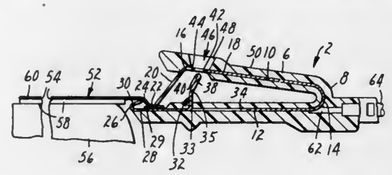
4,555,155

BIOELECTRODE CONNECTOR

Gerald E. Drake, Menomonie, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 28, 1983, Ser. No. 555,643
Int. Cl.⁴ H01R *9/07*
U.S. Cl. 339—61 R **2 Claims**

1. A bioelectrode connector adapted for connection with a monitoring electrode having a thin, conductive, deformable tab comprising generally parallel first and second major surfaces, the connector comprising:
a. an elongate first member having an end portion terminating at a generally transverse, plane edge surface;
b. an elongate, electrically conductive second member having a contact surface and an arcuate end portion extending from the contact surface and terminating at a generally transverse, plane edge surface overlying and spaced apart from the contact surface;
c. means for attaching the members opposite the end portions to afford relative movement of the end portions generally perpendicular to the contact surface from an open position with the end portions spaced apart to a



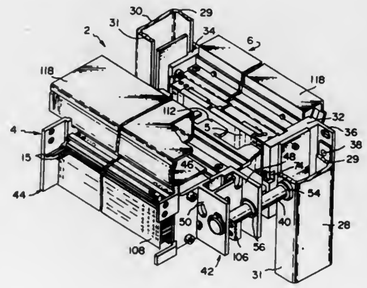
closed position with the edge surface of the first member pinning the tab into intimate engagement with the contact surface and bending a portion of the tab adjacent the edge surface of the first member into close proximity with the edge surface of the second member;
d. means for biasing the end portions in the open position to afford insertion of the tab therebetween; and
e. means for releasably latching the end portions in the closed position, comprising a latch having a first end portion connected to the second member and a second end portion including means for contacting the first member when the end portion of the first member is in the closed position and for locking the end portion of the first member in the closed position.

4,555,156

ELECTRICAL CONNECTOR ASSEMBLY HAVING MATING AND UNMATING REMOVABLE KEYS

Friedrich J. A. Kourimsky, Bensheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 16, 1984, Ser. No. 672,051
Int. Cl.⁴ H01R *13/629*
U.S. Cl. 339—75 M **10 Claims**



1. A multi-contact electrical connector assembly of the type comprising two connector parts, each of the parts comprising a housing assembly having contact terminals therein, each housing assembly having a mating face, oppositely facing endwalls and oppositely facing sidewalls, the endwalls and the sidewalls extending substantially perpendicularly of the mating face, the contact terminals in each housing assembly having a

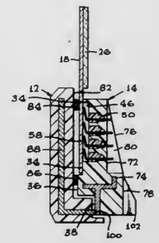
contact portion which is adjacent to the mating face, the contact terminals being of the type which are mated with each other by moving the terminals axially towards each other until the contact portions are in aligned overlapping and axially offset relationship and then moving the contacts laterally of their axis in a first lateral direction towards each other, the contact terminals being disengageable by moving the terminals laterally of their axes in a second lateral direction which is the opposite direction from the first lateral direction and then moving the terminals parallel to their axes away from each other, the connector assembly being characterized in that:
a connector assembly guide means is provided on the housing assemblies for guiding the assemblies towards each other from a spaced-apart position to a closed portion in which the mating faces are substantially against each other and the contact portions of the terminals are in overlapping offset relationship,
first and second camming systems are provided for moving the housing assemblies in the first and second lateral directions respectively, the first camming system being incapable of moving the housing assemblies in the second lateral direction, the second camming system being incapable of moving the housing assemblies in the first lateral direction,
the first and second camming systems being independent of each other, at least one of the camming
systems having a readily removable camming part which,
upon removal, immobilizes the one camming system whereby, upon removal of the one removable camming part, the housing assemblies cannot be moved in one of the lateral directions.

4,555,157

ELECTRICAL CONNECTOR FOR VISUAL DISPLAY AND METHOD OF MAKING SAME

Donald L. Johnson, Olivenhain, and Thomas F. Kordis, Solana Beach, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 410,938, Aug. 24, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 647,118
Int. Cl.⁴ H05K *1/00*; H01R *13/62*
U.S. Cl. 339—75 MP **12 Claims**



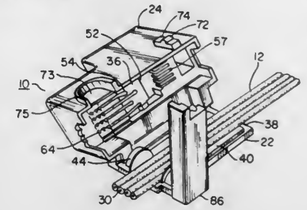
1. An electrical connector for making electrical connections to a generally rectangular large-area substrate having a plurality of spaced-apart contact pads arranged in parallel rows along the edges on one surface of the substrate and positioned with respect to substrate index means provided on a first end of the substrate, comprising:
a base in the form of a generally rectangular frame each side of which includes a support surface for supporting a respective edge on the one surface of the substrate, and having multiple rows of cavities formed below the support surface along each side of the base, each row including a plurality of spaced-apart cavities;
a plurality of generally rectangular contact assemblies, each including an insulator body for supporting multiple spaced-apart electrically conductive elements positioned to form a row of resilient electrical contacts which project from a first surface of the assembly body, and a row of corresponding electrical terminals which project from a second surface of the assembly body, each contact assembly body designed to be removably insertable within a respective one of the cavities so that the electrical contacts extend in multiple rows adjacent the support surface on each side of the base;
alignment means including a contact assembly alignment element formed as part of each contact assembly body and a cavity alignment element formed as part of each cavity for both aligning and retaining each contact assembly in the respective cavity so that the electrical contacts are maintained in aligned relation to the base;
registration means formed as part of the base for positioning the substrate with respect to the electrical contacts so that the substrate contact pads are aligned with the electrical contacts when the substrate is placed onto the base;
a cover in the form of a generally rectangular frame designed to fit over the edges on the other side of the substrate and to fasten to the base, and having means for applying pressure to the edges on the other surface of the substrate to maintain connection between the contact pads and the electrical contacts;
fastening means for fastening the cover to the base; and
in which the base further comprises base stiffening means including base stiffening bars, each bar embedded in and extending substantially the length of each side of the base and formed of a material sufficiently stiff to prevent the sides of the base from bending when the cover is fastened to the base.

4,555,158

MODULAR CONNECTOR AND SYSTEM CONTAINING THE SAME

Ping H. Lam, Baguio Villa, Hong Kong, assignor to The Wallace Companies, Inc., Birmingham, Ala.

Continuation-in-part of Ser. No. 638,021, Aug. 6, 1984. This application Mar. 18, 1985, Ser. No. 712,620
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—99 R **25 Claims**



1. A modular connector adapted to provide a removable electric connection between a source of electricity and electrical equipment, comprising:
(a) a base;
(b) a pathway on a surface of the base for receiving an insulated cable containing at least one conductor therein;
(c) a cover operatively connected and movable relative to the base, comprising an opening for receiving an electrical connector insertable therein, insulation piercing means, and electrical connecting means between said opening and said insulation piercing means adapted to electrically connect a pierced cable to an electrical connector inserted in said opening, said cover being movable from an open position exposing said base to a closed position for aligning said insulation piercing means with said insulated cable;
(d) a cam mounted to said base including an essentially planar surface which is alignable with said pathway to facilitate reception of the insulated cable, and a non-planar surface comprising at least one groove which surface is raised relative to said pathway for moving said cable

toward said insulation piercing means when said cover is moved from the open position to the closed position to facilitate piercing thereof; and

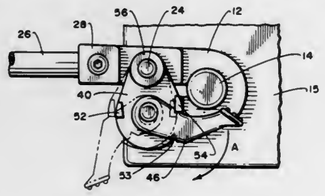
(e) means for moving said essentially planar surface out of alignment with said pathway and moving said non-planar surface adjacent said pathway.

4,555,159

BATTERY POST CONNECTOR

Armand N. Chartrain, 115 Poinsettia Gardens, Ventura, Calif. 93004, and Lee A. Genne, 1220 Johnson Dr., No. 111, Ventura, Calif. 93003

Filed Aug. 6, 1984, Ser. No. 638,276
Int. Cl.[4] H01R *11/26*
U.S. Cl. 339—239 **14 Claims**



1. A battery post connector comprising:

a conductor clamp having spaced-apart first and second legs each having an upstanding post;

a pivot member rotatably connected to one of said posts having a central opening into which the other of said posts extends;

a lever having a boss extending therefrom for rotatable interfitting with the central opening, the rotational axis of said boss being coextensive with the axis of said central opening; and

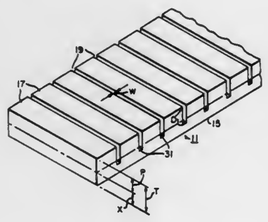
an aperture through said boss having an axis offset from the boss rotational axis, said other of the posts extending into said aperture and about which the lever rotates.

4,555,160

METHOD AND APPARATUS FOR STRAIN RELIEVING TRANSDUCERS BONDED TO ACOUSTO-OPTIC DEVICES

Milton Gottlieb, Pittsburgh, and Kenneth B. Steinbruegge, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1982, Ser. No. 403,954
Int. Cl.[4] G02F *1/33*
U.S. Cl. 350—358 **3 Claims**



1. A method of bonding a single acoustic transducer plate to an optical medium to form an acousto-optic device having at least two separate transducer elements, said single acoustic transducer plate having a first surface which is to be bonded to said optical medium and a second exposed surface opposite thereto, said method comprising the steps of:

forming at least one groove of predetermined depth in the first surface of the transducer plate whereby the first surface consists of at least two spaced mounting zones separated by said at least one groove;

bonding said transducer plate mounting zones of said first surface to the optical medium;

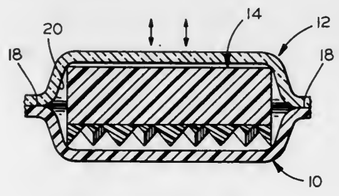
polishing the second exposed surface of said bonded transducer plate in order to reduce the transducer plate to a thickness which is less than the predetermined depth of said grooves in order to expose said grooves thereby rendering at least two separated transducer elements bonded to the optical medium.

4,555,161

ENCAPSULATED RETROREFLECTIVE MATERIAL AND METHOD OF MAKING SAME

William P. Rowland, Southington, Conn., assignor to Reflexite Corporation, New Britain, Conn.

Filed Feb. 16, 1984, Ser. No. 580,736
Int. Cl.[4] G02B *5/124*
U.S. Cl. 350—103 **10 Claims**



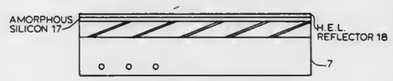
1. A retroreflective laminar sheet assembly comprised of a first length of flexible synthetic plastic sheet material providing a base sheet, a substantially coextensive length of flexible transparent synthetic plastic sheet material providing a cover sheet, and an array of retroreflective film pieces disposed between said base sheet and cover sheet along the length thereof in a predetermined pattern for retroreflectance through said cover sheet, said base and cover sheets being bonded to one another in the areas between and about said film pieces to provide a multiplicity of discrete cells in which said film pieces are seated.

4,555,162

METHOD OF FABRICATING LONG PERIOD OPTICAL GRATING

Ralph E. Aldrich, Acton, and Steven M. Daigneault, Rockland, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Mar. 5, 1984, Ser. No. 586,175
Int. Cl.[4] G02B *5/18*
U.S. Cl. 350—162.17 **19 Claims**



1. A method of fabricating a long period optical grating device comprising the steps of:

providing a plurality of support elements having planar surfaces;

producing light reflective surfaces upon the planar surfaces of said support elements;

thereafter bonding said support elements together in a stack; and

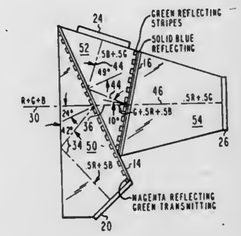
thereafter cutting said stack at an acute angle with respect to the planar surfaces of said support elements and lapping said stack to form said grating.

4,555,163

COMPLEMENTARY COLOR SPLITTING FILTERS USED IN A COLOR CAMERA

Theodor M. Wagner, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 22, 1983, Ser. No. 534,710
Int. Cl.[4] G02B *27/10, 5/28;* H04N *9/09*
U.S. Cl. 350—172 **10 Claims**



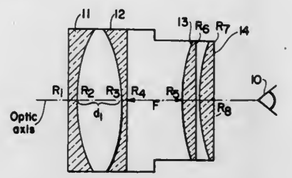
1. A color television beam splitter for use with incident light including first, second and third primary color components comprising a first partially reflecting means having first areas for transmitting all of said incident light components along a path and second areas for reflecting all of a first group of two of said three primary color components corresponding to a first color complementary to said first primary color component to a first output port; and a second partially reflecting means disposed in said path and having first areas for transmitting all of a second group of two of said three primary color components corresponding to a second color complementary to said second primary color component to a second output port and second areas for reflecting all of a third group of two of said three primary color components corresponding to a third color complementary to said third primary color component to a third output port.

4,555,164

ANAMORPHIC LENS SYSTEM INCREASING THE FIELD OF VIEW FOR THE VISUALLY HANDICAPPED

William Feinbloom, Highland, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,765
Int. Cl.[4] G02B *27/02, 13/00*
U.S. Cl. 350—420 **13 Claims**



1. A lens assembly for increasing the field of vision of a user having a visual handicap indicative of a condition designated as tunnel vision, said lens assembly operative to increase the field of view by minifying optically in one plane, while substantially not altering the magnification or minification in another plane transverse to said one plane, comprising:

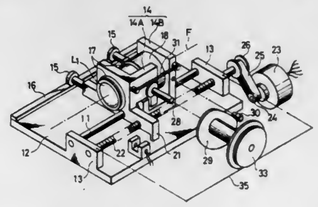
a first lens assembly being a cylindrical concave lens assembly including a first plano-concave lens having a front flat surface of an infinite radius and a second concave surface, with a second plano-concave lens assembly having its concave surface facing said concave surface of said first lens and aligned on the same optical axis positioned at a given distance from the eye of said user with a second lens assembly being a cylindrical convex lens assembly including a first plano-convex lens having its convex surface facing the flat surface of said second plano-concave lens, with a second plano-convex lens having its convex surface facing the flat surface of said first plano-convex lens, with all of said lenses aligned with their centers on a common optical axis positioned between said first assembly and the eye of said user to enable said user to perceive with almost no reduction of his own acuity in said one plane and with a minification proporational to the increase in said field of view, in said other plane transverse to said one plane.

4,555,165

ZOOM LENS BARREL FOR VARIABLE MAGNIFICATION TYPE COPYING MACHINE

Ikuo Negoro, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1984, Ser. No. 654,576
Claims priority, application Japan, Oct. 3, 1983, 58-186084
Int. Cl.[4] G02B *7/11;* G03B *27/10*
U.S. Cl. 350—429 **4 Claims**



1. In a variable magnification type copying machine in which a zoom lens having at least two movable lenses is arranged between an original surface and a photosensitive surface, and the positions of said movable lenses and the distance between said movable lenses are changed to vary the copying magnification thereof, the improvement wherein:

said movable lenses of said zoom lens are fixedly held by respective movable lens frames,

said movable lens frames are inserted into an axial hole formed in a single movable lens barrel which is moved in the axial direction as the magnification of said zoom lens is varied,

at least one of said movable lens frames is fixedly secured to said movable lens barrel, while the other movable lens frame is supported in said movable lens barrel in such a manner as to be moved in the axial direction as the magnification changes, and

said one movable lens frame comprises first means for adjusting an angular position of said one movable lens frame with respect to said movable lens barrel without moving said one movable lens frame in the axial direction, and second means for adjusting a position of said one movable lens frame in an axial direction thereof.

4,555,166

ELECTRIC REMOTE CONTROL MIRROR WITH HALF-BALL PORTION

Masao Enomoto, Isehara, Japan, assignor to Ichikoh Industries Limited, Tokyo, Japan

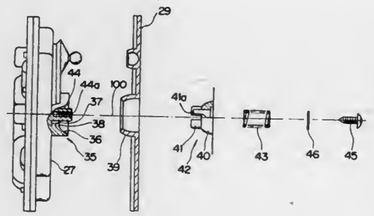
Filed Apr. 30, 1982, Ser. No. 373,783
Claims priority, application Japan, Feb. 8, 1982, 57-17604
Int. Cl.[4] G02B *5/08, 5/12;* A47G *1/24*
U.S. Cl. 350—634 **8 Claims**

5. An electric remote control mirror apparatus comprising a mirror having a backing member,

mirror housing means for receiving said mirror,

means for pivotally mounting said mirror within said mirror housing means to thereby define a pivoting axis, said pivotal mounting means including a housing member secured within said mirror housing means,

a pivot connection comprised to a partial ball base having a concave surface integrally formed with and extending outwardly from said housing member, means defining a cylindrical hole extending inwardly away from the central portion of said concave surface coaxially with the pivot axis to a bottom portion, at least one elongated projection formed so as to extend along the inner wall of said cylindrical hole in the direction of the pivot axis, means defining a column at the central bottom portion of said cylindrical hole means, said column means extending outwardly away from said bottom portion toward said concave surface coaxially with said pivot axis, said column means further including means defining an elongated interior opening, said backing member including a hollow convex shaped partial spherical projection integrally formed therewith and dimensioned to fit within said concave surface and having means defining a centrally positioned opening therein,



a pressure applying member having integrally formed upper and lower portions, said upper portion comprising a convex shaped partial spherical member dimensioned to fit within the interior of said hollow convex shaped portion of said backing member, said lower portion comprising a cylindrical member dimensioned to fit into said cylindrical hole means and through said opening means in said hollow convex shaped projection, said cylindrical portion having an annular end wall for fitting around said column means and means defining at least one slot for engaging said at least one elongated projection for preventing rotation of said mirror around the pivot axis, and

a coil spring disposed within said cylindrical portion about said column, one end thereof being in contact with a seat adjustably mounted at the top of said column and the other end thereof being held against said annular end wall for urging said pressure applying member toward said ball base so that said hollow convex shaped projection is retained between said ball base and said pressure applying member.

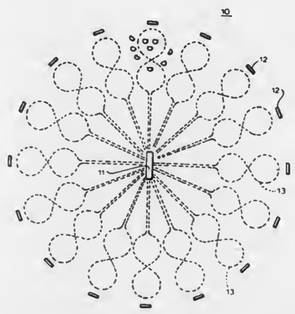
4,555,167

MULTIPLE SOUND PICTURE PROJECTION CINEMA

Anthony M. Roland, 19 Albany St., London N.W.1, England

Filed Aug. 1, 1983, Ser. No. 519,127
Int. Cl.⁴ G03B *19/18, 21/32*
U.S. Cl. 352—133 **13 Claims**

1. A multiple screen cinema comprising a projection room having projection windows, a plurality of mutually spaced proximate projection screens spaced from said projection room, a plurality of sound movie projectors located in said projection room and projecting different images toward respective projection screens through said windows, means responsive to each of said sound projectors for producing and limiting to a restricted area within the viewing area of each of said screens an audio modulated magnetic field, each restricted area being accommodative of a plurality of viewers and receiver means carried by each viewer located in a restricted area and responsive susbstantially only to the modulated magnetic field in the respective area for producing corresponding audible signals and being substantially nonresponsive to the magnetic fields in the areas other than that in which the viewer



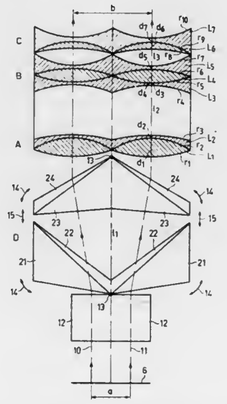
is located but being responsive to the magnetic field in any of the other areas in which said viewer is located.

4,555,168

DEVICE FOR PROJECTING STEROSCOPIC, ANAMORPHOTICALLY COMPRESSED PAIRS OF IMAGES ON TO A SPHERICALLY CURVED WIDE-SCREEN SURFACE

Walter Meier, Birmensdorf, Switzerland, and Jan Jacobsen, Reutern, Fed. Rep. of Germany, assignors to Walter Meier, Switzerland

PCT No. PCT/CH82/00099, § 371 Date Apr. 8, 1983, § 102(e) Date Apr. 8, 1983, PCT Pub. No. WO83/00749, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 23, 1982, Ser. No. 488,540
Claims priority, application Switzerland, Aug. 24, 1981, 5452/81; Sep. 23, 1981, 6177/81; Aug. 5, 1982, 4725/82
Int. Cl.⁴ G03B *21/00*
U.S. Cl. 353—7 **18 Claims**



1. An optical device for projecting stereoscopic, linear anamorphotically compressed pairs of images on to a spherically curved wide-screen surface, comprising:

a lighting unit including separate first and second light sources for first and second optical paths of separate first and second image channels, respectively, said light sources having two high pressure arc lamps surrounded by ellipsoidal mirrors, said ellipsoidal mirrors having optical axes at a predetermined angle relative to a plane of symmetry and defining optical illumination axes, and said lighting unit also including first and second deflecting prisms for displacing the illumination axes in directions parallel to said plane of symmetry;

two projection basic lens systems positioned in said optical paths of said lighting unit;

a film plane in said optical paths between said lighting unit and said basic lens systems; and

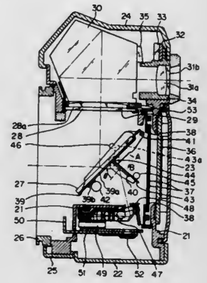
two supplementary lens systems, in said optical paths on a side of said basic lens systems remote from said lighting unit, for determining said optical paths of each of said image channels, said supplementary lens systems including decompression means for anamorphotically decompressing stereoscopic image paths and including a focal lens means for distortion-free superwide angle imaging of the image pairs displaced by a base distance on a spherically curved surface.

4,555,169

FOCUS DETECTING DEVICE FOR A CAMERA

Yasuo Suda; Akira Akashi; Akira Ishizaki; Akira Hiramatsu, all of Yokohama, and Keiji Ohtaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,244
Claims priority, application Japan, Sep. 13, 1983, 169915; Sep. 13, 1983, 169916; Sep. 13, 1983, 169917; Sep. 13, 1983, 169918; Sep. 13, 1983, 169919
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 354—407 **24 Claims**



1. A focus detecting device for a camera for detecting a focusing state of an imaging lens comprising:

first reflection means for reflecting a light flux from the imaging lens toward a bottom of a camera body;

second reflection means for reflecting a light flux from said first reflection means in a direction substantially parallel to an optical axis of the imaging lens;

third reflection means for reflecting the light flux from said second reflection means in a direction substantially normal to the optical axis of the imaging lens;

optical means for forming an image variable in accordance with a focusing state of the imaging lens based on the light flux transmitted through the imaging lens, said optical means being arranged between said second and third reflection means along the direction of reflection of the light flux by said second reflection means;

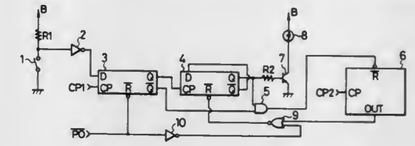
sense means for sensing the image formed by said optical means to produce a signal for detecting the focusing state of the imaging lens, said sensing means being arranged along the direction of reflection of the light flux by said third reflection means.

4,555,170

DEVICE FOR ILLUMINATING DISPLAY UNIT IN VIEWFINDER

Yoshio Wakui; Kiyoshi Negishi, and Eiichi Tano, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1985, Ser. No. 689,265
Claims priority, application Japan, Jan. 23, 1984, 59-8486
Int. Cl.⁴ G03B *17/18, 17/20*
U.S. Cl. 354—470 **4 Claims**



1. A device for controllably illuminating a display unit in the viewfinder of a camera, comprising:

a light source for illuminating said display unit in said viewfinder;

an operating switch for operating said light source;

a timer which, when said operating switch is turned off, operates for a predetermined period of time; and

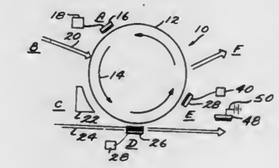
lighting circuit means for maintaining said light source turned on while said operating switch is turned on and while said timer is operating, said lighting circuit turning off said light source when said operating switch is turned on during operation of said timer.

4,555,171

CONDUCTIVE CHARGE/DISCHARGE DEVICE

Richard S. Clouthier, Penfield, and Thomas A. Rogers, Fairport, both of N.Y., assignors to Schlegel Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 358,107, Mar. 15, 1982, abandoned. This application Feb. 16, 1983, Ser. No. 467,168
Int. Cl.⁴ G03G *15/02*
U.S. Cl. 355—3 CH **22 Claims**





1. In a copying apparatus of the type having a photoconductive surface, a charging station to impart an electrostatic charge distribution to at least a portion of said photoconductive surface, an exposure station to impose an image on said portion of said surface, to thereby influence the charge distribution, a development station at which a developing material is deposited on said portion of said surface in a pattern corre-

sponding to the image to be reproduced, a transfer station having means for transferring the pattern to a sheet means and a discharge station for dissipating electrostatic charge on said portion of said surface, said photoconductive surface and said stations being relatively movable whereby a portion of said photoconductive surface is locatable adjacent a selected station, the improvement comprising said charging station including a charging device comprising an elongated, linear distribution of conductive fibers mounted on a conductive support means and extending across said charging station, with from 6 to 84 fibers per lineal inch and means connecting said fibers to a potential voltage source, said discharge station including a discharging means including an annular core having an exterior cylindrical surface which is covered with a plurality of closely positioned conductive fibers extending generally radially therefrom, means mounting said core of said discharging station for rotation adjacent to but with said fibers spaced from a said portion of said photoconductive surface at said discharge station and means connecting said fibers to a potential voltage source with a polarity different from that of said potential voltage source of said charging means.

4,555,172

DEVELOPING APPARATUS

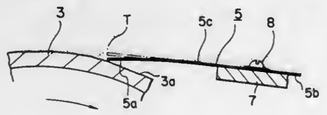
Michio Mogi, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

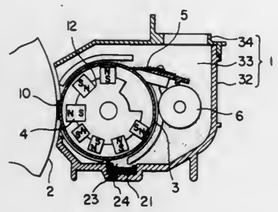
Filed Jul. 8, 1982, Ser. No. 396,285

Claims priority, application Japan, Jul. 10, 1981, 56-107051; Jul. 18, 1981, 56-112814; Jul. 20, 1981, 56-114126

Int. Cl.⁴ G03G *15/09*

U.S. Cl. 355—3 DD **17 Claims**





1. In a developing apparatus equipped with a sleeve placed inside a casing for storing developer and transferring the developer by means of the circumferential surface thereof and a scraper member positioned confronting the circumferential surface of said sleeve to scrape off the developer from the circumferential surface of said sleeve, the improvement wherein said scraper member is movable and is normally urged resiliently in the direction away from said sleeve to a first position which separates it a predetermined distance from the circumferential surface of said sleeve, and when there is developer on said scraper member the weight thereof causes the tip of said scraper member to move to another position closer to the circumferential surface of said sleeve.

16. In developing apparatus wherein a gap of limited width is defined between a developing sleeve and a restriction member for restricting the flow rate of developer, said restriction member being disposed so as to confront said sleeve, and said gap being changeable along the axial direction of said developing sleeve, the improvement wherein said restriction member has an adjusting member, and said gap can be adjusted by means of said adjusting member from the outside of the developing apparatus.

4,555,173

ELECTROSTATIC COPYING APPARATUS

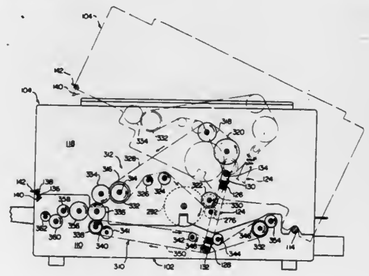
Masahide Iseki, Neyagawa; Toshio Yoshiyama, Sakai; Hiroshi Kajita, Kobe; Masanori Itakiyo, Sakai; Hiroshi Kusumoto, Takaishi; Yoshizo Kawamori, Fujiidera, and Masuo Kawamoto, Daito, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Nov. 15, 1983, Ser. No. 551,794

Claims priority, application Japan, Nov. 30, 1982, 57-209849

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **7 Claims**



1. An electrostatic copying apparatus having a first and a second supporting frames connected to each other for relative pivotal movement between an open position and a closed position, wherein

the first supporting frame has provided therein a rotatably mounted interlocking input gear and a first power transmission system drivingly connected to the interlocking input gear;

the second supporting frame has provided therein a drive source, a second power transmission system drivingly connected to the drive source, and a rotatably mounted interlocking output gear drivingly connected to the drive source;

a pivot member mounted for free pivotal movement about the central axis of rotation of the interlocking input gear or the interlocking output gear and held elastically at a predetermined angular position by a spring means is provided in the first supporting frame or the second supporting frame, and an interlocking linking gear is rotatably mounted on the pivot member;

when the pivot member is provided in the first supporting frame, the interlocking linking gear is in mesh with the interlocking input gear, and the interlocking input gear is drivingly connected to the first power transmission system so that it can freely rotate over a slight angular range with respect to the first power transmission system;

when the pivot member is provided in the second supporting frame, the interlocking linking gear is in mesh with the interlocking output gear, and the interlocking output gear is drivingly connected to the drive source so that it can rotate freely over a slight angular range with respect to the drive source; and

when the first and second supporting frames are relatively pivoted to the closed position, the interlocking linking gear is brought into mesh with the interlocking output gear or the interlocking input gear and as a result, the drive source is drivingly connected to the first power transmission system through the interlocking output gear, the interlocking linking gear and the interlocking input gear.

4,555,174

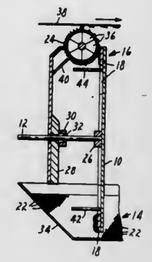
MAGNETICALLY ATTRACTABLE DEVELOPER MATERIAL TRANSPORT APPARATUS

George J. Kramer, Troy Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 19, 1983, Ser. No. 563,123

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 DD **15 Claims**



1. Apparatus for transporting magnetically attractable particles presented at a first position to a second position at which a magnetic field is present to attract magnetically attractable particles from the apparatus including:

a support member adapted for rotation about an axis that is located between the first and second positions,

said support member having a planar surface area at which a magnetic field is presented, said planar surface area located at a distance from said axis that is greater than the dimension of said support member at said planar surface measured in the direction defined by said axis, said distance from said axis causing said planar surface area to move between the first and second positions upon rotation of said support member.

4,555,175

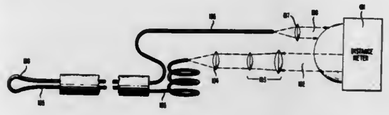
MEASURING COMPRESSION OF CABLED OPTICAL FIBERS

William B. Gardner, Atlanta; Parbhubhai D. Patel, Dunwoody; Dan L. Philen, Atlanta, and Manuel R. Santana, Doraville, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 15, 1983, Ser. No. 475,620

Int. Cl.⁴ G01B *11/02*

U.S. Cl. 356—32 **8 Claims**



1. A method of measuring the excess length of optical fiber in an optical fiber cable characterized by applying a stress to said cable along its longitudinal axis while optically monitoring the longitudinal strain applied to at least one fiber in said cable,

increasing the magnitude of said stress at least until said fiber is subjected to a tensile strain,

determining the tensile strain applied to said cable for which said fiber is initially subjected thereby to a tensile strain, and

thereby determining said excess length of said fiber.

4,555,176

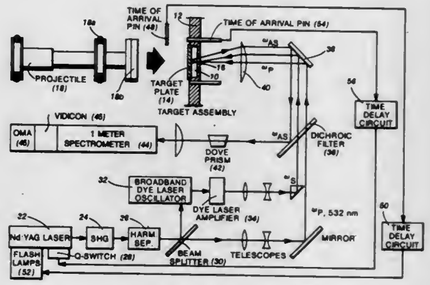
METHOD AND APPARATUS FOR DETERMINING PRESSURE-INDUCED FREQUENCY-SHIFTS IN SHOCK-COMPRESSED MATERIALS

David S. Moore, and Stephen C. Schmidt, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 16, 1983, Ser. No. 562,150

Int. Cl.⁴ G01N *21/65*

U.S. Cl. 356—301 **12 Claims**



1. An apparatus for conducting coherent anti-Stokes Raman scattering spectroscopy on shock-compressed materials, comprising:

a sample containment vessel having an optically transparent window forming one wall of said vessel, and an opposing, substantially parallel optically reflective wall;

shock means for applying a shock to said optically reflective wall so as to generate a shock wave in a sample contained in said vessel, said shock wave traveling from said reflective wall toward said optically transparent window,

laser means for producing a pump beam and a Stokes beam, and means for directing said pump beam and said Stokes beam through said optically transparent window so as to intersect in said sample between said window and said reflective wall as said shock wave passes through said sample; and

spectrometer means positioned to receive a coherent anti-Stokes beam emitted from the sample toward the reflective wall and reflected therefrom through the window along a path substantially parallel to the pump and Stokes beams.

4,555,177

METHOD AND APPARATUS FOR DETECTING SINGLET STATE RESONANCE FLUORESCENCE

Terence W. Barrett, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 564,583

Int. Cl.⁴ G01N *21/64*

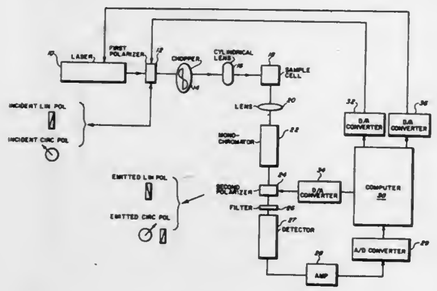
U.S. Cl. 356—318 **11 Claims**

1. A method for detecting the wavelength for singlet state resonance fluorescence of a sample, comprising:

sequentially illuminating the sample with incident light of different wavelengths, wherein at each wavelength the sample is sequentially illuminated with different components of the incident light, the incident components including a linearly polarized component, and an incident circularly polarized component;

detecting light emitted from the sample resulting from excitation by the incident light and subsequent spontaneous molecular energy transitions, wherein, for each wavelength of the incident light, intensities of components of the emitted light are sequentially detected, the compo-

nents of the emitted light including a linearly polarized emitted component, resulting from the incident linearly polarized component, and a circularly polarized emitted component, resulting from the incident circularly polarized component;



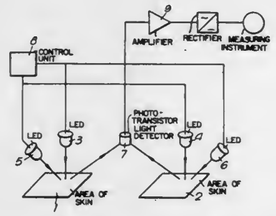
selecting the wavelength at which the intensity of the circularly polarized emitted component is approximately zero and where the intensity of the linearly polarized emitted component has some positive value, the selected wavelength being the wavelength for resonance fluorescence.

4,555,178

METHOD FOR THE MEASUREMENT OF THE DIFFERENCE IN THE OPTICAL PROPERTIES DEPENDENT ON THE LIGHT DIRECTION OF TWO SAMPLES

Hannu Harjunmaa, Espoo, Finland, assignor to Labsystems Oy, Helsinki, Finland

PCT No. PCT/FI83/00050, § 371 Date Feb. 2, 1984, § 102(e) Date Feb. 2, 1984, PCT Pub. No. WO84/00213, PCT Pub. Date Jan. 19, 1984
PCT Filed Jun. 21, 1983, Ser. No. 579,887
Claims priority, application Finland, Jun. 29, 1982, 822306
Int. Cl.⁴ G01N *21/47*
U.S. Cl. 356—339 **3 Claims**



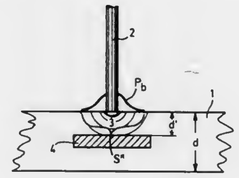
1. Method for measuring the difference in response of two samples to incident light directed at the samples from different angles and detected by a common light detector, characterized by the steps of irradiating said two samples simultaneously during a first interval with a first pair of light beams, one beam of said first pair being directed at one of said samples at a first angle, the other beam of said first pair being directed at the other of said samples at a second angle different from said first angle, irradiating said two samples simultaneously during a second interval with a second pair of light beams, one beam of said second pair being directed at said second angle at said one of said samples, the other beam of said second pair being directed at said first angle at said other of said samples, said first and second intervals occurring alternately in succession, and detecting at a common point the light from said light beams reaching said common point due to a given optical parameter of said samples.

4,555,179

DETECTION AND IMAGING OF OBJECTS IN SCATTERING MEDIA BY LIGHT IRRADIATION

John Langerholc, Paul-Klee-Str. 8, 8000 Munich 71, and Thorsteinn Halldórsson, Lerchenauerstrasse 2, 8 Munich 40, both of Fed. Rep. of Germany

Filed Nov. 8, 1982, Ser. No. 439,867
Int. Cl.⁴ G01N *21/00*
U.S. Cl. 356—342 **15 Claims**



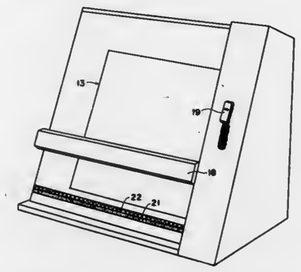
1. A method for detecting and imaging objects surrounded by a scattering medium comprising: illuminating the scattering medium with a collimated light beam incident upon and penetrating said medium; scanning the collimated light beam through a region of the scattering medium and at successive positions along a scanning path across a selected scanning area; detecting the back scattered light in the scattering zone around the locus of incidence of the collimated light beam on the scattering medium and measuring the intensity of the back scattered light from the scattering zone at successive positions along the scanning path across said scanning area; registering the measured intensity of light from the scattering zone at said successive positions along the scanning path; and associating differential measurements registered along the scanning path with the possible presence of an object.

4,555,180

PRINTED AREA MEASURING APPARATUS

Tatsunosuke Masuda, Kyoto; Tetsuo Hohki, Ibaragi, and Yasuo Kurusu, Otsu, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 18, 1983, Ser. No. 476,628
Claims priority, application Japan, Apr. 3, 1982, 57-55670
Int. Cl.⁴ G01N *21/55*
U.S. Cl. 356—445 **2 Claims**



1. An improved apparatus for measuring the printing area of a printing plate upon which a printing image area is formed of the type having a scanning head, movable in relation to the printing image area, which includes light sources arranged linearly and a plurality of photoelectric transfer elements arranged in parallel with the linear arrangement of light sources, wherein the quantity of light from said light sources reflected

from said printing plate is measured by said photoelectric transfer elements during a scanning operation of said scanning head, and the data obtained by such measurement is processed to measure said printing area, the improvement comprising:

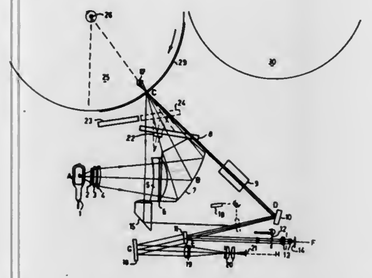
proving sensor means, separate from and movable independently of said scanning head, for measuring separately from said scanning operation a portion of said printing plate having a 0% signal level and a portion of said plate having a 100% signal level to provide calibration data for correcting the measurement of the printing area by said scanning head, said proving sensor means having at least one light source and one photoelectric transfer element.

4,555,181

APPARATUS FOR AUTOMATICALLY DETECTING AND EVALUATING THE CHARACTERISTICS OF PRINTS

Jan W. Klumper, Alphen a/d Rijn, and Hulbert Visser, Zevenhuizen, both of Netherlands, assignors to de Nederlandsche Bank N.V., Amsterdam, Netherlands

Filed Oct. 23, 1981, Ser. No. 314,292
Claims priority, application Netherlands, Nov. 7, 1980, 8006097
Int. Cl.⁴ G07D *7/00*
U.S. Cl. 356—448 **7 Claims**



1. Apparatus for automatically detecting and evaluating one or more characteristics of prints by comparing optically obtained data of a print to be tested with a standard print, comprising a light source in a first focussing optical system, a reflector means located in a region behind and spaced apart from the print to be tested and forming a background for a test field of the print to be tested and a light sensitive detection means in a second focussing optical system, said first focussing optical system and said second focussing optical system being directed to said test field and having their optical axes set at equal. but opposite angles with respect to a normal to the test field said reflection. means being for reflecting light from said first optical system passing through said print, into said second optical system, an area of said test field illuminated by said first focussing optical system being located in a focal plane of said reflection means.

4,555,182

APPARATUS AND METHOD FOR RECYCLING ASPHALTIC CONCRETE

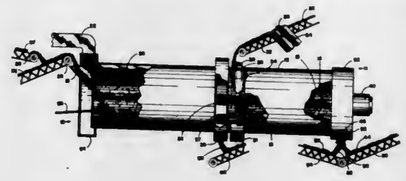
Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Division of Ser. No. 293,283, Aug. 17, 1981, Pat. No. 4,481,039. This application Jul. 26, 1984, Ser. No. 634,591
Int. Cl.⁴ B28C *5/46*
U.S. Cl. 366—25 **16 Claims**

1. An apparatus for treating asphaltic concrete comprising an elongated rotatable drum having a burner at a first end thereof for directing flame and hot gases of combustion into said drum toward an opposite second end,

first means for introducing composition into said drum intermediate said first and second ends in a first section of said drum,

second means for introducing composition into said drum adjacent said second end in a second section of said drum,



first means for recovering composition adjacent said first end, and

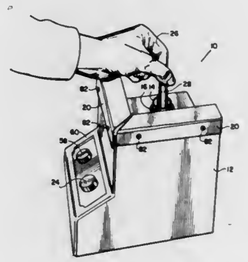
second means for recovering composition from said drum between said first and second means for introducing composition.

4,555,183

HIGH SPEED TEST TUBE AGITATOR APPARATUS

Rees D. Thomas, Lambertville, N.J., assignor to Reese Scientific Corporation, Lambertville, N.J.

Filed Feb. 6, 1984, Ser. No. 577,488
Int. Cl.⁴ B01F *11/00*
U.S. Cl. 366—208 **17 Claims**



1. A high speed laboratory mixer apparatus comprising:

a motor;

eccentric means attached to said motor for describing a circular path;

bearing means attached to said eccentric means;

cup means attached to said bearing means for supporting the base of a labortory test tube; and,

non-resilient restraining means attached to said cup means for allowing said cup to translate in a circular path while preventing said cup means from rotating.

4,555,184

MODULE FOR COMBINATION TIMEPIECE

Motoyuki Fujimori, Shiojiri, Japan, assignor to Shiojiri Kogyo Kabushiki Kaisha, Suwa, Japan

Filed Dec. 1, 1983, Ser. No. 557,036
Claims priority, application Japan, Dec. 7, 1982, 57-215287
Int. Cl.⁴ G04B *19/04*
U.S. Cl. 368—88 **11 Claims**

1. A combination time piece of modular construction comprising:

a power source;

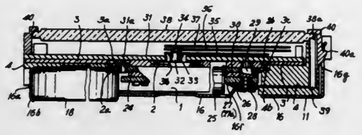
a frequency source coupled to the power source;

circuit means for performing timekeeping functions, having an aperture therein, coupled to the power source and frequency source;

an analog dial;

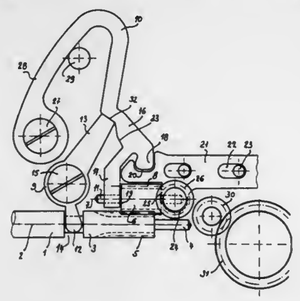
a spacer member disposed between the dial and the circuit

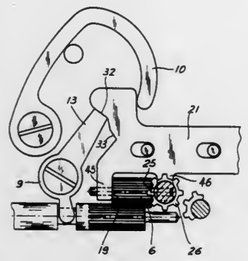
means, said spacer member having a second aperture aligned with the aperture of said circuit means;
stiff reinforcement member disposed between the dial and spacer means
an analog movement coupled to the circuit means, a portion of said analog movement being positioned in said apertures in said circuit means and spacer member to reduce a dimension of the timepiece;



analog hand display means coupled to the analog movement on top of the circuit means, said analog hand display means having a rotational center; and
electronic liquid crystal display means coupled to the circuit means and overlying the analog hand display means, said electronic liquid display means covering the rotational center of the analog hand display means.

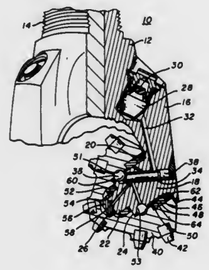
4,555,185
TIME SETTING MECHANISM FOR A TIMEPIECE HAVING AN ANALOG MECHANICAL DISPLAY
Cyril Vuilleumier, Bienne, Switzerland, assignor to Omega SA, Bienne, Switzerland
Filed Nov. 8, 1983, Ser. No. 549,859
Claims priority, application Switzerland, Nov. 9, 1982, 6502/82
Int. Cl.⁴ G04B *27/02*
U.S. Cl. 368—190 **9 Claims**





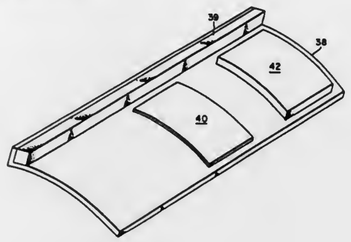
1. A time setting mechanism for a timepiece having an analog mechanical display with at least an hours hand and a minutes hand comprising a manually operable crowned stem capable of being toggled into at least two axial positions, an axially displaceable pinion and means slaving said pinion to the stem whereby the pinion may assume at least two distinct positions as determined by the axial positions of the stem, said stem including a toothed pinion, the axially displaceable pinion being rotatively mounted about an axis parallel to the stem axis, said axes being non-coincidently arranged in a manner such that the respective pinions mesh with one another and the slaving means being arranged and adapted such that with the stem in a drawn-out axial position the axially displaceable pinion drives the time setting gears when the stem is rotated.

4,555,186
AMORPHOUS ALLOY PLAIN BEARINGS
David M. Scruggs, San Juan Capistrano, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 10, 1984, Ser. No. 578,895
Int. Cl.⁴ E21B *9/08*
U.S. Cl. 384—93 **15 Claims**



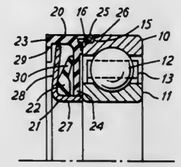
1. A boundary lubricated plain bearing pair comprising relatively moveable bearing surfaces in opposed load bearing sliding engagement through a thin film of lubricant wherein at least one of said bearing surfaces is formed of an amorphous alloy having as an essential component a refractory metal and having a VHN of at least 1000 and a crystallization temperature above 600° C.

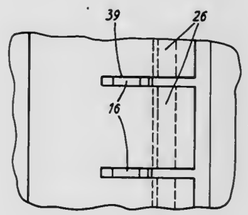
4,555,187
FOIL BEARING ALIGNMENT
Reinhard M. Klaass, Phoenix, and Francis J. Suriano, Scottsdale, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Division of Ser. No. 430,429, Sep. 30, 1982, Pat. No. 4,502,795. This application Jun. 11, 1984, Ser. No. 619,090
Int. Cl.⁴ F16L *32/06*
U.S. Cl. 384—103 **7 Claims**



1. A compliant foil for a diverging fluid bearing, said foil comprising a compliant member having at least two shims disposed along its axial length, each of said shims having a uniform thickness along its axial length with one shim having a greater uniform thickness than the other shim.

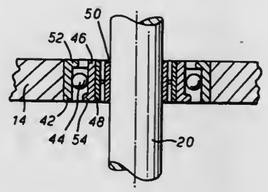
4,555,188
BEARING AND SEAL ASSEMBLY
Hubert W. T. Neal, Luton, England, assignor to SKF (U.K.) Limited, Luton, England
Filed Dec. 11, 1984, Ser. No. 680,572
Claims priority, application United Kingdom, Dec. 21, 1983, 8333962
Int. Cl.⁴ F16C *33/78*
U.S. Cl. 384—482 **17 Claims**





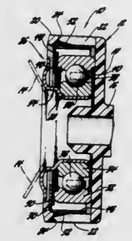
1. A ball or roller bearing and seal assembly in which the bearing comprises an outer bearing ring, an inner bearing ring, and rolling elements disposed between the two bearing rings and in rolling engagement therewith, the periphery of one of the bearing rings being formed with a recess having a side wall thereof facing in the direction away from the seal, and the seal comprises a component having one or more claws engaged in said recess, wherein the assembly comprises resilient means which urge the seal component in a direction away from said one bearing ring so as to engage the claw or claws as a tight fit against said side wall of the recess.

4,555,189
WINCHESTER DISC DRIVE
Charles W. Donkin, Falkland, Scotland, assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 23, 1982, Ser. No. 444,126
Int. Cl.⁴ F16C *33/04, 23/08, 27/08*
U.S. Cl. 384—493 **3 Claims**



1. In apparatus including a head-positioning actuator in a disc data store, a shaft for supporting the head-positioning actuator, a yoke for supporting the shaft, and a first rotary bearing mounted in said yoke and surrounding said shaft at a first location to allow said shaft rotate about an axis, the improvement comprising:
a removable composite bearing assembly mounting in said yoke at a second location to allow rotation of said shaft about said axis and allowing axial movement of said shaft along said axis, said composite bearing assembly being self-contained to include a second rotary bearing and an axial bearing, said second rotary bearing surrounding said shaft to allow rotation about said axis at said second location, said axial bearing mounted in said yoke and surrounding said second rotary bearing, said axial bearing having an outer axial ring and an inner axial ring with bearings in between, both said outer axial ring and said inner axial ring having stops to contain said bearings, said stops being separated by free space to allow free movement of said bearings along said axis between said stops, said outer ring mounted on said yoke and said inner ring surrounding said second rotary bearing, said axial movement of said bearings allowing said inner axial ring, said second rotary bearing, and said shaft to move along said axis;
wherein said outer axial ring comprises a plurality of axially-extensive outer recesses on the face thereof intermediate between said inner and said outer rings, wherein said inner axial ring comprises a corresponding plurality of axially-extensive inner recesses on the face thereof intermediate between said inner and said outer rings and wherein said plurality of balls are held between pairs of said outer recesses and said inner recesses whereby said outer and said inner axial rings are permitted mutual axial movement but are denied mutual rotational movement; and
wherein said first outer axial stop is an end wall in at least one of said plurality of outer recesses and wherein said first inner axial stop is an end wall in at least one of said plurality of inner recesses.

4,555,190
CLUTCH RELEASE BEARING ASSEMBLY
Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 17, 1985, Ser. No. 692,124
Int. Cl.⁴ F16D *23/14*; F16C *19/00, 33/30*
U.S. Cl. 384—495 **3 Claims**



1. An improved self-centering bearing assembly for a clutch release mechanism or the like of the type in which a carrier axially movable toward and away from a set of declutching elements has a radial bearing mounted thereto by an attachment member detachably joinable to said carrier with a resilient element axially compressed between a radial flange of said attachment member and a face of a race of said bearing that is non-rotatable relative to said carrier, with a rotatable race of said bearing having a contact member engageable with said declutching elements as said carrier moves axially thereto-ward, said improvement comprising:
a retention and shielding portion extending from said contact member radially past said attachment member radial flange and axially spaced from said face of said non-rotatable race by a distance sufficiently small that, when said attachment member is detached from said carrier, said resilient element may cooperate with said retention and shielding portion by axially expanding to bias said attachment member radial flange into said retention and

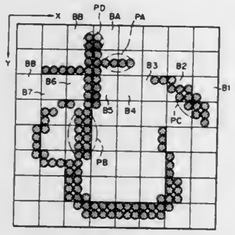
shielding portion to retain said attachment member to said bearing as a substantially rattle-free unit and so that, when said attachment member is joined to said carrier to compress said resilient element, said attachment member radial flange will move axially away from said retention and shielding portion just sufficiently to allow the bearing races to relatively rotate, whereby said attachment member radial flange and said retention and shielding portion may cooperate to shield said bearing.

4,555,191

METHOD OF REDUCING CHARACTER FONT

Tomomi Gojo, Zama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,319
Claims priority, application Japan, Nov. 5, 1983, 58-206914
Int. Cl.⁴ B41J *3/02;* **H04N** *1/00*
U.S. Cl. 400—121 **5 Claims**



1. A method of reducing a character font in which font data representative of the character font consists of a dot matrix having a plurality of rows of arranged in a first direction and a plurality of columns of arranged in a second direction perpendicular to the first direction, said method comprising the steps of:

(a) producing first data by dividing one of the rows in the first direction into a plurality of blocks such that each of the blocks includes a predetermined number of dots and, then, converting the one row to unit dots associated with the respective blocks;

(b) producing second data by shifting the row in the step (a) in the first direction to constitute a shifted row, then dividing the shifted row into a plurality of blocks, and then converting the shifted row to unit dots associated with the respective blocks;

(c) computing third data by associating the first and second data with each other in the second direction;

(d) computing third, row-by-row data by sequentially performing the steps (a), (b) and (c) in the second direction on the rows of a number which corresponds to the predetermined number;

(e) computing fourth data by associating in the second direction the third, row-by-row data computed by the step (d);

(f) computing the fourth data associated with the whole character font by repeating the consecutive steps (a) through (e); and

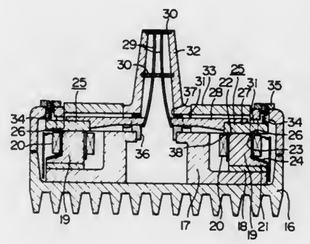
(g) converting the respective blocks consisting of dots associated with the plurality of fourth data computed by the step (f) to unit dots associated with the respective blocks.

4,555,192

RELEASE TYPE DOT PRINTER HEAD

Kuniaki Ochiai, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,715
Claims priority, application Japan, Feb. 25, 1983, 58-31395; Feb. 28, 1983, 58-33613
Int. Cl.⁴ B41J *3/12*
U.S. Cl. 400—124 **14 Claims**



1. A release type dot printer head comprising:

(a) a casing;

(b) an annular yoke secured to said casing;

(c) a permanent magnet secured to an upper face of said annular yoke;

(d) a plurality of cores, each of said plurality of said cores being secured to an upper face of said permanent magnet and each of said plurality of cores having an attractive face at the top thereof and a fulcrum at the top outer edge thereof;

(e) a plurality of coils, each of said plurality of coils being wound around an associated one of said plurality of cores;

(f) a plurality of armatures, each of said plurality of armatures being disposed for pivotal movement about the fulcrum on the associated one of said plurality of cores;

(g) a plurality of needles, each of said plurality of needles being secured to the inward end of an associated one of said plurality of armatures;

(h) a plurality of magnetic members, one of said plurality of magnetic members being disposed on the opposite side of an associated one of said plurality of armatures from the associated one of said plurality of cores, each of said plurality of magnetic members serving as a part of a side magnetic path which also includes said yoke and the associated one of said plurality of armatures; and

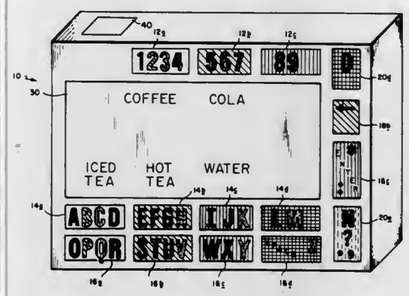
(i) a plurality of non-linear springs, each of said plurality of non-linear springs being disposed between an associated one of said plurality of armatures and an associated one of said plurality of magnetic members to resiliently bias the associated one of said armatures for pivotable movement about its fulcrum on the associated one of said cores against the attractive force of said permanent magnet, which attractive force acts on the associated one of said armatures through its attractive face, said plurality of non-linear springs not being in said side magnetic paths and each of said plurality of non-linear springs being selected so that the torque which it imparts to the associated one of said plurality of armatures as a function of the displacement of the associated one of said plurality of needles approximately the opposite torque imparted to the associated one of said plurality of needles by said permanent magnet.

4,555,193

KEYBOARDS INCLUDING COLOR CODING AND ONE HANDED OPERATION

Philip J. Stone, 70 Francis Ave., Cambridge, Mass. 02138

Filed Oct. 31, 1983, Ser. No. 546,884
Int. Cl.⁴ B41J *5/10*
U.S. Cl. 400—486 **23 Claims**



1. A keyboard for selecting characters from a variety of characters including all the letters of an alphabet, said keyboard comprising:

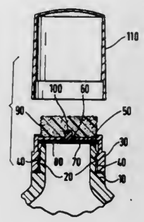
a plurality of fields of keys, each field including a plurality of single-field keys which identify a particular character when actuated concurrently with one other of said single-field keys from within the same field, said plurality of fields of keys being arranged for operation by one hand wherein each key has a background color and each character is printed on a key in a particular color so that actuation of a key upon which a character is printed concurrently with actuation of a key in the same field whose background color is identical to the color of said character causes the selection of said character.

4,555,194

APPLICATOR WITH RESILIENT VALVE

Geoffrey R. Hammond, Hull, England, assignor to Reckitt & Colman Products Limited, London, England

Filed May 16, 1984, Ser. No. 610,744
Claims priority, application United Kingdom, May 26, 1983, 8314585
Int. Cl.⁴ B05C *17/00*
U.S. Cl. 401—206 **9 Claims**



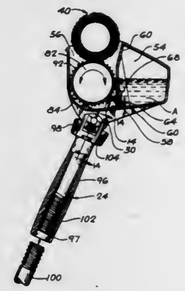
1. An applicator for applying liquids to surfaces when attached over the open mouth of a container, the applicator comprising a substantially rigid body (**30**) engageable with the container mouth, an applicator pad (**90**) bonded to the body (**30**), a resilient, substantially plane diaphragm (**70**) associated with the body (**30**) and provided with a split (**80**) offset from the center of the diaphragm for the passage of liquid from the container, and an actuator member (**100**) having one end in contact with the diaphragm (**70**) and the other end extending into the applicator pad (**90**) such that when the applicator pad (**90**) is pressed against a surface to be treated the actuator member (**100**) is displaced causing the diaphragm (**70**) to distort, opening the slit (**80**) and allowing liquid to flow from the container to the applicator pad (**90**), characterized in that the body (**30**) has a transverse wall (**50**) having therethrough a dispensing aperture for liquid in the container, the applicator pad (**90**) is bonded to the body (**30**) over the end of said aperture that is remote from the container, the substantially plane diaphragm (**70**) is located on the side of the transverse wall (**50**) adjacent the container and engages the container mouth in sealing contact therewith and is adapted to cover the dispensing aperture (**60**), and the slit (**80**) in the diaphragm (**70**) is situated intermediate its zone of contact with the container mouth and that portion of the diaphragm adapted to cover the dispensing aperture (**60**).

4,555,195

PAINTING TOOL

Joop J. deVreeze, Veendam; Zwier Tijssen, Sportlaan, both of Netherlands, and Daniel Doorley, Salem, Mass., assignors to Multigood, b.v., Netherlands

Filed Jul. 15, 1983, Ser. No. 514,227
Int. Cl.⁴ B43M *11/02;* **B05C** *17/02*
U.S. Cl. 401—218 **1 Claim**



1. A painting tool, comprising:

a housing including a handle;

a first paint reservoir;

a secondary paint reservoir;

a roller containing cavity within said housing having an internal wall defining a pair of sealing ledges which flank the secondary reservoir at either end of said housing;

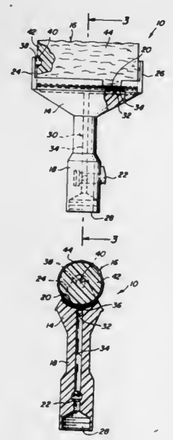
a first paint roller rotatably mounted within said housing;

a second, paint transfer roller rotatably mounted within said cavity rotating engagement with said first paint roller and in fluid communication with said first paint reservoir such that is transferred from the surface of the second, paint transfer roller to the surface of the first paint roller, said second, paint transfer roller having a pair of end portions and an intermediate portion between said end portions, said end portions having a larger diameter than said intermediate portion and arranged to rotate in sealing abutment with the sealing ledges of said housing, said intermediate portion including a plurality of projections spaced about said second paint transfer roller defining a paint transfer means, said secondary paint reservoir being defined generally intermediately of said second, paint transfer roller, adjacent said intermediate portion, to transfer paint thereto; and

a removable, rotary valve between said first and secondary paint reservoirs including an integrally formed generally arcuate valve casing defining on its forward end a slot segment projecting into said secondary paint reservoir and on its rearward side a stop means at the end of said first reservoir, said valve further including a valve stem adapted to be removably snap fit in said valve casing, said stem defining a generally cylindrical portion journalled in

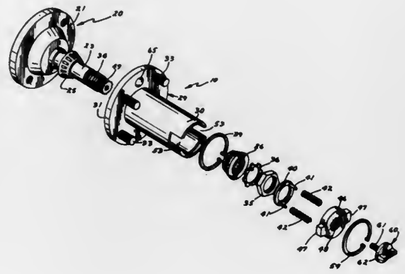
said casing and a wiper portion extending diametrically away from said cylindrical journalled portion, said wiper defining a movable closure for regulating paint flow from the first reservoir to the secondary reservoir in response to rotation of said journalled portion of the valve, said rotation occurring in an arc defined by translation of said wiper from a first limiting contact thereof with said forward slot segment and a second limiting contact with said stop means.

4,555,196
TANNING WAND
Billy B. De Garmo, 121 Jackson St., Weston, W. Va. 26452
Filed May 2, 1983, Ser. No. 490,403
Int. Cl.⁴ B43M *11/02*; B44D *3/28*
U.S. Cl. 401—220 **6 Claims**



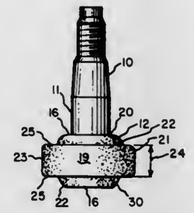
1. A tanning wand for dispensing tanning oil and the like from a container which comprises:
(a) a housing having a pair of opposite extending end walls;
(b) a resilient roller rotatively mounted to the housing between the end walls;
(c) means for directing the tanning oil through the housing onto the roller along an entire portion of a contact surface thereof, whereby tanning oil may be evenly spread on a surface by frictional engagement with said roller, wherein the wand is an attachment to the container and the housing includes means for securing the housing to the container, wherein said means for securing the housing to the container is a tube, affixed at its upper end to said housing, having a threaded opening at its lower end which mates with a threaded neck of said container;
(d) a T-shaped passage means for directing the tanning oil through the housing onto the roller having a horizontal portion having a plurality of exit apertures therethrough at top of the housing between the end walls and a vertical portion which connects with the threaded opening in the tube; and
(e) a plurality of soft bristle brushes mounted along the top of the housing in alignment with the exit apertures of the horizontal portion of the T-shaped passage so that the soft bristle brushes will aid in the even distribution of the tanning oil on the roller while still allowing rotation of the roller in either direction.

4,555,197
SELECTIVELY FREE WHEELING OR DRIVE HUB FOR VEHICLES
Mervin L. Erickson, 930 Dakota Ave. South, Huron, S. Dak. 57350
Filed Sep. 15, 1983, Ser. No. 532,287
Int. Cl.⁴ F16D *1/06*; B60B *27/00*
U.S. Cl. 403—1 **5 Claims**



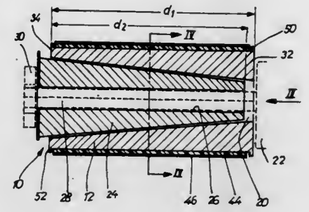
1. A free wheeling hub adapter for connection between the drive axle of a vehicle and a wheel comprising:
a stub axle having a mounting flange, said mounting flange having means for mounting it onto existing wheel bolts of a vehicle axle on which the adapter is to be mounted;
a hub including a sleeve rotatably mounted on said stub axle, and a wheel flange having means for mounting a wheel identical to the means for mounting on the mounting flange;
selectively engagable and disengagable means for effecting a driving connection between said sleeve and said stub axle comprising a drive member having a central opening and being axially slidably mounted relative to both said stub axle and said sleeve, the interiors of the drive member being axially slidably and rotationally drivably engageable with said stub axle, said sleeve having drive surface means defined thereon, said drive member having radially outwardly extending drive means on the outer periphery thereof rotationally drivably engageable with the drive surface means, and slidable axially along said drive surface means, the drive member in at least one axial driving position being rotationally drivably engaged with both the stub axle and the sleeve;
a washer mounted relative to the hub and retained from movement toward the mounting flange beyond a stopped position, said washer having spring mounting pegs extending from a side thereof facing toward the open end of the hub, said washer being mounted between the drive member and the mounting flange;
spring means having first ends mounted on said pegs and engaging the drive member for urging said drive member in an axial direction outwardly from the mounting flange, said spring means having second ends engaging the drive member and urging said drive member to a disengaged position wherein one of the rotationally drivable connections between the drive member and the stub axle and the drive member and the sleeve respectively, is disengaged; and
means to control the position of said drive member to overcome the force of said spring means to move the drive member from the disengaged position to position to effect a driving connection from the stub axle to the drive member and thus to the hub sleeve when the drive member is moved axially to its driving position.

4,555,198
RUBBERIZED BALL ROD STUD FOR AUTOMOTIVE STEERING ASSEMBLY
Thomas J. Wenning, New Bremen, and Charles E. Lynn, St. Marys, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 4, 1984, Ser. No. 646,997
Int. Cl.⁴ F16C *11/00*
U.S. Cl. 403—130 **7 Claims**



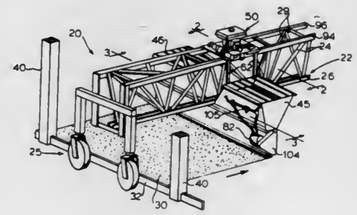
1. A rubberized stud member for a vehicle steering assembly including a metallic ball rod having a ball on one end thereof, said ball having a covering of rubber of 60 to 70 durometer hardness with a thickest section and thinnest sections, said thinnest sections of rubber being at least about 0.079 to 0.159 centimeters thick and the thickest section of rubber being a band at least about 0.44 to 0.70 centimeters thick, said band having a width to thickness ratio of about 2.0 to 3.0.

4,555,199
SUPPORT FOR ENDLESS GRINDING SLEEVES
Peter Maier, Gerokstrasse 1, 7311 Neidlingen; Roland Schirrmacher, Forellenstrasse 74, D-8084 Bachern am Wörthsee, and Rolf Simen, Birnblutenweg 15, D-7000 Stuttgart 80, all of Fed. Rep. of Germany
Filed Nov. 18, 1983, Ser. No. 553,058
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243598
Int. Cl.⁴ F16D *1/06*
U.S. Cl. 403—370 **11 Claims**



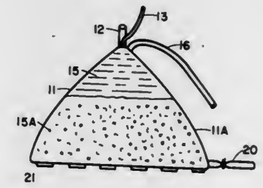
1. A support for an endless grinding sleeve, comprising:
a casing having a cylindrical outer surface and an axially extending conical inner hole therethrough, said casing having a pair of spaced apart flanges protruding outwardly of said cylindrical surface, said casing having a plurality of blind slots extending therein, each slot having a first end opening at one axial end of said casing and a second end terminating within said casing, a first end of one slot being adjacent a second end of a next slot around said casing;
an elastic lining of rubber-like material engaged on said cylindrical surface of said casing between said flanges and adapted to support an endless grinding sleeve thereon;
a wedging cone having an outer conical surface substantially mating with said conical inner hole of said casing;
a shaft connected to said wedging cone for carrying said casing and elastic lining; and
screw thread means engaged with said wedging cone and said casing for urging said wedging cone into said conical inner hole of said casing for radially expanding said casing.

4,555,200
HYDRAULICALLY-POWERED MATERIAL SPREADER
Donald R. Morrison, 6288 Eagle Peak Dr., Charlotte, N.C. 28214
Filed Mar. 26, 1984, Ser. No. 593,108
Int. Cl.⁴ E01C *19/20*; F28D *21/00*
U.S. Cl. 404—72 **3 Claims**



3. The method of cooling hot hydraulic fluid in a hydraulic fluid driven material spreader having a hopper with a heat conductive metal formed hopper wall comprising during operation of the spreader:
(a) flowing said hot fluid through a reservoir having a sidewall mounted on said heat conductive wall of said hopper and allowing the fluid heat to dissipate through said reservoir sidewall and said heat conductive wall of said hopper;
(b) flowing the material to be spread through said hopper in contact with said heat conductive wall on which said reservoir is mounted to allow said material to absorb said heat; and
(c) assisting said flow and dissipation of said heat by use of a driven paddle member mounted adjacent the bottom of a material dispenser box in association with the bottom of said hopper.

4,555,201
SEDIMENT DIKE APPARATUS AND METHODS
John A. Paoluccio, 3530 Kiernan St., Modesto, Calif. 95356
Filed Nov. 14, 1983, Ser. No. 551,361
Int. Cl.⁴ E02B *3/06*, *7/06*; E02D *25/00*
U.S. Cl. 405—117 **8 Claims**



1. The method of constraining a liquid such as water, either alone or mixed with sand, soil or the like, which includes:
providing an envelope which includes means for draining a liquid therefrom, and said means including providing an envelope having a first face having at least portions of which are fluid pervious and a second face which is impervious to a fluid; and
pumping a mixture of water and soil into said envelope.

4,555,202

TOOL HOLDER WITH TOOL

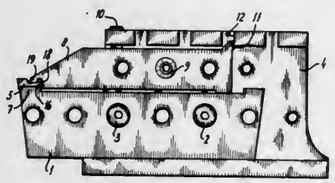
Alfonsius A. T. Pondes, Doetinchem, Netherlands, assignor to Comato B.V., Doetinchem, Netherlands

Filed Nov. 18, 1983, Ser. No. 553,098

Claims priority, application Netherlands, Nov. 18, 1982, 8204473

Int. Cl.⁴ B26D *1/00*

U.S. Cl. 407—117 **7 Claims**



7. A tool holder with a cutting tool comprising

a carrier;

a lower support for said cutting tool releasably connected to said carrier;

an upper clamping member releasably connected to said carrier located above said lower support and parallel to said lower support;

a cutting tool that is clamped between said lower support and said clamping member, said tool having a rear attachment portion which in each cross section perpendicular to said tool's longitudinal axis has been provided with a downwardly converging lower face and an upwardly converging upper face, said lower and upper faces cooperating with a downwardly converging groove of the lower support and an upwardly converging groove of the clamping member respectively;

said lower and upper faces of the attachment portion of said tool as well as the cooperating faces of the grooves of said supporting member and said clamping member extending at an angle to each other which opens in a direction away from the cutting edge of said tool with the lower face and cooperating groove extending substantially parallel to the plane through the cutting edge of the tool and the center of a cylindrical working piece, said plane defining the chip angle with respect to the top surface of said tool at the cutting edge;

said tool further having a rear abutting face in a plane perpendicular to said tool's longitudinal axis and cooperating with an abutment of said clamping member.

4,555,203

DRILLING MACHINE

Shiro Takahashi, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,714

Claims priority, application Japan, Nov. 20, 1981, 56-172011[U]

Int. Cl.⁴ B23B *51/04*

U.S. Cl. 408—119 **5 Claims**

1. A drilling machine comprising:

a spindle;

a hollow shaft axially movable associated by elevating movement of the spindle;

an annular cutter attached to an end of the shaft;

a drill holder disposed within said hollow shaft for axially slidable movement;

a center drill mounted fixedly within said drill holder and on the axis of the annular cutter, said center drill and drill holder being axially slidable independently of the annular cutter and the hollow shaft;

a spring for axially biasing the center drill so that, while the drilling machine is not in operation, the end of the center drill extends beyond the edge of the annular cutter axially of the cutter;

a cylindrical member mounted within a drilling machine holder for slidable movement in the axial direction of said hollow shaft, and in which said hollow shaft is relatively slidable with respect to said cylindrical member;

at least one through-hole formed in the wall of said cylindrical member;

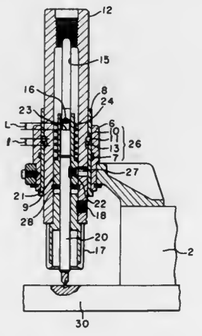
at least one ball received in said through-hole;

a first annular groove formed in the outer periphery of said hollow shaft for receiving said ball therein said groove having an axial length (**1**) permitting axial relative movement between said hollow shaft and the cylindrical member;

a second annular groove formed in the inner periphery of said drilling machine holder for receiving said ball therein;

an engaging groove formed in the upper end of said drill holder;

axially elongated slots formed through the wall of the hollow shaft; and



a pin extending transversely through said cylindrical member and through said axially elongated slots of the hollow shaft and fitted in said engaging groove, a distance (L) between said pin and the bottom of said associated engaging groove being equal to the axial length (**1**) of said first annular groove when said drilling machine is not in operation, said pin preventing relative rotation between said hollow shaft and cylindrical member but permitting the axial movement of said hollow shaft and annular cutter relative to said cylindrical member and center drill due to the existence of the axially elongated slots;

whereby initially said ball is received in said first annular groove to lock the hollow shaft to the cylindrical member for said axial slidable movement of the hollow shaft and the cylindrical member in unison, and when disengaged from said first annular groove and engaged in said second annular groove as a result of said axial movement of the cylindrical member in unison with the hollow shaft, said ball prevents the axial movement of said cylindrical member while permitting the axial slidable movement of said hollow shaft and anular cutter relative to said drilling machine holder and center drill.

4,555,204

METAL-WORKING TOOLS WITH AUGMENTED CONDUCTIVITY

Michael L. Cassidenti, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 542,281, Oct. 14, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 729,078

Int. Cl.⁴ B23C *51/02, 51/06*

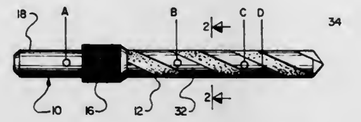
U.S. Cl. 408—144 **12 Claims**

1. In an electrically conductive metal-working tool, through which electric current may be passed for heating a workpiece,

said tool having at least one groove and at least one land, said land being adjacent to a cutting edge, the improvement comprising:

a relatively thick electrically conductive coating bonded to the surface of said groove, said conductive coating being formed from a material having higher electrical conductivity than the material from which the metal-working tool is formed, the land being coating-free, said conductive coating permitting a substantial portion of the electric current to pass therethrough when the tool is shearing a chip from said workpiece,

whereby, during operation of said tool, heating of said cutting edge is minimized.



4,555,205

REAMER HOLDING DEVICE FOR MACHINING VALVE SEATS

Minoru Hiroyasu, Saitama; Hideo Yamashita, Tokyo; Tamotsu Ohguro, Saitama; Shigeru Yamagishi, Tokyo, and Shigenari Shino, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

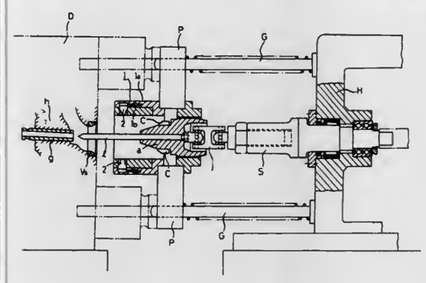
PCT No. PCT/JP82/00107, § 371 Date Nov. 24, 1982, § 102(e) Date Nov. 24, 1982, PCT Pub. No. WO82/03350, PCT Pub. Date Oct. 14, 1982

PCT Filed Apr. 7, 1982, Ser. No. 451,154

Claims priority, application Japan, Apr. 7, 1981, 56-51162

Int. Cl.⁴ B23B *47/60*

U.S. Cl. 408—150 **8 Claims**



1. A holding device for a rotating tool, comprising:

a tubular member adapted to surround said rotating tool;

at least three support members for supporting said tool, said support members being carried on said tubular member and disposed along a circumferential portion of said tubular member;

a hydraulic system adapted to move said support members substantially radially relative to said tubular member and to lock said support members on said tubular member;

means for driving said tool to rotate while permitting the inclination of said tool so as to render the axis of rotation of said tool to be guided by a bore in a workpiece; and

said hydraulic system being adapted to move said support members radially inwardly into a position at which said support members abut against said rotating tool which has the axis thereof preset at a predetermined posture, and to lock said support members on said tubular member at said position.

4,555,206

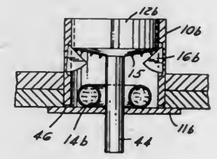
ADHESIVELY SECURABLE FASTENER

Theodore J. Sweeney, Grosse Pointe, Mich., assignor to Theodore Sweeney & Co., Detroit, Mich.

Division of Ser. No. 234,777, Feb. 11, 1981, Pat. No. 4,425,065, which is a division of Ser. No. 936,331, Aug. 24, 1978, abandoned. This application Mar. 4, 1983, Ser. No. 472,084

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—23 **8 Claims**



1. An adhesively securable fastener comprising:

a. an elongated body having an opening and having deflectable tabs at a position juxtaposed to the opening;

b. an adhesive positioned within said body; and

c. registering with the opening of the body, a plunger means for applying pressure to said adhesive, thereby adhesively securing the fastener to a substrate by movement of at least a portion of the adhesive from the body to the substrate wherein the plunger further contains an extended frangible portion which permits the pulling of the plunger toward the adhesive.

4,555,207

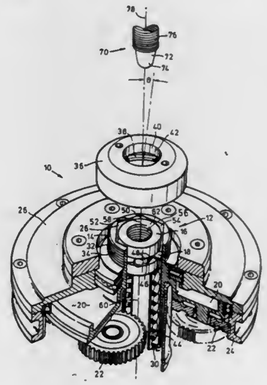
FLOATING NUT

Robert C. Ferguson, Bolton, Canada, assignor to Spar Aerospace Limited, Mississauga, Canada

Filed Apr. 16, 1984, Ser. No. 600,380

Int. Cl.⁴ F16B *37/00*

U.S. Cl. 411—366 **15 Claims**



1. A mating component for a mating assembly which, during assembly, provides at least one degree of freedom of movement selected from radial, axial and angular movement comprising;

(a) an outer member having a chamber extending inwardly from one end thereof, said chamber having side walls which are arranged such that the chamber has a polygon-shaped cross-sectional configuration,

(b) an inner member located within said chamber of said outer member and having external side faces which are arranged to provide a polygon-shaped cross-sectional configuration corresponding to that of said chamber, said inner member

being substantially smaller than said chamber and said outer member so as to provide a clearance gap between said side walls and external side faces,

(c) torque transmitting means mounted in said clearance gap to provide a torque transmitting interference between said external side faces and said side walls while permitting limited relative movement therebetween to provide at least one degree of freedom of movement of said members with respect to one another,

(d) one of said members being adapted to form a mating element which is self-aligning when being engaged with a complimentary mating element of said mating assembly.

4,555,208

METHOD OF FITTING A METAL CLOSURE

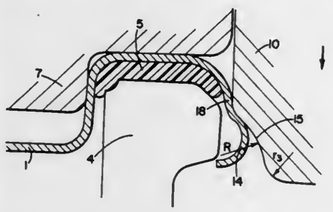
Bernard Houdayer; Bernard Le Fur, both of La Fleche; René Meneghin, Voiron, and Jean-Michel Moniod, Paris, all of France, assignors to Cebal, Clichy, France

Filed Apr. 2, 1984, Ser. No. 595,704

Claims priority, application France, Apr. 13, 1983, 83 06323

Int. Cl.⁴ B21D *39/03*

U.S. Cl. 413—2 **9 Claims**



1. A method for fitting a metal closure on a vessel having a circular edge comprising a rigid beaded lip (**4**), by means of fitting apparatus comprising a centering press (**7**) and an annular mandrel means (**10**) comprising an inclined inner curved profile (**15**) and a vertical inner surface, comprising the steps of:

(a) forming a closure blank (**1**) comprising a central depression (**2**) with a lateral wall (**9**) of substantially truncated conical shape and with a diameter slightly smaller than the diameter of the mouth of the vessel, and an annular toroidal section (**3**) which comprises in immediate succession:

an annular support section (**20**) generally perpendicular to said lateral wall,

an intermediate section (**18**) inclined outwardly and downwardly with respect to said annular support section, and

an outer edge (**14**) curved inwardly and downwardly with respect to said intermediate section and bent through an angle of 100° to 140°, with, in axial section, an inner radius of curvature of between 0.5 times and 0.8 times the radius of a circle which contains the outer contour of the edge of said beaded lip;

(b) positioning a thick endless elastic gasket (**5**) on the inside of the support section (**20**) of the closure blank (**1**);

(c) positioning the closure blank (**1**) under the centering press (**7**) of the fitting apparatus, and positioning the vessel beneath the closure blank (**1**);

(d) progressively pressing the closure blank (**1**) with its thick elastic gasket (**5**) onto the rim (**6**) of the vessel with the aid of the centering press (**7**) until a predetermined pressure is reached;

(e) during and after said step (d), shaping, fitting and tightening the closure blank (**1**) to seal on to the lip (**4**) of the vessel, by means of said annular mandrel means (**10**) according to the shaping steps of:

(e1) stretching, forcing downwardly and tightening the bent outer (**14**) and the intermediate section (**18**) by the pressure of the annular mandrel means (**10**) on said bent outer edge (**14**), and by the rolling of said edge in the inclined inner curved profile (**15**) of said annular mandrel means (**10**);

(e2) continuing this shaping of the outer edge (**14**) and of the intermediate section (**18**) of the closure blank (**1**), and at the same time forcing the extremity (**19**) of said outer edge (**14**) under the beaded lip (**4**) of the vessel by the upper engaging surface above said inclined inner curved profile and by the engaging of the vertical inner surface (**16**) of said annular mandrel means (**10**) around said outer edge and intermediate section (**14+18**);

(e3) achieving the sealed fitting of the closure (**1**) on the beaded lip (**4**) of the vessel by its being forced by the camming action of the vertical inner surface (**16**) of the annular mandrel means (**10**) around the outer edge (**14+18**) of the closure (**1**), this beig done at least until the bottom of the said vertical surface (**16**) reaches a level below the beaded lip (**4**) of the vessel.

4,555,209

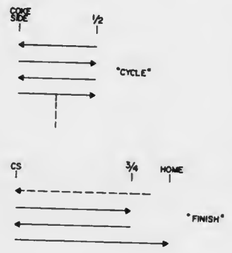
SEMI-AUTOMATIC PUSHER MACHINE LEVELER BAR CONTROL AND METHOD

Joseph W. Berenato, III, Bethesda; Earl L. Raivel, Jr., Baltimore, and John J. Strepelis, Forest Hill, all of Md., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 508,775, Jun. 29, 1983, abandoned. This application Apr. 24, 1984, Ser. No. 602,273

Int. Cl.⁴ C10B *31/02, 37/02*

U.S. Cl. 414—163 **15 Claims**



1. The method of distributing coal charged into a coke oven from a charging car on an upper level of the coke oven, said oven including spaced oven walls and a coke side door removably mounted at one end of said oven and a pusher side door removably mounted at an opposite end of said oven, said pusher side door includes a leveller bar door aligned with the coal line of the oven, and a leveller bar adapted for distributing the coal is movably disposed on an associated pusher machine adjacent the pusher side door, comprising the steps of:

(a) supplying said charging car with a predetermined supply of coal;

(b) charging a pre-determined portion of said supply into said oven for thereby partially charging said oven;

(c) opening said leveller bar door;

(d) positioning said leveller bar in said oven generally a pre-determined distance from said pusher side door;

(e) commencing charging the coal remaining in said charging car into said oven;

(f) moving said leveller bar to generally said coke side door;

(g) repeatedly cycling said leveller bar between said coke side door and generally midway of said oven while said charging continues and thereby distributing said coal in said oven;

(h) moving said leveller bar a pre-determined number of strokes between said pusher side door and generally said coke side door for thereby levelling said coal along generally said coal line;

(i) withdrawing said leveller bar; and,

(j) closing said leveller bar door.

7. A control system for the movable leveller bar of a coke oven pusher machine, comprising:

(a) means for moving said pusher machine;

(b) drive means operatively associated with said leveller bar for reciprocally moving said leveller bar between a retracted position associated with said pusher machine and an extended oven position;

(c) control means associated with said drive means and adapted for selecting any one of off, cycle and finish leveller bar movement configurations;

(d) manual control means operatively cooperating with said drive means and associated with said control means when in said off configuration and adapted for selectively moving said leveller bar;

(e) cycle control means operatively cooperating with said drive means and associated with said control means when in said cycle configuration and adapted for providing continuous reciprocal movement of said leveller bar between said oven position and a first pre-selected position intermediate said oven and said retracted of positions;

(f) position sensing means associated with said leveller bar and connected to said cycle control means for monitoring said leveller bar movement and communicating said leveller bar movement to said cycle control means for thereby permitting control of said leveller bar movement;

(g) finish control means operatively cooperating with said drive means and associated with said control means when in said finish configuration and adapted for providing a pre-determined movement configuration of said leveller bar between said oven and retracted positions;

(h) said position sensing means communicating with said finish control means for thereby permitting control of said leveller bar movement; and,

(i) interlock means associated with said means and said position sensing means for preventing movement of said pusher machine when said leveller bar is moved from said retracted position.

4,555,210

SPREADER DEVICE IN A STORAGE CONTAINER FOR UNIFORM FILLING OF THE CONTAINER WITH GRANULAR STORAGE GOODS

Stig Wigram, Nationsgatan 16, S-223 63 Lund, Sweden

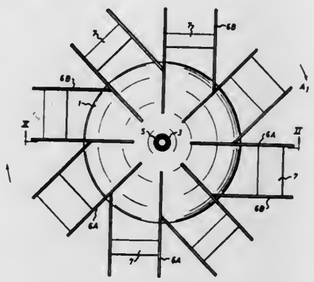
PCT No. PCT/SE83/00060, § 371 Date Oct. 19, 1983, § 102(e) Date Oct. 19, 1983, PCT Pub. No. WO83/02873, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 22, 1983, Ser. No. 552,131

Claims priority, application Sweden, Feb. 23, 1982, 8201113

Int. Cl.⁴ A01F *25/18*

U.S. Cl. 414—301 **5 Claims**



1. A spreader device in a storage container, such as a silo compartment, for uniform filling of the container with granular storage goods, including a generally conical body (**1**) which is suspended for rotation about its longitudinal, vertical axis in the container directly below the mouth of the fill spout (**2**) of the container with the upper narrow end of said body facing said fill spout mouth, said body forming the bottom of a number of similar upwardly open channels defined by spaced boundary walls that extend beyond the periphery of said body, said channels being distributed regularly over the outer side of said body in the peripheral direction thereof and open at the lower end of said body, each of said channels being equipped with a transverse blade (**7**) fixed to the lateral boundary walls (**6A, 6B**) thereof radially outwardly of the lower end of said body, said blades (**7**) being positioned at different degrees of inclination to the longitudinal axis of said body and serving as baffles for deviating the stream of material at the end of each channel downwardly.

4,555,211

TRUCK LOCKING DEVICE

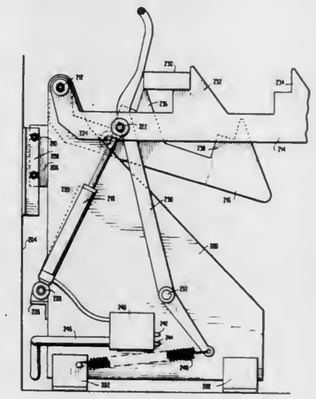
Donald L. Metz, 7459 Song Lake Rd., Tulley, N.Y. 13159

Continuation-in-part of Ser. No. 387,314, Jun. 11, 1982, Pat. No. 4,400,127, which is a continuation-in-part of Ser. No. 356,006, Mar. 8, 1982, abandoned. This application Jun. 14, 1982, Ser. No. 504,337

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.⁴ B65G *67/02, 69/00*; **G05G** *5/06*

U.S. Cl. 414—401 **5 Claims**



1. A truck locking device comprising support means adapted to be secured on a suitable suport surface, horizontally extending pivot means secured to said support means, locking arm means having at least one projection thereon pivotally mounted on said pivot means, operating means connected to said locking arm means for moving said locking arm means upwardly for engagement with a horizontally disposed bar secured to a truck, an activating arm means pivotally mounted on said support means, control means engageable by said activating arm means for operatively controlling said operating means whereby upon engagement of said bar with said activating arm means said activating arm means will be pivoted to cause said control means to initiate operation of said operating means to move said locking arm means upwardly into locking engagement with said bar to secure the truck in position relative to said support means.

4,555,212

APPARATUS FOR RUPTURING CARRIER BAGS

Robert C. Jones, P.O. Box 27, Napoleon, Ohio 43545

Continuation of Ser. No. 402,304, Jul. 27, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 685,596

Int. Cl.⁴ B65B *69/00*

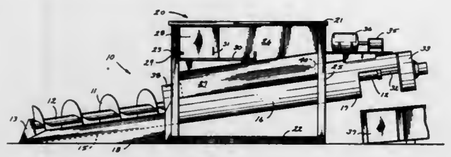
U.S. Cl. 414—412 **1 Claim**

1. An apparatus for rupturing carrier bags to expose the contents therein comprising:

an elongate transport trough including an inlet end portion and an outlet end portion;

screw impeller means rotatably supported in said transport trough for advancing carrier bags placed therein toward said outlet end portion of said transport trough;

first rupturing means spaced from said inlet end portion and disposed adjacent said screw impeller means for rupturing the carrier bags as the bags are advanced past said first rupturing means;



second rupturing means spaced between said first rupturing means and said outlet end portion and disposed adjacent said screw impeller means for rupturing the carrier bags as the bags are advanced past said second rupturing means; and

means positioned above said transport trough between said first rupturing means and said second rupturing means for enabling the carrier bags and the exposed contents thereof having passed said first rupturing means to expand upwardly prior to reaching said second rupturing means.

4,555,213

DAYLIGHT FILM LOADING METHOD AND APPARATUS

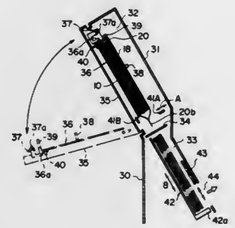
Kaoru Tamura, and Sadami Yamada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 10, 1984, Ser. No. 569,623

Claims priority, application Japan, Jan. 10, 1983, 58-1953

Int. Cl.⁴ G11B *1/00;* **G03B** *41/16*

U.S. Cl. 414—412 **9 Claims**



1. A daylight film loading method comprising:

(i) forming a clamp notch in a predetermined position of a side edge of an unexposed light-sensitive film,

(ii) forming a film package containing a stack of such notched films in a flexible light-tight envelope,

(iii) holding said film package in a vertical position in a loading chamber shielded from light, and holding the stack of said films by a clamp member in engagement with said clamp notch,

(iv) opening a lower end of said light-tight envelope and then moving said films and said light-tight envelope relative to each other in the vertical direction until at least the lower ends of said films are projected from a lower end of said light-tight envelope while said films are held by said clamp member,

(v) disengaging said clamp member from said clamp notch to release the clamping of said films, and

(vi) feeding said films to the next process.

4,555,214

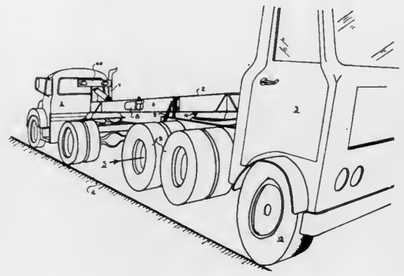
TOW BAR FOR SEMI-TRACTORS HAVING TRIANGULATED SUPPORT SYSTEM AND ADJUSTABLE DUAL CYLINDER HYDRAULIC CONTROL

James F. Morton, 3800 Cheryl St., Bucyrus, Ohio 44820

Filed Dec. 20, 1982, Ser. No. 450,974

Int. Cl.⁴ B60P *3/12*

U.S. Cl. 414—563 **5 Claims**



1. A dismounting towing apparatus for semi-tractors in which oppositely facing semi-tractors are maintained in a connected towing relationship by means of a king pin engagement to the fifth wheel each of a first towing semi-tractor and a second towed semi-tractor, the improvement being a tow bar comprising:

a single beam connection between a king pin fifth-wheel engagement means of the respective first and second semi-tractors,

said single beam extending in length from the king pin connection of the first semi-tractor to a first end point forward of said king pin connection and including at the said first end segment of the beam a means for selectively raising and lowering the opposite end of said beam to facilitate a connection of the king pin at the opposite end of the beam to to the fifth wheel of the second semi-tractor;

said means for selectively raising and lowering including a first expanding and contracting means extending as one side of a triangle in a triangular relationship defined by

(a) a first point above the extending forward end point of the beam;

(b) a second point approximately adjacent the king pin connection, and

(c) a third point at the forward extending end of the beam; and in which triangular relationship, the first point above the forward end of the beam is fixedly connected at a point forward of said beam end to the frame of the first semi-tractor; whereby the length of one side of the triangle is determined by expansion and contraction of the expanding and contracting means and the opposite end of the beam is correspondingly adjusted in height in accordance with the expansion and contraction of said means.

4,555,215

SPOOL TRANSPORTING DEVICE

Hans Raasch, and Hans Grecksch, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

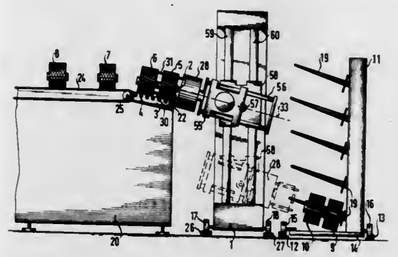
Filed Dec. 5, 1983, Ser. No. 558,201

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244925

Int. Cl.⁴ B65H *67/00*

U.S. Cl. 414—564 **16 Claims**

1. Spool transporting assembly for the sequential transfer of textile spools wound on tubes, comprising a spool preparation station having a support surface for textile spools, a spool receiving device, and a spool transporting device for transporting textile spools from said spool preparation station to said spool receiving device, said spool transporting device including a gripper head being movable in at least one plane into and out of a centered spool receiving position being fixed relative to said spool preparation station, said gripper head including gripper elements for gripping textile spools of different diameters in said centered spool receiving position, said gripper head having a given longitudinal axis, said gripper elements being in the form of at least three gripper arms aligned parallel to the



surface of the textile spools, said gripper arms being movable toward the longitudinal axis into a minimally open position and away from the longitudinal axis into a maximally open position, and said gripper head being movable into said spool receiving position relative to said spool preparation station wherein at least one of said gripper arms is disposed in said maximally open position substantially at the height of said support surface adjacent one of the textile spools.

4,555,216

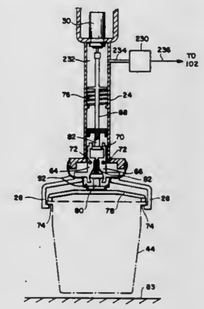
WORKPIECE HOLDING AND POSITIONING MECHANISM AND SYSTEM

Josef J. Buschor, San Jose, Calif., assignor to Five X Corporation, Santa Clara, Calif.

Filed Nov. 21, 1983, Ser. No. 553,534

Int. Cl.⁴ B66C *23/18*

U.S. Cl. 414—728 **13 Claims**



1. A workpiece holding mechanism, which comprises a pair of opposing grippers movable from an open position laterally to a closed position for engaging the workpiece, locking means movable between a first position to lock said grippers in the closed position and a second position to lock said grippers in the open position, actuating means for moving said locking means between the first position and the second position, said actuating means including a solenoid actuated rod, first and second pivotable and opposed lever members each being attached to one of said pair of grippers to move said grippers between the open and closed positions, said locking means being attached to said rod, and said locking means including a first portion dimensioned and configured to fit between said first and second pivotable lever members and a second portion dimensioned and configured to fit on either side of said pivotable lever members to lock said grippers in the open and closed positions, biasing means in opposition to said actuating means and urging said locking means toward the first position, and means responsive to upward force imparted by the workpiece engaged by said grippers for moving said grippers to the open position, said upward force responsive means also holding said grippers in the open position in absence of the workpiece in said grippers.

4,555,217

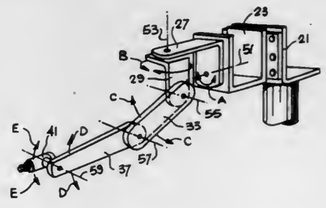
ROBOT ARM WITH SPLIT WRIST MOTION

Allen J. Wright, Corvallis, Oreg., assignor to Intelledex Incorporated, Corvallis, Oreg.

Continuation of Ser. No. 456,310, Jan. 6, 1983, abandoned. This application Jan. 11, 1985, Ser. No. 690,828

Int. Cl.⁴ G05J *17/00*

U.S. Cl. 414—735 **2 Claims**



1. A robot arm of the anthropomorphic type having shoulder, elbow and wrist joints comprising,

a base, an upper arm, a lower arm and a tool interface,

a shoulder joint connecting the base to a first end of the upper arm, the shoulder joint having an upper arm sweep axis, an upper arm swivel axis perpendicular to the sweep axis and an upper arm roll axis, perpendicular to both the sweep and swivel axes, the roll, sweep and swivel axes intersecting at a fixed common point,

an elbow joint connecting a second end, opposite the first end, of the upper arm to a first end of a lower arm, said elbow joint having an extension axis parallel to the swivel axis of the shoulder joint, and

a biaxial wrist joint connecting a second end, opposite the first end, of the lower arm to the end effector, the wrist joint having a pitch axis parallel to the extension axis of the elbow joint and the swivel axis of the shoulder joint, whereby wrist joint roll motion is achieved by roll motion of the shoulder joint, said shoulder joint comprising a first bracket cantilevered from the base parallel to said roll axis, said frame having an overhang portion with an end region defining said sweep axis in vertical alignment therethrough and a second bracket having a first portion through which said sweep axis passes and a spaced apart region through which the plane formed by the swivel and roll axes passes.

4,555,218

TURBO MACHINE OF THE ROTODYNAMIC TYPE

Arne Jonsson, Hagfors; Sigurd Nyman, Ekshärad; Eskil K. Olelind, Sundbyberg, and Björn Olofsson, Märsta, all of Sweden, assignors to Jonsson Pumpkonsult, Hagfors, Sweden

PCT No. PCT/SE83/00347, § 371 Date Apr. 30, 1984, § 102(e) Date Apr. 30, 1984, PCT Pub. No. WO84/01406, PCT Pub. Date Apr. 12, 1984

PCT Filed Oct. 4, 1983, Ser. No. 610,294

Claims priority, application Sweden, Oct. 6, 1982, 8205692

Int. Cl.⁴ F03D *3/04*

U.S. Cl. 416—17 **11 Claims**

1. A rotodynamic machine with a rotor comprising:

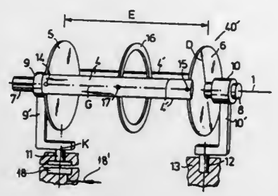
at least one elongate vane adapted to orbit an at least approximately circular path about a rotational axis of the rotor;

respective end pieces operatively engaging said vane and rotatable about respective centers located on said rotational axis;

means connected with said end pieces for conformably inclining same about inclination axes perpendicular to said rotational axes and adapted to vary the inclination of said end pieces during rotation of said rotor in operation, a medium traversing said rotor through the entire orbit of said vane in a given flow direction generally transverse to said rotational axis and said vane; and

respective pivot means connecting each of said end pieces to a respective end of said vane, each of said pivot means including:

means defining a first pivot axis between the respective



end piece and said vane and having a fixed relationship to the respective end piece, and

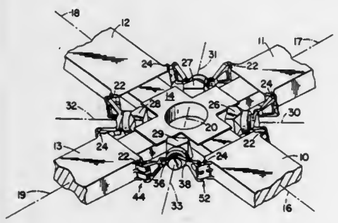
means defining a second pivot axis between the respective end piece and said vane which lies substantially at a right angle to the respective first pivot axis, is oblique to a longitudinal plane through said vane and includes an angle between substantially 5° and 85° or between substantially 95° and 175° with a longitudinal dimension of said vane, whereby said vane continuously alters its angular orientation with respect to said direction of flow in such manner that in all positions of said vane, a line perpendicular to said plane passes through a control point offset from said rotational axis by an amount determined by the inclination of said end pieces to said rotational axis.

4,555,219

HUB-MOUNTED ACTUATORS FOR BLADE PITCH COLLECTIVE CONTROL

Philip A. E. Jeffery, Trumbull, and Greg R. Luecke, New Haven, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 23, 1984, Ser. No. 644,001
Int. Cl.⁴ B64C *27/76*
U.S. Cl. 416—158 **5 Claims**



1. A rotor system comprising:

a rotorshaft that rotates relative to an airframe;

a hub attached for rotation to the rotorshaft;

blades attached to the hub in a manner to allow for blade pitch changes about respective blade pitch axes; and

means for providing a desired collective pitch input to the rotor system;

characterized by:

actuators mounted to the hub between adjacent blades, each actuator attached to the leading edge of one adjacent blade and to the trailing edge of the other adjacent blade for causing a corresponding pitch change in the adjacent blades in response to an actuator input, wherein all of the actuators act in unison so that the blade pitch changes are collective; and

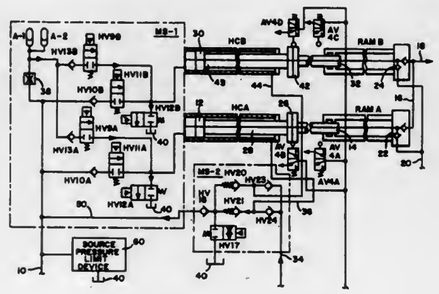
means for providing the actuator input as a function of the desired collective pitch input.

4,555,220

REGENERATION SYSTEM FOR A HYDRAULIC INTENSIFIER UNIT

Richard W. Hall; Sven Sonnenberg, both of Springfield, and Harbhajan S. Mahal, Dayton, all of Ohio, assignors to Towler Hydraulics, Inc., Milwaukee, Wis.

Continuation of Ser. No. 92,245, Nov. 7, 1979, abandoned. This application Jan. 28, 1982, Ser. No. 343,141
Int. Cl.⁴ F04B *17/00*
U.S. Cl. 417—342 **9 Claims**



1. In a hydraulic intensifier unit for use in oil well fracturing, erosion drilling or the like, in which a pair of working rams are sequentially operated by a corresponding pair of hydraulic cylinder motors each having a piston forming a working face side and an opposed return face side of lesser operative area than said working face side, a source of hydraulic fluid for supplying fluid to said working face side of said motors, and said pistons of said motors being movable between retracted and extended positions, the improvement comprising:

valve means connecting said hydraulic cylinder motors with said fluid source for selectably (1) receiving fluid from said return face side of said motors and supplying it to said source for increasing fluid flow from said source to the working face side of said motors during movement from said retracted position to said extended position, or (2) for expelling fluid from said return face side and not returning it to said source during movement from said retracted position to said extended position; and

means for supplying hydraulic fluid to said return face side of said motors to move said pistons to said retracted position.

4,555,221

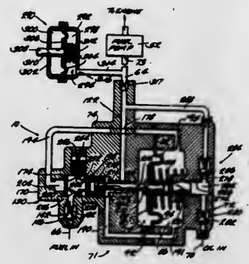
FLUID PUMPING DEVICE FOR USE WITH A FLUID PUMP

Chester G. DuBois, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 540,045, Oct. 7, 1983. This application Jan. 23, 1984, Ser. No. 573,302
Int. Cl.⁴ F04B *43/06*
U.S. Cl. 417—349 **25 Claims**

1. A fluid pumping arrangement including a fluid pump

including a suction port, and a fluid pumping device comprising a pump housing defining a recess, a moveable wall which is located in said recess and which cooperates with said recess to define a variable volume pumping chamber, biasing means for moving said moveable wall in one direction, a fluid outlet communicable with said fluid pumping chamber and communicating with said suction port so that suction present at said suction port communicates with said fluid pumping chamber and thereby moves said moveable wall in the opposite direction against the action of said biasing means when said fluid pumping chamber is in communication with said fluid outlet, a fluid inlet communicable with said fluid pumping chamber and adapted to communicate with a source of fluid, means for selectively controlling communication of said fluid pumping chamber with said fluid outlet and with said fluid inlet, and means responsive to movement of said moveable wall for pumping a second fluid and comprising a bore which is in said



pump housing and which extends perpendicularly from said moveable wall and which partially defines a second variable volume fluid pumping chamber, a piston which is received in said bore and which includes a first end and a second end, said first end being attached to said moveable wall and said second end cooperating with said bore to form said second variable volume fluid pumping chamber, a second fluid inlet in communication with said second fluid pumping chamber and adapted to communicate with said second fluid pumping chamber and adapted to communicate with a second source of fluid, check valve means in said second fluid inlet for permitting fluid flow into and preventing fluid flow from said second fluid pumping chamber, a second fluid outlet in communication with said second fluid pumping chamber and adapted to communicate with said suction port, and check valve means in said second fluid outlet for permitting fluid flow from and preventing fluid flow into said second fluid pumping chamber.

4,555,222

AIR-OPERATED DIAPHRAGM PUMP AND A VALVE ARRANGEMENT THEREFOR

Joseph C. Casilli, Waldwick, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,947
Int. Cl.⁴ F04B *43/06*
U.S. Cl. 417—393 **12 Claims**

1. A limiting valve assembly for use with a reciprocating member and a pressurized medium user, comprising:

a housing having a bore which opens toward the movable member;

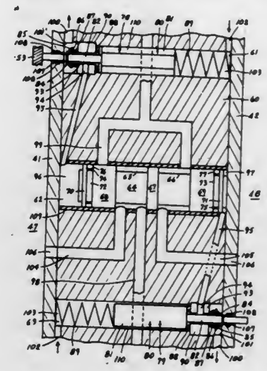
a limiting valve assembly accommodated in said bore and including a valve member guided in said bore for movement in opposite axial directions between two end positions and having a stem portion projecting from said bore into the path of movement of the movable member to be moved by the latter from one of said end positions toward the other, axially spaced first and second confining portions at the region of said stem portion, and a spring urging said valve member toward said one end position;

means for supplying a pressurized gaseous medium to a first region of said bore;

means for discharging gaseous medium from a second region of said bore that is axially spaced from said first region;

means for communicating a third region of said bore that is situated between said first and second regions with the user; and

means in said bore for sealingly separating said communicating means from said supplying means in said one end position, and from said discharging means in said other end position, of said valve member, including an annular element stationarily mounted in the respective bore at said third region and situated between said confining portions of the respective valve member, said annular element having a central passage through which said stem portion passes with clearance and a substantially radial passage



that connects said central passage with said communicating means, each of said two sealing elements being arranged around said stem portion at a different axial side of said annular element and between the latter and the respective confining portion to be confined therebetween and sealingly interrupt communication of said communicating means with said supplying means in said one, and with said discharging means in said other of said end positions of said valve member, and to become spaced therefrom and allow communication of said communicating means with said discharging means in said one, and with said supplying means in said other, of said end positions of said valve member to thereby alternately admit the pressurized gaseous medium to and discharge the gaseous medium from the user.

4,555,223

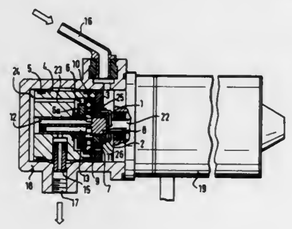
RADIAL PISTON MACHINE

Ludwig Budecker, and Georg Obersteiner, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 365,676, Apr. 5, 1982, abandoned. This application May 3, 1984, Ser. No. 605,996
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121528
Int. Cl.⁴ F04B *19/20, 29/00;* F16J *9/00*
U.S. Cl. 417—462 **1 Claim**

1. A radial piston machine for transmitting fluid therethrough, said machine comprising a stator, a rotor disposed in said stator and rotatable on a stationary control pintle having supply and discharge channels, a radial through-bore in said rotor adapted for periodic connection to said supply and discharge channels, said through-bore containing a first and a second radially displaceable spherical piston disposed at opposite ends of the bore on opposed sides of the control pintle, each piston including a radially outwardly disposed ball seated in a radially inwardly disposed unitary cylindrical sleeve, with each piston radially slidable relative to a cam surface on said stator, each said sleeve comprising a cylindrical outer wall of

uniform diameter and circumference each sleeve including an axially concentric through passage having a conic seat for its associated ball at one end to provide a line contact therewith, and in which said passage bounds an outwardly tapering wall



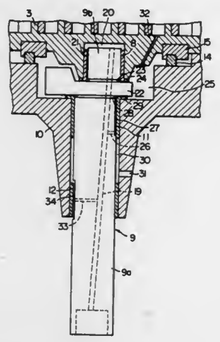
of said sleeve at the other end of said sleeve forming a peripheral integral sleeve lip positioned to sealingly engage the adjacent bore wall with a gap sealing lip responsive to pressure above a predetermined level passing through said passage.

4,555,224

OIL FEEDING DEVICE FOR SCROLL FLUID APPARATUS

Eiichi Hazaki, Shimizu; Masaya Imai, Ibaraki; Kenji Tojo, and Masao Shiibayashi, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 315,495, Oct. 27, 1981, Pat. No. 4,462,772.
This application May 2, 1984, Ser. No. 606,223
Claims priority, application Japan, Oct. 31, 1980, 55-152077
Int. Cl.⁴ F01C *1/04, 21/04*
U.S. Cl. 418—55 **6 Claims**



1. A scroll fluid apparatus comprising:

a fixed scroll member having an end plate located in an upstanding position on the end plate;

an orbiting scroll member having an end plate and a wrap located in an upstanding position on the end plate of the orbiting scroll member and engaging with the fixed scroll member to form a plurality of sealed spaces therebetween;

frame means connected to the fixed scroll member;

first and second bearing means mounted on the frame means;

a crankshaft having a shaft portion and a crank portion, said crank portion engaging with the orbiting scroll member through the first bearing means and said shaft portion being rotatably supported by the second bearing means;

balance weight means formed on the crankshaft and located between the shaft portion and the crank portion;

an intermediate chamber defined by the frame means and the end plate of the orbiting scroll member;

small opening means through which the intermediate chamber communicates with the sealed spaces;

an oil chamber defined by an end surface of the crank portion and the end plate of the orbiting scroll member;

an oil feeding passage means formed in the crankshaft and extending from an end of the shaft portion to the end surface of the crank portion, said oil feeding passage means communicating with the oil chamber;

an Oldham's ring and key means arranged between the frame means and the end plate of the orbiting scroll member for preventing the orbiting scroll member from rotating on its own axis;

drive means connected to the crankshaft;

sealed housing means defining a chamber for accommodating all the previous elements, said chamber defined by said housing means being isolated from said intermediate chamber;

an outlet port means formed in the fixed scroll member for enabling the sealed spaces to communicate with said chamber defined by the housing means;

suction pipe means mounted on the housing means so as to communicate with the sealed spaces; and

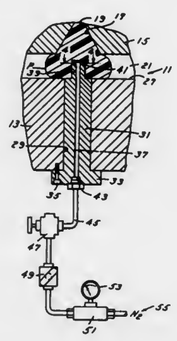
discharge pipe means mounted on the housing means so as to communicate with the chamber defined by the housing means.

4,555,225

APPARATUS FOR MAKING A TWIN-WALL, INTERNALLY CORRUGATED PLASTIC STRUCTURAL PART WITH A SMOOTH NON-CELLULAR SKIN

James W. Hendry, Englewood, Tenn., assignor to Lang Fastener Corporation, Roseville, Mich.

Division of Ser. No. 381,105, May 24, 1982, Pat. No. 4,474,717.
This application Sep. 26, 1984, Ser. No. 654,433
Int. Cl.⁴ B29C *17/04*
U.S. Cl. 425—4 R **24 Claims**



1. Apparatus for making a twin-wall, internally corrugated plastic structural part having a smooth, dense, solid, thin walled, non-cellular skin comprising a pair of mold members defining, when closed, a sealed cavity;

one of said mold members including an opening means through which plastic material is adapted to be injected into said cavity;

and probe means having a bore projected therethrough and mounted upon the other of said mold members, said probe means having one end located outwardly of said other mold member and adapted to be connected to a source of pressurized inert gas;

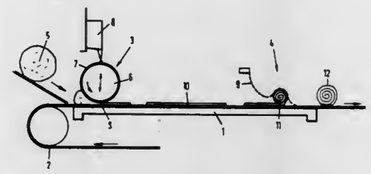
and said probe means having its other end located opposite from and facing said opening means and communicating with the mold cavity for injecting the gas under pressure into the mold cavity, first means for causing introduction of plastic material into said opening means; second means for causing the introduction of gas into said probe means whereby a small amount of the plastic material first introduced into said cavity by said first means is pressurized by the gas introduced by said second means, thereby forming the skin against the walls of said mold cavity and thereafter the progressive commingling of the inert gas under pressure from said second means with additional plastic material from said first means filling the cavity and forming an internal corrugated body integral with and bonded to said skin.

4,555,226

APPARATUS FOR ROLLING DOUGH AND COILING IT

Johan Benier, Vught, Netherlands, assignor to Benier B.V., 's-Hertogenbosch, Netherlands

Filed Dec. 27, 1982, Ser. No. 453,179
Claims priority, application Netherlands, Dec. 29, 1981, 8105893
Int. Cl.⁴ A21C *3/02, 3/06*
U.S. Cl. 425—96 **5 Claims**



1. A dough make-up machine having roller means for rolling out dough balls to flat slabs and coiling means for subsequently coiling the slabs to produce homogeneous cylinders for further processing in a bakery, said machine comprising a dough carrier having a smooth carrying surface for carrying the slabs from the roller means to the coiling means, said roller means having a rough, porous moisture retaining surface for rolling out dough balls on said smooth carrying surface to cause the formed slab to adhere to the surface so that the surface prevents elastic shrinking of the flat slab, and means for wetting the roller surface so that during the rolling out operation water is forced into the free surface of the slab where the surface structure of the dough is slightly disturbed by the rolling out force applied to the dough by said roller, whereby the entire dough surface and its adjacent subsurface are caused to accept moisture in a quantity such that when the slabs are subsequently coiled to cylinders there is sufficient moisture between the windings to allow them to fuse together, such fusion being further contributed to bey shrinkage of the slabs upon release from the carrier resulting in a tightening of the formed dough rolls.

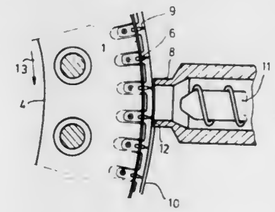
4,555,227

DEVICE FOR INJECTION MOULDING INSULATING DISKS ONTO THE INNER CONDUCTOR OF HIGH-FREQUENCY COAXIAL CABLES

Hans L. Ditscheid, Bergisch Gladbach, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1984, Ser. No. 628,013
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324348
Int. Cl.⁴ B29D *23/05*
U.S. Cl. 425—122 **6 Claims**

1. A device for injection molding insulating discs onto the inner conductor of a high-frequency coaxial cable comprising a turret rotatable about its axis and at the circumference of which are located radially arranged mold cavities provided with radially arranged molding ducts extending outwardly from said circumference forming said insulating discs, means for moving said conductor through the centers of said mold cavities, means for opening and closing said mold cavities, injection means for supplying molding material to said cavities comprising an injection nozzle directed toward the circumference of said turret and means for separating the molding material formed during the molding process on the circumference of said turret from said insulating discs, characterized in that the face of the injection nozzle facing the circumference of the turret is provided with an orifice which orifice is an oval shaped slot, the longitudinal direction of which slot extends along the circumferential direction of said turret and the longitudinal dimension of which slot is larger than the diameter of the molding ducts and the means for separating the film of molding material formed on the circumference of said turret from the insulating discs is so located in relation to the turret that it separates the film of molding material from the insulating discs in an area in which the mold cavities are closed.

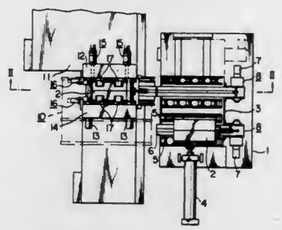


4,555,228

APPARATUS FOR AUTOMATICALLY EXCHANGING DIE FOR INJECTION MOLDING

Naritoshi Nishiike; Takashi Nishimaki, both of Chiba; Yasushi Miura, Yokohama, and Masaaki Kumamura, Ohita, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

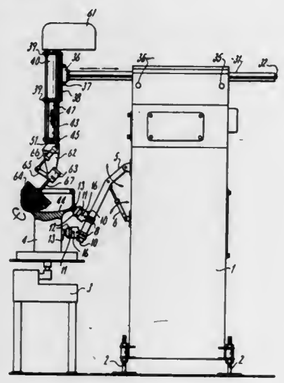
PCT No. PCT/JP83/00200, § 371 Date Feb. 22, 1984, § 102(e) Date Feb. 22, 1984, PCT Pub. No. WO84/00128, PCT Pub. Date Jan. 19, 1984
PCT Filed Jun. 22, 1983, Ser. No. 588,871
Claims priority, application Japan, Jun. 22, 1982, 57-106107
Int. Cl.⁴ B29F *1/00*
U.S. Cl. 425—185 **5 Claims**



1. An automatic die exchanging apparatus for automatically exchanging a split die on an injection molding machine having a stationary platen and a movable platen arranged to move horizontally with respect to said stationary platen, said split die having a locking mechanism adapted to automatically lock the preset die half parts, said injection molding machine having a die mounting portion between said stationary platen and said movable platen and accessible by the locked split die from a lateral side of said injection molding machine, said automatic die exchanging apparatus comprising: a die exchanging base having at least two transfer passages adapted to carry a locked die, said die exchanging base being movable to alternatingly bring said transfer passages into alignment with said die mounting portion at said lateral side of said molding machine; a transfer means for transferring said locked die from the aligned transfer passage to said die mounting portion and vice versa; a locating means for locating said die transferred to said die mounting portion at a predetermined postion; a clamping means for fixing the die half parts of the located die to said

stationary platen and said movable platen of said molding machine; and means provided on one of said stationary and movable platens for releasing said locking mechanism to unlock said die half parts, said means being effective only when said die half parts are located to be fixed to respective platens.

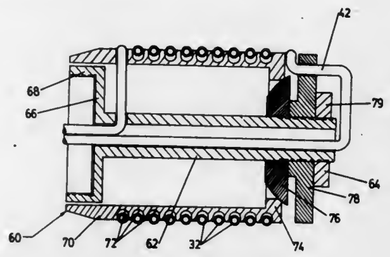
4,555,229
AUTOMATIC MACHINE FOR THE INTERNAL FETTLING OF SANITARY APPLIANCES
Mario Biadigo, Milan, and Gianfranco Zucchi, Brescia, both of Italy, assignors to Ideal Standard S.p.A., Milan, Italy
Filed Jul. 8, 1983, Ser. No. 511,998
Claims priority, application Italy, Jul. 9, 1982, 46843 A/82
Int. Cl.⁴ B29C *25/00*; B44D *5/10*
U.S. Cl. 425—267 **11 Claims**



1. An apparatus for fettling the internal surface of a vessel which comprises:
- a profile member configured to the shape of the internal surface of the vessel;
- a tappet device arranged to trace said profile member;
- a slide means operatively connected to said tappet device, the motion of said tappet device being transferred to said slide means;
- a slider means mounted for vertical motion on said slide means;
- an orientatable rotary head member connected to said slider means, said head member comprising a central shaft having a plurality of radial clamps, each of said radial clamps being fitted with a thin flexible strip of a soft weave or mat of slightly abrasive filiform plastic material; and
- means for causing said head member to traverse the internal surface of the vessel in a stepwise rotary motion in conformity with the traversal of the profile member.

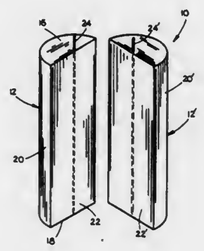
4,555,230
CALIBRATOR FOR USE IN THE MANUFACTURE OF DOUBLE WALLED THERMOPLASTIC PIPE
Manfred A. A. Lupke, 10 McLeary Ct., Concord, Ontario, Canada (L4K 2Z3)
Filed Mar. 7, 1984, Ser. No. 587,139
Claims priority, application Canada, May 27, 1983, 429064
Int. Cl.⁴ B29C *53/00, 53/56*
U.S. Cl. 425—325 **1 Claim**

1. In an apparatus for manufacturing thermoplastic pipes, a calibrator comprising an elongate carrier supporting a helical spring having a transitional deformation, said helical spring further having one end fixed to said carrier and an opposite end attached to a rotatable element so as to vary and fix the diameter of said spring by means of twisting said spring about said



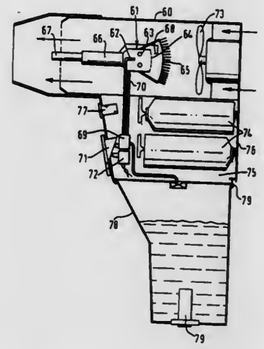
carrier and converting said transitional deformation of said spring into a radial deformation.

4,555,231
UNITY CANDLE
D. Lucinda Kustka, 1128 Surrey Rd., Papillion, Nebr. 68046
Filed Jan. 7, 1985, Ser. No. 689,335
Int. Cl.⁴ F23D *3/16*
U.S. Cl. 431—288 **8 Claims**



1. A unity candle, comprising
- a pair of elongated upright candle sections, each having upper and lower ends, an exterior surface and an exposed interior engagement surface,
- a pair of upright wicks, one on each of the respective candle sections and extended longitudinally thereof at a position substantially closer to the exposed interior engagement surface thereof than to the exterior surface thereof,
- the engagement surface of each candle section being matched with the engagement surface of the other candle section such that, upon placement of the matched engagement surfaces in registered engagement, a single candle is formed, and
- said wicks extending upwardly from the upper surfaces of said candle sections and being so positioned on the respective candle sections that, upon placement of the matched interior engagement surfaces in registered engagement and upon lighting of the wicks, flames from the separate wicks are merged into one.

4,555,232
HAIR DRYING APPARATUS
Edward R. Raccah, Southern Leigh, Blackberry La., Lingfield, Surrey, and James B. King, 5 Wardrobe Ct., 146a Queen Victoria St., London EC4V 5AT, both of England
PCT No. PCT/GB82/00255, § 371 Date Apr. 12, 1983, § 102(e) Date Apr. 12, 1983, PCT Pub. No. WO83/00607, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 13, 1982, Ser. No. 486,538
Claims priority, application United Kingdom, Aug. 14, 1981, 8124971
Int. Cl.⁴ A45D *20/06*; F24H *1/00*
U.S. Cl. 432—222 **2 Claims**



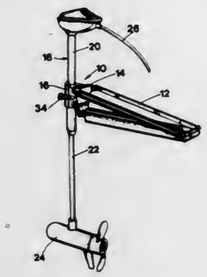
1. Hair drying apparatus comprising a tubular body with an air inlet at one end, an electric motor at said end, an air impeller driven by said motor to draw air in through the air inlet, propel the air through the body and out through an outlet nozzle at the other end of the body, a heating means disposed within the body between said impeller and said air outlet nozzle, said heating means comprising a gas burner assembly including a coiled tube positioned within the air-flow, one end of the tube being fed with a combustible gas mixture, the tube having apertures spaced along its length, a fibrous catalyst material around the outside thereof, a support wire on which said fibrous catalyst material is retained, a housing secured to and beneath the body, the housing containing an electric power source connected through switch means to drive said electric motor, a gas flow valve operably coupled with the switch means and to a trigger mounted on the housing for manual operation, a pressurised liquid gas container connected with the housing and extending to form therewith a handgrip, a gas refilling valve assembly at the base of said gas container, a gas duct connecting the said container with the burner through said gas flow valve, ignition means to initiate combustion of the gases, and a temperature sensing means operable to close a valve in the gas feed when the burner temperature rises above a predetermined maximum.

4,555,233
SHOCK-ABSORBING BOW MOUNT FOR TROLLING MOTOR
Mark S. Klammer, and Del P. Decko, both of Mankato, Minn., assignors to Johnson Fishing, Inc., Mankato, Minn.
Filed Apr. 23, 1984, Ser. No. 602,772
Int. Cl.⁴ B63H *21/26*
U.S. Cl. 440—56 **7 Claims**

1. In an electric trolling motor mounting device of the type having means for attachment to a boat, a tube-securing element connected to said attachment means and a tube structure held by the tube-securing element and having the motor at one end thereof for under water suspension during operation, the improvement, described in the in-water orientation, wherein:

said attachment means includes a substantially vertical bearing surface adjacent the tube-securing element;

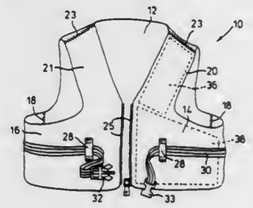
an array of compressible springs held in partial compression between said bearing surface and said tube-securing element, said array being constituted by a group of at least two such springs disposed in spaced horizontal orientation and a second group including at least a third spring vertically spaced from a line between centers of the springs of said first group of springs; and



means associated with said attachment means and said tube-securing element to permit said tube-securing element to tilt relative to said vertical bearing surface upon the application of a lateral force to the motor;

whereby the shock of collisions between the motor and underwater objects may be absorbed by tilting of said tube structure and tube securing element relative to said bearing surface to compress the springs of one of said groups.

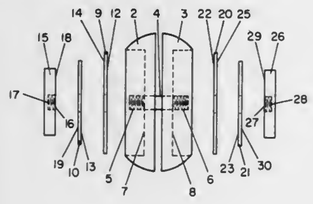
4,555,234
FLOTATION VEST CONSTRUCTION
David Kent, Guelph, Canada, assignor to Guelph Elastic Hosiery Company Limited, Guelph, Canada
Continuation of Ser. No. 536,377, Sep. 27, 1983, abandoned. This application Mar. 7, 1985, Ser. No. 709,200
Int. Cl.⁴ B63C *9/08*
U.S. Cl. 441—106 **7 Claims**



1. A flotation vest comprising a back panel, two front panels joined to the lower sides of the back panel, each front panel including a lapel portion extending upwardly to join the back panel at an upper corner thereof, each front panel defining with the back panel an armhole adjacent the respective lapel portion, each front panel having two layers of fabric defining between them a pocket extending continuously through the front panel including the respective lapel portion, and flotation material in each such pocket, said flotation material including:
- a plurality of layers of buoyant, flexible material in each pocket below the respective lapel portion, and a single sheet of buoyant, flexible material in the respective lapel portion, said single sheet being gated by means of a plurality of substantially parallel, spaced-apart slits which extend short of the edges of the sheet, each slit passing entirely through the sheet so that the sheet remains joined only beyond the extremities of each slit, whereby the sheet

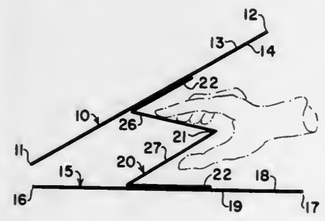
folds preferentially at said slits, said single sheet being folded to provide a plurality of juxtaposed layers connected at folds, whereby the folds prevent interleaving of said layers with said folded single sheet.

4,555,235
RETURN TOP
Robert C. Burroughs, 20400 Fredrick Rd., Germantown, MD 20874—Lot I-2
Continuation-in-part of Ser. No. 427,697, Sep. 29, 1982. This application Aug. 14, 1984, Ser. No. 620,319
Int. Cl.[4] A63H *1/30, 1/22*
U.S. Cl. 446—250 **18 Claims**



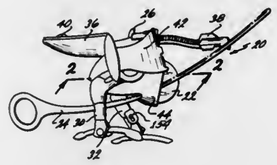
5. A return top having a multiple designing means enabling a changing and replacing and repositioning of surface designs of said multiple designing means with the use of existing mounted parts without changing its geometrical structure, and means to revert said return top back to its original surface design with same said existing mounted parts, said multiple designing means mounted to a structure, said structure comprising a pair of substantially disk shaped parts and an axle connecting said pair of substantially disk shaped parts, said multiple designing means comprising stacked and removable and repositionable design dates of said pair of substantially disk shaped parts, there being at least two of said stacked and removable design washers associated with each said disk shaped part, each plate having separate designs on opposing faces enabling a changing and replacing and repositioning of face side up designs of said design washers by the reversing of said design washers said designs on face side up of said design washers being visible when stacked, said design washers secured with fastening means, said fastening means enabling the removal and replacing and repositioning of said design washers.

4,555,236
HAND ACTUATED PUPPET AND KIT
Jeffrey L. Peyton, 2218 E. Grace St., Richmond, Va. 23223
Filed Apr. 26, 1984, Ser. No. 603,912
Int. Cl.[4] A63H *23/00, 3/14, 3/08*
U.S. Cl. 446—329 **10 Claims**



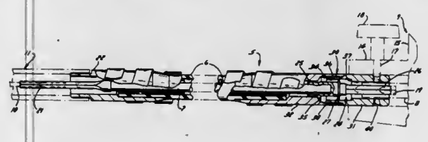
7. A kit in the form of a compact package amenable to commercial distribution comprising:
A. a hand actuated puppet fabricated substantially entirely of resilient thin flat sheet material and presenting the general appearance of the head of a person or animal, said puppet being comprised of:
(a) a flat upper panel representing the face of a person or animal and having front and rear extremities and upper and lower surfaces,
(b) a flat lower panel representing a lower portion of the person or animal and comprised of front and rear extremities and upper and lower surfaces, and
(c) a folded W-shaped hinge capable of being collapsed to a planar configuration, said hinge interengaging said upper and lower panels and disposed such that the outer legs of said W-shaped hinge are attached to opposing surfaces of said upper and lower panels inwardly of said front extremities, said inner legs forming a center bight directed toward the rear extremities of said panels, said hinge having a width sufficient to facilitate holding by the fingers of the operator,
(d) said upper and lower panels being adapted to be hand-manipulated in a manner to cause them to bend and meet in abutting contact in a mutual plane at a site adjacent their front extremities, said site of abutting contact being capable of gripping flat objects,
(e) the design and construction of said puppet being such as to facilitate interconversion between an operational configuration and a flattened storage configuration,
(f) said puppet being in its storage configuration, and
(B) literary material whose content is related to the puppet's appearance.

4,555,237
WALKING AND ROLLING TOY
Teruo Nikaido, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan
Filed Jul. 6, 1984, Ser. No. 628,527
Claims priority, application Japan, Nov. 25, 1983, 58-182379; Dec. 10, 1983, 58-190813
Int. Cl.[4] A63H *3/22, 29/02*
U.S. Cl. 446—355 **16 Claims**



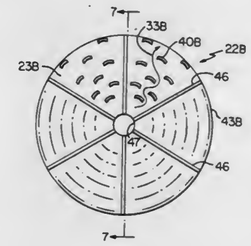
1. A movable toy which comprises:
a body;
a fly wheel rotatably mounted on said body;
means for rotating said fly wheel so as to energize said fly wheel;
appendage means for supporting and moving said toy on a support surface, said appendage means having ends, said appendage means pivotally connected to said body about one of said ends, the other of said ends of said appendage means contacting said support surface;
a member movably mounted on said body so as to move between a first and second position;
motion transfer means for transferring motion from said fly wheel to said appendage means, said motion transfer means operatively connectable between said fly wheel and said appendage means and further operatively associated with said member whereby when said member is in said first position said motion transfer means is connectable between said fly wheel and said appendage means and when said member is in said second position said connection between said fly wheel and said appendage means is disrupted;
said appendage means includes a first and second appendage element, each of said appendage members having ends, each of said appendage elements pivotally connected to said body about one of their ends;
said motion transfer means includes a crank shaft rotatably mounted on said body and operatively associated with said fly wheel so as to be rotated by said fly wheel, said crank shaft being elongated and including ends, said crank shaft located on said body so as to extend through said body with the respective ends of said crank shaft extending out of respective sides of said body, said crank shaft including a crank on each of its respective ends, each of said cranks of a type including a crank pin connected by a web to said crank shaft, the crank pins on each of said cranks orbiting about said crank shaft in response to rotation of said crank shaft;
each of said appendage element having a first and second appendage member, said first appendage member having ends, said first appendage member rotatably mounted to the crank pin of the respective crank associated with said appendage element, said first appendage member executing movement in response to rotation of said crank shaft, said second appendage member having ends, said second appendage member pivotally mounted to said first appendage member, said second appendage member slideably connected to said crank shaft proximal to one of the ends of said second appendage member, said second appendage member pivoting on said first appendage member in response to rotation of said crank shaft.

4,555,238
FLEXIBLE SHAFT HAVING DETACHABLE END CONNECTIONS
William J. Miller, Hartford, and Norman Faber, Jr., Allenton, both of Wis., assignors to Wacker Corporation, Hartford, Wis.
Filed Oct. 29, 1984, Ser. No. 665,618
Int. Cl.[4] F16C *1/08;* **F16D** *3/00*
U.S. Cl. 464—52 **2 Claims**



2. A flexible shaft comprising an elongated sheath having front and rear ends and an elongated flexible core having front and rear ends, said core being endwise insertable into said sheath and removable therefrom and being normally rotatable in the sheath with its front and rear ends respectively adjacent to the front and rear ends of the sheath, the rear ends of said sheath and said core being detachably connectable, respectively, with a relatively nonrotatable housing of a driven device and with a rotatable driven shaft of said driven device, the front end of said core being readily detachably connectable with a rotatable driving shaft of a driving device, which shaft has a coaxial non-circular well therein, and the front end of said sheath being detachably connectable with a fixed annular part on a housing of the driving device, said part being coaxial to said driving shaft and spaced radially outwardly therefrom and having a lengthwise slidable detent pin extending radially therethrough that is biased towards the driving shaft, said flexible shaft being characterized by:
A. tubular front securement means for said sheath comprising front and rear tubular members detachably connected in coaxial telescoping relationship,
(1) said rear tubular member having a rear portion which is secured to the front end portion of the sheath,
(2) said front tubular member
(a) having a substantially cylindrical radially outer front surface portion that is axially receivable in said annular part of a driving device and
(b) having at least one radially opening hole therein wherein said detent pin is receivable to releasably lock the securement, means against movement relative to said annular part,
(3) each of said tubular members having a counterbore therein
(a) which opens axially towards the other tubular member and
(b) which defines an inner coaxial annular shoulder that faces axially towards the other tubular member, and
(4) one of said tubular members having a portion which is axially adjacent to the other tubular member and which is removably secured in the counterbore in said other tubular member to connect the tubular members with their said shoulders in axially spaced opposing relationship; and
B. rigid front connector means for said core having
(1) a rear portion secured to the front end portion of the core,
(2) a coaxial front end portion axially slidably receivable in said noncircular well to provide a readily detachable rotation transmitting connection between the core and said driving shaft, and
(3) a radially outwardly projecting circumferential flange rearwardly adjacent to its said front end portion that is received in the counterbore in said other of the tubular members to be axially slidable therein between limits defined by said shoulders.

4,555,239
BELT PULLEY AND METHOD OF MAKING THE SAME
Joseph P. Miranti, Jr., Porter Township, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio
Filed Jun. 1, 1982, Ser. No. 383,856
Int. Cl.[4] F16H *57/04*
U.S. Cl. 474—93 **12 Claims**



1. In a belt pulley having a hub and a peripheral groove for receiving part of an endless belt therein that is to drive said pulley or be driven thereby whereby said pulley is adapted to be rotated about the axis of said hub, said pulley having opposed sides, said pulley having vane means extending outwardly from at least one of said sides thereof, the improvement wherein said vane means comprise a plurality of spaced apart curved vanes of substantially the same size and shape and disposed in a plurality of circular arrays that are generally concentrically disposed relative to each other about said axis on said one side of said pulley for acting on fluid adjacent said pulley to tend to cool said pulley with said fluid, said curved vanes in each circular array each being disposed substantially evenly between an adjacent pair of curved vanes in the circular array adjacent thereto whereby the number of curved vanes in each circular array is the same, each curved vane having a convex side and a concave side, said concave side of each curved vane facing said axis and each curved vane being substantially symmetric about a radial line intersecting its midpoint and said convex side of each curved vane facing in the direction of said peripheral groove.

4,555,240

PULLEY FOR COGGED BELT AND METHOD FOR PRODUCING SAME

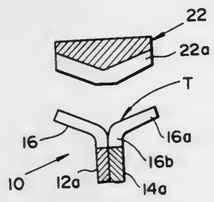
Yoshimasa Hayashi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 22, 1982, Ser. No. 360,423

Claims priority, application Japan, Mar. 23, 1981, 56-40430[U]

Int. Cl.⁴ F16H *55/30, 55/12*

U.S. Cl. 474—152 **4 Claims**



1. In combination, a pulley for use with a cogged belt, and a cogged belt, said cogged belt having sides and cogs extending from one of said sides to the other of said sides, said pulley comprising:

first and second discs formed of sheet metal and secured with each other as a single unit, each disc being formed at its peripheral section with a plurality of teeth and having a main body, each tooth including a base portion integral with and extending radially outwardly from said main body, and a bent portion integral with said base portion, said discs being secured such that the bent portions of the teeth on said first and second discs extend in generally opposite directions, and such that said bent portions are engageable with said cogs of said cogged belt, said opposed bent portions and radially outwardly extending base portions of each tooth defining a continuous contact surface whereby there is engagement of each tooth with a cog of said belt across the full extent of each tooth.

4,555,241

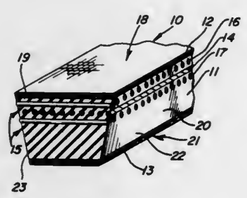
REINFORCED DRIVE BELT STRUCTURE

Hiroshi Takano, Miki, and Kunikatsu Shiinoki, Kobe, both of Japan, assignors to Mitsuboshi Belting, Ltd., Kobe, Japan

Filed Dec. 20, 1982, Ser. No. 451,045

Int. Cl.⁴ F16G *1/00*

U.S. Cl. 474—261 **19 Claims**



1. In a V-belt having a rubber body defining outer and inner faces and a plurality of substantially parallel, low elongation, high strength tensile cords extending lengthwise longitudinally of the V-belt intermediate said faces, the improvement comprising:

a first plurality of filament reinforcing elements each extending substantially fully transversely across the body outwardly adjacent said tensile cords; and

a second plurality of filament reinforcing elements each extending substantially fully transversely across the body outwardly adjacent said tensile cords; and

a second plurality of filament reinforcing elements each extending substantially fully transversely across the body inwardly adjacent said tensile cords for preventing inward migration of the tensile cords, said reinforcing elements defining outer surfaces completely engaging the surrounding rubber body and thereby being connected to each other longitudinally of the belt solely by said rubber body whereby said tensile cords provide the sole control of the longtudinal extension of the belt thereat.

4,555,242

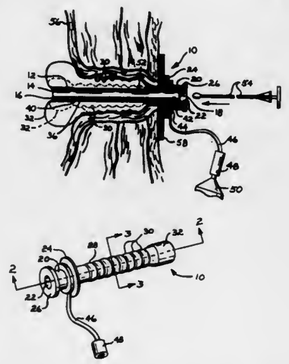
URINARY DRAINAGE APPLIANCE

Abdul S. Saudagar, 12 Eastshore, Irvine, Calif. 92714

Filed Jan. 19, 1984, Ser. No. 572,687

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—96 **19 Claims**



1. A device for draining bodily wastes from a natural or artificial bladder in a patient's body through a stoma connected with said bladder by a passage, said device comprising:

conduit means insertable into said bladder through said stoma and said passage, for allowing the passage of bodily wastes from said bladder to the exterior of the body through said stoma, said conduit means having a distal end adapted to be received in said bladder and a proximal end axially spaced from said distal end so as to extend to the exterior of the body through said stoma;

external retention means, attached to said proximal end of said conduit means, for sealing said stoma around said proximal end and forming an outlet for wastes discharged from said proximal end;

an inflatable balloon enclosing the exterior of said conduit means along a substantially portion of its length from said distal end thereof, said balloon having a bulbous tip portion surrounding said distal end and a ribbed portion extending proximally from said tip portion, said balloon and said conduit means defining a space therebetween; and

passage means, communicating with said space, for providing a flow path for a fluid into said space to inflate said balloon;

said balloon having a wall which is thicker in said tip portion than in said ribbed portion so as to allow said ribbed portion to be substantially fully inflated before said tip portion is inflated when said ribbed portion is situated in said passage and said tip portion is situated in said bladder.

8. A device for draining bodily wastes from a natural or artificial bladder in a patient's body through a stoma connected with said bladder by a passage, said device comprising:

a flexible tube insertable into said bladder through said stoma and said passage, and having a distal end adapted to be received in said bladder, a proximal end axially spaced from said distal end so as to extend to the exterior of the body through said stoma;

external retention means, attached to said proximal end of said tube, for (a) resisting axial displacement of said tube, (b) sealing said stoma around said proximal end, and (c) forming an outlet for the discharge of wastes flowing through said tube;

first inflatable means on said distal end of said tube, which, when inflated, extends radially outwardly from said distal end and axially beyond said distal end, for (a) resisting, with said external retention means, the axial displacement of said tube, (b) providing a fluid-tight seal around said distal end of said tube, and (c) providing a cushion around said distal end substantially to prevent direct contact between said tube and the tissues of said bladder;

second inflatable means, enclosing a substantial portion of the length of said tube extending proximally from said first inflatable means, for providing, when inflated, a substantially fluid-tight seal between said tube and said passage; and

passage means in said external retention means and said tube, for providing a flow path for a fluid into said first and second inflatable means for the inflation thereof;

said first and second inflatable means each having an expandable wall, the expandable wall of said first inflatable means being thicker than the expandable wall of said second inflatable means, so that said first inflatable means is permitted to begin inflating only after said second inflatable means is substantially fully inflated when said tube is inserted into said bladder through said stoma and said passage.

15. A device for draining bodily wastes from a natural or artificial bladder in a patient's body through a stoma connected with said bladder by a passage, said device comprising:

a flexible tube, insertable into said bladder through said stoma and said passage, and having a distal end adapted to be received in said bladder, a proximal end axially spaced from said distal end so as to extend to the exterior of the body through said stoma, and an axial bore extending from said distal end to said proximal end;

a retainer plug attached to said proximal end of said tube and having an axial bore aligned with the axial bore of said tube;

an inflatable balloon enclosing the exterior of said tube along a substantial portion of its length from the distal end thereof, said balloon having a bulbous tip portion surrounding the periphery of said distal end and a ribbed portion extending proximally from said tip portion, said balloon and said tube defining a space therebetween, said bulbous tip portion being inflatable to form a donut-shaped cushion extending radially outwardly from said distal end and axially beyond said distal end, said ribbed portion being inflatable to form a substantially fluid-tight seal between said tube and said passage, said balloon having an expandable wall which is thicker in said tip portion than in said ribbed portion, thereby allowing said ribbed portion to be substantially fully inflated before said tip portion is inflated when said ribbed portion is situated in said passage and said tip portion is situated in said bladder; and

passage means, in said retainer plug and said tube, for providing a flow path for a fluid from a fluid source into said space between said balloon and said tube to inflate said balloon.

4,555,243

FLEXIBLE AND PROTECTIVE GUIDE DEVICE FOR USE WITH ASPIRATING NEEDLES

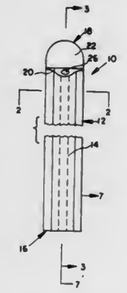
Charles W. Markham, 667 Snug Island, Clearwater Bch., Fla. 33515

Filed Mar. 5, 1984, Ser. No. 586,036

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 604—263 **7 Claims**

1. An elongated flexible and protective guide device for mounting on an operator's finger and for use with a flexible elongated aspirating needle comprising a flexible elongated tubular element having a proximal and a distal end and an elongated opening therethrough which telescopically receives said needle, a pair of flexible elongated flanges secured to said tubular element, having a length substantially equal to the length of said tubular element and projecting laterally beyond said tubular element to stabilize it against rolling displacement, and said guide device including a flexible distal base portion secured to the remainder of said guide device, said base portion extending distally beyond said tubular element and being made of a flexible plastic having a thickness between about six thousandths of an inch and one hundredth of an inch, providing for tactile palpation therethrough, which thinness allows appreciation of a needle tip presence, while being thick enough to allow for sliding protective engagement with the tip of the aspirating



needle, said base portion being positioned to lie between the projecting needle and the operator's finger, the amount of flexibility of said needle, tubular element, flanges, and base portion being sufficient to allow the operator's finger to bend during said palpation by an amount that allows said operator to feel an abnormal growth or swelling on the area being inspected with said operator's fingertip, said device permitting said operator to continue palpating said growth or enlarged area while simultaneously taking a sample thereof with said aspirating needle, there being no need for the fingertip of the operator to withdraw from the area being sampled, whereby the operator's fingertip can guide the needle into a nodule and can feel the needle entering the nodule while being protected from a puncture wound caused by said needle.

4,555,244

WASTE-CONTAINMENT GARMENT HAVING ABSORBENT BODY AND REUSEABLE SIDE-BRIDGING FASTENER FITMENTS

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

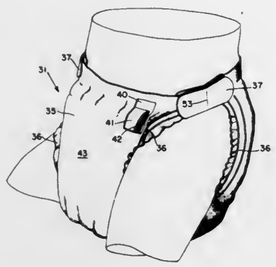
Filed Jul. 25, 1983, Ser. No. 517,098

Int. Cl.⁴ A41B *13/02*

U.S. Cl. 604—392 **8 Claims**

1. A waste containment garment, said garment comprising an absorbent pad assembly and two discrete side-bridging fastener fitments, said absorbent pad assembly comprising a liquid pervious topsheet, a liquid impervious backsheet, an absorbent core disposed between said topsheet and said backsheet and elasticized leg cuffs, said pad assembly having front and back waistband regions having widths which total less than the midsection girth of an intended wearer of said garment, and said core having end regions having individual widths of from about fifteen to about thirty-five percent of the midsection girth of said wearer; and each of said side-bridging fastener fitments comprising means for detachably securing one end of said fitment to a back corner of said pad assembly and for detachably securing the other end of said fitment to the front corner of said pad assembly on the same side of said pad assembly as said back corner whereby each said fitment will bridge across a side portion of said wearer of said garment said

side-bridging fasteners further comprising means for being substantially inelastic longitudinally, for having sufficient transverse rigidity to obviate roping, and for having sufficiently compliant longitudinal edge regions to substantially obviate edge marking the skin of said wearer.

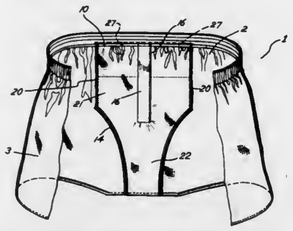


4,555,245

UNDERGARMENT WITH ATTACHED ABSORBENT LINER

Thomas L. Armbruster, Norfolk, Nebr., assignor to Comm Stitch, Norfolk, Nebr.

Filed Aug. 12, 1983, Ser. No. 522,813
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—396 **3 Claims**



1. An undergarment comprising an exterior cloth portion and an interior permanently attached absorbent liner portion; the exterior cloth portion having a waist opening, two leg openings that have a circumference greater than that of a wearer's leg so that the openings fit loosely about the leg, and an openable fly; the absorbent liner portion having a wide area disposed about the openable fly, at least two layers and two contoured elastic borders, one layer being waterproof and the other layer being moisture absorbent and disposed between the waterproof layer and the undergarment wearer, each contoured elastic border forming an edge on the absorbent liner so that the absorbent liner fits snugly against the undergarment wearer's body.

4,555,246

PROCESS FOR PREPARING A HAIR DYE OR HAIR BLEACH COMPOSITION; A COMPOSITION FOR USE IN THIS PROCESS; AND THE USE OF SAID COMPOSITION TO DYE OR BLEACH HAIR

Jean-Francois Grollier, Paris; Christian Monnais, Neuilly-sur-Seine, and Lyonel Peritz, Boulogne-sur-Seine, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 2, 1982, Ser. No. 365,023
Claims priority, application France, Apr. 2, 1981, 81 06676
Int. Cl.[4] A61K *7/13*
U.S. Cl. 8—405 **8 Claims**

1. A process for preparing a clear gel for application to the hair comprising

(a) admixing a gelifiable liquid consisting essentially of a mixture of

(1) a non-ionic compound selected from the group consisting of

(i) polyoxyethylenated fatty alcohol having 8–18 carbon atoms and oxyethylenated with 2–30 moles of ethylene oxide,

(ii) polyglycerolated fatty alcohol having 8–18 carbon atoms and glycerolated with 1–6 moles of glycerol,

(iii) polyoxyethylenated alkylphenol wherein the alkyl moiety has 8–9 carbon atoms and oxyethylenated with 2–30 moles of ethylene oxide, and

(iv) polyglycerolated alkylphenol wherein the alkyl moiety has 8–9 carbon atoms and glycerolated with 4–6 moles of glycerol,

(2) a solvent selected from the group consisting of a lower aliphatic alcohol, a glycol and a glycol ether, and

(3) an oxidation dye present in an amount effective to dye said hair, with

(b) an oxidizing solution comprising a solution of H_2O_2 and an incompatible cationic polymer dissolved therein, said incompatible cationic polymer being one which when mixed with an incompatible polymer test support in an amount from 0.5 to 5 weight percent of said test support results in the formation of a cloud or precipitate, or a separation of said test support into two phases, said test support consisting essentially of 20 g of a nonyl phenol oxyethylenated with 9 moles of ethylene oxide, 24 g of nonyl phenol oxyethylenated with 4 moles of ethylene oxide, 9 g of monobutylether of ethylene glycol, 10 g of propylene glycol, 2.4 g of 40 weight percent aqueous solution of the pentasodium salt of diethylene triamine pentacetic acid, 10 g of ammonia 22° Be'' and water in an amount sufficient for 100 g,

the resulting admixture containing 5 to 60 weight percent of said nonionic compound and 2 to 20 weight percent of said solvent and wherein said incompatible cationic polymer is present in said oxidizing solution in an amount sufficient so that the concentration of said incompatible cationic polymer is between 0.01 and 10 weight percent based on the total weight of the admixture resulting from admixing said gelifiable liquid and said oxidizing solution.

4,555,247

HAIR-DYEING COMPOSITIONS BASED ON NITRO DIRECT DYESTUFFS, AND A DYEING PROCESS USING THESE COMPOSITIONS

Roland de la Mettrie, Asnieres, and Patrick Canivet, Paris, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 291,100, Aug. 7, 1981, abandoned. This application Oct. 26, 1984, Ser. No. 665,083
Claims priority, application France, Aug. 8, 1980, 80 17616; Jun. 16, 1981, 81 11872
Int. Cl.[4] A61K *7/13*
U.S. Cl. 8—405 **17 Claims**

1. A composition having less than twice the number of mutants as the control, as tested by the Ames test, which is suitable for the direct coloration of human hair, said composition comprising at least one violet nitro dyestuff having a shade, on the Munsell scale, from 7.5 P to 10 PB, and at least one yellow nitro dyestuff having a shade, on the Munsell scale from 10 Y to 2.5 Y, these violet and yellow dyestuffs being present in proportions such that their selectivity coefficients are substantially equal, the coefficients being from 3 to 8 when determined at a concentration of 0.1 to 0.6% by weight, the ratio by weight of the violet dyestuff to the yellow dyestuff being from 1:1 to 3:1, so that said violet and yellow dyestuffs complement each other.

4,555,248

PROCESS FOR STABILIZING THE VISCOSITY CHARACTERISTICS OF COAL DERIVED MATERIALS AND THE STABILIZED MATERIALS OBTAINED THEREBY

James C. Bronfenbrenner, Edward P. Foster, and Krishna Tewari, all of Allentown, Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Jun. 20, 1984, Ser. No. 622,371
Int. Cl.[4] C10L *1/18*
U.S. Cl. 44—78 **12 Claims**

1. A process for stabilizing the viscosity during handling and storage at temperatures of 35°–150° C. for a period of time up to about four months of a homogeneous, single phrase blend of solvent refined coal and solvent refined coal liquid distillate which liquid distillate contains indigenous nitrogen base compounds, both derived via liquefaction of a coal feed stock, which process for viscosity stabilization comprises:

(a) adding to said blend of solvent refined coal and solvent refined coal liquid distillate up to about 5.0 percent by weight of a light volatile phenolic viscosity repressor;

(b) passing said blend of solvent refined and solvent refined coal liquid distillate containing said light volatile phenolic viscosity repressor to a storage container while minimizing the loss of light volatile components present therein; and,

(c) maintaining a partial pressure of said phenolic viscosity repressor over said stored blend of solvent refined coal and solvent refined coal liquid distillate throughout storage of said blend to insure that said phenolic viscosity repressor attaches to nitrogen base compounds contained within said blend of solvent refined coal and solvent refined coal liquid distillate to negate a large increase in viscosity.

4,555,249

SOLID FUEL GASIFYING UNIT AND GAS FRACTIONATING UNIT

Arnold M. Leas, 122 N. 34th St., Richmond, Ind. 47374

Filed Dec. 16, 1983, Ser. No. 562,087
Int. Cl.[4] C10J *3/54, 3/56*
U.S. Cl. 48—62 R **12 Claims**

1. An apparatus for gasifying solid combustible fuel comprising:

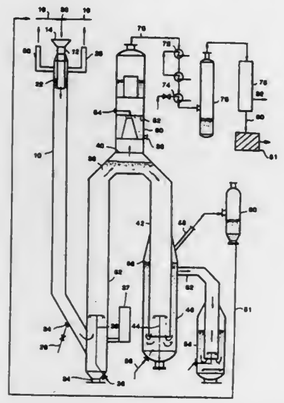
a vertical preheating zone having inlet means near an upper end of the zone and outlet means near a lower end of the zone wherein a solid fuel feed may be transferred through said inlet means in admixture with hot solid reagent to preheat the feed and to form a relatively dense bed of solid feed and reagent particles which extend vertically within the preheating zone to an elevation sufficient to create a gravitational particle flow which forces the solid particles in the lower end of the bed into a vertical gasifying zone;

said vertical gasifying zone having solid fuel inlet means located near a lower end of said gasifying zone and connected to said outlet means of said preheating zone so that said solid fuel and reagent can flow by gravity directly from said preheating zone to said gasifying zone, and having a fluidizing gas inlet means positioned below said solid fuel inlet means so that upon entry of a gasifying medium into the gasifying zone, said solid fuel and reagent in said zone are fluidized and directed to an upper end of the gasifying zone;

a gas-solid separator positioned near the upper end of said

gasifying zone to permit hot reaction gases to exit through the separation means and to direct ash product, reagent, and ungasified solid feed particles to an upper end of a vertical cooling zone;

said vertical cooling zone having a solid particle inlet means through which solids from said gasifying zone may be received to form to a hot downward flowing bed, and having a cooling gas inlet means positioned near a bottom portion of the cooling zone through which relatively cool gases enter and reduce the temperature of said solid particle bed and complete the gasification reaction of the solid fuel; and



a vertical ash separation zone positioned annularly around a lower portion of said cooling zone to receive the solid particles exiting the cooling zone and having a first outlet means directed to an ash recovery zone and a second outlet means located at a lower elevation than said first outlet means and directed to a reagent recycle zone and a fluidizing gas inlet means positioned near the bottom of said separation zone, so that upon entry of a fluidizing gas, said solid particles pass through the annular space around said cooling zone and said lighter ash particles are directed to said ash recovery zone and said heavier reagent particles are directed to said reagent recycle zone.

4,555,250

GRINDING SHEET AND PROCESS FOR PREPARING SAME

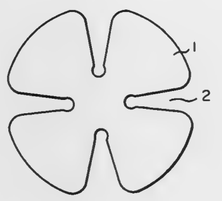
Shin'ichi Horie; Yutaka Matsuzaki, both of Chichibu, and Fumio Kagawa, Kasukabe, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 442,030, Nov. 16, 1982. This application May 29, 1984, Ser. No. 614,844

Claims priority, application Japan, Nov. 16, 1981, 56-182347

Int. Cl.⁴ B24D *3/02*

U.S. Cl. 51—369 **22 Claims**



1. In a process for the preparation of a glass-grinding sheet, which comprises the steps of:

mixing 100 parts by weight of a powdery metal composition comprising copper and at least one metal selected from the group consisting of tin and zinc, with 0.5 to 30 parts by weight of a diamond powder;

sintering the mixture; and then

rolling the obtained sintered body;

wherein said improvement comprises:

providing said powdery metal composition with a content consisting of, based on the weight of the composition:

80 to 96.8% of copper,

3 to 15% of at least one metal selected from the group consisting of tin and zinc, and

0.2 to 5% of at least one metal selected from the group consisting of nickel and titanium, and

at least the copper and said metal selected from tin and zinc in the powdery metal composition constituting an alloy.

4,555,251

PROCESS FOR THE SEPARATION OF GASEOUS MIXTURES USED IN STERILIZATION PROCESSES

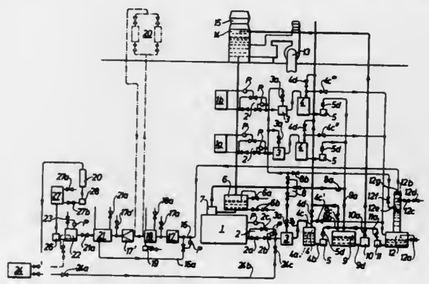
Ernst U. Jonsson, Lund; Sten-Borje Lindqvist, Veberod, and Roland V. Wimmerstedt, Lund, all of Sweden, assignors to Gambro Lundia AB, Sweden

Filed Apr. 30, 1984, Ser. No. 605,585

Claims priority, application Sweden, May 6, 1983, 8302611

Int. Cl.⁴ B01D *53/14*

U.S. Cl. 55—48 **16 Claims**



1. A process for the separation of gaseous mixtures used in sterilization processes, such gaseous mixtures including ethylene oxide and at least one chlorofluorocarbon gaseous component, said process comprising the steps of providing an aqueous solvent for said ethylene oxide from a solvent source, mixing said gaseous mixture with said aqueous solvent so as to produce a liquid phase comprising said ethylene oxide at least partially dissolved in said aqueous solvent, said at least one chlorofluorocarbon gaseous component being less soluble in said aqueous solvent than is said ethylene oxide, whereby said at least one chlorofluorocarbon gaseous component remains substantially in the gas phase and is therefore readily separable from said liquid phase, removing said gas phase from said liquid phase, recovering chlorofluorocarbons from said gaseous phase, separating said ethylene oxide from said aqueous solvent in said liquid phase, and recycling said aqueous solvent to said solvent source for subsequent use as said aqueous solvent.

4,555,252

ELECTROSTATIC FILTER CONSTRUCTION

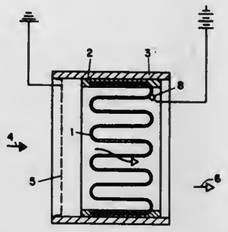
Wolfgang Eckstein, Sereetz, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,104

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1983, 3320299

Int. Cl.⁴ B03C *3/12, 3/45*

U.S. Cl. 55—132 **1 Claim**



1. An electrostatic filter for filtering out floating particles comprising:

a housing defining a space and having an inlet opening on one side and an outlet opening on an opposite side with a fluid flow path between said inlet and outlet openings;

a flat screen connected to said frame and covering said inlet opening, said screen acting as a first electrode and being grounded;

a corrugated dielectric filter made of fabric material with filaments which have a metallic vapor deposit thereon of a copper and silver mixture, disposed in said housing between said first electrode and said outlet opening and across said fluid flow path and forming a second electrode, said second electrode having opposite elongated ends;

a cement sealing layer connected to said housing on each side thereof opposite said fluid flow path and in said space, said elongated ends of said second electrode being embedded respectively in each of said cement sealing layers for holding said second electrode across said fluid flow path; and

a voltage source connected to said second electrode for applying a voltage thereto.

4,555,253

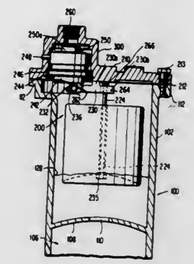
GAS-LIQUID VORTEX SEPARATOR-ELIMINATOR

Robert Hull, Warwick, R.I., and Joseph A. Lane, Taunton, Mass., assignors to Amtrol, Inc., West Warwick, R.I.

Continuation of Ser. No. 460,056, Jan. 21, 1983, Pat. No. 4,475,932. This application May 3, 1984, Ser. No. 606,634

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—170 **17 Claims**



1. A gas-liquid vortex separator-eliminator which is adapted to be connected in a closed liquid circulating system having supply and return lines including a circulating pump connected therein for circulating liquid in said circulating system, comprising (a) an upright main body which has an upper chamber (b) and a lower chamber (c), said upper chamber (b) and lower chamber (c) being separated by a horizontal wall (d) that has a gas discharge port (e) in the center thereof, (f) an inlet which has a longitudinal axis which is generally perpendicular to the vertical axis of said upright main body (a), said inlet (f) having a short pipe leg (g) connected to the upper portion of lower chamber (c), (h) an outlet, which has a longitudinal axis which is generally perpendicular to the vertical axis of main body (a) and is generally parallel to the longitudinal axis of inlet (f), said outlet (h) being positioned in the lower portion of said lower chamber (c), and (i) an air eliminator which is located in said upper chamber (b), when said separator-eliminator is in operation, liquid enters said inlet (f) and exits through said outlet (h), the flow of said liquid lower in lower chamber (c) producing a vortex whereby gas in said liquid is released in the form of bubbles, said liquid-exit outlet (h) being blow where said bubbles form and/or where gas bubbles entrained in said liquid are carried by said vortex, said gas bubbles rising into said upper chamber (b) and being purged into the atmosphere by means of said air eliminator (i), said gas vent-eliminator (i) for automatically venting entrapped gas from a liquid system having a pilot valve-operated diaphragm valve means comprising a valve seat structure containing an upwardly facing rigid valve seat member having a central aperture communicating with the interior of said upper chamber (b), a pilot valve-operated flexible diaphragm valve member having a sealing surface which faces downward and sealing engages against said rigid valve seat member, said diaphragm valve member having a central aperture, a chamber located above said flexible diaphragm member, on the side of said flexible diaphragm member opposite said sealing surface, said chamber communicating with said central aperture of said diaphragm valve member, a retaining means to position and retain said flexible diaphragm member in said valve seat structure such that said sealing surface on said flexible diaphragm member is in contact with said rigid valve member, said retaining means having a central aperture which is aligned with and communicates with said central aperture of said diaphragm valve member, and a pilot valve pin slidably located in said central aperture of said diaphragm valve member, at least one passageway being located in the lower portion of said pilot valve pin, said lower passageway being located in the lower portion of said pilot valve pin, said lower passageway allowing communication between said cavity in said upper chamber (b) and said central aperture in said diaphragm valve member when said diaphragm valve member sealingly engages said valve seat member and not being in such communication position once said lower passageway has moved entirely within said central aperture of said diaphragm valve member or when such sealing engagement does not exist, said pilot valve pin allowing communication between said chamber and said air outlet when said sealing engagement does not exist, at least one passageway or indentation being located in the upper portion of said pilot valve pin, said upper passageway or indentation allowing communication between said chamber and said air outlet once said diaphragm valve member is not in the sealing position, said pilot valve-operated diaphragm valve means selectively opening and closing said air outlet, the air pressure within said upper chamber (b) being used to open and close said diaphragm valve means, and float means within said upper chamber (b) operatively connected to said pilot valve pin, said float means rising and falling as the water level in said upper chamber (b) rises and falls such that when said float means reaches a first predetermined lower position said pilot valve pin no longer allows communication between said chamber and said upper chamber (b), when said float means reaches a second predetermined lower position said pilot valve pin causes said diaphragm valve to open and vent air through said air outlet, via from a said central aperture of said rigid valve seat member to said air outlet, said upper passageway or indentation in the upper portion of said pilot valve pin being in a position which allows communication between said chamber and said air outlet, said upper passageway or indentation in the

upper portion of said pilot valve pin being in a position which allows communication between said chamber and said air outlet, and when said float means reaches a predetermined upper position said pilot valve pin causes said diaphragm valve to close by allowing passage of air from said housing to said chamber located above said diaphragm said valve means, which returns to said sealing position, said diaphragm valve member being in sealing engagement with said rigid seat member whenever said float means is in its up sealing position or the air pressure in said chamber is equal to or greater than the air pressure in said cavity.

4,555,254

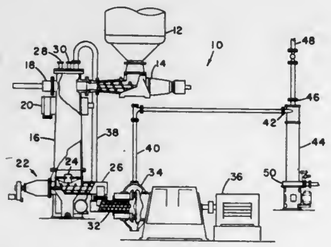
MATERIAL COLLECTOR AND DISCHARGER APPARATUS

Chester D. Fisher, Muncy, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 30, 1982, Ser. No. 445,495

Int. Cl.⁴ B01D *45/14*; D21C *1/02*; D21B *1/16*

U.S. Cl. 55—345 **4 Claims**



1. A material collector and discharger apparatus for use in a system in which solid material is processed in a gaseous fluid environment maintained at an elevated pressure and an admixture of said solid material and said gaseous fluid at elevated pressure is conveyed from a cyclone separator to said collector and discharger apparatus, said apparatus comprising:

a housing having a cylindrical side wall closed at one end and open at the other end and constructed and arranged to receive said solid material and said gaseous fluid and to collect said solid material about the cylindrical side wall thereof,

replaceable orifice means in said cylindrical side wall of said housing to discharge the collected solid materials, said orifice means having a selected sized orifice opening for controlled pressure discharge of the collected solid material with a predetermined minor portion of said pressurized gaseous fluid,

rotary blade impeller means within said housing to centrifugally urge said solid material toward said housing cylindrical side wall, said impeller means having a blade width at its free end that is slightly narrower than the width of said cylindrical side wall and a blade reach closely approximating the inner diameter of said cylindrical side wall, the axis of said rotary blade impeller means being perpendicular to the axis of said replaceable orifice means,

drive means for said impeller means, and

said cyclone operatively connected to said housing to provide for the conveyance of said admixture of said solid material and said gaseous fluid at elevated pressure to said housing and to maintain the pressure of said gaseous fluid in said housing at an elevated pressure.

4,555,255

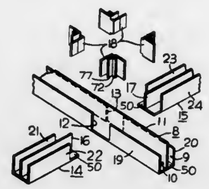
CORNER CONNECTOR CLIP IN AN AIR FILTER GRID

Gary T. Kissel, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 613,143, May 23, 1984, abandoned. This application Apr. 23, 1985, Ser. No. 726,914

Int. Cl.⁴ B01D *46/54*

U.S. Cl. 55—355 **6 Claims**



1. An invertible corner connecting clip for use in completing either a right-hand or a left-hand corner when assembling a suspended ceiling latticework of the type including main and cross filter supported members each having spaced apart side walls extending vertically from a bottom wall, said side walls of said main member having notches spaced along its length, to permit free ends of said cross support members to set therein with said bottom wall of each cross support member overlying the bottom wall of said main support member to place said spaced side walls of each cross support member in left and right-hand corner forming relationship with said main support member side walls, said invertible corner connecting clip comprising:

an out-corner unit including

a first out-corner plate having first horizontally extending upper and lower edges, and a first vertical common edge,

a second out-corner corner plate having second horizontally extending upper and lower edges and a second vertical common edge,

said first and second out-corner plates joined together along said common edges to form said out-corner unit;

an in-corner unit including

a first in-corner plate having first horizontally extending top and bottom edges and a first common vertical margin,

a second in-corner plate having second horizontally extending top and bottom edges and a second common vertical margin;

said first and second in-corner plates joined together along said common margins to form said in-corner unit;

means connecting said out-corner unit and in-corner units in spaced parallel relationship to each other to form pockets of uniform width to receive said side walls of said main and cross support members therebetween;

said first upper and lower edges of said first out-corner plate each having a horizontal notch therein adjacent said first common edge, said notch having a vertical dimension equal to the thickness of said bottom wall; and

said second out-corner plate having a vertical dimension equal to the vertical length of said first common edge between said horizontal notches to define upper and lower relieved areas adjacent the top and bottom edges of said second out-corner plate for accommodating the thickness of said bottom wall when assembled in a latticework to permit inversion of said clip for use in completing either a right or a left-hand corner connection between main and cross member side walls.

4,555,256

PROCESS AND DEVICE FOR THE PRODUCTION OF GASEOUS OXYGEN AT ELEVATED PRESSURE

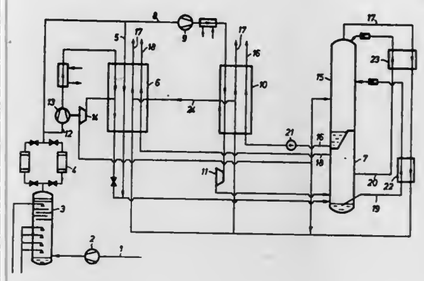
Werner Skolaude, Munich, and Gunnar Eggendorfer, Grunwald, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskruth, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,359

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216510; May 3, 1982, 3216502

Int. Cl.⁴ F25J *3/04*

U.S. Cl. 62—18 **24 Claims**



1. Process for the production of gaseous O at an elevated pressure by low temperature rectification of air, comprising reducing energy requirements for production of oxygen by compressing, purifying and at least in part cooling the air in a first heat exchange in heat exchange with rectification product, passing the air to the rectification, compressing a second gas stream to a higher pressure, cooling the second gas stream, after compressing, in a second heat exchanger in heat exchange with rectification product, withdrawing heat at an intermediate point along the second heat exchanger, whereby temperature differences at a cold end of the second heat exchanger are reduced, adding the withdrawn heat to the first heat exchanger, whereby less air is required for heating at a cold end of the first heat exchanger, expanding the second gas stream, after cooling, and passing the second gas stream, after expanding to the rectification, and cooling a third gas stream to be fractionated in heat exchange with fractionation product, liquid oxygen being withdrawn from the rectification, and being pumped to the desired pressure, and, in heat exchange with the compressed gas stream, being evaporated and heated, whereby energy requirements for the production of oxygen is reduced.

4,555,257

OPTICAL FIBRE PULLING TOWER

Kenneth G. Howard, Dartford, and Ian E. Little, Chislehurst, both of England, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed Aug. 31, 1984, Ser. No. 646,088

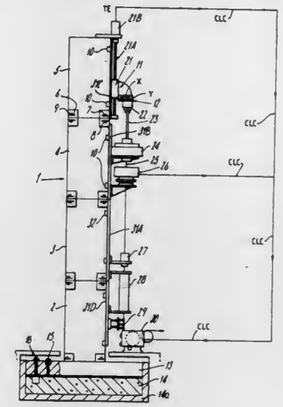
Claims priority, application United Kingdom, Sep. 3, 1983, 8323692

Int. Cl.⁴ C03B *37/025*

U.S. Cl. 65—13 **7 Claims**

1. An optical fibre pulling tower comprising:

an elongate structure made of case synthetic granite expoxy conrete with metal mounting plates case in situ; and



a preform holding chuck, a furnace and a coating application stage each secured to the structure by means of the metal mounting plates.

4,555,258

PRESSING MACHINE FOR THE MANUFACTURE OF GLASS ARTICLES

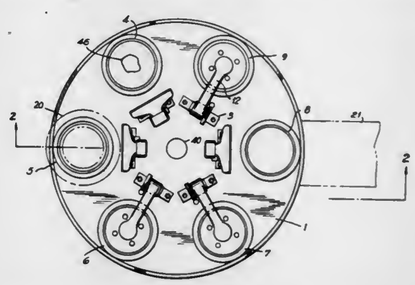
Jesus V. Curiel, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico

Filed May 9, 1984, Ser. No. 608,478

Claims priority, application Mexico, May 13, 1983, 197273

Int. Cl.⁴ C03B *11/02*

U.S. Cl. 65—319 **15 Claims**



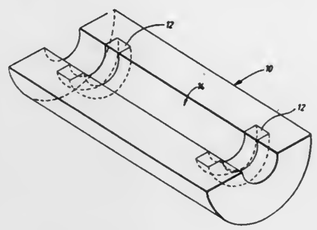
1. An improved pressing machine for the manufacture of glass articles, of the type which includes a gyratory table composed of mold supporters equidistantly laid out around the circularity of the table and at an intermediate position in respect of its radius, thereby carrying the molds from one station to the next as the table gyrates intermittently; featured by a machine encompassing six stations associated with the table, namely: one glass-gob charging station, one pressing station, two stations for the continuous cooling of articles, one extracting station and one station for the continuous cooling of molds; a system for the continuous external cooling of supporters and molds formed by a source of cooling fluid, a plurality of ducts on the table, each one corresponding to each respective mold supporter and mold, for sweeping the external surfaces of the supporters and molds; and a system for the continuous internal cooling of articles, including, for each mold supporter, a cooling device composed of ducts for causing a cooling fluid to circulate in order to cool the articles, which embraces a cool-

ing member, a laying arm which displaces said cooling member between a mold cooling position and a raised inactive position, such arm being coupled to the gyratory table so as to travel along with it and with its associated mold, and a mechanism for displacing said arm between its two positions.

4,555,259
COMPONENT

Terence J. Williamson, Leeds, England, assignor to Burwell, Reed & Kinghorn Limited, West Yorkshire, England

Filed Dec. 6, 1982, Ser. No. 447,162
Claims priority, application United Kingdom, Dec. 7, 1981, 8136808; Jun. 3, 1982, 8216153
Int. Cl.⁴ C03B *11/06;* B22D *11/126*
U.S. Cl. 65—374.12 **5 Claims**



1. A glass mold component which comprises a casting of a first metal having an insert therein to provide reinforcement, the insert being of a second, reinforcing metal whose melting point is below the casting temperature of the first metal, and the component having a machined surface of the desired final shape along both the cast first metal and the insert of the second metal which is exposed to provide reinforcement in molding of glass.

4,555,260
METHOD FOR STERILIZING MALE PARTS OF PLANTS

Barry R. J. Devlin, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 395,401, Jul. 6, 1982, abandoned, and a continuation of Ser. No. 289,552, Aug. 3, 1981, abandoned, and a continuation of Ser. No. 201,107, Oct. 28, 1980, abandoned, and a continuation-in-part of Ser. No. 395,525, Jul. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 289,552,. This application Aug. 15, 1983, Ser. No. 523,227
Claims priority, application United Kingdom, Nov. 16, 1979, 7939781
Int. Cl.⁴ A01N *43/00*
U.S. Cl. 71—88 **9 Claims**

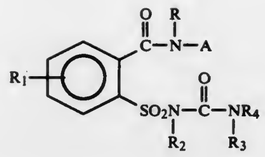
1. A method for producing male sterility in a cereal grain plant without substantial effect on the female fertility of the plant, which comprises applying to the plant an effective dosage of 3-carboxyazetidine, a hydrate or salt thereof.

4,555,261
HERBICIDAL SULFONAMIDES

Wallace C. Petersen, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 395,781, Jul. 12, 1982, Pat. No. 4,491,467, which is a continuation-in-part of Ser. No. 295,247, Aug. 24, 1981, abandoned. This application Nov. 1, 1984, Ser. No. 667,470
Int. Cl.⁴ C07D *401/12, 405/12;* A01N *43/70, 43/66*
U.S. Cl. 71—90 **17 Claims**

1. A compound selected from



wherein

A is a six-membered aromatic heterocycle, a six-membered dihydroaromatic heterocycle or a six-membered tetrahydroaromatic heterocycle which contains 1–4 hetero-atoms selected from 0–1 oxygen atoms, 0–1 sulfur atoms, and/or 0–4 nitrogen atoms; the heterocycles may be optionally substituted with 1–4 CH_3, 1–3 OCH_3, 0–1 SCH_3, 0–1 Cl, 0–1 $N(CH_3)_2$, or 0–1 CN groups;

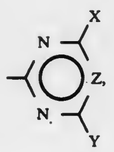
R is H or CH_3;

R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;

R_2 is H or CH_3;

R_3 is H or CH_3;

R_4 is



X is CH_3, OCH_3 or Cl;

Y is H, CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$ or $N(CH_3)_2$; and

Z is N; provided that

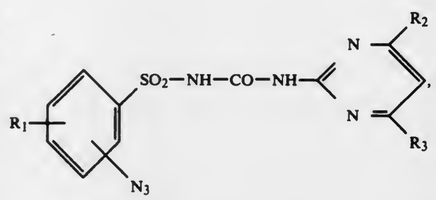
(1) the bond between N—R and A is attached to to a nitrogen or carbon atom of A.

4,555,262
N-AZIDOPHENYLSULFONYL-N'-PYRIMIDINYL UREAS

Rudolph C. Thummel, Courgenay, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 22, 1983, Ser. No. 525,365
Claims priority, application Switzerland, Sep. 1, 1982, 5196/82
Int. Cl.⁴ A01N *47/36;* C07D *239/46, 251/16*
U.S. Cl. 71—92 **20 Claims**

1. An N-azidophenylsulfonyl-N'-pyrimidinyl urea of the formula I



(I)

wherein

R_1 is hydrogen, halogen, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_1–C_4alkoxycarbonyl, C_1–C_4alkylthio, C_1–C_4alkylsulfinyl, C_1–C_4alkylsulfonyl or C_2–C_5alkoxyalkoxy,

R_2 is C_1–C_3alkyl, C_1–C_3alkoxy or C_1–C_3haloalkoxy,

R_3 is hydrogen, halogen, C_1–C_3alkyl, C_1–C_3haloalkyl, C_1–C_3alkoxy, C_1–C_3haloalkoxy, C_2–C_5alkoxyalkoxy or $—NR_4R_5$, wherein

R_4 is hydrogen or methyl and

R_5 is hydrogen, methyl, ethyl or methoxy,

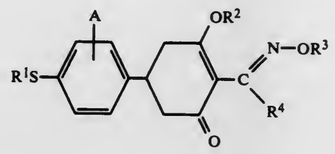
or a salt thereof.

4,555,263
HERBICIDAL CYCLOHEXANE-1,3-DIONE DERIVATIVES

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North; Graham J. Bird, North Melbourne; Graeme J. Farquharson, Reservoir, and Timothy L. Houston, Burwood, all of Australia, assignors to ICI Australia Limited, Victoria, Australia

Filed Dec. 6, 1982, Ser. No. 447,137
Claims priority, application Australia, Dec. 23, 1981, PF2072
Int. Cl.⁴ A01N *33/24;* C07C *131/00*
U.S. Cl. 71—98 **8 Claims**

1. A compound of formula



wherein:

R^1 is selected from C_1 to C_6 alkyl;

A is selected from hydrogen and nitro;

R^2 is selected from the group consisting of hydrogen and the cations of the alkali metal ions;

R^3 is selected from ethyl and allyl; and

R^4 is selected from ethyl and n-propyl.

6. A process for severely damaging or killing unwanted plants which process comprises applying to said plants, or to the growth medium of said plants, an effective amount of a compound as defined according to claim 1.

4,555,264
PROCESS FOR PRODUCING STEEL FOR AN ELECTRICAL STEEL SHEET

Takeaki Takeshita; Katuyuki Oba; Yoshiaki Shimoyama, and Takashi Masuda, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 25, 1982, Ser. No. 411,552
Int. Cl.⁴ C21C *7/06*
U.S. Cl. 75—49 **4 Claims**

1. A process for producing steel having 0.0030% or less of C, for an electrical steel sheet, comprising the steps of:

(1) tapping molten steel from a steelmaking furnace, and transferring it to a vacuum-degassing apparatus equipped with a means for blowing a gas into the molten steel;

(2) subjecting the molten steel to a degassing treatment including reducing the ultimate degree of vacuum in said degassing apparatus to 1.0 mmHg or less while blowing an inert gas into the molten steel at a rate of from 30 to 150 Nl/min per gas-blowing orifice so as to reduce the carbon content of the molten steel to 0.0030% or less;

(3) adding silicon, a silicon-containing alloy or an alloying component to the decarburized molten steel in an amount such that the silicon content in the molten steel is in a range of from 1.0% to 3.5% and thereby preparing molten steel for a non-oriented silicon steel sheet;

(4) in order to subject the resultant molten steel to continuous casting, bringing said molten metal into contact with a melt-receiving vessel, a melt-supplying apparatus, and a heat-insulating agent for the melt; and

(5) applying a casting powder onto the surface of the molten steel in a continuous casting mold, "the carbon content of each of said melt-receiving vessel, melt-supplying apparatus, heat-insulating agent, and casting powder being 3.0% or less."

4,555,265
METHOD OF TREATING STEEL WITH CALCIUM, TO OBTAIN A STEEL WELL ADAPTED TO COLD FORMING, WITH A LOW SILICON CONTENT

André Gueussier, Paris, and Edmond Vachiery, Solesmes, both of France, assignors to Vallourec, Paris, France

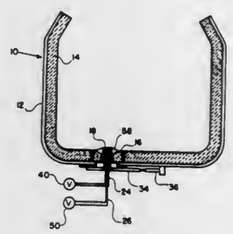
Filed Sep. 10, 1984, Ser. No. 648,821
Claims priority, application France, Sep. 20, 1983, 83 15191
Int. Cl.⁴ C21C *7/02*
U.S. Cl. 75—53 **11 Claims**

1. A method of producing a steel well-adapted to cold forming, comprising preparing a deoxidated liquid steel having a silicon content of less than 5 thousandths of a % by weight, then adding a cored wire containing a divided material to the liquid steel, wherein the divided material has at least two constituents, the first being granular metallic calcium, in which the content of particles smaller than 150 mesh is not more than 2 to 3% by weight of said constituent, and the second being silico-calcium containing (as % by weight): Ca 25 to 35; Si 50 to 70; Fe and impurities 5 to 15, ratio K of the content of the first constituent to that of the second being from 0.1 to 3 and preferably 0.3 to 2.

4,555,266
METHOD AND APPARATUS FOR TREATING LIQUID METAL IN A VESSEL

William Wells, Charlotte, N.C., assignor to Korf Technologies, Inc., Charlotte, N.C.

Division of Ser. No. 308,701, Oct. 5, 1981, Pat. No. 4,424,955. This application Aug. 29, 1983, Ser. No. 527,715
Int. Cl.⁴ C21B *13/00*
U.S. Cl. 75—53 **3 Claims**



1. A method of preparing a bottom-pour vessel for subsurface gas treatment through a nozzle well in its bottom wall, said vessel having a refractory lining, said method comprising

(1) inserting a dense refractory nozzle block into the nozzle well within the lining of the vessel and mortaring it into place while the vessel is at ambient temperature;

(2) heating the ladle to operating temperature;

(3) inserting a tuyere block into the opening in said nozzle block from the bottom of said vessel and mortaring said tuyere block into position, said tuyere block comprising a refractory brick adapted to fit into the opening in said nozzle block and having a central vertical hole therethrough, an outer pipe fixed in the vertical hole in said tuyere block, its upper end terminating at the upper end of said block and its lower end extending beyond the lower end of said block, and an inner pipe within said outer pipe, its upper end coextensive with said outer pipe and its lower end extending beyond the lower end of said block, said inner pipe carrying projections on its outer surface to form an annular conduit between said inner and outer pipe;

(4) fixing a nozzle closure apparatus to the exterior of said vessel in the nozzle-open position with said pipes extend-

ing from the nozzle block downwardly through the nozzle opening; and

(5) connecting said inner pipe to a first source of gas and connecting the annular conduit to a second gas source.

4,555,267

PROCESS FOR MAKING FUEL FROM SOLID METALLIC IRON-BEARING MATERIALS

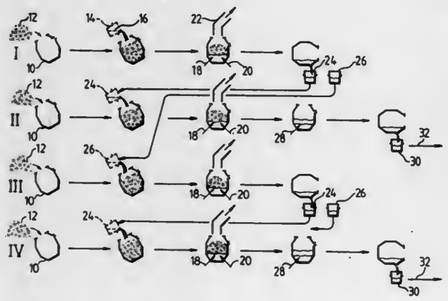
Manfred Chitil, Krefeld-Bockum, Fed. Rep. of Germany, assignor to Klöckner CRA Technologie GmbH, Duisburg, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 498,045

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226590

Int. Cl.⁴ C21C *7/00*

U.S. Cl. 75—46 **7 Claims**



1. A process for making steel from solid metallic iron-bearing materials during a plurality of alternating converter cycles including production cycles and repeat cycles using a converter having inlet tuyeres for providing a carbonaceous fuel and oxygen to said converter, a first storage vessel, and a second storage vessel, and wherein said process comprises:

preparing a molten metal charge during one of said converter cycles;

filling a quantity of said materials into said converter during each of said converter cycles;

pouring a portion of said metal charge over said materials filled in said converter to form a total charge during each of said converter cycles;

introducing said fuel and said oxygen into said converter for melting said total charge during each of said converter cycles;

melting said total charge in said converter to form a total tap during each of said converter cycles;

tapping a first portion of said total tap into said first storage vessel during each of said repeat cycles for use as a first metal charge in a first subsequent converter cycle;

tapping a second portion of said total tap into said second storage vessel during each of said repeat cycles for use as a second metal charge in a second subsequent converter cycle and wherein said first portion of said total tap and said second portion of said total tap together comprise a major portion of said total tap; and

alternating said converter cycles such that a tap from at least one of said converter cycles is delivered to a subsequent processing operation.

4,555,268

METHOD FOR IMPROVING HANDLING PROPERTIES OF A FLAKED TANTALUM POWDER COMPOSITION

Marlyn F. Getz, Barto, Pa., assignor to Cabot Corporation, Boston, Mass.

Filed Dec. 18, 1984, Ser. No. 683,243

Int. Cl.⁴ C22C *1/09*

U.S. Cl. 75—229 **12 Claims**

1. A method of preparing a tantalum powder composition comprising:

heat treating a flaked tantalum powder at a temperature ranging from about 1250° C. to about 1550° C. for a period ranging from about 5 to about 120 minutes in order to pre-agglomerate the flaked powder;

mixing the pre-agglomerated flaked tantalum powder with a granular tantalum powder to form a tantalum powder composition;

agglomerating said tantalum powder composition at a temperature of about 1250° C. to about 1550° C. for a period of from about 5 to about 120 minutes.

4,555,269

HYDROLYTICALLY STABLE POLYMERS FOR USE IN OIL FIELD CEMENTING METHODS AND COMPOSITIONS

S. Prabhakara Rao, Parma, Ohio, and John F. Burkhalter, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 592,989, Mar. 23, 1984, Pat. No. 4,515,635. This application Feb. 20, 1985, Ser. No. 703,377

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.⁴ C04B *7/35*

U.S. Cl. 106—90 **19 Claims**

1. A cementing composition for use in oil, gas and water well cementing operations comprising water, hydraulic cement, and a copolymer or copolymer salt of N,N,dimethylacrylamide and 2-acrylamido, 2-methyl propane sulfonic acid or acid salts thereof wherein said copolymer has a N,N,dimethylacrylamide to 2-acrylamido, 2-methyl propane sulfonic acid ratio from about 1:4 to about 4:1 and a molecular weight such that a 1000 ppm aqueous solution of said copolymer has a Brookfield viscosity reading at 5 rpm of the U.L. Adapter Spindle in the range of between about 30 and about 250 centipoise.

4,555,270

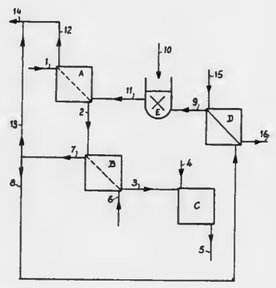
BEET JUICE EXTRACTING PROCESS

Jacques Ponant, Paris, France, assignor to Union Nationale des Cooperatives Agricoles de Transformation de la Betterave, Paris, France

Filed May 1, 1984, Ser. No. 605,803

Int. Cl.⁴ C12B *1/00*

U.S. Cl. 127—44 **4 Claims**



1. In a beet juice extracting process comprising first treating beets cut into cossettes with calcium ions and then extracting beet juice, the improvement wherein said first treatment is effected by treatment of the cossettes with an aqueous solution of calcium saccharate at a temperature lower than 15° C.

4,555,271

PROCESS FOR PURIFYING LACTULOSE SYRUP

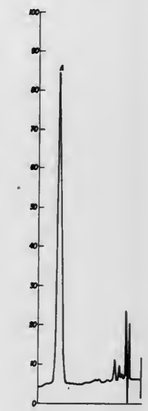
Renato Carobbi, Pistoia; Sandro Miletti, Florence, and Vittorio Franci, San Pietro a Sieve, all of Italy, assignors to Sirac SpA, Milan, Italy

Filed Jun. 18, 1984, Ser. No. 621,542

Claims priority, application Italy, Jun. 20, 1983, 21689 A/83

Int. Cl.⁴ C13D *3/14*

U.S. Cl. 127—46.2 **3 Claims**



1. A process for purifying commercial lactulose syrup, to obtain a syrup with a content of 50% by weight of lactulose, and to reduce the content of lactose, galactose and other carbohydrates to a level not exceeding, respectively, 0.2%, 0.1% and 2% by weight, comprising: oxidizing said commercial lactulose either chemically with bromine or in an electrochemical cell in the presence of sodium bromide to obtain an aqueous solution; successively passing the aqueous solution obtained over the following ion-exchange resins:

(a) strong cationic resin in H^+ form

(b) weak anionic resin in OH^- form

(c) strong anionic resin in bisulphite form

(d) strong cationic resin in H^+ form

(e) weak anionic resin in OH^- form,

the passage (c) being effected at a temperature of between 0° and 10° C.; and then concentrating the solution under vacuum to a concentration of lactulose of 50% by weight.

4,555,272

BETA COPPER BASE ALLOY ADAPTED TO BE FORMED AS A SEMI-SOLID METAL SLURRY AND A PROCESS FOR MAKING SAME

Sankaranarayanan Ashok, Bethany, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 11, 1984, Ser. No. 598,960

Int. Cl.⁴ C22F *1/08*

U.S. Cl. 148—3 **4 Claims**

1. A process for making a copper base alloy adapted to be formed in a semi-solid slurry condition comprising:

providing an alloy consisting essentially of from about 9% to about 10.5% by weight aluminum, at least about 10% by weight nickel and the balance essentially copper; or

an alloy consisting essentially of from about 9% to about 10.5% by weight aluminum, from about 3% to about 7% by weight nickel, from about 3% to about 7% by weight iron with the total nickel and iron contents being at least about 10%, balance essentially copper; and

chill casting without stirring said alloy from a fully molten condition with a cooling rate throughout the section of the casting comprising at least about 10° C./sec.

4,555,273

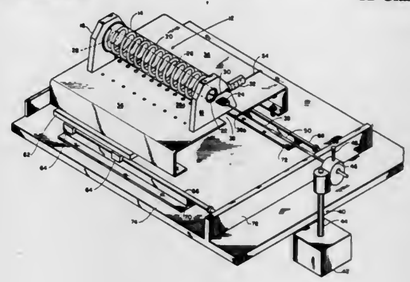
FURNACE TRANSIENT ANNEAL PROCESS

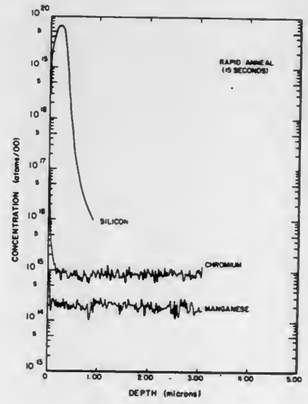
David A. Collins; Derek L. Lile, and Carl R. Zeisse, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1984, Ser. No. 583,560

Int. Cl.⁴ H01L *21/324, 21/265*

U.S. Cl. 148—1.5 **12 Claims**





1. A method of rapidly raising the temperature of a semiconductor sample comprising the steps of:

(a) providing a furnace having a single aperture through which said semiconductor sample can be placed within the interior of said furnace, said furnace being otherwise closed and having no other apertures through which heat can escape;

(b) affixing said furnace to a moveable assembly such that said furnace can be moved along a designated path;

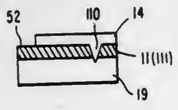
(c) placing said semiconductor sample upon a stationary semiconductor sample support assembly that is adjacent said furnace and aligned to be within said designated path such that said furnace can be advanced along said designated path so as to enclose said semiconductor sample and such that said furnace can also be withdrawn along said designated path;

(d) preheating said furnace to a desired temperature;

(e) advancing said furnace along said designated path such that said semiconductor sample enters said preheated furnace through said aperture;

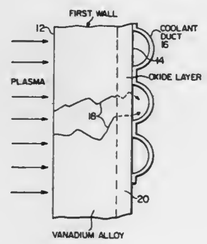
(f) retaining said semiconductor sample within said furnace for a period of time on the order of 10 to 30 seconds;
(g) withdrawing said furnace back along said designated path to remove said semiconductor sample from said furnace.

4,555,274
ION SELECTIVE ELECTRODE AND PROCESS OF PREPARING THE SAME
Masao Kitajima; Osamu Seshimoto, both of Saitama, and Shigemitsu Mizutani, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 475,672, Mar. 15, 1983, Pat. No. 4,528,085. This application Jun. 7, 1984, Ser. No. 618,285
Claims priority, application Japan, Mar. 15, 1982, 57-40398
Int. Cl.⁴ C25F *5/00*
U.S. Cl. 148—6.14 R **22 Claims**



1. In a process for preparing an ion selective electrode which comprises laminating, in sequence, a conductive layer and an ion selective layer on a support, the improvement which comprises forming at least one groove through said conductive layer, which forms at least two electrically separate conductive layers, at least one of which provides an electromotive force, and forming an ion selective layer over said conductive layer such that said groove is filled with said ion selective layer, whereby antishorting is achieved.

4,555,275
HYDROGEN PERMEATION PROTECTION FOR METALS
Albert G. Tobin, Hauppauge, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Oct. 19, 1984, Ser. No. 662,736
Int. Cl.⁴ C23F *7/02*
U.S. Cl. 148—6.3 **7 Claims**

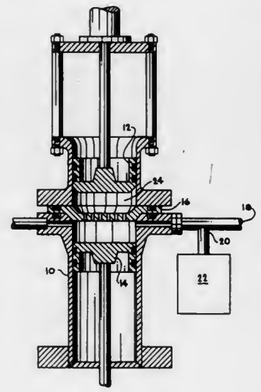


1. A method for reducing hydrogen permeation of a vanadium metal member, the method comprising the steps:
diffusing a metal into one surface of the member to form a diffusion gradient with respect to the surface, the metal selected from the group including Cr, Al, Si or NiCr; and oxidizing the diffused metal.

4,555,276
HIGH DENSITY PRESSURE RESISTANT INVERT BLASTING EMULSIONS
Scott Winston, Budd Lake, N.J., assignor to Hercules Incorporated, Wilmington, Del.
Filed Oct. 29, 1984, Ser. No. 666,070
Int. Cl.⁴ C06B *45/32*
U.S. Cl. 149—6 **17 Claims**

1. A high density emulsion blasting composition of
(A) a water-in-oil emulsion component comprising a continuous hydrophobic organic phase, a discontinuous aqueous phase containing at least one soluble inorganic oxidizer salt, and an emulsifier; and
(B) an effective amount of a sensitizing formulation comprising
(1) particulate aluminum and
(2) particulate smokeless powder, in which the ratio of (1) to (2) in said formulation is about 0.5–10 to 1–40 percent by weight of composition.

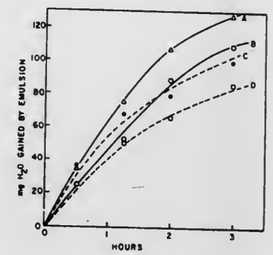
4,555,277
EXTRUSION CAST EXPLOSIVE
Kenneth J. Scribner, Livermore, Calif., assignor to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.
Filed Jan. 29, 1985, Ser. No. 696,276
Int. Cl.⁴ C06B *45/10*
U.S. Cl. 149—19.4 **18 Claims**



1. A multiphase extrusion cast explosive composition comprising:
a crystalline explosive material;
an energetic liquid plasticizer;
a urethane prepolymer mixture, comprising a blend of polyvinyl formal and polycaprolactone;
a polyfunctional isocyanate; and
a catalyst.

4,555,278
STABLE NITRATE/EMULSION EXPLOSIVES AND EMULSION FOR USE THEREIN
Lawrence A. Cescon, Hagerstown, Md., and Nolan J. Millet, Jr., Hopatcong, N.J., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 576,602, Feb. 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 493,916, May 12, 1983, abandoned. This application Jan. 29, 1985, Ser. No. 696,200
Int. Cl.⁴ C06B *45/02*
U.S. Cl. 149—21 **56 Claims**

1. In a method of preparing an explosive composition by combining inorganic nitrate particles with a water-in-oil emulsion comprising (a) a liquid carbonaceous fuel having components which form a continuous emulsion phase, (b) an aqueous solution of an inorganic oxidizing salt forming a discontinuous emulsion phase dispersed at discrete droplets within said continuous phase, and (c) an emulsifying agent to form a blend of



said particles and said emulsion containing a sensitizing amount of dispersed gas bubbles or voids, the improvement comprising forming said inorganic nitrate particles and the components of said emulsion into a structure that minimizes the loss of water from said droplets and transportation thereof across said continuous oil phase to said nitrate particles.

4,555,279
LOW DETONATION VELOCITY EXPLOSIVE COMPOSITION
Richard L. Funk, Hackettstown, N.J., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 597,311, Apr. 5, 1984, Pat. No. 4,490,196. This application Oct. 16, 1984, Ser. No. 661,493
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.⁴ C06B *25/34*
U.S. Cl. 149—92 **30 Claims**

1. An explosive composition comprising
(a) at least one component selected from the group consisting of

$$ROOC—A—COOR^1,$$

$$[R''—A—O]_3[PO_4],$$

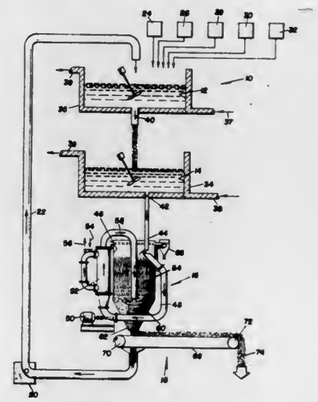
$$R''—A—[NO_2]_2,$$

and

$$R'''—Ac)_m$$

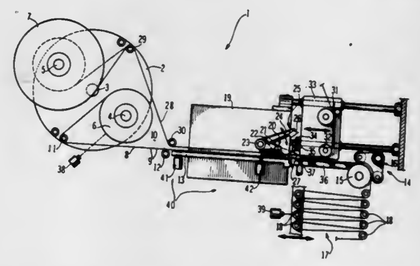
in which
R and R^1 are individually defined as a lower alkyl group;
A is defined as the nucleus of a substituted or unsubstituted aromatic group;
R″ is an alkyl group of 1–2 carbon atoms;
R‴ is an alkyl group of 3–8 carbon atoms;
Ac is an acetoxy group; and
m is a whole number of 1–3;
(b) a component comprising at least one member selected from the group consisting of metriol trinitrate, diethylene glycol dinitrate, and nitroglycerin; and
(c) an stabilizing amount of at least one organic stabilizer component;
the ratio by weight of (a) to (b) components in said composition being about 9–45 to 91–55.

4,555,280
PROCESS FOR SIMULTANEOUSLY CRYSTALLIZING COMPONENTS OF EAK EXPLOSIVE
Michael L. Levinthal, Brigham City, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.
Filed Sep. 10, 1984, Ser. No. 648,430
Int. Cl.⁴ D03D *23/00*
U.S. Cl. 149—109.6 **12 Claims**



1. A process for forming an explosive composition comprising ammonium nitrate, ethylene diamine dinitrate, and potassium nitrate, comprising the steps of:
A. forming an aqueous solution of ammonium nitrate, ethylene diamine dinitrate, and potassium nitrate;
B. cooling said solution sufficiently to concurrently crystallize said ammonium nitrate, ethylene diamine dinitrate, and potassium nitrate, thereby forming a crystallized composition; and
C. separating said crystallized composition from the remainder of said aqueous solution.

4,555,281
METHOD FOR AUTOMATICALLY SETTING AND JOINING REEL-FED LABEL STRIPS OR SIMILAR
Riccardo Mattei, Bologna, and Roberto Osti, Zola Predosa, both of Italy, assignors to G.D Societa' per Azioni, Bologna, Italy
Filed Oct. 15, 1984, Ser. No. 661,247
Claims priority, application Italy, Oct. 28, 1983, 3598 A/83
Int. Cl.⁴ B65H *69/06*
U.S. Cl. 156—64 **4 Claims**



1. A method for automatically setting and joining reel-fed label strips or similar, each said label being joined to adjacent labels along separating lines (**10**) each including a slit (**47**), the method comprising:
feeding a first label strip (**8**) off a first reel (**6**) to a user

machine through a joining unit (25), a cutting unit (34) and a strip (8) feed unit (14), all located between the said first reel (6) and the said user machine;

arranging a second label strip (28) off a second reel (7) in an idle position in which the said second strip (28) over laps the said first strip (8) and extends through the said joining unit (25) and the said cutting unit (34);

feeding the said first strip (8), in response to a signal indicating imminent runout of the said first reel (6), at a speed greater than the assimilation speed of the said user machine, in such a manner as to create a reserve between the latter and the said feed unit (14);

activating parting means (46) for parting the edges of one said slit (47) on said first strip (8), and for activating control means (45,48,49) controlling the location of the said first strip (8), so as to stop the said feed unit (14) when a label (9) on the said first strip (8) coincides with a label (9) on the said second strip (28);

activating the said cutting unit (34) so as to cut the said two strips (8,28) simultaneously;

activating the said joining unit (25) so as to join one end of the said second strip (28) upstream from a cutting line (27) on the said cutting unit (34) to one end of the said first strip (8) downstream from the said cutting line (27); and

restarting the said feed unit (14).

4,555,282

METHOD OF AND MEANS FOR BONDING SYNTHETIC RESIN PROFILED FASTENERS TO FILM SUBSTRATE

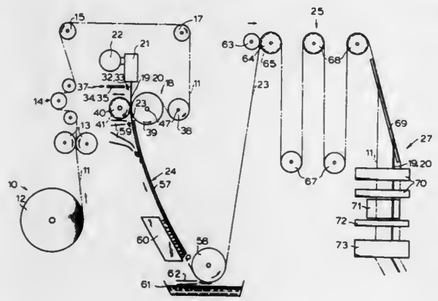
Mitsuru Yano, Shizuoka, Japan, assignor to Seisan Nippon Sha, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 380,832, May 21, 1982, abandoned. This application Dec. 28, 1983, Ser. No. 566,196

Claims priority, application Japan, May 28, 1981, 56-080190

Int. Cl.⁴ B29D *5/00*

U.S. Cl. 156—66 **32 Claims**



1. A method of fusion bonding a continuous freshly extruded low melt viscosity synthetic thermoplastic resin fastener strip having a fastener profile portion and a base portion opposite the profile, to a continuously running prefabricated film substrate, which comprises:

advancing the prefabricated substrate continuously through a bonding zone in which the substrate is directed to run downwardly;

effecting continuous direct free running transit of the fastener strip downwardly from thermoplastic extruder means through a short transit distance to said bonding zone located below said extruder means, so that in such short transit distance said fastener strip as a whole would tend to retain substantial residual thermoplastic fusion temperature;

in said free running short transit distance, and before the fastener strip reaches said bonding zone, selectively chilling and thereby solidifying and stabilizing said fastener profile portion of the transitting fastener strip, and thereby preventing deformation of said profile but leaving said base portion at sufficient residual fusion temperature to remain thermoplastic to said bonding zone;

at the downstream end of said short transit distance and beyond said chilling step effecting assembly of the still thermoplastic base portion of the otherwise solidified strip with said substrate in said bonding zone, and in said bonding zone pressing the assembled downwardly running strip and substrate together and thereby effecting fusion bonding of said thermoplastic base portion to said substrate;

and downstream from said bonding zone setting and curing the bonded assembly.

4,555,283

METHOD OF FORMING A STORAGE TANK FOR BITUMEN IN THE LIQUID STATE

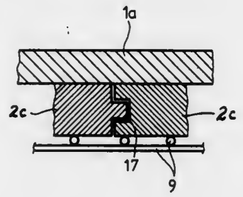
Klaus Thesenfitz, Winsen, Fed. Rep. of Germany, assignor to Linhoff & Thesenfitz Maschinenbau GmbH, Winsen, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,510

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218135; Jul. 2, 1982, 3224869

Int. Cl.⁴ E04B *2/20*

U.S. Cl. 156—71 **16 Claims**



1. A method of fabricating a storage tank for liquid bitumen comprising the steps of:

assembling a steel shell of individual steel panels to surround a liquid bitumen holding volume,

inserting glass foam panels into the shell, adjacent to the interior surface of the shell, and leaving labyrinthian gaps between the individual panels,

leaving the gaps empty of any material during fabrication of the storage tank, and

filling the holding volume with liquid bitumen so that the latter fills the gaps and solidifies therein to permanently interconnect the glass foam panels to thereby form a wall layer to contain the remaining liquid bitumen within said holding volume.

4,555,284

METHOD OF USING A FOAMABLE HOT-MELT ADHESIVE FOR SEALING

Ferdinand Quella, Gauting, and Bernd Steinwender, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,912

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3211067

Int. Cl.⁴ B32B *31/14, 5/20*

U.S. Cl. 156—79 **8 Claims**

2. A method of sealing communication cable structure ends comprising:

coating a foamable hot-melt adhesive, comprised of substantially uniform admixture of a per se known molten thermoplastic adhesive having a melting temperature in the range of about 100° C. and a thermally decomposable solid foaming additive in said molten adhesive having a decomposition temperature above the melting range of said adhesive, onto end portion to be sealed; said foaming additive being selected from the group consisting of 1,1'-diacetoxy-1,1'-azocyclohexane; 2,2'-diacetoxy-2,2'-azopropane; and 4,4'-dimethyl-4,4'-azobutyrolactone; and

heating the so-coated end portions to a temperature above the decomposition temperature of said foaming additive so that a foam is generated on said end portions and, which bonds and seals said end portions.

4,555,285

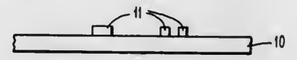
FORMING PATTERNS IN METALLIC OR CERAMIC SUBSTRATES

Dudley A. Chance, Danbury; Timothy C. Reiley, Ridgefield, both of Conn., and Michael Sampogna, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,373

Int. Cl.⁴ C04B *37/00*

U.S. Cl. 156—89 **20 Claims**



1. A method for forming a pattern in a metallic or ceramic substrate which comprises:

(a) providing a composite of a layer of photosensitive material on a backing;

(b) exposing said layer of photosensitive material to actinic radiation in a predetermined pattern;

(c) developing said layer of photosensitive material to leave the predetermined pattern on said backing;

(d) then laminating together said composite and a substrate in the green stage containing metallic particles or ceramic particles or combinations thereof with the developed photosensitive side of the composite confronting the surface of said substrate, thereby embedding the predetermined patterns of photosensitive material into said substrate in said green stage; and

(e) subjecting the substrate to elevated temperature sufficient to cause sintering of the particles in said substrate and removal of the photosensitive material, thereby resulting in embedding the said pattern into the sintered metallic or ceramic substrate.

4,555,286

APPARATUS FOR AND A METHOD OF REPAIRING BY FILLING WITH AN ADHESIVE

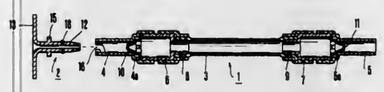
Wataru Orikasa; Kunio Tochimoto; Tomoyuki Mori; Masayoshi Shigetomi; Katsuji Yamaga; Masaaki Matsui, and Hiroshi Saito, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation; Sho-Bond Construction Co., Ltd. and Communication Architecture and Building Research Corporation, all of Tokyo, Japan

Filed Nov. 13, 1984, Ser. No. 670,843

Claims priority, application Japan, Aug. 17, 1984, 59-171315

Int. Cl.⁴ B32B *35/00*

U.S. Cl. 156—94 **6 Claims**



1. An apparatus for filling an adhesive in the portions of a structure to be repaired by filling an adhesive therein, comprising an injector and a support portion, said injector including a pressure buffer tube with coupler members at both ends thereof and check valves between both ends of said pressure buffer tube and said coupler members, said check valves being so actuated by the pressure from the pressure buffer tube as to close the passage of adhesive through the pressure buffer tube and the coupler member while said check valves being so actuated by the pressure from the coupler member side as to open said passage, said support portion including a coupler projection and a base member, said coupler projection having a passage therethrough and serving to press one of said check valves upon connecting said injector to said support portion to restore said passage of adhesive.

3. A method of filling an adhesive in the portion of a structure to be repaired by filling an adhesive therein, using the apparatus as described in claim 1, comprising feeding an adhesive in the pressure buffer tube through one of the coupler members so as to swell the pressure buffer tube, connecting the coupler member of the fed injector to the coupler projection of the support portion fixed on the portion of a structure to be repaired, whereupon one of the check valves is pressed by the coupler projection of the support portion to restore the passage through the pressure buffer tube, the coupler member and the portion of a structure to be repaired, thereby allowing the adhesive to be filled in the portion of a structure by the gradual and continuous contraction of the pressure buffer tube.

4,555,287

METHOD FOR BUILDING TIRES

Anthony G. Goodfellow, Maghull, England, assignor to W & A Bates Ltd., London, England

Filed Jun. 11, 1984, Ser. No. 619,182

Claims priority, application United Kingdom, Jun. 29, 1983, 8317687

Int. Cl.⁴ B29H *17/02, 17/37*

U.S. Cl. 156—127 **4 Claims**

1. A method of building a pneumatic tire comprising separately building an unexpanded carcass assembly and an annular tread assembly comprising tread rubber, breaker reinforcement and sidewall rubbers wherein the sidewall rubbers are separate and are each formed with a notched edge to engage and adhere to the tread and breaker, positioning the tread assembly and the carcass assembly in coaxial relationship with the unexpanded carcass disposed centrally within the tread assembly, expanding the carcass into engagement with the tread assembly and consolidating the two assemblies together.

4,555,288

METHOD OF AND DEVICE FOR PREPARING PAPER ROLLS FOR ROTARY PRESSES AND THE LIKE

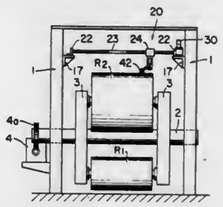
Yoshiki Nozaka, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,528

Claims priority, application Japan, Jun. 20, 1983, 58-110665

Int. Cl.⁴ B31F *5/06;* **B65H** *19/18*

U.S. Cl. 156—191 **2 Claims**



1. A method of preparing a new paper roll for a rotary press or the like, which method comprises the steps of: preparing a strong adhesive tape having on one surface thereof a central nontacky zone and adhesive tacky zones flanking opposites of the nontacky zone; sticking beforehand, upon completion of reeling of paper to form the roll, a plurality of pieces of the adhesive tape over and to the web end and the part of the roll adjacent thereto so that the nontacky zone of each tape piece is disposed over and along the web leading edge of the roll; and, after the roll has been loaded onto a paper feed apparatus

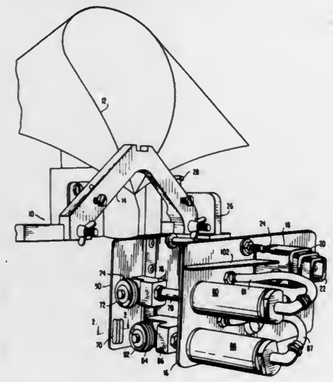
including web splicing means, forming from the outside a perforated line for tearing across each tape piece in the non-tacky zone thereof substantially in the vicinity of and along the web leading edge thereby to facilitate tearing of the tape pieces and peeling of the web leading edge part immediately prior to web splicing.

4,555,289

METHOD AND APPARATUS FORMING FIN-TYPE BACK SEAL USING COHESIVE SEALANTS WITHOUT EXTERNALLY APPLIED HEAT

William D. Kreager, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Jun. 1, 1983, Ser. No. 500,189
Int. Cl.⁴ B29D *23/10*
U.S. Cl. 156—203 **11 Claims**



1. Apparatus for providing and forming a cold, fin-type back seal on cohesively edge-striped packaging material used on a vertical or slant form-and-fill machine of the type that forms a web to bring the edges together for sealing and moves the web intermittently through forming and filling stages, the apparatus comprising:

(a) support means attachable to the form-and-fill machine;

(b) a tucker plate carried by the support means and positioned to receive the cohesively striped edges of the web;

(c) a guide means cooperating with the edges of the web on the tucker plate and guiding such to a cold sealing zone on the tucker plate during the longitudinal movement of the web; and,

(d) a cold-seal-forming assembly at the cold sealing zone, the cold-seal-forming assembly including means on each side of the web for forming a slight corrugation in the cohesively striped edge to provide a good fin seal without the application of externally applied heat.

11. The method of providing a fin-type back seal on packaging material used in a vertical or slant form-and-fill packaging machine, the method comprising:

(a) providing cohesive coating stripes on one side of the longitudinal edges of packaging material being fed through a vertical form-and-fill type package machine;

(b) forming the web containing such cohesive striped coating materials so that the cohesive stripes are juxtapositioned and in contact to provide a longitudinal fin seal area on the packaging material;

(c) guiding the seal area on the packaging material to a cold sealing zone; and,

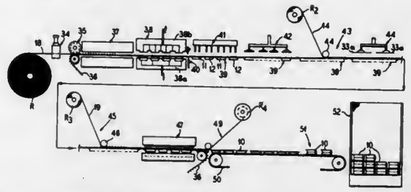
(d) in the cold sealing zone applying an adjustably constant rolling pressure to develop a corrugation in the fin seal without the application of external heat and thereby activating the cohesives to provide a longitudinal fin seal on the packaging material during motion of the packaging material through the form-and-fill packaging machine.

4,555,290

METHOD OF MAKING CASSETTE HOLDERS

Herbert Graetz, Chicago, Ill., and Ronald C. Unterreiner, Cape Girardeau, Mo., assignors to Blair Industries, Inc., Scott City, Mo.

Filed Apr. 19, 1984, Ser. No. 601,949
Int. Cl.⁴ B29C *3/04*
U.S. Cl. 156—245 **21 Claims**



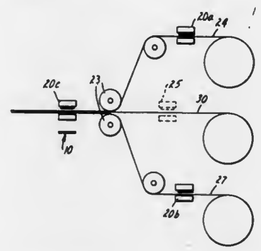
1. The method of making book style albums which comprises unwinding a first thermoplastic sheet from a roll, heating the sheet, thermal forming the sheet to define a plurality of pairs of trays and lids in side-by-side relation connected by flexible spines with open top pockets surrounding the bottom faces of the trays, depositing rigid slabs in said pockets to cover said bottoms, unwinding a second thermoplastic sheet from a roll, covering the thermal formed first sheet with said second sheet, unwinding a third thermoplastic sheet, covering the second sheet on the thermal formed first sheet with said third sheet, bonding the sheets together forming a continuous web of albums, severing the separate albums from the web, winding the web into a roll, and conveying the albums to an inspection station.

4,555,291

METHOD OF CONSTRUCTING AN LC NETWORK

William C. Tait, and Lanny L. Harklau, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 256,934, Apr. 23, 1981, abandoned. This application May 17, 1984, Ser. No. 611,093
Int. Cl.⁴ H03H *1/00, 3/00, 7/01*
U.S. Cl. 156—250 **5 Claims**



1. A method of constructing an LC network comprising,

cutting and removing a predetermined pattern from a first conductive sheet, leaving a conductive path having an essentially coil-like configuration of windings with a plurality of interconnections between the adjacent windings of the configuration, which interconnections add rigidity to the conductive sheet,

cutting and removing a predetermined pattern from a second conductive sheet, leaving a conductive path having as essentially coil-like configuration of windings with a plurality of interconnections between the adjacent windings of the configuration, which interconnections also add rigidity to the second conductive sheet;

forming at least one capacitor by orienting the first and second conductive sheets with respect to each other and laminating these conductive sheets to opposing faces of a non-conductive sheet with at least one portion of the conductive paths on the first conductive sheet substantially aligned with at least one portion of the conductive paths on the second conductive sheet, but with the aligned portions separated from each other by the non-conductive sheet, and,

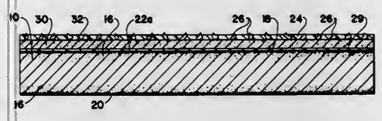
cutting from the lamination formed by said above steps to eliminate at least some of the interconnections between the adjacent spirals on each of the conductive sheets, and leaving at least one continuous portion of the conductive path on the conductive sheets which is in the configuration of a coil and in which the adjacent windings are no longer interconnected.

4,555,292

METHOD OF FORMING A NON-SKID SURFACE WOOD PANEL

Thomas L. Thompson, Costa Mesa, Calif., assignor to Thom-McI, Inc., Balboa, Calif.

Filed Feb. 16, 1984, Ser. No. 580,839
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—279 **1 Claim**



1. A method of forming a non-skid-surfaced plywood panel having a permanent but flexible bond between said plywood and the elements thereof, wherein the method comprises the steps of:

providing a sheet of plywood having substantially flat opposite surfaces;

applying to each of said surfaces a first coat of low-viscosity, catalized, epoxy resin so as to penetrate and seal said surfaces;

applying a second coat of a catalyzed epoxy resin to the upper surface of said plywood panel prior to the drying of said first coat of epoxy resin, said second coat having a higher viscosity than said first coat;

providing a fiber/cement panel having substantially the same configuration as said plywood panel;

applying a third coat consisting of the same catalyzed epoxy resin used in said second coat to one surface of said fiber/cement panel;

placing said coated surfaces of each panel into opposing engagement with each other;

applying pressure to said panels, whereby excess epoxy material is forced from between said panels;

allowing said epoxy between said panels to dry;

applying at a predetermined thickness a fourth coat of pigmented polyurethane material to form a surface layer over the exposed surface of said fiber/cement panel;

disseminating a hard grit material over said fourth coat while said polyurethane material is still in a wet stage, said grit material being of a size greater than the thickness of said fourth coat, so as to allow a portion of said grit to be exposed above the surface of said fourth coat; and

allowing said polyurethane coat to dry, thereby securing said grit material within said fourth coat.

4,555,293

METHOD AND APPARATUS FOR THERMO-BONDING SEAMS IN THERMOPLASTIC MATERIAL

Robert C. French, 22845 Willard, El Toro, Calif. 92630

Filed Jul. 26, 1983, Ser. No. 517,824
Int. Cl.⁴ C09J *5/00, 7/00*
U.S. Cl. 156—308.4 **9 Claims**

1. A method of sealing thermoplastic material which comprises the steps of:

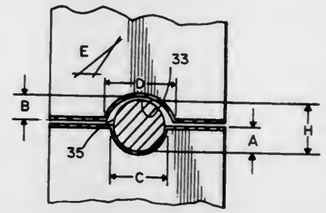
providing a support for the thermoplastic material to be sealed;

providing a pressure means for applying pressure on the thermoplastic material to be sealed;

providing a heat element in the configuration of a desired seam to be formed;

at least one of said pressure means and said heat element having a recessed wall configured to define a confined melt zone volume between said pressure means and said heat element;

providing said confined melt zone volume between the pressure means and the heat element when the pressure means and heat element are in mating relationship and are operating with the thermoplastic material;



introducing the thermoplastic material to be sealed between the pressure means and the heat element;

applying pressure on one side of the thermoplastic material by the pressure means while the heat element on the opposite side of the thermoplastic material is operating to provide heat to the thermoplastic material to melt the thermoplastic material in the configuration of the desired seam and force the melted thermoplastic to flow into and be confined within the melt zone volume; and

maintaining said confined melt zone volume between the pressure means and the heat element throughout the time that the heat element is operating to provide heat to the thermoplastic material.

4,555,294

INORGANIC COMPOSITION ADAPTED FOR USE IN BONDING A HIGH TEMPERATURE RESISTANT POLYMERIC MATERIAL TO AN ALUMINUM BASE SUBSTRATE

Kenneth J. Adams, Novelty, and David E. Dyke, Shaker Heights, both of Ohio, assignors to Imperial Clevite Inc., Glenview, Ill.

Filed Apr. 3, 1984, Ser. No. 596,319
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—309.6 **7 Claims**

1. A method of bonding a high temperature resistant polymeric material to an aluminum base substrate is provided which comprises:

providing a reaction product which is obtained by reacting chromium sesquioxide with a second inorganic compound containing at least one element selected from the group consisting essentially of calcium, barium and strontium to form a reaction product chromite XCr_2O_4 wherein X is selected from the group essentially consisting of calcium, barium and stronium;

bringing the so-obtained reaction product into contact with the surface of the aluminum base substrate which is to be coated with the polymeric material;

bringing at least one high temperature polymeric material selected from the group consisting essentially of polysulfone, polyethersulfone, polyamide-imide, polyetheretherketone, polyetherimide, polyphenylene sulfide, polyphenylsulfone and polymeric compounds containing them into contact with the surface of the substrate which is to be coated;

heating the so-applied polymeric material and reaction prod-

uct to a temperature sufficient to cause the polymeric material to flow and cover that portion of the substrate which is to be coated therewith; and

cooling the heated cooling to a temperature sufficient to cause the high temperature resistant polymeric material to become adherently bonded to the substrate.

4,555,295

ADHESIVE FILLER APPARATUS

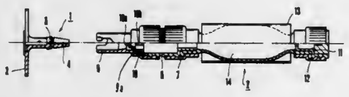
Wataru Orikasa; Makoto Ohara; Tomoyuki Mori; Masayoshi Shigetomi; Katsuji Yamaga; Masaaki Matsui; Hiroshi Saito, and Hiroshi Soda, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation; Sho-Bond Construction Co., Ltd. and Communication Architecture and Building Research Corporation, all of Tokyo, Japan

Filed Nov. 13, 1984, Ser. No. 670,844

Claims priority, application Japan, Dec. 20, 1983, 58-238973

Int. Cl.⁴ B32B *35/00*

U.S. Cl. 156—349 **2 Claims**



1. An adhesive filler apparatus comprising a support portion provided at one end with a base member for locating the support portion on the portion which is to be repaired by filling an adhesive therein and at the other end with a tubular coupler projection, an injector including a pressure buffer tube, a tubular coupler member at one end of said pressure buffer tube for connecting the injector to said support portion, and a valve device between said pressure buffer tube and coupler member, the other end of said pressure buffer tube being made capable of being closed, the closure provided by said valve device being cleared upon connecting said coupler member to said coupler projection.

4,555,296

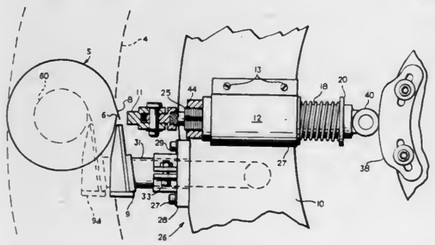
UNIVERSAL HOT AIR NOZZLE AND SEAL BAR WITH ADJUSTABLE CAM

John E. Burtch, Curtice, and James A. Hill, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 8, 1984, Ser. No. 669,509

Int. Cl.⁴ B65C *3/12*

U.S. Cl. 156—446 **11 Claims**



1. An apparatus for forming and assembling tubular thermoplastic sleeves, the apparatus having a circumferentially movable turret with a plurality of mandrels forming work stations thereon, wherein at one of the work stations each mandrel has a heat nozzle and a seal bar and the sleeve is wrapped around the coacting mandrel with the vertical edges of the sleeve being disposed in overlapping relation with heat being applied by the heat nozzle to the overlapped edges in coaction with the seal bar being subsequently applied to the heated overlapped edges with preselected pressure to heat-seal such edges together, the improvement thereon comprising; longitudinally telescoping means upon which the seal bar is mounted adjacent the turret enabling the seal bar to selectively contact the sleeve vertical edges with preselected pressure.

4,555,297

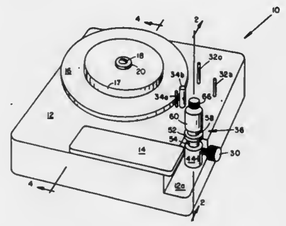
FOIL APPLICATOR

Robert E. Andrus, San Antonio, Tex., and Steve Hampton, 1906 Elsworthy, San Antonio, Tex. 78248, assignors to Steve Hampton, San Antonio, Tex.

Filed May 23, 1984, Ser. No. 613,333

Int. Cl.⁴ B29C *17/00*

U.S. Cl. 156—461 **3 Claims**



1. Apparatus for applying foil to a portion of a glass plane, comprising:

a horizontal base;

a turntable for receiving said foil thereon rotably mounted atop said base;

a horizontal platform fixedly mounted atop said base adapted to receive said glass portion thereon; and

a dual adjustment applicator head mounted to said base in operative proximity to said platform, comprising:

a foil support;

means for vertically adjusting said foil support relative to said platform, said means for vertically adjusting said foil support comprising a downwardly extending bushing integral with said foil support in threaded engagement with a threaded portion of an upstanding bolt;

a guide bushing; and

means for vertically adjusting said guide bushing relative to said platform and said foil support.

4,555,298

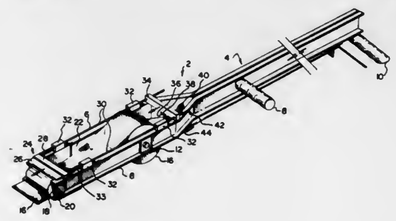
TAPE GUN

Ray Boucher, Perkinsfield, Canada, assignor to Bay Mills Limited, Canada

Filed May 18, 1984, Ser. No. 611,716

Int. Cl.⁴ B44C *7/02*

U.S. Cl. 156—523 **8 Claims**



1. A device for dispensing and applying adhesive tape from rolls, the device comprising:

(a) a frame consisting of a pair of spaced parallel arms connected to an elongated handle parallel thereto;

(b) a roller supported between the arms intermediate their free ends and the handle to support rotatably a roll of said tape;

(c) an applicator roller positioned transversely between the arms near their free ends, this roller to roll and press the tape, during use, into final position and being provided with a roller surface to frictional engage the tape as the roller rotates, to draw tape from the tape roll;

(d) knife means operatively positioned near the free ends of the arms, having a blade facing forwardly with respect to the arms and handle and positioned transversely across the arms above the applicator roller, the knife means movable in a direction parallel to the arms between withdrawn position wherein the knife means does not obstruct the dispensing and applying of tape from the device, and extended cutting position in which the blade extends forwardly from the ends of the arms beyond the applicator roller to permit cutting the tape transversely the knife means being biased towards extending cutting position, and provided with restraining means comprising a pawl pivotably secured to the frame to releasably engage the knife means to releasably hold it in withdrawn position, the restraining means being purposefully manipulable by the operator to release the knife means from being held by the restraining means; and

(e) guide means secured to the arms near their free end to receive tape from the roll and direct it towards the ends of the arms below the applicator roller.

4,555,299

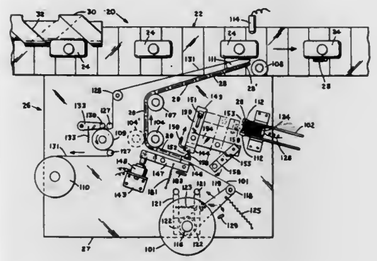
LITERATURE APPLYING MECHANISM

Helmut Voltmer, Park Ridge; Alfred F. Schwenzer, Totowa, and Edward J. Mazur, Montville, all of N.J., assignors to NJM, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 542,731, Oct. 17, 1983, Pat. No. 4,502,910. This application Jul. 9, 1984, Ser. No. 628,761

Int. Cl.⁴ B65C *9/40*

U.S. Cl. 156—552 **10 Claims**



8. A system for applying a piece of literature to an object, said system comprising:

means for pressing the piece of literature against the object;

a hopper for storing pieces of literature;

means for moving a tape having an adhesive coating to said pressing means;

suction cup means movable between a first position in which said suction cup means picks up, by a vacuum, the piece of literature from said hopper and a second position in which said suction cup means delivers said piece of literature onto said adhesive coating of said tape and said vacuum is terminated; and

means disposed adjacent said second position for urging said tape toward said suction cup means and against said piece of literature as said suction cup means deliver said piece of literature onto said adhesive coating of said tape.

4,555,300

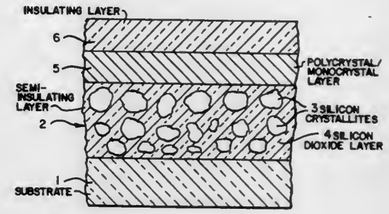
METHOD FOR PRODUCING SINGLE CRYSTAL LAYERS ON INSULATORS

Emil Arnold, Chappaqua; Helmut Baumgart, and Barbara A. Rossi, both of Mahopac, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,752

Int. Cl.⁴ C30B *25/06*

U.S. Cl. 156—613 **4 Claims**



1. A method for producing single crystal layers on an insulating layer comprising;

forming a first insulating substrate layer,

forming a semi-insulating film of small silicon crystallites embedded into a second insulating layer of silicon dioxide on said first insulating substrate layer, said semi-insulating film being a silicon-rich oxide layer, and said semi-insulating film having a coefficient of thermal expansion intermediate that of silicon and silicon dioxide,

depositing a polycrystalline semiconductor film of silicon onto said semi-insulating film,

forming a third insulating layer on said polycrystalline semiconductor film, and

converting said polycrystalline semiconductor film to a single crystal film.

4,555,301

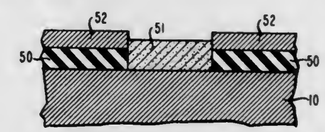
FORMATION OF HETEROSTRUCTURES BY PULSED MELTING OF PRECURSOR MATERIAL

John M. Gibson, Upper Montclair; Dale C. Jacobson, Independence Township, Warren County; John M. Poate, Summit, and Raymond T. Tung, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1983, Ser. No. 506,069

Int. Cl.⁴ C30B *1/08*

U.S. Cl. 156—617 R **17 Claims**



1. Method of producing a heterostructure comprising a layer of multiconstituent first material on a single crystal second material substrate, the first material comprising at least a first major constituent and a second major constituent, chemical elements A and B being the first and second major constituent, respectively, the chemical composition of the substrate differing from the chemical composition of the first material, the first material selected from the group consisting of the metals, the semiconductors, and the insulators, the second material selected from the group consisting of Si, Ge, the III-V compound semiconductors, and the II-VI compound semiconductors, the method comprising

(a) providing the single crystal second material substrate;

(b) forming a layer of precursor material on at least a part of the substrate, the precursor material having the same major constituents as the first material,

(c) melting momentarily at least a part of the precursor material by causing pulsed radiation to be incident on the precursor material, the pulsed radiation being electromagnetic radiation, or electron beam radiation, or ion beam radiation, the incident pulsed radiation adjusted to melt the part of the precursor material to at least the substrate/-precursor material interface, and

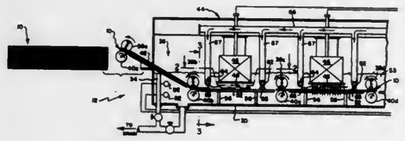
(d) permitting the melted precursor material to re-solidify, the re-solidified material being said first material.

4,555,302

METHOD AND APPARATUS FOR ULTRASONIC ETCHING OF PRINTING PLATES

John C. Urbanik, R.D. #1 3451 Stone Quarry Rd., Fredonia, N.Y. 14063

Filed Aug. 24, 1984, Ser. No. 644,177
Int. Cl.[4] B44C *1/22;* **C03C** *15/00, 25/06;* **B41C** *1/00*
U.S. Cl. 156—637 **13 Claims**



1. In a process for etching a light-sensitive photopolymerisable surface of a printing plate after exposure including the following steps:

providing a bath of etching fluid;

conveying a printing plate in a prescribed path with at least a surface to be etched being in contact with the bath of etching fluid;

forming longitudinal waves in the etching fluid at generally right angles to the surface of the printing plate, the waves being of a suitable wave length and amplitude to normally cause substantial cavitation adjacent the surface of the printing plate to be etched;

the improvement being characterized by

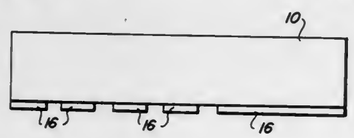
sweeping the surface to be etched with a flow of etching fluid at a substantial angle to the longitudinal waves and of a sufficient velocity and volume to prevent substantial cavitational erosion of the surface to be etched.

4,555,303

OXIDATION OF MATERIAL IN HIGH PRESSURE OXYGEN PLASMA

Ronald Legge, Scottsdale; M. John Rice, Jr., Tempe, and Kalluri R. Sarma, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1984, Ser. No. 656,822
Int. Cl.[4] B44C *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—643 **15 Claims**



1. A process for removing graphite from a surface which comprises the steps of: providing a surface having a layer of graphite adherent thereto; positioning said surface and said layer of graphite in a reaction volume; generating a high pressure rf plasma comprising reactive oxygen species; directing said reactive oxygen species to said layer of graphite; and oxidizing said layer of graphite.

4,555,304

METHOD OF POLISHING GLASS ARTICLES IN AN ACID BATH

Erich Sälzle, Nadistrasse 8, D-8000 München 40, Fed. Rep. of Germany

Filed Sep. 29, 1983, Ser. No. 537,209
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3238011; Jun. 24, 1983, 3322875
Int. Cl.[4] C03C *15/02*
U.S. Cl. 156—663 **16 Claims**

1. A method of polishing glass articles comprising

providing a polishing bath of acids consisting essentially of (1) 35–75% by weight of bath of sulfuric acid, (2) 1.5–12% by weight of bath of hydrofluoric acid, and (3) an amount of at least one non-oxidizing organic acid which is stronger than HF sufficient to hinder the dissociation of HF and thereby retard the formation of fluoride ions in the bath;

contacting glass articles to be polished with said polishing bath for a time sufficient to effect polishing of said glass, whereby deposits forming during polishing are in fine form with poor adhesive capacity on the glass surface;

avoiding the substantial presence in the bath of fluorosilicic acid which serves to remove alkali metal ions in the form of precipitates of alkali metal silico-fluorides; and

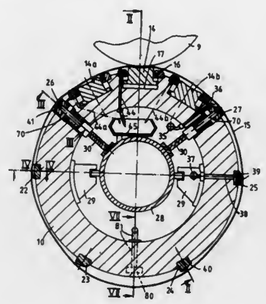
repeatedly contacting glass articles with said bath over a normal working shift of about 8 hours and, upon decrease in the effectiveness of said polishing bath or the appearance of polishing flaws due to reduction of bath effectiveness, adding to the bath 0.1 to 5 g of sodium chloride and/or potassium chloride per liter of polishing bath without otherwise renewing or cleansing said bath over said shift.

4,555,305

APPARATUS AND METHOD FOR COOLING A BELT PRESSING UNIT IN A PAPER MACHINE

Karl Steiner, Herbrechtingen; Christian Schiel, Heidenheim; Albrecht Meinecke, Heidenheim; Josef Müllner, Heidenheim, and Hans Weiss, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,628
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3311996; May 13, 1983, 3317456
Int. Cl.[4] D21F *3/02*
U.S. Cl. 162—205 **37 Claims**



1. A method of guiding a stream of liquid through a belt press unit, comprising the steps of:

rotating a tubular elastic press belt around a supporting body in a direction of travel, the supporting body having an outer surface and the press belt being generally spaced apart from the outer surface of the supporting body as the press belt rotates; pressing the press belt against a web between a pressing surface inside the press belt and an opposing surface outside the press belt in a pressing zone;

feeding a cooling stream of a liquid to the inner side of the tubular press belt at a main feed position near the pressing zone and downstream from the pressing zone when viewed in the direction of travel;

leaving the liquid on the inner side of the press belt for cooling the press belt as the press belt travels from the main feed position most of the way around the supporting body; and

removing at least part of the liquid from the inner side of the press belt at a removal position near the pressing zone and upstream from the pressing zone when viewed in the direction of travel.

11. A belt press unit comprising:

a supporting body having an outer surface;

a tubular elastic press belt around and movable around the outer surface of the supporting body, the press belt being generally spaced apart from the outer surface of the supporting body as the press belt moves around the supporting body;

a pressing means on the outer surface of the supporting body for pressing the press belt outward for pressing a web between the press belt and an opposing surface outside the press belt, the pressing means defining a pressing zone, the press belt moving around the supporting body in a direction of travel and moving with the web between the pressing means and the opposing surface;

feeding means for feeding liquid to the inner side of the press belt at a main feed position near the pressing zone and downstream from the pressing zone when viewed in the direction of travel;

means for permitting the liquid to remain on the inner side of the press belt for cooling the press belt as the press belt travels from the main feed position most of the way around the supporting body; and

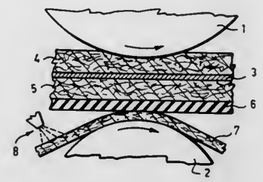
means for removing at least part of the liquid from the inner side of the press belt from at least one removal position near the pressing zone and upstream from the pressing zone when viewed in the direction of travel.

4,555,306

METHOD AND MEANS FOR REMOVING WATER FROM A WEB IN A PRESS OF A PAPERMAKING MACHINE

Kristian Lundström, Soljala, Finland, assignor to Tamfelt Oy Ab, Finland

Filed Sep. 24, 1984, Ser. No. 653,815
Claims priority, application Finland, Oct. 3, 1983, 833583
Int. Cl.[4] D21F *3/02, 3/06, 1/10*
U.S. Cl. 162—205 **12 Claims**



1. A method for removing water from a web in a press of a papermaking machine comprising:

passing a web to be dried between two press felts through a press nip formed between two press rolls:

passing a resilient water-impermeable mat through the press nip, said mat being in contact with one of the press felts;

passing a wire between the resilient mat and one of the press rolls through the press nip, said wire being in contact with said mat and said one of the press rolls at the press nip;

spraying water on said wire immediately before the press nip so that the wire becomes completely saturated; and

retaining said water in voids formed by weft and warp yarns within said wire that prevent water from moving in the direction of movement of the wire as the wire passes through said press nip thereby providing a water cushion in the section of the wire lying between the press roll and the resilient mat.

3. A wire in combination with a press of a papermaking machine, said press having a press nip formed between two press rolls and a web to be dried located between two press felts together with a resilient water-impermeable mat in contact with one of the press felts, means for passing said web, felts, and mat through the press nip, means for passing said wire between the mat and one of the press rolls, said wire being in contact with the mat and said one of the press rolls at the press nip and a means for spraying water on said wire located immediately before said press nip,

said wire comprising warp yarns arranged along the longitudinal direction of the wire; and

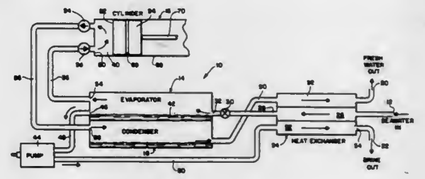
cross-direction weft yarns arranged substantially perpendicular to the warp yarns thereby forming voids that retain water whereby as said wire is passed through said press nip water is prevented from moving in the direction of movement of the wire, thereby producing a water cushion in the section of the wire lying between the press roll and the resilient mat.

4,555,307

SEA WATER DISTILLATION SYSTEM

Glenn E. Hagen, New Orleans, La., assignor to Williams, Inc., New Orleans, La.

Filed Jul. 20, 1983, Ser. No. 515,471
Int. Cl.[4] C02F *1/04;* **F04B** *17/00*
U.S. Cl. 202—177 **5 Claims**



1. A system for the distillation of impure aqueous solutions comprising:

impure aqueous solution input means for delivering said impure aqueous solution from a source to said system, said impure aqueous solution of the type capable of distillation through evaporation and condensation processes;

evaporation means communicating with said impure aqueous solution input means for causing said impure aqueous solution to form a gaseous portion;

work extracting means responsive to the wave motion of a liquid, said work extracting means being in communication with said evaporation means such that said gaseous portion can pass therebetween, said work extracting means capable of imparting pressure upon said gaseous portion, said work extracting means comprising:

a first float;

a second float pivotally connected to said first float said first float including an arm extending from said first float a distance beyond the point of connection of said first float and said second float;

a cylinder for receipt of said gaseous portion, said cylinder being pivotally connected to the exterior of said second float;

a piston slideably engaging the interior of said cylinder; and

a piston rod attached to and extending from said piston, said piston rod pivotally connected to said arm of said first float such that said piston moves within said cylinder in relation to the wave motion imparted to said first float;

condensation means communicating with said work extracting means, said condensation means capable of bringing said gaseous portion to a liquid state;

distilled solution output means communicating with said condensation means for removal of the generally pure distilled solution from said system; and

impure solution output means communicating with said evaporation means for the removal of the non-distilled portion of said impure aqueous solution.

4,555,308

GAS COLLECTING HOOD FOR COLLECTING EMISSIONS DURING COKE DISCHARGE OPERATIONS

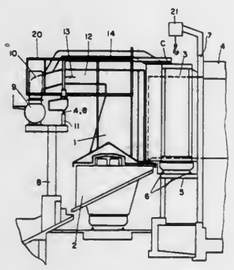
Engelbert Bruns, Recklinghausen, and Gerd Osterholt, Dorsten, both of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. K.G., Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 633,862

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3326971

Int. Cl.⁴ C10B *33/14, 27/00*

U.S. Cl. 202—263 **4 Claims**



1. In a coke oven battery having a coke guide mounted for movement in a longitudinal direction across the coke oven battery, the improvement comprising:

a support structure spaced laterally of the coke guide and extending in a longitudinal direction;

a rail mounted on said support structure extending in the longitudinal direction;

a gas collecting hood for collecting emissions during a discharge of coke from the coke oven battery over the coke guide;

a hood frame connected to said hood for supporting said hood;

two spaced apart roller means connected to said hood frame on a side of said hood frame and said hood remote from the coke guide, said roller means engaged on top of said rail for supporting said hood; and

said hood frame including a single pivotal bearing means providing a one point support between said hood frame and the coke guide on a side of said hood frame and hood adjacent the coke guide whereby said hood is supported at three points, said frame being supported only at said roller means and bearing means, said pivotal bearing means comprising a bearing socket connected between said hood frame and the coke guide for universal pivoting, said bearing socket disposed on a top of the coke guide and near a center of said hood frame between said two roller means in the longitudinal direction.

4,555,309

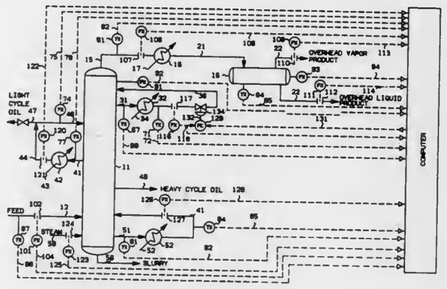
CONTROL OF A FRACTIONAL DISTILLATION PROCESS

Gyan P. Jain, Tulsa, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 19, 1983, Ser. No. 524,489

Int. Cl.⁴ B01D *3/42*

U.S. Cl. 203—1 **24 Claims**



1. Apparatus comprising:

a fractional distillation column;

means for providing a feed stream containing hydrocarbons and inerts including hydrogen to said fractional distillation column;

a cooling means;

an overhead accumulator;

means for withdrawing an overhead vapor stream from an upper portion of said fractional distillation column and for passing said overhead vapor stream through said cooling means to said overhead accumulator;

means for withdrawing a vapor stream from said overhead accumulator as an overhead vapor product;

means for withdrawing a liquid stream from said overhead accumulator as an overhead liquid product;

means for providing an upper external reflux to said fractional distillation column;

means for establishing a first signal representative of the heat removed per unit of said feed stream by said fractional distillation column at a time T_2;

means for establishing a second signal representative of the heat removed per unit of said feed stream by said fractional distillation column at a time T_1 which is earlier in time than said time T_2;

means for establishing a third signal representative of the change in heat removed per unit of said feed stream by said fractional distillation column between said time T_2 and time T_1;

means for establising a fourth signal representative of any change in the hydrogen concentration in said overhead vapor stream between said time T_2 and said time T_1 in response to said third signal;

means for establishing a fifth signal representative of the actual moles of inerts contained in said overhead vapor stream at said time T_2 in response to said fourth signal;

means for establishing a sixth signal representative of the actual moles of hydrocarbon contained in said overhead vapor stream in response to said fourth signal;

means for establishing a seventh signal representative of the hydrocarbon partial pressure in the upper portion of said fractional distillation column in response to said fifth and sixth signals;

means for establishing an eighth signal representative of the equilibrium flash vaporization end point temperature (EFVEP) at said time T_2 for said overhead liquid product in response to said seventh signal;

means for establishing a ninth signal representative of the actual moles of inerts in said overhead vapor stream at said time T_2 in response to said fourth signal;

means for establishing a tenth signal representative of the hydrocarbon partial pressure in said overhead accumulator in response to said ninth signal and said sixth signal;

means for establishing an eleventh signal representative of the equilibrium flash vaporization initial point temperature (EFVIP) for said overhead liquid product at said time T_2 in response to said tenth signal;

means for establishing a twelfth signal representative of the slope of the equilibrium flash vaporization boiling point line for said overhead liquid product at said time T_2 in response to said eighth signal and said eleventh signal;

means for establishing a thirteenth signal representative of the actual slope of the ASTM boiling point curve for said overhead liquid product at said time T_2 in response to said twelfth signal;

means for establishing a fourteenth signal representative of the actual ASTM end point temperature for said overhead liquid product in response to said thirteenth signal;

means for establishing a fifteenth signal representative of the desired ASTM end point temperature for said overhead liquid product stream;

means for comparing said fourteenth signal and said fifteenth signal and for establishing a sixteenth signal which is responsive to the difference between said fourteenth signal and said fifteenth signal; and

means for manipulating the flow rate of said upper external reflux to said fractional distillation column in response to said sixteenth signal to thereby maintain the actual ASTM end point temperature of said overhead liquid product substantially equal to the desired ASTM end point temperature represented by said fifteenth signal.

4,555,310

METHOD OF UTILIZING ENERGY OF HIGH PRESSURE CONDENSATE

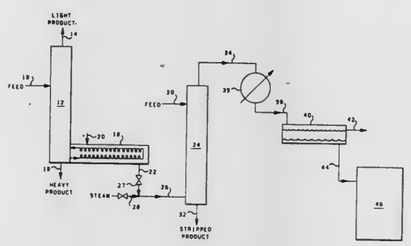
Ronald E. Marrelli, Bountiful, Utah, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1978, Ser. No. 938,189

The portion of the term of this patent subsequent to Jan. 26, 2000, has been disclaimed.

Int. Cl.⁴ B01D *3/38*

U.S. Cl. 203—10 **13 Claims**



1. A method of utilizing the energy of high pressure steam, comprising:

(a) passing said high-pressure steam, at an elevated pressure of at least about 150 psig, in indirect heat exchange with a first feed material, to be heated in a heat exchange operation, under conditions to produce a high-pressure condensate stream, having a pressure of essentially said elevated pressure, from the condensation of said high pressure steam;

(b) reducing the pressure of said high-pressure condensate to a pressure sufficient to produce a low-pressure steam, having a pressure of about 7 psig;

(c) directly contacting a multicomponent second feed material, other than the thus heated first feed material, with the thus produced low-pressure steam, in at least one steam stripping operation, to strip at least one component from said multicomponent second feed material;

(d) condensing said low-pressure steam to produce an at least partially purified water stream, including the thus condensed low-pressure steam; and

(e) passing said at least partially purified water stream directly to a water utilization operation, as at least part of the water requirement thereof.

4,555,311

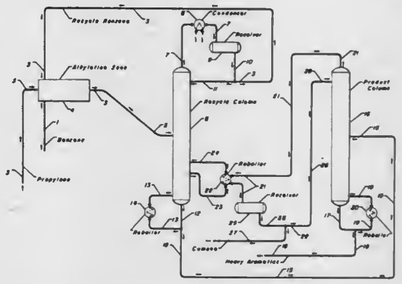
INTEGRATED FRACTIONATION IN THE RECOVERY OF ALKYLAROMATIC HYDROCARBONS

Dennis J. Ward, South Barrington, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 18, 1983, Ser. No. 553,343

Int. Cl.⁴ B01D *3/00;* **C07C** *3/54*

U.S. Cl. 203—21 **4 Claims**



1. A process for recovering an alkylaromatic hydrocarbon from the effluent stream of an aromatic hydrocarbon alkylation zone which comprises the steps of:

(a) passing an alkylation zone effluent stream which comprises a feed aromatic hydrocarbon, a product alkylaromatic hydrocarbon, and a by-product alkylaromatic having a higher boiling point than the product alkylaromatic hydrocarbon into a first fractionation column at a first intermediate point, with a first reboiler being located at the bottom of the first fractionation column;

(b) supplying heat to the first fractionation column by vaporizing bottoms liquid by indirect heat exchange in said first reboiler and passing the resultant vapors into the first fractionation column, with the resultant vapor having a first temperature;

(c) recovering a first net overhead product stream, which is rich in the feed aromatic hydrocarbon, from the first fractionation column;

(d) removing a first net bottoms stream, which is rich in the product alkylaromatic hydrocarbon, from the first fractionation column and passing the first net bottoms stream into a second fractionation column;

(e) removing a second net bottoms stream, which is rich in the by-product alkylaromatic hydrocarbon, from the second fractionation column;

(f) supplying additional heat to the first fractionation column by vaporizing process liquid withdrawn at a second intermediate point located below said first intermediate point and having a lower average boiling point than the bottoms liquid entering the first reboiler in a second reboiler, with the created vapor having a second temperature lower than said first temperature;

(g) passing a second overhead vapor stream, which is withdrawn from the second fractionation column and is rich in said product alkylaromatic hydrocarbon, through the second reboiler in indirect heat exchange relationship with said process liquid withdrawn at said second intermediate point, which results in vaporizing said process liquid

and at least partially condensing the second overhead vapor stream and thereby forming a condensate; and,

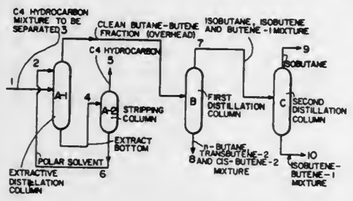
(h) withdrawing a first portion of said condensate as a product steam of the process and passing a second portion of said condensate into the second fractionation column as reflux.

4,555,312

PROCESS FOR SEPARATING HIGHLY PURE BUTENE-1 OR BUTENE-1/ISOBUTENE MIXTURE FROM C_4 HYDROCARBON FRACTION

Shunichiro Ogura, Tokyo, Japan; Masamichi Saremai, Yokohoma, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 444,039
Claims priority, application Japan, Nov. 27, 1981, 56-190385
Int. Cl.⁴ C07C *7/08*
U.S. Cl. 203—29 **6 Claims**



1. A process for separating a butene-1/isobutene mixture from a C_4 hydrocarbon fraction, which comprises subjecting the C_4 hydrocarbon fraction to extractive distillation using a polar solvent to separate components predominantly containing 1,3-butadiene as an extract bottom and obtain an overhead containing butanes, butene-1, isobutene and butene-2 as main components and being substantially free from C_3–C_4 diolefinic and acetylenic hydrocarbons, feeding the overhead into a first distillation column, removing n-butane and butene-2 as bottoms from the column, feeding low-boiling components from the top of the column into a second distillation column, removing isobutane from the top of the second distillation column, and obtaining highly pure butene-1 and isobutene from its bottom.

4,555,313

METHOD OF FORMING A CONTINUOUS POLYMERIC SKIN ON A CELLULAR FOAM MATERIAL

David V. Duchane, and Barry L. Barthell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1982, Ser. No. 435,796
Int. Cl.⁴ C25D *1/08;* **B05D** *5/00;* **B22D** *19/02*
U.S. Cl. 204—3 **10 Claims**

1. A method of forming a thin, smooth continuous skin of a hydrophilic polymer on the outer surface of a hydrophobic cellular material, said method comprising:

(a) coating said outer surface said cellular material, which has an average cell size less than about 500 μm, in a wetting solution of said hydrophilic polymer and water, wherein said wetting solution has a surface tension within the range from about 35 to about 55 dynes/cm and a viscosity within the range from about 100 to about 3000 cP;

(b) removing said cellular material from said wetting solution and allowing the excess wetting solution to drain away from said cellular material; and

(c) drying the wetted surface of said cellular material to thereby remove by evaporation the water in the wetting solution on said surface, thereby forming a smooth continuous layer of said hydrophilic polymer on the outer surface of said cellular material.

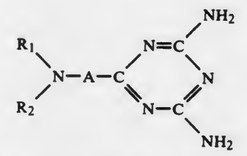
4,555,314

TIN-LEAD ALLOY PLATING BATH

Keigo Obata, Himeji; Nobuyasu Dohi, Kobe; Yoshiaki Okuhama, Kobe; Seishi Masaki, Kobe; Yukiyoshi Okada, Kobe, and Tadashi Yoshida, Kobe, all of Japan, assignors to: Obata, Do-Hi; Daiwa Fine Chemicals Co. Ltd.; Ishihaa Chemical Co., Ltd. i both of Kobe i Japan

Filed Sep. 10, 1984, Ser. No. 649,107
Int. Cl.⁴ C25D *3/56, 3/60*
U.S. Cl. 204—44.4 **6 Claims**

1. A tin-lead alloy plating bath based on a principal plating bath comprising an alkanesulfonic or alkanolsulfonic acid and both bivalent tin and lead salts thereof, characterized by the addition of a guanamine compound having the general formula



wherein R_1 and R_2, which may be the same or different, represent each a hydrogen atom, $C_{1\text{-}18}$ straight- or branched-chain alkyl radical, $C_{1\text{-}18}$ straight- or branched-chain alkoxy-lower alkyl radical, or a $C_{3\text{-}7}$ cycloalkyl radical, or R_1 and R_2 may combine with the nitrogen atom to form a piperidine, morpholine or piperazine cycle, and A represents a lower alkylene radical.

4,555,315

HIGH SPEED COPPER ELECTROPLATING PROCESS AND BATH THEREFOR

Stephen C. Barbieri, Rutherford, and Linda J. Mayer, Denville, both of N.J., assignors to OMI International Corporation, Warren, Mich.

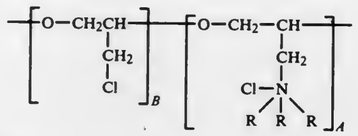
Filed May 29, 1984, Ser. No. 614,088
Int. Cl.⁴ C25D *3/38*
U.S. Cl. 204—52 R **10 Claims**

1. In an aqueous acidic electrolyte containing copper in an amount sufficient to electrodeposit copper on a substrate, the improvement comprising incorporating in the electrolyte a brightening and leveling amount of an additive system comprising a mixture of:

(a) a bath soluble polether compound,

(b) a bath soluble organic divalent sulfur compound,

(c) a bath soluble adduct of a tertiary alkyl amine with polyepichlorohydrin corresponding to the structural formula:



wherein:

R is the same or different and is methyl or ethyl,

A and B are integers whose sum is an integer of from 4 to about 500, and

A:B is at least about 1:5 and

(d) a bath soluble reaction product of polyethyleneimine and an alkylating agent which will alkylate the nitrogen on the polyethyleneimine to produce a quaternary nitrogen and wherein said alkylating agent is selected from the group consisting of benzyl chloride, allyl bromide, propane sultone, dimethyl sulfate and wherein the reaction temperature ranges from about room temperature to about 120° C.,

said additive system present to provide a mol ratio of (c):(d) within a range of about 9:1 to about 1:10 and a mol ratio of (a)+(b):(c)+(d) within a range of about 35:1 to about 2:1, and being substantially free of compounds containing substituted phthalocyanine radicals.

4,555,316

SYNTHESIS OF POLY(SULPHUR NITRIDE)

Arthur J. Banister, Durham; Zdenek V. Hauptman, Bishop Auckland, and Aidan G. Kendrick, Stockport, all of England, assignors to National Research Development Corporation, London, England

Filed Aug. 6, 1984, Ser. No. 637,829
Claims priority, application United Kingdom, Aug. 23, 1983, 8322621
Int. Cl.⁴ C25C *3/00*
U.S. Cl. 204—59 R **15 Claims**

1. A method of synthesizing crystalline poly(sulphur nitride), comprising electrolyzing a solution of $(S_mN_n)_z{}^p+X_y{}^{q-}$ where: m is an integer; n is one of m and m−1; X is an anion; and p is the number of units of charge on the cation (S_mN_n); q is the number of units of charge on the anion X; y is the number of the anions, z is the number of the cations; and, to preserve electroneutrality, pz=qy, whereby poly(sulphur nitride) is electrodeposited.

4,555,317

CATHODE FOR THE ELECTROLYTIC PRODUCTION OF HYDROGEN AND ITS USE

Edgard Nicolas, Meise-Eversem, and Louis Merckaert, Brussels, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Dec. 15, 1983, Ser. No. 561,726
Claims priority, application France, Dec. 17, 1982, 82 21390
Int. Cl.⁴ C25B *1/02, 11/06;* **C25D** *3/12*
U.S. Cl. 204—129 **10 Claims**

7. A process for the electrolytic produciton of hydrogen which comprises providing in an electrolytic cell containing an alkaline electrolyte, an anode and a cathode, said cathode having an active surface which comprises a nickel substrate, a porous coating film of dendrites of a metal selected from the group consisting of nickel and cobalt and a porous layer of an electrically conductive material interposed between said nickel substrate and said coating film of dendrites, said film of dendrites being formed in situ by electrolytic deposition on said cathode whilst said cathode is the seat of an electrolytic proton reduction in an aqueous electrolyte containing nickel ions or cobalt ions, and passing electric current between said anode and cathode to produce hydrogen gas at said cathode with minimum over-voltage.

4,555,318

REMOVAL OF FLUORIDE IMPURITIES FROM UF_6 GAS

James V. Beitz, Hinsdale, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 6, 1984, Ser. No. 568,769
Int. Cl.⁴ C01G *43/06*
U.S. Cl. 204—157.1 R **11 Claims**

1. A method of purifying a uranium hexafluoride gas stream containing a gaseous fluoride impurity of a transuranic metal, transition metal, or mixtures thereof, comprising the steps of contacting the gas stream with a bed of uranium pentafluoride at a temperature and time sufficient to react at least a portion of gaseous impurity with the uranium pentafluoride to form nongaseous product retained on the bed and thereby forming a treated gas stream, and removing the treated gas stream from contact with the bed.

4,555,319

RADIATION-CURABLE COMPOSITIONS COMPRISING ISOCYANURIC ACID-ACROLEIN DERIVATIVES

Saul M. Cohen, Springfield, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 21, 1981, Ser. No. 332,641
Int. Cl.⁴ C08F *2/50, 2/54;* **C08G** *2/26, 2/02*
U.S. Cl. 204—159.21 **6 Claims**

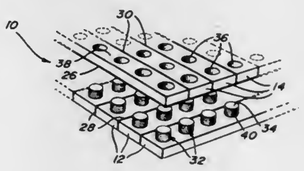
1. A radiation-curable coating composition comprising about 50 to about 90 parts by weight of a polyunsaturated ester of an ethylenically unsaturated acid and a polyhydric alcohol, and about 10 to about 50 parts by weight of a polyaldehyde adduct formed from 1 mole of isocyanuric acid and from about 2 to about 3 moles of acrolein or a hemiacetal of the polyaldehyde adduct.

4,555,320

IMAGE REPRODUCTION BY IN PLANE ELECTRO-COAGULATION OF A COLLOID

Adrien Castegnier, Outremont, Canada, assignor to Elcorsy Inc., Saint-Laurent, Canada

Filed May 25, 1984, Ser. No. 614,020
Int. Cl.⁴ C25D *13/04, 13/06, 13/12, 13/18*
U.S. Cl. 204—180.9 **23 Claims**



1. A method of reproducing an image by electro-coagulation of an electrolytically coagulable colloid, which comprises the steps of:

(a) providing a plurality of negative and positive electrolytically inert electrodes electrically insulated from one another and arranged to define a matrix of dot-forming elements, the negative and positive electrodes of each matrix element having respective planar active surfaces with the negative electrode active surface extending in substantially the same plane as the positive electrode active surface and in close proximity thereto;

(b) applying a layer of a substantially liquid colloidal dispersion over the negative and positive electrode active surfaces of the matrix elements whereby the positive and negative electrode active surfaces are disposed on the same side of the layer of colloidal dispersion, said colloidal dispersion containing an electrolytically coagulable colloid, a liquid dispersing medium and a soluble electrolyte and having a substantially uniform temperature throughout said layer;

(c) generating an electrical field between the negative and positive electrodes of selected ones of said matrix elements, said electrical field extending substantially parallel to the planar active surfaces of the negative and positive electrodes, whereby to cause selective coagulation and adherence of the colloid onto the positive electrode active surfaces of said selected matrix elements, thereby forming a series of corresponding dots representative of a desired image; and

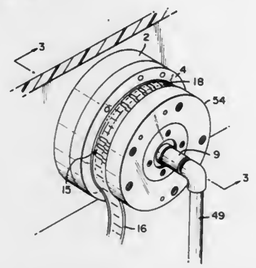
(d) removing any remaining non-coagulated colloid.

4,555,321

SELECTIVE PLATING APPARATUS

John L. Wicks, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 8, 1984, Ser. No. 618,707
Int. Cl.[4] C25D *5/02, 17/00*
U.S. Cl. 204—224 R **7 Claims**



1. An improved apparatus for plating interior surfaces of electrical terminals that are spaced apart and attached to a carrier strip comprising a strip feeding means for feeding the strip, a strip guide which guides the terminals through a plating zone while they are being plated, a source of electrolytic plating solution and a source of electrical potential for supplying an electrical current flow from an anode through the plating solution to a cathode, the strip guide being a mandrel that is continuously rotated as the strip of electrical terminals are continuously fed to the mandrel partially wrapped against the mandrel and fed from the mandrel, the improved apparatus being characterized in that

the anode has a plurality of anode extensions which are located around the mandrel's axis of rotation, said anode extensions being movable into and out of the interiors of the terminals that are against the mandrel,

the mandrel has a plurality of nozzles located around the mandrel's axis of rotation, said nozzles being associated with but separate from said anode extensions

a conduit is provided which carries plating solution under pressure through the nozzles and upon the anode extensions, whereby

the nozzles inject plating solution into the interiors of the terminals in which the anode extensions have been received, the electrical current flows from the anode extensions through the plating solution to the cathode, and the interior surfaces of the terminals are plated.

4,555,322

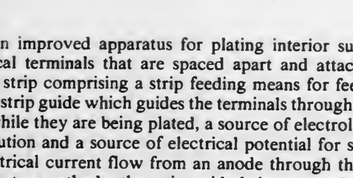
Patent Not Issued For This Number

4,555,323

CHLORINATION DEVICE

Richard B. Collier, 957 Kolokolo Pl., Honolulu, Hi. 96825

Filed May 24, 1984, Ser. No. 614,107
Int. Cl.[4] C02F *1/46;* **C25B** *13/02*
U.S. Cl. 204—258 **7 Claims**



1. In a system to generate chlorine to disinfect a body of water, the system including a pump to move water through the system, a filter and an electrolytic cell able to generate chlorine by the electrolysis of sodium chloride and having an anode and a cathode, each mounted in a separate compartment with chlorine generation in the anode compartment and hydrogen generation in the cathode compartment, the compartments being in communication through an ion permeable membrane, a power source for the cell, the improvement comprising:

(a) the ion permeable membrane is formed as a plurality of separate members, each covering an opening in a wall dividing the anode and cathode compartments;

(b) the anode and the cathode are located by means positioned above the electrolyte; and

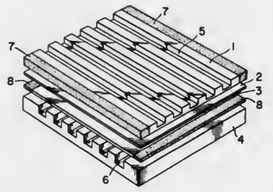
(c) a mixing container divided into a plurality of compartments, a first compartment to receive hydrogen and chlorine from the cell and provided with an outlet for water and the second compartment, in communication with the first and having an inlet for water, a float valve to control the inlet, the mixing container having a pressure relief outlet.

4,555,324

POROUS GAS DIFFUSION ELECTRODE AND METHOD OF PRODUCING THE SAME

Mitsushi Ueno, Yokohama; Tamotsu Shirogami, Yamato, and Yukihiro Mikogami, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 7, 1984, Ser. No. 607,786
Claims priority, application Japan, May 9, 1983, 58-80553; Oct. 25, 1983, 58-198313
Int. Cl.[4] C25B *11/03, 11/04;* **B05D** *5/12;* **H01M** *2/08*
U.S. Cl. 204—284 **14 Claims**



1. A porous gas diffusion electrode constituted of an electroconductive porous substrate, which has itself on one surface reaction gas feed channels or is to be used with one surface in contact with reaction gas feed channels which comprises gas impermeable and electrically insulating seals formed from a material comprising a tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer (PFA copolymer) and a substance wettable with respect to an electrolyte and thermally and chemically stable with respect to the electrolyte provided on the substrate at least at both end portions parallel to said reaction gas feed channels, wherein the substance wettable with respect to an electrolyte and thermally and chemically stable with respect to the electrolyte is used on the substrate at least at a hot pressure bonded portion formed from the PFA copolymer on the face opposite to the face having the reaction gas feed channels or the face opposite to the face to be contacted with the reaction gas feed channels during use.

4,555,325

METHOD FOR INTERCONNECTING THERMALLY AND PRESSURE-STRESSED MULTI-PHASE REACTORS

Eckard Wolowski, Mülheim, and Frank Mirtsch, Bottrop, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,183
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323885
Int. Cl.[4] C10G *1/00, 1/06;* **F28D** *21/00;* **B01J** *1/20*
U.S. Cl. 208—10 **4 Claims**

1. In a high pressure coal hydrogenation process in which multi-phase reaction products flow through at least one hydrogenation reactor and are then cooled in a hot precipitator having a first output of a first phase comprising solids and condensed reaction products and a second output comprising a second phase of residual gas and vapors, said at least one reactor comprising an internal casing which forms a reaction chamber, and an external pressure casing in a spaced relation with the internal casing and defining therebetween a generally annular chamber, and said hot precipitator comprising an internal casing which forms a reaction chamber and an external pressure casing in a spaced relation with the internal casing and defining therebetween a generally annular chamber, an improvement for the pressure protection of the internal casings which form the reaction chambers in both said at least one reactor and said hot precipitator comprising the steps of establishing an interconnection between the annular chamber of each said at least one reactor, and the annular chamber of said hot precipitator and the second phase residual gas and vapor output of said hot precipitator via a manifold; and establishing pressure equilibrium between the annular chambers and the second phase of the residual gas and vapor output of said hot precipitator wherein processed conditioned pressure changes are simultaneously balanced between the interior casings which form the reaction chambers and the annular chamber surrounding the reaction chambers.

4,555,326

METHODS AND COMPOSITIONS FOR BORONIZING METALLIC SURFACES

Dwight K. Reid, Houston, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed May 17, 1984, Ser. No. 611,067
Int. Cl.[4] C10G *9/12*
U.S. Cl. 208—48 R **12 Claims**

1. In a method of inhibiting the formation and deposition of filamentous coke on the surface of metallic equipment used for the processing of a hydrocarbon at temperatures in the range of about 900° to 1300° F., where the undesired filamentous coke formation is commonly experienced, which method comprises processing said hydrocarbon in equipment which has been previously contacted with a liquid composition comprising a boron source selected from the group consisting of elemental boron, boron oxide compounds and metal borides suspended or dissolved in an organic liquid carrier containing an activator which permits and enhances the reaction between the metal of the metal surface and the boron to achieve the boronization thereof, said contact being for a time and at a temperature sufficient to provide a uniform boronized surface on the metallic surface which will come in contact with the hydrocarbon to be processed, said surface while being contacted with said composition being at a temperature of from about 1000°-1400° F.

4,555,327

CRACKING WITH TETRACHLOROALUMINATE CATALYSTS AND WATER

Mark A. Plummer, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jul. 2, 1984, Ser. No. 627,154
Int. Cl.[4] C10G *11/08, 47/08*
U.S. Cl. 208—108 **19 Claims**

1. A process for producing lower molecular weight products from a higher molecular weight hydrocarbon liquid feedstock comprising:

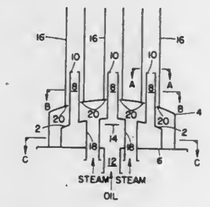
contacting the higher molecular weight hydrocarbon liquid feedstock with a molten catalyst system at a pressure from about atmospheric to about 14,200 kPa and a temperature from about 350° to 550° C. for a contact time sufficient to produce the lower molecular weight products wherein the molten catalyst system is comprised of a tetrachloroaluminate catalyst and water at a molar concentration from about 1 to about 25 percent and is substantially free of a metal chloride salt used in the manufacture of the tetrachloroaluminate catalyst.

4,555,328

METHOD AND APPARATUS FOR INJECTING LIQUID HYDROCARBON FEED AND STEAM INTO A CATALYTIC CRACKING ZONE

Frederick J. Krambeck, Cherry Hill; Stephen J. McGovern, Deptford, both of N.J., and John E. Sauer, Washington Crossing, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 19, 1984, Ser. No. 572,039
Int. Cl.[4] B01J *4/00, 8/18;* **C10G** *47/02, 35/14*
U.S. Cl. 208—157 **8 Claims**



1. A process of injecting a liquid hydrocarbon feedstock into a catalytic riser conversion zone which comprises:

(a) passing the liquid hydrocarbon feedstock, at a temperature effective to maintain said feedstock as a liquid at the pressure of said catalytic conversion zone, in parallel fashion through at least two confined passageways, each of said passageways having, at the downstream end thereof, a first flow restriction means effective to provide substantially the same flow rate of said feedstock through each of said confined passageways;

(b) passing a gaseous material in parallel fashion through at least two annular passageways, each of said annular passageways having a confined passageway extending longitudinally through a portion thereof in concentrically spaced relationship with respect to said confined passageway and each of said annular passageways having at the upstream end thereof a second flow restriction means in the form of an annular orifice effective to provide substantially the same flow rate of said gaseous material through each of said annular passageways;

(c) admixing said feedstock discharging from said first flow restriction means with said gaseous material, the relative linear velocity of said feedstock and said gaseous material being effective to atomize said feedstock to provide finely divided liquid droplets; and

(d) passing the admixture of step (c) into a catalytic conversion zone.

4,555,329

SELECTIVE FLOCCULATION OF COAL

Robert C. Sykes, Greenville, S.C.; Lawrence J. Connelly, Oak Lawn, and William J. Roe, Aurora, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

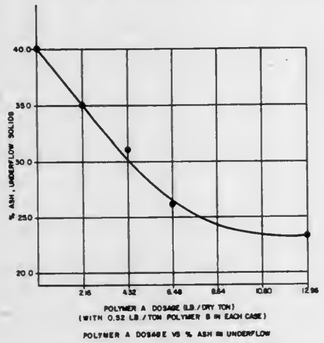
Filed Dec. 10, 1984, Ser. No. 679,728
Int. Cl.[4] B03D *3/06*
U.S. Cl. 209—5 **5 Claims**

1. A method of separating gangue from coal in a coal refuse slurry which comprises the selective flocculation of a coal refuse slurry by:

a. adding thereto an effective amount of an anionic vinyl polymeric dispersant having a molecular weight ranging between about 2,000–250,000, thereby forming a dispersed coal refuse slurry, and then,

b. adding thereto an effective amount of an anionic vinyl polymeric flocculant having a molecular weight ranging between about 1,000,000 and about 50,000,000, thereby forming a flocculating coal slurry,

c. allowing the flocculating coal slurry to settle without vigorous agitation, thereby forming a concentrated, settled coal slurry and a dispersed gangue slurry, and then
d. collecting the concentrated, settled coal slurry and removing water and dissolved salts therefrom to obtain a low-ash coal particulate, while separating



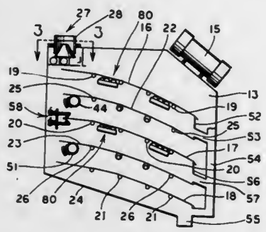
e. treating said dispersed gangue with a cationic flocculant or coagulant to form a flocculated and settled inorganic gangue and a recyclable aqueous phase, and finally
f. collecting the flocculated inorganic gangue and recycling the aqueous phase.

4,555,330

METHOD AND APPARATUS FOR SEPARATING MATERIAL

Masataka Tsutsumi, Canton, and Richard J. Frohman, Massillon, both of Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio

Filed Aug. 29, 1983, Ser. No. 526,951
Int. Cl.⁴ B07B *1/28*
U.S. Cl. 209—254 **13 Claims**



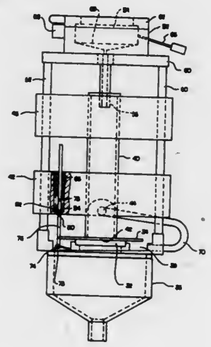
1. Apparatus for separating materials by size comprising:
frame means;
means to vibrate the apparatus to facilitate separating the materials, said means generating a vibratory throw;
a plurality of screen assemblies secured to said frame means and vertically arranged relative to each other;
a basin supported by said frame means;
a conically shaped flow diverter positioned within said basin and adapted to receive the material to be separated;
divider means extending upwardly within said basin and dividing said basin into approximately equal parts, said divider means engaging said flow diverter circumferentially and extending transversely therefrom, said flow diverter being partially recessed within said divider means, said divider means further being oriented within said basin so as to compensate for said vibratory throw of said means to vibrate whereby the material to be separated is transmitted approximately equally to said parts of said basin;
means to feed the material within each of said equal parts to a different of said screen assemblies uniformly across one dimension of said screen assemblies so that the material may be separated by size; and
means to transmit the material within at least some of said equal parts to said means to feed.

4,555,331

SELF-METERING SEMI-AUTOMATIC QUANTITATIVE FILTRATION ASSEMBLY

Michael G. Thornton, and Benton C. Clark, III, both of Littleton, Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Continuation of Ser. No. 556,029, Nov. 29, 1983, abandoned. This application Jan. 30, 1985, Ser. No. 696,863
Int. Cl.⁴ G01N *15/04*
U.S. Cl. 210—99 **34 Claims**



1. A filtering apparatus comprising:
means for supporting a filter medium,
measuring means to measure and to present a known quantity of fluid to a filter medium,
means to apply a vacuum to draw said known quantity of fluid through a filter medium,
said means to apply a vacuum including waste means to receive fluid drawn through a filter medium,
a fluid holding means adjacent and below a filter medium having means (i) for receiving and holding fluid in excess of said known quantity, which excess fluid does not pass through a filter medium and (ii) for receiving at least a portion of said known quantity of fluid positioned above a filter medium in said measuring means, which said portion of known quantity of fluid cannot pass through a filter medium,
said means for receiving comprising an inlet into said fluid holding means spaced laterally from a filter medium, and
outlet means in said fluid holding means for draining said fluid holding means into said waste means.

4,555,332

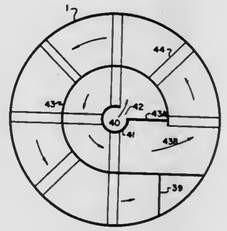
TREATMENT OF OIL WELL PRODUCTION

Alex W. Francis, Jr., Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 27, 1984, Ser. No. 574,312
Int. Cl.⁴ B01D *3/00*
U.S. Cl. 210—104 **5 Claims**

1. A system for stratifying liquids of oil well production containing a difficult-to-treat component of emulsion, including,
a cylindrical vessel vertically extended,

an inlet conduit mounted through the top of the vessel at its axis,
a cylindrical chamber formed coaxially with the vessel by a first baffle vertically extended within the vessel and connected to the inlet conduit to receive oil well production liquids,
an opening in the side of the chamber through which the production liquids flow into a first path segment formed by a second baffle vertically extended and concentric with the first baffle of the chamber,
a second path segment formed between the second baffle and the wall of the vessel and connected to and concentric with the first path segment whereby both flow path segments form a flat spiral to utilize the entire volume of the vessel to flow the production liquids,
a plurality of coalescing sections providing impact surfaces and spaced at predetermined distances along the length of the path which stratify the produced liquids into an upper



oil layer and a lower water layer and an intermediate layer continuing a major portion of difficult-to-treat emulsion,
a separate outlet conduit mounted through the vessel wall for each stratified layer at a second end of the flow path through which the liquid of each layer is separately withdrawn,
a first means mounted through the vessel wall at a predetermined height to sense the upper interface between the oil layer and the layer containing the difficult-to-treat emulsion,
a second means mounted through the vessel wall a predetermined vertical distance below the first sensing means with which to sense the interface between the water layer and the layer containing the difficult-to-treat emulsion, and
flow control means mounted in the outlet conduits connected to the first and second sensing means to control the rates of withdrawal from the two lower stratified layers which will maintain the height of the two interfaces at predetermined vertical distances.

4,555,333

SELF-PURGING SEPARATOR

Claude C. Laval, Jr., 2444 N. Farris Ave., Fresno, Calif. 93704

Filed Feb. 9, 1984, Ser. No. 578,779
Int. Cl.⁴ B04C *5/15*
U.S. Cl. 210—113 **1 Claim**

1. A self-purging separator for disposing of particulate matter borne by a liquid medium found in water wells and the like while submerged therein by segregating and accumulating such particulate matter and subsequently releasing accumulated particulate matter for gravitational descent down the well, the separator comprising:
A. a substantially cylindrical housing adapted to be submerged in a substantially erect attitude in said liquid medium containing particulate matter in a well and enclosing an elongated chamber having opposite upper and lower portions spaced from each other;
B. a substantially cylindrical vortex finder mounted on the housing in communication with the upper portion of the chamber disposed substantially centrally thereof and adapted to be connected in liquid transferring relation to a pump whereby such pump is operable to draw liquid from the chamber through the vortex finder;
C. means for admitting the liquid medium containing said particulate matter in which said housing is submerged to the upper portion of the chamber along a path substantially tangential to a circle concentric to the housing to fill the chamber and, when said pump is not operating, creating a substantial balance of liquid pressures within the chamber and outside the housing and whereby during operation of said pump the liquid medium containing said particulate matter enters the chamber through the admitting means, swirls downwardly and inwardly therein centrifuging the particulate matter outwardly thereof for descent in the chamber and the liquid medium from which the particulate matter has been removed thence swirls upwardly and out of the chamber through the vortex finder; and



D. a valve assembly mounted on the housing in communication with the lower portion of the chamber including a downwardly disposed annular valve seat mounted on the housing and defining a passage therethrough, and a flexible valve member, having a downwardly disposed surface and an upwardly disposed surface, mounted in communication with the lower portion of the chamber beneath the valve seat and flexibly positionable upwardly against the valve seat about the periphery of the passage in substantially sealing relation to the passage when the pressure on the downwardly disposed surface exceeds the pressure on the upwardly disposed surface to accumulate the particulate matter thereon and flexibly positionable downwardly from the valve seat to open the passage downwardly sufficiently to discharge particulate matter from the separator down the well when the pressure on the upwardly disposed surface exceeds the pressure on the downwardly disposed surface.

4,555,334

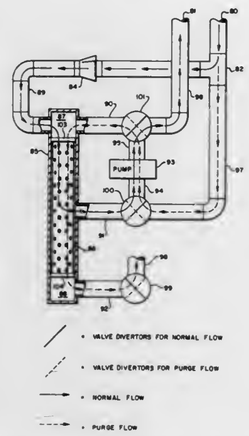
METHOD AND APPARATUS FOR CLEANING A PURGIBLE SWIMMING POOL STRAINER

Joseph D. Cohen, Frisco, Tex., assignor to Performance Pool Products, Ltd., Frisco, Tex.

Continuation-in-part of Ser. No. 477,378, Mar. 21, 1983. This application Jul. 22, 1983, Ser. No. 516,456
Int. Cl.⁴ B01D *29/38*
U.S. Cl. 210—169 **9 Claims**

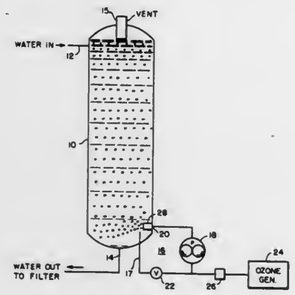
1. An apparatus for circulating water in a swimming pool comprising:
a strainer connected through a valve means to a swimming

pool intake for retaining particles from a flow of water from the swimming pool intake;
a pump connected through the valve means to the strainer for pumping water;
a filter for removing sediment from water received from the pump through the valve means;
a swimming pool return connected to the filter for depositing water from the filter into the swimming pool; and
the valve means for interconnecting said strainer, said pump,



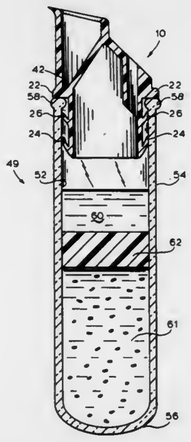
said filter, said swimming pool intake and said swimming pool return and for providing a first direction of water flow from the swimming pool intake through the strainer to the pump and to the filter and alternately providing a second direction of water flow from the swimming pool intake to the pump to the strainer to provide water flow substantially only across a single side of the strainer to remove particles retained thereon and to a waste receptacle wherein said water flow with removed particles are deposited.

4,555,335
OZONATOR FEED SYSTEM
W. Alan Burris, 7 E. Jefferson Cir., Pittsford, N.Y. 14534
Continuation of Ser. No. 912,870, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 569,765, Apr. 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 403,792, Oct. 5, 1973, abandoned. This application Mar. 23, 1982, Ser. No. 361,476
Int. Cl.⁴ C02F *1/78*
U.S. Cl. 210—192 **3 Claims**



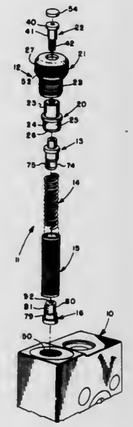
1. Apparatus for treating water with ozone comprising:
a. a tank for storing water at normal line pressure, said tank having an inlet near its top, an outlet near its bottom, and an auxiliary inlet near its bottom,
b. a by-pass circuit connected between the outlet of said tank and the auxiliary inlet,
c. a pump connected in said by-pass circuit for pumping water from the outlet of said tank back into said tank through said auxiliary inlet, said pump being of the positive displacement type and capable of pumping large quantities of gas entrained in the water without becoming airbound,
d. means for restricting the flow of water from said tank to said pump enough so that in operation the pump develops a suction at its inlet;
e. an ozone generator, and
f. means connecting the outlet of said ozone generator to the inlet of said pump so that in operation suction developed by the pump at its inlet draws gas from said generator into siad pump, said pump being the sole source of suction in the apparatus and providing substantially the only impetus drawing gas from the generator.

4,555,336
POUR SPOUT FOR CONTAINER WITH IMPROVED POURING FEATURE
Edward L. Nugent, North Caldwell, and Lawrence Lutkowski, East Rutherford, both of N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.
Filed Aug. 11, 1980, Ser. No. 176,932
The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.
Int. Cl.⁴ B01D *35/02*
U.S. Cl. 210—232 **17 Claims**



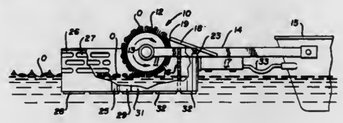
14. A container assembly which comprises:
a container having a side wall and enclosed by an end wall and formed with an opening at the other end thereof; and
a pouring spout disposed within the opening in said container, said pouring spout being comprised of a cylindrically shaped body side wall, a spout member, a screen means and a vent means, said cylindrically shaped body side wall enclosed at one end by a top wall and defining a first fluid channel, said spout member extending outwardly from said top wall and defining a second fluid channel having a fluid outlet orifice, said fluid channels being in fluid communication with each other and defining a fluid passageway for said liquid, said screen means angularly disposed in said fluid passageway for removal of solids from said liquid, said vent means providing for pressure equalization between said passageway and ambient atmosphere.

4,555,337
PLUG AND FILTER ASSEMBLY FOR PAINT SPRAYER
Eugene F. Gargas, Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed Oct. 23, 1984, Ser. No. 663,868
Int. Cl.⁴ B01D *29/10*
U.S. Cl. 210—238 **21 Claims**



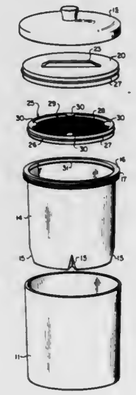
1. A plug and filter assembly removably securable in a paint head or the like having a filter chamber and a bore for insertion and removal of the assembly, said assembly comprising:
a sealing plug axially insertable into the paint head bore for sealing by an annular element to the inside of the paint head bore;
a cylindrical filter insertable into the paint head filter chamber;
means securing said filter coaxially to the inner end of said sealing plug;
a knob having a threaded portion for threaded engagement with a correspondingly threaded portion of the paint head and a head portion for turning of said knob; and
fastener means rotatably coupling said sealing plug and knob for axially driving of said sealing plug without rotation into and out of engagement with the sealing element upon turning of said knob when in threaded engagement with the paint head.

4,555,338
OIL SPILL COLLECTOR
Tony Marchionda, 708 Fifth St., Struthers, Ohio 44471
Filed Oct. 9, 1984, Ser. No. 658,999
Int. Cl.⁴ B01D *17/02*
U.S. Cl. 210—242.4 **7 Claims**



1. Apparatus for removing oil from the surface of a body of water comprising:
spaced mounting means at least partially above the body of water, a cylindrical roller journaled for rotation between said mounting means, said cylindrical roller having a porous deformable surface material partially submerged in the body of water, a breakwater extending from said spaced mounting means at least partially above said body of water and enclosing an area extending outwardly from said cylindrical roller, a collector blade adjacent said cylindrical roller for removing and collecting oil adhering to said absorbent material, means for rotating said cylindrical roller so that said absorbent material contacts the oil and moves the same beneath the water's surface and inunder said cylindrical roller and means for reversing said rotation of said cylindrical roller and engaging said collector blade on said absorbent material.

4,555,339
COOKING GREASE COLLECTION POT
James E. Graves, and Joan M. K. Graves, both of 312 Donax Ave., Imperial Beach, Calif. 92032
Filed Dec. 2, 1983, Ser. No. 557,617
Int. Cl.⁴ B01D *35/00, 35/28*
U.S. Cl. 210—244 **7 Claims**



1. A cooking grease collection pot comprising:
an outer upwardly opening container;
an inner upwardly opening container conformably shaped and dimensioned to be received within the outer container, the inner container being made of a material with sufficient heat resistance to prevent substantial deformation when directly contacted by grease which has been heated to cooking temperatures;
a lid for closing the opening of the inner container; and
means for preventing relative rotation between the containers when the inner container is received within the outer container;
wherein the outer container and the inner container are cylindrical, the outside diameter of the inner container is slightly smaller than the inside diameter of the outer container, and the rotation preventing means includes a plurality of circumferentially spaced, radially inwardly extending projections formed on an interior wall of the outer container, and a plurality of circumferentially spaced, radially inwardly extending notches formed on an exterior wall of the inner container each for receiving a corresponding projection when the inner container is inserted into the outer container.

4. A pot according to claim 1 further comprising a removable strainer including an annular ring and a layer of screen material attached to and covering the area enclosed by the ring, the ring having an annular rib formed on an exterior wall thereof and an outer diameter slightly smaller than the inner diameter of the upper end of the inner container so that the ring can be removably inserted into the upper end of the inner

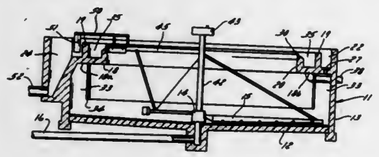
container with the annular rib snapping into an annular groove formed in the upper end of the interior container.

4,555,340

EXCESS OVERFLOW ORIFICE TUBES

William H. Boyle, Milwaukee, Wis., assignor to Envirex Inc., Waukesha, Wis.

Filed Oct. 26, 1983, Ser. No. 545,561
Int. Cl.⁴ B01D *21/24*
U.S. Cl. 210—248 **6 Claims**



1. In a sedimentation tank having a peripheral feed channel through which liquid can flow at varying elevations and with corresponding variations in hydraulic force; said channel provided with a floor and means defining a series of first stage orifices consisting of lower ports through which liquid can gradually flow from said feed channel into the tank without disturbing the sedimentation process, and an effluent weir which maintains the level of liquid in the tank within specified limits; wherein the improvement comprises:

means for maintaining the hydraulic force of said incoming liquid within predetermined limits, comprising;

means defining a plurality of second stage orifices extending through a side wall of said channel at an elevation at or above the floor of said channel between a normal liquid elevation and a predetermined maximum liquid elevation limit;

means defining a plurality of hollow overflow conduits in said side wall of said channel which correspond to and adjoin said second stage orifices to permit the passage of water from the channel into said tank without otherwise physically obstructing the flow of liquid in said channel or creating a turbulence in said tank; and

said overflow conduits including a scum baffle and weir for allowing liquid to flow under the baffle and over the weir while preventing floating material from passing into said tank.

4,555,341

POUR SPOUT FOR A CONTAINER WITH IMPROVED SCREENING FEATURE

Edward L. Nugent, North Caldwell, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

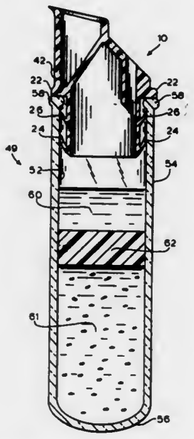
Filed Aug. 11, 1980, Ser. No. 176,931
The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.
Int. Cl.⁴ B01D *35/02*
U.S. Cl. 210—359 **5 Claims**

1. A pouring spout for use with a container for the withdrawal of a liquid from the container under conditions of controlled flow comprising:

a body side wall enclosed at one end by a top wall and defining a first fluid channel;

a spout member extending outwardly from said top wall and defining a second fluid channel having a fluid outlet orifice, said channels being in fluid communication with each other and defining a fluid passageway for said liquid;

screen means including diverging grate members defining increasing open areas at increasing pouring angles disposed in said fluid passageway for removal of solids from said liquid; and



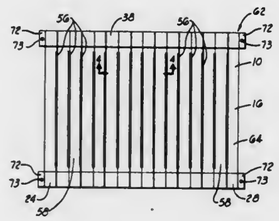
vent means for providing pressure equalization between said passageway and ambient atmosphere.

4,555,342

RIBBON FILTER APPARATUS

Blake F. Grant, Rte. 1, Box 264A, Hagerman, Id. 83332

Continuation-in-part of Ser. No. 393,183, Jun. 28, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 598,172
Int. Cl.⁴ B01D *25/04*
U.S. Cl. 210—488 **16 Claims**



1. A filter comprising:

a housing having an interior surface and an exterior surface;

at least one filtration module supported within the housing, comprising:

a first flexible sheet, comprising:

a first edge section;

an opposed second edge section; and

an interior section intermediate to the first and second edge sections, the interior section having a plurality of slits extending transversely to the edge sections, each adjacent pair of slits defining a ribbon element, each ribbon element disposed in a fully extended, flexible state;

a first lower terminal element having a corrugated first surface disposed in surface-to-surface engagement with each portion of the first edge section of the first flexible sheet; and

a first upper terminal element having a corrugated first surface disposed in surface-to-surface engagement with each portion of the second edge section of the first flexible sheet.

4,555,343

PROCESS OF LIQUID-LIQUID EXTRACTION OF METALS, WITH THE AID OF A MICROEMULSION, FROM AN AQUEOUS SOLUTION

Denise Bauer, Le Raincy; Jacques Komornicki, Lescar, and Jacques Tellier, Billere, all of France, assignors to Societe Nationale Elf Aquitaine, France

Filed Feb. 24, 1983, Ser. No. 469,241
Claims priority, application France, Feb. 26, 1982, 82 03231
Int. Cl.⁴ B01D *11/04*
U.S. Cl. 210—643 **14 Claims**

1. A process for the extraction of metal ions from an aqueous solution thereof which comprises:

mixing (a) an aqueous solution containing the metal ions and having a pH of 0.5 to 8, (b) a hydrophobic liquid containing an extractant for the metal ions, (c) an anionic or nonionic surfactant and (d) an alcohol co-surfactant, in a proportion such that the hydrophobic liquid forms a microemulsion with a portion of the aqueous solution;

allowing the mixture to separate into an aqueous layer and a microemulsion layer;

separating the aqueous layer from the microemulsion layer;

breaking the microemulsion; and

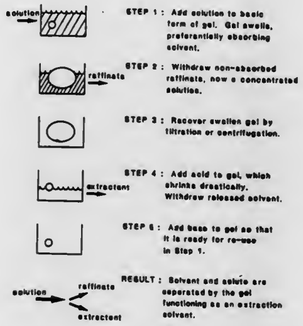
recovering the aqueous phase of the broken microemulsion.

4,555,344

METHOD OF SIZE-SELECTIVE EXTRACTION FROM SOLUTIONS

Edward L. Cussler, Edina, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Aug. 25, 1983, Ser. No. 526,275
Int. Cl.⁴ B01D *15/06, 15/08*
U.S. Cl. 210—670 **10 Claims**



1. A method of selectively extracting low molecular weight solvents from solutions of higher molecular weight solutes which comprises:

(A) admixing a solution of a high molecular weight solute in a low molecular weight solvent with either a cross-linked partially hydrolyzed ionic polymer gel or an ionic dextran gel, both gels capable of undergoing a rapid change in volume in response to change in pH,

(B) extracting a portion of the solvent from the solution by rapid swelling of the gel by selective absorption of the solvent under preselected pH conditions, thereby concentrating the solution,

(C) after absorption of a portion of the solvent by the gel, separating the concentrated solution from the swollen gel,

(D) after separation of the concentrated solution from the swollen gel, subjecting the gel to a change in pH whereby the gel shrinks to a reduced volume to release most of the absorbed solvent, and

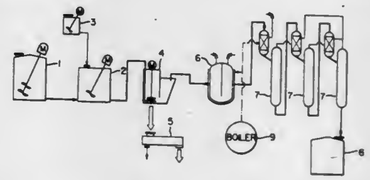
(E) separating the solvent from the reduced volume gel.

4,555,345

METHOD OF TREATMENT FOR SEPARATION OF OIL FROM OIL-CONTAINING SLURRY WASTE

Tadayuki Yoshida, Fukuoka, Japan, assignor to Sankyo Yuki Kabushiki Kaisha, Fukuoka and Arai Shoji Kabushiki Kaisha, Hiratuka, both of, Japan

Continuation of Ser. No. 596,576, Apr. 5, 1984, abandoned, which is a continuation of Ser. No. 336,320, Dec. 31, 1981, abandoned. This application Mar. 11, 1985, Ser. No. 709,365
Claims priority, application Japan, Jan. 22, 1981, 56-7140; Jun. 19, 1981, 56-93942
Int. Cl.⁴ C02F *1/24, 1/52*
U.S. Cl. 210—705 **17 Claims**



1. In the treatment of an oil-containing waste slurry containing sewage sludge, human or animal excrement, household waste, or industrial organic effluents from food processing or wool scouring plants, or mixtures of these materials, a method for separating an oil component from said oil-containing waste slurry comprising the steps of:

adding a saponifying agent to the waste slurry to saponify part of the oil or fat contained therein;

stirring the waste slurry containing the thus-formed soap to effect foaming of the waste slurry, whereby the remaining oil component adheres to the foam and rises to the surface of the waste slurry due to buoyancy; and

separating the foam to which the oil component adheres from said waste slurry so that said waste slurry is converted to a slurry with a low oil content, wherein said separated foam to which the oil component adheres is in the form of a water-containing oil component, wherein said saponifying agent is selected from the group consisting of potassium hydroxide and sodium hydroxide in an amount of 1/100 to 1/30 parts by weight based on the amount of the organic substances present in the waste slurry.

4,555,346

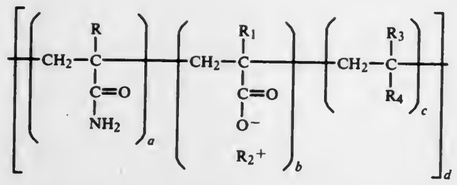
PROCESS FOR FLOCCULATING PHOPHATIC SLIMES

Meyer R. Rosen, Spring Valley, N.Y.; You-Ling Fan, East Brunswick, N.J., and Nan S. Chu, Hartsdale, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 302,141, Sep. 14, 1981, abandoned. This application Sep. 17, 1984, Ser. No. 651,338
Int. Cl.⁴ B01D *21/01*
U.S. Cl. 210—734 **10 Claims**

1. A process for flocculating phosphatic slimes which comprises:

(a) forming a concentrated aqueous solution from a water-soluble, ter- or higher polymer water-in-oil emulsion, wherein said polymer has the formula containing the repeating units as follows:



wherein:

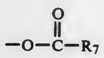
R, R_1 and R_3 are independently hydrogen or methyl;

R_2^+ is an alkali metal ion;

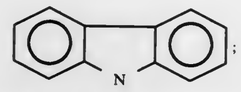
R_4 is OR_5 wherein R_5 is an alkyl group having up to 5 carbon atoms;



wherein R_6 is an alkyl group having up to 8 carbon atoms;



wherein R_7 is methyl, ethyl or butyl; phenyl; substituted phenyl; CN or



a is from about 30 to about 90 mole percent;

b is from about 5 to about 60 mole percent;

c is from about 1 to about 10 mole percent;

d is an integer of from about 1,000 to about 500,000;

and wherein said polymer has an intrinsic viscosity from about 15 to about 28 dl/g as measured in a one normal aqueous sodium chloride solution;

(b) diluting said concentrated aqueous solution of ter- or higher polymer formed in step (a) with additional water;

(c) mixing the diluted solution of step (b) with phosphatic slimes under floc forming conditions; and

(d) allowing the suspended solids to settle from said slime to form an essentially clear aqueous supernatant.

4,555,347

IODINE DISINFECTION DISPENSER

Dennis H. O'Dowd, 4070 Old Dundas St. W., Toronto, Ontario M6S 2R6, and George W. J. Barry, 2063 Lakeshore Blvd. W., Toronto, Ontario M8V 1A1, both of Canada

Continuation-in-part of Ser. No. 441,909, Nov. 15, 1982, abandoned. This application Apr. 20, 1984, Ser. No. 602,353

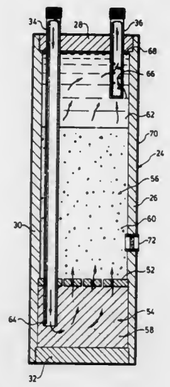
Int. Cl.⁴ C02F *1/50*

U.S. Cl. 210—752 **21 Claims**

1. A method of providing a disinfectant carried by a supply of water flowing through a conduit, comprising introducing a predetermined portion of the water into a sealed container having a reservoir and a chamber below the reservoir in intercommunication therewith, the chamber containing a bed of filter material, the reservoir holding a quantity of iodine crystals lying in a bed in the bottom portion of the reservoir and being of a predetermined size sufficient to hold a quantity of water proportional to the maximum flow rate attainable through the conduit and such that a minimum concentration of 120 parts per million (milligrams per liter) is obtainable as an outflow from the container when the supply of water is at least above freezing, the predetermined portion of the water being introduced into the chamber and through a first tube having an outlet portion opening into the chamber and outflowing from the reservoir through a second tube opening into the reservoir above the iodine crystals said second tube projecting into the reservoir and closed at the end thereof, and carrying a plurality of slots adjacent the closed end of the passage of water, the slots being of a size to prevent the passage of crystalline iodine therethrough whereby all said water portion passes through the filter material and between the iodine crystals.

9. A device for providing a disinfectant carried by a supply of water flowing through a conduit, comprising:

a sealed container having a reservoir and a chamber below the reservoir in intercommunication therewith, the reservoir holding a quantity of iodine crystals lying in a bed in the bottom portion of the reservoir and being of a predetermined size sufficient to hold a quantity of water proportional to the maximum flow rate attainable through the



conduit and such that a maximum concentration of 120 parts per million (milligrams per liter) is obtainable as an outflow from the container when the supply of water is at least above freezing, the chamber below the reservoir containing a bed of filter material;

inlet means for the connection with the water supply and opening into the chamber, and outlet means opening from the reservoir above the iodine crystals, the inlet means comprising a first tube having an outlet portion opening into the chamber and the outlet means comprising a second tube opening into the reservoir above the bed of iodine crystals said second tube projecting into the reservoir and closed at the end thereof, and carrying a plurality of slots adjacent the closed end for the passage of water, the slots being of a size to prevent the passage of crystalline iodine therethrough, whereby all said water portion throught the filter material and between the iodine crystals.

4,555,348

LIQUID BUFFER SYSTEM

James C. Moran, Taylors, S.C., assignor to Sybron Chemicals Inc., Birmingham, N.J.

Filed Jun. 28, 1984, Ser. No. 625,755

Int. Cl.⁴ C09K *3/00*; D06P *1/00*

U.S. Cl. 252—1 **5 Claims**

1. A premixed low pH liquid buffer suitable for use as a direct textile bath additive which consists essentially of a water solution in the following percent by weight:

Monosodium Phosphate: 13–40

Phosphoric Acid: 5–30

Water: Balance

2. A premixed high pH liquid buffer suitable for use as a direct textile bath additive which consists essentially of a water solution in the following percent by weight:

Tripotassium Phosphate: 20–50

Potassium Hydroxide: 2.5–20

Water: Balance

4,555,349

FABRIC SOFTENING COMPOSITIONS

Robert M. Butterworth, and Martin A. Wells, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,584

Claims priority, application United Kingdom, Apr. 8, 1983, 8309664

Int. Cl.⁴ C11D *1/62, 3/20*

U.S. Cl. 252—8.6 **6 Claims**

1. A concentrated liquid fabric softening composition comprising:

(i) an aqueous base;

(ii) at least 8% by weight of a water-insoluble cationic fabric softening agent;

(iii) a nonionic material having a HLB of not more than 10, selected from C_8–C_{24} fatty acids, the weight ratio of the cationic fabric softening agent to the fatty acid being not more than 4.6:1; and

(iv) from 10 ppm to 3,000 ppm of an electrolyte wherein said electrolyte is a salt of alumimium.

4,555,350

CARBAMATES OF BETA-HYDROXYETHYLSULFOXIDES

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

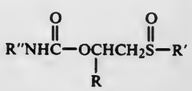
Division of Ser. No. 408,763, Aug. 17, 1982, Pat. No. 4,511,730. This application Aug. 20, 1984, Ser. No. 642,552

Int. Cl.⁴ E21B *43/22*

U.S. Cl. 252—8.55 D **3 Claims**

1. A method of injecting a micellar slug into a subterranean formation to enhance oil recovery comprising the steps of:

(1) contacting said formation with an aqueous fluid composition comprising water, a surfactant, a hydrocarbon, an electrolyte and a co-surfactant comprising a carbamate of a beta-hydroxyethylsulfoxide of molecular weight of from about 400 to about 1000, wherein the said carbamate is of the forumla



wherein R, R′ and R″ are individually selected from the group consisting of radicals derived from benzene, biphenyl, naphthalene, anthracene, and phenanthrene; alkyl moieties of 1 to 22 carbon atoms, and aralkyl moieties, alkylated aryl moieties, and cycloalkyl moieties containing 4 to 40 carbon atoms, the ring radicals of said moieties being selected from the group consisting of phenyl, biphenyl and cyclohexyl radicals, wherein R′ can be substituted with nitro, halogen, cyano and carboalkoxy moieties of 1 to 12 carbon atoms,

(2) applying sufficient pressure to said composition to cause said micellar slug to move through said formation,

(3) maintaining sufficient pressure while injecting said composition into said formation,

(4) and recovering oil from said formation.

4,555,351

MICELLAR SLUG FOR OIL RECOVERY

Hiroshi Morita, Chiba; Yasuyuki Kawada, Funabashi; Junichi Yamada, and Toshiyuki Ukigai, both of Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 458,360, Jan. 17, 1983, Pat. No. 4,532,053. This application Mar. 31, 1983, Ser. No. 480,770

Claims priority, application Japan, Jan. 28, 1982, 57-10858

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.⁴ E21B *43/22*

U.S. Cl. 252—8.55 D **6 Claims**

1. A micellar slug for use in the recovery of oil, said slug consisting essentially of a hydrocarbon, an aqueous medium containing about 2% to 15% inorganic salt, a surfactant and a consurfactant said surfactant containing, as an essential component, an internal olefin sulfonate having 10 to 26 carbon atoms the difference between the maximum and minimum carbon numbers of the internal olefin sulfonates being not more than 5 and the content of the same carbon number component of the internal olefin sulfonates present in the largest amount in the internal olefin sulfonates being 80% by weight or more.

4,555,352

LUBRICANT ADDITIVE

Alfred V. Garner, and William W. Nalder, both of Raymond, Canada, assignors to Power-Aid Industries (1980) Ltd., Raymond, Canada

Continuation-in-part of Ser. No. 483,288, Apr. 8, 1983, abandoned. This application Jul. 13, 1984, Ser. No. 630,683

Int. Cl.⁴ C10M *1/54*

U.S. Cl. 252—35 **43 Claims**

1. A heavy duty lubricant additive composition comprising:

(1) from about 5% to about 45% by weight of a lead soap of an organic acid, said lead soap being in the form of a solution in a liquid organic solvent therefor, said solution containing from 10%–32% by weight lead;

(2) 20%–50% by weight of an oil having a viscosity in the range of from about 45 SUS at 100° F. to about 3000 SUS at 100° F.; and

(3) 5%–40% by weight of diesel oil, or of a hydrocarbon oil having physical characteristics comparable to said diesel oil; said composition functioning both as a friction-reducing agent and as an extreme pressure (EP) additive.

4,555,353

BORATED PHOSPHONATES AS LUBRICANT AND FUEL ADDITIVES

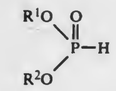
Andrew G. Horodysky, Cherry Hill, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 535,131, Sep. 23, 1983, Pat. No. 4,522,629. This application Mar. 13, 1985, Ser. No. 695,607

Int. Cl.⁴ C10M *1/10*

U.S. Cl. 252—49.6 **19 Claims**

1. A lubricant composition comprising a major proportion of a lubricant and from about 0.1 to about 10% by weight of the total composition of a reaction product made by reacting a hydrocarbyl vicinal diol containing 10 to 30 carbon atoms, a dihydrocarbyl phosphite of the formula



wherein R^1 is a hydrocarbyl group containing 1 to 30 carbon atoms and R^2 is a hydrocarbyl group containing 1 to 6 carbon atoms and a boron compound, the reaction being run at from about 70° C. to about 260° C. using amounts of reactants such

that in the final product at least about 5% of the hydroxy groups originally available are borated.

4,555,354

DETERGENTS PRODUCTS

David E. Clarke; James F. Davies; Colin Smart, and John B. Tune, all of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 536,137, Sep. 26, 1983, abandoned, which is a continuation of Ser. No. 383,648, Jun. 1, 1982, abandoned, which is a continuation of Ser.No. 198,013, filed as PCT GB 79/00189, Nov. 16, 1979, published as WO 80/01076, May 29, 1980 § 102(e) Jul. 14, 1980, abandoned.
This application Aug. 31, 1984, Ser. No. 645,898
Claims priority, application United Kingdom, Nov. 17, 1978, 45105/78
Int. Cl.⁴ C11D *17/04*
U.S. Cl. 252—90 **2 Claims**

1. In a detergent product in the form of a particular detergent composition suitable for treating fabrics in a washing machine, contained within a closed water-insoluble bag adapted to open in a washing machine environment, the improvement which comprises forming said bag at least partially of thermoplastic material and closing said bag with a mechanically weak heat seal including a layer of water-insoluble non-heat-sealable material positioned between the heat sealed surfaces to provide weakening of said heat seal, whereby under the influence of mechanical action during a wash cycle in a washing machine said mechanically weak heat seal opens and the contents of said bag are discharged.

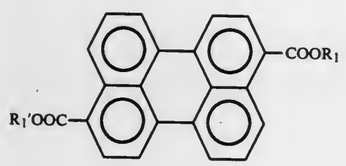
4,555,355

COMPOSITION FOR LIQUID CRYSTAL COLOR DISPLAY

Yasuyuki Yamada; Tadaaki Tanaka, both of Ohmuta; Ryoichi Tukahara, Mobara, and Tsutomu Nishizawa, Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 385,400, filed as PCT JP 81/00258, Sep. 30, 1981, published as WO 82/01191, Apr. 15, 1982 § 102(e) date May 21, 1982, Pat. No. 4,459,218.
This application Nov. 22, 1983, Ser. No. 552,302
Claims priority, application Japan, Oct. 3, 1980, 55-137779
Int. Cl.⁴ C09K *3/34*; G02F *1/13*
U.S. Cl. 252—299.1 **7 Claims**

1. A composition for liquid crystal color display, said composition comprising at least one nematic liquid crystal and at least one perylenedicarboxylic acid ester dye represented by the following formula (II):



(II)

wherein R_1' and R_1 are identical or different, and each represents a cyclohexyl, bicyclohexyl, cyclohexylphenyl, phenyl or biphenyl group which may be substituted by a halogen atom, an alkyl group having 1 to 15 carbon atoms or alkoxy group having 1 to 15 carbon atoms; or a group of the formula, Alk—X, wherein Alk represents an alkylene group having 1 to 15 carbon atoms which may be branched and X represents a phenyl group which may be substituted by an alkyl group having 1 to 4 carbon atoms, nitrile group, a halogen atom or a hydroxyl group.

4,555,356

WOOD PRESERVATIVE SYSTEM COMPOSITION

Richard J. Guglielmo, Sr., Cresskill, N.J., assignor to EMA Company, Cresskill, N.J.

Continuation-in-part of Ser. No. 888,373, Mar. 20, 1978, Pat. No. 4,393,102, and a continuation-in-part of Ser. No. 341,275, Jan. 21, 1982. This application Jun. 27, 1983, Ser. No. 508,521
The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.
Int. Cl.⁴ C09K *15/32*
U.S. Cl. 252—400 R **8 Claims**



1. A wood preservative composition comprised of a tri-n-butyl tin ester selected from the group consisting of tri-n-butyl tin linoleate, bis(tri-n-buty)tin succinate, tri-n-butyl tin benzoate, tri-n-butyl tin salicylate and mixtures thereof in an amount of from 2 to 15 percent by weight in a solvent system.

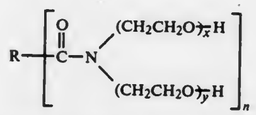
4,555,357

POLYACETAL RESIN COMPOSITION

Takuzo Kausga; Yukio Ikenaga, and Kunio Suzuki, all of Fuji, Japan, assignors to Polyplastics Company, Ltd., Osaka, Japan

Filed Sep. 12, 1983, Ser. No. 531,551
Claims priority, application Japan, Sep. 16, 1982, 57-161500
Int. Cl.⁴ H01B *1/06*
U.S. Cl. 252—511 **12 Claims**

1. A thermally stable, electrically conductive polyacetal resin composition, comprising a polyoxymethylene or a polyacetal copolymer having consecutive oxymethylene units in its main chain, 3–30 weight % based on the total resin composition of electrically conductive carbon black, and 0.1–15 weight % based on the total resin composition of an amide compound represented by the general formula:



wherein R represents a carboxylic acid residue selected from saturated and unsaturated hydrocarbon groups having 2–23 carbon atoms or a basic unit of a vinyl polymer or a vinyl copolymer, x and y are each 0 or an integer of 1–10 and n is an integer of 1–6.

4,555,358

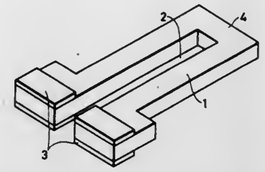
ELECTRICALLY CONDUCTIVE SINTERED CERAMICS AND CERAMIC HEATERS

Yasuo Matsushita; Kousuke Nakamura, and Koji Harada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1983, Ser. No. 497,577
Claims priority, application Japan, May 28, 1982, 57-89926
Int. Cl.⁴ H01B *1/04*
U.S. Cl. 252—516 **5 Claims**

1. A ceramic heater comprising a heater element consisting of an electrically-conductive, sintered ceramic body and heat-resistant metallic elements adapted to connect power-supply wires to both ends of said heater element, said ceramic body consisting essentially of (a) silicon carbide and (b) a non-oxide ceramic material other than silicon carbide which exhibits a positive resistance-temperature coefficient, said component (b) consisting of at least one substance selected from the group consisting of zirconium boride, titanium boride, zirconium silicide, molybdenum silicide, tantalum silicide, titanium nitride, zirconium nitride, tantalum carbide, zirconium carbide, titanium carbide, tantalum boride, hafnium boride, hafnium nitride, niobium boride, niobium carbide and tungsten carbide, the quantity of powder of said component (b) being 10 to 200 parts by weight based on 100 parts by weight of power of said component (a), said electrically-conductive, sintered ceramic body thereby exhibiting a generally positive resistance-temperature coefficient and a resistivity smaller than 1 Ωcm.

2. A ceramic heater comprising a heater element consisting of an electrically-conductive, sintered ceramic body and heat-resistant metallic elements adapted to connect power-supply wires to both ends of said heater element, said ceramic body consisting essentially of (a) silicon carbide, (b) a non-oxide ceramic material other than silicon carbide which exhibits a positive resistance-temperature coefficient and (c) a sintering additive, said component (b) consisting of at least one substance selected from the group consisting of zirconium boride, titanium boride, zirconium silicide, molybdenum silicide, tantalum silicide, titanium nitride, zirconium nitride, tantalum carbide, zirconium carbide, titanium carbide, tantalum boride, hafnium boride, hafnium nitride, niobium boride, niobium carbide and tungsten carbide, the quantity of powder of said component (b) being 10 to 200 parts by weight based on 100 parts by weight of powder of said component (a), said electrically-conductive, sintered ceramic body thereby exhibiting a generally positive resistance-temperature coefficient and a resistivity smaller than 1 Ωcm, and said sintering additive (c) consisting of a substance selected from the group consisting of an aluminum compound and a boron compound, the quantity of said sintering additive in the mixture of (a), (b) and (c) being between 0.1 to 3% by weight, based on the aluminum or boron content.



4,555,359

TRIMETHYLBICYCLO [4.3.0] NON-1-ENE DERIVATIVES

Klaus Bruns, and Ursula Weber, both of Krefeld-Traar, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,744
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212326
Int. Cl.⁴ A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 R **17 Claims**

1. A fragrant mixture of three isomers of trimethylbicyclo[4.3.0]non-1-ene wherein the methyl groups are positioned in the respective isomers in the 7,9,9, the 7,7,9 and the 6,8,8 positions and which are substituted in the 4 and 5 positions by substituents selected from the group consisting of hydrogen, lower alkyl, carbaldehyde and lower alkanoyl wherein at least one carbaldehyde or one lower alkanoyl is present in either the 4 or 5 position but not in both.

4,555,360

MILD DETERGENT COMPOSITIONS

Donald L. Bissett, Hamilton, and Mark H. K. Mao, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 22, 1984, Ser. No. 623,817
Int. Cl.⁴ C11D *1/75, 1/83, 1/90, 1/94*
U.S. Cl. 252—541 **2 Claims**

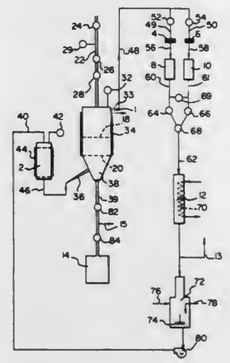
1. A mild foaming detergent composition comprising:
(1) from about 10% to about 40% of a mild, water-soluble, foaming anionic detergent surfactant having the generic formula RE_xSM wherein R is an alkyl group containing from about 12 to about 15 carbon atoms; Ξ represents an ethylene oxide moiety; x is a number from about 1 to about 12 on the average; S is a sulphate group; and M is selected from the group consisting of alkaline metal, alkaline earth metal, ammonium and substituted ammonium cation;
(2) from about 1% to about 10% of a surfactant selected from the group consisting of cetyl dimethyl betaine, cetyl amido propyldimethyl betaine, and mixtures thereof;
(3) from about 2% to about 10% of an alkyldimethylamine oxide suds booster wherein the alkyl group contains from about 10 to about 14 carbon atoms, wherein when said composition contains harsh surfactants such as C_{10-16} alkyl sulfates and C_{6-13} alkylbenzene sulfonates, said harsh surfactants are complexed with the amine oxide compound to make them milder, and wherein the ratio of (1) to (2) is from about 3:1 to about 10:1.

4,555,361

METHOD OF REDUCING THE VOLUME OF SOLID RADIOACTIVE WASTE

Leo P. Buckley; Kenneth A. Burrill, both of Deep River; Conrad D. Desjardins, and Robert S. Salter, both of Fredericton, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed May 17, 1983, Ser. No. 495,538
Claims priority, application Canada, Aug. 8, 1982, 409849
Int. Cl.⁴ G21F *9/14, 9/32*
U.S. Cl. 252—626 **5 Claims**



1. A method of reducing the volume of solid radioactive waste, comprising:
(a) pyrolyzing the radioactive waste in the interior of a vessel, while
(b) passing superheated steam through the vessel at a temperature in the range 500° to 700° C., a pressure in the range 1.0 to 3.5 MPa, and at a flow rate in the range 4 to 50 grams/second/cubic meter of the volume of the vessel interior, to cause pyrohydrolysis of the waste and to remove carbon-containing components of the waste from the vessel as gaseous decomposition products in the form of carbon monoxide and hydrogen leaving an ash residue in the vessel,

(c) filtering any entrained particles present with the gaseous decomposition products,
(d) removing any acidic vapours present with the gaseous decomposition products by solid sorbent,
(e) condensing steam and any organic substances present with the gaseous decomposition products, and
(f) removing the ash residue from the vessel.

4,555,362

METHOD AND INTERMEDIATES FOR PRODUCING α-L-ASPARTYL-L-PHENYLALANINE

Hugh L. Dryden, Jr, Deerfield, and John B. Hill, Woodstock, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 580,912, Feb. 16, 1984, which is a division of Ser. No. 506,465, Jun. 20, 1983, Pat. No. 4,440,677.
This application May 15, 1984, Ser. No. 610,376
Int. Cl.⁴ C07C *103/52*
U.S. Cl. 260—112.5 R **2 Claims**

1. A chemical reaction mixture for preparing α-L-aspartyl-L-phenylalanine methyl ester containing a compound of the class consisting of N-acetoacetyl-L-aspartic acid, N-acetoacetyl-L-aspartic anhydride and N-acetoacetyl-α-L-aspartyl-L-phenylalanine.

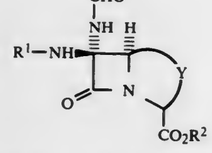
4,555,363

PROCESS FOR THE PREPARATION OF β-LACTAM COMPOUNDS

Peter H. Milner, Ridgwick, England, assignor to Beecham Group p.l.c., England

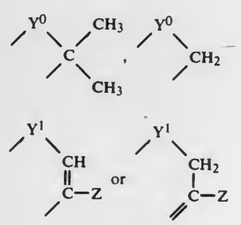
Filed Jan. 19, 1984, Ser. No. 572,196
Claims priority, application United Kingdom, Jan. 21, 1983, 8301688; Jun. 24, 1983, 8317199
Int. Cl.⁴ C07D *499/04, 501/02*
U.S. Cl. 260—239.1 **9 Claims**

1. A process for the preparation of a compound of formula (III) or a salt thereof:



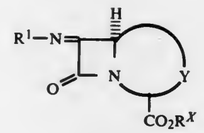
(III)

wherein R^1 is an acyl group, R^2 is hydrogen or a readily removable carboxyl protecting group; and Y is



wherein Y^o is sulphur, SO or SO_2, Y^1 is oxygen, sulphur, SO, SO_2 or $—CH_2—$ and Z represents hydrogen, halogen, or an organic group such as C_{1-4} alkoxy, $—CH_2Q$ or $—CH=CH—Q$

wherein Q represents hydrogen, halogen, hydroxy, mercapto, cyano, carboxy, carbamoyloxy, carboxylic ester, C_{1-4} alkyloxy, acyloxy, aryl, heterocyclyl group bonded via carbon, a heterocyclylthio group or a nitrogen containing heterocyclic group bonded via nitrogen, which process comprises treating an intermediate imine of formula (IV):



(IV)

wherein any reactive groups may be protected; R^1 and Y are as hereinbefore defined; and R^x is a readily removable carboxy protecting group; with a nucleophilic derivative of formamide and thereafter, if necessary, carrying out one or more of the following steps:
(i) removing any protecting groups;
(ii) converting a group R^x to a group R^2;
(iii) converting one group Z into a different group Z;
(iv) converting the product into a salt.

4,555,364

METHOD FOR PREPARING 1-HYDROXYVITAMIN D COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes; Seok H. Lee, all of Madison, and Mary E. Phelps, Stoughton, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 1, 1984, Ser. No. 667,296
Int. Cl.⁴ C07J *9/00*
U.S. Cl. 260—397.2 **11 Claims**

1. A method for preparing 1-hydroxyvitamin D compounds, which comprises treating a 1-hydroxy-3,5-cyclovitamin D compound with a mixture of dimethylsulfoxide and an organic acid, whereby the non-acylated 1-hydroxyvitamin D compound and its 5,6-trans-isomer are obtained in admixture and, optionally, separating said mixture to recover one or both 1-hydroxyvitamin D components.

4,555,365

ISOPRENYLIC ACID AMIDE DERIVATIVES

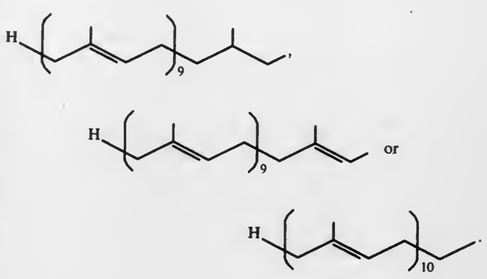
Yoshiyuki Tahara, Tsurugashima; Toshihiro Takahashi, Kawagoe; Hiroyasu Koyama, Ageo; Yoshikuni Suzuki, Ohmiya, and Masatoshi Yasuda, Kitakyushu, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan

Filed Feb. 17, 1984, Ser. No. 581,345
Claims priority, application Japan, Feb. 21, 1983, 58-26215
Int. Cl.⁴ C07C *103/133*
U.S. Cl. 260—404 **6 Claims**

1. An isoprenylic acid amide derivative represented by the general formula

$$R_1—CO—NH_2$$

wherein R_1 is



4,555,366

NON-EMISSIVE, FLAME-RETARDANT COATING COMPOSITIONS

Stephen D. Rodgers, Bowie, Md.; Richard J. Dick, Columbus, and Vincent D. McGinnis, Delaware, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Division of Ser. No. 199,843, Oct. 23, 1980, Pat. No. 4,405,761.
This application Sep. 29, 1982, Ser. No. 427,908
Int. Cl.⁴ C09F *5/00, 7/00;* C11C *3/00*
U.S. Cl. 260—404.8 **7 Claims**

1. A cationic, non-emissive, non-flame promoting, room-temperature curable surface-active agent which comprises a polyhalogenated compound containing a cationic group and a room-temperature curable group selected from the group consisting of an oxirane group, an air-dryable group derived from an air-dryable fatty acid, an air-dryable allyl ether group, and combinations thereof.

4,555,367

PURIFICATION OF ACRYLONITRILE

Joseph M. Schmitt, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 362,364, Mar. 26, 1982, abandoned, Continuation-in-part of Ser. No. 258,104, Apr. 27, 1981, abandoned. This application Jan. 3, 1984, Ser. No. 571,631
Int. Cl.⁴ C07C *121/32*
U.S. Cl. 260—465.9 **8 Claims**

1. A method for reducing the acrolein impurity content in an acrylonitrile monomer composition containing a finite amount of acrolein impurity in an amount of 24 parts per million or less of acrolein, said method comprising contacting the acrylonitrile-acrolein mixture with an amount of an alkali metal borohydride effective to reduce the content of said acrolein impurity but insufficient to catalyze polymerization of said acrylonitrile monomer composition.

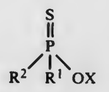
4,555,368

PROCESS FOR SYNTHESIZING DIORGANOMONOTHIOPHOSPHINATES

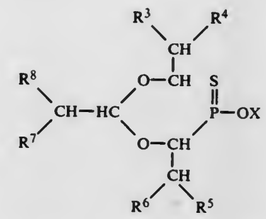
Allan J. Robertson, Thorold, Canada, assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 28, 1984, Ser. No. 675,492
Int. Cl.⁴ C07F *9/30*
U.S. Cl. 260—502.4 R **10 Claims**

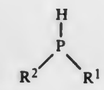
1. A method for making a diorganomonothiophosphinate compound of the formula:



wherein R^1 and R^2 are each, independently, selected from saturated and unsaturated hydrocarbyl radicals, alkyl polyether radicals, and aromatic radicals; and such radicals optionally and independently substituted with polar groups selected from halogen, nitrile and nitro groups; or wherein R_1 and R_2 together form a heterocyclic ring having the formula:



wherein R^3, R^4, R^5, R^6 R^7 and R^8 are each, independently, selected from hydrogen and C_1–C_{12} alkyl; and X is selected from the group consisting of hydrogen, alkali or alkaline earth metals and NH_4; said process comprising:
(a) providing a reactive mixture of at least one diorganophosphine compound of the formula:



in an aqueous medium;
(b) oxidizing the diorganophosphine compound in (a) under controlled temperature conditions of between about 40° to about 60° C. by adding an amount of an oxidizing agent sufficient to oxidize substantially all of the diorganophosphine in (a) to the corresponding diorganophosphine oxide;
(c) heating the reactive mixture of step (b) to an elevated temperature and adding an excess amount of sulfur and an excess amount of an hydroxide compound selected from the group consisting of water, alkali metal or alkaline earth metal hydroxides and ammonium hydroxide; and
(d) thereafter permitting the reaction to proceed until formation of the diorganomonothiophosphinate compound is substantially complete.

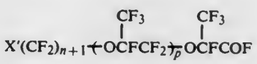
4,555,369

FLUORINATED ETHER ACYL FLUORIDES HAVING ALKYLTHIO OR ALKYLSULFONE GROUPS

Kyoji Kimoto, Kanagawa; Hirotsugu Miyauchi, Tokyo; Jukichi Ohmura, Kanagawa; Mikio Ebisawa, Kanagawa, and Toshioki Hane, Kanagawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 299,164, Sep. 3, 1981, Pat. No. 4,510,328, which is a division of Ser. No. 152,847, May 23, 1980, Pat. No. 4,329,434. This application Aug. 29, 1983, Ser. No. 527,425
Claims priority, application Japan, May 31, 1979, 54-67888; May 31, 1979, 54-67889; Jul. 9, 1979, 54-85852; Jul. 18, 1979, 54-90301; Jul. 18, 1979, 54-90302
Int. Cl.⁴ C07C *53/50*
U.S. Cl. 260—544 F **5 Claims**

1. A fluorinated acid fluoride represented by the formula:



wherein X′ is —SR or $—SO_2R$, R is C_1–C_{10} alkyl, C_1–C_{10} perfluoroalkyl, an aryl or chlorine, n is an integer of 2 to 4 and p is an integer of 0 to 50.

4,555,370

PROCESS FOR THE PREPARATION OF ACYL CYANIDES

Erich Klauke, and Kurt Findeisen, both of Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 487,242, Apr. 27, 1983, abandoned, which is a continuation of Ser. No. 252,717, Apr. 10, 1981, abandoned. This application Oct. 5, 1984, Ser. No. 658,444
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015587
Int. Cl.⁴ C07C *121/76*
U.S. Cl. 260—545 R **19 Claims**

1. In a process for the preparation of an acyl cyanide of the formula

$$R—CO—CN \quad (I)$$

wherein

R is an optionally substituted alkyl with 1 to 8 carbon atoms; an optionally substituted cycloalkyl with 3 to 12 carbon atoms; an optionally substituted aryl; an optionally substituted 5- or 6-membered heterocyclic radical which can additionally be fused to a benzine ring,

the improvement comprising reacting a carboxylic acid fluoride of the formula

R—CO—F (II)

in which

R is identified as above,

with an alkali metal cyanide, in the absence of a heavy metal salts catalyst or a phase transfer catalyst, at a temperature of from 20° to 150° C.

4,555,371

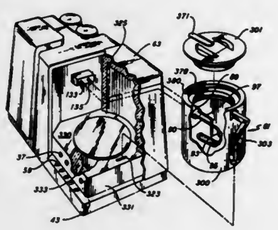
CARBONATOR FOR A BEVERAGE DISPENSER

Edward L. Jeans, Monmouth, Wales, assignor to Cadbury Schweppes, Plc, London, England

Continuation-in-part of Ser. No. 140,685, Apr. 16, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 393,298

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—122 **24 Claims**



19. A diluent tank for use in a beverage dispenser comprising:

(a) a tank body for containing a supply of diluent having a threaded opening therein;

(b) a threaded cover for covering said sealing said opening;

(c) means for relieving pressure in said tank prior to removal of said cover;

(d) means for connecting a source of pressurizing gas to said tank and for conducting diluent from said tank; and,

(e) means for preventing said cover from being fully removed from said body upon removal of said cover by rotation until after, the seal between said cover and body is broken, whereby if said means for relieving pressure fails, gas can escape without having said cover blow off.

20. A removable batch type diluent tank for use in a beverage dispenser comprising:

(a) a tank body for containing a supply of diluent having an opening therein;

(b) a removable cover for covering and sealing said opening;

(c) means for relieving pressure in said tank prior to removal of said cover;

(d) mechanical interlock means for preventing removal of said cover until said means for relieving pressure are operated;

(c) a quick disconnect coupling for connecting a source of pressurizing gas to said tank; and

(f) means for conducting diluent from said tank.

4,555,372

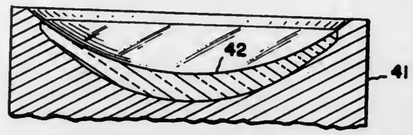
ROTATIONAL MOLDING OF CONTACT LENSES

Wilhelm F. Kunzler, Fairport, N.Y., and William F. Coombs, Punta Gorda, Fla., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 246,826, Mar. 21, 1981. This application Apr. 4, 1983, Ser. No. 481,600

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—2.1 **2 Claims**



1. In a casting process for preparing contact lenses, the improvement which comprises

(a) charging to the mold having the negative surface of the desire anterior lens surface an excess of monomer solution,

(b) spincast curing the monomer solution to obtain a lens which is thicker than desired, and

(c) lathe cutting only the posterior of said lens to obtain the desired thickness.

4,555,373

PRESSING OF REINFORCED THERMOSETTING POLYMER ARTICLES

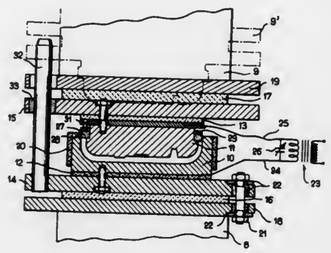
Willem Bloemkolk, deceased, late of Viviers du Lac (by Christiane Bloemkolk, legal representative), and André Blanc, La Ravoire, both of France, assignors to Vitrotex Saint-Gobain, Aubervilliers, France

Filed Mar. 30, 1983, Ser. No. 480,312

Claims priority, application France, Mar. 3, 1982, 82 05397

Int. Cl.⁴ B29C *1/02*

U.S. Cl. 264—25 **4 Claims**



1. The process of pressure molding a charge of reinforced thermosetting polymeric material into a molded piece comprising exerting pressure by relative movement of a pair of mold elements toward one another and said charge of material within a mold cavity, substantially simultaneously subjecting said charge of material to internal heating by dielectric losses under high frequency, maintaining said internal heating during formation of a molded piece under pressure, and until said molded piece is cured, all the while bringing the core of said molded piece to a prescribed temperature, said mold elements being thermally isolated from outside ambient conditions and having a calorific capacity at least equal to that of the material from which said molded piece is formed whereby heat transmitted from the mold cavity by conduction is stored in said mold elements, and using the mold elements as an external heat source to at least partially heat the next charge of said material as soon as it is introduced to said mold cavity after removal of said molded piece.

4,555,374

METHOD OF MANUFACTURING A DISC RESONATOR

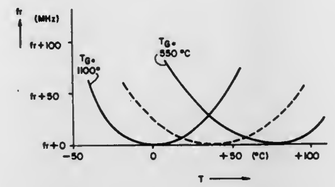
Peter Roschmann, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 189,286, Sep. 22, 1980, abandoned. This application Nov. 9, 1984, Ser. No. 670,086

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941994

Int. Cl.⁴ H01F *1/34;* **C30B** *33/00, 29/28*

U.S. Cl. 264—40.1 **3 Claims**



1. A method of manufacturing a disc resonator comprising the steps of:

providing a single crystal of a magnetic garnet having the composition $Y_3(Fe_{2-x}M_x)(Fe_{3-y}M_y)O_{12}$, where M is a nonmagnetic ion which can occupy both octahedral and tetrahedral sites; and

cutting the crystal into thin discs;

characterized in that in order to obtain a temperature coefficient of the resonant frequency which is approximately zero at a temperature within a desired temperature range, the method further comprises the steps of:

measuring the temperature at which the temperature coefficient of the resonant frequency of the crystal is approximately zero, this temperature being the initial compensation temperature;

estimating the temperature at which the crystal can be annealed without changing the initial compensation temperature, this estimated temperature being known as a reference temperature; and

annealing the crystal at a temperature above the reference temperature if the desired temperature range is below the initial compensation temperature, or annealing the crystal at a temperature below the reference temperature if the desired temperature range is above the initial compensation temperature.

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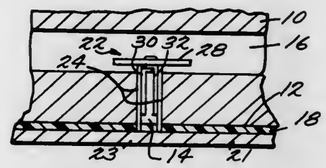
METHOD AND APPARATUS FOR IN MOLD COATING

John A. Sergovic, Severna Park, and John L. McClinton, Hanover, both of Md., assignors to Burns & Russell Company, Baltimore, Md.

Filed Dec. 7, 1983, Ser. No. 558,883

Int. Cl.⁴ B29C *5/00, 1/06*

U.S. Cl. 264—259 **13 Claims**



1. A method of applying a coating composition of the type using a curable resin and a filler to the planar surface of a building article where the surface has a perimeter and a discontinuity within the perimeter, comprising the steps of:

depositing the composition in flowable form in a mold,

placing the surface of the building article in the mold with the composition distributed over said surface and the discontinuity therein,

inserting boundary means having a boundary edge through said discontinuity so that said edge penetrates the composition,

subjecting the composition to heat to cure the composition and form a hardened glaze on the surface of the article,

removing the article from the mold, and

removing the boundary means from the discontinuity.

10. A molding apparatus, for forming a glazed surface on an article where the surface includes a discontinuity having a boundary, comprising a mold pan for receiving a molding composition and the surface of the article and a wall means insertable through the surface and conforming to the boundary of the discontinuity, said article being a building block and the surface having a perimeter, said discontinuity being a U-shaped slot extending from the perimeter of said surface, said wall means being a U-shaped plate which closely engages the slot, said slot having a length that is greater than the depth of the slot, said U-shaped plate having parallel legs and bridge means extending between said legs to maintain said legs in a fixed relation.

4,555,376

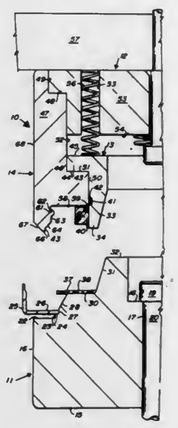
MOLDING AN ELASTOMERIC RING WHILE BONDING IT TO A METAL CASE AND TO A FLUOROCARBON WASHER

John D. Butler, Van Wert, Ohio, assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Mar. 12, 1984, Ser. No. 588,718

Int. Cl.⁴ B29D *3/00*

U.S. Cl. 264—266 **15 Claims**



1. A mold comprising:

a base molding member having a radially outer case-supporting portion and, spaced inwardly and away therefrom, a sloping frustoconical mold surface which ends at an inwardly extending upper ledge,

a two-part upper mold assembly having first and second mold members,

said first mold member having a lowermost generally horizontal toothed portion with a series of concentric sharp tooth edges in line with the radially inward portion of said ledge, and a cylindrical wall portion leading up from the outer edge of the toothed portion to an upper radially outwardly extending flange having a lower surface and an upper surface,

said second mold member having a cylindrical inner wall engaging the cylindrical wall portion of said first mold

member, a ledge at the upper end thereof against which the lower surface of said outwardly extending flange can abut, a spacing means leading from the outer edge of said ledge to an upper radially inwardly extending surface,

spring means engaging said upper surface of said first upper mold member and urging it down against said ledge of said second mold member, but compressible so that said second mold member can move down relative to said first mold member after said first mold member bottoms against said upper ledge of said base molding member,

said second upper mold member also having a mold-cavity-defining lower surface lying radially outwardly from its said cylindrical inner wall and extending downwardly for closing off said mold cavity,

said cylindrical wall portion of said first mold member normally extending down well below the lower extremity of the cylindrical inner wall of said second mold member and defining an annular corner portion against which a ring of uncured elastomer is placed just prior to molding, and

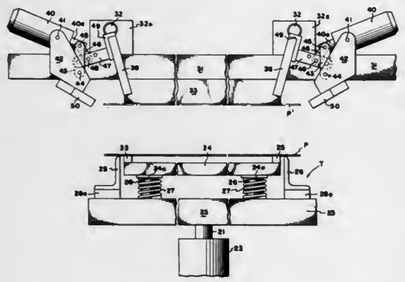
mold closing means for forcing said upper mold assembly down to bottom said toothed portion and forcing said second mold member down relatively to said first mold member against the pressure of said spring means.

4,555,377

THERMOFORMING METHODS AND APPARATUS

Robert C. Whiteside, Harrison; Albert W. Arends, Gladwin, and Roland Karklin, Beaverton, all of Mich., assignors to Leesona Corporation, Beaverton, Mich.

Filed Aug. 24, 1983, Ser. No. 526,077
Int. Cl.[4] B23B *11/08*
U.S. Cl. 264—292 **10 Claims**



1. In a thermoforming method for a machine having, a load station with a platform to receive a thermoplastic sheet to be molded where said thermoplastic sheet has edges overhanging the platform and said machine further comprising a heating station with a heating mechanism therein, a downstream mold station with a differential pressure mold member for differential pressure forming articles in thermoplastic sheets, and a conveying clamp frame carrier for the plastic sheets which moves in a path from the heating station to the mold station; said carrier comprising an expandable and contractible side frame assembly, with a pair of relatively movable opposed side frames, each of said opposed side frames having a movable clamp thereon, said frame assembly perimetrally defining an open mid-portion of a size to expose the mid-portion of a clamped sheet to heat at the heating station, one of said side frames having a generally vertical extending outboard surface for coaction with the clamp thereon where said clamp is movable angularly toward and away from said outboard surface the steps of:

a. relatively moving said carrier and platform vertically to fold at least one entire edge of a sheet generally vertically out of the plane of the sheet to a position alongside the said generally vertically extending outboard surface;

b. releasably clamping opposed edges of said sheet, to the carrier including the step of moving the clamp carried by said one side frame angularly toward said outboard surface to clamp the folded edge against said outboard surface and, transferring the carrier to the heating station; and heating the clamped sheet to a forming temperature;

c. transferring the carrier with the heated sheet to the mold station and relatively moving said one side frame and said opposed side frame to change the generally horizontal distance between said clamps on the opposed side frames and vary the sag in said sheet developed in the heating thereof;

d. relatively moving the mold member and carrier from a removed position to a sheet engaging position in which the mold member is in general planar alignment with said carrier; and

e. applying a differential pressure to conform the sheet to the mold member.

4. In a thermoforming machine having a heating station with a heating mechanism therein, and a downstream mold station with a differential pressure mold member for differential pressure forming articles in thermoplastic sheets having perimetral edges surrounding a mid-portion, and wherein a conveying clamp frame carrier for the plastic sheets moves on a frame in a path from the heating station to the mold station; the improvement wherein

a. said carrier comprises an expandable and contractible frame assembly perimetrally defining an open mid-portion of a size to expose the mid-portion of the clamped sheet to heat at the heating station while supporting edges of the sheet so that the sheet can be heated to a forming temperature;

b. said frame assembly including generally vertically extending opposite side plate members having outboard sides, at least one said side plate members being mounted for vertical swinging movement about a generally horizontal axis, means operable for folding edges of a plastic sheet to be carried around said outboard side of said at least one sideplate member, and said at least one side plate member carrying a clamp, movable angularly to said outboard side of said at least one side plate member toward and away from released and gripping positions against said folded around edge and said outboard side, for gripping opposite perimetral edges of the sheet, and actuators for operating said clamps to grip and release the opposite edges of the sheet;

c. means for relatively moving the mold member and carrier from a removed position to a sheet-engaging position in which the mold member is in general planar alignment with said carrier for receiving and forming the sheet; and

d. means carried by said carrier operable to relatively swing said at least one side plate member vertically relatively to an opposed side plate member carrying a clamp about said axis to vary the generally horizontal distance between said opposed side plate members while said clamps are in gripping position, and before the mold member is in sheet-engaging position.

4,555,378

METHOD OF FORMING THERMOPLASTIC PERFORATED SHEET

Richard A. Martin, Tarrytown, N.Y., and Walter Bialobrzeski, Wallingford, Conn., assignors to Dick Martin Design Ltd., Tarrytown, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,139
Int. Cl.[4] B29C *17/02, 1/02*
U.S. Cl. 264—292 **18 Claims**

1. In an apparatus for cold drawing a generally flat perforated plastic sheet, the apparatus including

a die having a bore therein terminating in an aperture,

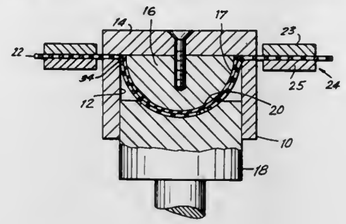
first means for holding said sheet adjacent said aperture, and

a punch having a curved contact surface, said punch being movable from a start position spaced from said sheet to a first position pressing a portion of said sheet into said aperture and forming a depression in said sheet,

the improvement in combination therewith comprising:

a pressure pad having an end surface with a recess in the center thereof, said pad having a first position inside said bore with said end surface adjacent said aperture and engaging and supporting said sheet while said punch is pressed downward, deforming said sheet into said recess

said punch and pad being further movable to a second position, said punch pressing said sheet and pad together further into said bore and further deforming said sheet to have the shape of said contact surface while said pad



remains engaging and supporting said deformed portion of said sheet, and

drive means for moving said punch between said start, first and second positions,

said punch further comprising on said contact surface a layer of material having durometer less than that of said sheet, said layer becoming embedded in perforations in said sheet when the punch is pressed to said first position, thereby establishing a mechanical coupling of said punch and sheet in the area of said embedded engagement.

4,555,379

CROSS-LINKABLE ROTATIONAL MOLDING COMPOSITIONS

Melvin F. Maringer, Cincinnati, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 497,313, May 23, 1983. This application Apr. 3, 1985, Ser. No. 719,398
Int. Cl.[4] B28B *1/02*
U.S. Cl. 264—310 **9 Claims**

1. A process for preparing a rotationally molded article of a cross-linked ethylene polymer which comprises:

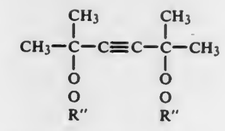
(a) placing in a rotational mold an ethylene polymer composition capable of being cross-linked during rotational molding which comprises:

(1) a linear polymer of ethylene having a density of above about 0.94, said polymer having been prepared by particle form polymerization in the presence of a catalyst composition comprising:

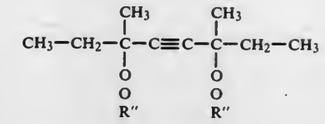
(i) the solid reaction product of (1) at least one nonhalide containing organic oxygenated compound of a metal selected from the metals of Groups Ia, IIa, IIb, IIIa, IVa, VIIb and VIII of the Periodic Table, with (2) at least one nonhalide containing organic oxygenated transition compound of a transition metal selected from the metals of Groups IVb, Vb and VIb of the Periodic Table, and with (3) an organo aluminum halide having the general formula $AlR_nR'_{3-n}$ in which R is a hydrocarbon radical containing 1 to 20 carbon atoms, R' is a halide and n is any number such that $1 \leqq n \leqq 2$; and

(ii) an organo-metallic compound selected from the organic derivatives of metals of Groups Ia, IIa, IIb, IIIa and IVa of the Periodic Table, and,

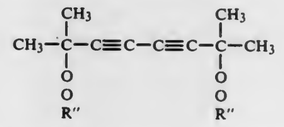
(2) a crosslinking effective amount of an acetylenic high molecular weight diperoxy compound selected from the group consisting of hexynes having the formula



octynes having the formula



and octynes having the formula



where R'' is selected from the group consisting of tertiary alkyl, alkyl carbonate and benzoate.

(b) biaxially rotating the mold about two perpendicular axes while heating the mold and contents at a temperature effective to crosslink and rotationally mold said composition,

(c) cooling said mold to about room temperature while maintaining said coaxial rotation, and

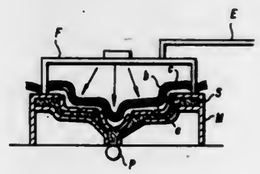
(d) removing the resultant rotationally molded article.

4,555,380

AIR-PRESSURE METHOD

Shunsaku Munakata, Kawagoe; Hitoshi Ukai, Niiza; Mitsuru Noguchi, Tsurugashima, and Shinichi Sawai, Kunitachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Tokyo Seat Co., Ltd., Asaka, both of, Japan

Filed Jun. 14, 1984, Ser. No. 620,599
Claims priority, application Japan, Jun. 16, 1983, 58-108992
Int. Cl.[4] B29C *17/04*
U.S. Cl. 264—510 **6 Claims**



1. A method of shaping a laminated sheet material formed from a base material, a skin material and a foamed resin layer therebetween, said method comprising the steps of:

(a) heating said laminated sheet material;

(b) positioning said heated, laminated sheet adjacent to a mold surface;

(c) placing a cover means over at least a portion of said laminated sheet adjacent said mold surface;

(d) forming a hermetic seal between said laminated sheet and said cover means, thereby defining a hermetically sealed space therebetween;

(e) increasing the air pressure in said hermetically sealed space to a pressure above atmospheric pressure and establishing an air cushion layer between the laminated material and the

surface of the mold from the air residing therebetween such that said at least portion of said laminated sheet takes a shape in substantial uniform thickness corresponding to said mold surface; and, thereafter,

(f) forcing the air from between said laminated sheet and said mold surface before the said laminated sheet is cooled substantially such that said at least a portion of said laminated sheet contacts said mold surface and conforms to the shape of the face of the mold.

4,555,381

PROCESS OF MAKING FOLDED CARDBOARD CONTAINER COVERED BY A LAYER OF SYNTHETIC MATERIAL AND PROVIDED WITH A PERIPHERAL FRAME

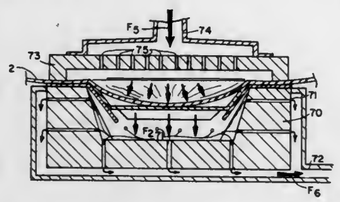
Guy A. Chazal, Sannois, and Jean A. Bodet, Versailles, both of France, assignors to Societe Parisienne d'Impression et de Cartonnage, Haute de Seine, France

Division of Ser. No. 307,833, Oct. 2, 1981. This application Mar. 23, 1983, Ser. No. 477,951

Claims priority, application France, Nov. 7, 1980, 80 23782

Int. Cl.⁴ B29C *17/04;* **B29D** *3/02;* **B31F** *1/00*

U.S. Cl. 264—516 **5 Claims**



1. Process of making a container comprising an exterior portion of cardboard having a frame positioned in a single plane, wall panels and at least one bottom panel and a portion of a synthetic material formed of a single layer which is applied onto the surface of the cardboard portion forming the interior of the container and the exterior of the frame and which is adherent over the entire surface of the cardboard to which it is applied to maintain the relative position of the frame, the walls and the bottom panel comprising the steps of:

(a) providing a blank of a first type having a frame and a plurality of wall panels integral with the interior sides of the frame and a blank of a second type having a bottom panel and a plurality of wall panels integral with the exterior sides of said bottom panel;

(b) placing a blank of the first type and then at least one blank of the second type thereupon in a position and orientation with respect to a die hving the form and interior dimensions thereof corresponding to the exterior form and dimensions of the container to be made and whereby the frame of the blank of the first type is disposed over an edge of the die and the bottom panel of the blank of the second type is disposed substantially in vertical alignment with a bottom of the die;

(c) maintaining the frame of the blank of the first type applied against the edge of the die and maintaining the blank of the second type so that it cannot move laterally or change the orientation thereof relative to the form of the die;

(d) exerting a vertical push upon the common plane of the superimposed first and second blanks which is directed toward the bottom of the die to cause simultaneously the bending of the wall panels integral with the frame toward the bottom of the die, the folding of the wall panels which are integral with the bottom panel in the direction opposite to the direction of bending of the wall panels integral with the frame and the penetration of the bottom panels of the blank of the second type through the interior of the frame to the bottom of the die, so that all the wall panels integral with the frame and with the bottom panel are disposed in generally side-by-side, interfitted juxtaposition with the same alinement of the surfaces thereof by pressure against the walls of the die;

(e) applying a layer of synthetic material so that it extends over and adheres to the bottom panel to the frame and to all the wall panels whereby there is formed by the combination thereof a container which is rigid and tight.

4,555,382

METHOD OF PROTECTION OF A PRESSURIZED-WATER NUCLEAR REACTOR

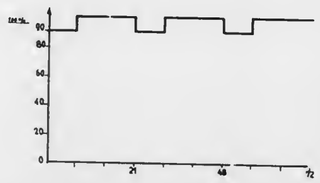
Michel Delor, Rueil Malmaison, and Michel Bruyere, Vaux Sur Seine, both of France, assignors to Framatome & Cie, Courbevole, France

Continuation-in-part of Ser. No. 103,556, Dec. 13, 1979, abandoned. This application Jun. 8, 1982, Ser. No. 386,476

Claims priority, application France, Dec. 20, 1978, 78 35765

Int. Cl.⁴ G21C *7/36*

U.S. Cl. 376—216 **3 Claims**



1. A method for protecting a pressurized-water nuclear reactor having fuel elements arranged in parallel with one another inside the core of said reactor delimiting coolant channels between them and between which control rods are moved by groups for the control of the reactor, which method enables avoidance of damaging said fuel elements by the appearance of the crisis of boiling and/or by the melting of at least one fuel pellet, comprising the steps of

(a) determining the level of power of the reactor from the measurements of inlet and outlet temperatures of the coolant in said reactor and of the pressure and flow of said coolant;

(b) determining the exact distribution of power in the axial direction of the core by measurements of neutron flux by ionization chambers arranged outside the reactor core, by measuring the ionization currents in each of said chambers;

(c) determining, from said level of power and the position of groups of control rods along the axial direction of the core a corrective factor or radial peaking factor, taking into account the distribution of power in the radial direction, at each point according to the position of said point in axial direction;

(d) determining the power released per unit length of said fuel elements, from said level of power, said radial peaking factor and said axial power at each point in axial direction, and comparing said power released to a predetermined limit;

(e) determining, from said radial peaking factor and said axial power, the ratio of the maximum increase of enthalpy in said coolant channels to the mean increase of enthalpy in the channels of said core, or enthalpy increase factor; and, thus, the maximum increase of enthalpy, corresponding to the hot channel of said core;

(f) determining from measured parameters of (a), from said maximum increase of enthalpy and predetermined correction terms, taking into account the mixing of coolant between the hot channel and adjacent channels, the margin with respect to the crisis of boiling for a number of points in the axial direction of the core; and

(g) triggering an emergency shutdown when at least one of the two parameters comprising (1) margin with respect to the crisis of boiling along said fuel elements and (2) power released per unit length of said fuel elements, exceeds a predetermined limit; and,

(h) said core being divided along its entire height into a plurality of superposed vertical sections, the total neutron flux in each of said sections being determined from the ionization currents measured in each of said chambers, the axial power being considered as a polynome with respect to the axial position of the point where said power is developed and said axial power being determined accurately by comparing the integrated values of neutron flux obtained from polynomial form of the axial power and the total neutron flux in each of said sections of said core derived from the ionization currents measurements.

4,555,383

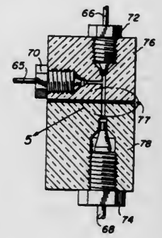
ELECTROLYTIC CONDUCTIVITY DETECTOR

Randall C. Hall, College Station, Tex., assignor to O. I. Corporation, College Station, Tex.

Filed Mar. 2, 1984, Ser. No. 585,491

Int. Cl.⁴ G01N *31/08*

U.S. Cl. 422—89 **8 Claims**



1. A chromatographic system having a conductivity cell for deriving an output signal functionally related to a throughput fluid, comprising:

chromatographic means for generating a gas stream from a material sample,

means for generating a solvent stream effective to separate selected material species from said gas stream,

means for mixing said gas stream with said solvent stream to form a mixed gas-liquid phase stream of a throughput fluid and for passing the throughput fluid to an electrode assembly without gas-liquid separation, and

an electrode assembly for continuous axial flow of said mixed gas-liquid phase stream of said throughput fluid, having spaced first and second planar electrodes transverse to said axial flow and defining respective first and second boreholes for said axial flow of said mixed phase stream wherein an electrical output signal is obtained across said first and second electrodes during passage of said mixed phase stream axially through said boreholes.

4,555,384

APPARATUS FOR PRODUCING STYRENIC/ALKENYLNITRILE COPOLYMERS

Jeffrey D. Morris, and Robert A. Fuller, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 423,489, Sep. 24, 1982. This application Sep. 23, 1983, Ser. No. 535,181

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.⁴ C08F *220/44;* **G05D** *23/00*

U.S. Cl. 422—109 **26 Claims**

1. An apparatus for the continuous mass polymerization of styrenic and alkenylnitrile monomers to produce a styrenic-/alkenylnitrile copolymer, comprising:

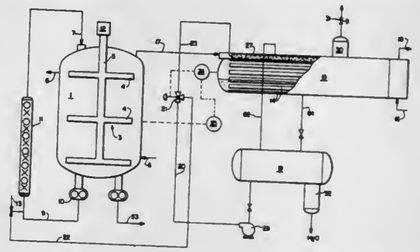
(a) a reaction vessel;

(b) means for continuously introducing a feed comprising a predetermined ratio of styrenic and alkenylnitrile monomers into said reaction vessel to produce a reaction mixture;

(c) means for subjecting the reaction mixture containing styrenic and alkenylnitrile monomers to conditions of temperature and pressure under which said monomers copolymerize to produce a styrenic/alkenylnitrile copolymer;

(d) a rotational agitator comprising at least one stirring device in the reaction vessel for subjecting the reaction mixture to horizontal agitation;

(e) means for subjecting the reaction mixture to vertical agitation, comprising means for withdrawing a portion of the reaction mixture from a position near the bottom of



the reaction vessel, at least one closed loop external of the reaction vessel for circulating the withdrawn portion and means for reintroducing the withdrawn portion at a position near the top of the reaction vessel;

(f) means for cooling the reaction mixture by withdrawing a vapor phase from the reaction vessel wherein said cooling means comprises a condenser for condensing the withdrawn vapor phase into a liquid and further wherein the amount of vapor phase withdrawn is controlled by including means in the condenser for selectively controlling the amount of cooled surface area available for contact with the withdrawn vapor phase; and

(g) means for continuously withdrawing styrenic/alkenylnitrile copolymer from the reaction vessel.

4,555,385

ELUTION PROCESS AND APPARATUS AND EXTRACTION OF PARTICULATE MATERIAL FROM A VESSEL

Alan M. Stone, Melbourne, Australia, assignor to Ok Tedi Mining Limited, Australia

Filed Aug. 19, 1983, Ser. No. 524,663

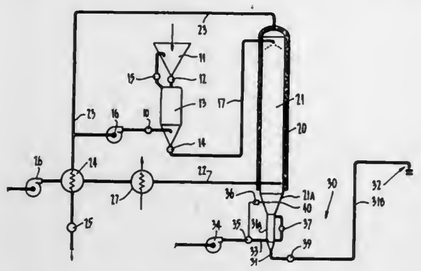
Claims priority, application Australia, Aug. 23, 1982, PF5515; Jul. 8, 1983, PG0204

Int. Cl.⁴ B01D *11/02;* **C01C** *3/08;* **C22B** *3/02;* **G05D** *9/00*

U.S. Cl. 423—30 **36 Claims**

1. A continuous elution process for stripping at elevated temperature a value from a particulate carrier loaded with the value by means of a stripping liquid passing through a pressurized stripping vessel having opposite end parts, in which the loaded particulate carrier is fed to one end part of the stripping vessel and is displaced through the stripping vessel in counterflow to the stripping liquid introduced under pressure to the other end part of the stripping vessel whereby the particulate carrier is stripped of the value, the unladen particulate carrier being removed from said other end part of the stripping vessel at a location spaced from the input of said stripping liquid at the other end part and the loaded stripping liquid being removed from said one end part of the stripping vessel, and wherein the loaded particulate carrier is introduced under pressure through input pipe means into said one end part of the stripping vessel upstream, in the direction of flow of the stripping liquid, of where the loaded stripping liquid is removed

from said one end part in a liquid carrier as a low velocity slurry having a maximum liquid carrier to particulate carrier volume ratio of 5:1 from which at least a substantial part of the liquid carrier separates in the stripping vessel and is removed with the loaded stripping liquid, and wherein the slurry is



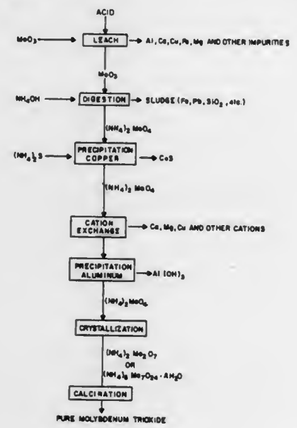
formed by feeding the loaded particulate carrier to a feed vessel communicating with the input pipe means and pumping the liquid carrier through the particulate carrier in the feed vessel and into the input pipe means under pressure until substantially all of said particulate carrier has been carried from the feed vessel into the input pipe means by the liquid carrier.

4,555,386

PROCESS FOR PURIFYING MOLYBDENUM TRIOXIDE

Michael J. Cheresnowsky, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 29, 1984, Ser. No. 584,845
Int. Cl.⁴ C01G *39/00*
U.S. Cl. 423—54 **8 Claims**



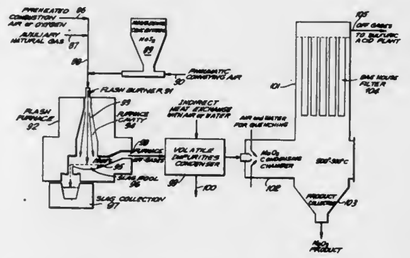
1. A method for preparing ammonium molybdate having low impurities aluminum, calcium, copper, magnesium, and iron from an impure concentrate of molybdenum trioxide comprising contacting said concentrate with an aqueous solution comprising about 2 to about 2.5 moles per liter of nitric acid, about 0.5 to 1 mole per liter of ammonium sulfate and less than 0.5 moles per liter ammonium nitrate to solubilize less than about 1.5 percent of the molybdenum values from said concentrate and solubilize a major portion of said impurities, wherein during contacting from about 0.85 parts to about 3 parts by weight aqueous solution is present per part of impure concentrate, washing the resulting concentrate, digesting said resulting concentrate with an aqueous solution of ammonium hydroxide at suitable concentrations to solubilize substantially all of the molybdenum values present in said resulting concentrate as ammonium molybdate and form an ammonium molybdate solution, adding ammonium sulfide to said ammonium molybdate solution in an amount sufficient to convert substantially all of the soluble copper values present in said solution to an insoluble copper sulfide, separating said ammonium molybdate solution from an insoluble residue, and contacting said resulting ammonium molybdate solution with a chelate cation exchange resin in ammonium form, removing ammonia to adjust the pH of said ammonium molybdate solution of from about 6 to about 8 to convert substantially all of the soluble aluminum values to an insoluble aluminum hydroxide, separating said resulting ammonium molybdate solution from a resulting insoluble residue, and concentrating said resulting ammonium molybdate to form ammonium molybdate having low impurities, aluminum, calcium, copper, magensium, and iron.

4,555,387

FLASH ROASTING OF MOLYBDENUM SULFIDE CONCENTRATES IN A SLAGGING REACTOR

Bruce J. Sabacky, Westminster, and Malcolm T. Hepworth, Golden, both of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 27, 1984, Ser. No. 583,905
Int. Cl.⁴ C01G *39/02*
U.S. Cl. 423—59 **10 Claims**



1. A process for flash-roasting molybdenum sulfide containing slag-forming constituents which comprises,

feeding a pneumatically suspended stream of particulate molybdenum sulfide and a mixture of fuel and oxidizing gases through a nozzle into a confined furnace chamber,

said fuel gas-oxidizing gas mixture exiting from said nozzle being ignited to provide a flame thereof,

maintaining said flame at a condition to provide a temperature in the range of 1600° C.±200° C. to about 1800° C. in said furnace chamber sufficient to oxidize said molybdenum sulfide to molybdenum trioxide and thereby sublime said oxide, and to melt slag-forming constituents contained therein,

collecting liquid slag formed in said chamber,

causing the resulting gases and any suspended solids including the sublimed molybdenum trioxide to flow from said furnace chamber to and through a condensing chamber, the temperature of said condensing chamber being controlled to above the condensing temperature of said sublimed molybdenum trioxide but below the volatilization temperature of volatile impurity species present and thereby effect a separation of the molybdenum trioxide from said impurities,

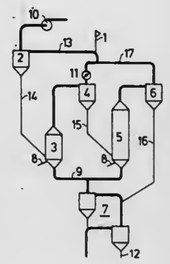
and then condensing and recovering the separated gaseous molybdenum trioxide as solids while removing off-gases comprising carbon oxides, H_2O, N_2, excess O_2 and SO_2.

4,555,388

METHOD AND APPARATUS FOR CALCINING RAW PHOSPHATE MATERIAL

Soren Hundebol, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Dec. 5, 1983, Ser. No. 558,117
Claims priority, application Denmark, Dec. 7, 1982, 5408/82
Int. Cl.⁴ C01F *5/00, 11/00;* C01B *25/26;* F27B *15/00*
U.S. Cl. 423—167 **6 Claims**



1. A method of calcining raw phosphate material containing organic compound and sulphide pollutants, comprising

(a) introducing the material to be calcined into a first stage suspension reactor, suspending and conveying said raw material in a gas flow of combustion air which flows at a velocity of at least 2 m/sec, and supplying fuel to said gas flow whereby the main part of the said organic components is burnt together with said fuel at a reaction temperature of between 700° and 850° C., and maintaining the oxygen surplus in the reactor in the range of 0–3%, and retaining the said material in the first stage reactor for at least 1.5 secs,

(b) removing the material from the reactor and separating the material from the gas flow in a separator,

(c) introducing the material into a second stage reactor after the material has been heated in said first stage reactor, the second stage reactor being a suspension reactor, suspending and conveying said preheated raw material in a gas flow of combustion air which flows at a velocity of at least 2 m/sec, and supplying fuel to said gas flow whereby remaining organic components and sulphides are burnt together with said fuel; the reaction temperature being between 700° and 850° C.; and maintaining the oxygen surplus in the second stage which is larger than and at least double of that of the first stage, the retention time of the second stage being at least double of the retention time of the first stage, and

(d) discharging the material from said second stage.

4,555,389

METHOD OF AND APPARATUS FOR BURNING EXHAUST GASES CONTAINING GASEOUS SILANE

Eletsu Soneta, Kawasaki, and Tetsukazu Urata, Iruma, both of Japan, assignors to Toyo Sanso Co., Ltd., Tokyo, Japan

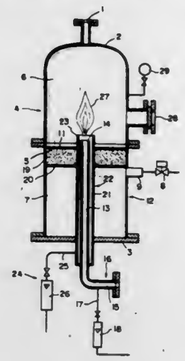
Filed Apr. 27, 1984, Ser. No. 604,720
Int. Cl.⁴ B01J *12/00;* B01D *47/00;* C01B *33/04*
U.S. Cl. 423—210 **5 Claims**

5. An improved method of processing exhaust gases containing gaseous silane wherein exhaust gases which are discharged from a reactor are burned through a reaction with air in a combustion chamber and then the burning products are treated in a scrubber, the improvement which comprises:

a step of previously diluting the exhaust gases to be introduced into the combustion chamber with an inert gas so that the concentration of the gaseous silane contained in the exhaust gases is reduced to less than 30% by volume,

a step of feeding the thus diluted exhaust gases from the nozzle of an exhaust gas introduction pipe to the combustion chamber, and

a step of feeding an inert gas to the vicinity of the nozzle top end of the exhaust gas introduction pipe to form a barrier of the inert gas atmosphere thereby contacting the diluted



exhaust gases introduced into the combustion chamber with the air ahead of the barrier of the inert gas atmosphere.

4,555,390

METHOD FOR REMOVING SULFUR OXIDES FROM HOT FLUE GASES

Vinay K. Bhatia, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Dec. 20, 1983, Ser. No. 563,358
Claims priority, application Denmark, Dec. 22, 1982, 5666/82
Int. Cl.⁴ C01B *17/00*
U.S. Cl. 423—242 **10 Claims**

1. A method of removing sulfur oxides from hot flue gases comprising the steps of introducing liquid water and at least one absorption agent selected from the group consisting of calcium oxides, magnesium oxides, calcium hydroxides, magnesium hydroxides, alkali metal oxides, alkali metal hydroxides and alkali metal carbonates, into a rising stream of hot flue gases in a reaction zone, contacting the absorption agent with the sulfur oxide such that the sulfur oxide is absorbed thereby and reacted therewith in the presence of evaporating liquid water so as to produce a dry powder comprising reaction products and unreacted absorption agent suspended in flue gases, separating the powder from the flue gases in a separating zone and recirculating a portion of said powder to the reaction zone, said method further comprising the steps of introducing said rising stream of hot flue gases axially into said reaction zone, said reaction zone being shaped as a vertical cylindrical chamber with a divergent conical lower portion, retaining the gas in said reaction zone during a gas retention time of about from 1 to 5 seconds, reducing the velocity of the gas in the reaction zone by passing the gas upwardly through the divergent conical lower portion thereof from a range of about 10–60 m/sec. to a range of about 2–20 m/sec. so as to cause a boundary layer separation in the gas, said conical lower portion of the reaction zone having an apex angle between 12° and 120° thereby promoting said boundary layer separation, suspending the water, absorption agent and resulting dry powder in said rising stream of hot flue gases during a material retention time of 1 to 8 minutes, thereafter passing the dry powder from the upper portion of the reaction zone to a separating zone, precipitating the powder from the flue gases in the separating zone, and recirculating a portion of the powder to the reaction zone for further treatment.

4,555,391

DRY INJECTION FLUE GAS DESULFURIZATION PROCESS

Michael J. Cyran, Morrisville, Pa., and Kuei-Hsiung Wang, Arlington Heights, Ill., assignors to Intermountain Research & Development Corporation, Green River, Wyo.

Filed Jul. 24, 1984, Ser. No. 634,234
Int. Cl.[4] B01J *8/00;* **C01B** *17/00*
U.S. Cl. 423—244 **23 Claims**

1. A dry injection process for desulfurizing a flue gas stream with a soda-type dry sorbent, which comprises

(i) injecting a soda-type particulate dry sorbent into a hot flue gas stream containing sulfur dioxide to desulfurize the gas stream said sorbent being substantially all smaller than about 40 mesh sieve;

(ii) collecting the dry sorbent in a bag filter;

(iii) removing the collected dry sorbent from the bag filter;

(iv) recycling a portion of the removed sorbent for reinjection into the flue gas stream;

(v) cooling the recycled sorbent below the bag filter temperature, prior to its reinjection, to a temperature below about 90° C. at which the sodium utilization of the sorbent is enhanced; and

(vi) reinjecting the cooled, recycled sorbent into the hot flue gas stream at a ratio of from about 0.2:1 to 5:1 reinjected sorbent: fresh injected sorbent, based on their respective sodium contents.

4,555,392

PORTLAND CEMENT FOR SO_2 CONTROL IN COAL-FIRED POWER PLANTS

Meyer Steinberg, Melville, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 17, 1984, Ser. No. 661,842
Int. Cl.[4] B01J *8/00;* **C01B** *17/00;* **F23B** *7/00;* **F23J** *11/00*
U.S. Cl. 423—244 **5 Claims**

1. A method for reducing the sulfur dioxide emissions produced from the burning of fossil fuels which comprises directly injecting into a furnace boiler portland cement particles, in sufficient quantity so that the amount of portland cement present will be from about 2.8 to 5.6 times the amount of sulfur in the fuel being burned, based on the weight of the fuel, so that said cement particles react with said sulfur dioxide and remove said sulfur dioxide from the exhaust gas before the exhaust gas exits the boiler system.

4,555,393

METHOD FOR MAKING CARBON MICROFIBERS

Ian W. Sorensen, and Robert S. Kiwak, both of Ellicott City, Md., assignors to Bendix Corporation

Division of Ser. No. 432,216, Oct. 1, 1982, Pat. No. 4,472,541. This application Jun. 21, 1984, Ser. No. 622,829
Int. Cl.[4] C01B *31/02;* **D01F** *9/12*
U.S. Cl. 423—447.1 **4 Claims**

1. A method for making carbon microfibers comprising the steps of:

immersing carbon fibers in an intercalating acid solution to weaken the intercrystal bonds betwen the crystallite planes of the carbon fibers;

stirring said intercalating acid solution with the immersed carbon fibers to separate the weakened crystallite planes from the carbon fibers to form carbon microfibers;

filtering said intercalating acid solution to separate said carbon microfibers from the acid solution: and

rinsing said separated carbon microfibers to remove the residual intercalating acid.

4,555,394

PROCESS FOR THE PREPARATION OF ALUMINA

Sachio Asaoka, Yokohama, and Takashi Sendo, Machida, both of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Jun. 1, 1984, Ser. No. 616,353
Int. Cl.[4] C01F *7/02, 7/34*
U.S. Cl. 423—626 **10 Claims**

1. In a process for the preparation of alumina, including forming an alumina hydrogel from aluminum hydroxide, and processing the alumina hydrogel into alumina, the improvement comprising the alumina hydrogel forming step which is conducted in the presence of sulfate ion and which comprises feeding an aluminum compound and a pH controlling agent to a reaction zone, in which an aqueous slurry containing seed aluminum hydroxide is contained, for mixing with said aqueous slurry while maintaining said aqueous slurry at a temperature of at least about 50° C. at feed rates so that the pH of said aqueous slurry is maintained within the range of 6–11 and that 0.2–5 mols/hour of aluminum components, in terms of elemental aluminum, are fed to said reaction zone per mole of the seed aluminum hydroxide originally contained in said aqueous slurry, whereby the seed aluminum hydroxide is caused to grow to the alumina hydrogel.

4,555,395

HYDRIDE COMPOSITIONS

Bruce E. Sirovich, Spring Valley; Robert L. Sandstrom, Chappaqua, both of N.Y., and Theo H. Fleisch, Warrenville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 424,608
Int. Cl.[4] C01B *6/00, 6/24, 6/34*
U.S. Cl. 423—644 **44 Claims**

1. A composition capable of reversibly absorbing and desorbing hydrogen comprising a metal hydride treated with an effective amount of an organic compound capable of imparting improved flow properties to said hydride without substantially altering said hydride's ability to reversibly absorb and desorb hydrogen, said hydride being an alloy, a mixture, or an intermetallic compound each consisting essentially of metals consisting of elements of Groups IIA, IIIA, IVB, VB, VIB, VIIB, and VIII of the Periodic Table of Elements and being capable of reversibly absorbing and desorbing hydrogen, said composition having been prepared by the method which comprises: (a) treating said hydride with an effective amount of an organic composition capable of imparting improved flow properties to said hydride without substantially altering said hydride's ability to reversibly absorb and desorb hydrogen, said organic composition being in a liquid or vapor form and being at least one compound selected from the group consisting of aliphatic hydrocarbons containing 1 to 18 carbon atoms, alcohols containing 1 to 18 carbon atoms, amines containing 1 to 18 carbon atoms, organic acids and organic acid salts containing 2 to 18 carbon atoms, and combinations thereof; (b) removing substantially all functionally excessive organic composition; and (c) cycling said hydride through one or more absorption/desorption cycles between about 5 psia and about 500 psia of hydrogen at a temperature above the boiling point of said organic composition.

14. A method for improving the flow properties of a metal hydride, said hydride being an alloy, a mixture, or an intermetallic compound, each consisting essentially of metals selected from the group consisting of elements of Groups IIA, IIIA, IVB, VB, VIB, VIIB, and VIII of the Periodic Table of Elements and being capable of reversibly absorbing and desorbing hydrogen, which method comprises: (a) treating said hydride with an effective amount of an organic composition capable of imparting improved flow properties to said hydride without substantially altering said hydride's ability to reversibly absorb and desorb hydrogen, said organic composition being in a liquid or vapor form and being at least one compound selected from the group consisting of aliphatic hydrocarbons containing 1 to 18 carbon atoms, alcohols containing 1 to 18 carbon

atoms, amines containing 1 to 18 carbon atoms, organic acids and organic acid salts containing 2 to 18 carbon atoms, and combinations thereof; (b) removing substantially all excess organic composition; and (c) cycling said hydride through one or more absorption/desorption cycles between about 5 psia and about 500 psia of hydrogen at a temperature above the boiling point of said organic composition.

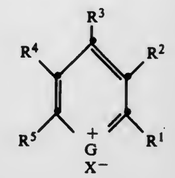
4,555,396

USE OF PYRYLIUM AND THIAPYRYLIUM COMPOUNDS AS BIOLOGICAL STAINS

David S. Frank, Rochester, and Robert T. Belly, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,260
Int. Cl.[4] G01N *1/30;* **C12Q** *1/04;* **C09B** *57/00*
U.S. Cl. 424—3 **9 Claims**

1. In a method for distinguishing cells in a biological sample by staining with a dye, wherein the improvement comprises employing as the dye a compound of the formula



wherein

G is O or S;

R^1, R^3, and R^5 are independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, amino, styryl and bis(diaryl)vinylene;

R^2 and R^4 are independently hydrogen; and

X^- is an anion.

4,555,397

METHOD FOR ANTI-CHOLINERGIC BLOCKAGE OF WITHDRAWAL SYMPTOMS IN SMOKING CESSATION

Nicholas Bachynsky, 7322 SW. Freeway, Houston, Tex. 77074

Filed Aug. 12, 1983, Ser. No. 522,858
Int. Cl.[4] A61K *31/24, 31/44, 31/54*
U.S. Cl. 424—10 **5 Claims**

1. A method for conditioning a patient to minimize physical withdrawal symptoms associated with cessation of chronic tobacco smoking by the patient, comprising:

injecting subcutaneously into an auricular area of said patient from about 0.4 to about 1.2 cc of a solution containing a unit dosage of from about 0.1 to about 0.8 mg atropine, from about 0.2 to about 0.4 mg scopolamine, and from about 10.0 to about 50.0 mg chlorpromazine in a suitable carrier.

4,555,398

SUSTAINED-RELEASE VASODILATOR

Yoshifumi Oda, Kohchiken, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Sep. 22, 1983, Ser. No. 534,622
Claims priority, application Japan, Oct. 5, 1982, 57-175144
Int. Cl.[4] A61L *15/03;* **A61F** *13/00;* **A61K** *9/70*
U.S. Cl. 424—19 **6 Claims**

1. A sustained release vasodilator product in molded form which comprises (1) a vasodilating effective amount of an atoxic agent having vasodilating activity selected from at least one member of the group consisting of papaverine hydrochloride, nicardipine hydrochloride, diltiazem, cinnarizine, cyclandelate and bencyclane fumarate and (2) a member selected from the group consisting of

(a) at least one setting resin selected from the group of silicone resin, cyano-acrylate resin, epoxy resin and polyimide resin, and

(b) at least one thermoplastic resin selected from the group of polystyrene resin, polyolefin resin, polyvinyl chloride resin, cellulose acetate resin, polyamide resin, polyurethane resin and acrylic resin,

said molded product being prepared by mixing and kneading the said atoxic agent with the setting or thermoplastic resin and subsequently molding the resultant mixture.

4,555,399

ASPIRIN TABLET

Charles H. Hsiao, Cooper City, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 553,256, Nov. 18, 1983, abandoned. This application Mar. 8, 1984, Ser. No. 587,533
Int. Cl.[4] A61K *9/28, 9/36, 31/60*
U.S. Cl. 424—35 **7 Claims**

1. A tablet that readily disintegrates in gastric fluid to give aspirin crystals coated with a polymeric film preventing the aspirin crystals from contacting the stomach wall but not preventing access of gastric fluid to the aspirin contained within the polymer film, which consists of a plurality of aspirin crystals 20–60 mesh in size coated with about 3–10% by weight of a polymeric mixture of about 1.5 to about 15 parts by weight ethylcellulose and about one part by weight hydroxypropylcellulose; a compression aid; a disintegrant; and a tableting aid.

4,555,400

SYNERGISTIC PRESERVATIVE COMPOSITIONS

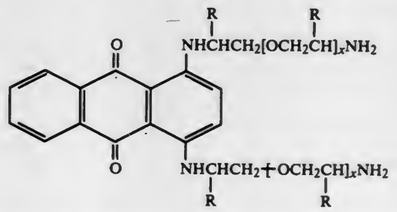
Gayle E. Borovian, Dover, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 666,023, Oct. 29, 1984, which is a division of Ser. No. 576,286, Feb. 2, 1984, Pat. No. 4,499,071, which is a division of Ser. No. 378,372, May 14, 1982, Pat. No. 4,454,146. This application Mar. 28, 1985, Ser. No. 717,737
Int. Cl.[4] A01N *33/02, 35/02;* **A61K** *31/74*
U.S. Cl. 424—78 **32 Claims**

1. A preservative comprising:

(a) a first component comprising formaldehyde; and

(b) a second component having the following formula:



I

wherein x is about 2 to 33 and R is H or CH_3 and mixtures thereof; and

wherein the weight ratio of said second component to said first component is 1000:1 to 1:10, the combination acting to kill or inhibit the growth of bacteria.

4,555,401

LIVE MUMPS VACCINE AND METHOD OF STABILIZING THE SAME

Hirofumi Arimura, Toyonaka; Yahiro Uemura, Hirakata, and Yoshiomi Okuno, Ibaraki, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Continuation of Ser. No. 351,401, Feb. 23, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 589,863
Claims priority, application Japan, Jul. 3, 1980, 55-90943
Int. Cl.[4] A61K *39/165*
U.S. Cl. 424—89 **6 Claims**

1. A stable live mumps vaccine composition comprising a

live mumps vaccine and a stabilizing amount of a stabilizer consisting of albumin and gelatin.

4,555,402

PHYSIOLOGICALLY ACTIVE SUBSTANCE K-252, PROCESS FOR PRODUCING SAME AND PHARMACEUTICAL COMPOSITION CONTAINING SAME

Yuzuru Matsuda, Koganei; Kazuyuki Iwahashi, Kunitachi; Takao Iida, Hofu; Noriaki Hirayama, Zama; Kozo Asano, Machida; Katsuichi Shuto, Shizuoka; Koji Yamada, Susono; Kunikatsu Shirahata, Komae, and Hiroshi Kase, Koganei, all of Japan, assignors to Kyowa Hakko Kogyo Co. Ltd., Tokyo, Japan

Filed Aug. 10, 1984, Ser. No. 640,159
Claims priority, application Japan, Aug. 12, 1983, 58-147471
Int. Cl.⁴ A61K *35/74;* C12P *1/06*
U.S. Cl. 424—122 **3 Claims**

1. A physiologically active substance K-252 having the following physico-chemical properties:
   State: Light yellow, columnar crystal
   Melting point: 262°–273° C. (decomposed)
   Specific rotation: $[\alpha]_D^{20} = -23.2°$ C. (C=0.5, $CHCl_3$)
   Solubility: Readily soluble in chloroform, acetonitrile, acetone, dioxane, tetrahydrofuran and pyridine; soluble in ethanol, methanol, 1-propanol, ethyl acetate and n-butanol; insoluble in water, 2-propanol, etc.
   Color reaction: Positive to reactions with each, iodine and ninhydrin; negative to reaction with ferric chloride and Rydon-Smith reaction
   Ultraviolet absorption spectrum (ethanol): FIG. 1
   Infrared absorption spectrum (KBr): FIG. 2
   Mass Spectrum: The mass spectrum of the present substance gives the following molecule ions and fragment ions: 467, 424, 406, 364, 337, 321
   Elemental analysis: H4.47, C69.08, N8.79% (as found); H4.52, C69.37, N8.98% (as calculated as $C_{27}H_{21}N_3O_5$)
   PMR spectrum ($CDCl_3$): δ(ppm) 2.16 (3H, s), 2.81 (1H, dd, J=4.9, 14.2), 3.44 (1H, dd, J=7.1, 14.2), 4.08 (3H, s), 4.61 (1H, d, J=17.0), 4.69 (1H, d, J=17.0) 5.46 (1H, brs), 6.79 (1H, dd, J=4.9, 7.1) 7.0–7.6 (6H, m), 7.7–8.0 (2H, m), 8.87 (1H, d, J=7.8)
   CMR spectrum ($CDCl_3$): δ(ppm) 22.8, 42.4, 45.9, 53.3, 84.9, 85.7, 99.5, 107.2, 114.2, 114.7, 116.4, 117.8, 119.3, 120.5, 120.7, 122.1, 123.9, 124.9, 125.0, 125.5, 125.8, 129.0, 132.3, 136.8, 140.3, 172.5, 173.5.

4,555,403

PHARMACOLOGICALLY ACTIVE PEPTIDES AND MEDICAMENTS CONTAINING THE SAME

Victor Brantl, Am Frauenplatz 10, 8000 München 2; Hansjörg Teschemacher, Hagstrasse 3, 6300 Giessen; Agnes Henschen, and Friedrich Lottspeich, both of Am Klopferspitz, 8033 Martinsried, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 258,617, filed as PCT DE 80/00126, on Sep. 4, 1980, published as WO 81/00712 on Mar. 19, 1981, § 102(e) date Apr. 29, 1981, Pat. No. 4,390,527.
This application Jun. 24, 1983, Ser. No. 507,807
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936099
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.⁴ C07C *103/52;* A61K *37/02*
U.S. Cl. 514—17 **7 Claims**

1. Pharmacologically active peptides of the formula:

   Tyr^1-X-A

   Tyr^1-X-A-Pro

   Tyr^1-X-A-Pro-B

   Tyr^1-X-A-Pro-B-Pro

   Tyr^1-X-A-Pro-B-Pro-C

   Tyr^1-X-A-Pro-B-Pro-C-Pro

   Tyr^1-X-A-Pro-B-Pro-C-Pro-D . . .

wherein x is D-serine, D-arginine, D-methionine, D-lysine, D-phenylalanine, D-leucine, D-isoleucine, D-tryptophane or D-cystine;
A is L-proline, L-tryosine or L-phenylalanine;
B is L-proline, L-tryosine, or glycine;
C is L-proline, L-tryosine, or L-isoleucine; and
D is L-proline, L-tryosine, or L-asparagine.

4,555,404

SODIUM 7β-(2D-2-AMINO-2-CARBOXYETHYLTHIOACETAMIDO)-7α-METHOXY-3-(1-METHYL-1H-TETRAZOL-5-YL)THIOMETHYL-3-CEPHEM-4-CARBOXYLATE HEPTAHYDRATE AND PROCESS FOR ITS PREPARATION

Ken Nishihata; Katsuharu Iinuma; Hitoshi Yamada; Fumiya Hirano, and Takashi Tsuruoka, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed May 16, 1983, Ser. No. 495,236
Claims priority, application Japan, May 14, 1982, 57-80075
Int. Cl.⁴ C07D *501/36;* A61K *31/545*
U.S. Cl. 514—201 **12 Claims**

1. Sodium 7β-(2D-2-amino-2-carboxyethylthioacetamido)-7α-methoxy-3-(1-methyl-1H-tetrazol-5-yl)thiomethyl-3-cephem-4-carboxylate heptahydrate.

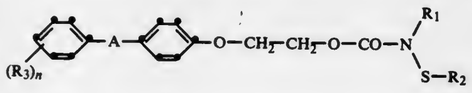
4,555,405

CARBAMIC ACID ESTERS USEFUL AS PESTICIDES

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,498
Claims priority, application Switzerland, Jul. 2, 1982, 4054/82; Mar. 16, 1983, 1437/83
Int. Cl.⁴ A01N *47/10, 37/34;* C07C *121/66, 125/04*
U.S. Cl. 514—488 **19 Claims**

1. A compound of the formula



wherein
R_1 is C_1–C_4-alkyl,
R_2 is phenyl, phenyl substituted by 1 or 2 halogen atoms or 1 or 2 C_1–C_4-alkyl groups, or is $—C(CH_3)_2—C{\equiv}N$,
R_3 is halogen, C_1–C_4-alkyl, or C_1–C_4-alkyl substituted by up to 3 halogen atoms,
A is oxygen or sulfur, and
n is zero, 1 or 2.

16. A method of controlling pests, selected from the group consisting of insects, and members of the order Acarina, which method comprises applying thereto or to the locus thereof a pesticidally effective amount of a compound according to claim 1.

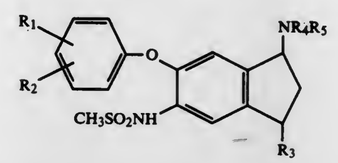
4,555,406

INDANYL DERIVATIVES, THEIR PREPARATION AND USE

Clemens Rufer, Berlin, Fed. Rep. of Germany, and Irmgard Boettcher, Basel, Switzerland, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,629
Int. Cl.⁴ A61K *31/18;* C07C *143/75*
U.S. Cl. 514—605 **20 Claims**

1. An indanyl derivative of the formula



wherein
R_1 and R_2 are identical or different, and each is hydrogen, flourine or chlorine
R_3 is hydrogen or phenyl
R_4 is hydrogen or alkyl of 1–6 carbon atoms, and
R_5 is hydrogen, alkyl of 1–6 carbon atoms, cyclohexyl or phenyl
with the proviso that at least one of the substituents R_3, R_4, and R_5 is different from hydrogen, or a physiologically acceptable salt thereof with an acid.

4,555,407

CONTINUOUS CHEWING GUM METHOD

Franklin Kramer, Briarcliff Manor, N.Y.; Henderikus B. Bruins, Cream Ridge; Joseph Giacone, Princeton Junction, both of N.J., and Luc L. Carbillet, Buc, France, assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 24, 1984, Ser. No. 686,049
Int. Cl.⁴ A23G *3/30*
U.S. Cl. 426—5 **14 Claims**

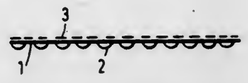
1. A method for continuously forming a wide thin chewing gum slab suitable for forming sheets and bands ready for packaging in an automatic wrapping machine which comprises:
   (a) continuously compounding a chewing gum paste;
   (b) extruding the formed gum paste to a slab at least 0.7 meters wide and less than 3 mm thick, said extruded slab having a temperature less than 100° C.;
   (c) cooling the extruded gum paste slab to a temperature less than about 60° C. in less than about 60 seconds; and
   (d) passing the gum paste slab through calender rolls to reduce the slab to less than 2.5 mm thick.

4,555,408

SAUSAGE

Barbara Gregor, Moorrege, and Gebhard Huckfeldt, Tornesch, both of Fed. Rep. of Germany, assignors to Huckfeldt & Thorlichen, Tornesch, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 648,671
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3333387
Int. Cl.⁴ A23L *1/31*
U.S. Cl. 426—90 **8 Claims**



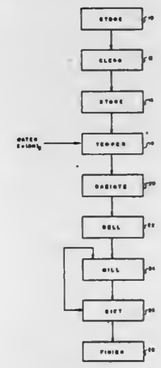
1. A sausage containing sausage meat and having an artificial sausage casing of two-dimensional fiber material, said casing being rough on the inside and containing an impregnation or coating of collagen and a separate impregnation of fat, oil or wax, and wherein the roughness on the inside of said casing is formed by still fibers or filaments which are positively anchored in the surface of the sausage meat.

4,555,409

CEREAL PROCESSING

Edwin R. Hart, Box 5184, Richardson, Tex. 75080

Filed Apr. 9, 1984, Ser. No. 598,079
Int. Cl.⁴ A21D *6/00;* A23L *1/10*
U.S. Cl. 426—242 **4 Claims**



1. A method of making masa from cereal grains comprising:
   a. cleaning the grains,
   b. tempering the grains by adding water until they have a moisture content of about 30% by weight,
   c. rapidly heating the tempered grains by radiating the grains with infrared radiation until the grains are uniformly partially gelatinized, then
   d. flaking the grains immediately after heating by rolling the grains through rolls while the grains are soft and turgid, and then
   e. grinding the grains to a flour.

4,555,410

PROCESS FOR THE PRODUCTION OF CONTROLLED FREEZING POINT DRIED FOODS

Akiyoshi Yamane, 577-1, Yonehara, Yonago-Shi, Tottori Prefecture, Japan

Filed Aug. 23, 1983, Ser. No. 525,678
Claims priority, application Japan, Aug. 31, 1982, 57-150015
Int. Cl.⁴ A23C *1/08;* A23L *3/36*
U.S. Cl. 426—384 **2 Claims**

1. A process for the production of controlled freezing point dried food having its original freshness and having an excellent restoration ability to its original state, which comprises treating a fresh food to be dry-treated in the presence of an edible freezing-point depression agent at a temperature of 0° C. or below for at least 10 hours without freezing said fresh food to thereby make the food cold-resistant, to maintain its original freshness and to improve its flavor and taste and blowing chilled air at a temperature of −5° C. to −10° C. onto the food at a stream rate of 0.5 m/sec to 5 m/sec for 5 to 600 hours to freeze dry said food and thereby form a freeze-dried food.

4,555,411

PROCESS FOR PRODUCING A REDUCED FAT SPREAD

David P. J. Moran, Covington; John J. Hepburn, Milton Ernest, and David G. Sharp, Clapham, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 7, 1983, Ser. No. 511,407
Claims priority, application United Kingdom, Jul. 8, 1982, 8219845; Netherlands, Oct. 18, 1982, 8204009
Int. Cl.[4] A23D *3/02*
U.S. Cl. 426—603 7 Claims

1. A process for producing a water-in-oil emulsion spread having a fat content of at most 60%, comprising

(i) providing an oil-in-water emulsion from a fatty phase and an aqueous phase at a temperature at which the fatty phase is melted, said emulsion being a dairy cream which is substantially free from added emulsifiers;

(ii) shearing and cooling said emulsion in the absence of a cream/air interface, using apparatus means internally coated with a hydrophobic material, to cause phase inversion and obtain a water-in-oil emulsion-spread having the same level of fat as the starting oil-in-water emulsion.

4,555,412

PROCESS FOR APPLYING A COATING TO A SUBSTRATE AND A LIQUID AQUEOUS COMPOSITION TO BE USED THEREIN

Gerhard Günter, Ettlingen, and Hartmut Haeufler, Aldingen, both of Fed. Rep. of Germany, assignors to Akzo nv, Arnhem, Netherlands

Filed Mar. 15, 1982, Ser. No. 357,819
Int. Cl.[4] B05D *1/04, 3/02*
U.S. Cl. 427—27 14 Claims

1. A process for applying a coating to a substrate by bringing the substrate into contact with an aqueous coating composition at a temperature in the range of 5° to 65° C., so that a coating of the coating composition is formed on the substrate, said coating being subsequently cured at a temperature in the range of 70° to 220° C., characterized in that the coating composition comprises a dispersion of an epoxy compound that is essentially a solid epoxy group-containing compound having a number average molecular weight of at least 1000, an epoxy equivalent weight in the range of 450 to 7500 and an average particle size of about 0.5 to 35 μm and a melting point between 40° C. and the baking temperature, in an aqueous medium comprising an ionized polyamino compound having primary or secondary amino groups as curing agent for the epoxy group-containing compound, the ratio of the number of reactive groups of the polyamino compound to the number of epoxy groups of the epoxy compound being at least 0.4.

4,555,413

PROCESS FOR PREPARING H_2 EVOLUTION CATHODES

Dale E. Hall, Wilton, Conn., assignor to Inco Alloys International, Inc., Huntington, W. Va.

Filed Aug. 1, 1984, Ser. No. 636,707
Int. Cl.[4] B05D *1/00, 1/08*
U.S. Cl. 427—34 6 Claims

1. A process for producing a hydrogen evolution cathode comprising spraying particles of a powder containing an AB_N intermetallic compound wherein A is at least one member of the group consisting of rare earth elements and calcium and up to 0.2 atom of zirconium and/or thorium, B is selected from the group of nickel and cobalt and up to 1.5 atom in total of aluminum, copper, tin, iron and chromium and N has a value between 4 and 8, through an energetic medium onto a metallic substrate characterized by corrosion resistance in aqueous alkaline media, the duration of the spray passage and the temperature of said medium being such that particles of said powder are at least partly molten at time of impact with said substrate, and thereafter subjecting the thus sprayed substrate to a reduction at a temperature up to about 650° C. to reduce the coating on said substrate.

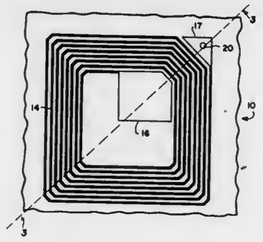
2. A process as in claim 1 wherein the energetic medium is a plasma.

4,555,414

PROCESS FOR PRODUCING COMPOSITE PRODUCT HAVING PATTERNED METAL LAYER

Merwin F. Hoover, Topsfield; Ann B. Salamone, Marblehead, and Jan Vandebult, Topsfield, all of Mass., assignors to Polyonics Corporation, Newburyport, Mass.

Filed Apr. 15, 1983, Ser. No. 485,328
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—43.1 29 Claims



1. The process for forming a composite product which comprises applying directly to a base a patterned layer of curable resin, curing said resin in said pattern, etching said patterned cured resin in the absence of a mask with an etchant which will permit absorption onto said patterned cured resin of a metal catalyst capable of promoting electroless metal deposition selectively but which will not chemically modify said base so as to permit absorption onto said base of a metal catalyst capable of promoting electroless metal deposition selectively, contacting said etched cured resin with a catalyst composition capable of promoting electroless metal deposition on said etched cured resin without effecting, absorption of said catalyst on said base, activating the absorbed catalyst, and electrolessly depositing a metal layer on said etched cured patterned resin selectively without effecting electroless deposition of said metal layer on the base.

4,555,415

VITREOUS ENAMELS

John L. C. Mumford, Saffron Walden, and Roger F. Price, Haverhill, both of England, assignors to TI (Group Services) Limited, Birmingham, England

Filed Dec. 19, 1984, Ser. No. 683,617
Claims priority, application United Kingdom, Dec. 21, 1983, 8334118
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—193 15 Claims

1. A process for applying a vitreous enamel comprising; applying a powdered vitreous frit to a metal, said vitreous frit having a water content of up to 0.03% by weight; and then firing the coated metal at a temperature in excess of the melting point of the frit, in a furnace having an atmosphere with a dew point of up to 10° C.

4,555,416

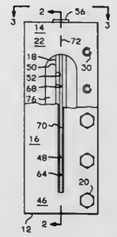
SPRAY APPARATUS WITH SELF CLEANING NOZZLE

Michael L. Fights, and William E. Jones, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Aug. 27, 1984, Ser. No. 644,490
Int. Cl.[4] C23C *16/00*
U.S. Cl. 427—248.1 36 Claims

1. A method for spraying a first fluid through a first nozzle, and for cleaning said first nozzle without removing said first nozzle from a spray apparatus, which method comprises:

(a) interposing a chamber between said first nozzle and a supply port;



(b) inserting a second nozzle into said chamber;

(c) supplying said first fluid to said supply port; and

(d) directing a second fluid through said second nozzle, and through said first nozzle.

4,555,417

METHOD FOR COATING A SUBSTRATE WITH A FOAMED PROTEINACEOUS PRODUCT

Paul W. Gibson, Mt. Zion, and Frank T. Orthoefer, Decatur, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 174,307, Jul. 30, 1980, Pat. No. 4,390,450.
This application Apr. 8, 1983, Ser. No. 470,836
Int. Cl.[4] B05D *3/12, 7/24*
U.S. Cl. 427—361 4 Claims

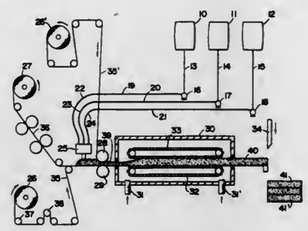
1. In an improved method for preparing a substrate coated with a proteinaceous foaming composition wherein an aqueous medium containing a proteinaceous foaming component is ingested with a sufficient amount of a gas to provide a foamed product, a substrate is coated with foamed product and the foamed product is mechanically disintegrated to form a continuous surface coating upon said substrate, the improvement which comprises ingesting gas into an aqueous medium containing a proteinaceous foaming composition consisting essentially of at least one proteinaceous foaming component selected from the group consisting of vegetable protein hydrolyzate having at least two different chelating sites, egg albumen, and casein hydrolyzate, at least 0.005 mole alkaline earth metal ions for each mole of nitrogen in said proteinaceous component and at least 0.002 mole zinc ions for each mole of nitrogen in said proteinaceous component.

4,555,418

ALKOXYLATED AROMATIC AMINE-AROMATIC POLYESTER POLYOL BLEND AND POLYISOCYANURATE FOAM THEREFROM

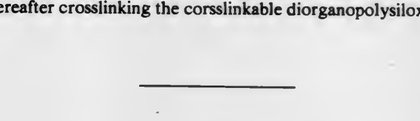
Scott C. Snider, Pinellas Park, and Alberto DeLeon, Clearwater, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 541,197, Oct. 12, 1983, Pat. No. 4,496,625.
This application Dec. 17, 1984, Ser. No. 682,119
Int. Cl.[4] C08G *18/14, 18/32, 18/42;* C09K *3/00*
U.S. Cl. 427—373 20 Claims



1. A polyisocyanurate foam comprising the reaction product of an organic polyisocyanate, a blowing agent, a trimerization catalyst, and a minor amount of a polyol blend comprising

(a) about 5 percent to about 95 percent by weight of said blend of an alkylene oxide adduct of an aromatic amine of the formula



wherein Z is a divalent aromatic radical, x, x', y, and y' each independently have an average value from about 1 to about 5, and each R is independently selected from the group consisting of hydrogen, alkyl or aryl, provided that the adduct is capped with ethylene oxide units, and

(b) about 5 percent to about 95 percent by weight of said blend of an aromatic polyester polyol having a molecular weight of from about 150 to about 5,000.

4,555,419

METHOD OF IMPREGNATING TEXTILE MATERIALS MADE FROM ORGANIC FIBERS

Karl Huhn, Burghausen, Fed. Rep. of Germany, and Günter von Au, Sao Paulo, Brazil, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 627,125
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1983, 3332997
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—387 9 Claims

1. A method for impregnating textile materials made from organic fibers which comprises impregnating the textile materials with a composition containing a crosslinkable diorganopolysiloxane, an organopolysiloxane having at least 3 Si-bonded hydrogen atoms per molecule, a crosslinking catalyst, and an organo(poly)siloxane having 1 or 2 Si-bonded hydrogen atoms and from 2 to 8 silicon atoms per molecule in which the composition is free of a filler having a surface area greater than 50 g/m^2 in an amount greater than 1 weight percent based on the weight of the organosilicon compounds and thereafter crosslinking the corsslinkable diorganopolysiloxane.

4,555,420

CURABLE SILICONE COMPOSITIONS AND PROCESSES

Gary M. Lucas, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jul. 5, 1984, Ser. No. 627,954
Int. Cl.[4] C08G *77/04, 77/06;* C08K *3/36, 3/26*
U.S. Cl. 427—387 38 Claims

1. A low modulus room temperature vulcanizable silicone composition substantially free of plasticizer consisting essentially of:

(A) 100 parts by weight of an organopolysiloxane wherein the silicon atoms at the polymer chain ends are terminated with at least two alkoxy radicals, said organopolysiloxane having a viscosity ranging from about 20,000 centipoise to 500,000 centipoise at 25° C., and

(B) at least 0.1 part by weight of at least one silane having the formula

Z_2SiX_2

where X is an amino radical, amido radical or aminoxy radical, or mixture of such radicals, and Z is a substituted or unsubstituted hydrocarbon radical or mixture thereof; with the proviso that the cured composition has an ultimate percent elongation of about 500 to 1200.

4,555,421

FILLING MATERIAL

Kazo Yasue, Utsunomiya, Japan, assignor to Anmin Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 128,468, Mar. 7, 1980. This application May 11, 1984, Ser. No. 609,905

Claims priority, application Japan, May 23, 1979, 54-63546

Int. Cl.⁴ A41G *11/00*

U.S. Cl. 428—6 **16 Claims**



1. A filling material which simulates feathers and which is composed of a plurality of resilient fibers of an elongated, substantially cylindrical bundle of fibers, at least some of the fibers having different lengths, said fibers being bent into a loopy configuration wherein the center of the loopy configuration is large in comparison to the diameter of the bundle of fibers, the opposite ends of said fibers being gathered at one point and bonded together at the one point such that there are substantially no free fiber ends and wherein some of the fibers bent into the loopy configuration have different angular orientation of the loopy configurations formed thereby such that the filling material is substantially three dimensional.

4,555,422

HEAT SHRINKABLE MAGNETIC SHIELDING ARTICLE

Koichi Nakamura, Numazu; Masashi Ishibashi, Chiba; Hideki Kameda, Yachiyo, and Minoru Makiyo, Inba, all of Japan, assignors to Fujikura Ltd, Tokyo, Japan

Filed Jan. 10, 1984, Ser. No. 569,634

Claims priority, application Japan, Jan. 15, 1983, 58-004755

Int. Cl.⁴ F16L *00/00*

U.S. Cl. 428—36 **14 Claims**

1. A heat shrinkable magnetic shielding article which comprises:

a heat shrinkable layer comprising a thermoplastic polymeric material;

and, arranged under the layer, directly or via an adhesive layer, a magnetic shielding layer comprising a thermoplastic polymeric material and at least one powdery ferrite selected from the group consisting of $MnO.Fe_2O_3$, $FeO.Fe_2O_3$, $CoO.Fe_2O_3$, $NiO.Fe_2O_3$, $CuO.Fe_2O$ and $ZnO.Fe_2O_3$,

said magnetic shielding layer being heat shrinkable or being adapted to flow due to the force exerted by shrinkage of the heat shrinkable layer,

said ferrite being contained in the magnetic shielding layer in an amount of from 10 to 90% based on the total weight of the layer.

4,555,423

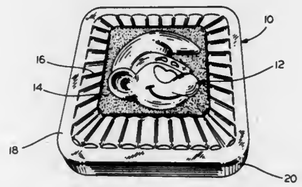
MULTICOLORED UNITARY THERMOFORMED ARTICLE

Howard E. Sands, Broadalbin, N.Y., assignor to Coleco Industries, Inc., West Hartford, Conn.

Filed Jun. 25, 1984, Ser. No. 624,452

Int. Cl.⁴ B44C *5/04*

U.S. Cl. 428—79 **8 Claims**



1. A unitary multicolored thermoplastic article including a body element and a substantially continuous contoured insert element of sheet-like nature on one surface of said body element and of lesser dimension than said body element so as to provide an exposed peripheral portion about said insert element, said insert element being preformed with at least two discrete depths providing a layer above said one surface of said body element and being differentially colored with respect thereto, said insert and body elements being bonded together and having a multiplicity of complimentary contours of at least two discrete depths in the area of said insert element to provide a first design component, said body element having a multiplicity of additional contours in said peripheral portion of at least two discrete depths.

4,555,424

TEXTILE SHEET WITH SURFACE EFFECTS

Ingeborg Reim, Cottbus; Gerhard Pohl, Forst; Wolfgang Götzke, Forst; Dieter Wahnberger, Forst; Lothar Postel, Forst; Irmgard Kindlein, Forst; Rudolf Vatter, and Manfred Greschke, both of Cottbus, all of German Democratic Rep., assignors to VEB Forst, Lausitz, German Democratic Rep.

Filed Feb. 24, 1984, Ser. No. 582,985

Int. Cl.⁴ B32B *5/06*

U.S. Cl. 428—91 **15 Claims**

1. A finished textile sheet having surface effects including one or more of threads with a high degree of hairiness, a larger volume of the yarn, a nap (at low material losses) on one or both surfaces, a loosening of the yarn structure, lower fiber volume per square centimeter, a higher volume, a softer touch, a warmer surface effect, increased tenacity and hairiness, and a higher sheet volume, which comprises a product textile sheet having at least one specific surface effect, and being derived from an initial textile sheet, said initial textile sheet including yarns or threads of strengths typical for carded yarns, and having a firm round yarn cross-section and low or minimal hairiness, stomach binder, and/or sugartop effects, said yarns or threads of said initial textile sheet having a mantle and fibers or fiber parts, said fibers or fiber parts being displaced from said yarns or threads as fiber ends and/or loops, and penetrating and extending into at least one surface of said initial textile sheet, said fibers or fiber parts being displaced at least partially through the entire thickness of said initial textile sheet, and filling the spaces between said yarns or threads, said fiber ends and/or loops projecting from said yarn mantle as hairs in said product textile sheet.

4,555,425

TEXTILE SHEET WITH SPECIFIC SURFACE EFFECTS

Ingeborg Reim, Cottbus; Gerhard Pohl, Forst; Wolfgang Götzke, Forst; Dieter Wahnberger, Forst; Lothar Postel, Forst; Irmgard Kindlein, Forst; Rudolf Vatter, and Manfred Greschke, both of Cottbus, all of German Democratic Rep., assignors to VEV Forster Tuchfabriken, Forst, German Democratic Rep.

Filed Feb. 24, 1984, Ser. No. 582,986

Int. Cl.⁴ B32B *5/06*

U.S. Cl. 428—91 **20 Claims**

1. A finished textile sheet article having specific surface effects including one or more of surface stability, pattern and needleloom felt character, fulling and raising-like effects, high hairiness, loose cross-section, high wool portion of the yarn, fulling-like fiber displacements, and a nap on the surface, which comprises a finished textile sheet having a high wool portion, said finished textile sheet having at least one specific surface effect, and being derived from an initial textile sheet having a predominantly low wool portion and including yarns or threads of yarn or thread strengths typical for carded yarns, and having a firm round yarn cross-section, and low hairiness, the surface of said initial textile sheet being penetrated by wool fiber portions, said wool fiber portions extending at least partially through the entire thickness of said initial textile sheet, so that said yarns or threads are penetrated with fibers from said wool fiber portions.

4,555,426

PREFORMED, LAMINATED PLASTIC PANELS

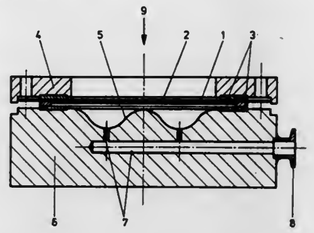
Siegfried Roth, Salem, and Horst Stenzenberger, Schriesheim, both of Fed. Rep. of Germany, assignors to Dornier GmbH, Friedrichshafen and Technochemie GmbH-Verfahrenstechnik, Dossenheim, both of, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,365

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3243021

Int. Cl.⁴ B32B *5/12*

U.S. Cl. 428—113 **3 Claims**



1. A preformed, rigid, laminated plastic panel comprising a plurality of individual rigid, unfoamed, non-porous laminated thermoplastic layers or thermoplastic layers arranged in partly differing orientation reinforced with unidirectionally preoriented short fibers comprising 20 to 80% of the layer volume.

4,555,427

HEAT TRANSFERABLE SHEET

Sadanobu Kawasaki, Tokorozawa; Mineo Yamauchi, Ichikawa, and Masanori Akada, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1984, Ser. No. 633,435

Claims priority, application Japan, Jul. 25, 1983, 58-135627

Int. Cl.⁴ B41M *3/12*; D06P *1/41, 5/00*

U.S. Cl. 428—195 **7 Claims**

1. A sheet to be heat transfer printed which is to be used in combination with a heat transfer printing sheet, and which has a receptive layer for receiving a dye transferred from the heat transfer printing sheet upon being heated, said receptive layer comprising first and second regions characterized in that:

(a) the first region is formed from a synthetic resin having a glass transition temperature of from −100° to 20° C. and having a polar group;

(b) the second region is formed from a synthetic resin having a glass transition temperature of 40° C. or above;

(c) both the first region and the second region are exposed at the surface of the receptive layer, the first region occupying at least 15% of said surface; and



(d) the first region exists in the form of mutually independent islands and the respective longitudinal length of the island-like portions is from 0.5 to 200 μm.

4,555,428

MULTI-LAYER UNITIZED FABRIC CONSTRUCTION AND METHOD OF MAKING SAME

Tyler L. Cole, Asheboro, N.C., assignor to Stedman Corporation, Asheboro, N.C.

Filed Apr. 13, 1982, Ser. No. 367,927

Int. Cl.⁴ B32B *3/06*

U.S. Cl. 428—102 **11 Claims**



1. A multi-layer unitized fabric construction comprising a single layer of shell fabric having a single fusible liner layer adhered thereon to form a composite layer folded on itself to form top and bottom shell fabric layers and two opposed layers of fusable lining therebetween and a permanent adhesive layer interposed between the two opposed layers of fusible lining with all of the layers being adhered together to form a single unitized structure.

4,555,429

CURVED NEEDLEPOINT CANVAS

Richard A. Martin, Tarrytown, N.Y., assignor to Dick Martin Design, Ltd., Tarrytown, N.Y.

Filed Jun. 21, 1984, Ser. No. 622,973

Int. Cl.⁴ D03D *29/00*

U.S. Cl. 428—131 **18 Claims**

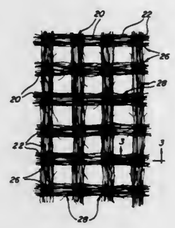
1. A needlepoint canvas comprising a curved perforated plastic sheet having, when in upright orientation, a mushroom shape cut by a central vertical plane, said mushroom shape comprising a generally oval head part whose major axis is horizontal and a generally cylindrical base part having a bottom end diameter less than the horizontal breadth of said head part and a top end diameter less than said bottom end diameter.

4,555,430

ENTANGLED NONWOVEN FABRIC MADE OF TWO FIBERS HAVING DIFFERENT LENGTHS IN WHICH THE SHORTER FIBER IS A CONJUGATE FIBER IN WHICH AN EXPOSED COMPONENT THEREOF HAS A LOWER MELTING TEMPERATURE THAN THE LONGER FIBER AND METHOD OF MAKING SAME

Alfred T. Mays, East Windsor, N.J., assignor to Chicopee, New Brunswick, N.J.

Filed Aug. 16, 1984, Ser. No. 641,144
Int. Cl.⁴ B32B *3/10*
U.S. Cl. 428—134 **14 Claims**



1. A strong durable nonwoven fabric comprising base fibers and conjugate fusible fibers of shorter length than said base fibers, and having a low melting point component and at least one high melting point, said fibers being arranged in a network of entangled fiber areas of higher density than the average density of the fabric, and interconnecting fiber bundles, the fibers of said interconnecting fiber bundles extending between and are entangled within the entangled fiber areas, said shorter length conjugate fibers being concentrated in said entangled fiber areas, and thermobonded to each other at fiber intersections to reinforce and strengthen the fabric, especially in said entangled fiber areas.

4,555,431

MAGNETIC RECORDING MEDIUM

Hajime Miyatsuka, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 6, 1984, Ser. No. 576,990
Claims priority, application Japan, Feb. 4, 1983, 58-16243
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—141 **18 Claims**



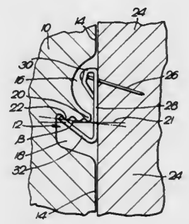
1. A magnetic recording medium comprising a magnetic layer on one side of a non-magnetic support and a back layer on the other side thereof, in which the magnetic layer consists mainly of a ferromagnetic metal powder and a binder and has a coercive force of at least 1000 Oe and a surface roughness of at most 0.03 μm, the ferromagnetic powder having a specific surface area of at least 35 m^2/gr and a saturation magnetization of at least 120 emu/gr, while the back layer has a surface electric resistance of at most $1 \times 10^{10}\Omega$ and a surface roughness of at most 0.05 μm.

4,555,432

WALL PLAQUES

William R. Bossons, Congleton, England, assignor to W. H. Bossons (Sales) Limited, England

Filed Aug. 15, 1984, Ser. No. 640,943
Claims priority, application United Kingdom, Aug. 18, 1983, 8322189
Int. Cl.⁴ B44C *5/04*
U.S. Cl. 428—156 **5 Claims**



1. A wall plaque adapted to be hung on a wall by a picture hook, said picture hook being of the type having an upturned V-shaped hook portion connected by a strap to a crown shaped head portion, said picture hook being mountable on a wall by a nail driven through said head portion, said wall plaque comprising

an intermediary body portion having a front face and a rear face,

structure defining a recess in said rear face, said recess having an upper portion sized to receive said hook's head portion, and having a lower portion sized to receive said hook's hook portion, said hook's head and hook portions being received in said recess's upper and lower portions, respectively, when said plaque is hung on a wall by said picture hook in a position where said plaque's rear face is flush against said wall, and

a tongue within said recess that divides said recess into said upper and lower portions, a bottom surface of said tongue having at least one of (a) an upward slope away from said rear face, and (b) a plurality of ribs, said tongue resting on, and said plaque thereby being supported by, the free edge of said picture hook's portion when said plaque is hung on a wall by said picture hook, and at least one of said tongue's slope and said tongue's ribs cooperating with said hook portion's free edge to tend to cause said plaque's rear face to remain flush with the wall.

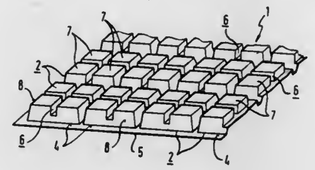
4,555,433

SOUND-ABSORBING ELEMENT

Dieter Jablonka; Klaus Urban, both of Herdecke; Heinz-Peter Raidt, Dortmund, and Eberhard Schepers, Herdecke, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich and Ewald Dörken AG, Herdecke, both of, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,640
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233654
Int. Cl.⁴ B32B *3/30*; E04B *1/84*
U.S. Cl. 428—166 **15 Claims**

1. A sound-absorbing element comprising a plurality of cup-shaped recesses being covered by a flat web, each of said cup-shaped recesses having a bottom surface consisting of a film, said bottom surfaces being directly exposed to a sound field during installation and the size of said bottom surfaces being such that they are excitable to a plurality of natural vibrations upon the incidence of sound at a plurality of frequencies, each of said bottom surfaces being subdivided by at least one crimp-shaped recess into bottom subsurfaces, the depth of said crimp-shaped recess is appreciably smaller than the depth of said cup-shaped recesses, and said crimp-shaped recess extends from one side of one said bottom surface to the other side thereof and separates said subsurfaces completely from one another.

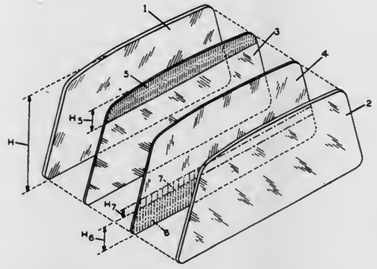


4,555,434

ANTI-GLARE GLASS PANE FOR A VEHICLE

Heinz Kunert, Cologne, Fed. Rep. of Germany, assignor to Saint-Gobain Vitrage, Aubervilliers, France

Continuation-in-part of Ser. No. 149,983, May 15, 1980, abandoned. This application Sep. 30, 1983, Ser. No. 537,673
Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920363; Sep. 5, 1979, 2935822
Int. Cl.⁴ B32B *3/02, 17/10*; H05B *3/10*
U.S. Cl. 428—194 **9 Claims**



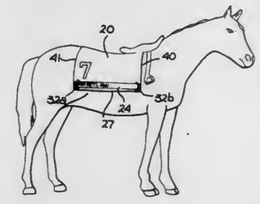
1. Anti-glare glass pane for a windshield of a vehicle having a front hood where said pane has a main area of a field of vision and a secondary area of a field of vision beneath said main area and which is less transparent than said main area; characterized in that a lower portion of the secondary area is in the shape of a downwardly curved concave band having an upper substantially center portion extending upwardly towards the top of the pane and lower side portions curved downwardly towards the bottom and both sides of the pane, in that the degree of transparency of the secondary area increases gradually from the bottom thereof towards the top, in that said lower portion of the secondary area has light transmission of the visable spectrum in the range of 30 to 50%, in that an upper portion of the secondary area positioned between the bottom portion and the main area of vision has a light transmission of the visible spectrum in the range of 50–80%, and in that said upper portion is positioned along a line of sight adapted to extend from the eye level of the operator of the vehicle to an area of a roadway 10–20 m ahead of the vehicle.

4,555,435

INTERCHANGEABLE IDENTIFICATION APPARATUS FOR RACING ANIMALS AND EVENT CONTESTANTS AND METHOD FOR MAKING SAME

Ernest J. Walter, 2913 Caldwell Ave., Ontario, Calif. 91761

Filed Jan. 30, 1984, Ser. No. 575,078
Int. Cl.⁴ B68C *1/12*; G09F *3/08, 7/08*
U.S. Cl. 428—79 **10 Claims**



1. A labelling apparatus with detachable label for providing spectator identification of animals comprising:

a flexible label having an upper surface for carrying information thereon, a lower surface, and a first and second end;

a carrier piece into which said label is attached and displayed, said carrier piece having an upper surface and a lower surface, and having at least one slot for receiving at least an end of said label and for passing said end therethrough, whereon said slot is disposed to provide upward support of said label and to provide for cooperative interface between the surface of said carrier piece and said label such that said label is urged against the surface of said carrier piece and the body of said animal by gravity and rider weight forces present thereon; a first fastening means for detachably securing said upper surface of said end to said lower surface of said carrier piece; and

a second fastening means for removably securing said lower surface of said label to said upper surface of said carrier piece;

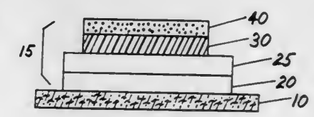
whereby said label is maintained flush and aligned with said carrier piece, and whereby said label is detachably secured thereto.

4,555,436

HEAT TRANSFERABLE LAMINATE

Friedrich H. H. Geurtsen, Holliston; John M. Anemaet, Millis; Donald R. Smith, Hingham, and Mary G. Boyd, Framingham, all of Mass., assignors to Dennison Manufacturing Co., Framingham, Mass.

Filed May 3, 1984, Ser. No. 606,747
Int. Cl.⁴ B32B *7/06*; C09J *7/02, 7/04*
U.S. Cl. 428—200 **17 Claims**



1. In a heat transferable laminate of the type including a carrier support and a solvent-based release layer coated onto the carrier support and wherein the solvent-based release layer is dried to evaporate the solvent contained therein and an ink design layer applied over the dried release layer forming a heat transferable substrate comprising the dried release layer and ink design layer, the substrate transferable from the carrier support to a receiving article upon application of heat to the carrier while said receiving article contacts the transferable substrate, an improved solvent-based release composition prior to drying comprising:

a oxidized, esterified, partially saponified montan wax component;
a film-forming binder comprising a thermoplastic resin selected from the group consisting of a rosin ester and a hydrocarbon resin, said rosin ester comprising pentaerythritol ester of rosin and said hydrocarbon resin comprising the product resulting from polymerization and hydrogenation of hydrocarbon monomer.
a plasticizer-binder comprising ethylene vinyl acetate copolymer; and
a liquid solvent;
the montan wax, film-forming binder and plasticizer binder being dissolved in said solvent to form a homogeneous solution,
said homogeneous solution having a gel point temperature of less than 140° F., said gel point temperature achieved by subjecting the solvent-based release composition to a temperature above its dissolving temperature.

4,555,437
TRANSPARENT INK JET RECORDING MEDIUM

Elinor J. Tanck, Cupertino, Calif., assignor to Xidex Corporation, Sunnyvale, Calif.

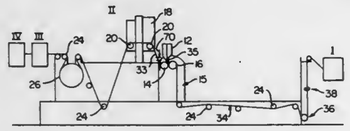
Filed Jul. 16, 1984, Ser. No. 631,282
Int. Cl.⁴ B41M *5/00*
U.S. Cl. 428—212 **19 Claims**

1. A transparent recording sheet comprising a transparent base support coated with a transparent ink-receiving layer comprising a hydroxyethylcellulose.

4,555,438
FRAGRANT WALL COVERING HAVING AN EMOLLIENT MOISTURIZER AND A METHOD OF MAKING SAME

John E. Orsak, Sparta, N.J., and Charles A. Roman, Conyngham, Pa., assignors to Dayco Corporation, Dayton, Ohio

Filed Mar. 14, 1985, Ser. No. 711,690
Int. Cl.⁴ B32B *9/04*
U.S. Cl. 428—219 **27 Claims**



1. In a wall covering comprising a polymeric exterior decorative surface layer and an inside surface of said wall covering, the improvement comprising a fragrant polymer entrapped emollient-moisturizer composition incorporated substantially uniformly in said polymeric layer, said fragrant emollient-moisturizer composition being gradually released into the atmosphere over an extended period of time.

4,555,439
TOUGH THERMOPLASTIC RESIN SHEET-LIKE MATERIAL

Ryuhei Ueeda, Kurashiki; Kiyonobu Fujii, Kibi, and Hiroshi Narukawa, Soja, all of Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Jan. 13, 1984, Ser. No. 570,295
Claims priority, application Japan, Jan. 21, 1983, 58-9169
Int. Cl.⁴ B32B *7/02, 27/09*; B28B *3/00*
U.S. Cl. 428—221 **10 Claims**

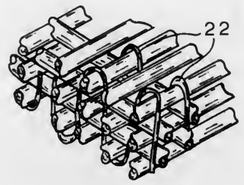
1. A pressed sheet like material characterized in that whitening is not found in the superficial layer upon electron microscope scanning, comprising:
(1) a thermoplastic resin having a degree of crystallinity of 10% or more and present in amounts of 20 to 90% by weight, and (2) flaky fillers of 10 to 80% by weight, the degree of orientation of crystals in the crystal plane parallel to the molecular chain of said resin being 55% or more; the percentage change in thickness of said sheet-like material being 2% or less; said sheet-like material being further characterized by the fact that it is pressed and has a notched Izod impact strength which is 2 or more times that of unpressed sheet-like material and a toughness which is 1.5 or more times that of unpressed sheet-like material.



4,555,440
MULTILAYERED PRESS FELT

Robert L. Crook, Saratoga Springs, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Jan. 2, 1985, Ser. No. 688,303
Int. Cl.⁴ B32B *7/08*
U.S. Cl. 428—223 **19 Claims**

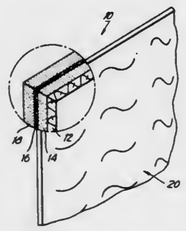


1. A press felt comprising:
a plurality of layers of yarns, the yarns of each layer oriented in parallel with respect to each other and perpendicular with respect to the yarns of adjacent layers, the yarns of one layer not binding the yarns of adjacent layers; and
separate binder means for binding said layers.

4,555,441
SELF-ADHESIVE WALL COVERING OR THE LIKE AND METHOD OF MAKING SAME

Irwin P. Rothenberg, Oceanside, N.Y., assignor to Stik-Trim Industries, Incorporated, New York, N.Y.

Filed Mar. 6, 1985, Ser. No. 708,674
Int. Cl.⁴ B32B *27/00*
U.S. Cl. 428—284 **9 Claims**

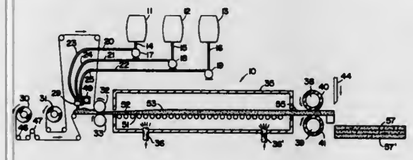


1. A self-adhesive wall covering or the like that is easily removable from a wall, consisting essentially of a layer of fabric having a visible pattern on one surface thereof; an acrylic-saturated paper having one surface adhesively fixed to the other surface of said fabric; a layer of PVA adhesive coated onto the other surface of said acrylic-saturated paper; and a layer of release paper removably secured to said PVA adhesive such that when said release paper is removed to expose said PVA adhesive, the wall covering is adherable to a wall by means of the exposed PVA adhesive.

4,555,442
POLYOXYALKYLENE/UNSATURATED DIESTER REACTION PRODUCT FOR CELLULAR FOAM STABILIZATION

Richard L. Frentzel, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 663,627, Oct. 22, 1984, Pat. No. 4,520,140, which is a division of Ser. No. 544,301, Oct. 21, 1983, Pat. No. 4,481,307, which is a division of Ser. No. 426,581, Sep. 29, 1982, Pat. No. 4,418,158, which is a division of Ser. No. 282,322, Jul. 10, 1981, Pat. No. 4,365,024. This application Apr. 11, 1985, Ser. No. 722,248
Int. Cl.⁴ B32B *3/26*
U.S. Cl. 428—318.4 **18 Claims**



1. A laminated structural panel having at least one facing sheet and having a foam material adhering to the facing sheet wherein the foam material comprises the reaction product of:
A. polymer forming reactants selected from the group consisting of phenolic, polyisocyanurate and polyurethane polymer forming reactants,
B. a blowing agent, and
C. a surfactant which comprises the reaction product of
(a) a polyoxyalkylene adduct having the formula

H—polyoxyalkylene chain R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, and
(b) an esterified unsaturated dibasic acid having the formula

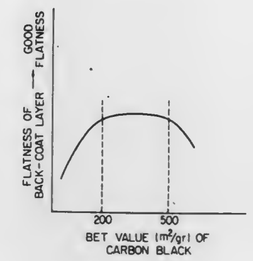
$T^1O_2C—C_uH_{2u-2}—CO_2T^2$

wherein u is 2 or 3 and T^1 and T^2 are identical or different and represent a straight or branched, saturated or unsaturated hydrocarbon chain, in the presence of an effective amount of a free-radical initiator, and wherein the polyoxyalkylene adduct optionally is capped by treatment either before or after its reaction with the esterified unsaturated dibasic acid with a capping agent capable of reacting with the hydroxyl groups of said adduct to reduce the hydroxyl number of said adduct to less than 50.

4,555,443
MAGNETIC RECORDING MEDIUM

Shozo Kikugawa, and Yoshitaka Yasufuku, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 624,097
Claims priority, application Japan, Jun. 30, 1983, 58-118881
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—336 **27 Claims**

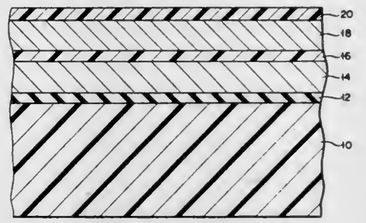


1. A magnetic recording medium comprising a support having a magnetic layer on a first side of said support and a back coat layer on a second side of said support which second side is opposite said first side, said back coat layer containing at east a silicon-modified polyurethane and a carbon black having a BET value of from 200 to 500 m^2/g, said silicon-modified polyurethane being obtained by the reaction of an isocyanate and an active hydrogen compound having a siloxane linkage.

4,555,444
MAGNETIC RECORDING MEDIUM AND METHOD FOR MANUFACTURING THE SAME

Naohiro Hanaoka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1983, Ser. No. 536,211
Claims priority, application Japan, Apr. 6, 1981, 56-51545; Apr. 9, 1981, 56-53369
Int. Cl.⁴ G11B *5/08*
U.S. Cl. 428—336 **23 Claims**



1. A magnetic recording medium comprising:
a base film;
an under coating layer formed on said base film;
a plurality of metal thin magnetic films formed on said under coating layer,
said under coating layer comprising a nonmagnetic material having a stiffness less than the stiffness of said metal thin magnetic films; and
an intermediate layer having a thickness of about 200 Å to about 800 Å which is formed between adjacent magnetic films to separate said magnetic films from each other, said intermediate layer comprising a high polymeric resin having a stiffness less than the stiffness of said magnetic films.

5. A process for making magnetic recording medium which comprises the steps of:

forming an under coating layer, comprising a nonmagnetic material having stiffness less than the stiffness of the metal thin magnetic film which is subsequently formed on said under coating layer, of a predetermined thickness on a base film, forming a first metal thin magnetic film of a predetermined thickness on said under coating layer, forming an intermediate layer of a high polymeric resin and a thickness of about 200 Å to about 800 Å on said first metal thin magnetic film, and forming a second thin magnetic film of a predetermined thickness on said intermediate layer, the stiffness of said intermediate layer being less than the stiffness of said metal thin magnetic films.

4,555,445

CORROSION RESISTANT LUBRICANT COATING COMPOSITE

Gary T. Frey, 566 Cedarbrook Dr., Painesville, Ohio 44077; Douglas H. Strong, 7466 Mountain Park Dr., Mentor, Ohio 44060, and Janet B. Urbanski, 642 High St., Fairport Harbor, Ohio 44077

Filed Mar. 30, 1984, Ser. No. 595,055
Int. Cl.⁴ B32B *9/06;* **C23F** *7/00*
U.S. Cl. 428—340 **10 Claims**

1. A coated article of manufacture having a heat resistant and corrosion-resistant coating composite that includes a smooth, uniform topcoating which article comprises substrate metal, an undercoating containing metal in elemental form, or chromium in non-elemental form, or mixtures thereof, and a heat-cured particulate-metal-free, smooth and uniform topcoating from a composition heat curable to a water resistant protective coating, said composition containing liquid medium, polyethylene-containing copolymer component and silicate substance compatible with said copolymer component in liquid medium.

4,555,446

CARBON FIBER AND PROCESS FOR PREPARING SAME

Atsushi Sumida, and Shizuo Watanabe, both of Ehime, Japan, assignors to Toray Industries, Incorporated, Japan

Filed Jun. 28, 1983, Ser. No. 508,576
Claims priority, application Japan, Jul. 5, 1982, 57-115334
Int. Cl.⁴ D02G *3/00;* **B32B** *9/00;* **B05D** *3/12*
U.S. Cl. 428—367 **4 Claims**

1. A carbon fiber superior in high-order processability and in physical properties as a composite, said carbon fiber having been treated with an epoxy resin composition, said epoxy resin composition comprising an epoxy resin and at least one polyalkylene ether glycol derivative selected from the group consisting of a polyoxyethylenized 1,6-hexanediol glycidyl ether, a polyoxyethylene styrenized cumyl phenol, an alkylene bis-(ϵ-glycidyl polyalkylene oxide ether), a polyoxyethylene lauryl glycidyl ether and an alkyl (ϵ-glycidyl polyalkylene oxide ether).

4,555,447

BLOWING WOOL INSULATION

Ronald F. Sieloff, Pataskala, and William A. Kays, Columbus, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 9, 1984, Ser. No. 639,178
Int. Cl.⁴ B32B *9/00;* **B05D** *3/02;* **C03C** *25/02*
U.S. Cl. 428—392 **12 Claims**

1. Blowing wool insulation formed from glass fibers, at least a portion of the fibers surfaces coated with an effective amount of the residue produced by evaporating water from an aqueous mixture consisting essentially of 1 to 5 weight percent of a quanternary salt of ammonium ethosulfate with water comprising the balance of the mixture wherein the percentage is by weight of the aqueous mixture.

4,555,448

BIOGENETIC SILICA INSULATION

Robert L. Durham, Simonton, Tex., assignor to Agritec, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 470,748, Feb. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 297,820, Aug. 31, 1981, abandoned. This application Jul. 10, 1984, Ser. No. 629,396
Int. Cl.⁴ B32B *5/16, 9/00;* **C08J** *9/00*
U.S. Cl. 428—402 **22 Claims**

1. An insulation material comprising,

particles of biogenetic silica in amorphous state and having a substantially porous structure bound together by a physical binder effective to provide bonds which pull the particles together without compaction,

the physical binder being effective and present in an amount effective to so bind the particles together in a rigid structure without substantially filling voids of the particles thereby not substantially reducing the porosity of the particles, and

the insulation material having a porosity of at least 60% by volume.

4,555,449

MAGNETIC RECORDING MEDIUM

Joseph V. Koleske, Charleston, W. Va.; Glenn S. Peacock, Belle Mead, and George T. Kwiatkowski, Green Brook, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 9, 1984, Ser. No. 578,422
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—411.1 **11 Claims**

1. A magnetic recording medium comprising a substrate and a magnetic recording layer thereon comprising a cured binder and magnetic particles, the binder containing a blend of a thermoplastic polymer or polymers and a polyfunctional acrylate derivative of a caprolactone-polyol characterized by the formula:

$$(CH_2{=}\underset{\displaystyle R_1}{\underset{|}{C}}COO)_m{-}R_2{-}(OH)_n \qquad (II)$$

wherein R_1 is hydrogen or methyl, R_2 is the residue of a caprolactone-polyol having an average molecular weight of from about 200 to about 10,000, m is an integer of 2 to 8 and n is an integer of 0 to 6, with the proviso that the sum of m+n is 8 or less.

4,555,450

MOISTURE-RESISTANT TRANSPARENT MERCAPTAN COMPOSITIONS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 394,204, Jul. 1, 1982, Pat. No. 4,454,201, and a continuation-in-part of Ser. No. 394,205, Jul. 1, 1982, Pat. No. 4,450,202, each is a division of Ser. No. 232,054, Feb. 5, 1981, Pat. No. 4,343,928, which is a continuation-in-part of Ser. No. 204,424, Nov. 6, 1980, Pat. No. 4,352,848, which is a continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application May 1, 1984, Ser. No. 605,725
Int. Cl.⁴ C08G *59/66, 59/56*
U.S. Cl. 428—412 **19 Claims**

1. A composition resistant to moisture permeation, comprising:

a blend having,

about 100 **parts by weight of a mercaptain compound having at least two thio terminal groups,**

from about 20 parts to about 300 parts by epoxy resin, and

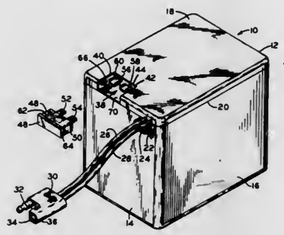
from about 0.1 to about 4.0 parts by weight of an amino-titanate compound.

4,555,451

STORAGE BATTERY WITH BUILT-IN FUSE

Lawrence R. Harrod, and Lucio C. Perego, both of Ft. Wayne, Ind., assignors to Pines of America, Inc., Fort Wayne, Ind.

Filed Jan. 29, 1985, Ser. No. 695,961
Int. Cl.⁴ H01M *2/30*
U.S. Cl. 429—1 **7 Claims**



1. A battery structure comprising:

an enclosure;

at least one cell rigidly enclosed by said enclosure, said at least one cell forming a battery having first and second cell terminals within said enclosure;

fuse receiving recess means, formed in the enclosure so as to open externally of the enclosure on at least one side of the enclosure, for removably accepting a conventionally encapsulated two terminal fuse inserted from outside the enclosure to a position substantially within said recess means;

first and second fuse holder terminals rigidly supported in the fuse receiving recess means and adapted to hold the respective terminals of said fuse inserted therein;

a first electrical connection between the first cell terminal and the first fuse holder terminal, said first connection being immovably disposed fully within said enclosure;

a second electrical connection between the second fuse holder terminal, at a portion thereof within said enclosure, and a first battery terminal external of said enclosure; and

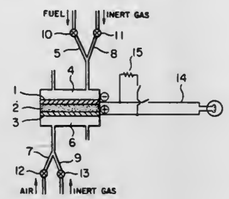
a third electrical connection between the second cell terminal, disposed within said enclosure, and a second battery terminal external of said enclosure.

4,555,452

METHOD FOR OPERATING FUEL CELL

Toshiki Kahara, Ibaraki; Toshikatsu Mori, Hitachi; Jinichi Imahashi, Hitachi; Akio Honji, Hitachi, and Kohki Tamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1985, Ser. No. 709,132
Claims priority, application Japan, Mar. 9, 1984, 59-43903
Int. Cl.⁴ H01M *8/04*
U.S. Cl. 429—13 **9 Claims**



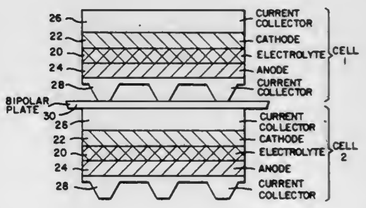
1. A method for operating a fuel cell comprising an oxidizing agent chamber subject to supply of an oxidizing agent gas and a fuel chamber subject to supply of a fuel gas, which comprises, at start to operate the fuel cell, purging the oxidizing agent chamber and the fuel chamber with an inert gas, while connecting the fuel cell to an outside auxiliary load circuit, then heating the fuel cell, then replacing the inert gas in the oxidizing agent chamber and the fuel chamber with an oxidizing agent gas and a fuel gas, respectively, and feeding the gases thereto, thereby controlling a unit cell voltage to not more than 0.85 V, and then connecting the fuel cell to an outside load circuit, thereby starting the operation of the fuel cell.

4,555,453

METHOD FOR FORMING MOLTEN CARBONATE FUEL CELL COMPONENT AND STRUCTURE

A. John Appleby, Mountain View, Calif., assignor to Electric Power Research, Inc., Palo Alto, Calif.

Filed Oct. 1, 1981, Ser. No. 307,446
Int. Cl.⁴ H01M *8/14*
U.S. Cl. 429—41 **16 Claims**



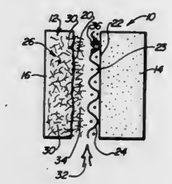
13. A component for a molten carbonate fuel cell comprising a porous fuel cell electrode and a continuous dense, porous, non-electrically conducting binder layer adhered to and supported by a surface of said electrode, said binder layer being of sufficient porosity to be impregnable with a carbonate salt and of insufficient thickness to be self-supporting.

4,555,454

REINFORCED CONSUMABLE ELECTRODE, ELECTROCHEMICAL CELL AND METHOD

Nicholas Shuster, Willoughby Hills, Ohio, assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Apr. 17, 1985, Ser. No. 724,322
Int. Cl.⁴ H01M *2/38, 4/12*
U.S. Cl. 429—51 **22 Claims**



1. An electrode suitable for use in an electrochemical cell, comprising:

(a) a solid body of a reactive metal which is consumable by reaction with a liquid electrolyte, said body defining at least one surface to be contacted by said electrolyte during operation;

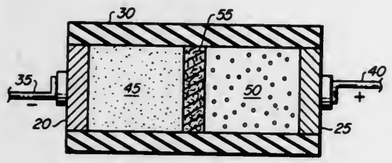
(b) a fibrous network of electrically insulating reinforcing material at least partially embedded in said body with at least a portion of said network disposed in said body in close proximity to said surface for contact with said electrolyte as metal at said surface is consumed by reaction with said electrolyte.

4,555,455

AMBIENT TEMPERATURE THERMAL BATTERY

Aaron N. Fletcher; George E. McManis, III, and Dan E. Bliss, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1985, Ser. No. 701,724
Int. Cl.⁴ H01M *6/36*
U.S. Cl. 429—112 **19 Claims**



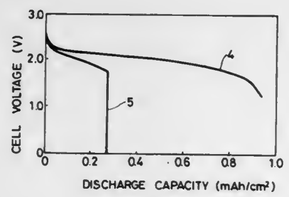
1. A thermal battery, operational at ambient temperatures after initial activation comprising:
an anode;
a first relatively high melting temperature electrolyte in contact with said anode;
a cathode;
a second relatively high melting temperature electrolyte in contact with said cathode;
a means for separating said first and said second electrolyte; and
a means for mixing said first and said second electrolytes to form a low melting temperature electrolyte.

4,555,456

CATHODE STRUCTURE FOR THIN FILM BATTERY

Keiichi Kanehori, Sayama; Katsuki Miyauchi, Hino; Yukio Ito, Sayama; Fumiyoshi Kirino, Suginami, and Tetsuichi Kudo, Setagaya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1984, Ser. No. 612,857
Claims priority, application Japan, May 26, 1983, 58-91438
Int. Cl.⁴ H01M *2/14, 4/58*
U.S. Cl. 429—131 **7 Claims**



1. In a thin film battery comprising a cathode and anode sandwiching an electrolyte, the improvement comprising wherein the cathode structure comprises a titanium disulfide thin film as a cathode active material disposed on a substrate, with a layer of titanium oxide being formed between the substrate and the titanium disulfide thin film.

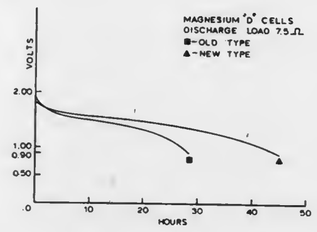
4,555,457

BATTERY CELL CONTAINING POTASSIUM MONOPEROXYSULFATE IN THE CATHODE MIX

Shiraz A. Dhanji, Sunrise, Fla., assignor to ACR Electronics Inc., Hollywood, Fla.

Filed Sep. 28, 1983, Ser. No. 536,634
Int. Cl.⁴ H01M *6/06*
U.S. Cl. 429—199 **18 Claims**

1. A battery cell containing an anode, a current collector, and a combined cathode dry mix and aqueous electrolyte primarily composed of manganese dioxide, in which said dry mix includes one or more oxides of a metal selected from the



group consisting of the noble metals, the rare earth metals, the alkaline earth metals, and conductive metals; and further includes a small amount of potassium monoperoxysulfate.

4,555,458

ELECTROLYTE FOR A LEAD ACID ACCUMULATOR, AND AN ACCUMULATOR USING SAID ELECTROLYTE

Pierre Mirebeau, Villebon sur Yvette, and Jean Gindre, Vierzon, both of France, assignors to Compagnie Europeenne d'Accumulateurs, S.A., Paris, France

PCT No. PCT/FR83/00030, § 371 Date Sep. 15, 1983, § 102(e) Date Sep. 15, 1983
PCT Filed Feb. 15, 1983, Ser. No. 537,390
Claims priority, application France, Feb. 15, 1982, 82 02420
Int. Cl.⁴ H01M *6/04*
U.S. Cl. 429—203 **4 Claims**

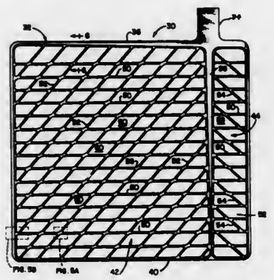
1. An electrolyte for a lead acid accumulator, in which the electrolyte comprises an aqueous solution of sulphuric acid which includes orthophosphoric and pyrophosphoric acid, wherein said electrolyte is prepared by the step of adding an amount of pyrophosphoric and an amount of metaphosphoric acid to the aqueous sulphuric acid to provide an electrolyte, the initial concentration of which is 5 to 30 grams per liter of said electrolyte of pyrophosphoric acid and 5 to 50 grams per liter of said electrolyte of orthophosphoric acid, the total quantity of phosphoric acids contained in the electrolyte being equal to or less than 60 grams per liter.

4,555,459

BATTERY GRIDS

Carl Anderson, Hamburg, Pa., and Richard H. Craig, Trenton, N.J., assignors to General Battery Corporation, Reading, Pa.

Filed Jan. 18, 1984, Ser. No. 571,862
Int. Cl.⁴ H01M *4/73*
U.S. Cl. 429—211 **14 Claims**



1. A battery grid comprising:
a rectangular frame having a lug projecting from one side thereof;
said lug located between the center and one end of said side;

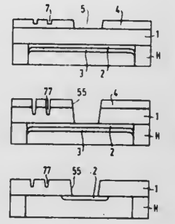
a partition member extending from said lug across said frame such that said frame is partitioned into first and second rectangular sections; and
a planar network of intersecting grid wires within said frame including:
a first array of substantially parallel wires extending across said frame and parallel with the lug side of said frame;
a second array of substantially parallel wires extending diagonally across said first rectangular frame section and such that the wires of said second array are sloped toward said lug; and
a third array of substantially parallel wires diagonally extending across said second rectangular section such that the wires of said third array are sloped toward said lug; wherein the grid wires of said second and third arrays intersect with alternate grid wires of said first array at said partition member.

4,555,460

MASK FOR THE FORMATION OF PATTERNS IN LACQUER LAYERS BY MEANS OF X-RAY LITHOGRAPHY AND METHOD OF MANUFACTURING SAME

Margret Harms, Hamburg; Angelika Bruns, Henstedt-Ulzbur; Holger Luthje, Halstenbek, and Bernd Matthiessen, Seevetal, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,352
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232498
Int. Cl.⁴ G02B *5/00, 7/00;* **G03F** *1/00*
U.S. Cl. 430—5 **6 Claims**



1. A mask for producing patterns in lacquer layers by means of X-ray lithography comprising a diaphragm of metal opaque to visible light and transparent to X-radiation, and an absorber pattern layer present on one of the major surfaces of the diaphragm for absorbing the X-ray radiation and structured in accordance with the pattern to be produced, characterized in that the diaphragm has adjustment windows transparent to visible light.

4,555,461

PROCESS FOR PREPARING A LITHOGRAPHIC PRINTING PLATE

Keisuke Shiba; Tetsuro Fuchizawa; Sho Nakao, and Chikashi Ohishi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 427,037, Sep. 29, 1982, abandoned. This application Mar. 26, 1985, Ser. No. 715,997
Claims priority, application Japan, Oct. 1, 1981, 56-156829
Int. Cl.⁴ G03G *5/10, 13/26*
U.S. Cl. 430—49 **17 Claims**

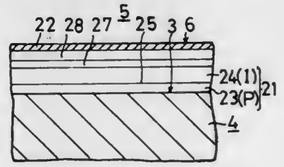
1. In a process of preparing a lithographic printing plate comprising uniformly charging a photoconductive layer of an electrophotographic plate-making material, subjecting the charged plate making material to imagewise exposure, developing the imagewise exposed plate-making material to form a toner image, fixing the toner image and treating the photoconductive layer with a desensitizing solution to render the non-toner image area hydrophilic to thereby produce the lithographic printing plate, the improvement characterized in that said plate making material comprises:
a substrate comprising a paper support and a polyolefin laminate layer containing an electroconductive material on at least one surface thereof and having a volume resistance of 10^{10} ohms or less, and
a photoconductive layer on said substrate.

4,555,462

PRINTING MEMBER FOR ELECTROSTATIC PHOTOCOPYING

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 276,503, Jun. 23, 1981, Pat. No. 4,418,132. This application Jul. 21, 1983, Ser. No. 502,630
Claims priority, application Japan, Jun. 25, 1980, 55-86801
Int. Cl.⁴ G03G *5/082, 5/14*
U.S. Cl. 430—57 **12 Claims**



1. A printing member for electrostatic photocopying, comprising:
a substrate having a conductive surface; and
photoelectrically-sensitive, electrically chargeable layer on the conductive surface of the substrate;
wherein the photoelectrically-sensitive, electrically chargeable layer has a photoelectrically-sensitive non-single crystal semiconductor layer on the substrate, a charge blocking layer on the photoelectrically-sensitive non-single crystal semiconductor layer, a charge storing non-single crystal semiconductor layer on the charge blocking layer and a chargeable layer formed on the charge storing non-single crystal semiconductor layer and permeable to light and electrical carriers; and wherein the charge storing layer has a smaller energy band gap than the last-mentioned chargeable layer and the charge blocking layer;
wherein the photoelectrically-sensitive, non-single crystal semiconductor layer has a first layer on the substrate, and a second layer on the first layer to create a transition region;
wherein each of said first, second, and charge storing layers is formed principally from materials selected from the group consisting of Si, Si_3N_{4-x} $(0<x<4)$, SiC_{1-x} $(0<x<1)$, or SiO_{2-x} $(0<x<2)$ and contains materials selected from the group consisting of hydrogen, chlorine, or fluorine; and
wherein the first layer is P or N type and the second layer is I type, and the transition region is PI or NI depending on whether the first region is P or N type.

4,555,463

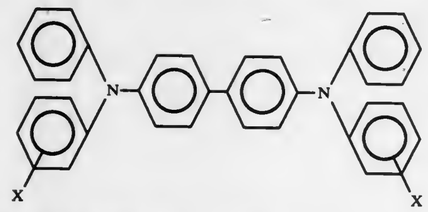
PHOTORESPONSIVE IMAGING MEMBERS WITH CHLOROINDIUM PHTHALOCYANINE COMPOSITIONS

Ah-Mee Hor, Mississauga, and Rafik O. Loutfy, Willowdale, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 22, 1984, Ser. No. 643,218
Int. Cl.⁴ G03G *5/10*
U.S. Cl. 430—59 **27 Claims**

1. An improved photoresponsive imaging member consisting essentially of (1) a supporting substrate, (2) an adhesive

layer, (3) a photogenerating layer in contact therewith comprised of chloroindium phthalocyanine, and (4) a hole transport layer comprised of an arylamine of the following formula dispersed in an inactive resinous binder composition:



wherein X is an alkyl group, or a halogen.

4,555,464

AMORPHOUS SILICON ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Keishiro Kido; Hiroshi Sunagawa; Kazuhiro Kawajiri; Toshio Iijima, and Nobuharu Nozaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1984, Ser. No. 628,363

Claims priority, application Japan, Jul. 6, 1983, 58-122868

Int. Cl.⁴ G03G *5/082, 5/14*

U.S. Cl. 430—67 **7 Claims**

1. An electrophotographic photosensitive material comprising a conductive support having thereon, in succession, a photoconductive layer composed of an amorphous silicon containing silicon atoms and hydrogen atoms and a barrier layer mainly composed of silicon and a further element selected from the group consisting of carbon, nitrogen and oxygen and further on the barrier layer a surface improvement layer having a composition of carbon and silicon of from 0.70/1 to 0.95/1 by atomic ratio in carbon/carbon+silicon, and said composition ratio being larger than that of the barrier layer.

4,555,465

PHOTOCONDUCTIVE MEMBER OF AMORPHOUS SILICON

Kyosuke Ogawa, Tokyo; Shigeru Shirai, Yamato; Keishi Saitoh, Tokyo; Teruo Misumi, Kawasaki, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 561,991

Claims priority, application Japan, Dec. 20, 1982, 57-222095

Int. Cl.⁴ G03G *5/082*

U.S. Cl. 430—95 **28 Claims**

1. A photoconductive member comprising a support and a light receiving layer provided on said support, having photoconductivity and containing an amorphorous material comprising silicon atoms as a matrix and at least hydrogen atoms as constituent atoms in said light receiving layer having a layer region with depth profile such that the content of hydrogen atoms contained therein is decreased in the direction of layer thickness toward both ends of said layer.

4,555,466

DEVELOPER COMPRISING A CARRIER COATED WITH Fe_3O_4 DISPERSED IN A BUTADIENE POLYMER, AND A TONER

Seiji Okada, Sagamihara; Isao Watanabe, Kawasaki; Norio Sawatari, Sagamihara; Kazumasa Saito, Atsugi; Toshiaki Narusawa, and Hirofumi Okuyama, both of Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 21, 1983, Ser. No. 534,462

Claims priority, application Japan, Sep. 27, 1982, 57-166714; Jan. 14, 1983, 58-3290

Int. Cl.⁴ G03G *9/10, 11/00*

U.S. Cl. 430—106.6 **11 Claims**

1. A developing material for electrostatic images comprising:

(a) carrier particles the electric resistivity of which is from 10^5 to 10^7 Ω·cm comprising iron beads having an average diameter of from 30 to 500 μm, coated with a layer comprising a butadiene polymer resin in which Fe_3O_4 powder is dispersed, said butadiene polymer resin comprises either a butadiene homopolymer the number average molecular weight of which is from 10,000 to 200,000 and which contains at least 50% by weight of 1,2-polybutadiene units, or a cyclized 1,4-cis-polybutadiene homopolymer, or a cyclized 1,4-cis-butadiene-styrene or cyclized 1,4-cis-butadiene-acrylonitrile copolymer which copolymer contains at least 50% by weight of 1,4-cis-polybutadiene units, or a mixture thereof, the volume ratio of said butadiene resin to Fe_3O_4 powder being from 1:2 to 4:1, and said butadiene polymer being cured by heating with an organic peroxide in an amount of from 0.5 to 5.0 parts by weight based on 100 parts by weight of said butadiene polymer, and

(b) from 1% to 6% by weight of toner particles, based on the weight of said carrier particles.

4,555,467

DEVELOPER HAVING IMPROVED FLOW CHARACTERISTICS AND A PROCESS FOR PRODUCING SAME

Tetsuo Hasegawa, Tokyo, and Koushi Suematsu, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 352,261 filed Feb. 25, 1982 now abandoned. This application Dec. 6, 1983, Ser. No. 558,702

Claims priority, application Japan, Mar. 10, 1981, 56-34374; Mar. 25, 1981, 56-43431

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—110 **14 Claims**

1. A one-component developer which comprises toner particles and flowability improver granules; said granules each comprising a plurality of primary flowability improver particles, said flowability improver granules having a granule size of 1–20 the average particle size of the toner particles, and said primary flowability improver particles having an average particle size smaller than the average particle size of the toner particles; wherein said granules are capable of releasing said primary flowability improver particles over a continued period of use.

4,555,468

PHOTOSENSITIVE DIAZONIUM MATERIAL WITH PRECOAT OF GRAFT POLYMER PREPARED BY GRAFTING CELLULOSE DERIVATION WITH RADICAL POLYMERIZABLE MONOMER

Takashi Yano, Amagasaki, and Masahiro Asami, Himeji, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed May 1, 1984, Ser. No. 605,727

Claims priority, application Japan, May 4, 1983, 58-77567; May 18, 1983, 58-87111; May 18, 1983, 58-87112

Int. Cl.⁴ G03C *1/80, 1/76*

U.S. Cl. 430—160 **10 Claims**

1. In a photosensitive diazotype reproducing material which comprises a polyethylene terephthalate support film, a precoat layer coated on said support film and a light-sensitive layer coated on said precoat layer, said light-sensitive layer comprising a light-sensitive diazonium compound, the improvement which comprises: said precoat layer consists essentially of a graft polymer which has been prepared by polymerizing from 70 to 99 wt. % of at least one radical-polymerizable monomer capable of grafting to a cellulose derivative, in the presence of from 1 to 30 wt. % of a cellulose derivative selected from the group consisting of cellulose ethers, cellulose esters and mixture thereof, under radical polymerization conditions, to form said graft polymer, said precoat layer being effective to firmly attach said light-sensitive layer to said support film.

4,555,469

PROCESS OF PREPARING LIGHT-SENSITIVE NAPHTHOQUINONEDIAZIDESULFONIC ACID ESTER

Fritz Erdmann, and Ulrich Simon, both of Mainz, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 333,338, Dec. 22, 1981, Pat. No. 4,424,270. This application Oct. 14, 1983, Ser. No. 542,173

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1981, 3100077

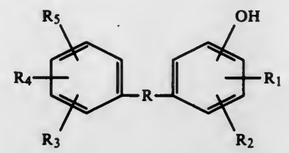
Int. Cl.⁴ G03C *1/54;* C07C *113/00*

U.S. Cl. 430—168 **20 Claims**

1. A process for preparing a light-sensitive naphthoquinonediazide-sulfonic acid ester which is non-explosive, comprising the steps of (I) reacting a naphthoquinonediazidesulfonyl halide in the presence of a base and a solvent with a mixture comprising:

A. a polymeric compound having recurring units, each of said recurring units containing at least one phenolic hydroxyl group, and

B. a low molecular weight compound corresponding to the formula



wherein

(1a) R denotes a single bond or one from the group consisting of CO, S, O, SO_2 and CR_6R_7;

(b) R_1, R_2, R_3, and R_5 represent hydrogen, halogen, hydroxyl groups, alkyl group having 1 to 4 carbon atoms or alkoxy groups having 1 to 4 carbon atoms; and

(c) R_6 and R_7 represent hydrogen or alkyl groups having 1 to 4 carbon atoms; or wherein

(2a) two of the radicals R_3, R_4, and R_5 and the radicals R_1 and R_2 in each case jointly form a fused aromatic ring; and

(b) at least one of the radicals R_1, R_2, R_3, R_4, and R_5 represents a hydroxyl group, wherein (i) said polymeric compound and said low molecular weight compound are present in a ratio in the range of 0.1–20:1 and (ii) said ester has a diazo nitrogen content of between about 2% and about 9%; and (II) isolating the reaction product of step (I).

4,555,470

HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIAL WITH HEAT FUSIBLE COMPOUND

Yukihiko Sakaguchi; Kozo Sato; Hideki Naito, and Hiroshi Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 2, 1983, Ser. No. 548,190

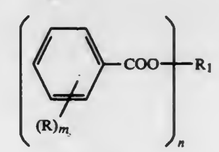
Claims priority, application Japan, Nov. 2, 1982, 57-193080

Int. Cl.⁴ G03C *1/40, 5/54*

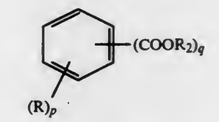
U.S. Cl. 430—203 **19 Claims**

13. A method for forming a color image, comprising the steps of:

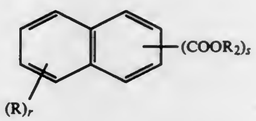
providing a heat-developable color photographic material comprising a support having thereon, a light-sensitive silver halide, a hydrophilic binder, a dye releasing redox compound and a heat fusible compound which has a melting point of 60° C. or higher, said heat fusible compound containing the dye releasing redox compound and dispersed in said hydrophilic binder, the heat fusible compound being represented by a general formula selected from the group of general formulae consisting of: (I), (II) and (III):



(I)



(II)



(III)

wherein m represents an integer from 1 to 3; n represents as integer from 1 to 8; q represents an integer from 1 to 4; p represents an integer which meets the requirement for p+q=6; s represents an integer from 1 to 4; r represents an integer which meets the requirement for r+s=8; R represents a hydrogen atom or a substituent selected from an alkyl group, a cycloalkyl group, an aryl group an alkoxy group, an aryloxy group, an aralkyl group, an acyl group, an acylamino group, an alkylsulfonylamino group, an arylsulfonylamino group, an alkoxyalkyl group, an aryloxyalkyl group, an acyloxy group, an acyloxyalkyl group, a carbamoyl group, a N-substituted carbamoyl group, a ureido group, a N-substituted ureido group, an alkylamino group, a dialkylamino group, an arylamino group, a halogen atom, a hydroxy group, a carboxy group, a nitro group, a cyano group, an alkoxycarbonyl group, an sryloxycarbonyl group and a cycloalkyloxycarbonyl group and the alkyl moiety, the cycloalkyl moiety and the aryl moiety of the substituents may be further substituted with a halogen atom, a hydroxy atom, a hydroxy group, an alkoxy group, a cyano group, an aryloxy group, an alkyl group, an alkoxycarbonyl group or an aryloxycarbonyl group, and when m, p or r represents 2 r more, R may be the same or different; R_1 represents an organic group derived from a compound of the formula $R_1—(OH)_n$ which is derived form a compound represented by the formula (IV), (V) or (VI):

$R_3—(OH)_t$ (IV)

$$HO-(R_4)_u-H \quad (V)$$

$$R_5-[(O)_v-(CH_2)_w-OH]_t \quad (VI)$$

wherein R_3 represents a t valent residue of an alkyl group, a substituted alkyl group, a cycloalkyl group or a substituted cycloalkyl group; R_4 represents an alkylene group or a substituted alkylene group; R_5 represents a t valent residue of an aryl group or a substituted aryl group; t represents an integer from 1 to 4; u represents an integer from 1 to 3; v represents 0 or an integer of 1; and w represents 0 or an integer from 1 to 3; wherein R_2 is a phenyl group, a substituted phenyl group, an alkyl group, a substituted alkyl group, a cycloalkyl group or a substituted cycloalkyl group;

imagewise exposing the heat-developable color photographic material;

developing the material by heating the material to a temperature in the range of 80° C. to 250° C. to release a hydrophilic diffusible dye; and

transferring the diffusible dye onto an image receiving material.

4,555,471

IMAGE-RECORDING MATERIALS AND IMAGE-RECORDING CARRIED OUT USING THESE

Helmut Barzynski, Bad Durkheim, and Klaus Holoch, Bobenheim-Roxheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 554,327, Nov. 22, 1983, Pat. No. 4,515,877.
This application Dec. 4, 1984, Ser. No. 678,051
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243943
Int. Cl.⁴ G03C *1/71*; G03F *7/02*
U.S. Cl. 430—273 **5 Claims**

1. A multilayer image-recording material suitable for the production of a relief image, which comprises, located one on top of the other in the stated sequence, a dimensionally stable support (S), a photosensitive relief-forming layer (RL) and a mask-forming layer (ML), with or without a top layer (T), wherein a dimensionally stable intermediate layer (I) which is transparent to actinic light in the wavelength range from 300 to 420 nm and is stable to heat radiation is present between the relief-forming layer (RL) and the mask-forming layer (ML), and the latter layer (ML) is sensitive to heat radiation and contains a thermochromic system which, when irradiated with an IR laser having a wavelength greater than 1.00 μm, undergoes an irreversible change in its absorption spectrum in the range from 300 to 420 nm so that the optical density of the mask-forming layer (ML) in this wavelength range changes by not less than 1.3 units.

5. A process for the production of a relief image by means of a multilayer image-recording material as claimed in claim 1, wherein any top film (T) present is removed, the mask-forming layer (ML) is subjected to imagewise irradiation with heat using an IR laser having a wavelength greater than 1.00 μm, the multilayer image-recording material is exposed completely, through the mask layer (ML), to actinic light having a wavelength of from 300 to 420 nm, the intermediate layer (I) together with the mask layer (ML) is removed from the relief-forming layer (RL), and the relief image is then developed from the relief-forming layer (RL) in a conventional manner.

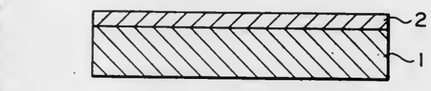
4,555,472

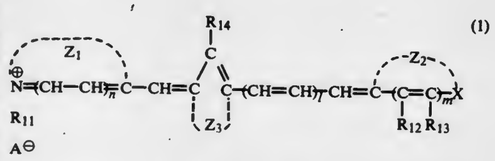
ORGANIC COATING FILM AND RADIATION-SENSITIVE MEMBER HAVING THE FILM

Kazuharu Katagiri, and Yoshihiro Oguchi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,208
Claims priority, application Japan, Feb. 9, 1983, 58-18785; Feb. 9, 1983, 58-20786
Int. Cl.⁴ G03C *1/72, 1/94*
U.S. Cl. 430—278 **13 Claims**

1. An optical recording member including, in sequence, a disc substrate, and a film comprising a compound of the general formula:





wherein; Z_1 is an atomic group necessary to form a substituted or unsubstituted nitrogen-containing heterocyclic compound ring; Z_2 is an atomic group necessary to form a substituted or unsubstituted pyrane, thiapyrane, selenapyrane, benzopyrane, benzothiapyrane, benzoselenapyrane, naphthopyrane, naphathiopyrane, or naphthoselenapyrane ring; X is a sulfur, oxygen, or selenium; Z_3 is a divalent hydrocarbon residue necessary to form a 5- or 6-membered ring substituted or unsubstituted; R_{11} is a hydrogen atom or substituted or unsubstituted alkyl; R_{12} and R_{13} each are a hydrogen atom, halogen atom, alkyl, alkoxyl, aryl, substituted aryl, styryl, substituted styryl, or substituted or unsubstituted heterocyclic residue; R_{14} is a hydrogen or halogen atom; $A^{\ominus}$ is an anion; m and n each are 0 or 1; and l is 0, 1, or 2.

4,555,473

ALKALI DEVELOPABLE PHOTOPOLYMER CRYSTALLINE COMPOSITION

Thomas E. Dueber, and William J. Nebe, both of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Dec. 6, 1984, Ser. No. 678,884
Int. Cl.⁴ G03C *1/68*
U.S. Cl. 430—281 **10 Claims**

1. A photopolymerizable crystalline composition soluble in aqueous alkaline solutions having a crystallinity index of at least 0.2 consisting essentially of

(a) 10 to 40% by weight of at least one ethylenically unsaturated compound;

(b) an initiating amount of at least one photoinitiator or photoinitiator system;

(c) 20 to 40% by weight of at least one acidic polymeric binder; and

(d) 20 to 50% by weight of a crystalline matrix forming compound having a melting point in the range of 50° to 200° C. selected from the group consisting of bibenzyl, biphenyl, pentamethylbenzene, 1,4-diethoxybenzene, 1,2-diphenoxyethane, octahydroanthracene, docosane, octacosane and, dotriacontane.

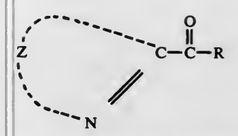
4,555,474

PHOTOPOLYMERIZABLE COMPOSITION

Kouichi Kawamura; Yoshimasa Aotani, and Akira Umehara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1985, Ser. No. 697,813
Claims priority, application Japan, Feb. 2, 1984, 59-17339
Int. Cl.⁴ G03C *1/68*
U.S. Cl. 430—281 **20 Claims**

1. A photopolymerizable composition comprising a polymerizable compound having an ethylenically unsaturated bond and a photopolymerization initiator represented by formula (I)



wherein Z represents a non-metallic atomic group forming a substituted or unsubstituted nitrogen-containing heterocyclic ring; and R represents a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic ring.

4,555,475

METHOD OF MAKING A PLANOGRAPHIC PRINTING MEMBER WITH ALUMINIUM SILICATE

Alan R. Gamson, and Phillip R. Kellner, both of London, England, assignors to Crossfield Electronic Limited, London, England

PCT No. PCT/GB83/00003, § 371 Date Aug. 29, 1983, § 102(e) Date Aug. 29, 1983, PCT Pub. No. WO83/02505, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 14, 1983, Ser. No. 531,896
Claims priority, application United Kingdom, Jan. 15, 1982, 8201171; Jan. 15, 1982, 8201168
Int. Cl.⁴ G06F *7/00*
U.S. Cl. 430—309 **13 Claims**

1. A method of forming a print resistant image on a planographic printing member comprising an aluminum substrate carrying an image forming layer that consists essentially of an image forming amount of aluminum silicate formed by contacting the substrate with an aqueous metal silicate solution, the method comprising effecting imagewise photoexposure of the image forming layer by infrared laser radiation having a wavelength of 0.8 to 4 microns and thereby forming an oleophilic image in the aluminum silicate layer and then applying a selective coating composition that is an emulsion of an aqueous phase with an organic phase and in which the organic phase includes a film forming oleophilic resin that preferentially wets and is deposited as a film on the oleophilic image areas and the aqueous phase preferentially wets and presents resin deposition on the less oleophilic, non-image areas, and the resin is then hardened to form a film having improved chemical resistance and scratch resistance compared to the oleophilic image in the aluminum silicate layer.

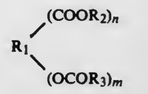
4,555,476

HEAT DEVELOPMENT PROCESS WITH STABILIZER

Yukihiko Sakaguchi; Toshiaki Aono, and Shinsaku Fujita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 29, 1984, Ser. No. 594,667
Claims priority, application Japan, Mar. 30, 1983, 58-54167
Int. Cl.⁴ G03C *1/40, 5/54*
U.S. Cl. 430—351 **7 Claims**

1. An image-forming process, which comprises heating a photographic material comprising a support having provided thereon at least light-sensitive silver halide, binder, and a dye releasing redox compound in the presence of a compound represented by the following general formula (A):



wherein R_1 represents a (m+n)-valent straight, branched or cyclic alkane or a (m+n)-valent straight, branched or cyclic alkene, R_2 and R_3, which may be the same or different, each represents a straight, branched or cyclic alkyl group or a straight, branched or cyclic alkenyl group, n represents 0, 1, 2 or 3, and m represents 0, 1 or 2, with m+n being 1 or more, after, or simultaneously with, imagewise exposure in the state of substantial absence of water to thereby imagewise form a mobile dye, wherein said thermally developable photographic material comprises said support having thereon one or more layers containing said light-sensitive silver halide which is a high-sensitive silver halide, said dye releasing redox compound, said binder, an organic silver salt and compound of general formula (A), said compound of general formula (A) improving stability of said thermally developable photographic material during storage before thermal development processing and depressing changes in maximum density, wherein the alkane or alkene represented by R_1 is substituted by a halogen atom, an alkoxy group, or an alkyl group, or has an epoxy group; the alkyl or alkenyl group represented by R_2 is substituted by a halogen atom, a hydroxy group, an alkyl group, —OOCR′, wherein R′ represents an alkyl or alkenyl group containing 1 to 20 carbon atoms, an alkoxy group, or has an epoxy group; and the alkyl or alkenyl group represented by R_3 is substituted by a halogen atom, an alkyl group, —OOCR′, wherein R′ represents an alkyl or alkenyl group containing 1 to 20 carbon atoms, an alkoxy group or has an epoxy group.

4,555,477

PHOTOGRAPHIC ELEMENT AND PROCESS UTILIZING METAL COMPLEX COLOR MASKING DYES

William N. Washburn, Ionia, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1985, Ser. No. 688,479
Int. Cl.⁴ G03C *1/40, 7/18*
U.S. Cl. 430—359 **15 Claims**

1. A photographic element comprising a support having thereon at least one silver halide emulsion layer having associated therewith a compound for providing a dye image in exposed areas of said element, and

an essentially colorless, immobile, ligand-releasing compound of the structure LIG-X wherein X is a group which, as a function of silver halide development is cleaved from LIG, and LIG is a ligand capable of complexing with metal ions while joined to X to form a color dye image in the unexposed areas of said element.

11. A process of color correction in an imagewise exposed element of claim 1, said process comprising the steps of:

(a) developing the imagewise exposed areas of said element with a color developing agent, thereby cleaving LIG from X and washing substantially all of the cleaved LIG out of said element; and

(b) treating said element with metal ions to form a color masking dye with LIG-X in the unexposed areas of said element.

4,555,478

PHOTOGRAPHIC ELEMENT AND PROCESS FOR PROVIDING METAL COMPLEX COLOR IMAGES

James A. Reczek, and Janice M. Palumbo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1985, Ser. No. 688,478
Int. Cl.⁴ G03C *1/40, 7/32*
U.S. Cl. 430—367 **20 Claims**

1. A photographic element comprising a support having thereon at least one silver halide emulsion layer having associated therewith an essentially colorless, immobile, ligand-releasing compound of the structure LIG-X wherein LIG is a ligand which is capable of complexing with metal ions to form a metal complex dye, and X is a group which, as a function of silver halide development, is cleaved from LIG.

16. A process of forming a dye image in an imagewise exposed element of claim 1, said process comprising the steps of

(a) developing said element to imagewise cleave the bond between LIG and X as a function of development; and

(b) treating said element with metal ions to form a metal complex dye with LIG and said metal ions.

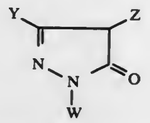
4,555,479

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Sakai; Masaki Okazaki, and Yoshio Inagaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

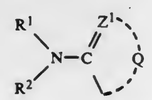
Filed May 25, 1984, Ser. No. 614,091
Claims priority, application Japan, May 25, 1983, 58-92082
Int. Cl.⁴ G03C *7/40, 7/26*
U.S. Cl. 430—372 **21 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, the color photographic light-sensitive material having at least one layer containing at least one of 2-equivalent magenta coupler of the 5-pyrazolone type represented by the following general formula (I):



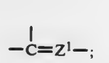
(I)

wherein W represents a phenyl group substituted with at least one substituent selected from the group consisting of a halogen atom, an alkyl group, an alkoxy group, an alkoxycarbonyl group and a cyano group; Y represents an acylamino group or an anilino group; and Z represents a group capable of being released upon coupling, and at least one compound represented by the following general formula (II):



(II)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkyl group or an aryl group, provided that both R^1 and R^2 do not represent hydrogen atoms at the same time; Z^1 represents a methine group or the group —N═; and Q represents an atomic group which contains a nitrogen atom, a sulfur atom or an oxygen atom and is necessary to form a 5-membered or a 6-membered heterocyclic ring together with the group



wherein the group capable of being released upon coupling represented by Z is an aryloxy group, an alkoxy group, a heterocyclic oxy group, a silyoxy group, a phosphonoxy group, an alkylthio group, an arylthio groups, a heterocyclic group, a heterocyclic thio group, an acylthio group, a thiocyano group, an aminothiocarbonylthio group, an acylamino group, a sulfonamido group, an alkoxycarbonylamino group, an aryloxycarbonylamino group or a nitrogen-containing heterocyclic group which is connected to the active position of the pyrazolone ring through the nitrogen atom; and

wherein the aryl group represented by R^1 or R^2 is an aryl group having from 6 to 38 carbon atoms which may be substituted with a halogen atom, an aryl group, a heterocyclic group, a cyano group, an alkoxy group, an aryloxy group, an acylamino group, an imido group, an anilino group, an alkylamino group, a heterocyclic amino group, a ureido group, a sulfamoylamino group, an alkylthio group, an arylthio group, a heterocyclic thio group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a sulfonyl group, a sulfinyl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a phosphonyl group, an imino group, a cyanothio group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, a heterocyclic oxy group, a hydroxy group or a nitro group.

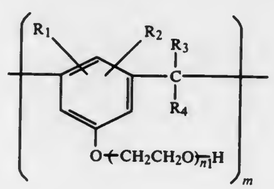
4,555,480

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A POLYOXYETHYLENE SURFACTANT AND A NITRON COMPOUND

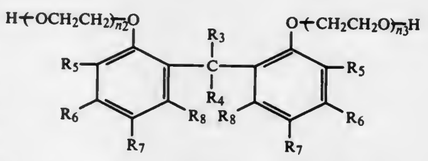
Shigeki Yokoyama; Koki Nakamura; Jyounichi Kouda, and Nobuhisa Sekiguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 4, 1984, Ser. No. 657,699
Claims priority, application Japan, Oct. 4, 1983, 58-185304
Int. Cl.⁴ G03C *1/82*
U.S. Cl. 430—527 **26 Claims**

1. A silver halide photographic light-sensitive element comprising a support having thereon at least one light-sensitive silver halide emulsion layer, wherein the light-sensitive silver halide emulsion layer or other layer is a hydrophilic colloid layer containing a polyoxyethylene surface active agent represented by general formula (I) or (II) described below, and a nitron compound selected from nitron, an inorganic acid salt thereof and an organic acid salt thereof,



(I)



(II)

wherein R_1, R_2, R_6 and R_8, which may be the same or different, each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a halogen atom, a substituted or unsubstituted acyl group, a substituted or unsubstituted amido group, a substituted or unsubstituted sulfonamido group, a substituted or unsubstituted carbamoyl group or a substituted or unsubstituted sulfamoyl group; R_5 and R_7, which may be the same or different, each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a halogen atom, a substituted or unsubstituted acyl group, a substituted or unsubstituted amido group, a substituted or unsubstituted sulfonamido group, a substituted or unsubstituted carbamoyl group or a substituted or unsubstituted sulfamoyl group, provided that R_5 and R_6 or R_7 and R_8 may combine to form a substituted or unsubstituted ring; R_3 and R_4 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted α-furyl group, provided that R_3 and R_4 may combine to form a ring; n_1, n_2, n_3 and m, which may be the same or different, each is an integer of from 2 to 50; and in general formula (II) the substituents represented by R_5, R_6, R_7 and R_8 on the two benzene rings may be bilaterally symmetrical or asymmetrical.

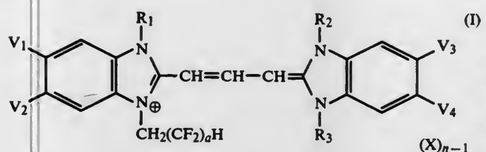
4,555,481

SILVER HALIDE PHOTOGRAPHIC EMULSIONS CONTAINING BENZIMIDAZOLOCARBOCYANINE DYE HAVING FLUOROALKYL GROUP AT THE NITROGEN ATOM OF BENZIMIDAZOLE

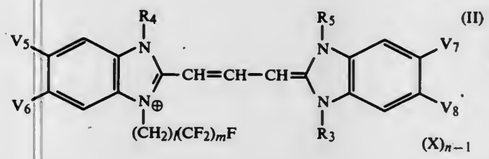
Toshinao Ukai; Masaki Okazaki; Haruo Takei, and Ichizo Toya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1984, Ser. No. 573,760
Claims priority, application Japan, Jan. 25, 1983, 58-10090; Sep. 22, 1983, 58-175939
Int. Cl.⁴ G03C *7/26, 7/32, 1/10*
U.S. Cl. 430—550 **10 Claims**

1. A silver halide photographic emulsion which contains at least one of benzimidazolocarbocyanine dyes represented by the general formula (I) or (II):



(I)



(II)

wherein a represents an integer of 1 to 8, R_1, R_2 and R_3, which may be identical with or different from one another, represent each $—(CH_2)_b(CF_2)_bH$ or a substituted or unsubstituted alkyl group, but at least one of R_1, R_2 and R_3 contains an acid group containing an alkyl group, wherein b, which may be identical with or different from a, represents an integer of 1 to 8, l represents 0 or an integer of 1 to 8, and m represents 0 or an integer of 1 to 8, but l+m>0; R_4 represents $—(CH_2)_j(CF_2)_kF$ or a substituted or unsubstituted alkyl group, R_5 and R_6, which may be the same or different, each represents an unsubstituted alkyl group or substituted alkyl group substituted with carboxy, sulfo, cyano, halogen, hydroxy, alkoxycarbonyl, alkoxy, monocyclic aryloxy, acyloxy, acyl, carbamoyl or sulfomoyl, but at least one of R_4, R_5 and R_6 represents an acid group-containing alkyl group; j represents 0 or an integer of 1 to 8; and k represents 0 or an integer of 1 to 8, but j+k>0; V_1, V_2, V_3, V_4, V_5, V_6, V_7, and V_8, which may be identical with or different from one another, represent each a hydrogen atom, a halogen atom, a substituted alkyl group, an unsubstituted alkyl group, an alkoxy group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfomoyl group, a cyano group or a trifluoromethyl group; X represents an anion; and n represents 1 or 2 but represents 1 when the dye forms an inner salt.

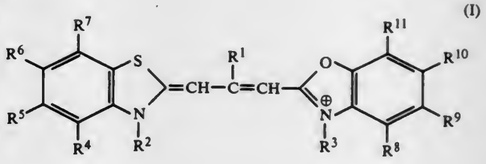
4,555,482

SILVER HALIDE PHOTOGRAPHIC EMULSION

Noriyuki Inoue; Masaki Okazaki; Kiyohiko Yamamuro, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

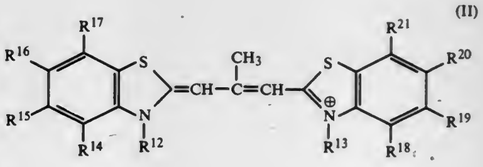
Filed Dec. 20, 1983, Ser. No. 563,488
Claims priority, application Japan, Dec. 22, 1982, 57-225306
Int. Cl.⁴ G03C *1/19*
U.S. Cl. 430—574 **9 Claims**

1. A silver halide photographic emulsion, comprising:
a vehicle having dispersed therein:
silver halide particles;
a sensitizing dye having the formula (I);
a sensitizing dye having the formula (II); and
a sensitizing dye having the formula (III);



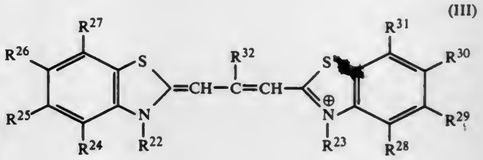
(I)

wherein R^1 is a hydrogen atom or a lower alkyl group; R^2 is an unsubstituted or substituted alkyl group; R^3 is a substituted alkyl group; R^5, R^6, R^9 and R^{10}, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a hydroxy group, an alkoxy group, a carboxy group, an alkoxycarbonyl group or an acylamino group; R^4, R^7, R^8 and R^{11}, which may be the same or different, each represents a hydrogen atom or an alkyl group; R^4 and R^5, R^6 and R^7, R^8 and R^9 or R^{10} and R^{11} may, when taken together, form a benzene ring; $X_1^\ominus$ is an acid anion; l is 0 or 1, and when an intramolecular salt is formed, l is 0;



(II)

wherein R^{12} and R^{13} each represents an unsubstituted or substituted alkyl group; R^{15}, R^{16}, R^{19} and R^{20} are the same as R^5, R^6, R^9 and R^{10}, respectively; R^{14}, R^{17}, R^{18} and R^{21} each represents a hydrogen atom or an alkyl group; $X_2^\ominus$ is an acid anion; m is 0 or 1, and when an intramolecular salt is formed, m is 0; and



(III)

wherein R^{22} and R^{23} are the same as R^{12} and R^{13}, respectively; R^{25}, R^{26}, R^{29} and R^{30} are the same as R^5, R^6, R^9 and R^{10}, respectively; R^{24}, R^{27}, R^{28} and R^{31} are the same as R^{14}, R^{17}, R^{18} and R^{21}, respectively; $X_3^\ominus$ is an acid anion; m is 0 or 1, and when an intramolecular salt is formed, n is 0; R^{32} is a hydrogen atom or a lower alkyl group other than a methyl group.

4,555,483

METHODS, COMPOSITIONS AND ELEMENTS FOR THE DETERMINATION OF LIPASE

Charles M. LiMuti, Hilton; Bruce E. Babb, and John C. Mauck, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 407,214, Aug. 11, 1982, abandoned. This application Jun. 17, 1983, Ser. No. 505,049

Int. Cl.⁴ C12Q *1/44;* **C12N** *9/18, 9/20;* **C12R** *1/125*

U.S. Cl. 435—19 **26 Claims**

1. A method for the determination of lipase in a sample, said method comprising the steps of:

(a) contacting said sample with a reagent composition comprising

(i) a lipase substrate which is a glycerol triester oil having in one of its two α-ester positions a long chain alkyl group having at least 8 carbon atoms and, in its two remaining ester positions, short chain alkyl groups such that, if the long chain alkyl group is hydrolyzed, the resulting glycerol diester is water soluble; and

(ii) an esterase enzyme capable of catalyzing the hydrolysis of said water soluble glycerol diester to glycerol; and

(b) detecting the rate at which glycerol is formed.

4,555,484

ANALYTICAL ELEMENT AND METHOD FOR ALKALINE PHOSPHATASE ASSAY

Denise D. LaRossa, Rochester; Allen L. Thunberg, Pittsford; Gary E. Norton, Rochester, and Glen M. Dappen, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,143

Int. Cl.⁴ C12Q *1/42*

U.S. Cl. 435—21 **20 Claims**

1. A dry analytical element for the quantitative determination of alkaline phosphatase in an aqueous liquid, said element comprising a support having therein, in fluid contact, first and second reagent zones, said first reagent zone consisting essentially of a substrate for alkaline phosphatase and said second reagent zone consisting essentially of a buffer which is an alkali metal or ammonium salt and has a pKa in the range of from about 9 to about 11.5.

4,555,485

PRODUCTION OF EDIBLE PROTEIN CONTAINING SUBSTANCES

Robert A. Marsh, Haddenham, England, assignor to Ranks Hovis McDougall, PLC, Berkshire, England

Filed Mar. 26, 1984, Ser. No. 593,473

Claims priority, application United Kingdom, Mar. 24, 1983, 8308162

Int. Cl.⁴ C12P *21/00;* **¯12R** *1/77;* **A01N** *61/00*

U.S. Cl. 435—68 **4 Claims**

1. A process for the production of an edible protein-containing substance having linear hyphae with little or no chain-branching comprising the steps of; inoculating and operating a continuous fermentation in a fermenter at a temperature of between 25° C. and 34° C., the fermenter being under a pressure of 101 kN/m^2 to 505 kN/m^2, the fermentation occurring at a pH of 3.5 to 7, using Fusarium graminearum schwabe IMI 14525 or variants or mutants thereof, in a culture medium comprising carbohydrate, Mg K, PO_4, Fe, Zn, Mn and Cu ions as growth-promoting substances, all in excess, aerating the fermentation at a flow rate of 0.32 to 1.2 liters per minute per liter volume of the fermenter, such that the oxygen is the limiting nutrient but supports cell concentration in the culture without the occurrence of anaerobic growth, to provide hyphae of longer length with little or no chain-branching.

4,555,486

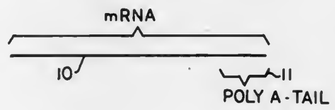
METHOD FOR USING AN AMINO-TERMINUS DNA SEQUENCE TO SYNTHESIZE A SPECIFIC DOUBLE-STRANDED DNA

Chander P. Bahl, El Cerrito, and Jack Nunberg, Oakland, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 214,119, Dec. 8, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 468,805

Int. Cl.⁴ C12P *21/00, 21/02;* **C12N** *15/00, 1/00;* **C07H** *21/04*

U.S. Cl. 435—91 **12 Claims**



1. A method for constructing double-stranded DNA having a strand which codes for a specific strand of messenger RNA, wherein single strands of a first DNA complementary to the specific strand of messenger RNA are provided, comprising blocking the free 3' hydroxy end of said first complementary DNA, providing at least one specific primer segment comprising a second DNA complementary to a preselected portion of the single strands of said first complementary DNA, said preselected portion of said first complementary DNA being in the region thereof which codes for the amino terminus end of the protein which the messenger RNA encodes and extending said specific primer segment with bases complementary to the single strands of said first DNA to form double-stranded DNA one strand of which codes for the specific strand of messenger RNA.

4,555,487

METHOD FOR CULTIVATION OF PSEUDOMONAS BACTERIA

Hideaki Yamada, Kyoto, and Koitchiro Ryuno, Yokohama, both of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo and Hideaki Yamada, Kyoto, both of, Japan

Filed Nov. 15, 1983, Ser. No. 551,852

Claims priority, application Japan, Oct. 13, 1983, 58-191637

Int. Cl.⁴ C12N *1/20, 9/78;* **C12P** *13/02;* **C12R** *1/38*

U.S. Cl. 435—253 **3 Claims**

1. A method for cultivation of Pseudomonas bacteria which comprises adding at least one amide compound selected from the group consisting of acrylamide, methacrylamide, crotonamide, and n-butyramide to a culture medium in the preparation of cells of bacteria having nitrile hydratase activity by cultivating Pseudomonas bacteria capable of producing nitrile hydratase.

4,555,488

METHOD FOR DETERMINING FLOW PATTERNS IN SUBTERRANEAN PETROLEUM AND MINERAL CONTAINING FORMATIONS USING ORGANONITROGEN TRACERS

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 353,544, Mar. 1, 1982, Pat. No. 4,420,565, which is a continuation-in-part of Ser. No. 221,692, Dec. 31, 1980, abandoned. This application Dec. 9, 1983, Ser. No. 559,657

Int. Cl.⁴ G01N *33/24, 31/08*

U.S. Cl. 436—27 **9 Claims**

1. The method for determining flow patterns within a subterranean formation penetrated by a spaced apart injection system and a production system, said method comprising injecting into the formation at a predetermined depth in the injection system a solution containing a tracer compound present in sufficient quantity for identification, recovering said solution containing tracer compound in the production system, determining the depth of recovery, and identifying said tracer compounds by gas chromatography and flame ionization detector; said tracer being a volatile water-soluble organic compound containing a hydrocarbon moiety and nitrogen, selected from the group consisting of formamides, acetamides, ureas and thioureas.

4,555,489

METHOD FOR DETERMINING FLOW PATTERNS IN SUBTERRANEAN PETROLEUM AND MINERAL CONTAINING FORMATIONS USING ORGANOSULFUR TRACERS

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 353,544, Mar. 1, 1982, Pat. No. 4,420,565, which is a continuation-in-part of Ser. No. 221,692, Dec. 31, 1980, abandoned. This application Dec. 9, 1983, Ser. No. 559,658

Int. Cl.⁴ G01N *33/24, 31/08*

U.S. Cl. 436—27 **5 Claims**

1. The method for determining flow patterns within a subterranean formation penetrated by a spaced apart injection system and production system, said method comprising injecting into the formation at a predetermined depth in the injection system a solution containing a tracer compound present in sufficient quantity for identification, recovering said solution containing tracer compound in the production system, determining the depth of recovery, and identifying said tracer compounds by gas chromatography and flame ionization detector; said tracer being a volatile water-soluble organic compound containing a hydrocarbon moiety and sulfur, selected from the group consisting of sulfoxides and sulfones; wherein said tracer is injected into an oil containing formation and the tracer does not partition into the oil.

4,555,490

RAPID VISUALIZATION SYSTEM FOR GEL ELECTROPHORESIS

Carl R. Merril, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 8, 1984, Ser. No. 618,949

Int. Cl.⁴ G01N *21/77, 33/52, 33/68*

U.S. Cl. 436—86 **10 Claims**

1. In a method for separating biopolymer entities by thin membrane or polyacrylamide gel electrophoresis of the type including fixing the separated entities in a suitable fixing medium and thereafter rapidly rinsing the fixed gel with deionized water to remove the fixing medium, the improvement comprising having in said fixing medium about 2% w/v citric acid and about 0.2% w/v sodium chloride; and visualizing said separated entities in less than about 10 minutes by placing said gel or membrane in a single solution photoimaging mixture of 50% v/v methanol, 10% v/v acetic acid and 40% v/v deionized water containing 2% w/v silver nitrate and then uniformly illuminating said gel or membrane with visible light within any chemical treatment.

8. A process for rapid visualization of separated biopolymers on suitable support medium comprising:

(a) immersing said support medium for about 5 min in an aqueous solution consisting essentially of about 50% v/v methanol, about 10% v/v acetic acid and about 40% v/v deionized water containing about 2% w/v citric acid and about 0.2% w/v sodium chloride;

(b) thereafter immediately rinsing said support medium with deionized water to remove surface chloride;

(c) placing said support medium in a a single photoimaging mixture containing about 50% v/v methanol, about 10% v/v acetic acid and 40% v/v of deionized water containing about 2% w/v silver nitrate, wherein imaging of separated biopolymers appears immediately upon placing said support medium in said photoimaging mixture.

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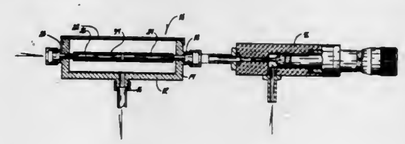
SULFIDE CHEMILUMINESCENCE DETECTION

Stanford R. Spurlin, and Edward S. Yeung, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 31, 1983, Ser. No. 462,532

Int. Cl.⁴ G01N *21/76*

U.S. Cl. 436—120 **5 Claims**



1. A method of chemiluminescently determining the presence of a sulfide containing compound in a gas sample where the sulfide containing compound is selected from the group consisting of hydrogen sulfide and methyl mercaptan, comprising:

reacting a gas sample with chlorine dioxide, at a pressure of 40 torr or below, to provide emission of a single photon for every two molecules of sulfide containing compound present in said sample; and

chemiluminescently detecting any photons so emitted as an indication of the presence of said sulfide containing compound.

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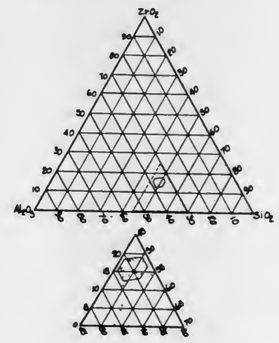
HIGH TEMPERATURE REFRACTORY FIBER

Wendell G. Ekdahl, DeLand, Fla.; Asit R. Chaudhuri, and William C. Miiller, both of Littleton, Colo., assignors to Manville Service Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 487,624, Apr. 22, 1983, abandoned. This application Mar. 1, 1984, Ser. No. 585,089

Int. Cl.⁴ C03C *3/04, 13/00*

U.S. Cl. 501—38 **2 Claims**



1. A high temperature refractory glass fiber, said fiber in bulk or blanket form exhibiting superior shrinkage resistance of less than 12% when subjected to temperatures up to 2700° F. for about four hours, said refractory fiber having a composition consisting of in percent by weight:

SiO_2	46–52%
Al_2O_3	32–38%
ZrO_2	13–18%

and having a silica to zirconia ratio in the range of from 2.6 to 3.8.

4,555,493

ALUMINOSILICATE CERAMIC PROPPANT FOR GAS AND OIL WELL FRACTURING AND METHOD OF FORMING SAME

David R. Watson, Benton; Val G. Carithers, Little Rock, and L. Thomas McDaniel, Benton, all of Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 7, 1983, Ser. No. 559,048
Int. Cl.⁴ B02C *23/00*; C04B *35/16, 35/10*
U.S. Cl. 501—127 **2 Claims**

1. In a process for producing an aluminosilicate ceramic proppant for use in fracturing of wells comprising performing crushing operations on bauxite clay to obtain particles of a desired size, agglomerating the particles to form pellets, and subjecting the pellets to a combined sintering and calcining process to thereby produce an aluminosilicate ceramic proppant, the improvement wherein the particles to be agglomerated to form the pellets are non-calcined particles, and wherein the process further comprises subjecting the paritcles after crushing and prior to agglomeration to a combined operation involving drying, grinding and air classification so as to remove more dense iron-containing particles from the particles to be agglomerated to form the pellets without the need for magnetic separation.

4,555,494

DIELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida, Osaka; Hiromu Ouchi, Toyonaka, and Yoshihiro Matsuo, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 16, 1983, Ser. No. 532,911
Claims priority, application Japan, Sep. 17, 1982, 57-162535; Sep. 17, 1982, 57-162536; Dec. 16, 1982, 57-221403
Int. Cl.⁴ C04B *35/00*
U.S. Cl. 501—134 **1 Claim**

1. A ceramic composition having a dielectric constant of 6380 or higher, and a sintering temperature of 960° C. or lower and consisting essentially of

$$Pb(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})_x(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})_y(Fe_{\frac{1}{2}}W_{\frac{1}{2}})_zO_3$$

wherein $0.01 \leqq x \leqq 0.70$, $0.15 \leqq y \leqq 0.45$, $0.05 \leqq z \leqq 0.60$ and $x+y+z=1$.

4,555,495

REACTIVATION OF NOBLE METAL-CONTAINING ZEOLITE CATALYST MATERIALS

Sowmithri Krishnamurthy, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,268
Int. Cl.⁴ B01J *29/38*; C10G *47/18, 35/095*
U.S. Cl. 502—50 **19 Claims**

1. A process for regenerating a coke-deactivated noble metal-containing zeolite catalyst material containing about 0.1 to 5 weight percent noble metal, which comprises: sulfiding said deactivated catalyst material by contact with a hydrogen sulfide-containing gas at temperatures ranging from about 300° C. to 500° C., pressures ranging from about 1 to 500 psig, in the presence of a hydrogen sulfide-hydrogen mixture containing about 0.1 to 10 volume percent hydrogen sulfide, removing coke from the sulfided catalyst by contacting said catalyst with oxygen in the presence of sulfur dioxide under oxidizing conditions, wherein said oxidizing conditions include temperatures ranging from about 100° to 500° C., pressures ranging from about 100 to 400 psig, and exposure to a gas stream containing about 100 ppm to 2 volume percent SO_2 and about 1 to 10 volume percent O_2, and exposing the resulting catalyst material to hydrogen under reducing conditions comprising temperatures ranging from about 300° to 500° C., pressures ranging from about 100 to 400 psig, and contact times ranging from about 2 to 10 hours.

2. The process of claim 1 wherein said sulfiding temperatures range from about 350° to 450° C., said sulfiding pressures range from about 150 to 250 psig and said mixture contains about 2 volume percent hydrogen sulfide.

3. The process of claim 1 wherein said oxidizing temperatures range from about 400° to 450° C., and said oxidizing gas stream contains about 0.05 to 1 volume percent sulfur dioxide and about 1 to 3 volume percent oxygen.

4,555,496

SUPPORTED POLYOLEFIN CATALYST COMPONENTS AND METHODS OF MAKING AND USING THE SAME

Agapios Agapiou, Humble, Tex.; John L. H. Allan, Glenrock, and Felix I. Jacobson, Westwood, both of N.J., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 409,041, Aug. 20, 1982, abandoned.
This application May 31, 1984, Ser. No. 615,882
Int. Cl.⁴ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—105 **52 Claims**

1. A method of producing a polymerization catalyst component suitable for use in the polymerization of alpha-olefins, which method comprises:

heating in an inert hydrocarbon solvent an active component formed by co-comminuting an inorganic Lewis acid, a first organic electron donor, a support base selected from the group consisting of the Group IIA and IIIA salts and the salts of the multivalent metals of the first transition series with the exception of copper, and a polymerization active tri- and tetra-, or penta- valent transition metal compound of a Group IVB–VIB metal, said heating being at a temperature of between about 40° to 150° C. for a period of between about 1–24 hours to produce the polymerization catalyst.

4,555,497

TITANIUM COMPLEXES AND CATALYSTS PREPARED THEREFROM

William M. Coleman, III, Lake Jackson, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 26, 1984, Ser. No. 665,336
Int. Cl.⁴ C08F *4/64*
U.S. Cl. 502—115 **19 Claims**

13. A catalyst composition resulting from reacting in an inert hydrocarbon medium

(A) at least one hydrocarbon soluble organomagnesium component represented by the formula $MgR''_{2-x}MR''_y$ wherein each R'' is independently a hydrocarbyl group having from 1 to 20 carbon atoms; M is a metal selected from Al, Zn, Si, Sn, B and P; y has a number corresponding to the valence of M and x has a value from about 0.001 to about 10;

(B) a sufficient quantity of at least one halide source so as to convert all of the organic groups attached to a magnesium atom in component (A) to a halide group; said halide source being selected from

(1) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms and such that the hydrocarbyl halide is at least as active as sec-butyl chloride and does not poison the catalyst and X is halogen; or

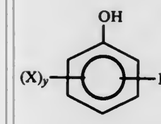
(2) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group IIIA or IVA of Mendeleev's Periodic Table of Elements, R is a monovalent hydrocarbyl group having from 1 to about 20 carbon atoms, X is halogen, y is a number corresponding to the valence of M and a is a number from 1 to y;

(C) at least one titanium compound represented by the formula $Ti(OR)_xX_{4-x}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen and x has a value from zero to 4;

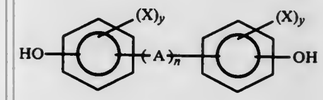
(D) a mixture comprising

(1) from about 2.5 to about 97.5 mole percent of at least

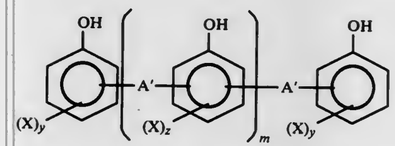
one compound containing at least one aromatic hydroxyl group represented by the following formulas



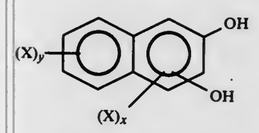
I.



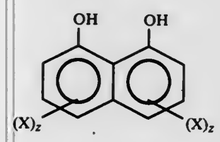
II.



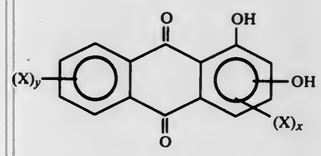
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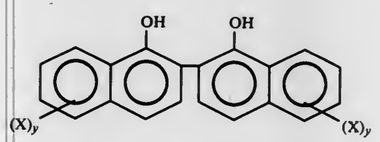
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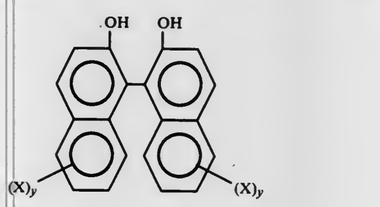
V.



VI.

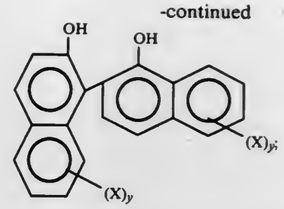


VII.



VIII.

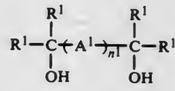
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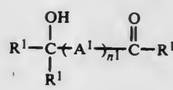
IX.

and

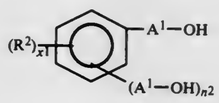
(2) from about 2.5 to about 97.5 mole percent of at least one compound having at least one aliphatic hydroxyl group represented by the following formulas



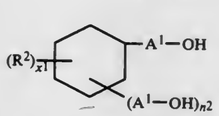
X.



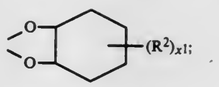
XI.



XII.



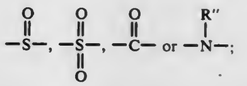
XIII.



XIV.

wherein components (C) and (D) are employed in quantities which provide a molar ratio of D:C of from about 0.1:1 to about 10:1 and wherein

(a) in component (D-1) each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms, —O—, —S—, —S—S—,



each A' is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; each R is independently —OH,



or a hydroxyl substituted hydrocarbyl or a hydroxyl substituted hydrocarbyloxy group having from 1 to about 20 carbon atoms; each R' is independently hydrogen, hydroxyl or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms; each R'' is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; each X is independently a hydroxyl group, a nitro group, a nitrile group, a hydrocarbyl group,

a hydrocarbyloxy group, a hydroxyl substituted hydrocarbyl or a hydroxyl substituted hydrocarbyloxy group each such groups having from 1 to about 20 carbon atoms or a halogen; m has an average value of from about 0.01 to about 6; each n independently has a value of zero or 1; each x independently has a value of from zero to 2; each y independently has a value of from zero to 4; and z has a value of from zero to 3; and

(b) in component (D-2) each A^1 is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; each R^1 is independently hydrogen, a hydrocarbyl group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyl group, each such hydrocarbyl or hydrocarbyloxy groups having from 1 to about 20 carbon atoms; each R^2 is independently hydrogen, a halogen atom, a hydrocarbyl group, a hydrocarbyloxy group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyloxy group, each such hydrocarbyl or hydrocarbyloxy groups having from 1 to about 20 carbon atoms; each n^1 is independently zero or 1; each n^2 has a value of from 1 to 5, and each x^1 independently has a value of from zero to 4;

and when components (A) and/or (B) do not contain or contain an insufficient quantity of aluminum, then

(E) an aluminum compound represented by the formula $AlR_{y'}X_{y''}$ wherein R is a hydrocarbyl group having from 1 to about 10 carbon atoms; X is halogen and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three is employed;

and wherein the components are employed in quantities so as to provide the following ratios:

(1) a Mg:Ti atomic ratio of from about 1:1 to about 200:1,

(2) components (D) and (C) are employed in quantities which provide a molar ratio of D:C of from about 0.1:1 to about 10:1;

(3) excess X:Al ratio of from about 0.0005:1 to about 10:1; and

(4) an Al:Ti atomic ratio of from about 0.1:1 to about 2000:1.

4,555,498

PREPARATION OF CERTAIN ALKALINE EARTH METAL ORGANOMETALLIC COMPOUNDS

Conrad W. Kamienski, Gastonia, N.C., assignor to Lithium Corporation of America, Gastonia, N.C.

Continuation-in-part of Ser. No. 551,917, Nov. 15, 1983, abandoned. This application Nov. 8, 1984, Ser. No. 669,675

Int. Cl.⁴ C08F *4/48, 4/50;* **C07C** *31/30*

U.S. Cl. 502—153 **30 Claims**

21. An organometallic complex composition soluble in volatile liquid solutions of hydrocarbon or chlorinated hydrocarbon solvents comprising at least one member of the group of alkyllithiums, dialkylmagnesium and trialkylaluminums, reacted with a volatile hydrocabon or chlorinated hydrocarbon solvent solution of an alkoxide resulting from the reaction of a suspension of a metal or an amide of calcium, strontium or barium, or a dialkylmetallic compound thereof and with an alcohol as such or in solution in a volatile liquid hydrocarbon or chlorinated hydrocarbon, said alcohol being selected from the group of (a) aliphatic 2-alkyl-substituted C_4–C_{12} monohydric primary alcohols, and (b) mixtures of said (a) alcohols with C_3–C_{12} aliphatic secondary monohydric alcohols in which the hydroxyl group is attached to the second carbon atom, said composition being substantially free from ammonia.

4,555,499

CATALYST FOR DEMETALLIZATION OF HYDROCARBON CONTAINING FEED STREAMS

Simon G. Kukes, and James B. Kimble, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 485,792, Apr. 18, 1983, abandoned. This application Feb. 1, 1984, Ser. No. 576,079

Int. Cl.⁴ B01J *27/14*

U.S. Cl. 502—208 **7 Claims**

1. A catalyst composition comprising zirconium phosphate, cobalt phosphate and vanadium phosphate.

4,555,500

CATALYST FOR HYDROFINING PROCESS FOR HYDROCARBON-CONTAINING FEED STREAMS

Simon G. Kukes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 619,661, Jun. 11, 1984, Pat. No. 4,492,626. This application Oct. 29, 1984, Ser. No. 665,843

Int. Cl.⁴ B01J *21/04, 23/42*

U.S. Cl. 502—334 **4 Claims**

1. A catalyst composition consisting essentially of an alumina support, platinum and a promoter selected from the group consisting of scandium oxide and yttrium oxide, where the concentration of platinum in said catalyst composition is at least about 0.3 weight percent based on the weight of said catalyst composition.

4,555,501

PROCESS FOR PREPARING SILVER CATALYSTS

William D. Armstrong, Stamford, Conn., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed May 14, 1984, Ser. No. 610,229

Int. Cl.⁴ B01J *29/00, 31/12, 23/02;* **C07D** *301/04*

U.S. Cl. 502—243 **14 Claims**

1. A process for preparing a supported silver catalyst suitable for the oxidation of ethylene to ethylene oxide comprising:

(a) impregnating a support with a hydrocarbon solution of a silver salt of a neo-acid having 7 or more carbon atoms, said solution being substantially free of water and said neo-acid, said support comprising alumina, silica, silica-alumina or combinations thereof;

(b) separating the impregnated support of (a) from said solution and heating said separated support in the presence of molecular oxygen for a period of time sufficient to produce an active silver catalyst containing up to about 15 wt. percent silver.

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AMINOACYL-CONTAINING DIPEPTIDE DERIVATIVES USEFUL AS ANTIHYPERTENSIVES

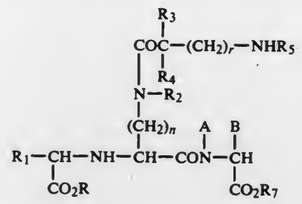
Arthur A. Patchett, Westfield, and Mu T. Wu, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1982, Ser. No. 425,133

Int. Cl.⁴ A61K *37/00;* **C07C** *103/52;* **C07D** *209/20, 209/18*

U.S. Cl. 514—19 **21 Claims**

1. A compound of the formula:



I

wherein:

R and R_7 are independently hydrogen, loweralkyl, aryl, aralkyl;

R^1 is hydrogen; alkyl of from 1–12 carbon atoms which include branched and unsaturated groups and cyclic groups of 3–9 carbon atoms; substituted lower alkyl of 2–8 carbon atoms wherein the substituent(s) are halo, hydroxy, carboxy, carboxamido, loweralkylthio, loweralkoxy, loweralkoxycarbonyl, arylthio, aryloxy, aralkylthio, aralkyloxy, amino, loweralkylamino, diloweralkylamino, arylamino, arloweralkylamino, acylamino, acyl loweralkylamino, acyl arylamino, acyl aralkylamino, =O, =S or ureido; benzofused cycloalkyl and bicycloalkyl of 8 to 12 carbon atoms which can be substituted by one or more of the foregoing substituents; aryl, arloweralkyl, heteroaryl, heteroarloweralkyl, and those groups substituted by one or more of the foregoing substituents, the aryl or heteroaryl portions thereof being optionally mono-, di- or trisubstituted by halo, loweralkyl, hydroxy, loweralkoxy, amino, aminoloweralkyl, substituted aminoloweralkyl, hydroxyloweralkyl, acylamino, carboxy, halolower alkyl, nitro, cyano or sulfonamido; all of said foregoing substituents containing an aryl or heteroaryl group in which the aromatic rings are partially or completely hydrogenated;

n is 1 to 5;

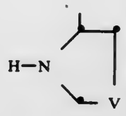
r is 0 to 3;

R_2 is hydrogen, loweralkyl;

R_3 is hydrogen, aryl, hydroxyaryl, loweralkyl, loweralkyl substituted with aryl, carboxy, heteroaryl, amino, hydroxy, guanidino, alkylthio, mercapto, or alkyloxy;

R_4 and R_5 are independently hydrogen, loweralkyl; or,

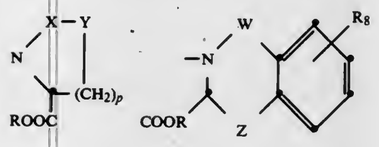
R_3 and R_5 can be joined to form a 5- to 6-membered ring having the formula:

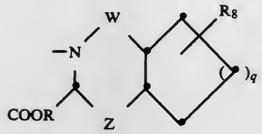


wherein V is $—CH_2CH_2—$, $—CH_2—$, S, $—CH(OR_2)—$ and wherein R_2 is the same as defined above;

A is loweralkyl, C_3–C_8 cycloalkyl; C_8–C_{12} bicycloalkyl; benzofused C_3–C_8 cycloalkyl; perhydrobenzofused C_3–C_8 cycloalkyl; aryl; aralkyl; heteroaryl; heteroaralkyl; perhydroheteroaryl, or perhydroheteroaralkyl; all of which can be substituted by loweralkyl, loweralkoxy, halo, hydroxy, amino or acylamino;

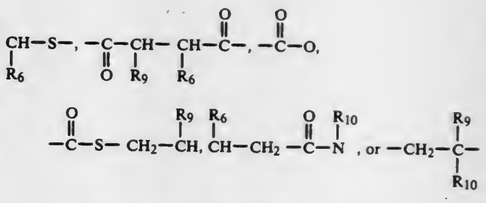
B is hydrogen or loweralkyl; or, A and B can be joined, together with the N and C atoms to which they are attached to form a ring having the formulae





wherein:

X and Y taken together are $—CH_2—CH_2—$,



wherein R_6 is hydrogen or loweralkyl;

R_9 is hydrogen; lower alkyl; cycloalkyl; aryl; aralkyl; heteroaryl; heteroaralkyl; loweralkyloxy; loweralkylthio; aryloxy; arylthio; arloweralkyloxy; arloweralkylthio; acyloxy; amino; mono- or disubstituted loweralkylamino and arloweralkylamino; heteroarloweralkylamino; acylamino in which the acyl group can be loweralkanoyl, arloweralkanoyl, aroyl, heteroaroyl, heteroarloweralkanoyl; carbamoyloxy; or, N-substituted carbamoyloxy; the aromatic ring in said foregoing substituents being optionally mono-, di- or trisubstituted by loweralkyl, loweralkoxy, hydroxy, amino, loweralkylthio, halo, lowerhydroxyalkyl, loweraminoalkyl, sulfonamido, cyano, nitro, aryl, aryloxy, arylthio, or aralkyl; the aromatic rings in said groups containing aryl or heteroaryl groups being completely or partially hydrogenated;

R_{10} is hydrogen; loweralkyl; aryl; substituted aryl; aralkyl; or, cycloalkyl; or R_9 and R_{10} taken together can form a 5 or 6 membered ring which can contain 0, 1 or 2 S or O atoms;

p is 1 to 3;

q is 1 to 3;

W is absent; $—CH_2$, or



Z is $—(CH_2)_m—$ wherein m is 0 to 2 provided that m is not 0 when W is absent;

R_8 is hydrogen; loweralkyl; loweralkoxy; hydroxy, halo; loweralkylthio; or, amino; and, the pharmaceutically acceptable salts thereof.

4,555,503

N^2-(SUBSTITUTED)CARBOXYMETHYL-N^6-(SUBSTITUTED)-LYSYL-AND α-(ε-AMINOALKYL)GLYCYL AMINO ACID ANTIHYPERTENSIVE AGENTS

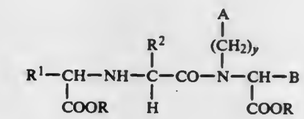
Arthur A. Patchett, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 374,834, May 5, 1982, abandoned. This application Feb. 18, 1983, Ser. No. 466,622

Int. Cl.⁴ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—19 **22 Claims**

1. A compound of the formula:



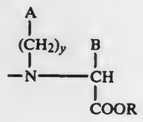
(I.)

wherein:

R is hydrogen; loweralkyl; aralkyl; or, aryl;

R^1 is hydrogen; alkyl of from 1 to 12 carbon atoms which include branched, cyclic and unsaturated alkyl groups; substituted loweralkyl wherein the substituent can be halo, hydroxy, carboxy, carboxamido, loweralkylthio, loweralkoxy, loweralkoxycarbonyl, loweraralkoxycarbonyl, amino, loweralkylamino, lowerdialkylamino, acylamino; substituted loweralkylamino, wherein the substitu-

ent can be halo, hydroxy, alkoxy or cyano; arloweralkylamino; cyclic amino; oxo, thio or ureido; aryloxy; arylthio; aralkyloxy; aralkylthio; benzofused cycloalkyl or bicycloalkyl of from 8–12 carbon atoms; aryl or heteroaryl which may be mono-, di- or trisubstituted by loweralkyl, hydroxy, loweralkoxy, halo, amino, acylamino, loweralkylthio or aminoloweralkyl; benzofused cycloalkyl or bicycloalkyl of from 8 to 12 carbon atoms; arloweralkyl; arloweralkenyl; heteroloweralkyl and heteroloweralkenyl in which the aryl or heteroaryl rings may be mono-, di- or tri-substituted by halo, loweralkyl, hydroxy, loweralkoxy, amino, loweralkylamino, diloweralkylamino, aminoloweralkyl, acylamino, carboxy; haloloweralkyl, nitro, cyano or sulfonamido; aralkyl or heteroaralkyl which include branched loweralkyl groups; substituted aralkyl or substituted heteroaralkyl which include branched loweralkyl groups wherein the loweralkyl groups can be substituted by amino, acylamino, or hydroxyl and the aryl and heteroaryl groups can be substituted by halo, dihalo, loweralkyl, hydroxy, loweralkoxy, aryloxy, aroyl, arylthio, amino, aminoloweralkyl, loweralkanoylamino, aroylamino, lowerdialkylamino, loweralkylamino, hydroxy, hydroxyloweralkyl, trihaloloweralkyl, nitro, cyano, or sulfonamido; any of the arloweralkyl or alkenyl and heteroloweralkyl or alkenyl groups described above in which the aryl or heteroaryl ring is partially or completely hydrogenated; substituted loweralkyl having the formula $R_A{}^1(CH_2)_n$-Q-$(CH_2)_m$ wherein n is 0–2, m is 1–3, $R_A{}^1$ is aryl or heteroaryl optionally substituted by amino, lowerdialkylamino, loweralkylamino, hydroxy, hydroxyloweralkyl, aminoloweralkyl, trihaloloweralkyl, cyano, nitro, sulfonamido, aroyl, loweralkyl, halo, dihalo, and loweralkoxy, and Q is O, S, SO, SO_2, N—$R_B{}^1$, CONR$_C{}^1$, NR$_C{}^1$CO, CH=CH wherein $R_B{}^1$ is hydrogen, loweralkyl, aryl, aralkyl, loweralkanoyl, or aroyl, and R$_C{}^1$ is hydrogen, or loweralkyl; in the group:



y is 0 to 4;

A is

(a) alkyl, including branched unsaturated and cyclic alkyl of 3 to 8 carbon atoms;

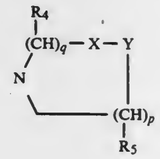
(b) benzofused cycloalkyl or bicycloalkyl of 8 to 12 carbon atoms;

(c) aryl or heteroaryl groups which may be mono-, di- or trisubstituted by loweralkyl; loweralkoxy, halo, amino, acylamino, hydroxy, acyl or acyloxy, and corresponding groups in which the aryl or heteroaryl groups are partially or completely hydrogenated;

(d) loweralkyl including branched and unsaturated groups which may be substituted by aryl or heteroaryl groups and corresponding groups in which the aryl or heteroaryl rings are partially or completely hydrogenated;

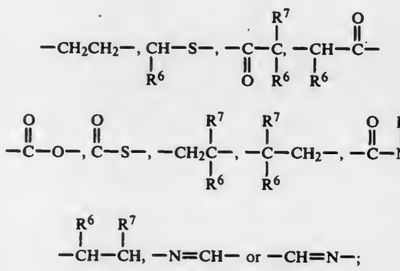
B is hydrogen or loweralkyl; or

A and B may be joined, together with the carbon atoms to which they are attached to form a ring having the formulae:



(1)

wherein X and Y taken together are

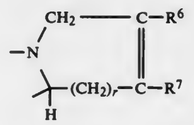


R^5 and R^6 individually are hydrogen; loweralkyl; cycloalkyl; aryl; aralkyl; heteroaryl; loweralkyloxy; loweralkylthio; aryloxy; arylthio; arloweralkyloxy; arloweralkylthio; hydroxy; acyloxy; acylloweralkyl; halo; amino; mono- or disubstituted loweralkylamino; arloweralkylamino; heteroloweralkylamino acylamino in which the acyl group may be loweralkanoyl, aroyl, heteroaroyl or heteroloweralkanoyl; carbamoyl or N-substituted carbamoyloxy; including any of these groups containing an aromatic ring wherein said ring may be mono-, di- or trisubstituted by loweralkyl, loweralkoxy, loweralkylthio, halo, hydroxy, aryl, aryloxy, arylthio or aralkyl; any of the groups recited above containing an aryl or heteroaryl group in which these groups are partially or completely hydrogenated;

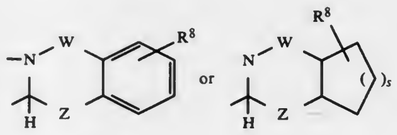
R^7 is hydrogen, loweralkyl, cycloalkyl, aryl, substituted aryl wherein the substituent can be halo, hydroxy, alkoxy, amino or loweralkyl; or

R^6 and R^7 taken together may be oxo or together with the carbon atoms to which they are attached form a 3 to 6 membered ring which may contain 0, 1 or 2 atoms of N, S or O;

p and q are independently 0 to 3;



wherein R^6 and R^7 are as defined above and r is 0, 1 or 2;



(3)

wherein:

W is absent; —CH_2—;



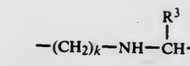
N; or S;

Z is —$(CH_2)_t$—, wherein t is 0 to 2, provided that m may not be O when W is absent; —O—; —N—, or —S—.

R^8 is hydrogen; loweralkyl; loweralkoxy; hydroxy; halo; loweralkylthio; amino; acylamino; or cyano;

s is 1 to 3;

R^2 is



where k is 2 to 5; R^3 is hydrogen; loweralkyl and substituted loweralkyl where the substituents are carboxy, hydroxy, and amino; or aralkyl, substituted aralkyl, heteroaralkyl, and substituted heteroaralkyl where the aryl and heteroaryl substituents are carboxy, hydroxy, and amino; and D is COOR; $CONH_2$; or CH_2OH; and a pharmaceutically acceptable salt thereof.

4,555,504

INCLUSION COMPLEX OF β-CYCLODEXTRIN AND DIGOXIN

Harry P. Jones, Erith, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 341,236, Jan. 21, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 589,035

Claims priority, application United Kingdom, Jan. 23, 1981, 8102124

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—26 **7 Claims**

1. A pharmaceutical composition comprising a nontoxic, effective cardiac dysfunction treatment amount of an inclusion complex of β-cyclodextrin and digoxin together with a pharmaceutically acceptable carrier therefor.

4,555,505

METHOD FOR THE TREATMENT OF HYPERGLYCEMIA USING P-AMINOBENZOATE-N-L-RHAMNOSIDE

Chikao Yoshikumi, Tokyo; Yoshio Ohmura, Funabashi; Fumio Hirose, Tokyo; Masanori Ikuzawa, Tokyo; Kenichi Matsunaga, Tokyo; Takayoshi Fujii, Tokyo; Minoru Ohara, Tokyo, and Takao Ando, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 484,592, Apr. 13, 1983, which is a continuation-in-part of Ser. No. 289,226, Aug. 3, 1981, abandoned, which is a division of Ser. No. 102,535, Dec. 11, 1979, Pat. No. 4,313,939, which is a continuation-in-part of Ser. No. 39,218, May 15, 1979, abandoned. This application Feb. 29, 1984, Ser. No. 584,629

Claims priority, application Japan, May 26, 1978, 53-63146; Dec. 29, 1978, 53-161385; Dec. 29, 1978, 53-161386

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—42 **4 Claims**

1. A method for the treatment of hyperglycemia, which comprises administering to a patient suffering therefrom a pharmaceutically effective amount of p-aminobenzoate-N-L-rhamnoside or a pharmaceutically acceptable salt thereof.

4,555,506

PHOSPHORUS CONTAINING COMPOUNDS AND USE AS HYPOTENSIVES

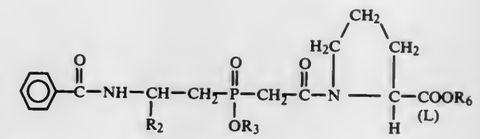
Donald S. Karanewsky, Princeton Junction, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 24, 1981, Ser. No. 334,271

Int. Cl.⁴ C07F *9/65*; A61K *31/40*

U.S. Cl. 514—91 **7 Claims**

1. A compound of the formula

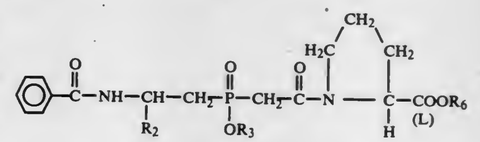


wherein

R_2 is phenylmethyl; and

R_3 and R_6 are the same and each is hydrogen, sodium, potassium, or lithium.

3. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



wherein R_2, R_3 and R_6 are as defined in claim 1.

4. The method of alleviating hypertension in a mammalian specie which comprises administering an effective amount of the composition of claim 3.

4,555,507

NOVEL 6, 16-DIMETHYLCORTICOIDS, THEIR PREPARATION AND USE

Klaus Annen; Henry Laurent; Helmut Hofmeister; Rudolf Wiechert; Michael Töepert, and Hans Wendt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

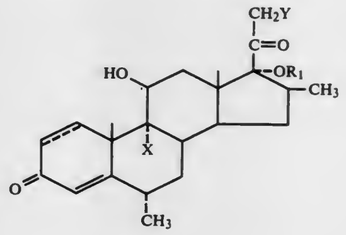
Filed Jul. 19, 1983, Ser. No. 515,243

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1982, 3227312

Int. Cl.⁴ C07J *5/00*

U.S. Cl. 514—172 **16 Claims**

1. A 6,16-dimethylcorticoid of the formula



wherein

⚌⚌⚌ represents a single bond or a double bond;

X is hydrogen, flourine, chlorine, or bromine;

R_1 is formyl, alkanoyl or alkoxyalkyl, each of 2–8 atoms, or benzoyl; and

Y is formyl.

8. A method of treating inflammation in a patient in need of such treatment comprising administering to the patient an anti-inflammatorily effective amount of a compound of claim 1.

4,555,508

ANTIHYPERTENSIVE SPIRO-CYCLIC COMPOUNDS

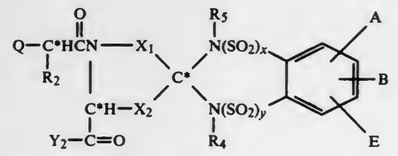
John T. Suh, Greenwich, Conn.; John R. Regan, Mamaroneck, N.Y.; John J. Piwinski, Parsippany, N.J.; Paul Menard, Tuckahoe, and Howard Jones, Ossining, both of N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Mar. 2, 1984, Ser. No. 585,697

Int. Cl.[4] A61K *37/00;* **C07D** *279/00;* **C07C** *103/52*

U.S. Cl. 514—211 **23 Claims**

1. A compound of the formula



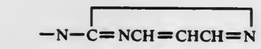
wherein

Q is $Y_1—C(O)—C^*H(R_1)—NH—$, $—NH_2$, $R_1—C(O)—S—(C^*H(R_1))_{0-1}—$, or $HS—(C^*H(R_1))_{0-1}—$;

Y_1 and Y_2 are independently —OH, —OR, or $—NR_1R_2$;

one of x and y is 1 and the other is 0;

R, R_1, R_2, R_4 and R_5 are independently hydrogen, alkyl having 1 to 8 carbon atoms, aryl having up to 12 carbon atoms, aryl-alkyl wherein the aryl moiety has up to 10 carbon atoms and the alkyl moiety has 1 to 6 carbon atoms, cycloalkyl having 3 to 10 carbon atoms, fused cycloalkylaryl having 8 to 12 carbon atoms, heterocyclic, or an alkyl group having 1 to 6 carbon atoms which is substituted with $—NH_2$, $[—NH—C(NH_2)=NH_2]^{-N-H-C(NH_2)=NH}$, or [—N—C=NCH=CHCH=N]



A, B and E are independently hydrogen, halogen, hydroxy, $—CF_3$, —OR, $—NR^1R_2$, $—C(O)Y_1$, $—SO_2R$, or $—SO_2NR_1R_2$ provided that at least two of A, B and E are not hydrogen;

X_1 is $—(CH_2)_a—$, $—(CH_2)_bS(CH_2)_c—$, $—(CH_2)_bC(O)(CH_2)_c—$, or $—(CH_2)_bCH(R_3)(CH_2)_c—$;

X_2 is $—(CH_2)_d—$, $—(CH_2)_eS(CH_2)_f—$, $—(CH_2)_eC(O)(CH_2)_f—$, or $—(CH_2)_eCH(R_3)(CH_2)_f—$;

provided that a is 0–4, b is 0–3, c is 0–3, d is 0–4, e is 0–3, f is 0–3, (a+d) is 2–4, (a+e+f) is 1–3, (b+c+d) is 1–3, and (b+c+e+f) is 0–2; and

R_3 is hydroxy, phenyl, alkyl having 1 to 6 carbon atoms, or alkoxy having 1 to 6 carbon atoms;

wherein the alkyl, cycloalkyl, aryl, and fused aryl-cycloalkyl groups may carry substituents selected from the group consisting of alkoxy with 1 to 6 carbon atoms, $—CF_3$, —OH, —SH, halogen, $—NO_2$, and —COOR; and

pharmaceutically acceptable acid addition, alkali metal, and alkaline earth metal salts thereof.

4,555,509

ANTI-HYPERTENSIVE BENZO[b]PYRAN-3-OLS

John M. Evans, Roydon; Robin E. Buckingham, Welwyn Garden City, and Kenneth Willcocks, Harlow, all of England, assignors to Beecham Group p.l.c., England

Filed Mar. 22, 1984, Ser. No. 592,117

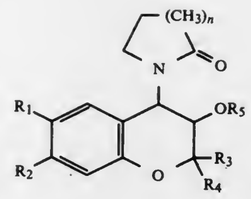
Claims priority, application United Kingdom, Mar. 24, 1983, 8308063

The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.

Int. Cl.[4] A61K *31/445, 31/40;* **C07D** *405/04*

U.S. Cl. 514—278 **11 Claims**

1. A compound of formula (I):



(I)

wherein:

one of R_1 and R_2 is hydrogen and the other is C_{1-6} alkyl-thiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, 1-mercapto C_{2-7} alkyl or formyl;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl, or R_3 and R_4 together with the carbon atom to which they are attached are C_{3-6} spiroalkyl;

R_5 is hydrogen, C_{1-3} alkyl or C_{1-8} acyl; and

n is 1 or 2; the lactam group being trans to the OR_5 group.

10. A method of treating or preventing hypertension in animal including humans which comprises administering to the patient an anti-hypertensive effective amount of a compound according to claim 1.

4,555,510

THERAPEUTIC AGENT FOR HYPERTENSION

Kazuhiro Goto, Nakatsu; Osamu Yaoka, Fukuoka, and Takanori Oe, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP82/00425, § 371 Date Jun. 27, 1984, § 102(e) Date Jun. 27, 1984, PCT Pub. No. WO84/01711, PCT Pub. Date May 10, 1984

PCT Filed Oct. 30, 1982, Ser. No. 626,837

Int. Cl.[4] A61K *31/435*

U.S. Cl. 514—291 **2 Claims**

1. A method of treating a human afflicted with hypertension, which comprises orally administering to the human a therapeutically effective amount of a compound selected from the group consisting of 9-chloro-5-oxo-7-(1H-tetrazol-5-yl)-5H-[1]benzopyrano[2,3-b]pyridine, a pharmaceutically effective salt thereof and the sodium salt.penta hydrate thereof.

4,555,511

THIENO [3,2,C]PYRIDINES USEFUL AS ANTIHYPERTENSIVES

Gerd Schnorrenberg, Ingelheim am Rhein; Otto Roos, Schwabenheim; Walter Lösel; Ingrid Wiedemann, both of Gau-Algesheim; Wolfram Gaida, Ingelheim am Rhein, and Wolfgang Hoefke, Wiesbaden, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

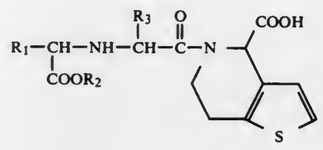
Filed Jan. 19, 1984, Ser. No. 572,179

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302125

Int. Cl.[4] C07D *513/02*

U.S. Cl. 514—301 **7 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl(alkyl of 1 to 6 carbon atoms);

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl(alkyl of 1 to 6 carbon atoms);

R_3 is hydrogen or alkyl of 1 to 6 carbon atoms; or a non-toxic, pharmaceologically acceptable salt thereof.

6. An antihypertensive pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antihypertensive amount of a compound of claim 1.

4,555,512

CIRCULATION-ACTIVE NOVEL CHROMONE- AND THIOCHROMONE-SUBSTITUTED 1,4-DIHYDROPYRIDINE-LACTONES

Siegfried Goldmann; Friedrich Bossert, both of Wuppertal; Matthias Schramm, Cologne; Günter Thomas, and Rainer Gross, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

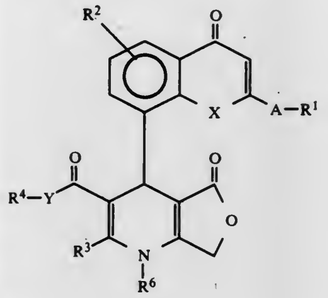
Filed Mar. 14, 1984, Ser. No. 589,614

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3311003

Int. Cl.[4] A61K *31/435;* **C07D** *491/048*

U.S. Cl. 514—302 **13 Claims**

1. A dihydropyridine of the formula



(I)

in which

R^1 represents hydrogen, a straight-chain, cyclic or branched aliphatic hydrocarbon radical with 1 to 10 C atoms, a carboxylic acid alkyl ester with an alkyl radical of 1 to 10 C atoms, an aromatic or a heteroaromatic radical which optionally can be substituted by one to 5 identical or different substituents from the group comprising halogen, $C_1–C_{10}$-alkyl, $C_1–C_{10}$-alkoxy, $C_1–C_{10}$-alkylthio, $C_1–C_{10}$-alkylsulphinyl, cyano, hydroxyl, nitro, mono- or poly-fluoro-$C_1–C_5$-alkyl, mono- or poly-fluoro-$C_1–C_5$-alkoxy, mono- or poly-fluoro-$C_1–C_5$-alkylthio, amino, mono-$C_1–C_5$-alkylamino and di-$C_1–C_5$-alkylamino,

R^2 represents one to three halogen atoms or hydrogen,

R^4 represents a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical with 1 to 20 C atoms, which is optionally substituted by alkoxy with 1 to 10 C atoms, alkylthio with 1 to 10 C atoms, alkylsulphinyl with 1 to 10 C atoms, trialkylsilyl with in each case 1 to 6 atoms, halogen, cyano, hydroxyl, amino, alkylamino with 1 to 6 C atoms, dialkylamino with in each case 1 to 6 C atoms, morpholinyl, piperidyl, piperazinyl, nitro, nitrate, aryl or heteroaryl either of which can optionally be substituted by 1 to 3 identical or different substituents from the group comprising halogen, alkyl with 1 to 6 C atoms, alkoxy with 1 to 6 C atoms, alkylthio with 1 to 6 C atoms, alkylsulphinyl with 1 to 6 C atoms, alkylsulphonyl with 1 to 6 C atoms, hydroxyl, cyano, nitro, amino, alkylamino with 1 to 6 C atoms, dialkylamino with in each case 1 to 6 C atoms, mono- or poly-fluoroalkyl with 1 to 6 C atoms and mono- or poly-fluoroalkoxy with 1 to 6 C atoms,

R^5 represents hydrogen or a straight-chain, branched or cyclic, saturated or unsaturated aliphatic alkyl radical with 1 to 10 C atoms, which optionally contains one or two identical or different hetero chain members from the group comprising O, CO, NH, N-alkyl with 1 to 8 C atoms, S and SO_2, and is optionally substituted by halogen, nitro, cyano, azido, hydroxyl, aryl, heteroaryl, amino or monoalkylamino or dialkylamino with in each case 1 to 6 C atoms,

R^6 represents hydrogen or a straight-chain or branched $C_1–C_{20}$-alkyl radical, which is optionally substituted by $C_1–C_{10}$-alkoxy, halogen or morpholino,

A represents a direct bond, a $C_1–C_{20}$-alkylene chain or a $C_2–C_{20}$-alkenylene chain, which chains are optionally interrupted by O or S,

X represents O or S and

Y represents a direct bond, O, S, —NH— or —N— alkyl with 1 to 8 C atoms,

or a pharmaceutically acceptable salt.

4,555,513

1,2 DIHYDRO- AND 1,2,3,4-TETRAHYDRO QUINOLYLACETIC ACIDS AND ANALGESIC USE THEREOF

Masaaki Hamada; Kaoru Okamaoto, and Teikichi Kurosaki, all of Osaka, Japan, assignors to Nippon Zoki Pharmaceutical Co., Osaka, Japan

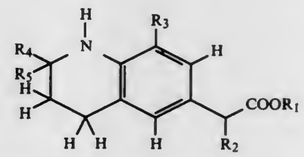
Filed Dec. 22, 1982, Ser. No. 452,146

Claims priority, application Japan, Dec. 29, 1982, 56-211626

Int. Cl.[4] A61K *31/47;* **C07D** *215/06*

U.S. Cl. 514—311 **19 Claims**

1. A quinolylacetic acid compound of the general formula (I)



(I)

wherein:

R_1 is hydrogen or an alkyl group having 1 to 4 carbon atoms;

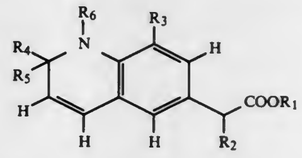
R_2 is an alkyl group of 1 to 4 carbon atoms;

R_3 is a halogen, an alkyl group having 1 to 8 carbon atons, or an alkenyl group having 2 to 8 carbon atons; and

R_4 and R_5 are each an alkyl group having 1 to 4 carbon atoms or R_4 and R_5 can form a carbocyclic ring having 3 to 6 carbon atoms;

and pharmaceutically acceptable salts thereof.

7. A quinolylacetic acid compound of general formula (II)



(II)

wherein:

R_1 is hydrogen or an alkyl group having 1 to 4 carbon atoms;

R_2 is an alkyl group of 1 to 4 carbon atoms;

R_3 is hydrogen, a halogen, an alkyl group of 2 to 8 carbon atoms, or an alkenyl group of 2 to 8 carbon atoms;

R_4 and R_5 are each an alkyl group having 1 to 4 carbon atoms or R_4 and R_5 can form a carbocyclic ring having 3 to 6 carbon atoms; and

R_6 is hydrogen, an alkyl group having 1 to 8 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkynyl group having 3 to 8 carbon atoms;

and further wherein at least one of R_3 and R_6 is other than hydrogen;

and pharmaceutically acceptable salts thereof.

19. A method for treating inflammation or pain which comprises administering an effective amount of an anti-inflammatory, anti-pyretic and analgesic agent comprising a carrier and at least one quinolylacetic acid compound according to any one of claims **1** through **17**.

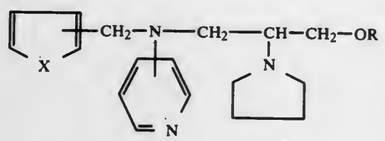
4,555,514

3-ALKOXY-2-(N-PYROLIDINO)-N-PYRIDYL-N-FURYL(OR THIENYL) METHYL-PYROPYL AMINES USEFUL AS CALCIUM ANTAGONISTS

Michel Combourieu, Aurillac; Jacques A. L. Simond, Les Martres De Veyre, and André J. Monteil, Chatel Guyon, all of France, assignors to Riom Laboratoires C.E.R.M. "RL-CERM" S.A., Riom, France

Filed Jan. 9, 1985, Ser. No. 690,051
Claims priority, application France, Jan. 18, 1984, 84 00755
Int. Cl.⁴ C07D *487/12*
U.S. Cl. 514—343 **5 Claims**

1. A compound of the general formula:



in which X represents oxygen or sulphur and

R represents a linear or branched alkyl group with 1 to 7 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

5. A calcium antagonistic composition comprising a calcium antagonistic effective amount of a compound of claim **1** and a pharmaceutically acceptable excipient therefor.

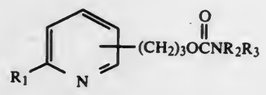
4,555,515

PYRIDYLPROPYL CARBAMATES AS INSECT REPELLENTS

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Feb. 25, 1985, Ser. No. 705,171
Int. Cl.⁴ C07D *213/53*
U.S. Cl. 514—357 **2 Claims**

1. A method for repelling insects comprising applying to a locus to be protected from insects an amount of a compound having the formula



in which R_1 is hydrogen or C_1–C_4 alkyl and R_2 and R_3 are C_1–C_4 alkyl, effective to repel insects from said locus.

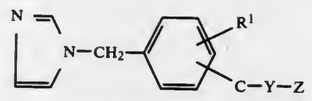
4,555,516

N-BENZYL-IMIDAZOLES AS SELECTIVE INHIBITORS OF THE THROMBOXANE SYNTHETASE ENZYME

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 9, 1980, Ser. No. 110,711
Claims priority, application United Kingdom, Jan. 19, 1979, 7902114
Int. Cl.⁴ A61K *31/415;* **C07D** *233/60*
U.S. Cl. 514—326 **11 Claims**

1. A compound of the formula

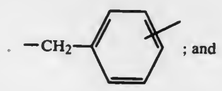


(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

R^1 is hydrogen, C_1–C_4 lower alkyl, C_1–C_4 lower alkoxy or halogen;

Y is $(CH_2)_n$ where n is an integer of from 1 to 4, or a group of the formula



; and

Z is $CONHR^3$, $CON(R^4)_2$ or CN wherein R^3 is hydrogen, C_1–C_4 lower alkyl or C_2–C_4 lower alkanoyl; and

each R^4 is C_1–C_4 lower alkyl or two groups R^4 together with the nitrogen atom to which they are attached form a pyrrolidino or piperidino group.

10. A pharmaceutical composition for use as a selective inhibitor of thromboxane synthetase enzyme comprising a thromboxane synthetase enzyme inhibiting amount of a compound of claim **1** together with a pharmaceutically acceptable diluent or carrier.

11. A method of selectively inhibiting the action of the thromboxane synthetase enzyme in an animal which comprises administering to the animal a thromboxane synthetase inhibiting amount of a compound of claim **1** or of a pharmaceutical composition of claim **10**.

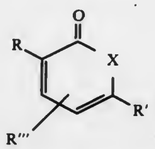
4,555,517

PYRIDONE ESTERS AS INOTROPIC AGENTS

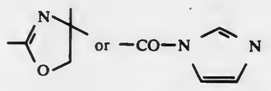
David M. Stout, Vernon Hills; Diane M. Yamamoto, Gurnee, both of Ill., and Cynthia Barcelon-Yang, Kenosha, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 3, 1984, Ser. No. 637,352
Int. Cl.⁴ C07D *213/79, 413/04, 401/06;* **A61K** *31/455*
U.S. Cl. 514—336 **15 Claims**

1. A compound of the formula

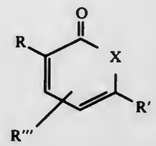


wherein R is hydrogen, lower alkyl, halo, cyano, hydroxy, amino, lower alkylamino, $—CH_2NH_2$, $—CH_2OH$ Or —COOR″; R′ is hydrogen, lower cycloalkyl or lower alkyl; R″ is $—CH_2Ar$ wherein Ar is phenyl, furan, thiophene or phenyl substituted with lower alkyl, halo, hydroxy, alkoxy or amino; R‴ is COOR″,

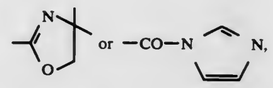


and X is nitrogen with the proviso that when R‴ is —COOR″, R cannot be hydrogen or cyano; or a pharmaceutically acceptable salt thereof.

7. A method of treating or relieving the symptoms associated with impaired ventricular myocardia contractility in a patient by providing a positive inotropic effect comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula



wherein R is hydrogen, lower alkyl, halo, cyano, hydroxy, amino, lower alkylamino, $—CH_2NH_2$, CH_2OH or COOR″; R′ is hydrogen, lower cycloalkyl or lower alkyl; R″ is CH_2Ar wherein Ar is phenyl, furan, thiophene or phenyl substituted with lower alkyl, halo, hydroxy, alkoxy or amino; R‴ is COOR″,



and X is nitrogen; or a pharmaceutically acceptable salt.

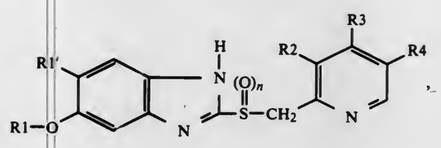
4,555,518

FLUOROALKOXY SUBSTITUTED BENZIMIDAZOLES USEFUL AS GASTRIC ACID SECRETION INHIBITORS

Georg Rainer, Konstanz, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Fed. Rep. of Germany

Filed May 1, 1984, Ser. No. 606,872
Claims priority, application Switzerland, May 3, 1983, 2401/83
Int. Cl.⁴ C07D *403/12;* **A61K** *31/44*
U.S. Cl. 514—338 **29 Claims**

1. A fluoroalkoxy compound of the formula



(I)

wherein

R1 represents a 1-3C-alkyl radical in the structure of which most or all hydrogen atoms are replaced by fluorine atoms, or a chlorodifluoromethyl radical,

R1′ represents hydrogen, halogen, trifluoromethyl, a 1-3C-alkyl radical, or a 1-3C-alkoxy radical in the structure of which optionally most or all hydrogen atoms are replaced by fluorine atoms,

R2 represents hydrogen or a 1-3C-alkyl radical,

R3 represents hydrogen or a 1-3C-alkyl or 1-3C-alkoxy radical,

R4 represents hydrogen or a 1-3C-alkyl radical and

n represents the number 0 or 1,

or a salt thereof.

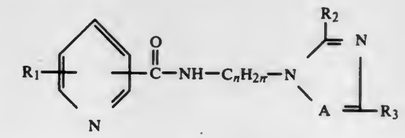
4,555,519

THROMBOXANE SYNTHETASE ENZYME INHIBITING N-[(1H-IMIDAZOL-1-YL) AND (1H-1,2,4-TRIAZOL-1-YL)ALKYL]PYRIDINECARBOXAMIDES

William B. Wright, Jr., Woodcliff Lake, and Jeffery B. Press, Rocky Hill, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 19, 1984, Ser. No. 673,069
Int. Cl.⁴ C07D *401/12;* **A61K** *31/455*
U.S. Cl. 514—340 **29 Claims**

1. A compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen and halogen; R_2 and R_3 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl(-C_1–C_3) and phenyl; A is selected from the group consisting of nitrogen and >CH; n is an integer from 2 to 8 inclusive; and the pharmaceutically acceptable salts thereof.

24. A method of inhibiting thromboxane synthetase enzyme in a mammal which comprises administering internally to said mammal a thromboxane synthetase enzyme inhibiting amount of a compound of the formula as recited in claim **1**.

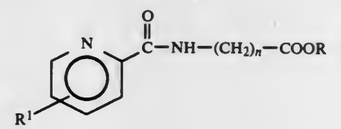
4,555,520

2-PYRIDYLCARBOXAMIDES WHICH INHIBIT ARACHIDONIC ACID RELEASE

Raj N. Misra, Princeton, and Donald S. Karanewsky, East Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 20, 1984, Ser. No. 642,006
Int. Cl.⁴ C07D *213/81;* **A61K** *31/455*
U.S. Cl. 514—346 **21 Claims**

1. A compound having the structure



wherein n is 1 to 10,

R is hydrogen, lower alkyl, alkali metal or an amine salt; and

R^1 is C_6–C_{20} alkyl, C_6–C_{20} alkenyl, C_6–C_{20} alkoxy or phenyl, including pharmaceutically acceptable salts thereof.

18. A composition for inhibiting allergic conditions mediated by leukotrienes in a mammalian species, comprising an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier thereof.

4,555,521

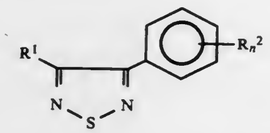
NEMATICIDAL 3-SUBSTITUTED-4-PHENYL-1,2,5-THIADIAZOLES

John F. Engel, Washington Crossing, and Joseph M. Puglis, Newtown, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 16, 1983, Ser. No. 552,595
Int. Cl.⁴ C07D *285/10;* **A01N** *43/82*
U.S. Cl. 514—362 **6 Claims**

1. A method for controlling nematodes which comprises

applying to the soil in which plants are or are to be planted a nematicidal amount of a compound of the formula



in which:

(a) R^1 is halogen, R^2 is halogen, cyano, methyl, methoxy, halomethoxy, or 4-methylcarbonyloxy, and n is 0 or 1; of R^2 is halogen and n is 2; or

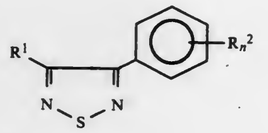
(b) R^1 is methoxy, R^2 is halogen, cyano, 4-methyl or 4-methoxy, and n is 0 or 1; or

(c) R^1 is halomethoxy, R^2 is halogen, and n is 1; or

(d) R^1 is dimethylaminocarbonyloxy or dimethylaminocarbonylthio, R^2 is halogen or methyl, and n is 0 or 1; or

(e) R^1 is cyano, methylthio, 2-propenyloxy, 2-propynyloxy, 2,2,2-trifluoroethoxy, or phenoxy, and n is 0.

5. A compound of the formula



in which

(a) R^1 is halogen, R^2 is halogen, cyano, or methoxy, halomethoxy, or 4-methylcarbonyloxy, and n is 1; or R^2 is halogen and n is 2; or

(b) R^1 is methoxy, R^2 is halogen, cyano, or 4-methoxy and n is 1; or

(c) R^1 is halomethoxy, R^2 is halogen, and n is 1; or

(d) R^1 is dimethylaminocarbonyloxy or dimethylaminocarbonylthio, R^2 is halogen or methyl, and n is 0 or 1; or

(e) R^1 is cyano, methylthio, 2-propenyloxy, 2-propynyloxy, 2,2,2-trifluoroethoxy, or phenoxy, and n is 0.

4,555,522

ANTITHROMBOTIC AND/OR ANTIHYPERTENSIVE COMPOSITIONS

Bernard K. Martin, Bagshot, England, assignor to T & R Chemicals, Inc., Clint, Tex.

Filed Jan. 3, 1984, Ser. No. 567,914

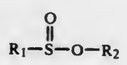
Claims priority, application United Kingdom, Jan. 5, 1983, 8300102

Int. Cl.⁴ A61K *31/335, 31/35, 31/34, 31/266*

U.S. Cl. 514—449 **8 Claims**

1. A pharmaceutical composition in unit dosage form for use in treating a hypertensive or a thrombotic condition in a mammal, said composition comprising a pharmaceutically acceptable diluent or carrier and, as an active pharmaceutical agent, from 50 to 1,000 mg per unit dose of a sulphite or bisulphite ester having:

(A) the Formula IA:



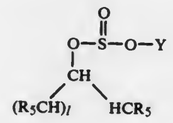
(Formula IA)

wherein

R_1 represents C_1–C_{10} alkyl, C_1–C_{10} hydroxyalkyl having a number of hydroxyl substituents from 1 to a value equal to the number of carbon atoms in the hydroxyalkyl group; and

R_2 represents C_1–C_{10} alkyl, or C_1–C_{10} hydroxyalkyl having a number of hydroxyl substituents from 1 to a value equal to the number of carbon atoms in the hydroxyalkyl group,

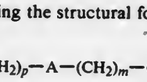
(B) the Formula ID:



(Formula ID)

wherein

R_5 represents hydroxyl or

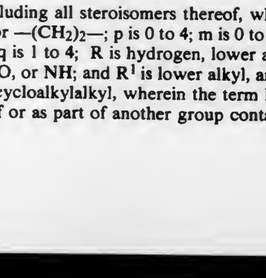


Y represents hydroxymethyl, methyl, ethyl or $-(CH_2)_l-N(CH_3)_3$;

l represents an integer from 1 to 4 inclusive;

t represents 1, 2 or 3, or

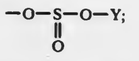
(C) the Formula IE:



(Formula IE)

wherein

R_5 represents hydroxyl or



Y represents hydroxymethyl, methyl, ethyl, or $-(CH_2)_l-N(CH_3)_3$; and

t represents 1, 2 or 3.

4,555,523

7-OXABICYCLOHEPTANE SUBSTITUTED THIO PROSTAGLANDIN ANALOGS AND THEIR USE IN THE TREATMENT OF THROMBOLYTIC DISEASE

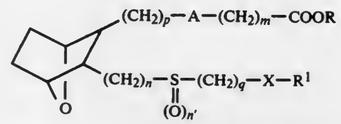
Steven E. Hall, Ewing Township, Mercer County, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 4, 1984, Ser. No. 617,199

Int. Cl.⁴ A61K *31/34;* **C07D** *307/00*

U.S. Cl. 514—469 **17 Claims**

1. A compound having the structural formula



and including all steroisomers thereof, wherein A is —CH=CH— or $-(CH_2)_2-$; p is 0 to 4; m is 0 to 8; n is 1 to 4; n′ is 0, 1 or 2; q is 1 to 4; R is hydrogen, lower alkyl or alkali metal; X is S, O, or NH; and R^1 is lower alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl, wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, haloaryl, cycloalkyl or alkylcycloalkyl;

the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with lower alkyl, halogen or lower alkoxy;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups; and

$(CH_2)_p$, $(CH_2)_m$, $(CH_2)_n$ and $(CH_2)_q$ can be substituted by one or more alkyl groups.

10. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,555,524

TRANSDERMAL 2-(4-ISOBUTYLPHENYL)-PROPIONIC ACID MEDICATION AND METHODS

Klaus Gruber, Remagen; Manfred Löhner; Klaus Posselt, both of Bonn, and Hans H. Wagener, Meckenheim, all of Fed. Rep. of Germany, assignors to Dolorgiet GmbH & Co KG, Bonn, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 443,903

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205504

Int. Cl.⁴ A61K *31/19*

U.S. Cl. 514—570 **6 Claims**

1. A transdermal medicament for the delivery of 2-(4-isobutylphenyl)-propionic acid to a patient which comprises a sustained release vehicle containing a pharmaceutically effective amount of 2-(4-isobutylphenyl)-propionic acid, said sustained release vehicle comprising a base capable of substantially dissolving all of said 2-(4-isobutylphenyl)-propionic acid and containing from about 30 to about 50 parts by weight C_{6-12} carboxylic acid triglyceride, about 4 to about 10 parts by weight glycerol monostearate-polyoxyethylene stearate mixture and about 2 to about 10 parts by weight polyoxyethylene fatty acid ester.

4,555,525

USE OF DESETHYL-N-ACETYLPROCAINAMIDE (NAPADE) AS AN INOTROPIC AGENT

Juan J. L. Lertora, and Lucy W. King, both of New Orleans, La., assignors to Administrators of the Tulane Educational Fund, New Orleans, La.

Filed Aug. 31, 1984, Ser. No. 646,191

Int. Cl.⁴ A61K *31/16*

U.S. Cl. 514—616 **1 Claim**

1. A method of increasing the force of contraction of cardiac muscle in an animal requiring same comprising administering to said animal an inotropic effective amount of desethyl-N-acetylprocainamide or a pharmaceutically acceptable salt thereof.

4,555,526

METHOD FOR PRODUCING HYDROCARBONS

Tadahiro Wakui, Soka, and Tadahiko Handa, Hyogo, both of Japan, assignors to Daido Sanso K. K., Osaka, Japan

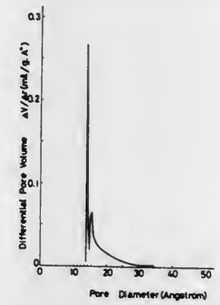
Filed Jul. 13, 1984, Ser. No. 630,560

Claims priority, application Japan, Jul. 15, 1983, 58-130119

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—717 **7 Claims**

7. A method for selectively producing hydrocarbons useful in the manufacture of gasoline, kerosene and light oil, which comprises contacting synthesis gas having a molar ratio of hydrogen to a combined amount of at least one of carbon monoxide and carbon dioxide of from 0.5 to 3.0 with a heterogeneous catalyst at a temperature of from 200° to 350° C. and at a pressure of from 0 to 100 Kg/cm^2A and at a gas space velocity of from 500 to 5000 l/hour, said heterogeneous catalyst comprising 0.1 to 50 parts by weight of at least one VIII group metal capable of reducing at least one of carbon monoxide and carbon dioxide supported on 100 parts by weight of a



metal oxide carrier having a very narrow pore size distribution in the micropores region within the range of between substantially 10 to 100 Angstroms.

4,555,527

PROCESS FOR THE PREPARATION OF ACRYLAMIDE GRAFT POLYMER DISPERSIONS

Duane A. Heyman, Monroe, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 510,565, Jul. 5, 1983, Pat. No. 4,503,207. This application Dec. 14, 1984, Ser. No. 681,838

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—67 **6 Claims**

1. A polyurethane foam prepared by reacting (a) a white stable low viscosity graft polymer dispersion prepared by polymerizing, in the presence of an effective amount of a free radical initiator, in an unsaturation containing polyol or polyol mixture, an aqueous solution of acrylamide and removing the water during or after said polymerization (b) an organic polyisocyanate, and (c) a blowing agent in the presence of an effective amount of a urethane forming catalyst.

4,555,528

PROCESS FOR MAKING FOAMED, SULFUR-CURED POLYMER BLEND COMPOSITIONS

Gary L. Loomis, Drexel Hill, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 692,634, Jan. 18, 1985. This application Apr. 2, 1985, Ser. No. 719,054

Int. Cl.⁴ C08J *9/06*

U.S. Cl. 521—89 **11 Claims**

1. A foamable and curable composition comprising a polymer blend of

(1) 5 to 95 parts of an E/X/Y copolymer, wherein

E is ethylene;

X is a vinyl ester; and

Y is carbon monoxide or sulfur dioxide; and

(2) 95 to 5 parts of a polymer of a vinyl halide or vinylidene halide, the total amount of polymers (1) plus (2) being 100 parts;

(3) an effective amount of a blowing agent; and

(4) at least one curing agent selected from

(a) about 0.2 to 5 parts of sulfur and

(b) about 0.2 to 15 parts of an agent capable of releasing elemental sulfur under the cure conditions, at a temperature of about 100°–180° C.

4,555,529

FOAMABLE POLYORGANOSILOXANE COMPOSITIONS

Chi-Long Lee; Myron T. Maxson, and James A. Rabe, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 715,807, Mar. 25, 1985. This application Jun. 21, 1985, Ser. No. 747,217
Int. Cl.[4] C08J *9/14*
U.S. Cl. 521—124 **15 Claims**

1. A foamable polyorganosiloxane composition exhibiting a viscosity of at least 0.5 Pa.s at 25° C., said composition consisting essentially of the product obtained by homogeneously blending together

(A) a polydimethylsiloxane containing at least two vinyl radicals per molecule and exhibiting a viscosity of from 0.1 to 100 Pa.s at 25° C.;

(B) an organohydrogensiloxane containing an average of at least 3 silicon-bonded hydrogen atoms per molecule in an amount sufficient to cure said composition in the presence of a hydrosilation catalyst;

(C) a catalytically effective amount of a platinum-containing hydrosilation catalyst,

(D) from 0.2 to 25%, based on the weight of said polyorganosiloxane composition, of a foam stabilizer consisting essentially of a resinous, benzene-soluble organosiloxane copolymer comprising $SiO_{4/2}$ units, $(CH_3)_3SiO_{1/2}$ units and fluorine-containing units selected from the group consisting of $R_aR_b'SiO_{(4-a-b)/2}$, $R''[Si(R')_bO_{(3-b)/2}]_2$ and combinations thereof, where R is a monovalent organic radical containing at least four Perfluorinated carbon atoms, R' is an alkyl radical containing from 1 to 3 carbon atoms, R'' is a divalent organic radical containing at least four perfluorinated carbon atoms, R and R'' are bonded to the silicon atoms of their respective fluorine-containing units by means of a sequence of at least two methylene radicals or a silicon-bonded oxygen atom that is, in turn, bonded to a sequence of at least two methylene radicals, a is 1 or 2, b is 0, 1 or 2 and the sum of a and b is 3 or less, the molar ratio of all units other than hydroxyl and said $SiO_{4/2}$ units to said $SiO_{4/2}$ is from 0.7:1 to 1.1:1 inclusive, and the molar ratio of the $(CH_3)_3SiO_{1/2}$ units with respect to said fluorine-containing units and any remaining units other than said $SiO_{4/2}$ units is such that

(a) the surface tension exhibited by a 10% by weight solution of (D) in a trimethylsiloxy endblocked polydimethylsiloxane exhibiting a viscosity of 0.01 Pa.s at 25° C. is less than 2.2×10^{-4} newtons per cm at 25° C., and

(b) said 10% by weight solution requires the addition of from 0 to 5 weight % of xylene to achieve clarity at 25° C. and;

(E) an amount of a blowing agent sufficient to convert said composition to a foam during exposure of said composition to atmospheric pressure and a temperature of at least 0° C.

4,555,530

HALOGENATED PHENOLIC POLYOLS AND RIGID CELLULAR COMPOSITIONS MADE THEREFROM

John T. Patton, Jr., Wyandotte, Mich., and John P. Rupert, Wadsworth, Ohio, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 458,286, Jan. 17, 1983, Pat. No. 4,448,952. This application May 7, 1984, Ser. No. 581,429
Int. Cl.[4] C08J *9/14*
U.S. Cl. 521—131 **5 Claims**

1. A rigid cellular composition obtained by reacting, in the presence of a polymerization catalyst and a blowing agent, (1) an organic polyisocyanate with (2) a modified high ortho-benzyllic ether-containing resole polyol (2), said polyol obtained by a process comprising reacting, at a temperature of 100° C. to 130° C., a mixture of

(a) a phenolic component comprising phenol or a mixture of phenol and a phenol which is substituted in the meta or para position with halogen, C_1–C_{12} alkyl, or halogen-substituted alkyl of 1 to 6 carbon atoms;

(b) a molar excess relative to the phenolic component of a non-aqueous aldehyde having the formula RCHO where R is hydrogen, alkyl of 1 to 5 carbon atoms, or halogenated alkyl of 1 to 5 carbon atoms;

(c) less than 50 mole percent relative to the phenolic component of a hydroxylic component having one or more aliphatic hydroxyl compounds which contain 1 to 4 hydroxyl groups, 1 to 12 carbon atoms, and 0 to 5 ether oxygen atoms wherein the hydroxylic component contains at least 15 mole percent of a halogenated alcohol having 2 to 4 carbon atoms and at least 60 weight percent of halogen having an atomic number of 17 to 35; and

(d) an effective amount of a metal salt catalyst.

4,555,531

RIGID POLYURETHANE FOAMS EMPLOYING ALKYLENE OXIDE ADDUCTS OF ALKANOLAMINES

Donald L. Christman, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 14, 1985, Ser. No. 691,479
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—167 **10 Claims**

1. A rigid polyurethane foam comprising the reaction product of

(a) a polyoxyalkylene polyether polyol other than one derived from an alkanolamine,

(b) an ethylene oxide-propylene oxide adduct of an alkanolamine having a molecular weight range from about 200 to about 500 and containing an amount of ethylene oxide from about 20 weight percent to about 96 weight percent,

(c) catalyst, surfactant, blowing agent, and

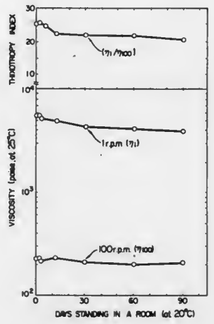
(d) an organic polyisocyanate.

4,555,532

EPOXY RESIN COMPOSITION

Isamu Tanaka, Yokosuka; Hiroshi Kikuchi, Zushi; Akira Tomizawa, and Hitoshi Oka, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

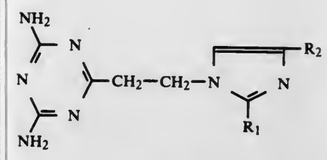
Filed Oct. 10, 1984, Ser. No. 659,565
Claims priority, application Japan, Oct. 14, 1983, 58-190756; Jul. 13, 1984, 59-144240
Int. Cl.[4] C08L *63/00*; C09D *3/58*
U.S. Cl. 523—400 **26 Claims**



1. An epoxy resin composition comprising

(a) 100 parts by weight of an epoxide compound having more than one epoxy group on the average per molecule,

(b) 1 to 20 parts by weight of a diaminotriazine-modified imidazole compound represented by the formula:



(I)

wherein R_1 is an alkyl group having 1 to 20 carbon atoms or a phenyl group; and R_2 is a hydrogen atom or a lower alkyl group, or an acid adduct thereof,

(c) dicyandiamide in an amount of 0.2 to 2.0 equivalent weight per epoxy equivalent weight of the epoxide compound (a),

(d) 3 to 40 parts by weight of a filler,

(e) 0.5 to 10 parts by weight of an anti-foaming agent, and

(f) a thixotropic agent in an amount of making a thixotropy index of the whole composition 5 to 40 and a viscosity of the whole composition 800 to 10,000 poises when measured by using a B type rotational viscometer at a rotational rate of 1 r.p.m. at 20° C.,

whereby said composition has a storage stability of at least 30 days and cures at temperatures as low as 130° C., and has good screen printing properties, and provides a cured product that has excellent resistance to electroless plating baths and to soldering heat.

4,555,533

BONDING ASSISTANT FOR A SUPPORT MATERIAL

Peter Ambros, Hohenroth, and Erich Gatzke, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,209
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028496
Int. Cl.[4] C08L *3/00*; C08K *3/34, 3/18*; H05K *3/38*
U.S. Cl. 523—440 **3 Claims**

1. A bonding assistant for use in a printed circuit, which consists essentially of a composition containing:

(a) from 50 to 80 percent by weight of a mixture of a saturated polyester and an isophorone diisocyanate containing masked isocyanate groups;

(b) from 5 to 40 percent by weight of a mixture of epoxy resin ester and/or acrylic resin and/or melamine formaldehyde resin and/or an alkyd resin; and

(c) from 10 to 50 percent by weight of filler particles of a particle size less than 15 μm dispersed therein; in which the composition is curable at a temperature of from 180° to 250° C.

4,555,534

UNIFORMLY PIGMENTED, LOW SHRINKING POLYESTER MOLDING COMPOSITIONS

Kenneth E. Atkins, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 247,991, Mar. 26, 1981, abandoned, which is a continuation of Ser. No. 868,447, Jan. 10, 1978, abandoned, which is a continuation of Ser. No. 737,580, Nov. 1, 1976, abandoned. This application Sep. 23, 1982, Ser. No. 422,078
The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.
Int. Cl.[4] C08K *3/22, 5/06, 5/10, 5/13*
U.S. Cl. 523—507 **22 Claims**

1. A curable molding composition containing:

(a) a polyester resin that is suitable for use in molding and which comprises the reaction product of an olefinically unsaturated dicarboxylic acid or anhydride and a polyol;

(b) an olefinically unsaturated monomer that is copolymerizable with said polyester resin;

(c) a thickening agent comprising an oxide or hydroxide of a metal or Group I, II, or III of the Periodic Table;

(d) a pigment;

(e) a carboxylated vinyl acetate polymer low profile additive having a molecular weight within the range of from about 10,000 to about 250,000; and

(f) a surface active compound that is employed in an amount sufficient to enhance the uniformity of the pigmentation of the cured composite produced from said curable molding composition.

4,555,535

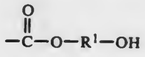
ACRYLIC POLYURETHANE COATING COMPOSITION

Milan B. Bednarek, Carabobo Valencia, Venezuela, assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.

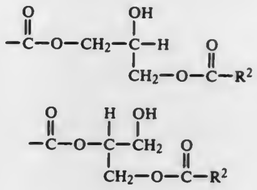
Filed Mar. 7, 1984, Ser. No. 587,062
Int. Cl.[4] C08L *1/14*
U.S. Cl. 524—40 **23 Claims**

1. A coating composition having a binder solids content of 5–75% by weight and 95–25% by weight in an organic liquid; wherein the binder consists essentially of about

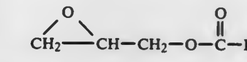
(1) 50–95% by weight of an acrylic polymer having a backbone consisting essentially of polymerized monomers selected from the group consisting of alkyl methacrylate, alkyl acrylate each having 1–12 carbon atoms in the alkyl group, styrene or mixtures thereof and polymerized ethylenically unsaturated ester monomers that form ester groups pending from the carbon atoms of the polymer backbone and consist of about 10 to 75% of the total weight of the polymer and consist of ester group (A)



and ester group (B) selected from the group consisting of



or mixtures thereof; wherein ester group B is formed by reacting carboxyl groups pending from the backbone of the acrylic polymer with glycidyl esters of the formula



R^1 is a saturated hydrocarbon group having 2–4 carbon atoms,

R^2 is a tertiary hydrocarbon group having 8 through 10 carbon atoms; and

(2) 5–50% by weight of an aliphatic, aromatic or cycloaliphatic polyisocyanate.

4,555,536

ANTI-CORROSIVE COATING COMPOSITION

Hirohisa Maki, Neyagawa; Takashi Sano, Kyoto, and Misao Yamamoto, Otsu, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jul. 3, 1984, Ser. No. 627,580

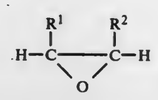
Claims priority, application Japan, Jul. 4, 1983, 58-121916; Jul. 6, 1983, 58-123633

Int. Cl.⁴ C08G *18/50, 18/36*

U.S. Cl. 524—66 **4 Claims**

1. An anti-corrosive coating composition consisting essentially of a non-foamed reaction product of:

(1) a mixture of (a) a castor oil polyol and (b) an amine polyol produced by addition reaction of an alkylene oxide of the formula:



wherein R^1 and R^2 are hydrogen, alkyl or aryl, provided that at least one of R^1 and R^2 is hydrogen,

to a nitrogen-containing compound having at least 2 active hydrogen atoms, said amine polyol having at least 2 hydroxyl groups and a hydroxyl value of at least 150 mgKOH/g, the amount of said amine polyol being 5 to 70% by equivalent based on the total polyol; and

(2) a polyisocyanate compound, the amount of said polyisocyanate compound being such that the ratio of isocyanato group to the active hydrogen of the polyol is from 0.85 to 1.15:1 by equivalent.

4,555,537

HETERO NITROGEN CONTAINING COMPOUNDS AND POLYMERMS LIGHT STABILIZED WITH SAID COMPOUNDS

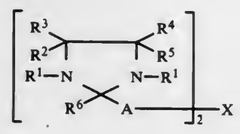
Richard Spector, Kendall Park, and Donald R. Maulding, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1983, Ser. No. 520,933

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—97 **21 Claims**

1. A compound of the formula:



wherein;

(1) R^1 represents hydrogen, alkyl (C_1–C_6) hydroxyl, or oxyl;

(2) R^2 and R^3, which may be the same or different, represent alkyl (C_1–C_6), cycloalkyl (C_5–C_6), or together with the carbon to which they are attached form a cycloalkyl (C_5–C_6) radical;

(3) R^4 and R^5, which may be the same or different, represent the same groups as R^2 and R^3;

(4) R^6 represents:

(a) alkyl (C_1–C_{18}); or

(b) substituted alkyl (C_1–C_8); or

(c) together with the carbon to which they are attached form a cycloalkyl (C_5–C_6) radical; or

(d) optionally, (C) is substituted with alkyl (C_1–C_8); or

(e) substituted cycloalkyl (C_5–C_6) radical; or

(f) a substituted alkyl (C_1–C_8) - substituted cycloalkyl (C_5–C_6) radical;

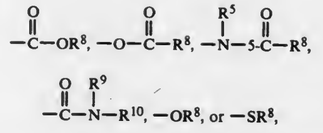
wherein said substitutents of (b), (e) and (f) are selected from:

(i) amino; or

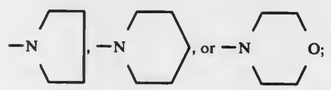
(ii) cyano; or

(iii) hydroxy; or

(iv)



wherein R^8 is selected from alkyl (C_1–C_{18}) and cycloalkyl (C_5–C_6), R^9 is hydrogen, alkyl (C_1–C_{18}), or cycloalkyl (C_5–C_6), R^{10} is alkyl (C_1–C_{18}) or cycloalkyl (C_5–C_6), or R^9 and R^{10}, together with the nitrogen atom to which they are attached, form a ring represented by the formula:



or

(v)



wherein R^9 and R^{10} are as defined in (iv);

(5) the group



represents:

(a) alkylene (C_2–C_6); or

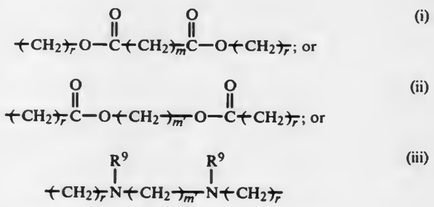
(b) arylene (C_6–C_{10}); or

(c) arylenedialkyl (C_8–C_{12}); or

(d) a substituted alkylene (C_1–C_8); or

(e) A together with R^6 and the carbon atom to which they are attached form a substituted cycloalkyl ring (C_5–C_6);

wherein the substituents of (d) and (e) are:



(i)

(ii)

(iii)

wherein m is zero to 6, m' is 2 to 6, and r is zero to 2.

4,555,538

COMPOSITIONS OF POLYPHENYLENE ETHER RESIN AND HIGH IMPACT POLYSTYRENE RESIN HAVING IMPROVED ULTRAVIOLET LIGHT RESISTANCE

Peter H. Shu, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 22, 1983, Ser. No. 564,420

Int. Cl.⁴ C08K *5/34*

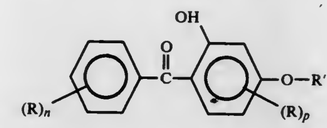
U.S. Cl. 524—102 **26 Claims**

1. A thermoplastic composition, comprising an admixture of

(a) a polyphenylene ether resin; and

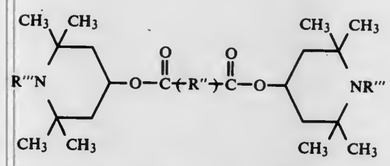
(b) an effective amount of an ultraviolet light stabilizing combination of

(1) one or a mixture of two or more compounds having the formula



in which R' is hydrogen, alkyl having from 1 to 25 carbon atoms or aryl; each R is, independently, hydrogen, hydroxy, alkoxy having from 1 to about 10 carbon atoms, alkyl having from 1 to about 10 carbons atoms, or aryl; and n and p are independently zero or an integer from 1 to the total number of replaceable hydrogen atoms; and

(2) one or a mixture of two or more compounds having the formula



in which R'' is alkyl, straight or branched, or aryl unsubstituted or substituted, in which (b)(1) is present in an amount from about 0.5 to about 10 parts by weight, and (b)(2) is present in an amount from about 0.05 to about 1 part by weight, per 100 parts of (a) and (b) together.

4,555,539

FIREPROOF POLYMER MATERIAL

Jean-Pierre Bonicel, Lyons; Madeleine Prigent, Marcoussis, and Christian Cottevieille, Montreuil, all of France, assignors to Les Cables de Lyon, S.A., Clichy Cedex, France

Filed Mar. 17, 1982, Ser. No. 359,077

Claims priority, application France, Mar. 19, 1981, 81 05491

Int. Cl.⁴ C08K *5/52*

U.S. Cl. 524—127 **2 Claims**

1. A fireproof polymer material, which comprises:

(a) a polymer material containing polyethelene and a copolymer of ethylene and of alkyl acrylate;

(b) 25% to 35% by weight relative to the weight of the polymer matrix of a brominated diphenyloxide;

(c) 8% to 17% by weight relative to the polymer matrix of antimony oxide; and

(d) 0.1% to 0.5% by weight relative to the weight of polymer matrix of an organic titanate selected from the group consisting of isopropyl-tri(dioctylpyrophosphato)titanate, isopropyl-tri(dioctylphosphato)titanate, di(dioctylpyrophosphato)ethylene-titanate, di(dioctylphosphato)ethylene-titanate, titanium di(dioctylpyrophosphato)oxyacetate, and tri(butyl-octyl, pyrophosphato)ethylene-titanate, wherein the polymer material is a non reticulated mixture of 40% to 50% by weight of polyethylene and 50% to 60% of copolymer of ethylene and of alkyl acrylate.

4,555,540

STABILIZATION OF FLAME RETARDANT POLYCARBONATE-POLYESTER COMPOSITIONS

Roger W. Avakian, Brasschaat, Belgium, assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1984, Ser. No. 687,576

Int. Cl.⁴ C08K *5/52, 5/53*

U.S. Cl. 524—130 **34 Claims**

1. A thermoplastic composition, comprising

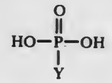
(a) an aromatic polycarbonate, an aromatic poly(ester-carbonate), an aromatic dihydric phenol sulfone carbonate, or a mixture of any of the foregoing, in combination with

(b) a polyester resin comprising units of an aliphatic diol, an aliphatic ether diol, a cycloaliphatic diol, or a mixture of such diols and an aromatic or cycloaliphatic diacid;

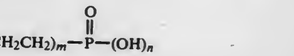
(c) a flame retardant amount of a halogen-containing flame retardant agent;

(d) a metal oxide synergist for (c) in an amount which enhances the flame retardancy of the composition; and

(e) a phosphorus-containing compound of the formula



where Y is hydrogen or phenyl, or of the formula



where R_f is $F(CF_2\ CF_2)_t$, n and m are independently 1 or 2, and t is an integer from 3 to 8, said component (e) being present in an amount which substantially deactivates the transesterification causing properties of (d) and prevents said transesterification from occuring when the composition is processed at elevated temperatures.

4,555,541

BENZOATE-STABILIZED RIGID POLYVINYL CHLORIDE COMPOSITIONS

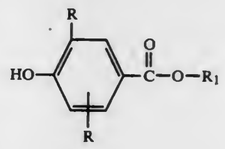
William J. Reid, New Fairfield, Conn.; Jean M. Zappia, Yonkers, N.Y.; Gerald A. Capocci, Greenwich, Conn., and John D. Spivack, Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,232

Int. Cl.⁴ C08K *5/58*

U.S. Cl. 524—180 **29 Claims**

1. A rigid polyvinyl chloride composition comprising in addition to said polyvinyl chloride, 2 to 8% titanium dioxide, by weight of the polyvinyl chloride, an effective thermal stabilizing amount of a tin mercaptide and an effective stabilizing amount of a benzoate compound of the formulae

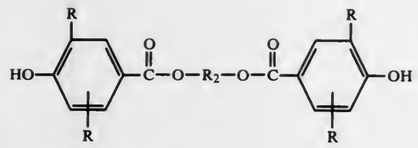


(I)

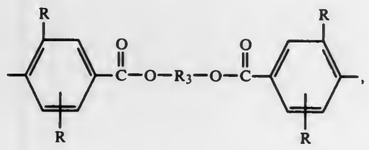
wherein

R is alkyl and

R_1 is alkyl, haloalkyl, phenyl, alkyl-substituted phenyl, alkyl-substituted benzoyloxy;



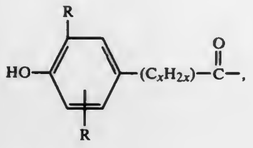
wherein
R is as defined hereinabove,
R_2 is alkylene, haloalkylene or



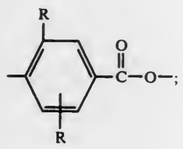
and R_3 is alkylene or haloalkylene;

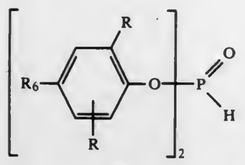


wherein
R_4 is



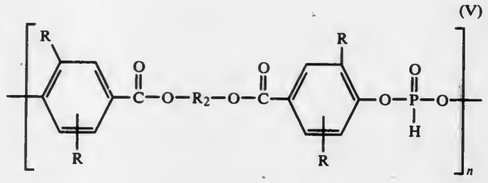
a is an integer from 2 to 6,
b is an integer from 3 to 40,
x is an integer from 0 to 6,
d is 0 or 1,
R is as defined hereinabove, and
R_5 is





wherein
R is as previously defined,
R_6 is —$COOR_7$, and
R_7 is alkyl, phenyl or alkyl-substituted phenyl;

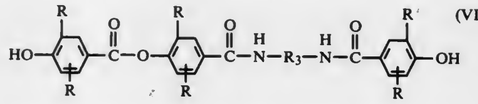
(II)



wherein
R and R_2 are as previously defined, and
n is 1–15;

(V)

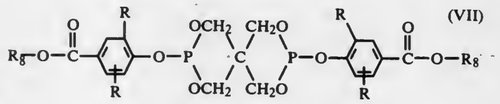
(VI)



wherein R and R_3 are as previously defined; and

(VII)

(III)



wherein
R is as previously defined, and
R_8 is alkyl, phenyl or alkyl-substituted phenyl.

4,555,542

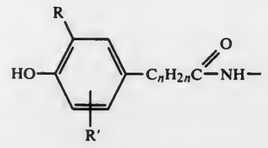
POLYESTER-POLYETHER COPOLYMER COMPOSITION

Hideo Komatsu; Hiroyuki Harada, and Tomiji Matsuki, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 347,624, Feb. 10, 1982, abandoned. This application Dec. 21, 1983, Ser. No. 564,342
Claims priority, application Japan, Feb. 10, 1981, 56-17526
Int. Cl.[4] C08K *5/57*
U.S. Cl. 524—178 **10 Claims**

1. A stabilized polyester-polyether copolymer composition having improved thermal life and color change properties when exposed to air hotter than 120° C. which comprises a polyester-polyether copolymer composed mainly of an aromatic dicarboxylic acid, 1,4-butane diol and a polyalkylene ether glycol of average molecular weight from about 400 to about 6,000, about 0.002% to 0.1% by weight of a monalkyl tin compound based on the amount of tin in the monalkyl tin compound, and about 0.1% to about 0.5% by weight of an amide-containing phenolic antioxidant based on the weight of the polyester-polyether copolymer composition, the antioxidant having at least one hindered phenol group and at least one amide group represented by the following formula:

(IV)



where R is a secondary or tertiary alkyl group, R′ is a hydrogen atom or a secondary or tertiary alkyl group, and n is from 0 to 6.

4,555,543

FLUOROPOLYMER COATING AND CASTING COMPOSITIONS AND FILMS DERIVED THEREFROM

John A. Effenberger, Bennington, Vt., and Frank M. Keese, Hoosick Falls, N.Y., assignors to Chemical Fabrics Corporation, Merrimack, N.H.

Filed Apr. 13, 1984, Ser. No. 599,764
Int. Cl.[4] C08L *27/00, 27/14*
U.S. Cl. 524—520 **7 Claims**

1. A fluid composition which comprises a blend of a perfluoroelastomer and a perfluoroplastic, wherein the perfluoroplastic component comprises up to about 95% by weight of the composition.

4,555,544

HARDENING PHENOL-FORMALDEHYDE RESOLS IN THE PRESENCE OF ANILINE

Nicolas Meyer, Lens, and Michel Cousin, Loison sous Lens, both of France, assignors to Societe Chimique des Charbonnages CDF Chimie, S.A., Paris, France

Filed Dec. 28, 1984, Ser. No. 687,230
Claims priority, application France, Dec. 30, 1983, 83 21058
Int. Cl.[4] C08G *8/32, 8/28, 14/06*
U.S. Cl. 524—595 **13 Claims**

1. In a process for hardening phenol-formaldehyde resol resins, comprising conducting the hardening of the resins with an acidic solution of water and/or an organic solvent having dissolved therein an aromatic sulphonic acid and/or concentrated sulphuric acid, the improvement comprising conducting the hardening in the presence of aniline added to the phenolic resin beforehand in a quantity of between about 0.5 and 2% relative to the weight of the phenolic resin.

4,555,545

COMPOSITION FOR COATING

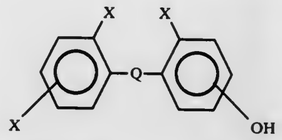
Hiroshi Kimura; Ikurou Mori, and Bunjirou Murai, all of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1985, Ser. No. 697,358
Claims priority, application Japan, Feb. 9, 1984, 59-20893
Int. Cl.[4] C08L *83/00*
U.S. Cl. 524—858 **4 Claims**

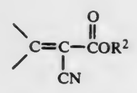
1. A composition for coating, which comprises:
(1) 100 parts by weight of film forming components comprising:
(A) 10 to 90% by weight of an organosilane triol of the following formula and/or its partial condensate:

$R^1Si(OH)_3$

wherein R^1 represents a monovalent group selected from the group consisting of alkyl groups having 1 to 3 carbon atoms and aryl groups, and
(B) 90 to 10% by weight of colloidal silica; and
(2) 5 to 40 parts by weight of a copolymer of:
(C) a compound represented by the formula:



wherein Q represents >C=O or the following formula:



wherein each X may be either the same or different and each represents hydrogen atom or hydroxyl group, of which at least one is hydroxyl group, and R^2 represents an alkyl group having 1 to 18 carbon atoms, and
(D) an epoxy group-containing trialkoxysilane.

4,555,546

COMPATIBILIZED BLENDS OF ACRYLIC ESTER

Raman Patel, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 566,641, Dec. 29, 1983, abandoned. This application Nov. 27, 1984, Ser. No. 674,240
Int. Cl.[4] C08L *23/04, 23/26, 33/08, 51/06*
U.S. Cl. 525—194 **37 Claims**

1. A compatibilized polymer composition comprising a blend of about 1–99 parts by weight of an olefin polymer comprising amorphous or crystalline essentially saturated homopolymers or copolymers of C_2–C_8 alpha monoolefins, about 99–1 parts by weight of cured acidic acrylic ester copolymer rubber containing about 0.1–25 mole percent of carboxylic acid; and at least about 0.1 weight percent of a graft copolymer comprising at least one olefin polymer compatibilizing segment derived from an olefin polymer selected from the group consisting of amorphous or crystalline essentially saturated homopolymers or copolymers of C_2–C_8 alpha monoolefins, polybutadiene, polyisoprene, and polyalkenamer and at least one acidic acrylic ester copolymer rubber compatibilizing segment derived from a polymer selected from the group consisting of epichlorohydrin polymer, nitrile rubber, urethane polymer, vinyl chloride polymer, polyamide, polyamine, acrylic polymer, polyester, and acidic acrylic ester copolymer rubber.

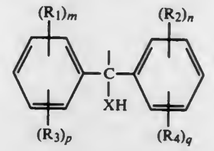
4,555,547

RUBBER COMPOSITION FOR TIRE TREADS

Akio Ueda, Yokohama; Shuichi Akita, and Toshio Namizuka, both of Kamakura, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,421
Int. Cl.[4] C08L *7/00, 9/00, 9/06*
U.S. Cl. 525—237 **8 Claims**

1. A rubber composition for tire treads, said composition comprising
(I) 10 to 70% by weight of an essentially amorphous polybutadiene rubber having a 1,2-linkage content of 40 to 90% and having bonded to a carbon atom of the rubber molecular chain at least 0.1 mole and up to about 5 moles, per mole of the rubber molecular chain, of an atomic grouping represented by the general formula



wherein X represents 0 or S, R_1 and R_2 are identical or different and each represents an amino group or an alkyl-substituted amino group, R_3 and R_4 are identical or different and each represents a substituent other than an amino group or an alkyl substituted amino group, m, p and q represent 0 or an integer of at least 1, n represents an integer of at least 1, m+p=0–5 and n+q=1–5, and

(II) 90 to 30% by weight of at least one rubber selected from the group consisting of styrene/butadiene copolymer rubber having a bound styrene content of from 3 to not more than 50% by weight and a 1,2-linkage content of butadiene units of 10 to 90%, natural rubber and synthetic polyisoprene rubber having a cis-1,4-linkage content of at least 90%.

4,555,548

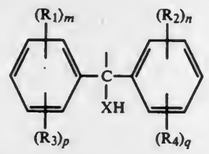
RUBBER COMPOSITION FOR TIRE TREADS

Akio Ueda, Yokohama; Shuichi Akita, and Takeshi Chida, both of Kamakura, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,420
Int. Cl.[4] C08L *7/00, 9/00, 9/06*
U.S. Cl. 525—237 **7 Claims**

1. A rubber composition for tire treads, said composition comprising

(I) 10 to 90% by weight of a styrene-butadiene copolymer rubber containing not more than 40% by weigtht of bound styrene and having bonded to a carbon atom of the rubber molecular chain at least 0.1 mole and up to 5 moles, per mole of the rubber molecular chain, of an atomic grouping represented by the following formula



wherein:

X represents O or S,

R_1 and R_2 are identical or different and each represents an amino group or an alkyl-substituted amino group,

R_3 and R_4 are identical or different and each represents a substituent other than an amino group or alkyl-substituted amino group,

m, p and q represent O or an integer of at least 1,

n represents an integer of at least 1, $m+p=0-5$ and $n+q=1-5$, and

(II) 90 to 10% by weight of at least one rubber selected from the group consisting of styrene-butadiene copolymer rubber having a bonded styrene content of not more than 40% by weight, natural rubber and synthetic polyisoprene rubber having a cis 1,4-linkage content of at least 90%.

4,555,549

POLYOXYALKYLENE POLYMERS AS LUBRICANTS PARTICULARLY IN MOLDING PROCESSES

Ronald L. Camp, Riverview; Edward M. Dexheimer, Grosse Ile, and Michael J. Anchor, Canton Township, Wayne County, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 26, 1984, Ser. No. 675,018
Int. Cl.[4] C08L *71/02*
U.S. Cl. 525—409 **4 Claims**

1. A composition of matter comprising: a polyoxyethylene-polyoxypropylene copolymer which is a cogeneric mixture of compounds represented by the formula:

$$HO(C_2H_4O)_m(C_3H_6O)_n(C_2H_4O)_mH$$

wherein n is an integer; the value of which is such that the molecular weight of the oxypropylene groups is from about 2500 to 4000; and the value of m is such that the oxyethylene groups constitute about 20 to 80 percent by weight of the compound and

a copolymer which is a cogeneric mixture of compounds represented by the formula:

$$R—O(A)H$$

wherein R is an essentially linear alkyl group having from 10 to 18 carbon atoms, with the proviso that at least 70 weight percent of said compounds in said mixture have an R of from 12 to 16 carbon atoms and A is a random mixture represented by the latter formula of oxypropylene and oxyethylene groups, said oxypropylene and oxyethylene groups being from 55 percent to 80 percent of the total weight of the compounds, the oxypropylene to oxyethylene ratio being from about 0.85:1 to 2.75:1.

4,555,550

MOLDING COMPOSITIONS BASED ON HIGH MOLECULAR WEIGHT POLYETHER ESTER AMIDES

Michael Droescher; Salih Mumcu; Klaus Burzin; Christian Gerth, and Horst Heuer, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Feb. 25, 1985, Ser. No. 705,168
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1984, 3406951
Int. Cl.[4] C08L *77/00*
U.S. Cl. 525—424 **10 Claims**

1. A molding composition based on a high-molecular weight polyether ester amide having a relative solution viscosity η_{rel} of at least 2.0, prepared by heating at 180°–250° C. a molten mixture of

(A.) a polyether ester amide with a relative solution viscosity η_{rel} of at least 1.5 and less than 2.0; and

(B.) 0.05–1.5 parts by weight, based on 100 parts by weight of the molding composition, of a cyclic, trimerized isophorone diisocyanate or an oligomer thereof having a degree of oligomerization of 2–5 and an isocyanate functionality of 3–7;

for a time effective to increase the η_{rel} value of (A.) to at least 2.0.

4,555,551

METHOD OF MOLDING

Joseph M. Makhlouf, Mars; Gregory J. McCollum, Glenshaw, and Paul R. Kerr, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 427,397, Sep. 29, 1982, Pat. No. 4,477,405, which is a division of Ser. No. 336,226, Dec. 31, 1981, Pat. No. 4,425,468. This application Jun. 1, 1984, Ser. No. 616,035
Int. Cl.[4] C08G *18/12, 18/32*
U.S. Cl. 525—455 **10 Claims**

1. A method of providing a molded thermoset article which comprises:

(a) depositing in a mold a charge of a thermosetting-molding composition, comprising a dispersion of the following ingredients in an ethylenically unsaturated monomer:

(i) a polymerizable ethylenically unsaturated ureaurethane polymer prepared by a process, which comprises

A. reacting a polyisocyanate, at least a portion of which is a diisocyanate, with a polyfunctional amine containing primary and/or secondary amino groups in the presence of a polyol, at least a portion of which is a polymeric polyol, free of ethylenic unsaturation and a diluent which is an ethylenically unsaturated compound free of active hydrogens, the equivalent ratio of isocyanate to active hydrogen in said polyol and said polyfunctional amine being within the range of 1.1 to 2.0/1 and the equivalent ratio of polyol to polyfunctional amine being within the range of 0.75 to 20/1, under conditions sufficient to form an NCO group-containing polyurea-polyurethane dispersed in an ethylenically unsaturated compound; followed by

B. reacting the NCO group-containing polyurea-polyurethane dispersion with an active hydrogen containing polymerizable ethylenically unsaturated compound

under conditions sufficient to react the NCO-functionality with the active hydrogens thereby forming the polymerizable ethylenically unsaturated urea-urethane polymer dispersion;

(ii) a mold release agent;

(b) heating the charge while in the mold so as to cure it and form a thermoset article; and

(c) removing the article from the mold.

4,555,552

PHENOLIC MODIFIED URETHANE ELASTOMER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 24, 1982, Ser. No. 361,282
Int. Cl.[4] C08G *71/04;* **C08L** *61/00*
U.S. Cl. 525—456 **6 Claims**

1. A process for preparing urethane elastomer having methylol phenolic groups grafted thereto which comprises masticating about 0.1–20 parts by weight of a methylol-p-alkyl phenolic material containing about 1–40 weight percent methylol groups, 100 parts by weight of urethane elastomer, and a graft forming amount of an activator to form a graft between the methylol phenolic material and urethane elastomer, and recovering a thermoplastic urethane elastomer having methylol-p-alkyl phenolic groups grafted thereto.

4,555,553

HYDROXYAROMATIC OLIGOMERS OF A MIXED CYANATE AND AROMATIC POLYAMINE AND EPOXY RESINS THEREOF

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 15, 1985, Ser. No. 702,699
Int. Cl.[4] C08G *59/32, 59/26, 59/04*
U.S. Cl. 525—523 **11 Claims**

1. Hydroxyaromatic oligomer compositions containing both triazine groups and imino carbamate linkages prepared by

(I) reacting at a temperature and time sufficient to essentially complete the reaction

(A) at least one material having an average of more than one aromatic hydroxyl group per molecule with

(B) at least 0.01 but not more than 0.95 moles of at least one cyanogen halide per aromatic hydroxyl group in the presence of

(C) from about 0.01 to about 1.1 moles of a suitable base per aromatic hydroxyl group

and thereafter recovering the resultant cyanate-containing mixture; and

(II) co-oligomerizing the product resulting from (I) with

(D) an aromatic polyamine in an amount which provides a mole ratio of amine groups to cyanate groups of from about 0.01:1 to about 1:1 optionally

in the presence of

(E) a suitable co-oligomerization catalyst and at a temperature and time to essentially complete the co-oligomerization reaction.

4. An epoxy resin composition prepared by reacting an epihalohydrin with a hydroxyaromatic oligomer containing at least one triazine group and at least one imino carbamate linkage of claims 1, 2 or 3 and subsequently dehydrohalogenating the resultant halohydrin ether and thereafter recovering the resultant glycidyl ether product.

4,555,554

OLIGOMERIC VINYL ESTER RESIN COMPOSITIONS CONTAINING TRIAZINE GROUPS AND IMINO CARBAMATE LINKAGES

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 15, 1985, Ser. No. 702,700
Int. Cl.[4] C08G *59/16*
U.S. Cl. 525—531 **40 Claims**

1. A vinyl ester resin composition prepared by reacting

(A) a polyepoxide of a hydroxyaromatic oligomer containing at least one triazine group and at least one imino carbamate linkage or mixture of such polyepoxides; with

(B) a monounsaturated monocarboxylic acid or mixture of such acids; in the presence of

(C) a catalytic quantity of a suitable catalyst for effecting a reaction between components (A) and (B);

wherein components (A) and (B) are employed in amounts which provides from about 0.75 to about 1.2 mole of component (B) per epoxide group present in component (A).

4,555,555

PROCESS FOR POLYMERIZING VINYL CHLORIDE WITH A SCALE PREVENTION COMPOUND COATED ON A REACTION SURFACE

Eietsu Toyooka; Yoshio Tomishima, and Yasuhiro Nojima, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 344,266, Jan. 28, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,418
Claims priority, application Japan, May 22, 1981, 56-78388; May 22, 1981, 56-78389
Int. Cl.[4] C08F *2/34, 2/16*
U.S. Cl. 526—62 **6 Claims**

1. In a process for polymerizing vinyl chloride alone or a monomeric mixture of vinyl chloride as a major component and other monomers copolymerizable therewith as a minor component, the improvement which comprises coating, prior to the polymerization, the surfaces of a polymerization reactor, agitator blades and a reflux condenser positioned to the polymerization reactor, with a reaction product obtained by the reaction of a phenolic compound selected from the group consisting of pyrogallol and hydroxyhydroquinone with benzaldehyde, wherein said reaction product has an average molecular weight of from 3,000 to 10,000 and is coated onto said surfaces in a range from about 0.001 g/m^2 to about 0.2 g/m^2.

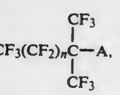
4,555,556

TERTIARY PERFLUORINATED COMPOUNDS AS RATE ENHANCING ADDITIVES IN PTFE DISPERSION POLYMERIZATION

Aleksander Beresniewicz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 12, 1985, Ser. No. 711,054
Int. Cl.[4] C08F *2/24*
U.S. Cl. 526—212 **9 Claims**

1. In a process for producing a colloidal dispersion of polytetrafluoroethylene homopolymer or copolymers of tetrafluoroethylene and ethylenically unsaturated comonomers by polymerizing tetrafluoroethylene and, optionally, ethylenically unsaturated comonomers, in an aqueous medium in the presence of a suitable initiator and a surfactant, the improvement comprising use as a rate enhancing additive of a compound of the formula



wherein

A is —OH, —COOH, —NH_2, or —C(O)NH_2; and n is 0, 1 or 2.

4,555,557

MALEIC ACID/(METH)ACRYLIC ACID COPOLYMER

Yasuhisa Fukumoto, and Noboru Moriyama, both of Utsunomiya, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Division of Ser. No. 360,518, Mar. 22, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 597,987
Claims priority, application Japan, Apr. 13, 1981, 56-55351
Int. Cl.[4] C08F *220/04*
U.S. Cl. 526—240 **6 Claims**

1. A process for producing an alkali metal salt of a copolymer of (1) maleic acid (MA) and (2) a vinyl carboxylic acid (AA) selected from the group consisting of acrylic acid and methacrylic acid, wherein the molar ratio (γ) of monomer units of (MA) to monomer units of (AA) in said copolymer is from 1.15 to 2.7, the number average molecular weight MW is from 1,000 to 8,000, and the product of (γ)×MW is at least 3,000, which comprises: gradually adding to (a) an aqueous solution of an alkali metal monomaleate having a pH of from 3.5 to 5.0, (b) said vinyl carboxylic acid or said acid which has been partly neutralized with an alkali metal neutralizing agent, and (c) a polymerization initiator effective to initiate copolymerization of said alkali metal monomaleate and said vinyl carboxylic acid, under conditions effective to copolymerize said vinyl carboxylic acid and said alkali metal monomaleate, the mol ratio of the total maleic acid monomer units to the total vinyl carboxylic acid monomer units added to said solution being in the range of from 1.2/1.0 to 3.0/1.0, and the solution being continuously maintained at a pH in the range of from 3.5 to 5.0 during the addition, whereby to form said copolymer.

4,555,558

TERPOLYMERS OF 2-ACRYLAMIDO-2-METHYLPROPANE-SULFONIC ACID, SODIUM SALT (AMPS), N,N-DIMETHYLACRYLAMIDE, AND ACRYLONITRILE

David M. Giddings, Sugar Land; Donald G. Ries, and Allen R. Syrinek, both of Richmond, all of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 530,569, Sep. 9, 1983, Pat. No. 4,502,964. This application Oct. 25, 1984, Ser. No. 664,631
Int. Cl.[4] C08F *228/02*
U.S. Cl. 526—287 **3 Claims**

1. A novel water-soluble terpolymer having a molecular weight below 1,000,000 comprising:

Ingredients	Mole %
2-acrylamido-2-methylpropane-sulfonic acid, sodium salt (AMPS)	51–59
N,N—dimethylacrylamide	6–28
acrylonitrile	20–35

4,555,559

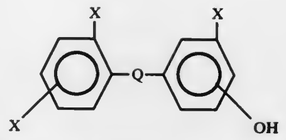
METHOD FOR MAKING NOVEL COPOLYMER

Hiroshi Kimura; Ikurou Mori, and Bunjirou Murai, all of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

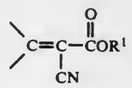
Filed Feb. 1, 1985, Ser. No. 697,357
Claims priority, application Japan, Feb. 9, 1984, 59-20892
Int. Cl.[4] C08G *77/06*
U.S. Cl. 528—16 **5 Claims**

1. A method for making a novel copolymer, which comprises: reacting

(A) a compound represented by the formula:



wherein Q represents >C═O or the following formula:



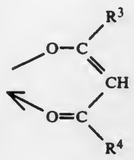
wherein each X may be either the same or different and each represents hydrogen atom or hydroxyl group, of which at least one is hydroxyl group, and R^1 represents an alkyl group having 1 to 18 carbon atoms, with

(B) an epoxy group-containing trialkoxysilane and/or an epoxy group-containing dialkoxysilane in the presence of

(C) an aluminum chelate compound represented by the formula:

$$Al(OR^2)_nL_{3-n}$$

wherein R^2 represents an alkyl group having 1 to 4 carbon atoms, L represents the following formula:



where R^3 represents an alkyl group having 1 or 2 carbon atoms, R^4 represents an alkyl group or an alkoxy group each having 1 or 2 carbon atoms,
and n is an integer of 0, 1 or 2.

4,555,560

ROOM TEMPERATURE VULCANIZABLE POLYORGANOSILOXANE COMPOSITIONS CONTAINING KETOXIMOSILANES AND ORGANOTITANATES

Toshio Saruyama, Narashino, and Ryuzo Mikami, Ichihara, both of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,664
Claims priority, application Japan, Jul. 21, 1983, 58-133136
Int. Cl.[4] C08G *77/06*
U.S. Cl. 528—17 **9 Claims**

1. A room temperature vulcanizable polyorganosiloxane composition consisting essentially of the product obtained by mixing

(A) 100 parts by weight of a polyorganosiloxane which has a viscosity at 25° C. of 0.001 to 0.2 m^2/s, has at least two terminal silanol groups per molecule, contains ≦2 weight percent components with a polystyrene-based molecular weight of ≦5,000 according to the gel permeation chromatogram, and has organic radicals selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals,

(B) 0.5 to 30 parts by weight of a ketoxime silicon compound selected from silane of the general formula

$$RSi(O—N=X)_3$$

or its partial hydrolysis product wherein R represents a radical selected from the group consisting of alkyl, alkenyl, and phenyl, X represents $=CR_2'$ or $=CR^2$, each R' represents a monovalent hydrocarbon radical, and each R^2 represents a divalent hydrocarbon radical, and

(C) 0.005 to 2 parts by weight of an organotitanate ester.

4,555,561

POLYURETHANE RESIN COMPOSITION

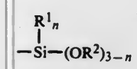
Masaru Sugimori, and Koichiro Sanji, both of Takatsuki, Japan, assignors to Sun Star Giken Kabushiki Kaisha, Takatsuki, Japan

Filed Aug. 24, 1984, Ser. No. 643,700
Claims priority, application Japan, Sep. 7, 1983, 58-165424
Int. Cl.[4] C08G *77/26, 18/66;* C08K *9/06*
U.S. Cl. 528—26 **4 Claims**

1. A polyurethane resin composition comprising

(A) a urethane prepolymer composition containing 0.5 to 15.0% by weight based on said prepolymer composition of an active isocyanate group, said prepolymer composition prepared by reacting (1) a polyoxyalkylene ether polyol and/or polyester polyol and (2) a stoichiometric excess of a polyisocyanate compound and

(B) 0.05 to 5.0% by weight based on the polyurethane resin composition of a reaction product of (1) an amine compound having a primary and/or secondary amino group and containing at least one alkoxysilyl group of the formula:



wherein R^1 and R^2 are the same or different and are each alkyl having 1 to 4 carbon atoms and n is 0, 1 or 2, and (2) a stoichiometrically equivalent or excess amount of a carbonyl compound selected from the group consisting of an aldehyde, a cyclic ketone, an aliphatic ketone, and a β-dicarbonyl compound of the formula:

$$R^4—CO—CH_2—CO—R^5$$

wherein R^4 and R^5 are the same or different and each are an alkyl having 1 to 16 carbon atoms, an aryl having 6 to 12 carbon atoms, or an alkoxy having 1 to 4 carbon atoms, said reaction product containing enamine or ketimine groups formed by a dehydration condensation reaction of the carbonyl group of said carbonyl compound with the primary and/or secondary amino group of said amine compound.

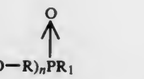
4,555,562

POLYURETHANE ELASTOMER COMPOSITION

Fui-Tseng H. Lee, Princeton, and Joseph Green, East Brunswick, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

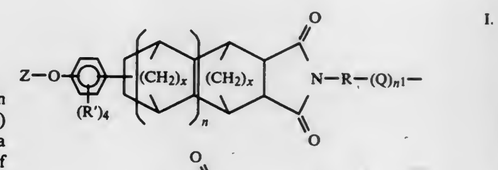
Continuation-in-part of Ser. No. 476,163, Mar. 17, 1983. This application Feb. 27, 1984, Ser. No. 584,021
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.
Int. Cl.[4] C08G *18/38*
U.S. Cl. 528—72 **5 Claims**

1. A polyurethane elastomer product of an NCO terminated elastomer prepolymer formed from a polyol selected from the class consisting of dihydroxy functional polyethers and polyesters cured with a mixture of polyhydroxyalkyl phosphine oxides of the formula:

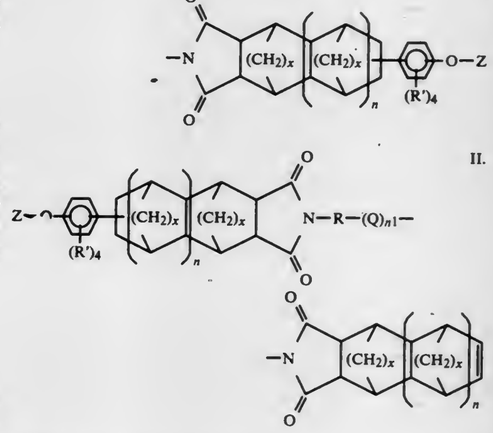


wherein R is alkylene of 3 to 6 carbon atoms, R_1 is alkyl of 2 to 10 carbon atoms, cycloalkyl of 6 to 12 carbon atoms and n is an integer of 2 to 3, it being provided that the said mixture contains a minor amount of the phosphine oxide wherein n is 3 and a major amount of the phosphine oxide wherein n is 2.

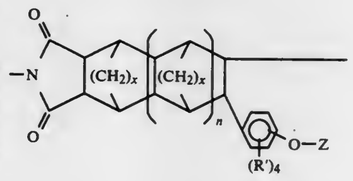
I.



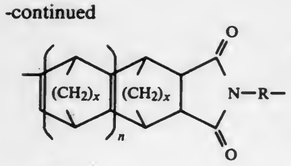
II.



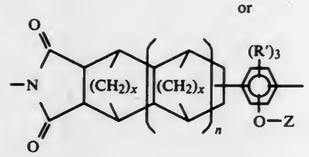
wherein each Q is independently

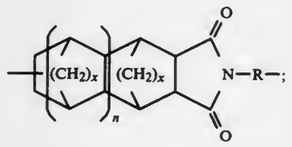


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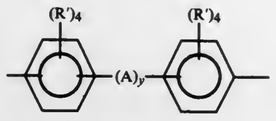


or

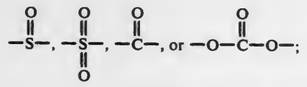




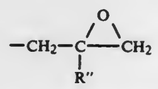
each R is independently a hydrocarbyl group having from 1 to about 10 carbon atoms or a



group; each A is independently a divalent hydrocarbyl group having from 1 to about 10, carbonatoms, —S—, —S—S—, —O—,



each R′ is independently hydrogen, chlorine, bromine, a hydrocarbyl or hydro-carbyloxy group having from 1 to about 3 carbon atoms; each R″ is hydrogen or a hydrocarbyl group having from 1 to about 3 carbon atoms; Z is independently hydrogen or a group represented by the formulas



or —C≡N wherein R″ is hydrogen or a hydrocarbyl group having from 1 to about 4 carbon atoms; each x has a value of zero or 1; each y has a value of zero or 1; each n independently has an average value from zero to about 20, and n^1 has a value from zero to about 10.

4,555,564

ALKYD RESINS CONTAINING HYDROXYL GROUPS

Herbert Fischer; Manfred Gorzinski, both of Duesseldorf; Wolfgang Gress, Wuppertal-Elberfeld; Alfred Meffert, Monheim, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 612,754, May 21, 1984. This application Mar. 27, 1985, Ser. No. 716,596

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318595

Int. Cl.⁴ C08G *63/54*

U.S. Cl. 528—295.3 **31 Claims**

1. A process for synthesizing alkyd resin compositions comprising:

(A) condensing a carboxylic acid with an alcohol to form a polyester precondensate having terminal hydroxyl groups, wherein

(1) said carboxylic acid is a fatty acid, a polycarboxylic acid, a reactive derivative thereof, or any mixture thereof,

(2) said alcohol is at least one polyfunctional alcohol, and said condensation reaction is conducted at a temperature of about from 120° to 220° C. and is continued until the acid number of the precondensate is less than 2;

(B) converting said precondensate into an acidic precondensate by further condensation with a polycarboxylic acid anhydride wherein

(1) said polycarboxylic acid anhydride is a dicarboxylic acid anhydride, a tricarboxylic acid anhydride, a higher polycarboxylic acid anhydride, or any mixture thereof, and said further condensation is conducted at a temperature of about from 140° to 200° C. and continued until an acid number of about 50 to 130 is obtained; and

(C) forming an alkyd resin by further esterification of said acidic precondensate with a further alcohol wherein

(1) said further alcohol is at least one polyol having a functionality of from 3 to 10 or any mixture thereof, and said further esterification reaction is conducted at a temperature of about from 120° to 220° C. and is continued until an acid number of about 10 to 40 is obtained.

4,555,565

RING-CHAIN POLYMER CONTAINING TRIARYL-S-TRIAZINE RING AND OTHER HEAT-RESISTANT HETEROCYCLIC RINGS

Li-Chen Hsu, 6422 Grandvale, Houston, Tex. 77072

Filed Mar. 31, 1983, Ser. No. 480,705

Int. Cl.⁴ C08G *73/06*

U.S. Cl. 528—322 **9 Claims**

1. In a process for preparing triaryl-s-triazine ring containing polymers by heating together a aromatic nitrile with an aromatic nitrile appended or terminated oligomer, the improvement comprising:

contacting a mole percent excess of said aromatic nitrile with said aromatic nitrile terminated or appended oligomer selected from imide, benzimiazole, imidazopyrone, or quinoxaline nitrile-modified oligomers, the mole percent of said aromatic nitrile being in at least 5 mole percent in excess of the moles of said aromatic nitrile required to react with said aromatic nitrile terminated or appended oligomer, and reacting said aromatic nitrile with said aromatic nitrile terminated or appended oligomer to produce a nitrile capped oligomer; and

cyclotrimerizing said nitrile-capped oligomer and excess aromatic nitrile mixture in contact with a trimerization catalyst at temperatures above 100° C. and at pressures above 200 PSI to produce a partly crosslinked or substantially non-crosslinked triaryl-s-triazine ring containing chain extended polymer.

4,555,566

COPOLYMER POLYAMIDE RESIN CONTAINING POLYOLEFIN MOIETY

Koichiro Arita, and Hajime Suzuki, both of Himeji, Japan, assignors to Daicel Chemical Industries, Co., Ltd., Sakai, Japan

PCT No. PCT/JP82/00068, § 371 Date Oct. 12, 1982, § 102(e) Date Oct. 12, 1982, PCT Pub. No. WO82/03219, PCT Pub. Date Sep. 30, 1982

Continuation of Ser. No. 440,215, Oct. 12, 1982, abandoned. This PCT application Mar. 16, 1982, Ser. No. 651,633

Claims priority, application Japan, Mar. 16, 1981, 56-38374; Jun. 30, 1981, 56-102047; Mar. 9, 1982, 57-36910

Int. Cl.⁴ C08G *69/02, 69/14, 69/26, 63/00*

U.S. Cl. 528—323 **11 Claims**

1. A polyamide-modified hydrogenated polyolefin block copolymer resin which consists essentially of (A) 99 to 5 parts by weight of a polyamide component consisting essentially of repeating units selected from the group consisting of (1) —NH(CH₂)ₙCO—, wherein n is an integer of from 5 to 11, (2) —NH—X—NHCO—Y—CO—, wherein X is —C_mH_{2m}— in which m is an integer of from 6 to 12, isophorone, phenylene or cyclohexylene, and Y is —C_lH_{2l}— in which l is an integer of from 4 to 10, phenylene, or cyclohexylene, copolymerized with (B) 1 to 95 parts by weight of hydrogenated polyolefin blocks consisting essentially of repeating hydrogenated olefin units; said hydrogenated polyolefin blocks being derived from a hydrogenated polyolefin having a pair of terminal hydroxyl groups and derived from an olefin monomer having at least two double bonds, said hydrogenated polyolefin blocks having a number-average molecular weight in the range of 500 to 10,000 and having a double bond hydrogenation ratio of greater than 70%, said block copolymer resin having a number-average molecular weight in the range of 5,000 to 500,000.

4,555,567

2,6-DISAZO ANTHRAQUINONE COMPOUNDS

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

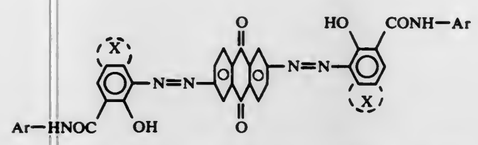
Division of Ser. No. 385,341, Jun. 4, 1982, Pat. No. 4,440,845. This application Sep. 30, 1983, Ser. No. 537,774

Claims priority, application Japan, Jun. 8, 1981, 56-87845; Jun. 8, 1981, 56-87846

Int. Cl.⁴ C09B *33/02, 35/02, 56/12;* G03G *5/06*

U.S. Cl. 534—654 **18 Claims**

1. A disazo compound having the formula:



wherein X is selected from the group consisting of benzo, naphtho, indolo, carbazolo, benzofurano and halogen-substituted derivatives thereof, and Ar is selected from the group consisting of phenyl, naphthyl, dibenzofuranyl, carbazolyl, and substituted derivatives thereof, wherein the substituent on said substituted derivative is one or more members selected from the group consisting of lower alkyl, lower alkoxy, halogen, trifluoromethyl, cyano, nitro, carboxyl, —COOR wherein R is lower alkyl, di(lower alkyl)amino and —SO_3Na.

4,555,568

MONOAZO COMPOUNDS DERIVED FROM 3-NITRO-4-AMINO-BENZOATES AND 5-(2′-HYDROXY-3′-NAPHTHOYLAMINO)-BENZIMIDAZOLONES

Klaüs Hünger, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengeselischaft, Frankfurt, Fed. Rep. of Germany

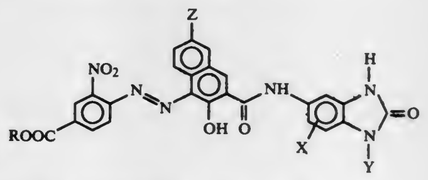
Filed Jun. 23, 1980, Ser. No. 162,074

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925542

Int. Cl.⁴ C09B *29/01, 29/15;* D06P *1/44, 3/24*

U.S. Cl. 534—801 **2 Claims**

1. A compound of the formula



wherein R is ethyl and X, Y and Z are hydrogen.

2. A compound of the formula



wherein R is methyl, X is methyl in 6-position and Y and Z are hydrogen.

4,555,569

CHROMOGENIC QUINAZOLINES

Rudolf Zink, Therwil, and Ian J. Fletcher, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

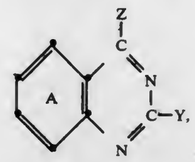
Filed Jun. 22, 1984, Ser. No. 623,687

Claims priority, application Switzerland, Jun. 28, 1983, 3522/83

Int. Cl.⁴ C07D *403/02, 413/02*

U.S. Cl. 544—105 **14 Claims**

1. A chromogenic quinazoline of the formula



(I)

wherein

Y is a polycyclic non-aromatic heterocyclic radical selected from an indoline, tetrahydroquinoline or benzomorpholine radical which is attached to the quinazoline moiety through a fused benzene nucleus and is unsubstituted or substituted, and

Z is hydrogen, R, —OR_1, —SR_1 or —NR_2R_3, wherein

R and R_1 are each alkyl which contains not more than 12 carbon atoms and is unsubstituted or substituted by cyano or lower alkoxy, or are cycloalkyl, unsubstituted or substi-

tuted aryl or aralkyl or an unsubstituted or substituted heterocyclic radical, and R_1 is also C_2–C_6haloalkyl,

R_2 and R_3, each independently of the other, are hydrogen, alkyl which contains not more than 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxy, cyano or lower alkoxy, or are cycloalkyl, phenyl, benzyl, or phenyl or benzyl which are each substituted by halogen, nitro, cyano, lower alkyl, lower alkoxy or lower alkoxycarbonyl, and R_2 is also C_1–C_{12}acyl; or R_2 and R_3, together with the nitrogen atom to which they are attached, are a 5- or 6-membered, saturated heterocyclic radical,

and the ring A is unsubstituted or substituted by halogen, cyano, nitro, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

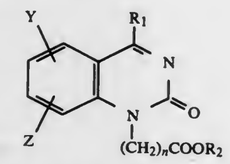
4,555,570

SUBSTITUTED 4-ALKYL-2-(1H) QUINAZOLINONE-1-ALKANOIC ACID DERIVATIVES

Ramesh M. Kanojia, Sommerville; Victor T. Bandurco, Bridgewater; Seymour D. Levine, North Brunswick, all of N.J.; Dennis M. Mulvey, New Hope, and Alfonso J. Tobia, Doylestown, both of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Sep. 29, 1983, Ser. No. 537,232
Int. Cl.⁴ C07D *239/80;* **A61K** *31/505*
U.S. Cl. 544—286 **4 Claims**

1. A compound of the formula:



wherein n is an integer from 2–6; R_1 is lower alkyl; R_2 is hydrogen and lower alkyl; and Y and Z are hydroxy and lower alkoxy; and the pharmaceutically acceptable acid addition salts thereof; provided that Y and Z are not hydroxy at the same time in the 5,6 or 6,7 position.

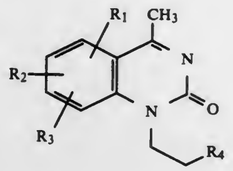
4,555,571

SUBSTITUTED 2(1H)-QUINAZOLINONE-1-ALKANOIC ACIDS AND ESTERS

Victor T. Bandurco, Bridgewater; Seymour D. Levine, North Brunswick, both of N.J.; Dennis M. Mulvey, New Hope, and Alfonso J. Tobia, Doylestown, both of Pa., assignors to Ortho Pharmaceutical Corporation, Rawritan, N.J.

Filed Sep. 29, 1983, Ser. No. 537,233
Int. Cl.⁴ C07D *239/80, 403/04, 413/04;* **A61K** *31/505*
U.S. Cl. 544—286 **4 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, lower alkoxy, morpholino, methyl piperazino, hydroxy, alkoxycarbonyloxy wherein the alkoxy group has 1–4 carbon atoms, alkylamino having 1–4 carbon atoms, halo, ureido, alkylthio, alkyl sulfinyl and alkanoyloxy having 2–5 carbon atoms; R_2 is hydrogen, lower alkoxy, alkoxycarbonyloxy, hydroxy, alkylamino and alkanoyloxy; R_3 is hydrogen, hydroxy and lower alkoxy; and R_4 is carboxy and carboalkoxy wherein the alkoxy group has 1–3 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof, provided that R_1, R_2 and R_3 are not simultaneously hydrogen.

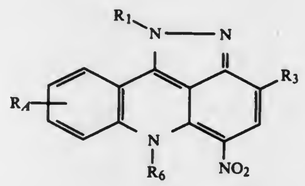
4,555,572

PYRAZOLO[3,4,5-KL]ACRIDINE COMPOSITIONS AND METHODS FOR THEIR PRODUCTION AND USE

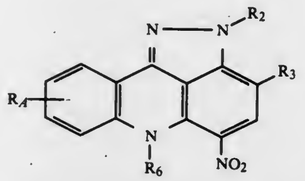
David B. Capps, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 515,125, Jul. 19, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 619,258
Int. Cl.⁴ C07D *471/02;* **A61K** *31/41*
U.S. Cl. 546—14 **30 Claims**

1. Pyrazolo[3,4,5-kl]acridine compounds having in free base form the formulas 1 and 2:



1



2

and the pharmaceutically acceptable salts thereof, where R_1 and R_2 are each -alkylene-NR_xR_y where alkylene is two to four carbon straight or branched chain alkylene which can be substituted by hydroxyl, and R_x and R_y are each independently H, one to four carbon straight or branched chain alkyl, or two to four carbon straight or branched chain hydroxyalkyl, or combined with said nitrogen represent piperidyl or pyrrolidyl, when R_x and R_y are both alkyl, the amine may be an N-oxide; R_3 is H or NO_2; R_6 is H or one to three carbon straight or branched chain alkyl; R_A is H or one or two groups selected from hydroxy, chloro, amino, one to four carbon straight or branched alkylamino or dialkylamino optionally substituted by methoxy, one to four carbon straight or branched alkyl; one to six carbon straight or branched alkoxy which may be substituted by methoxy, dimethylaminoethoxy, dimethylaminopropoxy, diethylaminoethoxy, diethylaminopropoxy, benzyloxy or benzyloxy substituted by methoxy, three to ten carbon straight or branched trialkylsilyloxy, two to twelve carbon straight or branched alkanoyloxy which may be substituted by methoxy, benzoyloxy or benzoyloxy substituted by methoxy, one to four carbon straight or branched alkoxycarbonyloxy, benzyloxycarbonyloxy one to four carbon straight or branched alkylaminocarbonyloxy or dialkylaminocarbonyloxy.

29. An antitumor, antileukemic, or antimicrobial composition comprising an effective amount of a compound having the formula 1 according to claim **1** in combination with a pharmaceutically acceptable carrier.

30. An antitumor, antileukemic, or antimicrobial composition comprising an effective amount of a compound having the formula 2 according to claim **1** in combination with a pharmaceutically acceptable carrier.

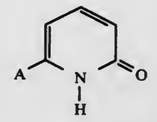
4,555,573

CERTAIN 6-BENZAMIDOMETHYL-2(1H)-PYRIDONE DERIVATIVES

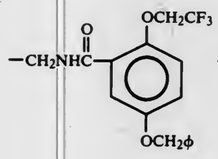
William R. Bronn, Maplewood, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 15, 1983, Ser. No. 551,967
Int. Cl.⁴ C07D *213/56*
U.S. Cl. 546—291 **3 Claims**

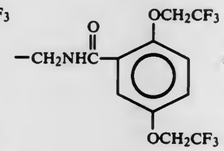
1. A compound of the formula

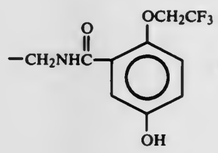


wherein A is selected from the group consisting of

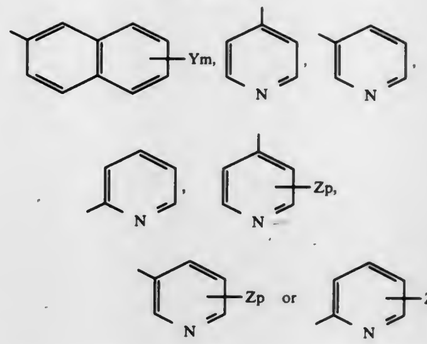


and

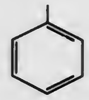




-continued



X, Y and Z represent an alkyl, alkoxy or aromatic group and l, m and p represent the number of each substituent which is an integer of 1 to 3, with the proviso that all of R^1, R^2 and R^3 should not represent



at the same time.

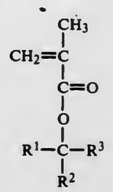
4,555,574

METHACRYLIC ESTER USEFUL AS AN OPTICAL RESOLVING AGENT

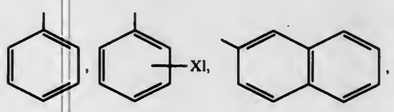
Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 389,631, Jun. 16, 1982, Pat. No. 4,473,690. This application Jul. 11, 1984, Ser. No. 630,477
Claims priority, application Japan, Jun. 19, 1981, 56-94875
Int. Cl.⁴ C07D *211/70*
U.S. Cl. 546—342 **3 Claims**

1. A methacrylic ester of the following formula:



wherein R^1, R^2 and R^3 may be the same or different and each represent



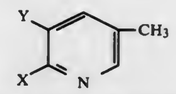
4,555,575

PROCESS FOR PREPARING 2,3-DICHLORO-5-TRICHLOROMETHYLPYRIDINE

David Cartwright, Woodley, England, assignor to Imperial Chemical Industries, plc, London, England

Continuation of Ser. No. 29,341, filed as PCT GB 78/00008, Aug. 10, 1978, published as WO 79/00094 Mar. 8, 1979, § 102(e) date Apr. 11, 1979. This application Feb. 6, 1985, Ser. No. 698,690
Claims priority, application United Kingdom, Aug. 12, 1977, 34039/77; Oct. 26, 1977, 44541/77; Feb. 9, 1978, 5230/78
Int. Cl.⁴ C07D *213/26*
U.S. Cl. 546—345 **1 Claim**

1. A liquid phase process for preparing 2,3-dichloro-5-trichloromethylpyridine, said process consisting essentially of contacting with chlorine the hydrochloride salt of a 2,3-disubstituted-5-methylpyridine of formula



wherein X and Y are halogen atoms selected from bromine and chlorine, in a dry inert organic liquid medium under the influence of UV light.

4,555,576

4,5-DIHYDROTHIAZOLES AND PREPARATION THEREOF

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 146,905, May 5, 1980, abandoned. This application May 21, 1984, Ser. No. 612,155
Int. Cl.⁴ C07D *277/10*
U.S. Cl. 548—146 **9 Claims**

1. A process of preparing a 4,5-dihydrothiazole which comprises heating to a temperature above 160° C., a 2,5-dihydro-

thiazole or a mixture comprising an aliphatic aza-alkylene diene and sulfur which is a precursor thereof.

4,555,577

2,4-DICHLORO-5-THIAZOLECARBOXALDEHYDE AND A PROCESS FOR ITS PREPARATION

Gunther Beck, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

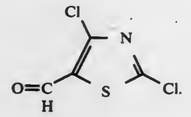
Filed Feb. 2, 1984, Ser. No. 576,183

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303704

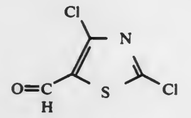
Int. Cl.⁴ C07D *277/20*

U.S. Cl. 548—200 **5 Claims**

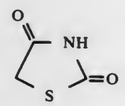
1. 2,4-dichloro-5-thiazolecarboxaldehyde of the formula



2. A process for preparing a 2,4-dichlor-5-thiazolecarboxaldehyde of the formula

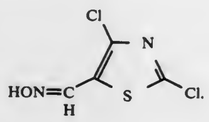


which comprises contacting, 2,4-thiazolidinedione of the formula



with 1–1.5 mols of dimethylformamide and 3–10 mol of phosphorus oxychloride at the reflux temperature of the reaction mixture until evolution of hydrogen chloride gas has ceased and thereafter working up the reaction mixture hydrolytically.

5. 2,4-dichloro-5-thiazolecarboxaldehyde oxime of the formula



4,555,578

MERCAPTOTETRAZOLYLALKANOHYDROXAMIC ACIDS, SALTS AND ESTER THEREOF

Wataru Nagata, Hyogo, and Tsutomu Aoki, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

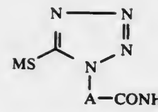
Filed May 11, 1983, Ser. No. 493,573

Claims priority, application Japan, May 13, 1982, 57-81128

Int. Cl.⁴ C07D *257/04*

U.S. Cl. 548—251 **15 Claims**

1. A tetrazolylalkanohydroxamic acid or its ester represented by the following formula:



wherein A is methylene, ethylene or propylene; M is a hydrogen or light metal atom; and R is methyl, ethyl or isopropyl.

4,555,579

DIOXOLENYLMETHYL ESTER PRODRUGS OF PHOSPHINIC ACID ACE INHIBITORS

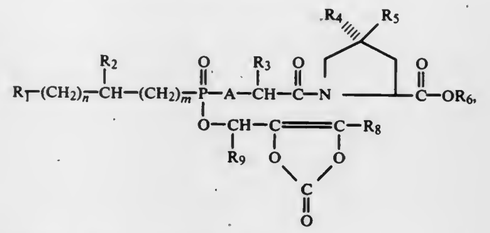
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 24, 1983, Ser. No. 478,598

Int. Cl.⁴ C07F *9/65;* **A61K** *31/675*

U.S. Cl. 548—409 **9 Claims**

1. A compound having the formula



or a salt thereof, wherein R_1 is hydrogen, aryl or heteroaryl;

R_2 is hydrogen, amino, alkanoylamino, arylcarbonylamino, or heteroarylcarbonylamino;

R_3 is hydrogen, alkyl, or aminoalkyl,

R_4 and R_5 are the same or different and each is hydrogen, alkyl, halogen, aryl, arylalkyl, hydroxy, alkoxy, alkylthio, aryloxy, arylthio, or cycloalkyl, or R_4 and R_5 taken together are oxo, ethylenedithio or propylenedithio;

R_6 is hydrogen, alkyl or aryl;

R_8 is hydrogen, alkyl or aryl;

R_9 is hydrogen or alkyl;

n is 0 or an integer of 1 to 8;

m is 0 or 1; and

A is $—(CH_2)_p—$ wherein p is 0 or 1, —NH—, or —O—;

wherein the term "aryl" refers to phenyl or phenyl substituted with halogen, alkyl, alkoxy, alkylthio, hydroxy, alkanoyl, nitro, amino, dialkylamino, or trifluoromethyl groups;

the term "alkyl" refers to groups having 1 to 10 carbon atoms;

the term "alkoxy" refers to groups having 1 to 8 carbon atoms;

the term "alkanoyl" refers to groups having 2 to 10 carbon atoms; and

the term "heteroaryl" refers to pyridyl, furyl, thienyl, pyrimidinyl, quinolyl, indolyl, benzothiophenyl, benzothiazolyl, purinyl, benzoxazolyl, or thiazolyl.

4,555,580

PROCESS FOR THE PREPARATION OF THIOINDIGO COMPOUNDS

Detlef-Ingo Schütze, Bergisch-Gladbach; Reinold Schmitz, Odenthal, and Klaus Wunderlich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

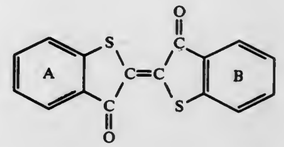
Continuation of Ser. No. 367,694, Apr. 12, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 535,543

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117055

Int. Cl.⁴ C07D *333/24*

U.S. Cl. 549—52 **15 Claims**

1. Process for the preparation of thioindigo compounds of the formula

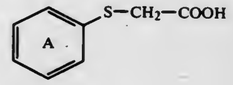


(I)

in which

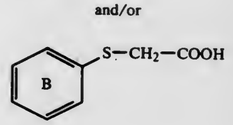
A and B designate identical or different, optionally substituted benzene rings or benzene rings to which further carbocyclic and heterocyclic rings can be fused,

characterised in that compounds of the formula



(IIa)

and/or



(IIb)

in which

A and B have the abovementioned meaning, are reacted in a mixture of chlorosulphonic acid and a further halide of an inorganic acid, and the resulting reaction product is oxidised in a manner which is in itself known and the batch is worked up to give compounds of the formula (I).

4,555,581

PROCESS FOR THE PRODUCTION OF 7-OXABICYCLO (2.2.1)HEPT-5-ENE DERIVATIVES

Alfons Landscheidt, Krefeld, Fed. Rep. of Germany, assignor to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,533

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235399

Int. Cl.⁴ C07D *307/00*

U.S. Cl. 549—463 **10 Claims**

1. A process for the production of a 7-oxabicyclo(2.2.1)hept-5-ene 2-carboxylic acid alkyl ester compound, comprising reacting a furan and an ester of acrylic acid with an alcohol of 1 to 22 C-atoms in the presence of a catalytic quantity of a Lewis acid.

4,555,582

CATALYTIC PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES [WITH SUPPORTED CATALYST]

Steven H. Vanderpool, New Braunfels, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 455,154, Jan. 3, 1983. This application Nov. 23, 1984, Ser. No. 674,453

Int. Cl.⁴ C07C *85/06*

U.S. Cl. 564—479 **6 Claims**

1. In a method wherein monoethanolamine is reacted with ethylenediamine in the presence of a phosphorous containing catalyst to provide an essentially noncyclic product comprising polyethylenepolyamines, the improvement which comprises:

a. using, as a catalyst, a thermally activated pelleted composition consisting essentially of zirconium silicate having from about 0.5 wt.% to about 10 wt.% of phosphorous thermally chemically bonded thereto,

b. continuously contacting a mixture of ethylenediamine and monoethanolamine in a molar ratio of about 1 to about 5 mols of ethylenediamine per mole of monoethanolamine with said pelleted catalyst at a temperature of about 250° to about 400° C. and a pressure of about 500 to about 3000 psig. to obtain an essentially noncyclic product.

4,555,583

PREPARATION PROCESS FOR GLYOXAL

Yoshiaki Toyoda, Takaishi; Kazuo Wakimura, Sennan; Tadaharu Hase, and Nobumasa Arashiba, both of Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP83/00283, § 371 Date Mar. 28, 1984, § 102(e) Date Mar. 28, 1984, PCT Pub. No. WO84/00955, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 30, 1983, Ser. No. 597,067

Claims priority, application Japan, Aug. 30, 1982, 57-149351; Aug. 31, 1982, 57-150082

Int. Cl.⁴ C07C *45/29*

U.S. Cl. 568—473 **8 Claims**

1. A process for preparing glyoxal by subjecting ethylene glycol to gas-phase oxidation, which process comprises bringing the ethylene glycol and a gas containing molecular oxygen into contact at a temperture in the range of 450°–650° C. with a silver catalyst in the simultaneous feeding of one or more phosphorus compounds in a vapor phase to effect the oxidation of the ethylene glycol, the amount of the molecular oxygen used is 0.7–2.0 moles per mole of the ethylene glycol and the amount of the fed phosphorus compounds is 50 ppm or less as calculated in terms of phosphorus relative to the ethylene glycol.

4,555,584

PROCESS FOR PRODUCING CONJUGATED DIENES

Paul R. Robinson, Costa Mesa, and Eric L. Moorehead, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Division of Ser. No. 328,446, Dec. 7, 1981, Pat. No. 4,454,245. This application Mar. 21, 1984, Ser. No. 592,422

Int. Cl.⁴ C07C *5/333, 5/03, 5/09*

U.S. Cl. 585—623 **27 Claims**

1. A method for producing diolefins from monolefins which comprises reacting a feedstream comprising a gas containing helium, molecular oxygen and a C_4 and C_8 mono-olefin under reaction conditions, in contact with an oxidative dehydrogenation catalyst defined by the formula:

$$Me_aV_bP_cSn_dO_eX$$

wherein X is mordenite, Me is an alkali metal, a is 0.10 to 2, b is 0.10 to 1, c is 1, d is 0.001 to 0.30 and e is a number which satisfies the valence requirements of the other elements present.

4,555,585

FOLDABLE SOLAR CELL PANEL APPARATUS

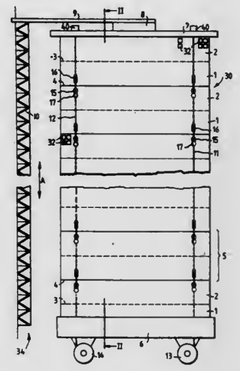
Günter Behrens, Hamburg; Walter Schmitz, Wedel; Peter Kitzer, Hamburg, and Dieter Rüsch, Wedel, all of Fed. Rep. of Germany, assignors to Licentia Patent Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,879

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316789

Int. Cl.⁴ H01L *31/04*

U.S. Cl. 136—245 **9 Claims**



1. A foldable solar cell panel apparatus, comprising:

a solar cell generator panel having a top end, a bottom end, and an axis running through said top and bottom ends, said solar cell generator panel having a plurality of panel portions which are connected at foldable edges that are substantially perpendicular to said axis to form a plurality of foldable pairs of panel portions, the panel portions of said plurality of foldable pairs being movable between a folded state and an unfolded state;

a panel container disposed at said bottom end to store said foldable pairs when said foldable pairs are in their folded state; and

folding and unfolding system means, connected to said solar cell generator panel and to said panel container, for folding into said container the lowermost of said foldable pairs that is not already in its folded sate in the container while any foldable pairs above said lowermost foldable pair remain in their unfolded state so that foldable pairs that are being folded into said container are folded individually in succession, and for unfolding from said container the uppermost of said plurality of foldable pairs that is not already in its unfolded state outside the container while any foldable pairs below said uppermost foldable pair remain in their folded state so that foldable pairs that are being unfolded from said container are unfolded individually in succession, said folding and unfolding system means including

an end plate to which said top end of said solar cell generator panel is operationally connected,

a mast mechanism movable along a line substantially parallel to said axis of said solar cell generator panel and operationally connected to said end plate,

means for releasably fastening said plurality of foldable pairs of panel portions when said solar cell generator panel is being folded into said container, said means for releasably fastening including at least two cables each having a top end operationally secured to said end plate and a bottom end wound around a spring drum disposed below said bottom end of said solar cell generator panel, said means for releasably fastening providing releasably fastened connections between said cables and individual ones of said plurality of foldable pairs, and

holding mechanism means operationally connected to said container for preventing the unfolding of foldable pairs already in said container when said lowermost of said plurality of foldable pairs that is not already in its folded state in the container is being folded into said container and for preventing simultaneous unfolding or fanning out of a plurality of foldable pairs when said uppermost of said plurality of foldable pairs that is not already in its unfolded state outside the container is being unfolded from said container.

4,555,586

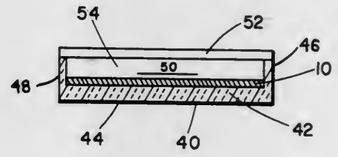
PHOTOVOLTIAC DEVICE HAVING LONG TERM ENERGY CONVERSION STABILITY AND METHOD OF PRODUCING SAME

Subhendu Guha, Clawson, and William DenBoer, Troy, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 6, 1984, Ser. No. 637,984

Int. Cl.⁴ H01L *31/06*

U.S. Cl. 136—259 **29 Claims**



1. In a photoresponsive semiconductor device of the type which (1) generates electron-hole pairs in an intrinsic type photoactive region thereof in response to incident light; (2) separates and collects the electrons and holes; (3) develops light induced defects tending to deleteriously affect collection efficiency; and (4) is capable of having substantial numbers of said light induced defects removed by annealing said device at elevated temperatures; the improvement comprising in combination:

p-dopant means incorporated into at least a portion of the photoactive region for reducing the temperature at which said substantial number of light induced defects can be annealed out of the photoresponsive device to a temperature below the annealing temperature of material without the p-dopant means; and,

means for maintaining said photoresponsive device at said reduced annealing temperature for at least a portion of its operational lifetime, said temperature maintaining means including means for preventing loss of heat from said device; whereby light induced defects are at least periodically annealed out of the photoresponsive device during the operation thereof, so as to provide a photoresponsive device characterized by a relatively stable collection efficiency.

4,555,587

ENCLOSURE FOR A POWER SUPPLY

Michael A. Argentieri, West Orange, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,277

Int. Cl.⁴ H05K *5/00, 7/20*

U.S. Cl. 174—11 R **15 Claims**

1. An arrangement enclosing a power supply having a high voltage portion and a low voltage portion, comprising:

a closed housing having a wall therein dividing the interior of said housing into a first compartment containing the high voltage portion of the power supply and a second compartment containing the low voltage portion of the power supply;

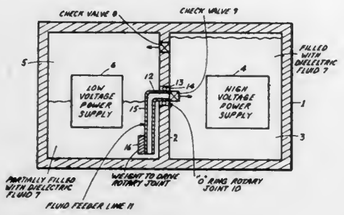
a dielectric fluid filling said first compartment and partially filling said second compartment;

a first check valve disposed in said wall to enable said fluid to flow from said first compartment to said second compartment during a temperature increase to compensate for expansion of said fluid in said first compartment; and

a second check valve disposed in said wall in communication with said fluid in said second compartment to enable said fluid to flow from said second compartment to said first compartment during a temperature decrease to maintain said first compartment full of said fluid.

4. An arrangement for enclosing a power supply having a high voltage portion and a low voltage portion, comprising

a closed housing having a wall therein dividing the interior of said housing into a first compartment for containing a high voltage portion of a power supply and a second compartment for containing a low voltage portion of a power supply;



a dielectric fluid filling said first compartment and partially filling said second compartment;

a first check valve disposed in said wall to enable said fluid to flow from said first compartment to said second compartment during a temperature increase to compensate for expansion of said fluid in said first compartment;

a second check valve disposed in said wall in communication with said fluid in said second compartment to enable said fluid to flow from said second compartment to said first compartment during a temperature decrease to maintain said first compartment full of said fluid; and

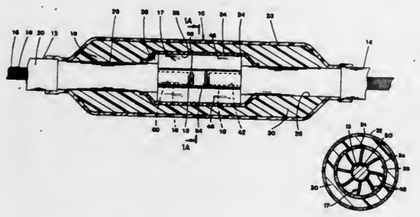
a fluid feeder device disposed in said second compartment operative at all times to have one end in communication with said second check valve and the other end submerged in said fluid of said second compartment independent of the attitude of said housing within a predetermined acceptable attitude range.

4,555,588

HEAT TRANSFER DEVICE FOR ELECTRICAL CONNECTOR IN INSULATING HOUSING OF HIGH VOLTAGE SPLICE OR TERMINATOR

John P. DuPont, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Oct. 26, 1983, Ser. No. 545,800
Int. Cl.⁴ H02G *15/064, 15/184*
U.S. Cl. 174—73 R **8 Claims**



1. In combination in a high voltage component such as a splice, terminator, elbow or the like:

an electrically insulating housing having a cavity therein and at least one passage in said housing communicating with said cavity;

a hollow electrically conductive stress relief insert in said cavity and connected to said insulating housing;

an electrical connector located within said hollow stress relief insert;

an electrical cable extending through said passage into said hollow stress relief insert and having an electrical conductor electrically and mechanically connected to said electrical connector;

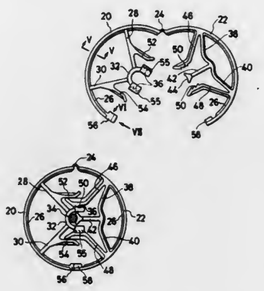
and an electrically and thermally conductive hollow elastic heat transfer device discrete from said housing and surrounding and engaging said electrical connector and having radially outwardly extending spaced apart projections on the exterior thereof engaging said stress relief insert.

4,555,589

LEAD WIRE RETAINER

Hiroshi Osada, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Nov. 26, 1984, Ser. No. 674,809
Int. Cl.⁴ H01B *17/58*
U.S. Cl. 174—156 **4 Claims**



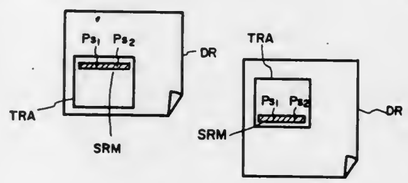
1. A lead wire retainer, comprising a pair of half rings, means for joining said half rings to complete a full ring, means for retaining a lead wire within said full ring projecting from said half rings which automatically nip the lead wire when said half rings are brought into mutual engagement, and elastic supporting means for elastically supporting said means for retaining.

4,555,590

METHOD AND APPARATUS FOR ENTERING GRAPHICS

Hajimu Kishi, Hino; Masaki Seki, Tokyo, and Kunio Tanaka, Hachioji, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Filed Feb. 25, 1983, Ser. No. 469,824
Claims priority, application Japan, Feb. 27, 1982, 57-31495
Int. Cl.⁴ G08C *21/00*
U.S. Cl. 178—18 **7 Claims**



1. A method of entering graphics data using a graphic data entering apparatus including a tablet having a read-out area and a coordinate designating device for designating a plurality of points on a figure of a drawing laid on the tablet over the read-out area, the figure having a size larger than the read-out area, said method comprising the steps of:

(a) entering graphic data on the drawing on the read-out area and the coordinates of two specified points on the figure;

(b) displacing the drawing over the tablet;

(c) entering graphic data on the displaced drawing on the read-out area and the coordinates of the displaced two specified points on the figure; and

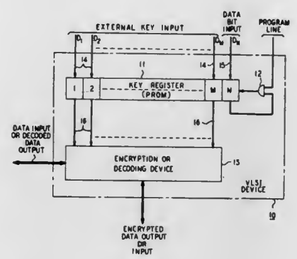
(d) converting the coordinates of the graphics data entered before and after the drawing is displaced into graphic data for one coordinate system using the coordinates of said two specified points before and after the drawing is displaced.

4,555,591

INTEGRATED CIRCUIT DEVICES FOR SECURE DATA ENCRYPTION

Randy D. Nash, Long Branch, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 7, 1982, Ser. No. 415,668
Int. Cl.⁴ A04K *1/02*
U.S. Cl. 178—22.13 **2 Claims**



1. An integrated device comprising:

an externally programmable read-only-memory register including a plurality of M+N storage locations capable of separately storing both an M-bit unique binary key word and an N-bit enable code word which is used for programming the register, the M+N bits initially including a first binary value; and

gating means responsive to the first binary value of the N-bit enable code word initially stored in the N storage locations of the register to enable the register and permit the writing of a uniquely encoded binary key word into the M storage locations of the register followed by an N-bit enable code word including a predetermined second binary value which is capable of both disabling the gating means and preventing the subsequent changing of the M+N bit values.

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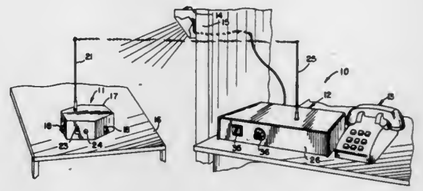
WIRELESS HANDS-FREE CONFERENCE TELEPHONE SYSTEM

Gerald J. Deinzer, Chicago, Ill., assignor to Teleconferencing Systems International, Inc., Elk Grove Village, Ill.

Filed May 23, 1983, Ser. No. 496,904
Int. Cl.⁴ H04Q *7/04*; H04R *1/02*
U.S. Cl. 179—2 E **2 Claims**

1. A wireless hands-free conference telephone system for use with a telephone, said system conprising:

a wireless microphone/transmitter circuit for receiving sounds generated over a significant distance, converting said sounds received into a first corresponding signal and radiating same from a position spatially related to the remainder of said telephone system, and including a compact housing, a plurality of distance sensitive microphones, an FM transmitter for receiving said electrical signals from said microphone and transmitting same over a pre-determined frequency, an antenna for radiating signals received from said transmitter, a portable power supply for energizing said microphone/transmitter circuit as desired and said plurality of microphones being positioned on said housing in even substantially radially outwardly extending orientation for receiving sounds signals from a pre-determined angular segment of the circumferential area surrounding said housing; each said microphone also being positioned to face generally downwardly in said housing at an acute angle to the vertical for picking up sound signals rebounding from any substantially horizontal surface on which said housing is positioned, a lowest part of said microphone being in close spatical proximity to any said horizontal surface;



a unitary control module including a receiver circuit for receiving said remotely eradiated first corresponding signal and transferring same via a first path to an output adapted for connection to said telephone;

a loudspeaker circuit for producing sound from a second corresponding signal via a second signal path from an input adapted for connection to said telephone; and

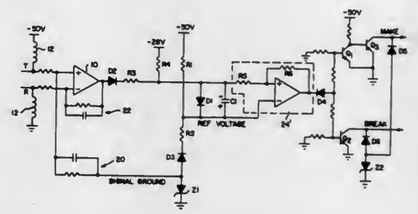
a voice switching circuit acting between said telephone and both said loudspeaker circuit and said receiver circuit on said first and second signal paths for increasing the gain in said loudspeaker circuit when said second corresponding signal is greater than said first corresponding signal, and for increasing the gain in said receiver circuit when said first corresponding signal is greater than second corresponding signal.

4,555,593

ELECTRONIC TELEPHONE RELAY

Orrin B. O'Dea, Garden Grove, Calif., assignor to Microcommunications, Inc., Santa Ana, Calif.

Filed Feb. 16, 1983, Ser. No. 467,011
Int. Cl.⁴ H04Q *1/36, 3/14*
U.S. Cl. 179—18 GD **6 Claims**



1. In an electronic circuit for replacement of an A-type relay in a step-by-step selector or connector of a telephone exchange system having: a first differential operational amplifier having

inverting and noninverting input terminals adapted to be connected to respective tip and ring conductors of a telephone line without disconnecting relay coils of said A-type relay from said conductors, one of said relay coils being connected between circuit ground and the tip conductor and the other relay coil being connected between a source of negative voltage and the ring conductor, whereby said first amplifier produces a negative output signal when a telephone switch between the tip and ring conductors is open for an ON-HOOK condition of the telephone line, and a less negative output signal when said telephone switch is closed for an OFF-HOOK condition of the telephone line; a second differential operational amplifier having inverting and noninverting input terminals, said inverting input terminal being connected to a reference voltage derived from a voltage divider, and said noninverting input terminal being connected to the output of said first differential amplifier by means comprising a coupling resistor; a capacitor connected between the output of said coupling resistor and the inverting input terminal of said second differential amplifier, thereby to couple signals from said first differential amplifier to said second differential amplifier as common mode signals for a period determined by the RC time constant of said coupling resistor and capacitor; and a diode in parallel with said capacitor poled to limit the voltage charge of said capacitor in the OFF-HOOK condition, an improvement comprising

a second diode connected in series between the output of said first differential amplifier and said coupling resistor, and

a second resistor, connected from a source of negative voltage to a junction between said capacitor and coupling resistor,

whereby ON-HOOK to OFF-HOOK transitions are presented as common mode signals to said second differential amplifier for periods controlled by the RC time constant of said coupling resistor and capacitor while OFF-HOOK to ON-HOOK transistions are presented as common mode signals to said second differential amplifier for periods independently controlled by the RC time constant of said second resistor and capacitor, thereby providing controlled RC timing of transitions at both the beginning and the end of dial pulses which are transitions from OFF HOOK to ON HOOK then back to OFF HOOK.

4,555,594

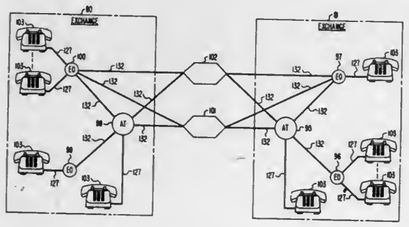
TELEPHONE INTEREXCHANGE SIGNALING PROTOCOL

Albert Friedes, East Brunswick, N.J.; Thomas V. Greene, Downers Grove, Ill.; Frederick W. Idenden, Colts Neck, N.J.; Kenneth L. Moeller, Naperville, Ill.; Robert M. Musen, Holmdel, and John F. O'Hara, Jr., Robertsville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1983, Ser. No. 520,112

Int. Cl.[4] H04M *3/42*

U.S. Cl. 179—18 B **66 Claims**



1. A method of establishing at a first telephone switch a communication path between the first switch and a second telephone switch, for a call connected to the first telephone switch, comprising the steps of:

transmitting a first signal on a selected communication path leading from the first switch to the second switch;

receiving on the selected path a second signal responsive to the first signal;

transmitting call-characterizing information on the selected path, in response to the second signal;

receiving on the selected path a third signal acknowledging the call-characterizing information; and

connecting the call to the selected path for communication, in response to the third signal.

4,555,595

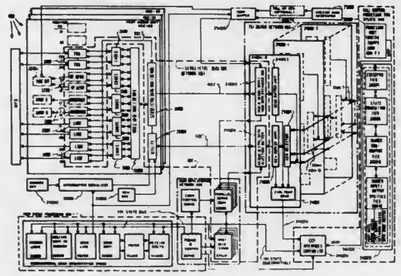
SAMPLED PORT DATA SWITCHING SYSTEM EMPLOYING INTERACTIVE PROCESSORS

Barrie Brightman, Fern Park; George Elliott, Longwood; Pedro A. Lenk, Fern Park, all of Fla.; Jayantkumar R. Shah, Munich, Fed. Rep. of Germany, and William H. Stewart, West Palm Beach, Fla., assignors to Stromberg-Carlson Corp., Lake Mary, Fla.

Division of Ser. No. 290,531, Aug. 6, 1981, abandoned, which is a continuation of Ser. No. 924,883, Jul. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 864,401, Dec. 27, 1977, abandoned. This application Nov. 8, 1982, Ser. No. 439,747

Int. Cl.[4] H04Q *3/54, 11/04*

U.S. Cl. 179—18 ES **21 Claims**



15. A telephone system comprising:

A. a plurality of ports connected to trunk lines and subscriber lines for receiving and transmitting voice signals and supervisory signals;

B. timing means for generating a first timing signal at a first frequency and a second timing signal at a lower frequency,

C. storage means connected to said ports and to said timing means for storing supervisory information representative of said supervisory signals that are transferred to and from said ports at a sampling rate dependent upon the first timing signal, and

D. port event processing means connected to said timing means and said storage means for controlling the operation of each of said ports collectively in response to the information in said storage means and the second timing signal.

4,555,596

LOUDSPEAKING TELEPHONES

Peter F. Blomley, Bishops Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

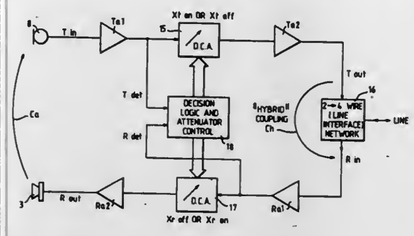
Filed Jun. 7, 1983, Ser. No. 501,791

Claims priority, application United Kingdom, Jun. 10, 1982, 8216845

Int. Cl.[4] H04M *1/60, 9/10*

U.S. Cl. 179—81 B **2 Claims**

1. An electronic circuit for use in a loudspeaking of handsfree telephone comprising a transmit channel and a receive channel, said circuit including a first analogue-digital signal converter to which analogue voice frequency signals in the telephone's transmitting channel are applied and said converter derives therefrom a succession of multi-bit digital combinations each representing the current amplitude of the voice frequency signal in that channel, a second analogue-digital signal converter to which a signal from the receiving channel is applied and which derives therefrom a succession of multi-bit digital combinations each representing the current amplitude of the voice frequency signal in the receiving channel, a comparator to which the digital combinations derived from the two channels are applied and which derives therefrom a control output which indicates which of the two channels is passing the larger signal, and control means in each of the two channels each settable respectively to disable or enable its one of the channels, the arrangement being such that if the transmitting channel signal is larger than the receiving channel signal the transmitting channel is enabled and the receiving channel is disabled, and that if the receiving channel signal is larger than the transmitting channel signal the receiving channel is enabled and the transmitting channel is disabled.



4,555,597

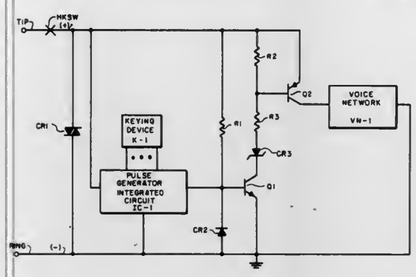
TRANSIENT RESISTANT KEY OPERATED PULSE GENERATING CALLING DEVICE CIRCUIT

Eduard F. B. Boeckmann, and Larry A. Woodworth, both of Huntsville, Ala., assignors to GTE Business Communication Systems Inc., Northlake, Ill.

Filed Dec. 5, 1983, Ser. No. 558,130

Int. Cl.[4] H04M *1/31, 1/274*

U.S. Cl. 179—90 B **4 Claims**



1. A subscriber's telephone circuit connected to a telephone line and including: a voice network; switching means operated to connect said telephone line to said voice network and, in the alternative, to disconnect said telephone line from said voice network; a pulse generator, including circuit connections to said telephone line and an output connection to said switching means; key means connected to said pulse generator manually operated to cause said pulse generator to periodically operate said switching means; and first and second unidirectional conducting means, including circuit connections to a pulse generator output means operated to prevent transients from entering said pulse generator via an output circuit connection; said first uni-directional conducting means comprising a diode connected between said pulse generator output connection and said telephone line and said second uni-directional conducting means comprising a SCHOTTKY diode included in said switching means.

4,555,598

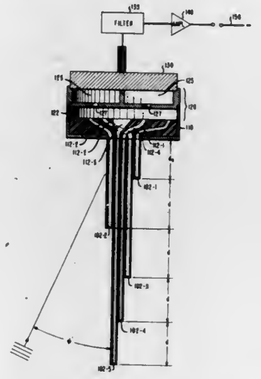
TELECONFERENCING ACOUSTIC TRANSDUCER

James L. Flanagan, Warren, and Robert A. Kubli, Whitehouse Station, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 21, 1983, Ser. No. 534,204

Int. Cl.[4] H04R *1/40*

U.S. Cl. 179—121 D **11 Claims**



1. A directional acoustic transducer comprising:

a plurality of acoustic paths each having first and second ends, each path second end terminating in the atmosphere;

an acoustic cavity;

an electroacoustic device attached to said acoustic cavity; and

means between the acoustic path first ends and said acoustic cavity for coupling said acoustic paths to said acoustic cavity;

said coupling means comprising acoustical means adapted to produce a substantially cone shaped directional response pattern having an apex at the acoustic path second ends.

4,555,599

SIGNAL TRANSMISSION DEVICES

Francis C. Hackett-Jones, Kent, England, and Frederick H. Kiko, Aurora, Colo., assignors to Telspec Limited, Rochester, England

Filed Mar. 9, 1984, Ser. No. 588,006

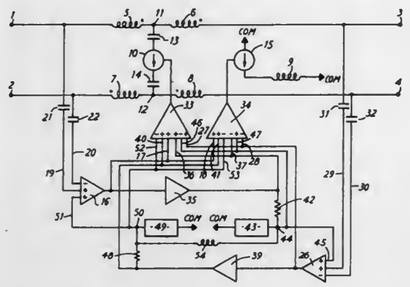
Claims priority, application United Kingdom, Mar. 18, 1983, 8307628

Int. Cl.[4] H04B *3/36*

U.S. Cl. 179—170 R **7 Claims**

1. A signal transmission device comprising a signal path extending between respective terminals of an input and an output port of the device, a controllable, substantially load independent current source shunting said signal path at a point intermediate said input and output ports, impedance means connected in each series circuit including the terminals of a respective port of the device and the shunt path provided by said current source for presenting at each port an impedance which is high in relation to that of a signal source to be coupled to said input port or of a signal load to be coupled to said output port, as the case may be, said current source being responsive to a voltage signal applied at the terminals of said input port to provide a corresponding magnitude of output current, and means being provided for determining the relative proportions of the current from said current source which pass through the respective impedance means in the input and

output circuits of the device, thereby to determine the virtual impedances of the device presented at said input and output

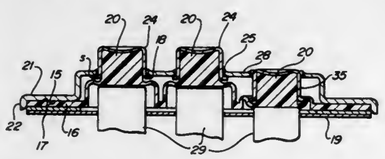


ports respectively and to determine the signal gain provided by said device.

4,555,600
VANDAL-RESISTANT SHIELD FOR TELEPHONE KEYPAD

Milton Morse, Fort Lee, N.J., assignor to APM Corporation, Englewood, N.J.

Continuation-in-part of Ser. No. 381,905, May 25, 1982, and a continuation-in-part of Ser. No. 299,509, Sep. 4, 1981, and a continuation-in-part of Ser. No. 286,063, Jul. 23, 1981, and a continuation-in-part of Ser. No. 261,647, May 7, 1981, and a continuation-in-part of Ser. No. 236,757, Feb. 23, 1981. This application Oct. 21, 1983, Ser. No. 544,391
Int. Cl.⁴ H01H *13/70*
U.S. Cl. 179—184 **23 Claims**

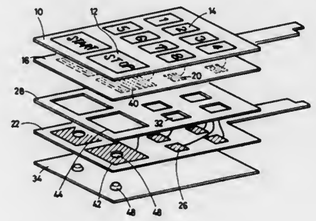


1. In combination with a keypad comprising:
a rigid support plate having a front face and formed with an array of throughgoing apertures;
respective push-buttons projecting at the apertures through the plate past the front face thereof;
a continuous flexible membrane overlying the front face and formed at each of the push-buttons with a relatively thick projecting portion in front of the respective pushbuttons, whereby the membrane seals the apertures around the buttons while allowing same to be depressed via the thick portions; and
means urging the pushbuttons and the overlying thick portions forward from the front face;
a shield assembly comprising:
a rigid shield plate formed with an array of throughgoing apertures aligned with and generally identical to those of the support plate and having a rear face confronting the front face of the support plate and an opposite front face, the thick projecting portions of the membrane projecting forward through the apertures of the shield plate past the front face thereof;
means for securing the shield plate in front of the membrane with the apertures aligned; and
respective rigid caps fitted over the thickened portions, projecting forward through the shield-plate apertures, and each having an outwardly projecting flange extending generally parallel to and lying between the plates and of greater size than the respective shield-plate aperture, the means urging the respective flanges forward against the rear face of the shield plate.

4,555,601
MEMBRANE KEYBOARD

Toshimichi Taguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1983, Ser. No. 461,148
Claims priority, application Japan, Jan. 29, 1982, 57-13679; Jan. 29, 1982, 57-13680
Int. Cl.⁴ H01H *13/70*
U.S. Cl. 200—5 A **2 Claims**

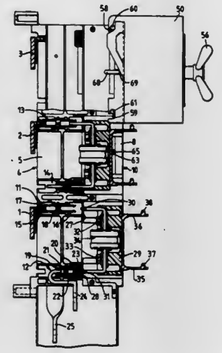


1. A membrane keyboard comprising:
a first flexible sheet having key pad labels formed thereon, said key pad labels including at least one larger size key pad label and at least one smaller size key pad label;
a second flexible sheet disposed below said first flexible sheet, said second flexible sheet carrying conductor electrodes formed on the rear surface thereof at positions corresponding to each of said key pad labels formed on said first flexible sheet;
a sheet member disposed below said second flexible sheet, said sheet member carrying counter conductor electrodes formed on the front surface thereof at positions corresponding to each of said conductor electrodes formed on the rear surface of said second flexible sheet;
a spacer sheet disposed between said second flexible sheet and said sheet member, said spacer sheet including openings formed at positions corresponding to each of said conductor electrodes formed on the rear surface of said second flexible sheet;
a reinforcing plate disposed below said sheet member; and
space determination means disposed in the opening of said spacer sheet, said opening corresponding to said larger size key pad label, thereby ensuring electrical separation of the conductor electrode and the counter conductor electrode formed at said larger size key pad label, said space determination means comprising:
an aperture formed in said sheet member at a position about the center of said counter conductor electrode which corresponds to said larger size key pad label; and
a protrusion formed on said reinforcing plate at a position corresponding to said aperture formed in said sheet member, wherein
said protrusion extends through said aperture formed in said sheet member and said opening formed in said second flexible sheet, and confronts said conductor electrode formed on said first flexible sheet, said conductor electrode corresponding to said larger size key pad label.

4,555,602
DRAW OUT SWITCHGEAR AND OPERATING MECHANISM

Thomas W. Mennell, Scarborough, England, assignor to Y.S. Securities Limited, England

Filed Apr. 23, 1984, Ser. No. 602,987
Claims priority, application United Kingdom, Apr. 22, 1983, 8311063; Aug. 17, 1983, 8322119
Int. Cl.⁴ H01H *9/20*
U.S. Cl. 200—50 AA **13 Claims**

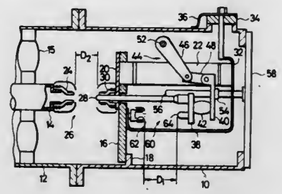


1. An electrical assembly comprising a fixed casing with an opening into the casing; a pair of fixed contacts spaced apart within the casing and set back from the opening into the casing; a structure forming a contact carrier carrying a pair of movable contacts thereon; cooperating guide means on the casing and the contact carrier for guiding the contact carrier to move within the casing along a rectilinear path between a first position adjacent to the opening, in which position the movable contacts are spaced from the fixed contacts, and a second position in which the movable contacts engage the fixed contacts to close a circuit therebetween; a manually portable drive unit for mechanically driving the carrier between the positions, the drive unit being a self-contained mechanism that is mountable on the casing to lie outside thereof and that is demountable from the casing; the drive unit comprising a drive housing; means for releasably locking the drive housing to the fixed casing against relative movement thereto when the drive unit is mounted on the casing; a drive member movable relative to the drive housing and means for detachably coupling the drive member to the contact carrier when the drive unit is mounted on the casing.

4,555,603
GROUNDING SWITCH

Takanobu Aoyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,403
Claims priority, application Japan, Jul. 26, 1982, 57-130081
Int. Cl.⁴ H01H *33/16*
U.S. Cl. 200—144 AP **15 Claims**

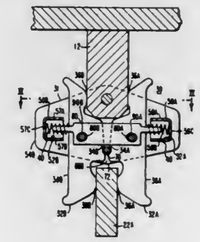


1. A grounding switch comprising:
a resistance contact means having a fixed contact means connected to a main power circuit conductor and a movable contact means;
a resistor means being grounded at one end and being connected to the movable contact means at the other end; and
short circuiting contact means having a grounded fixed contact means and a movable contact means connected to the movable contact means of said resistance contact means, said short circuiting contact means being arranged so as to extend in parallel with said resistance contact means in a direction of movement of the movable contact means of said resistance contact means.

4,555,604
CIRCUIT BREAKER HAVING IMPROVED STAB ASSEMBLY

Alfred E. Maier, and Louis N. Ricci, both of Chippewa Township, Beaver County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1983, Ser. No. 558,723
Int. Cl.⁴ H01H *1/50*
U.S. Cl. 200—255 **10 Claims**



1. An electric circuit breaker for connection to one or more current carrying members, comprising:
a stationary contact;
a movable contact operable between open and closed positions with respect to the stationary contact;
movement effecting means for effecting relative movement of the movable contact between the open and closed positions;
support means secured to the stationary contact and movable contact for maintaining the position of the stationary and movable contact with respect to one another when the movable contact is in the open or closed position;
stab means for detachably and electrically interconnecting a portion of a preselected contact selected from the stationary contact or the movable contact to a portion of at least one of the current carrying members by the insertion therein of said portion of said preselected contact and said portion of said current carrying member, the stab means comprising:
a plurality of pairs of opposed, relatively movable, electrically conductive fingers, each finger having two relatively parallel faces, an opposed face and an opposite face, the opposed faces each having a contact surface placed in contact with the portions of the preselected contact and the current carrying member when each is inserted into the stab means between the opposed faces of the opposed fingers thereof;
housing means for holding the pairs of opposed fingers in a spaced relationship with respect to the inserted portions of the preselected contact and the current carrying member and aligning adjacent fingers substantially parallel with respect to one another, the housing comprising:
a pair of axially aligned substantially parallel end housings, each end housing having two relatively parallel faces, an opposed face and an opposite face, and disposed opposite one another extending across the opposite faces of the

opposed fingers, the opposed faces of the end housings having a substantially U-shaped channel therein, the channel positioned proximate the opposite faces of the opposed fingers, the ends of the channel walls limiting the outward axial and arcuate motion of the fingers with respect to the inserted portions of the preselected contact and the current carrying member;

a pair of substantially parallel support members for holding the end housings in a spaced relationship, each support member having a pair of openings intermediate the end housings with an opening proximate each end housing, corresponding openings in the support members being substantially aligned with respect to each other, a pivot hole, and a projection extending therefrom toward the current carrying member forming an insertion stop intermediate the opposed fingers abutting the current carrying member when inserted into the stab means to prevent the overinsertion thereof;

a pivot rod connected to the housing means and positioned intermediate the inserted portion of the preselected contact, the insertion stop and the opposed fingers with the pivot rod extending across the space therebetween, ends of the pivots rod being inserted in the pivot holes of the support members, the pivot rod stopping the axial motion of the opposed fingers toward one another and acting as a fulcrum for the rotation of the fingers when the portion of the preselected contact is inserted into the stab means, the diameter of the pivot rod controlling the minimum spacing between the opposed fingers upon disconnection of the current carrying member from the stab means; and

a pair of assembly pairs;

a plurality of support shims, a support shim intermediate the fingers in each pair of adjacent fingers and a corresponding axially aligned opposing pairs of fingers with the ends thereof extending beyond the opposite faces of the opposed pairs of fingers into the U-shaped channels of the end housings, each support shim having a pair of openings, one opening in alignment with each of the openings in the support members that are proximate the end housings;

a plurality of spacing shims, a spacing shim intermediate the adjacent pairs of fingers and the corresponding axially aligned opposing pairs of fingers, each spacing shim having a pair of openings, one opening aligning with each of the openings in the support members;

means for detachably fastening the support members of the housing means to the preselected contact when inserted into the stab means thereby assuring disconnection of the stab means from the current carrying member whenever the circuit breaker is disconnected therefrom;

biasing means disposed about the opposite faces of the opposed fingers for axially urging the opposed fingers toward each other thereby increasing the contact pressure of the opposed fingers upon the inserted portions of the preselected contact and the current carrying member, the biasing means comprising a plurality of compression springs, one spring disposed about each end of each support shim, the springs being compressed between the base of the U-shaped channels in the end housings and the opposite faces of the fingers adjacent each support shim, the fully compressed length of each spring being less than the depth of the U-shaped channel thereby avoiding the overcompression thereof caused by the outward axial or arcuate motion of the fingers with the ends of the support shims preventing lateral motion of the springs with respect to the opposite faces of the opposed fingers; and

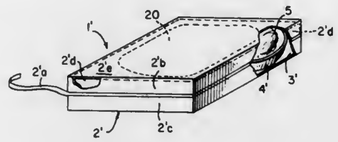
each finger having a slot, the slots of the adjacent fingers aligning with the openings in the adjacent support shims and spacing shims so that the assembly pins can be inserted therethrough for assembling the stab means, the slot in each finger allowing arcuate and axial motion of the finger with respect to the inserted portions of the preselected contact and the current carrying member with the support shims and spacing shims allowing for the independent arcuate and axial motion of each finger.

4,555,605

PACKAGE ASSEMBLY AND METHOD FOR STORING AND MICROWAVE HEATING OF FOOD

Richard K. Brown, Appleton, and Oscar E. Seiferth, Madison, both of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Filed Aug. 2, 1984, Ser. No. 637,057
Int. Cl.⁴ H05B *6/64*
U.S. Cl. 219—10.55 E **20 Claims**



1. A package assembly for storing and microwave heating of food comprising

(a) a package body defining, in an assembled condition, a receiving space; and

(b) a disposable combination food storage tray and heating stand of a size and shape which, in an assembled condition, is fully receivable within the receiving space of the package body;

wherein the combination storage tray and heating stand has tray means forming a food storage space of a size and shape within which a predetermined quantity of food may be stored and when the combination storage tray and heating stand is received within said receiving space of the package body, said food storage space being bounded by a support wall upon which said predetermined quantity of food is positionable and at least one perimetric wall that projects upwardly from said support wall for laterally enclosing food positioned thereon; wherein said at least one perimetric wall is sized and shaped so as to coact with said support wall for converting said food storage space into an enclosed air space when said combination storage tray and heating stand is placed on the floor of a microwave oven in an inverted heating stand condition; wherein the at least one perimetric wall and support wall are of sufficient strength to support said predetermined quantity of food upon said support wall when said combination storage tray and heating stand is in said inverted heating stand condition; and wherein said at least one perimetric wall and support wall are formed of a material that is transparent to microwave energy; and wherein a microwave interactive layer formed of a material capable of converting microwave energy into heat is disposed in association with said support wall for heating said predetermined quantity of food when it is supported upon said support wall in said inverted heating stand condition.

4,555,606

AIR FLOW SYSTEM FOR COMMON CAVITY OVEN

Calvin J. Thomas, Orefield, and James E. Hurley, Allentown, both of Pa., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 19, 1984, Ser. No. 632,517
Int. Cl.⁴ H05B *6/72*
U.S. Cl. 219—10.55 R **17 Claims**

1. A common cavity microwave and electric self-clean oven, comprising:

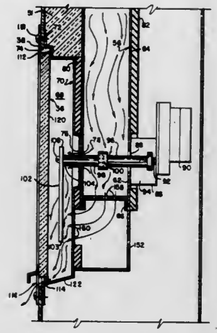
an oven cavity having a port for directing air into said cavity;

an electric heating element positioned in said cavity for providing thermal energy for cooking and for self-cleaning;

a magnetron for energizing said cavity with microwave energy for cooking;

a blower coupled to said port wherein at least a portion of air forced from said blower is directed through said port into said cavity;

means for controlling said heating element, said magnetron, and said blower, wherein said controlling means activates said blower when said magnetron is activated to remove moisture from said cavity; and



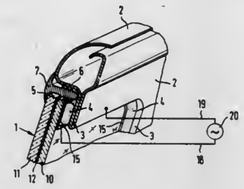
wherein said controlling means also activates said blower when said heating element is activated in a self-cleaning mode to resist hot air from said cavity flowing outwardly through said port.

4,555,607

PROCESS FOR INSTALLATION AND REMOVAL OF GLASS PANE FROM A FRAME

Paul Roentgen, Talweg 7, D-5106 Roetgen/Rott; Helmut Krumm, Lohmühlenstrasse 2, D-5100 Aachen; Gottfried Krasborn, Bismarckstrasse 12, D-5100 Aachen, and Günter Lenzen, Teichwinkel 14, D-5100 Aachen, all of Fed. Rep. of Germany

Continuation of Ser. No. 384,939, Jun. 4, 1982, abandoned. This application Jun. 1, 1984, Ser. No. 616,026
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124138
Int. Cl.⁴ H05B *6/64*
U.S. Cl. 219—10.57 **11 Claims**



1. A process for attaching a glass pane to a frame which comprises the steps of:

(a) depositing a conductive material in strip form on the marginal edge of said glass pane;

(b) attaching the conductive material onto the glass;

(c) depositing a layer of thermoplastic adhesive between the glass pane and the frame;

(d) connecting a source of electric power to the conductive strip; and

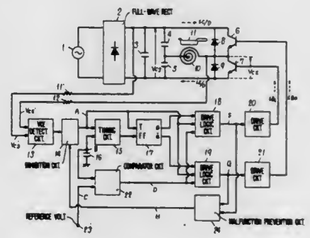
(e) passing electric current through the conductive strip to heat the adhesive to its deformation temperature to bond the glass to the frame.

4,555,608

INVERTER DEVICE FOR INDUCTION HEATING

Takumi Mizukawa, Neyagawa; Yoshio Ogino, Takatsuki; Hideki Ohmori, Kawanishi, and Taketoshi Sato, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00426, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/01721, PCT Pub. Date May 11, 1983
PCT Filed Nov. 2, 1982, Ser. No. 522,373
Claims priority, application Japan, Nov. 4, 1981, 56-176871
Int. Cl.⁴ H05B *6/06, 6/64*
U.S. Cl. 219—10.77 **2 Claims**



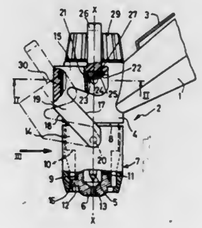
1. An inverter device for induction heating, comprising a bridge inverter having a pair of series-connected switching elements connected to a DC power source and having an output obtained from a junction between said switching elements, a circuit for detecting the turn-off of said switching elements comprising a voltage comparator having one input terminal connected to said junction and another input terminal connected to said DC power source wherein said turn-off is detected when the voltages at said one and another input terminals become equal, and a timing circuit and a flip-flop circuit which are connected to an output of said turn-off detection circuit, the arrangement being such that after the turn-off of one of said switching elements has been detected, the other switching element is driven.

4,555,609

ARC WORKING TORCHES

Gërard Marhic, Cergy; Didier Schaff, Auvers-sur-Oise, and Francis Remy, Montigny-les-Cormeilles, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sep. 26, 1983, Ser. No. 535,881
Claims priority, application France, Oct. 1, 1982, 82 16511
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PC **8 Claims**



1. An arc working torch comprising, in combination:

an electrode;

a head element surrounding the electrode and having a shoulder and a free end;

a removable protective cowling having a skirt elemnent

surrounding the free end of the head element and axially positioned by said shoulder;

a tilting stirrup pivotally supported by one of said elements for movement between an open position and a closed position;

clipping means for releasably connecting the stirrup to the other of said elements to thereby secure said cowling to said head element in the closed position of said stirrup;

actuating means for supplying electrical energy to said electrode; and

a safety circuit connected to said actuating means for interrupting the supply of electrical energy, the safety circuit including a pair of terminals carried by said other element.

4,555,610

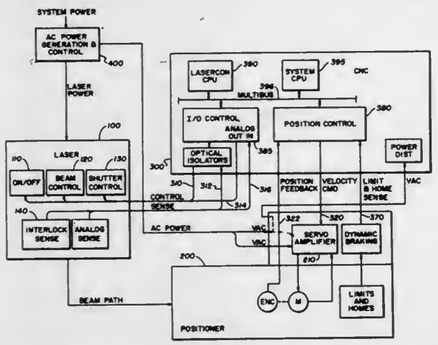
LASER MACHINING SYSTEM

Michael D. Polad, Mendota; LeRoy E. Gerlach, Bloomington, and Robert H. Schmidt, Minnetonka, all of Minn., assignors to Data Card Corporation, Minnetonka, Minn.

Filed Sep. 13, 1983, Ser. No. 531,777

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LA **19 Claims**



1. A machining system utilizing a laser beam for machining a stationary workpiece, comprising:

a frame constructed and arranged for positioning adjacent the stationary workpiece;

first optical path means oriented along a first axis relative to the frame and constructed and arranged for extension and retraction along the axis thereof in response to a first command signal, the first optical path means operatively coupled to the laser for receiving the beam at one end thereof and for delivering a collimated laser beam at an output end thereof;

second optical path means oriented along a second axis relative to the frame and constructed and arranged for extension and retraction along the second axis in response to a second command signal, the second optical path means operatively coupled to the output end of the first optical path means for receiving the beam therefrom at one end and for delivering a collimated laser beam at an output end thereof;

third optical path means oriented along a third axis relative to the frame and constructed and arranged for extension and retraction along the third axis in response to a third command signal, the third optical path means operatively coupled to the output end of the second optical path means for receiving the beam therefrom at one end and for delivering a collimated laser beam from an output end thereof to a workpiece; and

control logic means for generating first, second and third command signals to move the laser beam across the workpiece in accordance with a machining program, and including laser control means for generating command signals for varying the intensity of the laser beam in accordance with the machine program to match the machining characteristics of the laser beam to the stored characteristics of the workpiece.

4,555,611

METHOD AND APPARATUS FOR UNIFORMLY HEATING ARTICLES IN A VACUUM CONTAINER

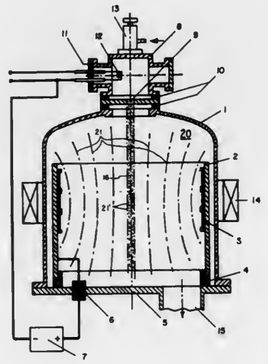
Eberhard Moll, Triesen, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Aug. 26, 1983, Ser. No. 526,526

Claims priority, application Switzerland, Sep. 10, 1982, 5389/82

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—121 **7 Claims**



1. A method of uniformly heating articles in a vacuum container comprising: supporting the articles on an anode; bombarding the articles with electrons from a magnetically beamed low voltage arc discharge sustained between the anode, which is provided in the container, and a hot cathode which is provided in a cathode chamber communicating with the container through an aperture; and during the bombarding operation maintaining a magnetic field such that lines of magnetic force which extend through the aperture between the cathode chamber and the container do not extend through and do not intersect the articles to be heated.

4. A device for heating articles in a vacuum, comprising a container having an interior chamber, means defining a hot cathode chamber connected to said interior chamber, means for directing a plasma flame past the articles to be heated, a support for the articles to be heated positioned in the interior of said chamber and defining an anode, there being an aperture defined between said hot cathode chamber and the interior of said container means connected between said anode and said cathode for electrically energizing said anode and cathode to generate a low voltage arc discharge for bombarding the articles, and means for generating a magnetic field having lines of force favoring the generation of the plasma and extending through the aperture in a direction so as to intersect any surfaces of the articles.

4,555,612

PLASMA JET CLEANING APPARATUS AND METHOD

Michael F. Collins, Scotia, and Francis D. Lordi, Rotterdam Junction, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,668

Int. Cl.⁴ B23K *9/00*

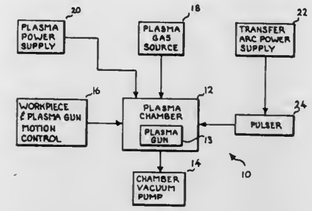
U.S. Cl. 219—121 P **16 Claims**

1. Apparatus for plasma jet cleaning of a workpiece comprising:

means for producing a plasma jet impingable on a workpiece;

means for producing a negative voltage on said workpiece effective for maintaining a cathode current between said workpiece and said means for producing a plasma jet; and

means for cyclically varying said cathode current at a repetition frequency between a first current value which is effective to perform plasma jet cleaning of said workpiece



and a second, lower, current value in the same direction as said first current value, without an intervening current value of zero which is effective to enhance movement of said plasma jet over a surface of said workpiece whereby improved cleaning with reduced probability of workpiece surface damage is attained.

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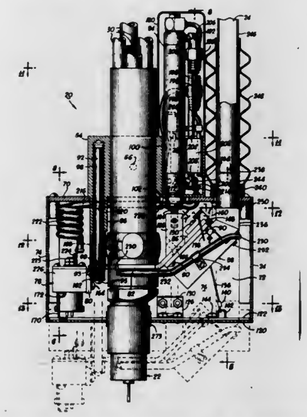
IMAGE SENSING AND WELDING ARRANGEMENT FOR MANIPULATOR WELDING APPARATUS

Burt H. Shulman, Salt Point, N.Y., assignor to Unimation, Inc., Danbury, Conn.

Filed Oct. 17, 1984, Ser. No. 661,587

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—124.34 **24 Claims**



1. An image sensing arrangement for a manipulator arm having a plurality of arm sections interconnected by rotary joints and a hand rotatably connected to the end of the outermost one of said arm sections,

a welding torch connected to said hand;

a sensing assembly carried by said hand and movable relative to said welding torch, said assembly comprising a projection source and an optical sensing unit including an objective lens;

a camera mounted on said outermost arm section;

a fibre optic cable connected between said objective lens and said camera to permit rotation of said hand relative to said outermost arm section and movement of said assembly relative to said welding torch;

means for normally positioning said assembly within a housing carried by said hand; and

means for moving said assembly along a line parallel to the axis of said welding torch to a sensing position outside said housing..

4,555,614

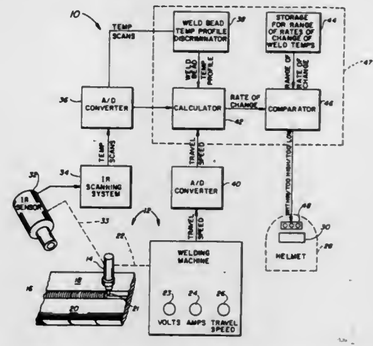
WELD METAL COOLING RATE INDICATOR SYSTEM

Richard A. Morris, Severna Park; William E. Lukens, Annapolis, and Charles A. Zanis, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 24, 1984, Ser. No. 685,943

Int. Cl.⁴ B23K *9/10*

U.S. Cl. 219—130.01 **8 Claims**



1. A weld metal cooling rate indication system for a welding machine wherein the welding machine has a torch which is capable of producing a weld bead and has a speed sensor which senses the speed at which the torch travels as selected by an operator, the indication system comprising:

measns for continuously sensing a temperature versus distance profile curve along the weld bead, said profile curve including a predetermined weld temperature;

means responsive to the temperature versus distance profile curve sensing means and the speed sensor for calculating and producing a signal which represents rate of change of weld temperature at said predetermined weld temperature along the weld bead;

means for producing signals which are representative of a range of acceptable rates of change of weld temperatures at said predetermined weld temperature;

means responsive to the calculating means and the producing means for comparing the rate of change of temperature signal with a range of acceptable rates of change of weld temperature signals and producing signals which represent whether the rate of change of temperature is within, above, or below the said range; and

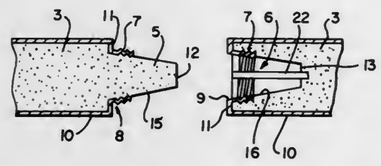
means responsive to the comparing means for indicating whether the rate of change of weld temperature is within, above, or below the range of acceptable rates of change of weld temperatures.

4,555,615

CARBON ROD ASSEMBLY FOR ARC GOUGING AND BLASTING OF METALLIC ARTICLE

Haruo Yasuda, Ohgaki; Kunihiko Yoshida, Motosu; Yasuro Iwai, Ohgaki, and Takayuki Mizutani, Yoro, all of Japan, assignors to Ibigawa Electric Industry Company, Ltd., Japan

Continuation of Ser. No. 352,758, Feb. 26, 1982, Pat. No. 4,492,850. This application Aug. 6, 1984, Ser. No. 637,784
Claims priority, application Japan, Mar. 3, 1981, 56-29348
The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.
Int. Cl.[4] B23K *9/24*
U.S. Cl. 219—145.21 **6 Claims**



1. A carbon rod assembly for arc gouging and blasting of a metallic article, comprising:

a first carbon rod piece having a substantially frusto-conical axial projection formed at one end thereof, the diameter of said projection being smaller than the diameter of said first carbon rod piece at said one end thereof and decreasing as said projection extends away from said first carbon rod piece, said projection having from one-half to three turns of external screw threads formed on a foot portion thereof, and a conductive metallic coating continuously covering the outer periphery of said first carbon rod piece and said external threads; and

a second carbon rod piece having a frusto-conical axial socket hole formed at an open end thereof, the diameter of said socket hole being smaller than the diameter of said second carbon rod piece, said socket hole having from one-half to three turns of internal screw threads formed adjacent said open end portion thereof, and a conductive metallic coating continuously covering the outer periphery of said second carbon rod piece and said internal screw threads;

wherein said substantially frusto-conical projection and said frusto-conical axial socket hole have the same taper, the axial length of said projection being smaller than the axial depth of said socket hole, wherein said socket hole of said second carbon rod piece is bisected by an axial slit formed at said open end of said second carbon rod piece, whereby said first and second carbon rod pieces are adapted to be firmly joined together by inserting said projection into said socket hole and rotating said carbon rod pices relative to each other.

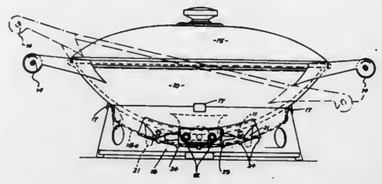
4,555,616

ELECTRICALLY HEATED WOK

William J. O'Brien, Vaucluse, Australia, assignor to Breville Holdings Pyt. Limited, New South Wales, Australia

Filed Aug. 28, 1984, Ser. No. 645,171
Claims priority, application Australia, Aug. 31, 1983, PG1159
Int. Cl.[4] F27D *11/02*
U.S. Cl. 219—432 **7 Claims**

1. An electrically heated wok comprising a bowl of rigid heat-conductive material having a wall the inner surface of which is a smooth part-spherical surface and the outer surface of which is smooth and part-spherical except in its central area, the wall being of substantial thickness, an electrical heating element embedded in the underside of the bowl and electrically insulated therefrom, an electrical connector means for enabling an electrical connection to be made to said heating element, an annular supporting skirt of rigid material surrounding said heating element and making sliding contact with the smooth portion of the undersurface of the bowl, guiding means for guiding movement of the bowl in relation to the skirt,



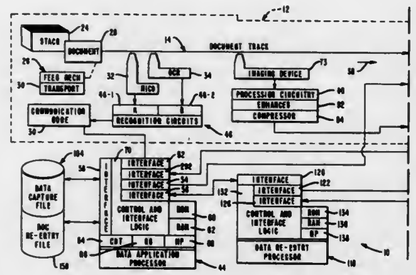
means on the bowl engaging said guiding means and means for locking the bowl in any one of a plurality of positions in relation to said skirt.

4,555,617

CONCURRENT, IMAGE-BASED, REJECT-RE-ENTRY REPAIR SYSTEM AND METHOD

Ralf M. Brooks, and Daniel A. Lepic, both of Waterloo, Canada, assignors to NCR Canada Ltd.-NCR Canada Ltee, Mississauga, Canada

Filed Dec. 23, 1982, Ser. No. 452,524
Int. Cl.[4] G06F *15/30*
U.S. Cl. 235—379 **14 Claims**



1. A document re-entry and repair system comprising:

a reader/sorter having a reject pocket into which rejected documents are fed, said rejected documents meaning those documents which have the entire monetary amount missing thereon; and

means for encoding data on said rejected documents, with said means for encoding data being connected to said reject pocket to receive said rejected documents from said reject pocket as said rejected documents are fed into said reject pocket by said reader/sorter to provide on-line encoding of said rejected documents.

4,555,618

METHOD AND MEANS FOR COLLECTING HIGHWAY TOLLS

Bernard N. Riskin, Lambertville, N.J., assignor to R L Associates, Yardley, Pa.

Filed Jun. 2, 1983, Ser. No. 500,584
Int. Cl.[4] G07B *15/02*
U.S. Cl. 235—384 **19 Claims**

1. The method of extending credit to, and thereafter billing, individual customers of a credit grantor for fees incurred by operation of a vehicle indentified with the customer past any one of a plurality of given scanning locations, that comprises the steps of:

(a) providing each customer with a machine-readable bar code element that is issued by the credit grantor, bears an account identification, and is adapted to be attached to an exteriorly visible surface of the customer's vehicle;

(b) machine-reading said element while the vehicle is in movement past said location;

(c) transmitting the machine-read data from said locations through a computer system common to all of said locations, to a central billing authority of the credit grantor; and

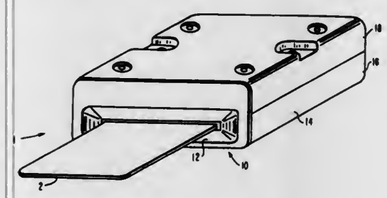
(d) transferring said data, at the location of the billing authority, to billings addressed to the customers in the amounts chargeable for operation of their vehicles past said point.

4,555,619

DRIVER KEY CAR IDENTIFYING SYSTEM

Eric G. Anderson, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 19, 1983, Ser. No. 496,043
Int. Cl.[4] G06K *19/06*
U.S. Cl. 235—492 **15 Claims**



1. A key card system comprising:

(a) a key card receiver having a jack with plural terminals including power-out terminals, power-in terminals and data terminals;

(b) a power source connected to the power-out terminal;

(c) a key card having first and second sides, power-in contacts and power-out contacts located on both sides, first connection means connecting the power-in contacts with the power-out contacts including means to connect them through a body of the card, a plurality of data contacts located on opposite sides of the card, a plurality of conductors located on opposite sides of the card and connecting the power-in contacts to the data contacts, the conductors on one side of the card being alternately looped, second connection means extending through the body of the card connecting distal ends of the looped conductors to conductors on an opposite side of the card in opposite sequential order thereby enabling the cord to be inserted into the receiver with either side up;

(d) means for interrupting selected conductors for producing a binary code of shorted and interrupted conductors on the data contacts;

(e) converting means connected to the data terminals for converting binary shorted or open data from the key card concurrently received on the data terminals to sequential data; and,

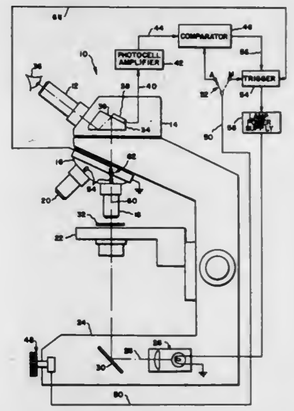
(f) signal output means connected to the converting means for carrying the sequential data to a remote location.

4,555,620

AUTOMATIC ILLUMINATION CONTROL FOR MULTI-OBJECTIVE OPTICAL INSTRUMENTS SUCH AS MICROSCOPES

William D. Bridson, Ontario, and Edward N. Esmay, Webster, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jan. 11, 1983, Ser. No. 457,301
Int. Cl.[4] G01J *1/32*
U.S. Cl. 250—205 **7 Claims**



1. In an optical instrument having an optical axis, a plurality of objectives selectively positionable along said optical axis, and means, including an illuminator, for producing a preselected light level at a receptor plane positioned along said axis, apparatus for automatically maintaining said preselected light level at said receptor plane, regardless of which of said objectives is positioned along said optical axis, said apparatus comprising:

a photocell mounted relative to said optical axis to detect at least a portion of said preselected light level at said receptor plane, said photocell producing a signal proportional to the amount of light detected, said signal changing in response to a change in said preselected light level;

monitoring means for receiving and comparing said photocell signal with a preselected reference signal and producing an output comparison signal, said comparison signal changing in response to a change in said photocell signal;

trigger means receiving said comparison signal and sending an output signal proportional thereto to said illuminator, said output signal changing in response to a change in said comparison signal to thereby change the output of said illuminator to thereby maintain a preselected light level at said receptor plane; and

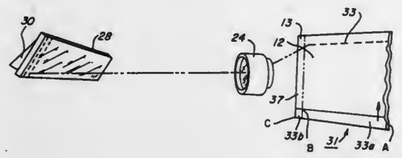
means responsive to a change from one objective to another, said means being electrically connected to said trigger means to overide and reduce the preselected light level to a further predetermined level of light when any objective is not aligned with said optical axis.

4,555,621

ILLUMINATION CONTROL SYSTEM UTILIZING AN INTEGRATING FEEDBACK DETECTOR

Wayne A. Buchar, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 24, 1983, Ser. No. 507,614
Int. Cl.[4] G01J *1/32*
U.S. Cl. 250—205 **4 Claims**



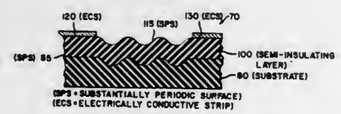
1. A document scanning system comprising:
an illumination source adapted to provide incremental line illumination during a scan cycle of a document at an object plane;
a projection lens for projecting incremental line images reflected from said document along an optical path onto a photosensitive image plane forming a latent image of the document on the image plane during the scan cycle;
at least one mirror positioned on the image side of said projection lens and along the optical path, said mirror adapted to reflect the projected incrementally scanned image lines onto said image plane, said mirror further adapted to incorporate an optically transparent area extending along the height of said mirror;
an illumination detector comprising a light guide member for coupling light entering said transparent area and adapted to direct said coupled light onto a photosensor contained within said member, said photosensor generating an output signal representative of the integrated level of the illumination impinging thereon during said scan cycle; and
control means for adjusting the output of said illumination source in response to said photosensor output signal.

4,555,622

PHOTODETECTOR HAVING SEMI-INSULATING MATERIAL AND A CONTOURED, SUBSTANTIALLY PERIODIC SURFACE

Alastair M. Glass, Rumson; Anthony M. Johnson, New Brunswick, and Paul F. Liao, Fair Haven, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1982, Ser. No. 445,460
Int. Cl.[4] H01L *31/00*
U.S. Cl. 250—211 J **26 Claims**



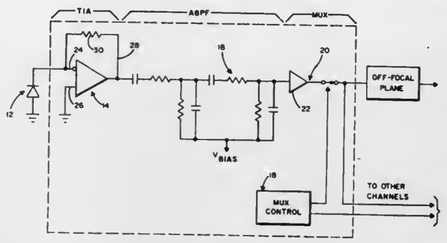
1. A photodetector, comprising:
a body which includes semi-insulating material and which includes means for detecting a change in said body when said body is exposed to electromagnetic radiation, characterized in that
said body also includes a contoured surface which is substantially periodic and includes prominences, the average spacing, Λ, between, and the composition of, said prominences being chosen to couple at least a portion of said radiation into said body in the form of a propagating electromagnetic wave traveling through said body adjacent said contoured surface and/or localized plasma resonances within said prominences.

4,555,623

PRE-AMPLIFIER IN FOCAL PLANE DETECTOR ARRAY

Walter F. Bridgewater, Santa Clara; Robert E. De Caro, Hermosa Beach; Roger Larson, Fullerton, and Llewellyn E. Wall, Irvine, all of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Filed Dec. 5, 1983, Ser. No. 558,099
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—214 A **11 Claims**



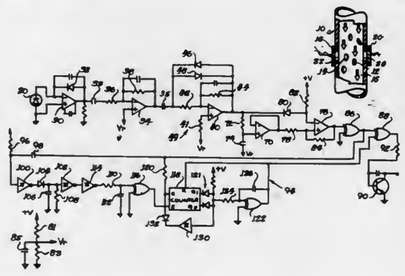
1. A focal plane optical-electronics systems comprising:
a plurality of densely packed photo-detectors, each electrically connected to a separate circuit;
a single-stage pre-amplifier in each photo-detector circuit having its input connected to its photo-detector and including a matched differential pair of MOSFET transistors;
means in each photo-detector circuit for limiting the current available to the pre-amplifier to cause it to operate in the weak-inversion mode; and
means in each photo-detector circuit for providing feedback resistance between the pre-amplifier output and its photo-detector input.

4,555,624

HIGH RATE SEED SENSOR

David E. Steffen, Chatham, Ill., assignor to DICKEY-john Corporation, Auburn, Ill.

Filed Feb. 22, 1983, Ser. No. 468,858
Int. Cl.[4] H03K *21/04;* **G01D** *21/00*
U.S. Cl. 250—223 R **15 Claims**



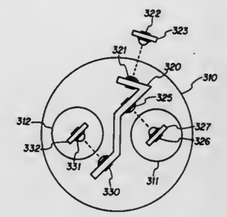
1. An improved circuit for a seed sensor which includes a light source and light responsive means respectively positioned along a path of travel of seeds for producing a momentary change in signal level from the light responsive means in response to a momentary change of level of light incident thereupon from said light source due to the passage of one or more seeds therebetween, said circuit comprising: a switching circuit responsive to said change in signal level from said light responsive means for producing an output signal including a discrete pulse signal in response to the initiation of said change in signal level and thereafter a further discrete pulse signal in response to each change in the direction of said change in signal level.

4,555,625

PRECISION DRUM ENCODER

Donald E. Mosier, and Michael R. Cascini, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 21, 1983, Ser. No. 477,202
Int. Cl.[4] G01D *5/34*
U.S. Cl. 250—231 SE **11 Claims**



1. A position encoder comprising in combination:
a. a plurality of light sensors rigidly attached to a frame member;
b. a plurality of light sources matching said light sensors and in cooperation therewith, and rigidly attached to said frame member; and
c. a plurality of drum-shaped masks, at least one of said plurality of masks having a smaller circumference than another one of said plurality of masks, and said masks are disposed interjacent said light sources and said light sensors, masks are rigidly attached to an arm, said arm rotationally moveable relative to said frame member, wherein said masks interrupt said cooperation between said light sources and said light sensors as a function of rotational movement of said arm wherein at least two of said drum-shaped masks are positioned relative to each other having a first mask at least partially inside the second mask.

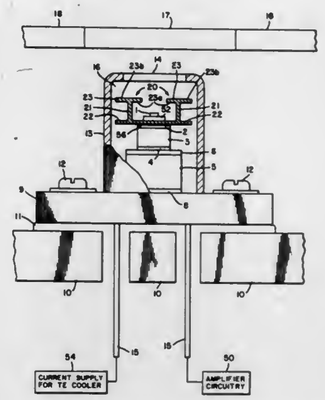
4,555,626

RADIATION SHIELD IN LIGHT DETECTOR AND/OR ASSEMBLY

Arata Suzuki, Ramsey, N.J., assignor to Capintec Inc., Ramsey, N.J.

Filed Aug. 3, 1982, Ser. No. 404,825
Int. Cl.[4] H01J *5/02*
U.S. Cl. 250—239 **17 Claims**

1. A radiation shield for use with a detector disposed in and defining a first horizontal plane, a thermoelectric cooler adapted to cool said detector, a case enclosing a volume of space about said detector and said cooler, a light-transmissive window in said case adapted to admit radiation into the enclosed volume and onto said detector, means for electrically coupling said detector and said cooler to respective external circuitry, said shield comprising:
a first shield means being disposed in a second horizontal plane parallel to and vertically spaced from said detector and said first horizontal plane, and disposed within said enclosed volume, said first shield means having an opening therein to allow the radiation admitted through said light-transmissive window to impinge on said detector;
a second shield means extending vertically between the first and second horizontal planes; and
said first shield means having portions extending both inward and outward with respect to said detector and said second shield means;



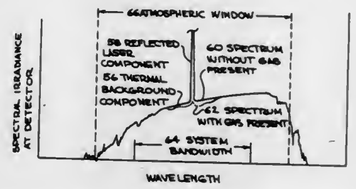
whereby to shield said detector from radiation not admitted through said light-transmissive window.

4,555,627

BACKSCATTER ABSORPTION GAS IMAGING SYSTEM

Thomas G. McRae, Jr., Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 5, 1983, Ser. No. 482,380
Int. Cl.[4] G01N *21/35*
U.S. Cl. 250—334 **17 Claims**



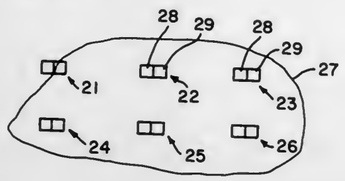
1. Method for detecting the presence of an invisible cloud of gas over a terrain, comprising:
irradiating an area of the terrain within infrared laser radiation at a single wavelength which is absorbed by the gas and reflected or backscattered by the terrain;
detecting background infrared radiation from the irradiated area of the terrain;
detecting backscattered laser radiation from the irradiated area of the terrain;
producing an image of the terrain from the background radiation;
enhancing the image of the terrain with the backscattered laser radiation, the irradiating infrared radiation being of sufficient power so that the enhancement of the image by backscattered radiation is about equal in brightness to the image produced by the background radiation;
producing a region of detectable contrast or shadow over the image of the terrain when the gas is present, said region being primarily due to absorption of the laser light by the gas.

4,555,628

METHOD FOR MEASURING THE CAMOUFLAGING CAPACITY OF A SMOKE

Bengt-Ake Agren, Trumpetvägen 100, S-633 47 Eskilstuna, Sweden

Filed Mar. 25, 1983, Ser. No. 478,987
Claims priority, application Sweden, Mar. 30, 1982, 8202007
Int. Cl.⁴ G01S 5/16
U.S. Cl. 250—341 5 Claims



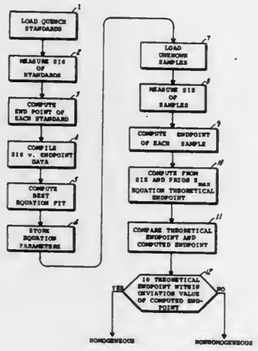
1. Method for measuring the camouflaging capacity of a smoke, comprising the following steps:
(a) locating a predetermined number n of radiating elements side by side to form a group, n being an integer >1;
(b) selecting the radiation intensities of said radiating elements such that the intensities are mutually different and increases on a scale with respect to the background radiation level;
(c) locating a radiation detector facing towards said group of radiating elements;
(d) spacing said radiating elements within said group sufficiently apart from one another such that said radiation detector can detect said radiating elements as n separate and individual items having mutually different high radiation intensity peaks;
(e) discharging said smoke in an area between said radiation detector and said group of radiating elements, said smoke thereby causing a change of said background radiation level; and
(f) counting the number of said radiation peaks which cannot be distinguished by said radiation detector with respect to said changed background radiation level.

4,555,629

METHOD AND APPARATUS FOR DETERMINATION OF SAMPLE HOMOGENEITY IN SCINTILLATION COUNTING

Leroy J. Everett, Glen Ellyn, and Stanley J. DeFilippis, Woodridge, both of Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Sep. 6, 1983, Ser. No. 529,439
Int. Cl.⁴ G01T 1/204
U.S. Cl. 250—362 5 Claims



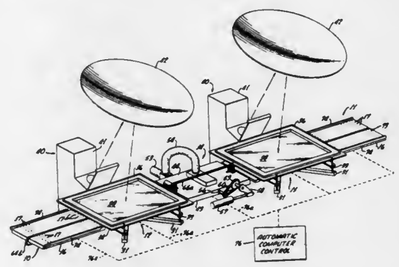
1. A liquid scintillation counting system for use with a test sample containing one, or more, radioactive isotopes together with a liquid scintillator, the degeneration of an isotope distributed in a known manner over spectrum, comprising:
transducer means for converting each pulse emanating from said test sample to an electrical signal proportional thereto;
coincidence means connected to said transducer means for eliminating pulses which do not fall within a predetermined time differential window thus passing only those pulses which relate to a nuclear event;
quantizing means connected to said coincidence means for identifying a parameter of each pulse passed by said coincidence means;
processing means, including storage means, connected to said quantizing means for receiving and storing parameter data related to each nuclear event, for calculating the radionuclide endpoint, for calculating a calibration curve associated with each radioactive isotope, and for comparing the computed endpoint of a test sample with the theoretical endpoint to determine if said test sample deviates by more than a predetermined amount thereby identifying heterogeneous states.

4,555,630

AUTOMATIC SYSTEM FOR EXPOSING AND HANDLING DOUBLE-SIDED PRINTED CIRCUIT BOARDS

Ronald E. Sheets, Santa Ana; George A. Barbas, Dana Point; Howard W. Doering, Jr., Garden Grove, and John R. Bjorkman, Costa Mesa, all of Calif., assignors to Tamarack Scientific Co., Inc., Anaheim, Calif.

Continuation-in-part of Ser. No. 470,571, Feb. 28, 1983, abandoned. This application Dec. 9, 1983, Ser. No. 559,746
Int. Cl.⁴ B65G 47/24
U.S. Cl. 250—492.1 33 Claims



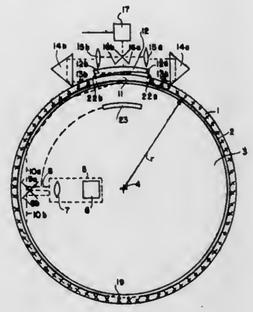
1. An automatic system for exposing and handling double-sided printed circuit boards, said system comprising:
(a) first apparatus for exposing one side of a printed circuit board, and thus causing said one side to receive an image corresponding to artwork located at said first apparatus,
(b) second apparatus for exposing the other side of said board, and thus causing said other side to receive an image corresponding to artwork located at said second apparatus, and
(c) apparatus for automatically conveying said board from said first apparatus to said second apparatus without effecting substantial scuffing of said board, and for automatically inverting said board after said one side thereof receives an image and before said other side thereof receives an image, said inverting also being effected in the absence of substantial scuffing of said board,
said means (c) comprising means to effect floating of said board on an air bearing while traveling between said first and second apparatuses.

4,555,631

APPARATUS FOR TRANSMITTING SIGNALS BETWEEN TWO RELATIVELY ROTATABLE PARTS

Gerhard Martens, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,544
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3205065
Int. Cl.⁴ G02B 27/00
U.S. Cl. 250—551 9 Claims



1. Apparatus for transmitting signals between a first part and a second part which are relatively rotatable about an axis of rotation wherein:
the first part comprises a hollow cylinder with an axis which is disposed along the axis of rotation and having an inner reflective surface;
a portion of said second part is disposed within said hollow cylinder and reflective surface; and further comprising
a light-emitting device;
a light-receiving device, a first of said light-emitting and light-receiving devices being affixed to the first part and the second of the light-emitting and light-receiving devices being affixed to the second part;
means for directing at least one beam of light from the light-emitting device onto the reflective inner surface of the cylinder at a grazing angle which is sufficiently small so that the beam(s) are repeatedly reflected by the inner surface along a path around and within the inner surface of the hollow cylinder without intervening reflection from portions of the second part which are contained within said hollow cylinder;
coupling section means, fixedly disposed with respect to the hollow cylinder and through which the light beam(s) are transmitted so that the first of the light-emitting and light-receiving devices is an optical connection with the second of the light-emitting or light-receiving devices from every possible relative position of the first part with respect to the second part.

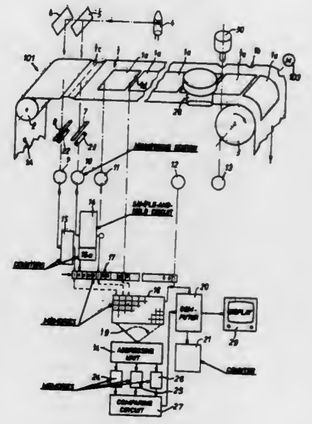
4,555,632

METHOD AND APPARATUS FOR ASCERTAINING THE DIMENSIONS AND POSITIONS OF FILM FRAMES ON COHERENT ROLL FILMS

Peter Vockenhuber, Concise, Switzerland, assignor to AGFA-Gevaert A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,999
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3237053
Int. Cl.⁴ G01N 21/86; G01V 9/04
U.S. Cl. 250—560 20 Claims

1. A method of automatically ascertaining the locations and the length of image areas, particularly film frames, in each of a series of successive portions of an elongated strip of photosensitive material wherein portions having longer image areas alternate at random with portions having shorter image areas and wherein successive image areas of each portion alternate with non-image areas, particularly with frame lines, comprising the steps of effecting a relative movement between the strip and a monitoring station; photoelectrically monitoring at said station the radiation-transmissivity of successive narrow transversely extending increments of the strip during successive intervals which elapse for relative movement between said station and a longer image area and generating signals denoting the monitored transmissivity whereby the intensity of signals which are generated during monitoring of non-image areas deviates from that of signals which are generated during monitoring of image areas; storing the signal which is generated as a result of monitoring the non-image area in front of each longer or shorter image area; replacing each stored signal with a second signal, if any, whose intensity deviates unequivocally from the intensity of the stored signal, which is generated during the interval following storage of the signal denoting the monitoring of a non-image area in the course of relative movement between said station and a given portion of the strip, and which is indicative of a non-image area; and utilizing the stored signals as a criterion of the length of image areas in the corresponding portions of the strip.

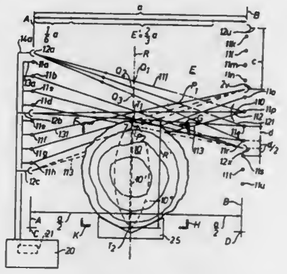


4,555,633

PHOTOELECTRIC DIMENSION MEASURING SYSTEM

Mats Björkelund, Västerås, Sweden, assignor to Kockumation AB, Remadivisionen, Västerås, Sweden

Filed Aug. 2, 1982, Ser. No. 404,422
Claims priority, application Sweden, Aug. 26, 1981, 8105051
Int. Cl.⁴ G01N 21/86
U.S. Cl. 250—560 17 Claims



1. A method of indicating the presence of an object in a measuring zone E, and of measuring with a degree of accuracy

depending on the cross-sectional shape of the object, the extent of the object along a reference line R located in the measuring zone comprising:

positioning plural groups of stationary radiation emitters and receivers on opposing sides of said measuring zone so that radiation paths between them intersect in the measuring zone, each group including at least one emitter and at least one receiver;

sucessively actuating and deactivating said emitters in a scanning sweep;

successively interrogating one group of receivers after another at the same pace as the emitters are activated and deactivated, each group of receivers comprising at least one receiver;

each activated emitter emitting radiation along diverging paths toward a plurality of receivers on the opposite side, and each activated receiver receiving radiation along converging paths from a plurality of emitters on the opposite side, whereby a network of radiation paths is created in the measuring zone having intersections with fixed predetermined locations;

determining with electronic computer means which intersections are occupied by the object and the extent of the object along the reference line to establish with said degree of accuracy two uninterrupted intersections on the reference line between which a length of screened-off intersections lies; and

repeating the scanning sweep and successive interrogation of receivers as desired in a plurality of cross-sectional planes relative to the object as the latter is transported at right angles to the planes past the emitters and receivers.

4,555,634

OPTICAL SMOKE DETECTOR WITH CONTAMINATION DETECTION CIRCUITRY

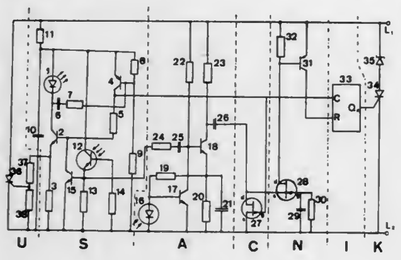
Jürg Muggli; Heinz Güttinger, and Zoltan Horvath, all of Männedorf, Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Nov. 3, 1982, Ser. No. 439,059

Claims priority, application Switzerland, Nov. 11, 1981, 7248/81

Int. Cl.⁴ G01N *21/53*; G08B *17/10*

U.S. Cl. 250—565 **15 Claims**



1. A smoke detector comprising:

a radiation source operated in a pulsed mode;

said radiation source delivering a beam of radiation and source output pulses corresponding to the pulsed mode operation of said radiation source;

a radiation receiver arranged externally of a direct radiation region of the radiation source;

said radiation receiver in the presence of smoke in the radiation region being impinged by scattered radiation and delivering receiver output pulses of an amplitude corresponding to the scattered radiation received by the radiation receiver;

an evaluation circuit containing switching elements which, when the number of source output pulses exceeds a predetermined threshold value for the number of the source output pulses, deliver a signal to a toggle stage for outputting an alarm signal;

a reference cell located in a direct beam of the transmitted radiation emanating from the radiation source and arranged near to the radiation receiver;

said reference cell controlling the transmission of radiation from the radiation source;

means for setting an amplitude threshold value for the amplitude of said receiver output pulses delivered by said radiation receiver;

means for adjusting said amplitude threshold value for the amplitude of said receiver output pulses delivered by said radiation receiver;

said adjusting means adjusting said amplitude threshold value, in the presence of slow changes in the amplitude of the receiver output pulse, to an adjusted amplitude threshold value at a rate corresponding to a time-constant greater than one minute;

said adjusting means being operatively connected with said switching elements contained in said evaluation circuit;

said adjusting means, in the presence of either no change or said slow changes in said amplitude of said receiver output pulses relative to said set amplitude threshold value, blocking said switching elements contained in said evaluation circuit from delivering said signal to said toggle stage for outputting said alarm signal; and

said adjusting means, in the presence of an amplitude of said receiver output pulses in excess of said set amplitude threshold value, enabling said switching elements contained in said evaluation circuit to deliver said signal to said toggle stage for outputting said alarm signal.

4,555,635

SURFACE FLAW INSPECTION APPARATUS FOR A CONVEX BODY

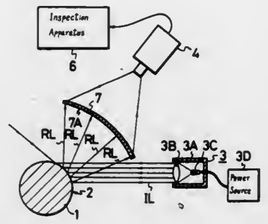
Hajime Yoshida, Chofu, Japan, assignor to Hajime Industries, Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,165

Claims priority, application Japan, Jun. 15, 1982, 57-102699

Int. Cl.⁴ G01N *21/88*

U.S. Cl. 250—572 **8 Claims**



1. Apparatus for inspecting the surface of a convex body for flaws, comprising:

(a) a light source directly irradiating a surface of an object to be inspected with a substantially parallel light flux, said surface of the object being curved;

(b)image sensing means receiving the reflected light from said curved surface of the object and producing a corresponding electrical signal;

(c) inspection means receiving the electrical signal from said image sensing means and determining whether or not there is a flaw on the surface of said object; and

(d) a projection screen located in the light path from said light source through said curved surface of the object to said image sensing means on which the image of the irradiated area of the curved surface of the object by the parallel light flux from said light source is formed, said projection screen being curved such that each of the distances of reflected light fluxes at the respective points with the irradiated area of said curved surface of the object is substantially equal to each other, said image sensing means picking up the image on said projection screen.

4,555,636

PATTERN DETECTOR

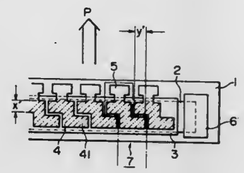
Hakubun Fujisawa; Masaharu Nishiura; Hiromu Haruki, and Yoshiyuki Uchida, all of Kanagawa, Japan, assignors to Fuji Electric Company, Ltd. and Fuji Electric Corporate Research & Development, Ltd., both of Kanagawa, Japan

Filed Sep. 14, 1982, Ser. No. 417,944

Claims priority, application Japan, Sep. 16, 1981, 56-145712

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—578 **8 Claims**



1. A pattern detector comprising a substrate; a linear array of photoelectric converter elements on said substrate, consecutive converter elements in said linear array arranged to overlap one another by a predetermined length in a direction perpendicular to the direction in which said converter elements are arrayed.

4,555,637

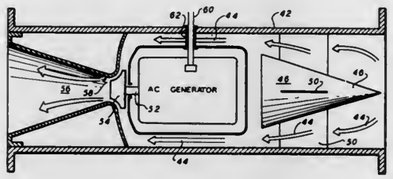
HIGH SPEED TURBOGENERATOR FOR POWER RECOVERY FROM FLUID FLOW WITHIN CONDUIT

Michael D. Irvine, La Mirada, Calif., assignor to ACD, Inc., Santa Ana, Calif.

Filed Jul. 26, 1982, Ser. No. 401,781

Int. Cl.⁴ F01D *15/10*; H02K *7/18*

U.S. Cl. 290—52 **9 Claims**



1. A power recovery system for obtaining electrical power from a flowing fluid, said system comprising:

a conduit through which a fluid passes of a predetermined minimum flow and pressure;

a restriction means in said conduit forming a flow path of reduced area for the fluid,

a high speed turbogenerator comprising an electrical generator, said electrical generator having a rotating shaft and a pair of bearings, said shaft having one end thereof extending outwardly from one of said bearings, and a radial inflow expander wheel directly affixed to the extended end of said shaft,

said high speed turbogenerator positioned entirely within said conduit and having said expander wheel adjacent said restriction means such that fluid passing through said restriction means causes rotation of said expander wheel at a speed of about 6,000 rpm to about 32,000 rpm and with a reduction in pressure,

means to pass electrical wiring carrying current from said high speed turbogenerator through said conduit to a utilization means external of said conduit.

6. A method of producing electricity from the flow of fluid through a conduit comprising the steps of:

locating entirely within the conduit an electrical generator having affixed to its main shaft a radial inflow expander wheel,

directing the flow of fluid through the radial inflow expander wheel to rotate the same,

transmitting the power generated by the electrical generator through the conduit for outside utilization.

4,555,638

FUSE AND DISTRIBUTION ARRANGEMENT BOX FOR MOTOR VEHICLES

Hartwig Lobe, Unterschleissheim, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

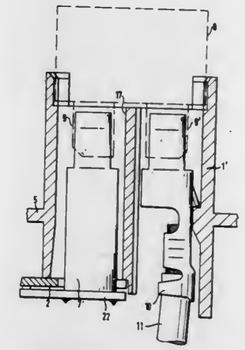
Continuation of Ser. No. 355,734, filed as PCT 81/00020, Jun. 11, 1981 § 102(e) date Feb. 12, 1982, abandoned.

This application Jan. 30, 1985, Ser. No. 696,862

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022115

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 307—10 R **6 Claims**



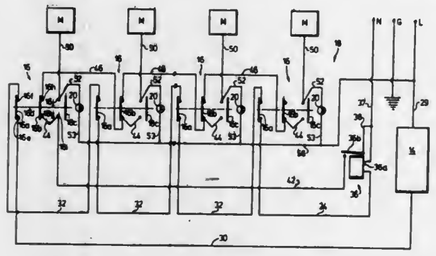
1. A fuse and distribution box arrangement for motor vehicles wherein an electrical load is connected to a printed circuit board in the distribution box by an electrical fuse, the arrangement comprising a distribution box means for housing a printed circuit board, a printed circuit board having a printed circuit connected to a power supply of a motor vehicle, an electrical fuse having a plurality of contacts, first discrete spring-biased contact means associated with an electrical load for connecting the load to one of the plurality of contacts of the fuse, and second spring-biased contact means associated with said printed circuit for connecting another of said plurality of contacts of said fuse to said printed circuit, and first spring-biased contact means including resilient means for attaching said first spring-biased contact means to said box means, said second spring-biased contact means being directly connected to the printed circuit board wherein the electrical load is connected to the printed circuit by the discrete spring-biased contact means associated with the load being positioned relative to the box means by the resilient means and the fuse interconnecting the first discrete spring-biased contact means associated with the load to the second spring-biased contact means associated with the power supply of the vehicle.

4,555,639

MONEY-OPERATED UNIT CONTROL SYSTEM

Bernard Melek, 92 Dunthorne Ct., Scarborough, Ontario, Canada (M1B 2S9)

Filed Jun. 28, 1984, Ser. No. 625,775
Int. Cl.[4] G07F *13/00, 5/18*
U.S. Cl. 307—38 **5 Claims**



1. A central control panel to be used in association with a source of electric power, defining at least two power terminals, and a plurality of electrical units, each such unit including a unit controller device operable to control the functioning of the unit upon delivery of a start signal to the unit controller device, the start signal being a signal from a pre-determined terminal of the power source, wherein the control panel comprises:

a power input means connectable to a first power terminal of the power source;

a plurality of electrical switch means, each such switch means defining two normally closed switches and a normally open switch, each switch defining two terminals, the three switches being ganged together for simultaneous operation, one of the normally closed switches of each switch means being connected in a first series to each corresponding normally closed switch and to the power input means, another of the normally closed switches of each switch means being connected in a second series with each corresponding another normally closed switch, a first terminal of each normally open switch being connected to an electrical unit controller device, a second terminal of each normally open switch being connected with a terminal of the said another normally closed switch within the same switch means, and,

a control relay means, including an energizing circuit and a normally open relay switch, the energizing circuit being connected in series to the normally closed switch of a last switch means in the said first series, the energizing circuit being connectable to the second power terminal of the power source, whereby a voltage difference may be defined across the energizing circuit, the relay switch being connectable between the pre-determined terminal of the power source and the normally closed switch of the first switch means in the said second series.

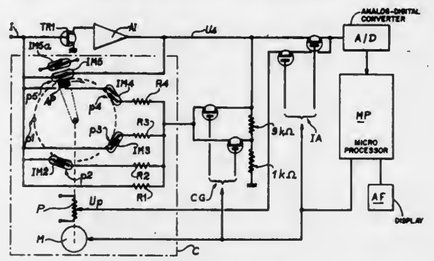
4,555,640

AUTOMATIC HIGH INSULATION SWITCH

Bernard Bonnet, Paris; Roger Bressy, le Plessis Robinson, and Jean-Claude Sevaille, Savigny le Temple, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 8, 1983, Ser. No. 511,923
Claims priority, application France, Jul. 9, 1982, 82 12115
Int. Cl.[4] H01H *19/00*
U.S. Cl. 307—115 **2 Claims**

1. A high insulation automatic switch with a low consumption level and small overall dimensions, which is to be associated with an electrometric apparatus constituted by an integrated amplifier, preceded by at least one field effect transistor having an insulated gate and a very low leakage current, the transistor-amplifier assembly being linearly negatively fed back by high value resistors, switched in accordance with the range of measurements to be used by flexible reed interrupters or switches and magnetically controlled by a permanent magnet, wherein the high insulation automatic switch also comprises a servomechanism with a motor and a potentiometer for positioning the permanent magnet facing one of the magnetically controlled, flexible reed interrupters, means being provided for comparing the output voltage of the amplifier and the voltage supplied by the potentiometer with reference values characterizing the position of the permanent magnet and



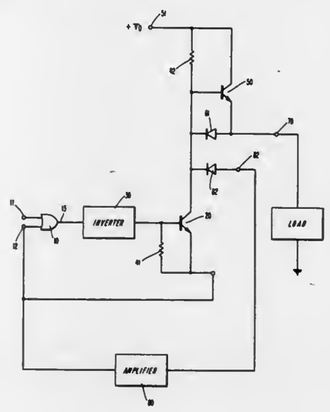
consequently controlling the motor, wherein another magnetically controlled, flexible reed switch, facing which is positioned the permanent magnet stopping the apparatus, ensures the short-circuiting of the transistor-amplifier assembly, when the apparatus is deenergised, and wherein the other magnetically controlled, flexible reed interrupter is associated with another magnetically controlled, flexible reed interrupter for cutting off the power supply to the measuring apparatus in the stop position.

4,555,641

PULSE SIGNAL CONTROL CIRCUITS WITH IMPROVED TURN-OFF CHARACTERISTIC

Hiroshi Hada, and Tsutomu Hirayama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 23, 1983, Ser. No. 497,047
Claims priority, application Japan, May 24, 1982, 57-87476
Int. Cl.[4] H03K *17/60*
U.S. Cl. 307—254 **6 Claims**



1. A pulse signal control circuit comprising first and second transistors, a first diode connected between the emitter and base electrodes of said first transistor, said first diode having a polarity opposite to the diode characteristic between said emitter and base electrodes, a resistor having a high resistance

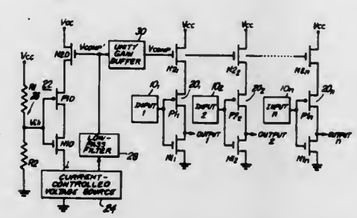
connected between the collector and base electrodes of said first transistor, a source of a reference potential connected to the collector electrode of said first transistor, means for connecting the collector electrode of said second transistor to the base electrode of said first transistor and to a second diode, a source of a first high frequency pulse signal connected to the emitter electrode of said second transistor, a source of a second high frequency pulse signal having the same phase as said first high frequency pulse signal connected to the collector electrode of said second transistor through said second diode, and a source of a pulse data input signal containing a high frequency input pulse signal connected to the base electrode of said second transistor, the phase of said high frequency input pulse signal being opposite to that of said first and second high frequency pulse signals, thereby producing an amplified pulse data output signal corresponding to said pulse data input signal on the emitter of said first transistor, said pulse data output signal containing a high frequency signal.

4,555,642

LOW POWER CMOS INPUT BUFFER CIRCUIT

Louis J. Morales, Nesconset, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Sep. 22, 1983, Ser. No. 534,783
Int. Cl.[4] H03K *19/01, 19/017, 19/092*
U.S. Cl. 307—475 **9 Claims**



1. An input buffer circuit comprising at least one buffer stage having an input for receiving a signal at one of two logical levels, an output, a first switching device connected between said input and said output, and a first control device connected to said first switching device; and an additional dummy input buffer stage having a second switching device and a second control device connected to said second switching device, said control devices and said switching devices are respectively complementary MOS devices means for applying an input signal at one of said logic levels to said second switching device to cause said second switching device to be conductive, and sensing means coupled to said second switching device and wherein said sensing means includes a source of a reference current operatively coupled to said first control device for comparing the current from said second switching device against said reference current and for producing a control signal responsive to that comparison; and means for applying said control signal to said second control device and to said first control device in said one buffer stage to tend to minimize the current in said first switching device.

4,555,643

SUPERCONDUCTING LOGIC CIRCUIT AND SUPERCONDUCTING SWITCHING DEVICE THEREFOR

Nobuo Kotera; Yuji Hatano, both of Kokubunji; Atsushi Asano, Hachioji, and Ushio Kawabe, Hamuramachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,716
Claims priority, application Japan, Jul. 1, 1981, 56-101221
Int. Cl.[4] H03K *19/195*
U.S. Cl. 307—476 **10 Claims**

1. A superconducting logic circuit comprising:

a first power source terminal connected with a current source;

a second power source terminal connected with a current sink;

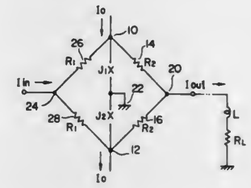
a first superconducting switching device connected between said first power source terminal and ground, said first superconducting switching device having a control terminal;

a second superconducting switching device connected between said second power source terminal and ground, said second superconducting switching device having a control terminal; p1 first and second resistors having one terminal thereof connected with said first and second power source terminals, respectively; and

third and fourth resistors having one terminal thereof connected with the control terminals of said first and second superconducting switching devices, respectively,

wherein said first and second resistors have another terminal thereof connected with each other at a node to provide a logic output terminal, and

wherein said third and fourth resistors have another terminal thereof connected with each other at a node to provide a logic input terminal.

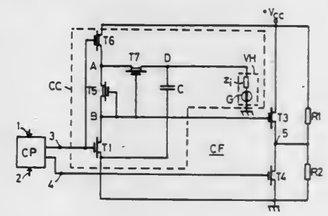


4,555,644

OUTPUT INTERFACE FOR A THREE-STATE LOGIC CIRCUIT IN AN INTEGRATED CIRCUIT USING MOS TRANSISTORS

Daniele Devecchi, Desio, and Guido Torelli, S. Alessio, both of Italy, assignors to SGS-ATES Componenti Elettronici SpA, Agrate Brianza, Italy

Filed Dec. 12, 1983, Ser. No. 560,401
Claims priority, application Italy, Dec. 17, 1982, 24816 A/82
Int. Cl.[4] H03K *4/24, 17/06, 19/096, 4/58*
U.S. Cl. 307—482 **3 Claims**



1. An output interface circuit for a three-state logic circuit in an integrated circuit using MOS transistors having a single type of charge carriers, comprising:

a supply voltage source having first and second power supply terminals;

an output stage having first and second enhancement type transistors which are connected in series between said first and second terminals of said supply voltage source, said output stage having an output terminal constituting a junction point between a drain electrode of said first tran-

sistor and a source electrode of said second transistor, gate electrodes of said first and second transistors being respectively connected to a first and a second output of said three-state logic circuit so as to provide an output at said output terminal of said output stage which corresponds to the three states of said three-state logic circuit which in turn correspond to combinations of binary logic states of said first and second outputs of said three-state logic circuit;

wherein a connecting and biasing network is connected between said gate electrode of said second transistor and said second output of said three-state logic circuit, said connecting and biasing network having an auxiliary feed terminal which is connected to a first terminal of an auxiliary voltage supply for supplying a predetermined voltage which is higher than that of said supply voltage source, said auxiliary voltage supply having a second terminal which is connected to said first terminal of said supply voltage source, said connecting and biasing network comprising:

a capacitive element having a first electrode which is connected to said auxiliary feed terminal and having a second electrode which is connected to said first terminal of said supply voltage source;

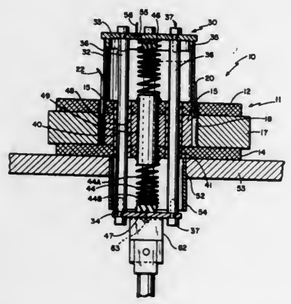
a switching means connected to said gate electrode of said second transistor and to said first electrode of said capacitive element and to said second output of said three-state logic circuit, said switching means connecting said first electrode of said capacitive element to said gate electrode of said second transistor via a low-resistance path when said second output of said logic circuit is in a predetermined binary state and substantially isolating said capacitive element when said second output of said logic circuit is in a binary logic state which is opposite to said predetermined binary logic state.

4,555,645

MOVEABLE COIL LINEAR MOTOR

Robert W. Atkinson, Dover, Ohio, assignor to Snyder Laboratories, Inc., Dover, Ohio

Continuation of Ser. No. 445,792, Dec. 1, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 581,514
Int. Cl.⁴ H02K *33/00*
U.S. Cl. 310—27 **6 Claims**



1. An alternating current linear motor comprising:

a coil support;

a moveable coil attached to said coil support;

a stationary core including a bearing; and

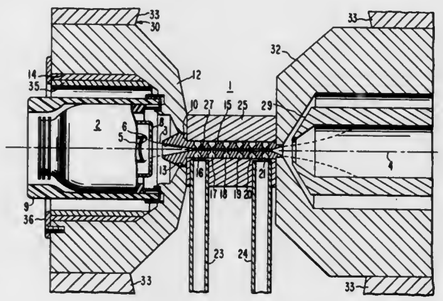
a drive member spaced from said coil and connected to said coil support, said drive member comprising a shaft, said shaft being moveable in said bearing and passing through the core, said coil support being connected to said shaft at a first location on one side of said core, said shaft being connected with a device to be powered by said motor at a second location on the opposite side of said core, and said moveable coil and said coil support remaining spaced from the opposite side of said bore so as to be compactly arranged on the one side of said core, and said stationary core defining a slot surrounding said bearing to movably receive said moveable coil therein.

4,555,646

ADJUSTABLE BEAM PERMANENT-MAGNET-FOCUSED LINEAR-BEAM MICROWAVE TUBE

George V. Miram, Atherton, and Yosuke M. Mizuhara, Palo Alto, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 309,366, Oct. 7, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 587,837
Int. Cl.⁴ H01J *23/08*
U.S. Cl. 315—5.35 **24 Claims**



1. A magnetically-focused linear beam microwave tube having a central axis, said tube comprising:

electron gun means adjacent one end of said tube for originating a strongly converging electron beam, said gun including a cathode having a concave emitting surface, and an envelope means, said envelope means including electrically insulating material, said gun operable at a high voltage;

collector means at the opposite end of said tube for collecting the electrons of said beam;

means disposed between said gun and collector alongside said beam for supporting energy-exchanging electron beam-microwave interaction;

said electron gun means, said means for supporting energy-exchanging interaction, and said collector means being in a vacuum-tight relationship;

an anode having a passage therethrough for accepting said beam from said gun, said anode operable at a voltage which is positive with respect to said cathode;

magnetic circuit means for focusing said beam to a substantially uniform and narrow diameter within said interaction means, said circuit means including a polepiece extending about said gun;

means for externally adjusting primarily the magnetic field acting on said cathode, said means for adjusting the magnetic field being substantially at ground potential during tube operation, said means for adjusting the magnetic field including magnetic material disposed within said polepiece outside and adjacent said envelope means, and being moveable axially about said cathode during tube operation, said magnetic material including at least one permanent magnet portion, whereby the diameter of said electron beam may be optimized, while maintaining variations in said beam diameter with beam travel at a negligible level; and

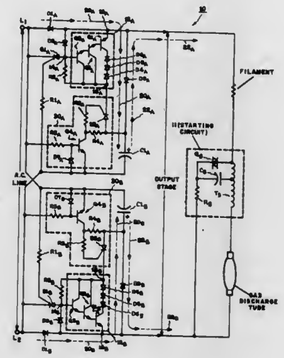
means for fixing the position of said means for adjusting the magnetic field after beam diameter optimization.

4,555,647

BALLAST CIRCUIT FOR GAS DISCHARGE TUBES UTILIZING TIME-PULSE ADDITIONS

Robert A. Leskovec, Richmond Hts.; John M. Davenport, Lyndhurst, and Pieter J. von Herrmann, Shaker Hts., all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 538,246, Oct. 3, 1983, abandoned. This application Jun. 27, 1985, Ser. No. 749,129
Int. Cl.⁴ H05B *35/00*
U.S. Cl. 315—179 **7 Claims**



1. In a lighting unit having a gas discharge tube as a main light source, a starting circuit for said gas discharge tube, a filament serving as a resistive element and as a supplementary light source, and an operating circuit for controlling the steady state run mode of operation of said gas discharge tube, the improvement wherein said operating circuit comprises:

a first and a second input terminal for having applied thereacross an alternating current (A.C.) source voltage;

an output stage having a first and a second terminal which has connected thereacross a serial arrangement of said filament and said gas discharge tube;

a capacitive energy storage means comprising a first capacitor and a second capacitor each provided with means connected to one end thereof for respectively charging each of said first and second capacitors during a preselected portion of said applied (A.C.) voltage and each of said first and second capacitors having the other end thereof connected respectively to an opposite input terminal of said operating circuit

a switching means comprising first and second current control devices each having a first, a second and a third terminal;

a first bias network and a second bias network respectively connected to said first terminal of each of said first and said second current control device, said first and said second bias networks being respectively responsive to a selected portion of the cycle of said A.C. voltage effective to respectively render said first and said second current control devices conductive; and

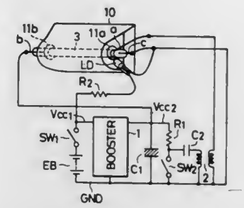
said first and said second current control devices each respectively having its second terminal connected to opposite terminals of said output stage, and each of said first and second current control devices having its third terminal respectively connected to said first end of said first and second capacitors effective to respectively discharge said first and second capacitors across said gas discharge tube when said first and second current control devices are rendered conductive.

4,555,648

ELECTRONIC FLASH UNIT UTILIZING PRE-FLASH ILLUMINATION OF FLASHTUBE

Yoshikazu Iida, Chigasaki, and Nobuyoshi Hagyuda, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,346
Claims priority, application Japan, Aug. 13, 1982, 57-139695
Int. Cl.⁴ H05B *41/32*
U.S. Cl. 315—241 P **5 Claims**



1. An electronic flash unit for emitting flashlight toward an object to be photographed in order that a camera may obtain proper exposure, comprising:

(a) flash means having a flash tube which emits flashlight;

(b) means for driving said flash tube in order that said flash tube may emit flashlight, said driving means including

capacitor means chargeable with charge and producing a voltage corresponding to the charge;

means for supplying charge to said capacitor means;

trigger means for applying a trigger to said flash tube in order that said flash tube may emit flastlight; and

means responsive to the triggering of said flash tube by said trigger means to discharge the charge in said capacitor toward said flash tube;

(c) means for applying light to the interior of said flash tube prior to said driving means causing said flash tube to emit flashlight; and

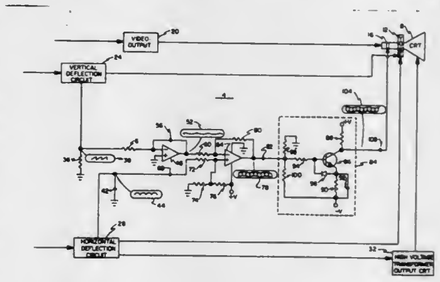
(d) operating means for said supply means to start the supply of charge to said capacitor means and wherein said means for applying light applies light to the interior of said flash tube in response to operation of said operating means.

4,555,649

CATHODE RAY TUBE FOCUSING CIRCUITRY

Gulab Sharma, Salt Lake City, Utah, assignor to Beehive International, Salt Lake City, Utah

Filed Dec. 5, 1983, Ser. No. 557,959
Int. Cl.⁴ H01J *29/58*
U.S. Cl. 315—382 **5 Claims**



1. Cathode ray tube focusing circuitry for use in a cathode ray tube video circuit which includes a cathode ray tube having a generally rectangular screen and a focus electrode for producing a D.C. voltage for controlling the focusing of the electron beam of the cathode ray tube, a vertical deflection

circuit which produces a first sawtooth wave signal which identifies the vertical location on the screen of the electron beam, and a horizontal deflection circuit which produces a second sawtooth wave signal which identifies the horizontal location on the screen of the electron beam, said horizontal deflection circuit including a capacitor which produces an inverted parabolic wave signal from the second sawtooth wave signal, said focusing circuitry including:

first operational amplifier means coupled to the vertical deflection circuit for producing a parabolic wave signal from the first sawtooth wave signal;

second operational amplifier means for inverting the parabolic wave signal produced by the first amplifier means and for adding this wave signal and the inverted parabolic wave signal produced by the horizontal deflection circuit to produce an inverted parabolic signal envelope;

linear amplifier means for inverting and amplifying the parabolic signal envelope; and

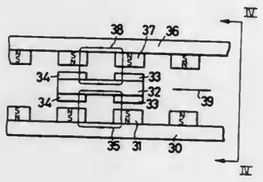
means for applying the amplified signal envelope to the focus electrode of the cathode ray tube to modulate the D.C. voltage of the focus electrode.

4,555,650

TWO DIMENSIONAL DRIVING DEVICE FOR USE IN A POSITIONING DEVICE IN A SEMICONDUCTOR MANUFACTURING APPARATUS

Teruo Asakawa, Nirasaki, Japan, assignor to Telmec Co., Ltd., Nirasaki, Japan

Filed Apr. 4, 1983, Ser. No. 481,737
Claims priority, application Japan, Apr. 7, 1982, 57-57848
Int. Cl.⁴ H02K *41/00*
U.S. Cl. 318—135 **5 Claims**



1. A current-motion converter is provided comprising:

a magnetic field group formed from a plurality of magnetic fields disposed on a plane in a two-dimensional array with an equal predetermined distance between the centers of the magnetic fields with respect to the two dimensions of the array, the magnetic fields of the array being disposed perpendicular to the plane and adjacent magnetic fields being directed in alternate directions;

a first coil set adapted to generate a force in one direction of said two-dimensional magnetic field group, said first coil set being formed by fixedly securing a plurality of coils to each other;

a second coil set adapted to generate a force in the other two-dimensional direction different from said one direction, said second coil set being formed by fixedly securing a plurality of coils to each other;

each coil of said coil sets being generally rectangular in shape, the side dimensions of said rectangular coils being generally parallel to the two-dimensions of said magnetic field group, the sides of the coils extending approximately one-half of said predetermined distance between the centers of the fields of said magnetic field group, and the coils of said coil sets being provided with a predetermined spacing approximately equal to said predetermined distance of the two-dimensions of said magnetic field group;

a coil group formed by fixedly securing said coil sets to each other, said coil group being disposed within said magnetic field group so as to be freely movable along said plane;

a detector device for registering a position of an armature in said converter;

a current distribution signal generator device responsive to a value applied to said current distribution signal generator device by said detector device; and

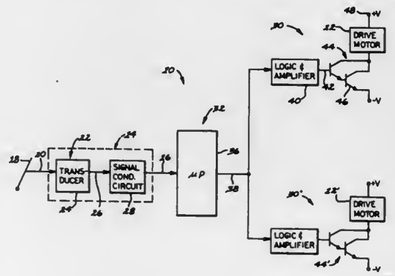
a group of amplifiers having amplification factors controlled by said current distribution signal generator device.

4,555,651

MOTOR SPEED CONTROL APPARATUS

Grant C. Melocik, Chardon, and William Pickering, University Heights, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 455,775, Jan. 5, 1983. This application Aug. 8, 1984, Ser. No. 638,850
Int. Cl.⁴ H02P *5/06*
U.S. Cl. 318—341 **6 Claims**



1. Appparatus (**10**) for controlling the rate of acceleraton of an electric motor (**12**) of a vehicle, said vehicle having a power source (**48**), comprising:

generating means (**14**) for producing a predetermined plurality of motor speed command signals, each signal having an incrementally different digital value;

processor means (**32**) for receiving each of said motor speed command signals, producing an accelerator ramp signal in response to receiving said motor speed command signals, said accelerator ramp signal having a predetermined digital value, storing said produced accelerator ramp signal within said processor means (**32**), producing predetermined successive motor speed limit signals each for a first predetermined period of time in response to said received motor speed command signal having a digital value geater than said stored accelerator ramp signal digital value and to said stored accelerator ramp signal digital value being in a first predetermined range of values, and incrementing said accelerator ramp signal to the next successive value in response to each successive motor speed limit signal being produced for said first predetermined period of time; and

controllable supplying means (**30**) for receiving said motor speed limit signals and controllably coupling said power source (**48**) to said motor (**12**) in response to said received motor speed limit signals.

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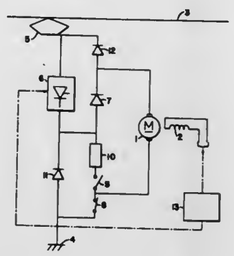
CONTROL CIRCUIT FOR OPERATING A DIRECT CURRENT MOTOR DURING TRACTION OR BRAKING

Michel C. Brulard, Clamart, France, assignor to Jeumont-Schneider Corporation, France

Filed Oct. 22, 1981, Ser. No. 313,641
Claims priority, application France, Oct. 30, 1980, 80 23209
Int. Cl.⁴ H02P *3/12*
U.S. Cl. 318—375 **1 Claim**

1. A control circuit for operating from a power supply a separately excited direct current motor, as of the type used to drive railway traction vehicles, said circuit operating during traction and during regenerative and dynamic braking, said

circuit including a chopper and energy dissipation resistor means, said chopper comprising thyristor means, said circuit being characterized in that a first branch of the circuit, connected between the power supply and ground, includes first diode means and said thyristor means, each having an anode and a cathode, the anode of the thyristor means being connected to said power supply and the cathode of said first diode means being connected to the cathode of said thyristor means, in that the thyristor means is shunted across a second branch of the circuit including a second and a third diode means, and in



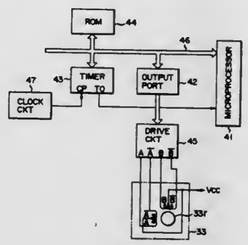
that the first diode means is shunted across a third branch of the circuit including said resistor means series-connected with two alternately closed circuit breakers, and in that said motor is connected between the junction point of said second and third diode means and the junction point of said two circuit breakers, one of said circuit breakers being closed during traction to connect said junction of said circuit breakers to ground and the other of said circuit breakers being closed during regenerative and dynamic braking to connect said resistor means in series with said motor.

4,555,653

PULSE MOTOR DRIVING APPARATUS

Yoshiaki Nawata, Yokohama, and Yasufumi Tanimoto, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 1, 1983, Ser. No. 556,786
Claims priority, application Japan, Dec. 2, 1982, 57-211950
Int. Cl.⁴ H02K *29/04*
U.S. Cl. 318—696 **2 Claims**



1. A pulse motor driving apparatus for driving a pulse motor having a plurality of phase windings, said apparatus comprising:

exciting phase specifying means for sequentially specifying said plurality of phase windings of said pulse motor, on a two-phase unit basis in a driving mode, and for specifying only one of said phase windings in a stopping mode, said exciting phase specifying means including:

(a) means for sequentially outputting phase change-over timing signals, comprising memory means in which phase change-over timing data has been memorized, and timer means whose times are set in response to the timing data of said memory means and which outputs said timing signals at the set times, and

(b) means for specifying the exciting phases in response to said timing signals; and

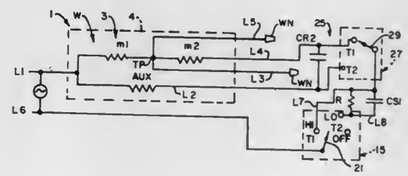
means for supplying driving pulses to the specified two of said phase windings in said driving mode, and for supplying a driving pulse to only one of said phase windings in said stopping mode for stopping said motor.

4,555,654

MEANS FOR REVERSING OPERATION OF A MOTOR

Gene V. Spradling, and Terrence L. Stanek, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 26, 1984, Ser. No. 604,070
Int. Cl.⁴ H02P *1/44*
U.S. Cl. 318—751 **2 Claims**



1. In a capacitor run motor having a stator including an auxiliary winding and a main winding, said main winding having at least two main winding portions with a tap point therebetween, a run capacitor connected to said main and auxiliary windings, said run capacitor being located externally of said stator and externally of said windings, and a multiple-position speed selector switch for controlling the speed of the motor and for energization/de-energization of the motor, said speed selector switch having a movable switch member, a first terminal and a second terminal, said motor being operable at high speed when only one of said main winding portions is energized, and being operable at a slower speed mode of operation when others of said main winding portions are energized in series with said one main winding portion, said motor having a plurality of leads extending externally of said stator, including a first power lead connected to said auxiliary and main windings, a second lead connected between said auxiliary winding and one side of said run capacitor, a third lead connected between the other side of said run capacitor and one of said tap points, a fourth lead connected to said main winding and to one of said speed selector switch terminals, a fifth power lead connected between said tap point and to the other of said terminals of said speed selector switch, and a sixth power lead of said speed selector switch for supplying electrical power thereto, wherein the improvement comprises: a reversing switch mounted exteriorally with respect to said motor, said reversing switch having a movable switch member and a pair of terminals, said first and second terminals of said speed selector switch being connected to said movable switch member of said reversing switch, a speed control capacitor in series with one of said terminals of said speed selector switch and said movable member of said reversing switch for operation of the motor at a slow speed mode of operation, said run capacitor being connected exteriorally of said motor so as to be connected in parallel between said second and fourth leads, said reversing switch having one of its terminals connected to said fourth power lead, and its other terminal connected to said second power lead whereby with power supplied by said speed selector switch to said reversing switch, and with said reversing switch in one of its operating positions, said auxiliary winding and said run capacitor are in series with one another, and

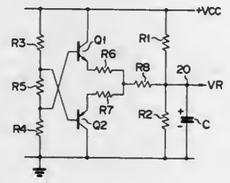
said main windings are in series such that said motor operates in one direction, and whereby with said reversing switch in its other position, said main windings and said run capacitor are in series such that said motor operates in the opposite direction.

4,555,655

CHARGING/DISCHARGING CIRCUIT

Tatsuo Tanaka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 23, 1984, Ser. No. 592,857
Claims priority, application Japan, Mar. 31, 1983, 58-56075
Int. Cl.[4] H03G *3/00*
U.S. Cl. 320—1 **14 Claims**



1. A charging/discharging circuit, comprising:

voltage divider means coupled between a power supply circuit and a fixed potential circuit and having an output node, for voltage-dividing a power supply potential difference between the power supply circuit and the fixed potential circuit, and providing at the output node a reference potential corresponding to said power supply potential difference;

a capacitor coupled between said output node and said fixed potential circuit;

charging means coupled between said power supply circuit and said output node and being responsive to a potential at said output node, for feeding a charge current from said power supply circuit to said capacitor means when said power supply potential difference has a given high value and the potential at said output node is lower than a first given potential which corresponds to said reference potential, said charging means stopping the feeding of said charge current when the potential at said output node exceeds said first given potential; and

discharging means coupled between said fixed potential circuit and said output node and being responsive to the potential at said output node, for feeding a discharge current from said capacitor means to said fixed potential circuit when said power supply potential difference has a given low value and the potential at said output node exceeds a second given potential which is lower than said first given potential, said discharging means stopping the feeding of said discharge current when the potential at said output node is lower than said second given potential.

4,555,656

GENERATOR AND RECHARGEABLE BATTERY SYSTEM FOR PEDAL POWERED VEHICLES

David Ryan, 3595 Sante Fe Ave., Space 77, Los Angeles, Calif. 90810

Filed Jan. 20, 1984, Ser. No. 572,398
Int. Cl.[4] H02J *7/00*
U.S. Cl. 320—5 **24 Claims**

20. A generator - rechargeable battery system for use with pedal powered vehicles which have an electrically operable load thereon, said system comprising:

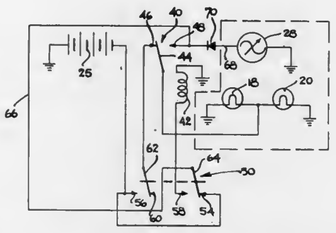
(a) a generator operable by a moving member of the vehicle when propelled to generate an electrical current,

(b) a battery providing a source of stored electric power sufficient to operate an electrical load on said vehicle,

(c) manually operable switch means operable by an operator of the vehicle for switching between a first mode of operation in which the battery is connected to the generator in such manner that the generator recharges the battery, and a second mode of operation in which the generator and the battery individually and at different times supply power to the load, said manually operable switch means comprising a first terminal connected to said battery and a second terminal connected to said battery,

(d) a relay means operable when the manually operable switch means is in the second mode, said relay means comprising:

(1) a relay coil energizable at selected times when the manually operable switch is actuated to operate in the second mode,



(2) and a relay switch operable by said relay coil, said relay switch being connected to maintain a connection of the generator to the load for as long as current is generated thereby, said relay coil being de-energized and said relay switch maintains a connection of the battery to the load and disconnecting the generator when the generator is not generating current, and

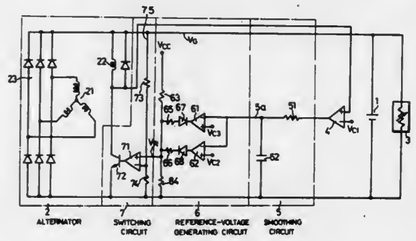
(e) as only one electronic component of said system a diode which is connected to permit current generated at said generator to flow into said system but, which precludes current from flowing back to said generator.

4,555,657

VOLTAGE REGULATOR FOR ALTERNATOR OF VEHICLE

Hidetoshi Kato, Anjo; Toshinori Maruyama; Hajime Matsushashi, both of Kariya, and Yoshio Akita, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 2, 1983, Ser. No. 557,529
Claims priority, application Japan, Dec. 6, 1982, 57-213497
Int. Cl.[4] H02J *7/14;* **H02P** *9/04*
U.S. Cl. 320—64 **3 Claims**



1. A voltage regulator for an alternator of a vehicle, having a rotor coil for charging a battery of the vehicle in proper condition, comprising:

(a) switching means for controlling a current flowing through the rotor coil of the alternator to regulate an output voltage from the alternator or a voltage for charging the battery to a predetermined value;

(b) means for detecting an average conduction rate of said switching means and generating an output signal indicative of said detected average conduction rate; and

(c) means responsive to the output signal from said detecting means for generating and issuing a reference voltage to said switching means, which determines the predetermined value of the voltage to be regulated by said switching means;

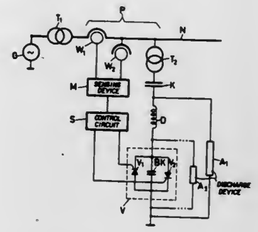
said switching means comprising a switching transistor connected in series with the rotor coil of the alternator and said detecting means comprising a comparator for generating an output signal of "0" state or "1" state when said switching transistor is rendered conductive and an output signal of "1" state or "0" state when said switching transistor is rendered nonconductive through detection of a collector-to-emitter voltage of said switching transistor.

4,555,658

CIRCUIT ARRANGEMENT FOR THE COMPENSATION OF REACTIVE POWER IN AN ELECTRICAL ALTERNATING-CURRENT POWER SYSTEM

Michael Häusler, Weilheim, Fed. Rep. of Germany; Philippe Huber, Nussbaumen; Walter Pfyl, Ennetbaden, both of Switzerland, and Kadry Sadek, Lauchringen, Fed. Rep. of Germany, assignors to BBC Brown, Boveri and Company, Limited, Baden, Switzerland

Filed Nov. 1, 1983, Ser. No. 547,587
Claims priority, application Switzerland, Nov. 2, 1982, 6354/82
Int. Cl.[4] H02J *3/18*
U.S. Cl. 323—210 **6 Claims**



1. An electrical circuit for the compensation of reactive power in an electrical alternating-current power system, comprising:

a capacitor;

an inductor;

a thyristor rectifier;

said capacitor, said inductor and said rectifier being connected in a first series circuit to said power system;

a first overvoltage discharge means connected in parallel to a second series circuit of said inductor and said rectifier; and

a second overvoltage discharge means connected in parallel with said rectifier containing a protective level at least as high as that of said first overvoltage discharge means.

4,555,659

STATIC VAR GENERATOR SYSTEM HAVING IMPROVED RESPONSE TIME

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

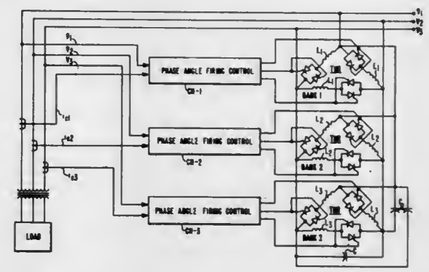
Filed Feb. 27, 1984, Ser. No. 584,203
Int. Cl.[4] G05F *1/70*
U.S. Cl. 323—210 **2 Claims**

1. A static VAR generator, comprising:

(a) a plurality of reactance means connected to anti-parallel thyristors for connection into an AC network;

(b) a VAR monitoring means connected to the A.C. network for monitoring its reactive requirements;

(c) a plurality of control means connected to the VAR monitoring means and each of said plurality of control means is connected to at least one of said plurality of reactance means for individually connecting a reactance means into the A.C. network in response to its reactive requirements; and



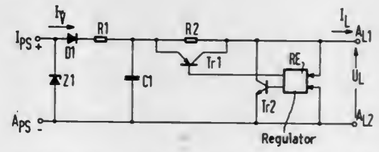
(d) each of said plurality of control means is comprised of a phase angle firing control for the anti-parallel thyristors having different firing intervals wherein the different firing intervals provide for progressively later connection of each of said plurality of reactance means into the A.C. network.

4,555,660

CURRENT SUPPLY DEVICE FOR SERIES-FED ELECTRONIC CIRCUITS

Kalixt von Winnicki, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 25, 1984, Ser. No. 603,746
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315393
Int. Cl.[4] G05F *1/613*
U.S. Cl. 323—224 **15 Claims**



1. A current supply device for a series-fed electronic consumer circuit, said supply device comprising:

input and output terminals for the feed current;

a Zener diode and a charging capacitor connected in parallel across said terminals;

a rectifying diode and a charging resistor connected in series to said input terminal between said charging capacitor and said Zener diode; and

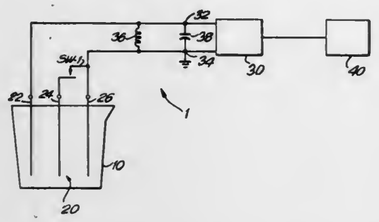
a regulating device having a first controllable impedance connected between said consumer circuit and said charging capacitor, a second controllable impedance connected in parallel with said consumer circuit, and a regulating means for controlling said first and second controllable impedances for maintaining the voltage across said consumer circuit constant.

4,555,661

METHOD AND APPARATUS FOR DETERMINING DIELECTRIC CONSTANT

Warren E. Benson, Needham, and Stanley Breen, Norwood, both of Mass., assignors to Forte Technology, Inc., Norwood, Mass.

Filed Apr. 11, 1983, Ser. No. 483,857
Int. Cl.[4] G01N *27/02*; G01R *27/26*
U.S. Cl. 324—61 R **30 Claims**



1. A method for measuring the dielectric constant of a material in a container comprising the steps of:

placing an electrode device in the container said electrode device having first, second and third electrodes which are physically spaced relative to one another, with the third electrode located between the first and second electrodes;

connecting the first and second of the electrodes across first and second terminals at first and second electrical potentials, respectively, and leaving the third electrode at a floating electrical potential;

measuring across the first and second electrodes a first value of an electrical signal proportional to the product of the dielectric constant of the material and the distance between the first and second electrodes, while maintaining the area and the end effects of the electrodes essentially constant;

electrically switching the third electrode from the floating electrical potential to an electrical potential equal to the first electrical potential;

measuring across the second and third electrodes a second value of an electrical signal proportional to the product of the dielectric constant of the material and the distance between the second and third electrodes, while maintaining the area and the end effects of the electrodes essentially constant;

computing a third value equal to the difference between the first and second values; and

calculating the dielectric constant of the material based on the third value.

4,555,662

METHOD AND APPARATUS FOR THE DETECTION AND MEASUREMENT OF PARTICULATES IN MOLTEN METAL

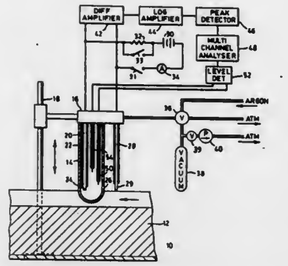
Don A. Doutre, Jonquiere, and Roderick I. L. Guthrie, Westmount, both of Canada, assignors to Limca Research Inc., Montreal, Canada

Filed Mar. 3, 1983, Ser. No. 471,908
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—71.4 **9 Claims**

1. A method for the detection and measurement in a molten metal sample of suspended particulates of greater than a predetermined size whose electrical conductivities differ from that of the suspending molten metal including the steps of:

establishing a current path which will include molten metal of the sample between two electrodes and through a passage of predetermined cross-sectional area,

passing the molten metal sample in the said current path and through the said passage while an electric current is maintained through the current path, and



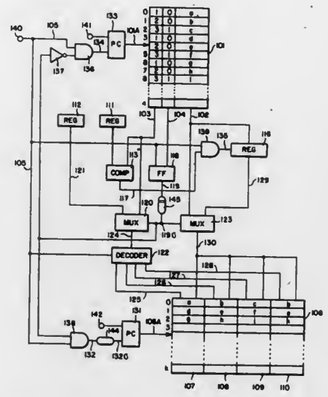
measuring the voltage difference between the said electrodes and detecting changes therein caused by the passage through the passage of said particulates.

4,555,663

TEST PATTERN GENERATING APPARATUS

Masao Shimizu, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,374
Claims priority, application Japan, Nov. 19, 1982, 57-203878
Int. Cl.[4] G01R *31/28*; G06F *11/00*
U.S. Cl. 324—73 R **5 Claims**



1. A test pattern generating apparatus for providing test patterns for testing a logic circuit, comprising

a storage device for storing words corresponding to said test patterns, wherein each said word is divided into a plurality of test pattern blocks, and for storing block data indicating the position of each said block in each respective word and last block data indicating the last one of said test pattern blocks of each said word,

a pattern generator for storing said test pattern blocks that are provided from the storage device, and for outputting each said word one at a time during said testing of the logic circuit,

fault register means for storing fault block data indicating the position of at least one of said blocks of said pattern generator, corresponding to at least one respective fault of test pattern generating apparatus,

unused-block register means for storing unused block data indicating the position of at least one respective unused block of said pattern generator,

a comparator for comparing the block data provided from the storage device with the fault block data provided from the fault register means,

further register means for storing each respective one of said test pattern blocks that is provided from the storage device upon each coincidence of the block data and the fault block data detected by said comparator, and

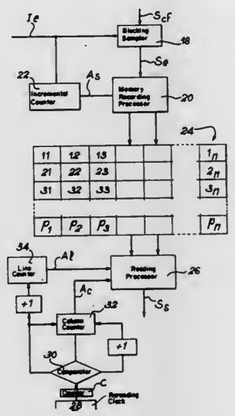
means for transferring the test pattern block corresponding to each said fault to each respective unused block of the pattern generator that is specified by the unused block data from the unused-block register means.

4,555,664

PROCESS AND DEVICE FOR INSPECTING A SURFACE IN SIMULATED MANNER WHICH DIFFERS FROM THE REAL SURFACE SCANNING BY AN EDDY CURRENT TRANSDUCER

Bernard David, Gif sur Yvette, and Michel Pigeon, Bures sur Yvette, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 31, 1982, Ser. No. 413,517
Claims priority, application France, Sep. 14, 1981, 81 17312
Int. Cl.[4] G01N *27/72*; G01R *33/12*
U.S. Cl. 324—225 **14 Claims**



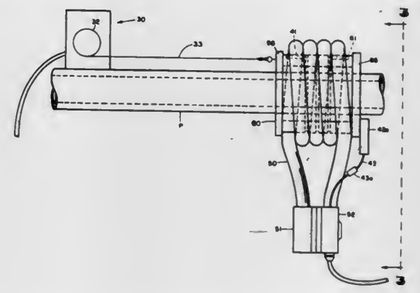
1. A device for inspecting the surface of a member by means of an eddy current transducer incorporating at least one eddy current probe and supplying a signal representing the state of said surface, wherein said device comprises means for scanning only the surface to be inspected by said transducer along a given path, means for sampling the values of said signal corresponding to elementary measurement zones of said surface separated by a given acquisition spacing, means for storing the sampled values of the signals supplied by the transducer, and means for restoring in a given order independent of said path and at a given speed a series of second signals, each of said second signals having a value deduced only from the sampled value(s) corresponding to at least one adjacent zone(s) of the surface, said series of second signals simulating an inspection of the surface which differs from the real scanning performed by said means for scanning only the surface.

4,555,665

MAGNETIC FLUX METHOD FOR MEASURING TUBULAR WALL THICKNESS

Roderic K. Stanley; Marvin Milewits; Robert C. Knauer, Jr., and James E. Bradfield, all of Houston, Tex., assignors to PA Incorporated, Houston, Tex.

Filed Aug. 4, 1982, Ser. No. 405,203
Int. Cl.[4] G01B *7/10*; G01R *33/12*
U.S. Cl. 324—229 **12 Claims**



1. A method of inspecting a length of ferromagnetic pipe to determine the average wall thickness of the pipe as a function of the axial position along the pipe, comprising the steps of:

disposing a multi-turn encircling saturating coil in surrounding relationship to the pipe;

producing a value of magnetic flux entending longitudinally through a portion of the pipe by applying a current to the encircling coil;

disposing a voltage generating means in surrounding relationship to the pipe;

moving the saturating coil and the voltage generating means relative to the pipe at a varying speed;

integrating the voltage generated in the voltage generating means; and

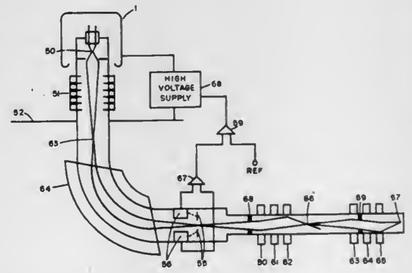
correlating the integrated voltage to the average thickness of the pipe as a function of axial length.

4,555,666

ENERGY-STABLE ACCELERATOR WITH NEEDLE-LIKE SOURCE AND FOCUSED PARTICLE BEAM

Frederick W. Martin, Colebrook Rd., North Stratford, N.H. 03590

Continuation of Ser. No. 25,027, Mar. 29, 1979, abandoned. This application May 19, 1982, Ser. No. 379,736
Int. Cl.[4] H01J *23/00, 23/34*
U.S. Cl. 326—233 **11 Claims**



1. An improved energy stabilized accelerator for producing beams of particles comprising a particle source, a means for accelerating particles, and an analyzer comprising a deflector which serves to measure the kinetic energy of accelerated

particles and disperses them in position according to the difference of their energy from an undeviated central value, a pair of slits positioned at the focal point of said analyzer, a corresponding pair of means for producing electronic signals proportional to the current or pulse rate of particles which strike said slits, and electronic circuitry which produces an output signal indicating deviation of the beam energy from the undeviated, central value of energy specified by said analyzer, the output signal of which analyzer is subtracted electronically from a reference signal and fed back to the accelerating means in order to stabilize the particle energy at said central value, wherein the improvement comprises a field ion source for generating ions or a field emission source for generating electrons, and wherein said source, accelerating means, and analyzer function to provide particle beams of precisely determined energy.

11. The method of creating a beam of particles which simultaneously has extremely small diameter and extremely small deviation from a fixed energy comprising the steps of

(a) providing an improved, energy-stabilized accelerator for producing beams of particles comprising a particle source, a means for accelerating particles, and an analyzer comprising a deflector which serves to measure the kinetic energy of accelerated particles and disperses them in position according to the difference of their energy from an undeviated central value, a pair of slits positioned at the focal point of said analyzer, a corresponding pair of means for producing electronic signals proportional to the current or pulse rate of particles which strike said slits, and electronic circuitry which produces an output signal indicating deviation of the beam energy from the undeviated, central value of energy specified by said analyzer, the output signal of which analyzer is subtracted electronically from a reference signal and fed back to the accelerating means in order to stabilize the particle energy at said central value, wherein the improvement comprises a field ion source for generating ions or a field emission source for generating electrons, and wherein said source, accelerating means, and analyzer function to provide particle beams of precisely determined energy, and

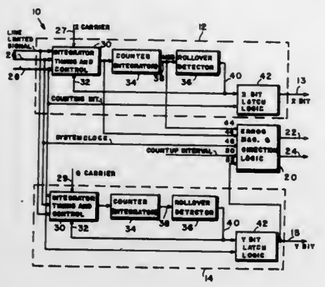
(b) using the particle beam emergent from said improved accelerator.

4,555,667

SYNCHRONOUS DIGITAL QPSK DEMODULATOR WITH CARRIER ERROR CORRECTION

John R. Cressey, College Pk., and Dennis C. Meneely, Bowie, both of Md., assignors to Rixon, Inc., Silver Spring, Md.

Filed Sep. 26, 1983, Ser. No. 536,140
Int. Cl.⁴ H03D *3/18, 3/00, 3/04;* **H03K** *9/04*
U.S. Cl. 329—50 **30 Claims**



1. In a synchronous digital demodulator for a quadri-phase shift key system including

decoding means for decoding data represented by phase shifts of a received signal for successive baud intervals, and

error correcting means for correcting phase errors between a reconstructed carrier and a received phase modulated carrier of the received signals, the improvement comprising

integrator means operable both for detecting said phase shift data and for correcting said phase errors

wherein said integrator means comprises counter means operable during a first, integrating, interval of said baud interval for counting a clocking signal and for producing a first signal indicative of data received during said baud interval,

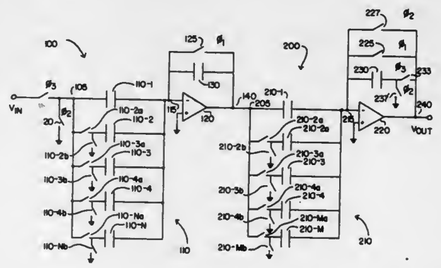
said counter means being further operable in a second, error detecting, interval for counting a clocking signal and for producing a second signal indicative of phase error between said received phase modulator carrier and said reconstructive carrier.

4,555,668

GAIN AMPLIFIER

Roubik Gregorian, and Bahram Fotouhi, both of San Jose, Calif., assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 14, 1983, Ser. No. 542,228
Int. Cl.⁴ H03F *1/02*
U.S. Cl. 330—9 **10 Claims**



9. A gain amplifier comprising at least a first gain stage having a first gain factor and a second gain stage having a second gain factor, wherein each said gain stage comprises:

an input lead for receiving an input signal to the amplified;

an operational amplifier having an inverting input lead, a noninverting input lead connected to a reference voltage, and an output lead;

a feedback capacitor having a first plate connected to said inverting input lead and a second plate connected to said output lead of said operational amplifier;

input capacitor means connected between said input lead and said inverting input lead of said operational amplifier;

feedback initialization switch means connected between said inverting input lead and said output lead of said operational amplifier,

and wherein in said second gain stage, said feedback initialization switch means closes during a period of time when the feedback initialization switch means of said first gain stage closes, said feedback initialization switch means of said second gain stage remaining closed for a period of time after the feedback initialization switch means of said first gain stage opens, the feedback initialization switch means of said second gain stage opening after said period of time, and wherein said second gain stage further comprises:

second switch means connected between said second plate of said feedback capacitor and said output lead of said operational amplifier; and

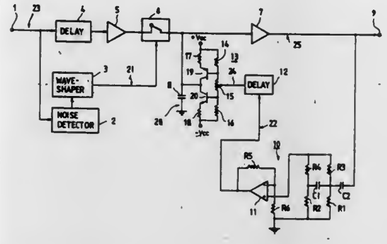
third switch means connected between said second plate of said feedback capacitor and said reference voltage, wherein said output lead of said operational amplifier of said first gain stage is connected to said input lead of said second gain stage.

4,555,669

NOISE REDUCTION BY LINEAR INTERPOLATION USING A SINGLE SAMPLE-AND-HOLD CIRCUIT

Yasuomi Namiki, Yokohama, Japan, assignor to Victor Company of Japan, Yokohama, Japan

Filed Jul. 20, 1984, Ser. No. 632,875
Claims priority, application Japan, Jul. 21, 1983, 58-133128; Aug. 25, 1983, 58-155668
Int. Cl.⁴ H03F *1/26*
U.S. Cl. 330—149 **6 Claims**



1. A noise reduction circuit having an input terminal to which an information signal is applied and an output terminal, comprising:

means connected to said input terminal for detecting a noise impulse introduced in said information signal and generating therefrom a sampling pulse time-coincident with the portion of the signal affected by the impulse;

a sample-and-hold circuit connected between said input and output terminals, the sample-and-hold circuit including a capacitor and a switch for passing said information signal to said output terminal in the absence of said sampling pulse;

a slope detector connected to be responsive to a voltage developed in said capacitor for generating a voltage representative of the rate of variation of the capacitor voltage; and

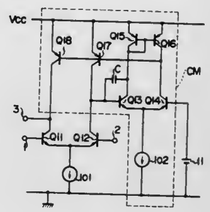
a voltage-to-current converter connected between the output of said slope detector and said capacitor for converting said voltage to a corresponding current and injecting said current to said capacitor when the rate of variation is positive and draining said current from said capacitor when said rate is negative.

4,555,670

DIFFERENTIAL AMPLIFIER

Tatsuo Tanaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Nov. 8, 1984, Ser. No. 669,330
Claims priority, application Japan, Nov. 30, 1983, 58-225726
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—252 **9 Claims**



1. A differential amplifier comprising:

first and second input terminals;

an output terminal;

a first differential amplifying circuit comprising first and second transistors of a first polarity type, the bases of the first and second transistors being connected to said first and second input terminals, respectively;

a current source connected to said first differential amplifying circuit and a first predetermined potential;

a second differential amplifying circuit comprising third and fourth transistors of said first polarity type, the base of the third transistor constituting an inverting input terminal and being connected to the collector of said second transistor, and the base of the fourth transistor constituting a noninverting input terminal and being connected to a bias potential;

a load circuit for said second differential amplifying circuit;

a fifth transistor of a second polarity type forming a collector load for said second transistor, the base of the fifth transistor being connected to the collector of said fourth transistor; and

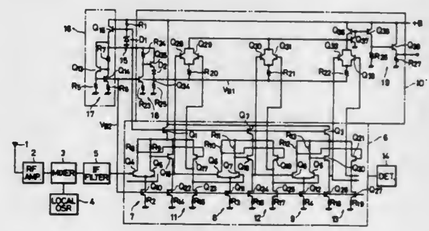
a sixth transistor of said second polarity type for forming a collector load for said first transistor, the base of the sixth transistor being connected to the base of said fifth transistor.

4,555,671

CIRCUIT FOR DRIVING A SIGNAL METER FOR A RECEIVER

Tatsuo Numata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 462,865
Claims priority, application Japan, Feb. 2, 1982, 57-15197
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—252 **7 Claims**



1. A circuit for driving a signal meter in a receiver of the type having an intermediate frequency (IF) amplifier for amplifying an IF input signal, said IF amplifier having a d.c. voltage output in the absence of said IF input signal, said circuit comprising at least one control terminal and at least one controlled terminal and controlling the signal at its controlled terminal in accordance with a control signal applied to its control terminal, means for driving a signal for driving said signal meter in accordance with the signal at said at least one controlled terminal, means for providing said amplifier output to said at least one control terminal, and bias means for biasing an active element circuit with a first bias voltage having a predetermined difference with respect to said d.c. voltage output;

wherein said amplifier is a differential amplifier having at least first and second differential outputs, and

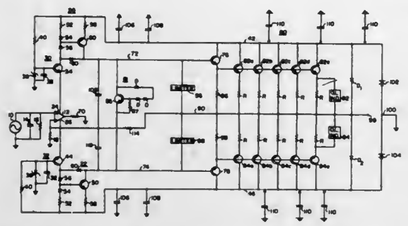
said one active element circuit includes at least one pair of active elements, each active element circuit being associated with a respective first and second pair of differential outputs and each said active element circuit having control and controlled terminals, corresponding controlled terminals of said active elements being coupled together and said first and second differential outputs of said differential amplifier being applied to said control terminals of respective active elements.

4,555,672

HIGH-FIDELITY AUDIO FREQUENCY AMPLIFIER

Brahm R. Segal, 4265 Carlton Ave., Montreal, Quebec, Canada

Filed Nov. 17, 1983, Ser. No. 552,818
Int. Cl.⁴ H03F *3/30*
U.S. Cl. 330—255 **9 Claims**



8. A high frequency audio frequency amplifier comprising:

an input amplifier having an inverting input, a non-inverting input, a positive bias port, a negative bias port and an output, the non-inverting input being a signal input;

a positive potential bias source having a reference terminal and a positive terminal;

a negative potential bias source having a negative terminal and a reference terminal common with said reference terminal of said positive potential bias source;

a first current amplifier having an input coupled between said positive bias terminal and said positive bias port of said input amplifier and having a first current amplified output;

a second current amplifier having an input coupled between said negative bias terminal and said negative bias port of said input amplifier and having a second current amplified output;

a first transistor amplifying circuit comprising a first transistor, an amplifier output terminal, a first emitter resistor connected to the emitter of said first transistor, the output of said first current amplifier being connected as an input to the base of said first transistor, the collector of said first transistor being connected to said positive terminal;

a second transistor amplifying circuit comprising a second transistor of opposite polarity type to said first transistor, a second emitter resistor connected between the emitter of said second transistor and the first emitter resistor, the output of said second current amplifier being connected as an input to the base of said second transistor;

a first power amplifier comprising at least one third transistor having its input connected to the emitter of said first transistor and its collector connected to said positive terminal, and a third emitter resistor connected between the emitter of said third transistor and said amplifier output terminal;

a second power amplifier comprising at least one fourth transistor of opposite polarity type to said third transistor and having its input connected to the emitter of said second transistor and having its collector connected to said negative terminal, and a fourth emitter resistor connected between the emitter of said fourth transistor and said amplifier output terminal, the combined outputs of said first and second power amplifiers appearing between said amplifier output terminal and said reference terminal;

a temperature compensating current control comprising a fifth transistor connected in emitter-to-collector configuration and between the bases of said first and second transistors, and current conducting means connected from the base of one of said first and second transistors to the base of said fifth transistor;

a negative feedback circuit comprising a feedback resistor connected between said amplifier output terminal and said inverting input of said input amplifier, a first capacitor connected between the base of said first transistor and the inverting input of said input amplifier, and a second capacitor connected between the base of said second transistor and the inverting input of said input amplifier; and

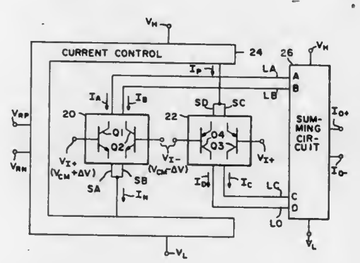
a plurality of capacitors, including a first plurality of capacitors in turn including capacitors of different capacitances connected between said positive terminal and said reference terminal, and a second plurality of capacitors, including capacitors of different capacitances connected between said negative terminal and said reference terminal.

4,555,673

DIFFERENTIAL AMPLIFIER WITH RAIL-TO-RAIL INPUT CAPABILITY AND CONTROLLED TRANSCONDUCTANCE

Johan H. Huijsing, Den Hoorn ZH, Netherlands, and Rudy J. van de Plassche, Cupertino, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Apr. 19, 1984, Ser. No. 602,231
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—258 **24 Claims**



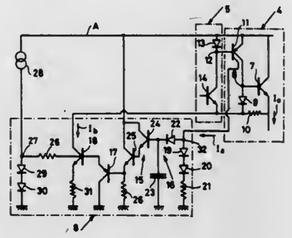
1. An amplifier operable between first and second supply voltages which define a supply range consisting of (a) a first end range extending from the first supply voltage to a first specified voltage between the supply voltages, (b) a middle range extending from the first specified voltage to a second specified voltage between the first specified voltage and the second supply voltage, and (c) a second end range extending from the second specified voltage to the second supply voltage, the amplifier having: first differential means for amplifying a differential input signal by largely dividing a first operating current into first and second internal currents whose difference is representative of the input signal when its common-mode voltage (V_{CM}) varies across the middle and second ranges; second differential means for amplifying the input signal by largely dividing a second operating current into third and fourth internal currents whose difference is representative of the input signal when V_{CM} varies across the first and middle ranges; and summing means for selectively combining the internal currents to generate at least one output signal; characterized by control means for providing amplifier supply current to generate the operating currents and for suitably steering at least part of the supply current away from at least one of the differential means when V_{CM} is in at least one part of the supply range so as to control the operating currents at values dependent on the steering of the supply current.

4,555,674

POWER AUDIO-AMPLIFIER WITH AUTOMATIC ADJUSTMENT OF THE BIAS CURRENT ABSORBED BY THE FINAL STAGE

Sergio Palara, Bareggio, and Aldo Torazzina, Monza, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed Aug. 15, 1983, Ser. No. 523,052
Claims priority, application Italy, Sep. 24, 1982, 23443 A/82
Int. Cl.⁴ H03F *3/30*
U.S. Cl. 330—267 **6 Claims**



1. A power audio amplifier, comprising:

at least one amplifying stage;

a final stage coupled to said at least one amplifying stage and having a bias current and an output adapted to provide an output current to a load having a load and a no-load state; and

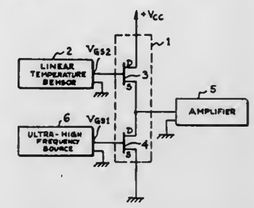
current control means, coupled to said final stage, for automatically changing said bias current between a low and a higher value when said load changes between said no-load and said load state, respectively.

4,555,675

DEVICE FOR COMPENSATING TEMPERATURE DRIFTS OF THE GAIN OF AN ULTRA-HIGH FREQUENCY ELECTRIC SIGNAL AMPLIFIER

Monique Blanchandin, Neuilly sur Seine; Roland Girardat, Andresy, and Jean-Michel Vanestrenvord, Levallois-Perret, all of France, assignors to Thomson CSF, Paris, France

Filed Jan. 10, 1984, Ser. No. 569,711
Claims priority, application France, Jan. 21, 1983, 83 00914
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—289 **8 Claims**



1. A device to compensate for temperature drift in the gain of an amplifier which amplifies ultra-high frequency signals generated by an ultra-high frequency signal source, comprising:

a bi-gate field effect transistor with a gain and having an output adapted for connection to said amplifier, a first input adapted for connection to said ultra-high frequency source, and a second input; and

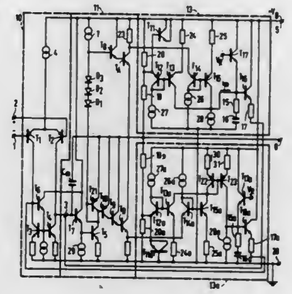
linear temperature sensor means, coupled to said bi-gate transistor second input, for controlling said bi-gate transistor gain as a function of temperature variations.

4,555,676

DUAL-SECTION AMPLIFIER ARRANGEMENT HAVING A PROTECTION CIRCUIT

Rudy J. van de Plassche, Sunnyvale, Calif., and Eise C. Dijkmans, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1984, Ser. No. 569,648
Claims priority, application Netherlands, Jan. 11, 1983, 8300078
Int. Cl.⁴ H03F *1/34*; H02H *7/20*
U.S. Cl. 330—298 **6 Claims**



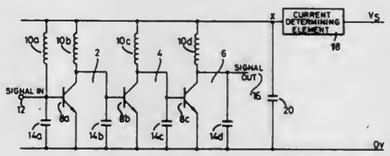
1. An amplifier arrangement comprising a first amplifier section having an input and an output, a second amplifier section having an input which is connected to the output of the first amplifier section, an output, at least a first output transistor and a first driver transistor which drives said output transistor, and a protection circuit for overload protection of said output transistor, characterized in that the protection circuit forms a loop around the second amplifier section, acts on the input to the second amplifier section, and has a frequency response a portion of which falls off with increasing frequency within the frequency range of the amplifier arrangement.

4,555,677

F.M. AMPLIFIER FOR USE IN I.F. STAGES

Graham E. Beesley, Winchester, England, assignor to Sinclair Research Limited, Cambridge, England

Filed Apr. 3, 1984, Ser. No. 596,270
Claims priority, application United Kingdom, Apr. 22, 1983, 8311071
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—302 **5 Claims**



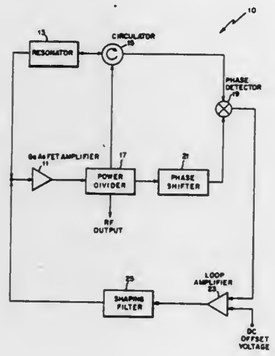
1. An amplifier comprising a plurality of direct-coupled common emitter bipolar transistor amplifier stages connected in cascade and a biassing means comprising a pair of common voltage rails for said stages, each stage having an inductive load connected between the collector of its respective transistor and one of the common voltage rails and the emitter of its respective transistor being directly-coupled to the other common voltage rail.

4,555,678

MICROWAVE OSCILLATOR

Zvi Galani, Bedford; Richard W. Laton, Lexington; Raymond C. Waterman, Jr., Westford, and Robert DiBiase, Carlisle, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 21, 1983, Ser. No. 554,012
Int. Cl.⁴ H03B 5/22
U.S. Cl. 331—1 A **2 Claims**



1. In a microwave oscillator using a GaAs FET as the active element, such oscillator including a resonator with a high Q to provide positive feedback and to reduce FM noise, the improvement comprising:

(a) phase detector means, responsive to signals out of the GaAs FET shifted by 90° and to a portion of the positive feedback signals, for providing signals representative of low frequency noise arising within the GaAs FET; and

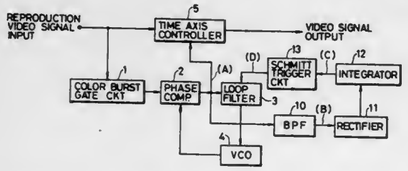
(b) means for feeding back the signals out of the phase detector to degenerate such low frequency noise.

4,555,679

DETECTION CIRCUIT FOR DETECTING SYNCHRONOUS AND ASYNCHRONOUS STATES IN A PHASE-LOCKED LOOP CIRCUIT

Hitoshi Katsuyama, Saitama, Japan, assignor to Pioneer Video Corporation, Yamanashi, Japan

Filed May 20, 1983, Ser. No. 496,733
Claims priority, application Japan, May 20, 1982, 57-85598
Int. Cl.⁴ H03L 7/00, 7/10; H04N 9/46
U.S. Cl. 331—17 **14 Claims**



1. A detection circuit for detecting synchronous and asynchronous states is a phase-locked loop (PLL) circuit, said PLL circuit including a voltage controlled oscillator for generating an oscillation signal, a phase comparator for comparing said oscillation signal to an input signal, said phase comparator providing an output which includes a first frequency component when said PLL circuit is in said synchronous state and a second frequency component when said PLL circuit is in an asynchronous state, and a loop filter connected between said phase comparator and said voltage controlled oscillator for providing a control signal applied to said voltage controlled oscillator, said detection circuit comprising:

processing means for generating a processed signal from said phase comparator output by removing said first frequency component from said phase comparator output; and

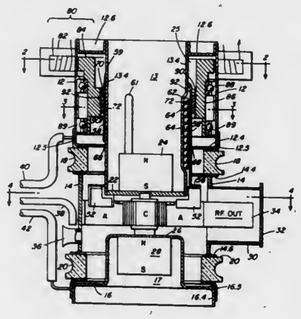
detection signal generating means responsive to said processed signal for generating a detection signal indicating the synchronous or asynchronous state of said PLL circuit.

4,555,680

MAGNETRON TUNED PROGRAMMABLY USING STEP MOTOR

John E. Burr, Wenham, Mass., assignor to M/A-COM, Inc., Burlington, Mass.

Filed Jul. 5, 1983, Ser. No. 510,664
Int. Cl.⁴ H03B 9/10, 5/40; H01J 25/50
U.S. Cl. 331—86 **5 Claims**



1. A resonant-cavity type electron tube having a mechanically-operable tuning means associated with the resonant-cavity structure within an evacuable envelope, means within said envelope for adusting said tuning means relative to said resonant-cavity structure so as to tune the frequency of resonance of said structure step-wise in accordance with a predetermined program, said adjusting means comprising a step motor having a stator and armature, said envelope having a portion extending between said stator and said armature for enclosing said armature within the evacuable space containing said tuning means and said resonant-cavity structure, means coupling said armature to said tuning means for altering the position of said tuning means relative to said resonant-cavity structure in fixed relation to the displacement of said armature relative to said stator, means to couple said armature to said stator magnetically through said portion of said envelope, and means to provide electrical signals to said stator for establishing a programmable series of displacements of said armature relative to said stator,

in which said portion of said envelope between said stator and said armature is fixed relative to said stator and includes inserts of readily-magnetizable material located adjacent pole-faces of said stator for enhancing the strength of the stator magnetic field within said envelope.

4,555,681

IMPROVED, LOW-DISTORTION, BROADBAND DIRECTIONAL COUPLER FORMED BY MULTIPLE SERIES TRANSFORMERS

Thomas S. Dominick, Glen Burnie, and Roy G. Anderson, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

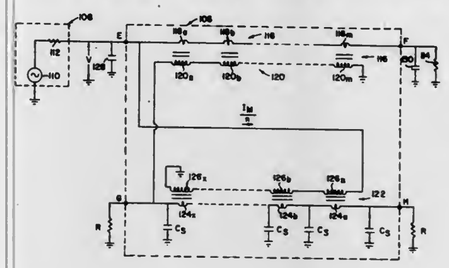
Filed Aug. 1, 1984, Ser. No. 636,774
Int. Cl.⁴ H03H 7/00
U.S. Cl. 333—112 **6 Claims**

1. A high frequency directional coupler, comprising

(a) input, output, reflected, and incident ports;

(b) current transformer means including at least one primary winding connected between said input and output ports and at least one secondary winding coupled with said current transformer primary winding and connected between said reflected port and ground; and

(c) voltage transformer means including a plurality of series-connected primary windings connected between said



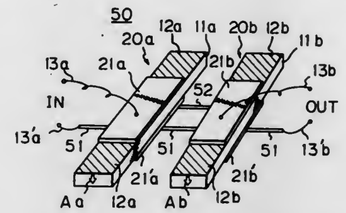
reflected port and said incident port, and a plurality of series-connected secondary windings coupled with said voltage transformer primary windings, respectively, and connected between said input port and ground, whereby intermodulation distortion of the coupler is improved.

4,555,682

MECHANICAL FILTER

Takashi Gounji, Yokohama; Teruo Kawatsu, Kawasaki; Yoshihiko Kasai, Yokohama, and Chikao Takeuchi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 23, 1984, Ser. No. 582,768
Claims priority, application Japan, Mar. 2, 1983, 58-032936; Mar. 2, 1983, 58-032937; Mar. 4, 1983, 58-035302
Int. Cl.⁴ H03H 9/50, 9/54, 9/13
U.S. Cl. 333—189 **38 Claims**



1. A mechanical filter having input and output sides comprising:

an input side piezoelectric ceramic member and an output side piezoelectric ceramic member, each of said piezoelectric ceramic members having a center, top and bottom surfaces, a thickness in the direction between said top and bottom surfaces, a frequency temperature characteristic, a polarization in the direction of said thickness and a longitudinal vibrational mode;

top and bottom constant modulus alloy members separately mounted on said top and bottom surfaces of said piezoelectric ceramic members, respectively, each pair of top and bottom constant modulus alloy members having the same configuration, a frequency-temperature characteristic opposite to said frequency-temperature characteristic of the piezoelectric ceramic member mounted therebetween, and centers, said centers of said top and bottom piezoelectric ceramic members being aligned with the center of the piezoelectric ceramic member mounted therebetween; and

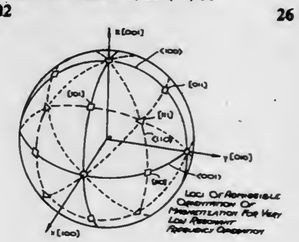
at least one coupler connected between either said top or said bottom side constant modulus alloy members mounted on said input and output side piezoelectric ceramic members.

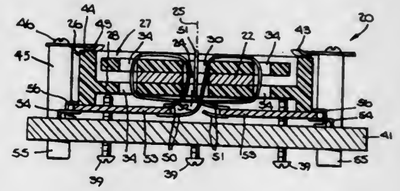
4,555,683

MAGNETICALLY TUNABLE RESONATORS AND TUNABLE DEVICES SUCH AS FILTERS AND RESONANT CIRCUITS FOR OSCILLATORS USING MAGNETICALLY TUNED RESONATORS

Gunter U. Sorger, Menlo Park, and Dan Raicu, Sunnyvale, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 30, 1984, Ser. No. 574,847
Int. Cl.⁴ H01P 1/217, 7/00
U.S. Cl. 333—202 **26 Claims**





1. A magnetically tunable resonator comprising a body and means for applying a dc magnetic field to the body, the body being generally flat and being generally rotationally symmetrical with respect to an axis of rotation, the body comprising a single crystal ferrimagnetic material and being configured so that said axis of rotation is oriented in a specific manner with respect to the lattice of said single crystal ferrimagnetic material, the orientation of said axis with respect to said lattice being parallel to a (100) plane for a material with a negative anisotropy, and parallel to a (110) plane inside the acute angle formed by two [111] axes for a material with a positive anisotropy, the dc magnetic field applying means and the body being oriented with respect to each other so that the dc magnetic field applying means applies the dc magnetic field to the body parallel to said axis of rotation, the body having a variable resonance frequency selectable by the dc magnetic field, and the dc magnetic field applying means being adjustable so as to apply a dc magnetic field to the body to cause it to resonate at a selected resonance frequency.

4,555,684

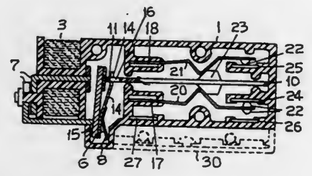
MOTOR STARTING DEVICE

Douglas J. Slack, Smithfield Plains, Australia, assignor to Texas Instruments Incorporated, Dallas, Tex.

PCT No. PCT/AU83/00181, § 371 Date Aug. 9, 1984, § 102(e) Date Aug. 9, 1984, PCT Pub. No. WO84/02425, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 9, 1983, Ser. No. 639,106
Int. Cl.⁴ H01H 7/06, 43/02
U.S. Cl. 335—66 **16 Claims**

1. A motor starting device adapted to de-energize a start winding, the device having a housing supporting an electro-

magnetic coil and switch means, characterized by a movable latch member connected between a keeper means of the electromagnetic coil and the switch means, the keeper having a portion movable toward and away from the electromagnetic coil and being operatively connected to the latch member to move the latch member, and a current carrying bimetallic strip mounted in the housing, the bimetallic strip having at least a



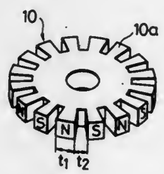
portion movable between a first unheated position when no current is being carried and a second heated position when current is being carried, the bimetallic strip adapted to hold the latch member against displacement by the keeper means of the electromagnetic coil until the bimetallic strip is heated by current flow, the latch member having means to actuate the switching means upon selected movement of the latch member.

4,555,685

FORMED PERMANENT MAGNET

Ryozi Maruyama, Ageo, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Continuation of Ser. No. 446,419, Dec. 2, 1982, abandoned. This application Nov. 29, 1984, Ser. No. 675,473
Claims priority, application Japan, Dec. 9, 1981, 56-196993
Int. Cl.⁴ H01F *7/02*
U.S. Cl. 335—303 **12 Claims**



1. A formed permanent magnet used as a sensor comprising a base having a plurality of gaps with a predetermined width formed between portions of said gaps serving to form magnetic poles and having a predetermined width, said base being injection molded with a material including a synthetic resin mixed with a magnetic material, said portions between said gaps being magnetized as N poles and S poles, alternately.

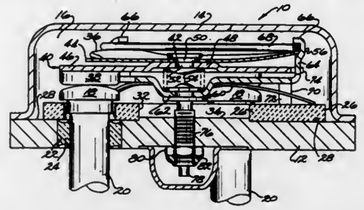
4,555,686

SNAP-ACTING THERMOSTATIC SWITCH ASSEMBLY

Radi Pejouhy, Marshfield, and Wilfred W. Cardin, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1984, Ser. No. 614,621
Int. Cl.⁴ H01H *61/01, 71/16*
U.S. Cl. 337—102 **11 Claims**

1. A thermostatic switch assembly comprising a metallic base member and a cover attached to the base member forming therewith a switch compartment, the base member having an inner surface, a plurality of apertures extending through the base member, a terminal pin extending through each aperture in electrical insulating relationship with the base member by glass sealing means, an electrical insulator disposed on the inner surface, the insulator having an aperture therethrough for each terminal pin, each terminal pin having an end extending through a respective insulator aperture and disposed in the switch compartment spaced a selected distance from the inner surface, a stationary contact mounted on the end of each terminal pin, a movable contact assembly mounted in the compartment comprising on elongated element mounted on the base member and having a distal end portion disposed in the compartment, a spider mounted on the distal end portion, the spider having a plurality of arms extending transversely over the inner surface, each arm having an inwardly disposed hook, a heater plate having a plurality of contacts mounted on a surface thereof, a snap-acting, thermally responsive disc having a plurality of ears projecting therefrom, the disc and the heater plate being centrally attached to one another, the ears of



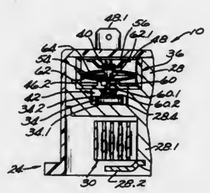
the disc each having a bifurcating slot with a respective spider hook received through the slot, a wire retainer received in each hook between the hook and its respective ears of the disc to mount the heater plate and the disc to the spider, the disc adapted to snap from a first configuration with the contacts on the heater plate in engagement with respective stationary contacts to a second configuration with the contacts on the heater plate out of engagement with the stationary contacts, characterized in that the electrical insulator is loosely received on the inner surface of the base member and a spring member is disposed between the insulator and the spider to bias the insulator firmly against the base member and to stabilize the position of the movable contact assembly.

4,555,687

FUEL SUPPLY SYSTEM WITH ELECTRIC CHOKE AND CONTROL THEREFOR

Hidde Walstra, Almelo, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 437,982, Nov. 1, 1982, Pat. No. 4,496,496. This application Jun. 25, 1984, Ser. No. 620,595
Int. Cl.⁴ H01H *37/52*
U.S. Cl. 337—370 **3 Claims**



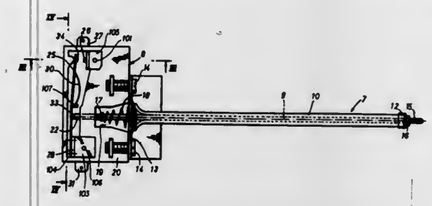
1. A control device comprising movable and complementary contact means connectable between a power source and a load for energizing the load when the contact means are engaged and for deenergizing the load when the contact means are separated, and a pair of dished bimetallic elements which are movable with snap action from original dished configurations to inverted dished configurations in response to respective selected increases in temperature, the elements being electrically insulated from at least one of said contact means and at least one of the elements having an aperture therein, and the pair of bimetallic elements being disposed between the contact means to hold the contact means separated at least when the pair of dished bimetallic elements has one combination of said dished configurations and at least said one of the dished bimetallic elements having said aperture therein permitting the contact means to be engaged through the aperture at least when the pair of dished bimetallic elements has a second combination of said dished configurations.

4,555,688

THERMOSTAT FOR COOKING UTENSIL

Helmut Bayer, Vienna, Austria, assignor to Electrovac, Fabrikation elektrotechnischer Spezialartikel Gesellschaft mbH, Vienna, Austria

Filed Jul. 6, 1984, Ser. No. 628,532
Claims priority, application Austria, Jul. 7, 1983, 2507/83
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 337—394 **9 Claims**



1. A device for regulating temperature of radiation and contact heating bodies and electrical cooking apparatus in combination with cooking surfaces consisting of metal, glass ceramics and the like, in which at least one temperature sensor and switch system are provided in order to regulate the temperature of the heating body between the heating body and the cooking surface, said sensor having a rod of high thermal expansion which is disposed in a tube made of low thermal expansion, the switch system being enclosed within a switch housing, one end of the rod being in communication with the switch system which serves to regulate the temperature of the heating body, one end of the tube resting against a side wall of the switch housing, the side wall being oriented approximately perpendicular to the rod, a second end of the rod and a second end of the tube being joined together at a location distant from the switch housing to form the sensor, the improvement wherein

the end of the tube which rests against the side wall has a funnel-shaped enlargement in diameter and the side wall has a spherical bulge which extends into the enlargement of the diameter to contact directly the material of the tube so as to form a joint in this region;

the bulge having a hole for entry of the one end of the rod into the switch housing, the device including spring means connecting between an interior side of said bulge and the one end of the rod for securing the sensor to the housing, and wherein electrically conducting elements of the switch system are electrically insulated from said sensor.

4,555,689

ELEVATOR SYSTEM WITH LAMP STATUS AND MALFUNCTION MONITORING

Michael J. Brick, Wallingford, Conn., and Linus R. Dirnberger, Randolph, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 30, 1983, Ser. No. 527,919
Int. Cl.⁴ B66B *3/00*
U.S. Cl. 340—19 R **5 Claims**

1. An elevator system, comprising:

a building having a plurality of floors,

an elevator car mounted for movement in said building,

car controller means for directing said elevator car to serve floors of said building,

lamp means at each floor served by said elevator car, with said lamp means including at least one lamp,

said car controller means preparing and issuing illumination commands for selectively controlling the illumination status of the lamp means,

processor means at each floor served by said elevator car,

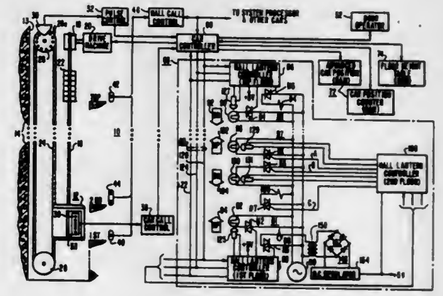
and communication means having first, second and third conductors, with said third conductor being common to the first and second conductors, said car controller means selectively addressing and communicating illumination commands to each of said processor means via said first communication conductor,

each of said processor means including means for implementing illumination commands for its associated lamps, including means for energizing and deenergizing said lamps,

each of said processor means further including means for testing the results of each implementation, with said means including detector means, comparator means, and memory means,

said detector means determining the actual illumination status of each lamp associated with the processor,

said comparator means comprising the actual illumination status of each associated lamp with the commanded status, to detect lamp malfunctions,



said processor memory means storing malfunction indications detected by said comparator means,

each of said processor means including means for preparing and transmitting response messages to said car controller via said second communication conductor, with said response messages including an acknowledgement when an illumination command has been actually implemented, as determined by said detector means and said comparator means, and a malfunction indication when detected by said detector means and said comparator means,

said car controller means including memory means for maintaining a lamp status table and a lamp malfunction table in response to said response messages, with said car controller means being responsive to the status of the elevator system, said lamp status table, and said lamp malfunction table when preparing commands for the processor means, preparing an energizing command for a lamp only in the absence of a stored malfunction indication relative to the lamp,

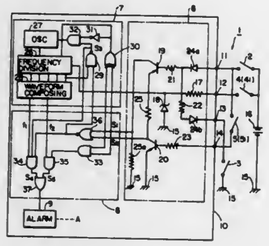
said first, second and third conductors handling all of the communications between said car controller means and said processor means, regardless of the number of said processor means.

4,555,690

WARNING SIGNAL GENERATING DEVICE FOR VEHICLE

Yoneharu Fukushima, and Kiyoshi Wakai, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Dec. 30, 1981, Ser. No. 335,492
Claims priority, application Japan, Dec. 30, 1980, 55-188149
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 340—52 F **12 Claims**



1. A warning signal generating device for a vehicle of the type including a plurality of switch means for providing outputs indicating the status of respective vehicle components and means for generating a warning signal in response to abnormal combinations of indicated component status, said means for generating a warning signal comprising:

control circuit means responsive to said switch means outputs for providing a first control signal in response to a first abnormal combination of said switch means outputs and a second control signal in response to a second abnormal combination of switch means outputs;

alarm signal generating means responsive to said first control signal for providing an alarm drive signal of a first frequency and responsive to said second control signal for providing an alarm drive signal of a second frequency comprising;

alarm means responsive to said alarm drive signals for providing different alarm indications in response to said two drive signals, said alarm signal generating means comprising; oscillation signal generating means responsive to either of said control signals for simultaneously generating said first and second frequency signals comprising; oscillator means responsive to either of said control signals for generating an oscillation signal, and means for including a frequency division means for receiving and frequency dividing said oscillation signal into a plurality of frequency divided signals, for deriving said first and second frequency signals from said oscillation signal; gate circuit means responsive to said first control signal for passing said first frequency signal to said alarm means and responsive to said second control signal for passing said second frequency signal to said alarm means; and

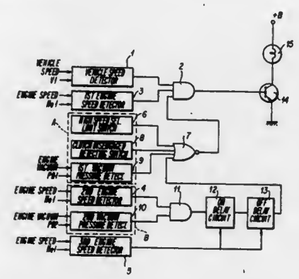
wherein said oscillation signal generating means further comprises timing means responsive to an output from said frequency division means for terminating the generation of said first and second alarm drive signals after a predetermined period of time, said timing means including a counter for counting a timing signal derived from said oscillation signal.

4,555,691

SHIFT INDICATING SYSTEM FOR SPEED CHANGE GEARS OF A MANUAL TRANSMISSION

Takefumi Hosaka, Asaka; Takeshi Imai, Tokyo, and Takaya Senzaki, Iruma, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,710
Claims priority, application Japan, Dec. 4, 1981, 56-196092
Int. Cl.⁴ G09B *9/04*; B60Q *1/26*
U.S. Cl. 340—52 R **8 Claims**



1. A shift-up indicating system for manual speed change gears of a automobile transmission, said system comprising:

(a) car speed detector means for detecting a vehicle speed condition when the speed of an automobile is greater than a predetermined vehicle speed and for producing an output voltage level indicative of said condition;

(b) engine speed detector means for detecting an engine speed condition when the speed of an engine of said automobile is greater than a predetermined engine speed and for producing an output voltage level indicative of said condition;

(c) circuit means for monitoring the occurrence of at least one predetermined operating condition of said automobile during the occurrence of which said at least one predetermined operating condition an indication to a driver of said automobile of a condition of poor fuel consumption is not required, and for producing an output voltage level when said at least one predetermined operating condition occurs; and

(d) indicator means operably coupled to said car speed detector means, said engine speed detector means and said circuit means, for producing an indication of an operating condition of poor fuel consumption when said output voltage levels of said car speed detector means and said engine speed detector means indicate that the automobile and engine speeds are greater than the respective predetermined vehicle speed and predetermined engine speed and when the output voltage level of said circuit means indicates that none of said at least one predetermined operating condition of said automobile has occurred.

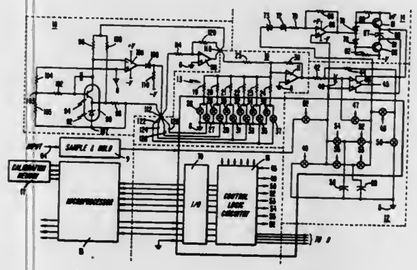
4,555,692

ERROR CORRECTING APPARATUS FOR SYSTEMS SUCH AS ANALOG TO DIGITAL CONVERTERS

Benjamin Eng, Jr., Everett; Peter S. Duryee, Lynnwood, and John M. Anholm, Jr., Snohomish, all of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Nov. 14, 1983, Ser. No. 551,377
Int. Cl.⁴ H03K *13/06*
U.S. Cl. 340—347 AD **3 Claims**

1. In a recirculation of remainder analog to digital converter having an input terminal for receiving an input analog signal, selectable switch means for generating digital reference signals, offset means for causing said digital reference signals to be offset by a predetermined amount; digital to analog conversion means responsive to said switch means and said offset means for generating analog reference signals representative of said digital reference signals and amplifier means operable selectively as (a) a comparator to compare the input analog signal with said analog reference signals and generate an indicator signal when said analog input and reference signals have a predetermined relationship, (b) a difference amplifier to amplify a difference between the analog input and analog reference signals to obtain an analog remainder signal to be recirculated, and (c) a comparator to compare the analog recirculated remainder signal with the analog reference signal and generate said indicator signal when said input analog reference and remainder signals have a predetermined relationship; and control means for controlling said switch means to generate said



digital reference signals and to modify the output of said switch means in response to said indicator signals, the digital reference signal corresponding to outputs of said modified switch means, together with the digital reference signals corresponding to said remainder signals, constituting said digital output signal;

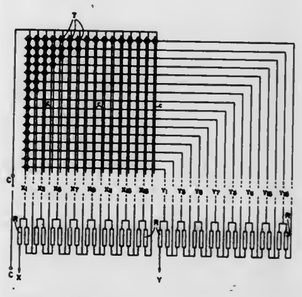
error correcting circuitry characterized in that said switch means generates digital reference signals having a predetermined degree of accuracy greater than the required accuracy of an output of said analog to digital converter, and in that successive recirculated remainders overlap, whereby errors in said successive remainders cancel.

4,555,693

MULTIKEY KEYBOARD FOR INPUTTING DATA INTO A COMPUTER

Sherif Danish, Foster City, and Adel Danish, Menlo Park, both of Calif., assignors to Polytel Corp., Sunnyvale, Calif.

Filed Dec. 27, 1982, Ser. No. 453,592
Claims priority, application France, Oct. 27, 1982, 82 17975
Int. Cl.⁴ G06F *3/02*
U.S. Cl. 340—365 S **19 Claims**



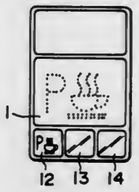
1. A multikey keyboard for inputting data into the computer, whose keys place in circuit the point of intersection of a matrix of X rank and Y rank conductors, characterized in that the X rank conductors, on the one hand, and the Y rank conductors, on the other, are respectively connected together by interconnection resistors (R) and to an output X and an output Y of the keyboard, intended to be connected to two analog inputs of the computer, so that the resistance values applied at the input to these latter are representative of the X rank and of Y rank of any key pressed in that the resistance for any key of a given X or Y rank is substantially constant for all keys of the same column or row, respectively, but differ in resistance from column to column or row to row.

4,555,694

DISPLAY DEVICE FOR A VEHICLE

Takayuki Yanagishima, Yokosuka, and Yasutoshi Seko, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 1, 1982, Ser. No. 384,029
Claims priority, application Japan, Jun. 3, 1981, 56-84427
Int. Cl.⁴ G08B *25/00*
U.S. Cl. 340—524 **16 Claims**



1. An automotive vehicle display device for displaying various information according to vehicle driving conditions, comprising:

detector means for detecting driving and/or driver conditions for deriving plural detector signals in response to preselected vehicle driving and/or driver conditions being detected;

a common display for displaying various visual patterns, each corresponding to one of the conditions to be displayed, said common display including a storage for storing said display patterns;

a plurality of individual displays, each displaying one of said display patterns indicative of a corresponding one of said conditions; and

a display controller associated with said common and individual displays for controlling displays thereon, said common display, and one of the display patterns corresponding to the detected notable condition for a predetermined period of time; and said controller operating one of said individual displays to display specific information concerning said notable condition in response to said detector signal as long as the preselected vehicle driving condition is maintained.

4,555,695

FIRE ALARM SYSTEM

Haruchika Machida, and Sadataka Yuchi, both of Sagamihara, Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,437
Claims priority, application Japan, May 19, 1983, 58-75145[U]; Sep. 20, 1983, 58-173701
Int. Cl.⁴ G08B *1/08*
U.S. Cl. 340—538 **10 Claims**

1. A fire alarm system having a plurality of fire detectors connected in parallel with each other to signal lines leading to a central signal station for detecting a change in the ambient physical phenomena caused by a fire and responding to the station with the detection signal, which system is characterized in that

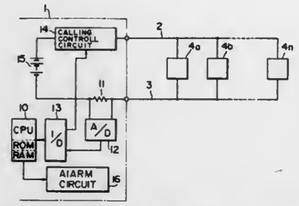
said signal lines connecting to the respective fire detectors are also used as power lines;

each of said fire detectors receives calling clock pulses su-

perposed on a power supply voltage and transmitted from the central signal station through the power/signal lines and returns the detection signal in the mode of current to the signal station; and

said central signal station comprises:

a calling control means which outputs the calling clock pulses by transmitting one calling clock pulse to one fire detector and providing, between the calling clock pulses,



a time for detecting at least a steady-state current and a time for detecting the detection signal current;

a current detecting means for detecting the steady-state current and the detection signal current;

a computing means for obtaining a difference between the steady-state current and the detection signal current; and

an alarm means for giving an alarm upon determination of a fire based on the output value from the computing means.

4,555,696

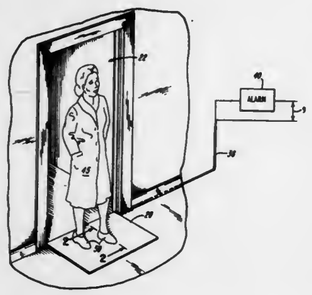
PASSAGEWAY SELECTIVE DETECTOR MECHANISM AND SYSTEM

Donald G. Brown, 4609 Kellogg Ave., Cincinnati, Ohio 45226

Filed Jun. 8, 1983, Ser. No. 502,175

Int. Cl.⁴ G08B *13/24*

U.S. Cl. 340—551 **12 Claims**



1. Passageway selective detector mechanism comprising a mat for location in a passageway, the mat including a plurality of magnetically operable electric switches, alarm means, electric circuit means joined to the electric switches and to the alarm means and adapted to be joined to a source of electrical energy for energization of the alarm means by magnetic means positioned adjacent the mat.

4,555,697

TEETH-HELD HEAD TILT ALARM

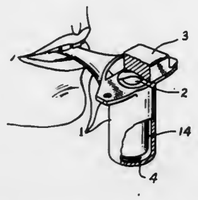
James D. Thackrey, 13852 Dall La., Santa Ana, Calif. 92705

Filed Feb. 17, 1984, Ser. No. 581,075

Int. Cl.⁴ G08B *23/00*

U.S. Cl. 340—575 **4 Claims**

1. A self-contained drowsiness alarm device of the type in which a tilt switch moving with the head connects a source of electromotive force to a buzzer when the head tilts, wherein the improvement comprises a mouthpiece for holding the device between the user's upper and lower teeth, said buzzer



emitting a signal both by sound and vibration when the head tilts.

4,555,698

DETECTING MACHINE TOOL SET-UP ERRORS

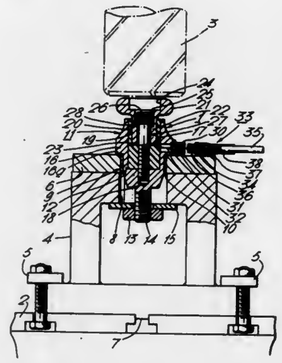
Frederick Clark, and Colin Moore, both of Preston, England, assignors to British Aerospace Public Limited Company, London, England

Filed May 11, 1982, Ser. No. 377,177

Claims priority, application United Kingdom, May 12, 1981, 8114467

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—680 **12 Claims**



1. Set-up checking apparatus for a machine tool, the apparatus comprising:

a setting-aid including an electrically conductive member and a mounting member for supporting the electrically conductive member at a predetermined position relative to the machine tool, and

a detector circuit and conductor means for connecting the conductive member of said setting-aid to the detector circuit, the detector circuit including supply means connected to said conductor means for supplying a signal to said setting-aid via the conductor means, first sensor means connected to said conductor means and operable for sensing a change in said signal indicative of disconnection between the detector circuit and the setting-aid, and second sensor means connected to said conductor means and operable for sensing a change in said signal indicative of contact between said conductive member of the setting-aid and a cutting tool of the machine tool.

4,555,699

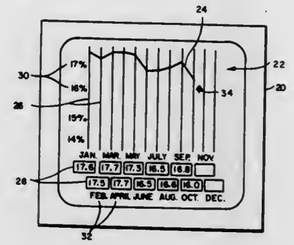
DATA-ENTRY SYSTEM

Alan L. Citron, Winchester; Thomas W. F. Lindquist, Boston, and William E. Popp, Walpole, all of Mass., assignors to Bancware, Inc., Stoughton, Mass.

Filed Jan. 10, 1983, Ser. No. 456,611

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—707 **10 Claims**



1. A data-entry system comprising:

A. a two-axis analog entry device that senses successive locations thereon of a location indicator and generates location signals representing the location in terms of a pair of axis coordinates whereby one may enter on said entry device a graphic representation of a function by positioning the location indicator at successive locations thereon;

B. a two-axis display device operable to display thereon an independent-variable scale and a function scale and to indicate the values of a function of an independent variable for a series of values of the independent variable by generating thereon a graphical representation of the function that represents the values of the independent variable by distance from one axis in accordance with said independent-variable scale and represents the values of the function by distance from the other axis in accordance with said function scale; and

C. control means for operating said display device to display said function and independent-variable scales, for receiving said location signals from said analog entry device, and for responding to the location signals by operating said display device to display said graphical representation and by storing a series of values of the function represented by said graphical representation.

4,555,700

INTERNAL IMAGE AND BIT ARRAY FOR DISPLAY AND PRINTING OF GRAPHICS

Danny B. Convis, Washington Grove; Donald T. Crehan, Gaithersburg, both of Md., and Charles J. Lovell, Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 11, 1983, Ser. No. 493,677

Int. Cl.⁴ G07G *3/00*

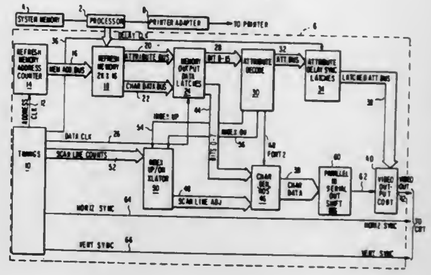
U.S. Cl. 340—721 **4 Claims**

1. In a word processing system having an interactive display terminal and a printer, both said display terminal and said printer being character box devices, the improvement comprising apparatus for displaying alphanumeric and graphic images on said display terminal by character generation and for printing high resolution graphic images on said printer, said apparatus comprising:

first storage means for storing data representative of alphanumeric data and low resolution graphic data in the form of alphanumeric character data and graphic character data, respectively;

second storage means for storing data representative of high resolution printed graphics in the form of a bit array;

means for applying said data representative of said alphanumeric data from said first storage means and data from said second storage means to said printer; and



means for applying said data representative of said alphanumeric data and said graphic data from said first storage means to said display terminal.

4,555,701

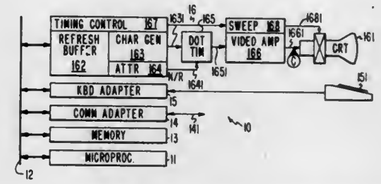
LEGIBILITY ENHANCEMENT FOR ALPHANUMERIC DISPLAYS

Richard E. Dahl, Rochester; Daniel P. Faflak, Mazeppa, and Lee A. Sendelbach, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,404

Int. Cl.⁴ G09G *1/08*

U.S. Cl. 340—736 **8 Claims**



1. In a display for alphanumeric character images made up of a matrix of individual dots having a character-generator means for producing a raw video signal having first and second levels, and having attribute means for producing an attribute signal specifying a normal mode in which said first level represents said image dots and specifying a reverse mode in which said second level represents said image dots, said images being substantially the same overall size in both said modes, the improvement comprising:

timing means responsive to said raw video signal for producing a modified video signal having first and second dot durations different from each other; and

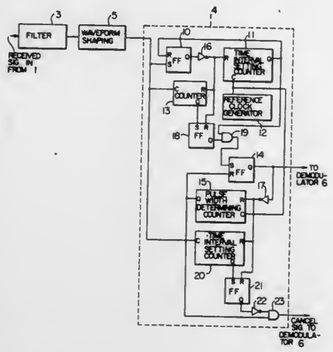
switching means responsive to said attribute signal for selectively enabling said timing means to produce dots of said first and second durations for said normal mode and for said reverse mode respectively.

4,555,702

REMOTE CONTROL SIGNAL REPRODUCING CIRCUIT

Shigeo Matsuura, Chigasaki; Uji Ito, and Yasuhiro Yakushiji, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,254
Claims priority, application Japan, Sep. 17, 1981, 56-145624
Int. Cl.[4] H04Q *1/36;* H03K *5/20*
U.S. Cl. 340—825.64 4 Claims



1. A signal reproducing circuit comprising:

an input terminal for receiving a modulated transmission signal subjected to a pulse modulation;

at least one of first, second and third noise rejection means for eliminating noise from the modulated transmission signal received by said input terminal; and

an output terminal to which a reproduced output signal reproduced from the modulated transmission signal removed of noise by said noise rejection means is delivered,

said first noise rejection means including;

first time setting means connected between said input terminal and said output terminal, for setting a first predetermined time interval starting from a time at which an initial pulse of said modulated transmission signal is received by said input terminal, and

first pulse counting means coupled to said first time setting means, for counting the number of the pulses received by said input terminal during said first predetermined time interval and allowing the reproduced output signal to be delivered to said output terminal when the number of the counted pulses exceeds a first predetermined number,

said second noise rejection means including;

second time setting means connected between said input terminal and said output terminal, for setting a second predetermined time interval following lapse of said first predetermined time interval, and

second pulse counting means coupled to said second time setting means, for counting the number of the pulses received by said input terminal during said second predetermined time interval and preventing delivery of the reproduced output signal to said output terminal when the number of the counted pulses is below a second predetermined number,

said third noise rejection means including;

third time setting means connected between said input terminal and said output terminal, for setting a third predetermined time interval following lapse of said second predetermined time interval and

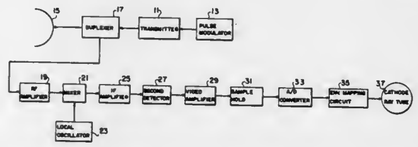
third pulse counting means coupled to said third time setting means, for counting the number of the pulses received by said input terminal during said third predetermined time interval and preventing delivery of the reproduced output signal to said output terminal when the number of the counted pulses exceeds a third predetermined number.

4,555,703

ENVIRONMENTAL MAPPING SYSTEM

Ben H. Cantrell, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 19, 1980, Ser. No. 160,877
Int. Cl.[4] G01S *7/44*
U.S. Cl. 343—5 SA 17 Claims



1. An environmental mapping system comprising:

input means for receiving a first signal representing the amplitude of a first pulse-echo return versus time after transmission, for subsequently receiving a second signal representing the amplitude of a second pulse-echo return versus time after transmission and for simultaneously outputting the second signal and a delayed replica of the first signal;

echo source classification means, connected to the input means to receive the second signal and the delayed replica of the first signal, for generating a plurality of classification signals, each classification signal representing the expectation of finding an echo from a respective one of a plurality of environmental sources in the amplitudes of the first and second pulse-echo returns versus time after transmission; and

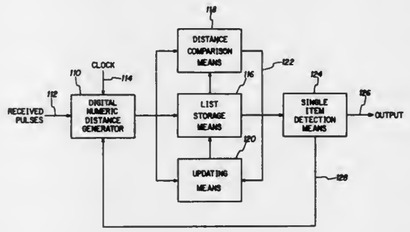
output means for connecting the echo source classification means to a display means to transmit to the display means any of the plurality of classification signals.

4,555,704

RANGE REPLY SEARCH APPARATUS

Jan E. Treise, West Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 15, 1982, Ser. No. 441,454
Int. Cl.[4] G01S *13/00*
U.S. Cl. 343—7.3 6 Claims



1. The method of searching for range indicating pulse signals received as part of distance measuring equipment (DME) comprising, the steps of:

forming a list of computed numeric distance indications, over a first predetermined period of time, corresponding to times of receipt of a first set of pulse signals from a signal source;

logically combining computed numeric distance indications, obtained over a second predetermined period of time and corresponding to times of receipt of a second set of pulse signals from said signal source, with those distance indications in said list to produce difference result values;

updating said list of computed numeric distance indications to include only those computed numeric distance indications, obtained from said second set of pulse signals, that are instrumental in producing logical result values that are less than a predetermined absolute value; and

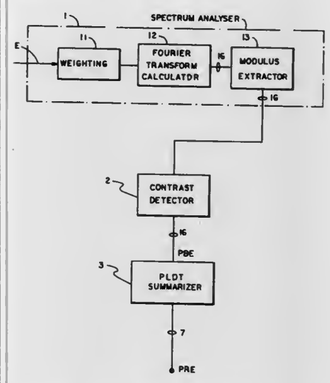
repeating said combining and updating until there is only one distance indication left in said list.

4,555,705

SYSTEM FOR PROVIDING A SUMMARIZED INFORMATION ON THE LINE SPECTRUM FROM A DOPPLER RADAR SPECTRUM ANALYZER

Jean-Louis G. Bossennec, Elancourt; Jean-Claude A. Debuisser, Trappes, and Philippe F. Farhi, Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 19, 1982, Ser. No. 442,935
Int. Cl.[4] G01S *13/50*
U.S. Cl. 343—55 A 3 Claims



1. A Doppler radar plot summarizer for moving targets supplying a digital signal for one or more targets, said signal for each target range called an elementary summary plot, PRE, corresponding to a given delay of the received signal, said digital signal consisting of one target detection bit D, one bit V indicating whether the target is a single-speed target and one word of m+1 bits containing information on the speed of that target, if the target is of a single speed, wherein said plot summarizer receives a digital signal called an elementary raw plot, PBE, from a circuit comprising in series a 2^m point spectrum analyser, made up of a weighting circuit, a 2^m Fourier transform calculator and a modulus extractor, and a contrast detector furnishing, for each of these target ranges, said elementary raw plot consisting of one word of 2^m bits, the weighting performed by said weighting circuit being such that it limits the maximum number of cyclically contiguous lines for which a single-speed target is detected to $2^m/4+1$, said plot summarizer comprising:

four read-only memories respectively addressed by a first, a second, a third and a fourth group of bits of said elementary raw plot and providing at their outputs corresponding digital signals of m+3 bits called pseudosummaries, said first group consisting of bits 0 to $2^{m-1}-1$ of the elementary raw plot, said second group consisting of bits 2^{m-2} to $2^{m-1}+2^{m-2}-1$ of the elementary raw plot, said third group, complementary to said first group, consisting of bits 2^{m-1} to 2^m-1 of the elementary raw plot and said fourth group, complementary to said second group, consisting of bits $2^{m-1}+2^{m-2}$ to 2^m-1 and 0 to $2^{m-2}-1$ of the elementary raw plot; and

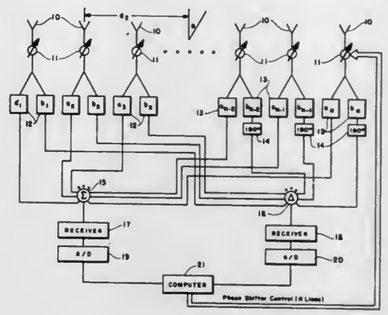
a logic circuit for reconstituting said elementary summary plot from said pseudosummaries provided by said four read-only memories.

4,555,706

SIMULTANEOUS NULLING IN THE SUM AND DIFFERENCE PATTERNS OF A MONOPULSE RADAR ANTENNA

Randy L. Haupt, 179 Hudson Rd., Stow, Mass. 01775

Filed May 26, 1983, Ser. No. 498,334
Int. Cl.[4] G01S *3/44, 3/38, 13/44*
U.S. Cl. 343—379 2 Claims



1. In a monopulse radar system having: a phased array antenna, said phased array antenna comprising a multiplicity of equally spaced antenna elements, a sum channel means and a difference channel means connected to receive radar signals from said antenna and transmit sum and difference signals to radar receiver means, and computer means, said computer means generating interference source direction data θ_m from received radar signals; the improvement residing in nulling means for effecting, simultaneous nulling in antenna sum and difference patterns, said nulling means comprising

an adaptive weight, w_n, associated with each antenna element, each said adaptive weight being represented by $w_n=1+\alpha_n+j\beta_n$, and

means for setting each said adaptive weight, w_n, in response to data developed by said computer, said computer developing weight settings in accordance with the functions

$$\alpha_n=Re[A^+(AA^+)^{-1}B]$$

$$\beta_n=Im[A^+(AA^+)^{-1}B]$$

wherein

$$A=\begin{bmatrix} a_1 e^{jd_1(u_1-u_s)} & \cdots & a_N e^{jd_N(u_1-u_s)} \\ \vdots & & \vdots \\ a_1 e^{jd_1(u_M-u_s)} & \cdots & a_N e^{jd_N(u_M-u_s)} \\ b_1 e^{jd_1(u_1-u_s)} & \cdots & b_N e^{jd_N(u_1-u_s)} \\ \vdots & & \vdots \\ b_1 e^{jd_1(u_M-u_s)} & \cdots & b_N e^{jd_N(u_M-u_s)} \end{bmatrix}$$

-continued

$$B = \begin{bmatrix} -\sum_{n=1}^{N} a_n \cos[d_n(u_1 - u_s)] \\ \vdots \\ -\sum_{n=1}^{N} a_n \cos[d_n(u_M - u_s)] \\ -j\sum_{n=1}^{N} b_n \sin[d_n(u_1 - u_s)] \\ \vdots \\ -j\sum_{n=1}^{N} b_n \sin[d_n(u_M - u_s)] \end{bmatrix}$$

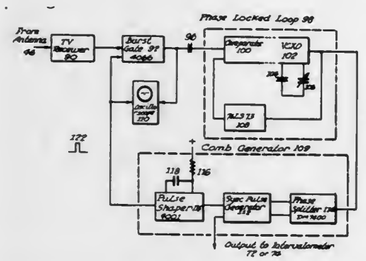
N=number of elements
n=elements number from 1 to N
a_n=sum amplitude weight
b_n=difference amplitude weight
k=propagation constant=$2\pi/\lambda$
λ=wavelength
d_n=n−(N+1)/2
M=number of jammers
m=jammer number from 1 to M
u_m=sin θ_m,
θ_m=direction of mth jammer relative to boresight,
u_s=sin θ_s, and
θ_s=direction of desired signal relative to boresight.

4,555,707

TELEVISION PULSED NAVIGATION SYSTEM

Will A. Connelly, 5220 SW. 8th St., Plantation, Fla. 33317

Continuation of Ser. No. 412,219, Aug. 27, 1982, abandoned.
This application May 6, 1985, Ser. No. 731,331
Int. Cl.⁴ G01S *1/24, 3/02*
U.S. Cl. 343—387 **15 Claims**



1. A method in aid of navigation and positioning using television and no other radiated signals comprising the steps of:
receiving simultaneously at an unknown location two television signals each containing a mutually common and idehtical redundant waveform component, said component being identically positioned in each said signal in accordance with the technical standard pertaining to said signals, said signals being radiated synchronously from two different known locations;
extracting said component from each of said signals;
measuring and delivering as output the measurement of the elapsed time between extraction of said component from first one received said signal and then from the other received said signal; and
deriving from said output and known locations a hyperbolic line of position to define a first coordinate of the unknown location.

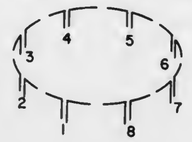
4,555,708

DIPOLE RING ARRAY ANTENNA FOR CIRCULARLY POLARIZED PATTERN

Douglas K. Waineo, Placentia, and Sam S. Wong, Yorba Linda, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1984, Ser. No. 569,642
Int. Cl.⁴ H01Q *21/20, 1/28*
U.S. Cl. 343—799 **4 Claims**

DIPOLE RING ARRAY CONCEPT



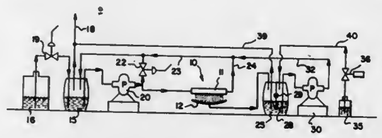
1. In an antenna configuration for a satellite having a first array beamed toward the earth, and a second array with a null toward the earth for communication with other satellites;
wherein said second array comprises N dipole elements arranged in a ring forming a full circle, the diameter of the ring and the phase distribution to the N elements being selected to produce circular polarization in the far field, the phase to each element being P° I/N, where P is a multiple of 360° and I is the element number.

4,555,709

INK RECONSTITUTION SYSTEM AND METHOD FOR INK DROP PRINTER

Arnold J. Greeson, Midlothian, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Apr. 12, 1984, Ser. No. 599,375
Int. Cl.⁴ G01D *9/00, 15/16*
U.S. Cl. 346—1.1 **7 Claims**



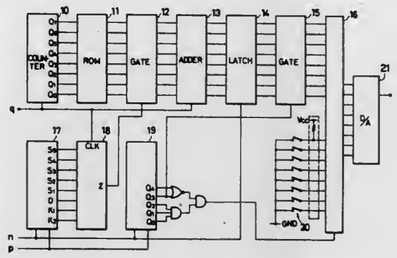
5. A method of maintaining the consistency of printing ink in the ink supply system of an ink drop printer, in which evaporation of solvents occurs to the ink component which is not printed but is caught in a catcher tray or the like and returned to the ink system, comprising the steps of:
collecting all of the non-printed ink in a catcher and delivering the same to a temporary holding vessel,
defining fixed predetermined volumes of such collected ink for return to the system,
mixing with each of said fixed volumes a predetermined amount of ink replenisher to make up for solvent loss in such quantities, which amount is exclusively related to said volumes, and
returning said mixture to the ink supply system.

4,555,710

CHARGE-CONTROLLED INK-JET PRINTING METHOD AND APPARATUS

Takahisa Koike, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 20, 1982, Ser. No. 451,193
Claims priority, application Japan, Dec. 20, 1981, 56-205728
Int. Cl.⁴ G01D *9/00, 15/18*
U.S. Cl. 346—1.1 **4 Claims**



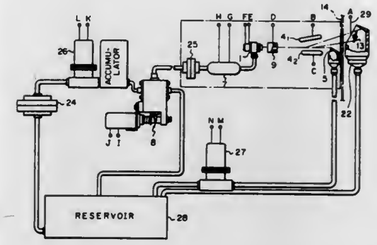
1. A method for controlling the charging on ink droplets in a charging type ink-jet printer which forms a printed image on a recording medium by passing a first series of varyingly charged ink droplets through an electric field, deflecting ink droplets to be used for printing by causing those printing ink droplets having a first charging state at a print level to reach the recording medium, and collecting with a gutter ink droplets not to be used for printing by preventing those nonprinting ink droplets having a second charging state at a non-print level from reaching the recording medium, said method characterized by a step of charging a last ink droplet of said nonprinting ink droplets having said second charging state at a non-print level to a third charging state at a transitional level, which is different from said non-print level but still sufficient to cause collection by said gutter and is of the same polarity as a next following series of ink droplets having said first charging state at the print level for printing, thereby allowing to prevent a first printing ink droplet of said following series from catching up with said last ink droplet of said non-printing droplets of said first series.

4,555,711

DEFLECTION CONTROL INK JET OPERATION ADJUSTMENT CONTROL

Tsutomu Sato, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,389
Claims priority, application Japan, Aug. 30, 1982, 57-150390; Aug. 30, 1982, 57-150392
Int. Cl.⁴ G01D *18/00*
U.S. Cl. 346—75 **2 Claims**



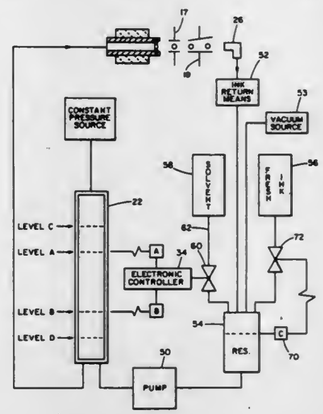
2. A deflection control type ink jet recording apparatus having an ink ejection head equipped with an ink ejection nozzle and a vibrator for applying pressure vibration having a predetermined period to ink which is communicated to the ink ejection nozzle, a pump for supplying ink under pressure to the ink ejection head, a charging electrode for applying a charging electric field to ink ejected from the nozzle, and a deflection electrode for applying a deflecting electric field to a charged ink drop, said ink jet recording apparatus comprising:
charge voltage generator means for generating a record charge pulse equivalent in period to the pressure vibration and having a comparatively large width, and a search charge pulse common in period to and smaller in width than the record charge pulse, said charge voltage generator means selectively supplying and charg electrode with the record charge pulse and the search charge pulse;
electrode means for detecting a charged ink drop;
charge detector means for generating an electrical signal representing the presence/absence of a charged ink drop, said charge detector means being connected to said electrode means for detecting a charged ink drop; and
electronic control means for performing an ink ejection control inclusive of a start and a stop of operation of the pump, and a phase search control which predetermines one of a separation phase of ink drops and a phase of charging pulses relative to the other, said control means being constructed to, when failed to predetermine an adequate phase by at least one cycle of phase shifts in the phase search control, temporarily stop ink ejection and, after a predetermined period of time, resume ink ejection for a second phase search control.

4,555,712

INK DROP VELOCITY CONTROL SYSTEM

George Arway, Norridge; Frank Eremity, Hanover Park; George Dick, Chicago, all of Ill., and Elaine Pullen, Brentwood, England, assignors to Videojet Systems International, Inc., Elk Grove Village, Ill.

Filed Aug. 3, 1984, Ser. No. 637,404
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



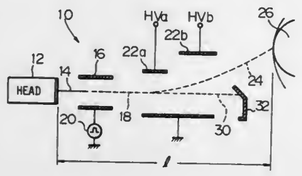
16. A method for controlling ink drop velocity in a drop marking system having an ink supply, a nozzle to form a stream of ink drops and a pressure source to force the ink to the nozzle from the supply, said method comprising the steps of:
(a) measuring the time interval required for a known volume of ink to flow to said nozzle,
(b) comparing the time interval against a reference value to identify deviations therefrom,
(c) altering the ink flow rate to maintain said time interval substantially equal to said reference value.

4,555,713

POWER SOURCE DEVICE FOR INK JET PRINTER

Kazumi Ishima, Kashiwa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,472
Claims priority, application Japan, Apr. 20, 1983, 58-69540
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 5 Claims



1.

A power source device for a charge and deflection type ink jet printer which has at least a first deflection electrode and a second deflection electrode separate from the first deflection electrode, comprising:

a DC power source;

a voltage control circuit for controlling an output voltage of said DC power source;

a transformer for varying a magnitude of a controlled voltage supplied from said voltage control circuit to a primary winding and producing the varied controlled voltage from a secondary winding;

a first shaper and a second shaper for individually rectifying and smoothing a voltage appearing at said secondary winding of said transformer and applying outputs of said first shaper and said second shaper to the first deflection electrode and the second deflection electrode as a first deflection voltage and a second deflection voltage respectively; and

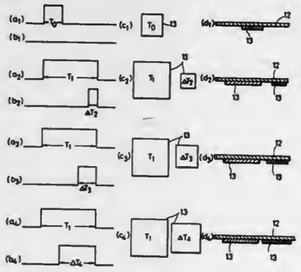
a discharging time constant control circuit for substantially equalizing discharging time constants of output voltages of the first shaper and the second shaper.

4,555,714

APPARATUS AND METHOD FOR THERMAL INK TRANSFER PRINTING

Itsuo Takanashi; Hideshi Tanaka; Terumi Ohara, all of Yokohama; Toshinori Takahashi, Kawasaki; Shigeru Kato, Tokyo; Tsutomu Kiuchi, Yokohama, and Hiroki Kitamura, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Nov. 9, 1984, Ser. No. 669,783
Claims priority, application Japan, Nov. 12, 1983, 58-211716
Int. Cl.[4] B41J *3/20*
U.S. Cl. 346—76 PH 2 Claims



1.

Apparatus for thermal ink transfer printing, comprising:

(a) a thermal head having a plurality of heat generating resistors arranged in line for melting thermally fusable ink attached to an ink sheet, first and second groups of heat generating resistors respectively corresponding to two alternate arrangements of said heat generating resistors being arranged so that each of said second group is positioned within a pre-heating region of said first group;

(b) a head driving circuit responsive to an input signal for energizing said heat generating resistors such that each datum representing a desired density of a pixel is used to energize first and/or second heat generating resistors positioned close to each other, said first heat generating resistor being of said first group and said second heat generating resistor being of said second group, said head driving circuit having;

first means responsive to said input signal for detecting said desired density;

second means for energizing only said first heat generating resistor when said desired density is smaller than a predetermined value, said second means energizing said first heat generating resistor for a duration determined by said desired density; and

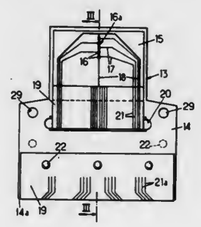
third means for energizing both said first and second heat generating resistors when said desired density is equal to or greater than said predetermined value, said third means energizing said first heat generating resistor for a predetermined maxium duration and said second heat generating resistor, for a duration determined by said desired density, in such a manner that an end of the energizing duration of said second heat generating resistor corresponds to an end of the energizing duration of said first heat generating resistor.

4,555,715

THERMAL PRINTHEAD MOUNTING CONTROL

Patrick Vegeais, St Germain en Laye; Michel Brot, Argenteuil, and Jean-Yves Valet, Beauchamp, all of France, assignors to Societe d'Applications Generales d'Electricite et de Mecaniques Sagem

Filed Jul. 5, 1984, Ser. No. 627,985
Claims priority, application France, Jul. 8, 1983, 83 11448
Int. Cl.[4] G01D *15/10;* B41J *3/20*
U.S. Cl. 346—76 PH 12 Claims



1.

Writing device with heating elements for printing by thermal action on a writing support, this device being fixed to a base such as a carriage of a printing machine, said device comprising:

a support for the heating elements bearing, on the one hand, the heating elements arranged in the form of electrical resistors and, on the other hand, first electrical contacts connected electrically to said heating elements,

an intermediate support mounted on said base and adapted to removably support mechanically the heating elements support,

a connecting part provided with second electrical contacts arranged to cooperate with abovesaid first electrical contacts of the heating elements support and attached respectively to the base,

fastening means to fix the intermediate support and the connecting part to the base ,

means for positioning the heating elements support on the intermediate support arranged so that the heating elements occupy, in operating position, a position pre-determined with respect to the writing support and the first and second electrical contacts respectively of the heating elements support and the connecting part cooperate mutually,

and locking means to make fast mechanically and removably the heating elements support to the intermediate support,

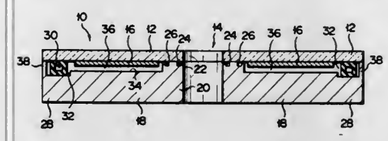
wherein the fastening means comprise a fixed rotary axle borne by the base and to which are hinged the intermediate support and the connecting part, control means being interposed between the base and the intermediate support to position the intermediate support angularly in a manner suitable for the progress of the writing process.

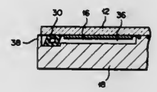
4,555,716

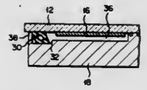
OPTICAL DISK HAVING ELASTIC DEFORMABLE SPACER

Kazuharu Odawara, and Yoshiaki Tago, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 12, 1983, Ser. No. 541,307
Claims priority, application Japan, Oct. 14, 1982, 57-180277
Int. Cl.[4] G01D *15/34*
U.S. Cl. 346—137 19 Claims







1.

An optical disk comprising:

a recording layer for storing data which is adapted to be read upon irradiation with a laser beam;

a protective plate for protecting said recording layer, with said recording layer being formed on one major surface of said plate, said plate being adapted to allow transmission of a laser beam therethrough;

a substrate, opposing said protective plate, for supporting said protective plate so as to form a space therebetween and having an outer wall around an outer peripheral portion of said substrate extending to support an outer peripheral portion of said plate, said recording layer being formed between said protective plate and said substrate; and

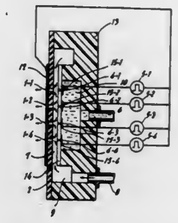
an elastically deformable spacer, disposed within said space radially inward of said wall close thereto and attached to said protective plate and said substrate, for coupling said protective plate and said substrate through said space so as to allow expansion and contraction of said protective plate and said substrate relative to each other without deformation of said plate.

4,555,717

INK JET PRINTING HEAD UTILIZING PRESSURE AND POTENTIAL GRADIENTS

Masayoshi Miura, Kawasaki, and Hiroshi Naito, Tokyo, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jun. 16, 1983, Ser. No. 505,353
Claims priority, application Japan, Jun. 16, 1982, 57-104202
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 14 Claims



1.

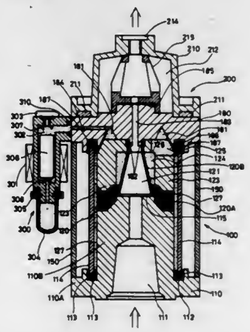
An ink jet printing head comprising an air flow chamber having a front channel, an air intake channel connected to a source of pressurized air for directing an airstream to said front channel so that the airstream makes a sharp turn at the entry into said front channel creating a sharp pressure gradient, a liquid chamber connected to a source of ink, an insulative plate defining on one side thereof part of said liquid chamber and defining on the other side thereof part of said air intake channel, the insulative plate having a rear channel axially aligned with said front channel, a first electrode disposed around said front channel, and a second electrode disposed on a rear side wall of said insulative plate and encircling said rear channel for establishing an electric field between said first and second electrodes by which liquid is discharged from the liquid chamber through the aligned rear and front channels in response to a potential developed across said first and second electrodes.

4,555,718

PIEZO ACTIVATED PUMP IN AN INK LIQUID SUPPLY SYSTEM

Masahiko Aiba, Nara; Masaaki Kuranishi, Yamatokoriyama, and Hideyuki Miyake, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1984, Ser. No. 572,054
Claims priority, application Japan, Jan. 25, 1983, 58-11042
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 4 Claims



1.

An ink liquid supply system for an ink jet system printer comprising:

an ink liquid reservoir containing water-color ink;

a liquid supply pump system connected to introduce said water-color ink from said ink liquid reservoir, and developing a pressurized ink liquid;

first conduit means, disposed between said ink liquid reservoir and said liquid supply pump system, for supplying said water-color ink to said liquid supply pump system; and

second conduit means for supplying said pressurized ink liquid developed from said liquid supply pump system to a nozzle unit,

said liquid supply pump system comprising:

a cylinder shaped vibration pipe;

a cone shaped pressure chamber surrounded by a resilient member, said cone shaped pressure chamber being diposed in said cylinder shaped vibration pipe in a manner that a cavity is formed between said cylinder shape vibration pipe and said resilient member;

an inlet passage connected to said first conduit means;

an inlet valve disposed at said inlet passage;

an outlet passage connected to said second conduit means;

an outlet valve disposed at said outlet passage; and

a vibration transferring liquid filled in said cavity formed between said cylinder shaped vibration pipe and said resilient member.

4,555,719

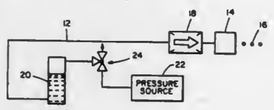
INK VALVE FOR MARKING SYSTEMS

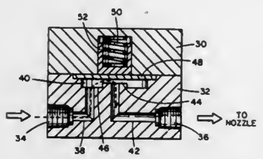
George Arway, Norridge; Frank Eremity, Hanover Park, and Tung M. Huang, Elk Grove Village, all of Ill., assignors to Videojet Systems International, Inc., Elk Grove Village, Ill.

Filed Aug. 19, 1983, Ser. No. 524,658

Int. Cl.⁴ G01D *15/16*

U.S. Cl. 346—140 R **7 Claims**





1. A system for controllably supplying ink to a remotely located drop marking nozzle comprising:

(a) an ink reservoir having a supply of ink therein,

(b) a drop marking nozzle remotely located from the ink reservoir and in communication therewith by means of a flexible fluid conduit,

(c) means for pressurizing said reservoir to deliver ink from the reservoir to the nozzle via said conduit and for depressurizing said reservoir to terminate ink flow and release the energy stored in the walls of the flexible fluid conduit,

(d) valve means adjacent said nozzle responsive solely to pressure variations in the fluid conduit, for preventing ink flow and nozzle drool when the fluid pressure in said conduit is below a selected value and for permitting ink flow to the nozzle when the fluid pressure is above said selected value.

4,555,720

INFRA-RED RADIATION DETECTORS AND THEIR MANUFACTURE

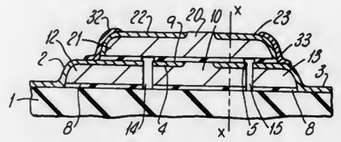
John B. Readhead, Lyndhurst, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,210

Claims priority, application United Kingdom, Mar. 3, 1982, 8206290

Int. Cl.⁴ H01L *27/14, 27/12*

U.S. Cl. 357—30 **12 Claims**



1. An infrared radiation detector comprising:

a substrate;

a lower body of infrared-sensitive material mounted on the substrate, said lower body having at least one first detector element formed therein;

an upper body of infrared-sensitive material mounted on the lower body, said upper body having at least one second detector element formed therein directly above the first detector element, said second detector element having detector characteristics different from those of the first detector element; and

electrical connections to the first and second detector elements;

characterized in that:

the lower body is divided into at least first and second portions electrically insulated from each other and separated from each other by a gap;

the upper body bridges the gap between the first and second portions of the lower body;

the first portion of the lower body has the first detector element formed therein; and

one of the electrical connections to the second detector element is formed on the second portion of the lower body.

4,555,721

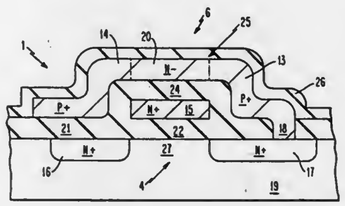
STRUCTURE OF STACKED, COMPLEMENTARY MOS FIELD EFFECT TRANSISTOR CIRCUITS

Jai P. Bansal, Manassas, Va.; Claude L. Bertin, S. Burlington, and Ronald R. Troutman, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 265,001, May 19, 1981. This application Nov. 4, 1983, Ser. No. 548,733

Int. Cl.⁴ H01L *29/04, 27/02*

U.S. Cl. 357—42 **3 Claims**



1. A stacked CMOS, two-input NAND integrated circuit comprising:

a first diffusion bar of N-type conductivity in a P-type silicon substrate;

a second diffusion bar of N-type conductivity in said substrate located in spaced, parallel relationship with said first bar forming a first N channel region therebetween;

a third diffusion bar of N-type conductivity in said substrate located in spaced, parallel relationship with said second bar forming a second N channel region therebetween;

a first logical input gate electrode juxtaposed over said first N channel region which is covered by an insulating layer, with said first N channel region forming a first N channel FET device;

a first layer of phosphosilicate glass on top of said first gate electrode;

a second logical input gate electrode juxtaposed over said second N channel region which is covered by an insulating layer, with said second N channel region forming a second N channel FET device;

a second layer of phosphosilicate glass on top of said second gate electrode;

a layer of laser annealed silicon having a first N-type portion covering said juxtaposed portion of said first gate electrode and formed by the diffusion of phosphorous atoms out from said first layer of phosphosilicate glass, a first P-type portion juxtaposed over said first bar and a second P-type portion juxtaposed over said second bar, forming a first P channel FET device;

said silicon layer having a second N-type portion covering said juxtaposed portion of said second gate electrode and formed by the diffusion of phosphorous atoms out from said second layer of phosphosilicate glass, and a third P-type portion juxtaposed over said third bar forming a second P channel FET device with said second P-type portion;

said first diffusion bar connected to a logical output terminal, said third diffusion bar connected to ground potential, said second diffusion bar operating as the source of said first N channel FET and the drain of said second N channel FET and said third diffusion bar operating as the source of said second N channel FET;

said first and third P-type portions of said layer connected to said logical output, said second P-type portion connected to a positive potential to operate as the source for both said first and second P channel devices, and said third P-type portion operating as the drain for said second P channel device.

4,555,722

TRI-LEVEL SANDCASTLE PULSE DECODER

Leopold A. Harwood, Bridgewater, N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 14, 1983, Ser. No. 561,331

Int. Cl.⁴ H04N *9/535*

U.S. Cl. 358—17 **10 Claims**

1. A sandcastle pulse decoder for use with a sandcastle pulse source delivering a train of trilevel pulses, inclusive of first pulse components exhibiting a first voltage level, second pulse components exhibiting a second voltage level lower than said first voltage level, and third pulse components exhibiting a third voltage level intermediate said first and second voltage levels, to a pulse input terminal; said decoder comprising:

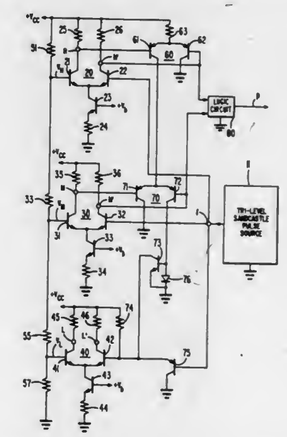
a source of DC potential;

a voltage divider, connected across said DC potential source and having a plurality of divider output terminals at which respectively different reference voltages appear;

a first voltage comparator, having a reference input and a signal input, said reference input being connected to one of said divider output terminals to receive one of said reference voltages; said first voltage comparator exhibiting a first state of operation when the voltage at its signal input is below a first threshold potential related to said one reference voltage and exhibiting a second state of operation when the voltage at its signal input significantly exceeds said first threshold potential, one of said voltage levels of said trilevel pulse train components lying below said first threshold potential whereas the next higher of said voltage levels of said trilevel pulse train components significantly exceeds said first threshold potential;

first coupling means for coupling said pulse input terminal to said signal input of said first voltage comparator;

a second voltage comparator, having a reference input and a signal input, said reference input being connected to another of said divider output terminals to receive a second one of said reference voltages; said second voltage comparator exhibiting a first state of operation when the voltage at its signal input is below a second threshold potential related to said second reference voltage, and exhibiting a



second state of operation when the voltage at its signal input significantly exceeds said second threshold potential; both said one and said next higher of said voltage levels of said trilevel pulse train components significantly exceeding said second threshold potential;

second coupling means for coupling said pulse input terminal to said signal input of said second voltage comparator; and

control means, responsive to the operating state of said first voltage comparator, for holding the voltage at said signal input of said second voltage comparator below said second threshold potential when said train of trilevel pulses exhibits said next higher of said voltage levels.

4,555,723

APPARATUS FOR REDUCING MOTION INDUCED DISTORTION IN A FRAME COMBED CHROMINANCE SIGNAL

Dalton H. Pritchard, Princeton Township, Mercer County, N.J., assignor to RCA Corporation, Princeton Township, Mercer County, N.J.

Filed Feb. 6, 1984, Ser. No. 576,241

Int. Cl.⁴ H04N *9/535, 5/21*

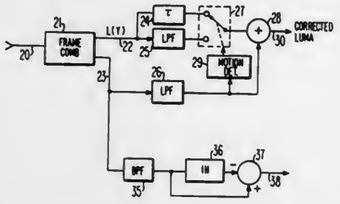
U.S. Cl. 358—31 **6 Claims**

6. Apparatus for separating the chrominance signal component from composite video signal comprising:

a source of composite video signal;

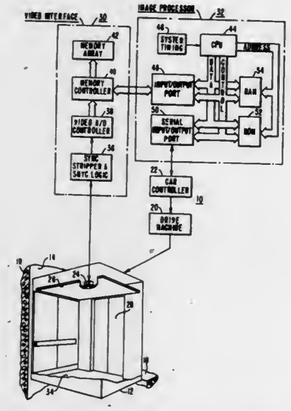
a frame comb filter having an input terminal coupled to said source and an output terminal at which frame comb filtered chrominance signal is available;

an interline comb filter having an input terminal coupled to the output port of said frame comb filter and an output



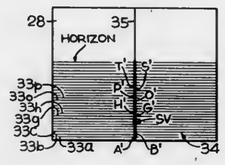
terminal at which said separated chrominance signal component is available.

4,555,724
ELEVATOR SYSTEM
Emanuel E. Enriquez, West Caldwell, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 21, 1983, Ser. No. 544,196
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—93 **6 Claims**



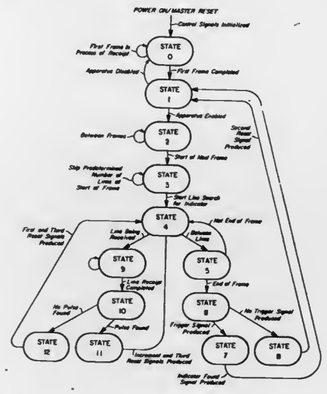
1. A method of determining elevator car loading, comprising the steps of:
providing a video image of the car, with said video image having a predetermined number of picture elements (pixels),
determining the gray level of each pixel,
comparing the gray level of each pixel with a predetermined reference value to determine loaded pixels,
discarding loaded pixels which do not have a predetermined relationship with adjacent pixels,
totalling the number of loaded pixels, after the discarding step,
and comparing the number of loaded pixels with the predetermined number of pixels to obtain an indication of car loading.

4,555,725
AGRICULTURAL IMPLEMENT STEERING GUIDANCE SYSTEM AND METHOD
Allois F. Geiersbach, Milwaukee, Wis., and David L. Murray, La Porte, Ind., assignors to Deutz-Allis Corporation, Milwaukee, Wis.
Filed Aug. 24, 1983, Ser. No. 526,080
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—93 **8 Claims**



1. A method of visually displaying an elongated indicating marking on the surface of a field to an operator at an operator's station on a mobile farm implement to indicate the path to be steered in order for the implement to traverse the desired swath, comprising the steps of imaging a substantial length of said sensed indicating marking forwardly of said operator's station and implement on a video camera at a slight angle to the horizontal from a position adjacent an outer extremity of said implement whereby the image includes the horizon and displaying the image of said substantial length of said indicating marking viewed by said camera along a substantial height of the raster of a video monitor in the field of view of the operator, whereby each scanning line of the video monitor raster below the horizon creates a spot representing a different point on said substantial length of said sensed indicating marking and the multiplicity of points created by said raster scanning lines forms a steering vector extending to the horizon indicating the direction the implement should be steered in order to traverse the desired swath and maintain constant spacing between successive swaths.

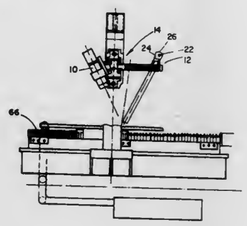
4,555,726
VIDEO TARGET TRACK VALID INDICATOR
Brent A. Teeter, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 5, 1984, Ser. No. 586,366
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—93 **7 Claims**



1. Apparatus for monitoring a video signal in a line by line,

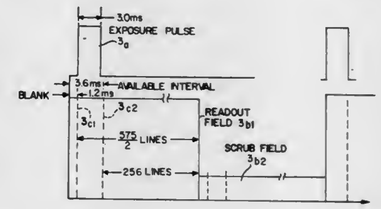
frame by frame sequence for the existence of an indicator signal where said video signal includes vertical sync signals indicative of the start of each video frame and horizontal sync signals indicative of the start of each video line in a video frame and where said indicator signal is a plurality of qualified white pulses imposed one pulse per video line in a predetermined number of consecutive video lines in a video frame, said qualified white pulses being pulses both exceeding a predetermined brightness level and having a duration falling within a predetermined range of durations, said monitoring apparatus comprising:
video signal stripper means having said video signal as an input, for extracting said vertical sync signals, said horizontal sync signals and white pulses from said video signal, said extracted white pulses being white pulses in said video signal having a brightness level exceeding said predetermined brightness level established for said qualified white pulses;
pulse length checking means receiving said extracted white pulses as an input, for determining the duration of each extracted white pulse received and producing a pulse found signal in response to receipt of an extracted white pulse having a duration falling within said predetermined range of durations established for said qualified white pulses;
indicator finding means incremented in response to production of a pulse found signal by said pulse length checking means, for producing a trigger signal, said indicator finding means producing said trigger signal in response to being incremented a predetermined number of times prior to being cleared, said predetermined number of times said finding means is required to be incremented to produce said trigger signal being equal to said predetermined number of consecutive video lines in which said qualified white pulses must exist to constitute a valid indicator signal; and
a system controller electrically connected to said stripper means, said pulse length checking means and said indicator finding means, said controller producing a plurality of system control signals, said control signals including an indicator found signal, said indicator found signal produced by said controller in response to production of a trigger signal by said indicator finding means indicating receipt by said monitoring apparatus of a video frame containing a valid indicator signal.

4,555,727
OPTICAL SCANNING APPARATUS
Emmanuel B. Nun, Jerusalem; Rafi Izhar, Mazkeret Batya, and Avner Karpol, Nes Ziona, all of Israel, assignors to Optrotech Ltd., Nes Ziona, Israel
Filed Sep. 14, 1983, Ser. No. 532,172
Claims priority, application Israel, Sep. 14, 1982, 66788
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—106 **5 Claims**



1. Scanning apparatus, comprising:
a base;
a light source mounted on said base;
a camera mounted on the base and arranged to observe a workpiece surface to be scanned; and
an optical waveguide arranged in light receiving relationship with said light source for directing light from a light output surface thereof to said workpiece surface, said optical waveguide being operative to provide uniform, homogeneous, diffuse illumination of the workpiece surface, thereby to prevent definition of shadows thereon, said optical waveguide comprising a slab of optically transmissive material formed with a ground surface at the light output surface thereof for diffusing the light output therefrom, said ground surface being disposed adjacent the workpiece.

4,555,728
DIGITAL FLUOROGRAPHY
Paul Fenster, Petah Tikvah; Zvi Netter, Haifa, and Yair Shimoni, Jerusalem, all of Israel, assignors to Elscint Ltd., Haifa, Israel
Filed Oct. 27, 1983, Ser. No. 546,177
Claims priority, application Israel, Nov. 26, 1982, 67344
Int. Cl.[4] H04N *5/32*
U.S. Cl. 358—111 **34 Claims**

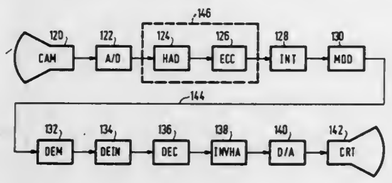


22. A method of examining an object by repeatedly exposing the same to a source of penetrating radiation, said method comprising the steps of:
(a) converting the radiation transmitted to the object to a pattern of electrical charges on the mosaic of a TV camera;
(b) scanning repeatedly said mosaic with an electron beam controlled by scanning signals to read out during scanning intervals electrical signals representing frames of the object examined;
(c) separating said scanning signals with blanking signals operating for intervals shorter than said scanning intervals for blanking the TV camera between readout frames; and
(d) energizing said source of penetrating radiation with exposure pulses applied during intervals at least partially concurrent with said blanking signals.

4,555,729
SYSTEM FOR TRANSMITTING TELEVISION PICTURE INFORMATION USING AN ERROR-PROTECTION CODE
Leonardus M. H. E. Driessen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 20, 1982, Ser. No. 451,685
Claims priority, application Netherlands, Dec. 23, 1981, 8105799
Int. Cl.[4] H04M *7/12*
U.S. Cl. 358—133 **6 Claims**

1. In a system for transmitting, over a transmission medium, data for reconstructing a television picture constituted by a plurality of subpicture, said system comprising means for generating subpicture data for reconstructing each of said subpictures, transformation means for receiving subpicture data and transforming said data into a series of a coefficient bits including a most significant bit of respective transformation functions, said transformation functions having associated frequen-

cies including a lowest frequency, said transformation means further comprising encoding means interconnected between said transformation means and said transmission medium for encoding a first subset of k bits of said coefficient bits into a larger group of n bits by a predetermined code having predetermined error detection capabilities for said k bits, said k bits containing at least one bit constituting said most significant bit of said coefficient associated with said transformation function having said lowest frequency;



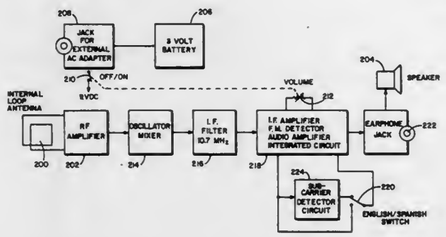
improved encoding means wherein said predetermined code has a first minimum Hamming distance of four for allowing at least single error correction, double-error detection within said k bits, said code further having a second minimum Hamming distance of at least five for allowing double-error correction within an error protected subset of at least two of said k bits.

4,555,730

SINGLE CHANNEL SPLIT-SOUND RECEIVER FOR USE WITH TELEVISION SET

James B. Briggs, La Canada, Calif., assignor to Media Transference International, Los Angeles, Calif.

Filed Jan. 24, 1983, Ser. No. 460,450
Int. Cl.[4] H04N *5/60*
U.S. Cl. 358—142 **2 Claims**



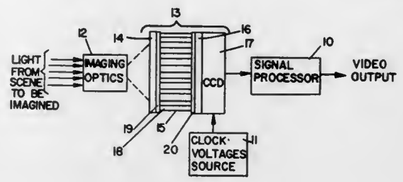
1. A split-sound receiver for reproducing foreign language audio signals accompanying a television signal received on a particular channel of a television receiver, said television receiver radiating a radio frequency signal when the television receiver is tuned to television channel, said television signal including a first sub-carrier modulated in accordance with audio signals representative of a first language and a second sub-carrier modulated in accordance with audio signals representative of a second language, said receiver comprising: an antenna for receiving the radio frequency signal from the television receiver when the television receiver is tuned to a particular television channel; band-pass circuit means coupled to said antenna and tuned to said particular television channel to pass only the radio frequency signal associated with said particular television channel; first detector means coupled to the band-pass circuit means for converting the radio frequency signal passed by said band-pass circuit means into an intermediate frequency signal of a selected intermediate frequency; circuit means coupled to said first detector means and including a sub-carrier detector circuit responsive to said intermediate frequency signal from said first detector means for detecting said second sub-carrier to recover the second language audio signals; a speaker; and output circuit means connecting the output of said sub-carrier detector circuit to said speaker to apply said second language audio signals thereto.

4,555,731

ELECTRONIC IMAGING CAMERA WITH MICROCHANNEL PLATE

Michael Zinchuk, Hyannis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 30, 1984, Ser. No. 605,188
Int. Cl.[4] H04N *5/30*
U.S. Cl. 358—209 **17 Claims**



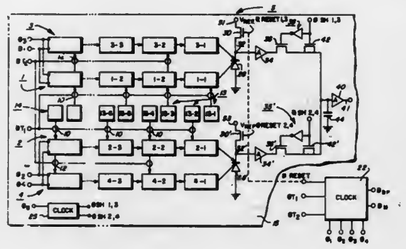
1. Image receiving and converting apparatus for use with an electronic imaging camera, said apparatus comprising means responsive to an image received by the camera of the scene to be reproduced for converting photons into electrons representative of the scene image, electron multiplier means, including an output surface at its output side, coupled to said converting means and responsive to the electrons therefrom representative of the scene image for intensifying the electron representation of the scene image, and a charge transfer device coupled to said output surface and directly responsive to its electron output for producing an electric signal representation of the image received by the camera.

4,555,732

IMAGE SENSOR CORRECTION SYSTEM

Richard H. Tuhro, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 22, 1984, Ser. No. 592,128
Int. Cl.[4] H04N *5/14*
U.S. Cl. 358—213 **9 Claims**



1. Offset correction means for neutralizing any differences in the shift register offset voltages of an image sensor having at least two discrete banks of parallel in/serial out shift registers for processing image signals generated by plural photosensitive elements of said sensor to provide at least one serial image signal output and a source of reference potential for input to said shift registers; the improvement comprising:

(a) offset signal generating means for generating offset signals representing any offset potential in each of said banks of shift registers;

(b) offset signal comparing means for comparing said offset signals to provide an offset correction potential;

(c) means for summing said offset corrective potential with said reference potential to provide an adjusted reference potential; and

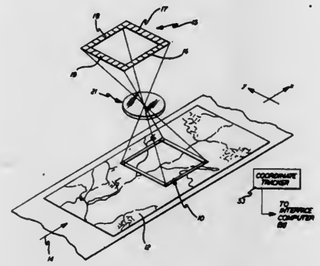
(d) means for inputting said adjusted reference potential to at least one of said shift register banks to neutralize any differences in offset voltages in said shift register banks.

4,555,733

IMAGE ACQUISITION SYSTEM

Enrique Garcia, Sandy Hook, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 25, 1984, Ser. No. 613,932
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—293 **7 Claims**



1. In an image acquisition system wherein a field-of-view is panned over a fixed image format, the combination comprising:

sensor means;

optical means for imaging said field-of-view at said sensor means;

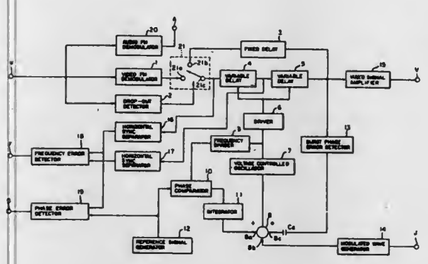
said sensor means including only four linear arrays disposed in quadrilateral configuration.

4,555,734

VIDEO TIME BASE AND DROP OUT CORRECTOR

Tsutomu Fukui, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,827
Claims priority, application Japan, Aug. 24, 1981, 56-131628
Int. Cl.[4] H04N *5/94, 5/95*
U.S. Cl. 358—314 **4 Claims**



1. An apparatus for reproducing recorded data, comprising:

a video FM demodulator means for demodulating a video FM signal detected from a video disc and for providing a demodulated video signal;

a variable delay device means connected after said video FM demodulator, and being clock-controlled, for varying the delay time of said demodulated video signal;

a reference signal generator means for generating a reference signal which serves as the reference time base;

a phase-locked loop including at least a voltage controlled oscillator and a phase comparator, in which the oscillating output from said voltage controlled oscillator and said reference signal are supplied to said phase comparator, and said voltage controlled oscillator is controlled by the output produced by said phase comparator so that said oscillating output is synchronized to said reference signal;

a drive circuit means receiving said oscillating output for producing a transfer clock signal which is supplied to said variable delay means to clock-control and to vary the delay time thereof; and

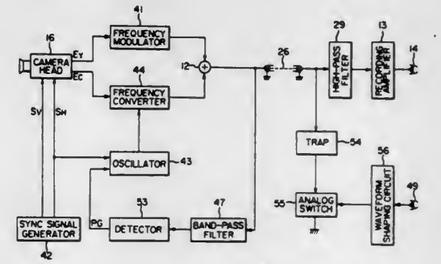
a frequency divider provided between said voltage controlled oscillator and said phase comparator for causing said variable delay means to delay said demodulated video signal for one horizontal sync period according to said reference time base.

4,555,735

INTERCONNECTION SYSTEM BETWEEN IMAGE PICKUP DEVICE AND RECORDING DEVICE

Hiroshi Usuki, and Hiroshi Taniguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 206,082, Nov. 12, 1980, abandoned.
This application Oct. 4, 1983, Ser. No. 538,834
Claims priority, application Japan, Nov. 19, 1979, 54-160906; Dec. 12, 1979, 54-161773; Apr. 30, 1980, 55-57357
Int. Cl.[4] H04N *9/491*
U.S. Cl. 358—330 **2 Claims**



1. A system for coupling between an image pickup device and a recording device of the type in which rotary head means sequentially records on adjacent tracks at least an angularly modulated luminance signal and a modulated color signal in a frequency range lower than the lowermost sideband of said angularly modulated luminanace signal, said system comprising:

(A) an image pickup device comprising:

(a) first means for converting a received image into a luminance signal and first and second color signals,

(b) second means for effecting angular modulation of said luminance signal derived from said first means,

(c) third means for converting said first and second color signals derived from said first means into a frequency range lower than the lowermost sideband of the angularly modulated luminance signal derived from said second means,

(d) fourth means for controlling the phase of the carriers of said converted first and second color signals in such a way that said converted first and second color signals derived from said third means are interleaved with each other on adjacent tracks upon which said converted first and second color signals are sequentially recorded,

(e) fifth means for deriving an audio signal by means of a microphone attached to said image pickup device, said audio signal being of the base band in a frequency range lower than the frequency range of said converted first and second color signals derived from said third means, and

(f) sixth means for multiplexing at least said angularly modulated luminance signal derived from said second means, said phase-controlled converted first and second color signals derived from said fourth means and said audio signal derived from said fifth means,

(B) a single cable to transmit said multiplexed signal derived from said sixth means to said recording device, and

(C) a recording device comprising:

(a) seventh means for deriving said angularly modulated luminance signal and said phase-controlled converted first and second color signals from said multiplexed signal transmitted through said single signal cable from said image pickup device,

(b) eighth means for recording by means of said rotary head means said angularly modulated luminance signal and said phase-controlled, converted first and second color signals derived from said seventh means in the spectrum as derived,

(c) ninth means for deriving said audio signal from said multiplexed signal transmitted through said single signal cable from said image pickup device,

(d) tenth means for recording said audio signal derived from said ninth means through audio recording circuit means, and

(e) eleventh means responsive to a signal indicative of the rotational position of said rotary head means for controlling said fourth means such that the phase of the color carriers of said converted first and second color signals are shifted by a predetermined amount for each horizontal scanning time interval, said eleventh means including means which controls the passage of harmonics of said angularly modulated luminance signal through said single signal cable in response to the phase of said rotating-phase pulse of said rotary head, and

said fourth means includes means which derives the rotating-phase pulse of said rotary head means by detecting the passage of said harmonics of said angularly modulated luminance signal through said single signal cable.

4,555,736

DISC AND VIDEODISC READER HEAD POSITIONING CONTROL SYSTEM

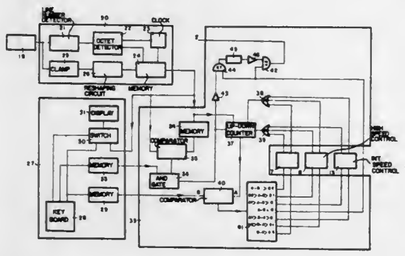
Michel G. Mathieu, Hermitage, France, and Andre J. L. Le Rodallec, 7, Square de Varsovie, 35000 Rennes, France, assignors to Etablissement Public de Diffusion dit Telediffusion de France and Andre J. L. Le Rodallec, both of, France

Continuation-in-part of Ser. No. 42,988, May 29, 1979, abandoned, which is a continuation of Ser. No. 753,994, Dec. 27, 1976, abandoned. This application Apr. 19, 1982, Ser. No. 369,977

Claims priority, application France, Dec. 29, 1975, 75 40403

Int. Cl.⁴ H04N *5/76;* **G11B** *21/00*

U.S. Cl. 358—342 **5 Claims**



1. A control system for positioning the reader head of a videodisc reader of the type wherein a picture corresponding to a television frame is recorded on a videodisc track, each recorded television frame including an identifying indication, said control system comprising means for operating said videodisc reader in a picture stop mode, a picture identity detector including a first memory for storing the detected picture identity means for providing a desired picture identity including a second memory for storing the desired picture identity, control means for causing a relative movement between said reader head and said videodisc, and a control circuit for said control means, said control circuit comprising an up-down counter, means connecting the output of said first memory to a preset input of said up-down counter, a comparator having one input connected to the output of said up-down counter and a second input connected to said second memory, whereby said comparator provides an output signal indicative of the difference between the desired picture identity and the contents of said up-down counter, a logic decision circuit having its input connected to the output of said comparator, said logic circuit including means responsive to the output of said comparator for operating said control means so as to reduce said difference to nil and simultaneously deliver pulses to said up-down counter corresponding to an output of the control means, said logic circuit having an output delivering a signal when its input signal is nil, said output of said logic circuit enabling said means operating said videodisc in said picture stop mode.

4,555,737

METHOD OF PROVIDING SMOOTH TRANSITION FROM ONE TO ANOTHER OF TWO SEQUENCES OF DIGITALLY CODED SOUND SIGNALS (FADING)

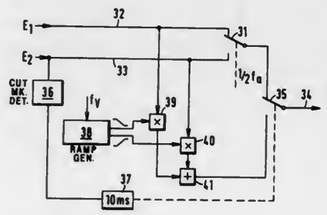
Jürgen Heitmann, Alsbach-Hähnlein, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 530,114

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 3233287

Int. Cl.⁴ G11B *27/02*

U.S. Cl. 360—13 **4 Claims**



1. Method for disturbance-free slicing together first and second digitally coded signal sequences representing sound corresponding respectively to first and second television scenes in a manner providing freedom of choice of television cut-over point even after trial splicing at a previously selected cut-over point, comprising the steps of:

distributing successive coded signal samples of each of said sequences alternately between at least first and second recording channels for subsequent recording;

making a transition in each of said recording channels regarding signal samples available thereto from samples of said first sequence to samples of said second sequence in such a way that said transition occurs in said first recording channel before the transition occurs in said second recording channel and the time span between said respective transitions in said first and second channels extends over a multiplicity of sampling intervals of said signal sequences;

modifying the values of said coded samples during said time span by progressively reducing the successive samples of said first sequence from a nominal to a minimum value and reducing the values of the successive samples of said second sequence by a progressively declining reduction factor so that during said time span said samples of said second sequence progessively increase from a minimum value to a nominal value;

forming, during said time span, interplated-value sample value signals between each of the successive samples, of both said first and second sequences, respectively distributed to said first and second channels;

inserting said interpolated value sample signals between successive sample value signals of the sequence in the channel to which said sample values are distributed, and

in the reproduction of the signals from said recording channels, combining the signals to the two recording channels to provide the basis of a reproduced sound signal, the combination being performed with averaging of said interpolated values with the contemporary values of the other sequence participating in the splicing method during each said time span.

4,555,738

HEAD ADJUSTING DISK

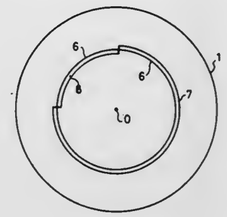
Noriaki Murayama, and Kiyoto Abe, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jan. 13, 1984, Ser. No. 570,302

Claims priority, application Japan, Jan. 13, 1983, 58-2168[U]

Int. Cl.⁴ G11B *21/00*

U.S. Cl. 360—75 **4 Claims**



1. In a head adjusting disk which has first and second head position adjusting record tracks formed thereon in concentrical relationship around the center of rotation thereof in order to enable adjustment of the position of a head to be adjusted by comparing amplitude of reproduction signals obtained by scanning for reproduction of said first and second head position adjusting record tracks with the head to be adjusted, the improvement wherein said first and second head position adjusting record tracks are formed such that an outer circumferential edge of one of said first and second head position adjusting record tracks and an inner circumferential edge of the other of said first and second head position adjusting record tracks extend along a same circumference and that one of said first and second head position adjusting record tracks is formed to extend along a portion of one n'th (where $n>1$ and $n\neq 2$) of the circumference while the other of said first and second head position adjusting record tracks is formed to extend along the remaining $(1-1/n)$ portion of the circumference, whereby individual signals reproduced from said first and second head position adjusting record tracks can be distinguished from each other by difference in duration thereof.

4,555,739

SEMI SELF-LOADING FERRITE HEAD

Dien Le Van, San Jose, Calif., and Jesse T. Wallace, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,767

Int. Cl.⁴ G11B *5/60, 21/20*

U.S. Cl. 360—103 **8 Claims**

1. An air bearing magnetic head slider assembly for supporting

a transducer comprising:

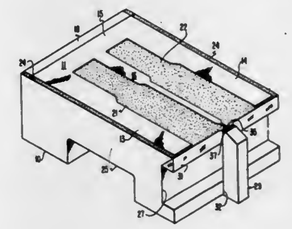
a substantially rectangular planar support having leading and trailing edges and including:

a pair of coplanar outer rails;

a middle rail positioned between and substantially coplanar with respect to said pair of rails;

a cross rail interconnecting and coplanar with said pair of rails and said middle rail;

said middle rail and said cross rail defining respectively with said pair of rails, a pair of recesses each enclosed on three



sides by said rails and extending rearwardly from said cross rail to said trailing edge whereby, a negative pressure region is established at said recesses and a positive pressure region is established adjacent said rail surfaces causing said support to fly in close proximity to a confronting planar surface at a substantially constant height; and

a transducer gap formed transversely in said middle rail adjoining said trailing edge.

4,555,740

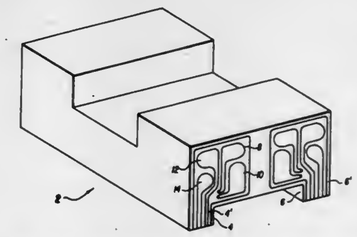
THIN FILM TRANSDUCER HEAD FOR INDUCTIVE RECORDING AND MAGNETORESISTIVE READING

Bruce J. Jackson; Ralph F. Simmons, both of Boise, and Mike L. Covault, Eagle, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 4, 1983, Ser. No. 482,654

Int. Cl.⁴ G11B *5/12*

U.S. Cl. 360—113 **11 Claims**



1. A thin film transducer for inductively recording and magnetostrictively reading magnetic information comprising:

A non-magnetic substrate a first thin film yoke member of magnetic material disposed on a surface of said substrate; a thin film magnetoresistive element insulatingly mounted on said first yoke member and having means for defining a single magnetic domain in a predetermined portion thereof; a thin film read conductor of electrically conductive material disposed over said magnetoresistive element and having a transducer gap therein whose sides are at an acute angle with respect to the principle longitudinal axis thereof and overlying said magnetic domain in said magnetoresistive element; a thin film write conductor of electrically conductive material insulatingly disposed on and in substantial alignment with said read conductor; and a second thin film yoke member of magnetic material insu-

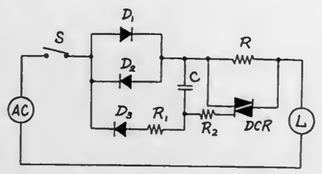
latingly disposed on said write conductor and overlying said transducer gap in said read conductor.

4,555,741

DEVICE FOR ELIMINATING INRUSH-CURRENT

Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan

Filed Jun. 1, 1984, Ser. No. 616,166
Claims priority, application Japan, Jun. 14, 1983, 58-104867
Int. Cl.⁴ H02H *3/02*
U.S. Cl. 361—58 **9 Claims**



1. A device for eliminating inrush-current, comprising the components of a power switch, a thyristor, pair of diodes in reverse parallel, a resistance, a rectifier and a time constant circuit,

(1) the switch, pair of diodes and resistance being connected in series;

(2) the thyristor being connected to the resistance in parallel;

(3) one terminal of the diode pair being connected to the time constant circuit through the rectifier; and

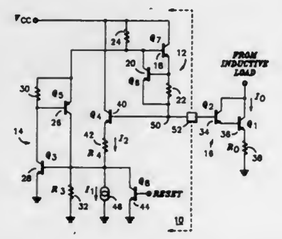
(4) the time constant circuit being connected to the gate of the thyristor.

4,555,742

SHORT DETECTION CIRCUIT AND METHOD FOR AN ELECTRICAL LOAD

Randall C. Gray, Scottsdale, and Robert B. Jarrett, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1984, Ser. No. 608,335
Int. Cl.⁴ H02H *3/08*
U.S. Cl. 361—93 **5 Claims**



1. A short detection circuit for operatively controlling current in an electrical load connected to a source voltage line comprising:

means for driving an electrical load having first, second and third terminals thereof, said first terminal being connected to said electrical load and said second terminal being connected to a common voltage line; and

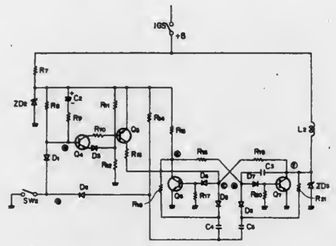
means for detecting a short circuit current in said electrical load connected to said third terminal of said driving means, said means for detecting comprising a current source for providing an operating current to said driving means and an SCR for disabling said current source in response to a shorted condition of said electrical load, said detecting means selectively withholding and providing said operating current to said driving means when a shorted and not shorted condition of said electrical load to said source voltage line is respectively detected at said third terminal of said driving means.

4,555,743

TIMER CIRCUIT

Sadao Kokubu; Masatoshi Hirano, and Takao Sakakibara, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jul. 22, 1983, Ser. No. 516,363
Claims priority, application Japan, Jul. 27, 1982, 57-112865[U]
Int. Cl.⁴ H01H *47/18*
U.S. Cl. 361—196 **1 Claim**



1. A rear window heater control circuit for an automobile, comprising:

a power source switch;

a first transistor connected to said power source switch so as to become conductive when said power source switch is turned on;

a timer circuit provided between said power source switch and said first transistor, said timer circuit including a capacitor and a resistor, said first transistor having a base connected to said timer circuit;

a second transistor arranged to become conductive when said first transistor becomes conductive;

a bistable circuit including a third transistor and a fourth transistor, said third transistor having a base receiving a bias current from said second transistor;

a normally open momentary switch having a first terminal which is grounded, and a second terminal connected to said power source switch;

a first diode connected between said power source switch and said normally open momentary switch, said first diode having an anode connected to said connection between the base of said first transistor and said time circuit;

a second diode having a cathode connected to said connection between said normally open momentary switch and said first diode and an anode connected to said power source switch;

a relay having a first end connected to said power source switch, and a second end connected to a collector of said fourth transistor,

whereby conductivity of said third transistor and said fourth transistor is reversed to energize said relay upon closing of said normally open switch while said timer circuit starts discharging.

4,555,744

STORAGE CABINET

Ralf P. Maroney, and Gregory A. Fishkind, both of Milford, Conn., assignors to Plug-In Storage Systems, Inc., Milford, Conn.

Filed Aug. 28, 1984, Ser. No. 645,054
Int. Cl.⁴ H05K *7/14*
U.S. Cl. 361—212 **19 Claims**

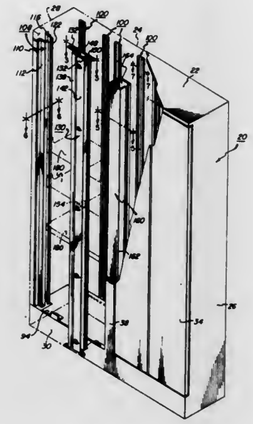
1. A storage cabinet for circuit board modules comprising:

a housing;

a plurality of electrically conductive brackets extending longitudinally in spaced relation in said housing, each of said brackets including

a surface connected to said housing, a longitudinal slot and a hollow interior behind said slot,

at least one pair of shelves of conductive material slidably mounted for adjustable movement relative to said brackets and each other in each of said slots, each of said shelves including



a series of grooves extending substantially perpendicular to said brackets on the top and bottom surface of each of said shelves,

the grooves on each adjacent pair of shelves slidably disposed on said brackets being in registration with each other for receiving a circuit board module therebetween, and

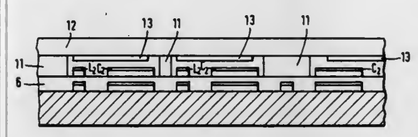
means attached to said cabinet for electrically grounding the cabinet.

4,555,745

THICK-FILM CAPACITOR MANUFACTURED BY PRINTED-CIRCUIT TECHNIQUES

Gisela Westermeir, Hohenroth, and Friedhard Fehr, Lauter, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,519
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143995
Int. Cl.⁴ H01G *4/20;* **B05D** *5/12*
U.S. Cl. 361—320 **16 Claims**



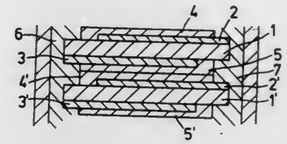
1. Thick film capacitor implemented by printed-circuit technology, comprising a substrate, a substantially planar base electrode positioned on said substrate, a thick-film dielectric which covers said base electrode and defines an upper surface which is substantially parallel to said base electrode, and a substantially planar counter-electrode positioned on said dielectric surface, in alignment with said base electrode, wherein said dielectric is composed of a screen-printable dispersion of dielectric filler substances in a polymeric material which can be cured at comparably low temperatures.

4,555,746

ORGANIC CHIP CAPACITOR

Hideaki Mochizuki, Higashiosaka, and Tooru Tamura, Ikeda, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 11, 1984, Ser. No. 570,028
Claims priority, application Japan, Jan. 12, 1983, 58-3671; Jan. 12, 1983, 58-3672; Jan. 12, 1983, 58-3673
Int. Cl.⁴ H01G *4/08, 1/14*
U.S. Cl. 361—323 **8 Claims**



1. A chip film capacitor capable of being directly soldered comprising a laminate of one or more assemblies, each assembly comprising the following layers (a) to (d):

(a) a layer of heat resistant film which is not meltable or extremely deformable at a temperature of 260° C.,

(b) vapor coated metal electrodes provided on a portion of opposite major surfaces of said heat resistant film,

(c) a heat resistant dielectric film provided on said vapor coated metal electrodes and containing said heat resistant film where it is not coated by said electrodes,

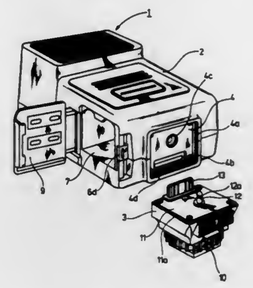
(d) common metal electrodes formed at the side of said laminated layer and containing said vapor coated metal electrodes, wherein said common metal electrodes are comprised of a first metal layer formed at both sides of said laminated layer by plasma sprying and having good adhesion to said heat resistant films and a second metal layer formed on said first metal layer by arc spraying or gas spraying and said second metal layer having good solderability.

4,555,747

COUPLING MECHANISM OF PHOTOGRAPHIC FLASH DEVICE

Yuzo Tsuruta, Kanagawa, Japan, assignor to Kabushiki Kaisha Sunpak, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 302,257
Int. Cl.⁴ G03B *7/099, 15/05*
U.S. Cl. 362—3 **14 Claims**



1. Photoflash apparatus, comprising: a flash unit including a main body, an adapter unit for mounting between said main body of said flash unit and a camera, and coupling means for securing said adapter unit to one end of said main body, said

coupling means comprising interengageable mounting structures at said one end of said body and on said adapter unit, one of said interengageable mounting structures including a central projecting pin and the other of said mounting structures including a wall having a central opening through which said pin extends when said mounting structures are engaged, and a locking member operable to a locked position to engage said pin and lock said members together with said mounting structures being stressed in a manner such that said flash unit and said adapter unit are held tightly together and to hold said locking member in said locked position.

4,555,748

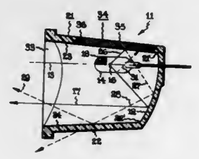
TRUNCATED MOTOR VEHICLE HEADLAMP

Irving Bradley, Russell Township, Geauga County, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 437,424, Oct. 28, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,816

Int. Cl.[4] F21V *29/00, 7/00*

U.S. Cl. 362—61 **6 Claims**



1. An improved vehicle headlamp for forward illumination substantially devoid of upwardly directed glare light comprising a concave parabolic enclosed reflector truncated at opposite sides thereof to provide top and bottom flat sections substantially parallel to each other and to the optical axis of a curved portion of the reflector, both of said top and bottom sections being non-reflective and with said top section being substantially closer to said optical axis than said bottom section, a single filament light source contained within said reflector, said light source being enclosed within a bulb, said filament also being devoid of shield means blocking its light rays from being projected to the curved portion of the reflector member, and said light source being positioned substantially on said optical axis and frontwardly of the junctions of said generally flat truncated sections with the reflecting section of the reflector at least in the vicinity of the vertical plane in which the light source lies, wherein the improvement comprises having said reflector formed with a thermoplastic synthetic organic polymer and having a planar metal member forming a part of the flat section above the light source which removes heat from the enclosed reflector member.

4,555,749

LED CIRCUIT BOARD INDICATOR HOUSING AND TIE-BAR ASSEMBLY

Gary L. Rifkin, Gurnee; Charles C. Lawrence, Chicago; Sam Zilber, Skokie, and Michael Hamby, Chicago, all of Ill., assignors to General Instrument Corporation, New York, N.Y.

Filed May 7, 1984, Ser. No. 607,673

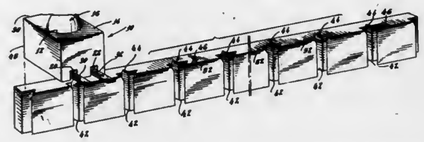
Int. Cl.[4] F21V *21/14*

U.S. Cl. 362—249 **9 Claims**

1. The assembly of at least one circuit board indicator lamp housing and a tie-bar for mounting a plurality of said lamp housings, said assembly comprising:

a plurality of dove-tail channels provided at spaced locations along the length of said tie-bar, and

said housing including a complementary shaped dove-tailed channel on a surface thereof adapted to be slidingly received between one half



of each of an adjacent pair of said spaced tie-bar dove-tail channels.

4,555,750

CONTROL APPARATUS FOR D.C. POWER TRANSMISSION SYSTEM

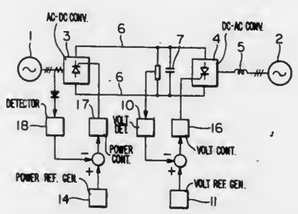
Susumu Matsumura, c/o Sohgo Gigyutsu Kenkyusho of Kansai Electric Power Company Incorporated, No. 1, Nakohji, Ichinotsubo, City of Amagasaki, Hyogo Pre, Japan; Yasuhiko Hosokawa, Kobe, Japan; Kanji Katsuki, Kobe, Japan, and Masao Yano, Kobe, Japan, assignors to Susumu Matsumura, Amagasaki and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Filed Sep. 22, 1982, Ser. No. 421,574

Claims priority, application Japan, Sep. 22, 1981, 56-149890; Sep. 22, 1981, 56-149891

Int. Cl.[4] H02M *5/45*

U.S. Cl. 363—37 **5 Claims**



1. In an apparatus for controlling a D.C. power transmission system having a line-commutated converter which is connected between a first A.C. system and D.C. power transmission lines and which performs power conversion between A.C. power and D.C. power, and also having a forced-commutated converter which is connected between said D.C. power transmission lines and a second A.C. system and which performs power conversion between D.C. power and A.C. power; a control apparatus for a D.C. power transmission system comprising a voltage detector which detects a D.C. voltage of said D.C. power transmission lines, a first control means for comparing an output of said voltage detector with a voltage reference signal and for controlling ignition of said forced-commutated converter in accordance with said comparison, a current detector which detects a current proportional to a conversion power of said line-commutated converter, and a second control means for comparing an output of said current detection with a power reference signal and for controlling ignition of said line-commutated converted in accordance with said comparison, whereby said two converters may be remotely located from each other and electrically connected by only a D.C. transmission line since a separate feedback wire is not required between said first and second control means.

4,555,751

RECTIFIED AND SMOOTHED DC SUPPLYING CIRCUITRY

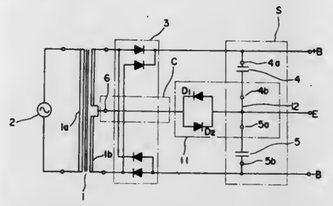
Yoshiro Koga, Ashiya, and Kenji Nakao, Neyagawa, both of Japan, assignors to Onkyo Kabushiki Kaisha, Neyagawa, Japan

Filed Mar. 31, 1983, Ser. No. 480,804

Claims priority, application Japan, Apr. 2, 1982, 57-48770[U]

Int. Cl.[4] H02M *1/12*

U.S. Cl. 363—44 **7 Claims**



1. A rectified and smoothed DC supply circuit for use with an audio amplifier which amplifies input audio signals, said DC supply circuit comprising:

a power source transformer having primary and secondary windings;

a rectifying circuit for rectifying an AC output from said secondary winding of said power source transformer;

a smoothing circuit consisting of positive-side and negative-side smoothing capacitors connected in series;

a center-tap lead circuit of said secondary winding coupled to said smoothing circuit;

a bidirectional switching circuit, having predetermined threshold values, coupling said smoothing circuit and said center-tap lead circuit, and provided for conducting charging current between said smoothing circuit and said center-tap lead circuit when the voltage at connecting points between said center-tap lead circuit and said smoothing circuit exceeds said predetermined thresholds;

first and second output terminals, said first output terminal coupled between a first output terminal of said secondary winding and said positive-side smoothing capacitor, and said second output terminal coupled between a second output terminal of said secondary winding and said negative-side smoothing capacitor, said first and second output terminals being connected to said audio amplifier.

4,555,752

AC POWER CONVERTER WITH COMMUTATION CIRCUIT FOR REDUCING REACTIVE POWER

Ryoichi Kurosawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 24, 1984, Ser. No. 613,730

Claims priority, application Japan, May 31, 1983, 58-96129

Int. Cl.[4] H02M *7/757*

U.S. Cl. 363—68 **20 Claims**

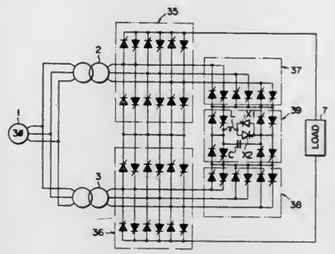
1. A power converter comprising:

power source means for supplying a first AC power and a second AC power which is isolated from the first AC power;

thyristor bridge means coupled to said power source means, for converting said first and second AC power into a given converted power which is supplied to a load of the power converter;

a first thyristor circuit coupled to said power source means and including plural first auxiliary thyristors each having two terminals between which a current path is formed, one terminal of each of said first auxiliary thyristors receiving said first AC power and the other terminal of each of said first auxiliary thyristors being coupled to a first node;

a second thyristor circuit coupled to said power source means and including plural second auxiliary thyristors each having two terminals between which a current path is formed, one terminal of each of said second auxiliary thyristors receiving said second AC power and the other terminal of each of said second auxiliary thyristors being coupled to a second node; and



commutation circuit means coupled between said first and second nodes, for commutating at least a part of a current flowing through said thyristor bridge means to the current path of said first and second thyristor circuits.

4,555,753

RECTIFIER CIRCUIT WITH TWO RECTIFIERS

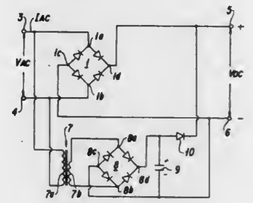
Makoto Takahashi, Tottori, Japan, assignor to TDK Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1983, Ser. No. 546,269

Claims priority, application Japan, Oct. 28, 1982, 57-188240

Int. Cl.[4] H02M *7/06*

U.S. Cl. 363—126 **7 Claims**



1. A rectifier circuit for producing an output DC voltage from an input AC voltage, comprising:

(a) a first full wave rectifier connected directly to said input AC voltage for rectifying the same, said first rectifier output being connected to a first pair of output termionals to provide an unfiltered output DC voltage;

(b) a voltage reducing means connected to said input AC voltage for providing a voltage-reduced AC output;

(c) a second full wave rectifier connected to said voltage-reduced AC output for rectifying the same to provide at a second pair of output terminals a reduced voltage DC output;

(d) a smoothing capacitor connected across said second pair of output terminals; and

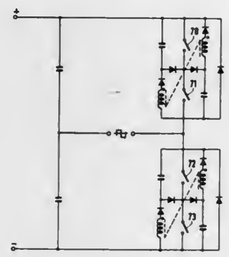
(e) means connecting said first and second pair of output terminals including unidirectional current means whereby the combined DC voltage output during each half cycle of said input AC voltage has a peak value equal to the peak voltage of said unfiltered DC voltage and a minimum value equal to said reduced voltage DC output.

4,555,754

EQUALIZER CIRCUIT FOR SWITCHES CONNECTED IN SERIES

Bernard Hennevin, Decines, France, assignor to Compagnie Electro-Mecanique, Paris, France

Filed May 30, 1984, Ser. No. 615,450
Claims priority, application France, May 30, 1983, 83 08891
Int. Cl.⁴ H02M *7/537*
U.S. Cl. 363—132 **5 Claims**



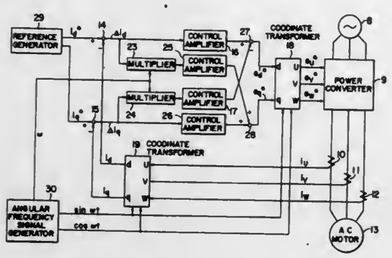
1. An equalizer circuit for a plurality of switches connected in series between a voltage source and a load, each of said switches being connected in parallel with a respective equalizing capacitor via a respective diode, the improvement comprising a transformer having a plurality of windings, each of said windings being connected in series with a respective diode, and each of said switches having a respective winding-diode series connection connected in parallel therewith, whereby electrical energy initially stored in the capacitors is transferred for storage in magnetic form to the windings when the switches are closed and is re-used when the switches are opened to accelerate charging of the less charged capacitors until all the capacitors reach the voltage of the most charged capacitor.

4,555,755

AC CURRENT CONTROL SYSTEM

Ryoichi Kurosawa, Kokubunji, and Takeo Shimamura, Hachioji, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 15, 1984, Ser. No. 589,998
Claims priority, application Japan, Mar. 16, 1983, 58-42349
Int. Cl.⁴ H02P *13/30*
U.S. Cl. 363—160 **3 Claims**



1. An AC current control system for controlling multi-phase AC currents supplied from a power converter to a multi-phase load, said system comprising:

current detector means detecting said currents and producing signals indicative of the detected multiphase current values,

first coordinate transformer means transforming the detected multi-phase current values into orthogonal two-axis current values i_d and i_q in a rotating coordinate rotating at an angular frequency ω,

means providing two-axis current reference values i_d^* and i_q^* for the current values i_d and i_q,

means receiving the current values i_d and i_q, and the current reference values i_d^* and i_q^*, and determining two-axis voltage values e_d^* and e_q^*, and

second coordinate transformer means transforming the two-axis voltage values e_d^* and e_q^* into multiphase voltage reference values,

said multi-phase voltage reference values being used for determining multi-phase output voltages of the power converter, and

said angular frequency ω being equal or close to an angular frequency of the AC currents,

wherein

the voltage value e_d^* contains at least a first quantity proportional to a first deviation Δi_d between the current value i_d and the current reference value i_d^*, a second quantity proportional to an integral of the first deviation Δi_d and a third quantity proportional to an integral of a product of the angular frequency ω and a second deviation Δi_q between the current value i_q and the current reference value i_q^* and

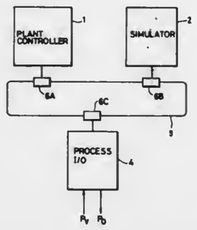
the voltage value e_q^* contains at least a fourth quantity proportional to the second deviation Δi_q, a fifth quantity proportional to an integral of the second deviation Δi_q and a sixth quantity proportional to an integral of a product of the angular frequency ω and the first deviation Δi_d.

4,555,756

PLANT CONTROLLER SIMULATOR WITH STRUCTURE FOR COMBINING SIMUATION SIGNALS WITH ACTUAL PROCESS I/O SIGNALS

Kimio Yamanaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,658
Claims priority, application Japan, Nov. 12, 1981, 56-182530
Int. Cl.⁴ G05B *17/00*
U.S. Cl. 364—130 **5 Claims**



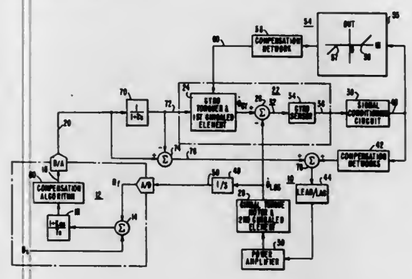
1. A simulation system for performing simulation of a plant controller, comprising; an input/output device for interfacing process input/output signals, a data path for transmitting said process input/output signals, at least three stations inserted in the said data path, each including input/output buffer memories, said plant controller being connected to said data path through one of said stations, an output signal from the plant controller being transmitted via the output buffer memory of said one station, the data path and the input buffer memory of another of said stations, and simulator means for supplying a simulating signal to said plant controller through the output buffer memory of a further station coupled to said simulator means, the data path and the input buffer memory of said one station.

4,555,757

INTERFACE SYSTEM FOR HYBRID CONTROL LOOPS

William J. Dorman, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1983, Ser. No. 492,061
Int. Cl.⁴ G05B *11/00*
U.S. Cl. 364—165 **10 Claims**



1. A system for interfacing a digital computer with at least one analog gimbal control loop, said computer being operative to provide a rate command signal to said analog gimbal control loop to govern the rate output of said analog control loop, said rate command signal being stepwise updated at time intervals designated by said computer to converge the rate output of said analog control loop to a desired rate, said interface system comprising:

means for filtering said rate command signal of said computer to provide a filtered rate command signal to said analog gimbal control loop;

means for generating a feed-forward aiding signal as a function of the rate of change of said filtered rate command signal to further govern said analog gimbal control loop; and

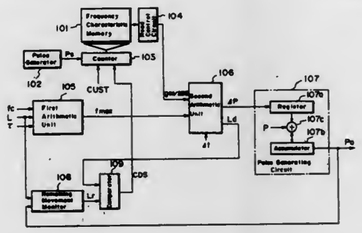
means for compensating said rate command signal for the operation of said filtering means to render the average rate output of said analog gimbal control loop during the time intervals between computer rate command signal updates to be substantially that desired.

4,555,758

METHOD AND APPARATUS FOR CONTROLLING THE ACCELERATION AND DECELERATION OF A MOVABLE ELEMENT WITHOUT ABRUPT CHANGES IN MOTION

Hajimu Inaba, Hino, and Shinsuke Sakakibara, Komae, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Mar. 3, 1983, Ser. No. 471,474
Claims priority, application Japan, Mar. 8, 1982, 57-036184
Int. Cl.⁴ G06F *15/46*; G05B *19/18*
U.S. Cl. 364—174 **5 Claims**



1. A method of controlling, in an apparatus including a memory, an access means and a computing means, acceleration of the frequency at the beginning of a pulse train and the deceleration of the frequency at the end of the pulse train, comprising the steps of:

storing a frequency function in a memory in advance, which frequency function represents an acceleration characteristic having minimum initial acceleration during an acceleration period and deceleration characteristic having minimum initial deceleration during a deceleration period;

reading the frequency function out of the memory via the access means at predetermined time intervals, which frequency function represents the acceleration characteristic during acceleration and the deceleration characteristic during deceleration;

receiving a command frequency;

computing using the computing means, a frequency of the pulse train from the product of the command frequency and the frequency at specified times during acceleration and during deceleration; and

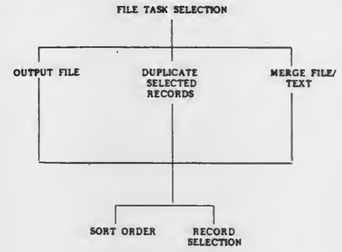
generating the pulse train having a number of pulses corresponding to the product of the computed frequency and the predetermined time interval, during said predetermined time interval.

4,555,759

SELECTIVE USE OF RESTORED FILE SETUPS

Rex A. McCaskill; John W. McInroy, and Paul D. Waldo, all of Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,794
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—300 **35 Claims**



1. A method for utilizing stored file setups in a word processing system having a processor, keyboard, display and a storage medium, comprising the steps of:

(a) prompting an operator to select, via said keyboard, a specified task to be performed on a file from a task menu displayed on said display;

(b) displaying on said display a current frame for the specified task;

(c) prompting the operator to input, via said keyboard, a name of a previous file setup stored on the storage medium while the current frame is being displayed;

(d) determining positively or negatively whether the previous file setup contained frames in a hierarchy of the current frame; and

(e) copying the stored information in the frames of the previous file setup into frames in the hierarchy of the current frame to produce an updated setup of restored frames when a result in step (d) is positive.

4,555,760

METHOD AND COMPUTER TOMOGRAPHY DEVICE FOR DETERMINING A TOMOGRAPHIC IMAGE WITH ELEVATED RESOLUTION

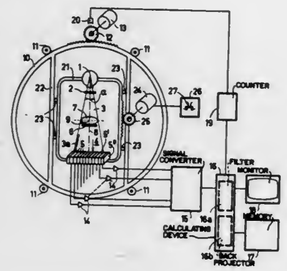
Johannes C. A. Op de Beek, and Steven Lobregt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1983, Ser. No. 491,516

Claims priority, application Netherlands, May 12, 1982, 8201942

Int. Cl.⁴ G06F *15/42*

U.S. Cl. 364—414 **3 Claims**



1. In a method of computed tomography which comprises the steps of:

irradiating a plane through a body with a flat, fan-shaped beam of penetrating radiation which lies in the plane, the beam being sequentially directed through the body from a plurality of source points which are uniformly distributed around the body on a circle which lies in the plane;

measuring the values of the attenuation of the radiation along a plurality of measuring paths which lie in the beam and diverge from each of the source points, each of the measuring paths subtending an angle $\Delta\psi$, a centermost measuring path in the beam having a center line and being disposed so that from each source point said center line forms an angle ψ_i with the line which connects the center of the circle to the source point, the centermost measuring path further having a width, a, measured along a line which is perpendicular to the center line and passes through the center of the circle;

forming subgroups of the measured attenuation values wherein each subgroup includes all attenuation values which were measured along a corresponding set of parallel measuring paths;

filtering each subgroup of values, by either convolution or Fourier transformation, followed by frequency filtering and Fourier back-transformation;

and then backprojecting the filtered values into an image matrix; the improvement wherein:

each subgroup of values includes only values which were measured in a single direction along parallel measuring paths;

for each of the subgroups of values there is a corresponding subgroup of values which were measured in the opposite direction along parallel paths;

within each subgroup the distance between two adjacent measuring paths is greater than a/2 and less than or equal to a;

the filtering step comprises filtering the values with a filter which has a transfer function response having a maximum value at the frequency $(2a)^{-1}$ and zero points at frequencies 0 and 1/a; and further including the step of

interleaving values from the pairs of corresponding subgroups after the filtering step and before the backprojection step; and

the backprojection step includes backprojecting the interleaved data from each pair of corresponding subgroups and is performed with an interpolation distance of a/2.

4,555,761

DIRECTION DETECTION FOR A VEHICLE

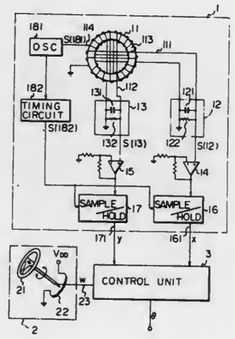
Muneaki Matsumoto, Okazaki; Akira Kuno, Obu, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 9, 1983, Ser. No. 465,188

Claims priority, application Japan, Feb. 12, 1982, 57-19794

Int. Cl.⁴ G06F *15/50*; G01C *17/28*

U.S. Cl. 364—424 **18 Claims**



7. A device for detecting a running direction of a vehicle, comprising:

direction detection means attached to said vehicle for detecting the direction of the terrestrial magnetic field;

turning angle detection means for detecting the turning angle of said vehicle;

first calculation means, receiving said detection from said direction detection means, for calculating successively the running direction of said vehicle;

memory means for storing said running direction calculated in said first calculation means;

second calculation means for determining the change in said running direction on the basis of said running direction calculated in said first calculation means and said running direction stored in said memory means, and for determining whether the relationship between said determined change in said running direction and variation in said detected vehicle turning angle is not within a predetermined relationship, and for determining an abnormality of said terrestrial magnetic field direction detection when the result of said relationship determination is affirmative; and

means for prohibiting updating of data in said memory means when said abnormality is determined by said second calculation means.

4,555,762

ENGINE SPEED CONTROL SYSTEM

Masaaki Ohgami; Kazuo Hara, and Kunihiro Abe, all of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 334,060

Claims priority, application Japan, Dec. 27, 1980, 55-187185

Int. Cl.⁴ B60K *41/02*; G05D *13/02*

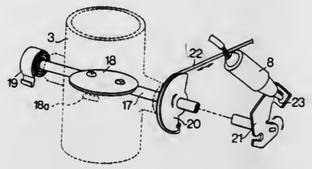
U.S. Cl. 364—431.09 **17 Claims**

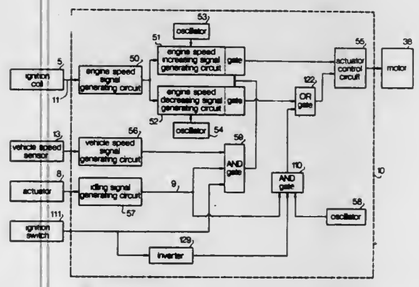
1. In a system for controlling the idling speed for an internal combustion engine mounted on a vehicle, said engine having an induction passage and a throttle valve in said induction passage, an improvement comprising:

ignition switch means for producing an ignition switch signal when said ignition switch means is opened;

actuator means, upon occurrence of said ignition switch signal, for undergoing movement for operatively moving said throttle valve into a closed position closing said induction passage;

sensing switch means for producing a closed throttle valve position signal when said throttle valve reaches said closed position; and





means responsive to said closed throttle valve position signal for stopping the movement of said actuator means substantially when said throttle valve reaches said closed position, whereby movement of said actuator means is minimized and the engine is prevented from running on after the ignition switch means is opened.

4,555,763

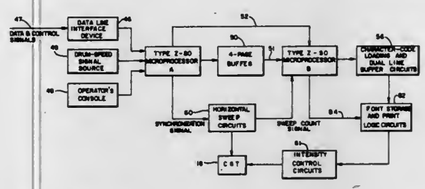
METHOD AND APPARATUS FOR STORAGE AND ACCESSING OF CHARACTERS, AND ELECTRONIC PRINTER EMPLOYING SAME

Jerome R. Dahme, Berwyn, Pa., assignor to Decision Data Computer Corp., Horsham, Pa.

Filed Jul. 1, 1982, Ser. No. 394,436

Int. Cl.⁴ G06F *3/14*; B41B *19/00*

U.S. Cl. 364—521 **28 Claims**



24. In the electronic printing of characters, the method of storing, accessing and displaying character-representing information as to a plurality of different characters, in and from a computer memory, comprising:

(a) permanently storing said character-representing information in the form of sets of an integral number of bytes, at least some of said sets containing a combination of 6-bit and 8-bit bytes and representing the character information for a particular slice through a particular character and being separately addressable according to the character and slice which it represents, the number of 6-bit bytes and the number of 8-bit bytes used to represent each slice being selected to equalize the number of bits in the set with the number of bits in the corresponding character slice;

(b) selectively addressing each of said sets of bytes according to the character and slice which it represents, to read out the corresponding character-slice bytes, and

(c) displaying said read-out bytes along a scan of a scanning type of image-display device to reproduce the character information corresponding to the read-out set of bytes.

4,555,764

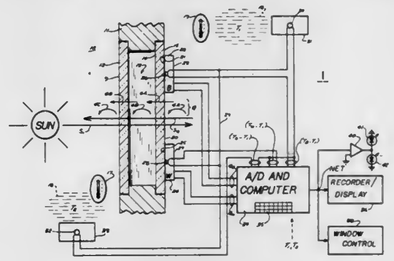
NET ENERGY TRANSFER MEASUREMENT METHODS, APPARATUS AND SYSTEMS WITH SOLAR ENERGY AND CONTROL APPLICATIONS

Thomas H. Kuehn, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 23, 1981, Ser. No. 334,513

Int. Cl.⁴ G01K *7/00*

U.S. Cl. 364—557 **16 Claims**



16. A method for instrumenting fenestrations for measuring net energy transfer therethrough, each said fenestration having first and second surfaces separating regions having ambient temperatures T_1 and T_2 respectively, said ambient temperatures T_1 and T_2 having auxiliary measurements made of them, wherein the method comprises

providing and locating a thermocouple in the region having ambient temperature T_1;

providing a plurality of additional thermocouples and heat flux sensors corresponding to each said fenestration, each said plurality comprising first and second thermocouples differentially connected with said T_1 thermocouple for providing three temperature difference outputs, and each said plurality further comprising first and second heat flux sensors providing respective heat flux sensor electrical outputs and having different absorptivities to light;

mounting as a combination said first thermocouple of each said plurality in thermal contact with said first heat flux sensor of each said plurality respectively on said first surface of each said corresponding fenestration;

mounting as a combination said second thermocouple of each said plurality in thermal contact with said second heat flux sensor of each said plurality respectively on said first surface of each said corresponding fenestration;

analog-to-digitally converting said respective heat flux sensor electrical outputs and two of the three temperature difference outputs for each said plurality to digital representations;

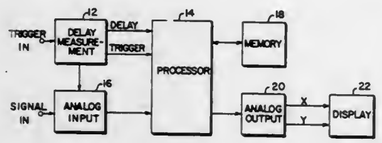
electronically storing said auxiliary measurements of temperatures T_1 and T_2; and

electronically computing and providing physical representations of net energy transfer respectively corresponding to said fenestrations utilizing all of said digital representations and said stored auxiliary measurements.

4,555,765
MULTI-MODE OSCILLOSCOPE TRIGGER WITH COMPENSATING TRIGGER DELAY

Arthur W. Crooke, Concord, and Edwin E. Stebbins, Boston, both of Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed Sep. 14, 1982, Ser. No. 418,186
Int. Cl.⁴ H01J *29/56;* G01R *23/16*
U.S. Cl. 364—571 **10 Claims**



6. Apparatus to synchronize a digital oscilloscope displaying an input signal comprising:

a clock providing periodic sample times;

comparator means providing a trigger output signal when a trigger signal crosses a predetermined threshold;

time measuring means providing a delay signal corresponding to the time interval between said trigger output signal and a subsequent sample time;

sample means providing representative sample signals corresponding to said input signals at said sample times;

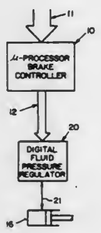
storage means for storing said representative sample signals and said delay signal; and

signal adjustment means providing interpolated sample signals according to previous said sample signals and said stored delay signals, wherein the resulting said interpolated sample signals correspond to subsequent sample signals having a delay signal equal to the delay signal of said previous sample signal.

4,555,766
BRAKE CONTROL SYSTEM FOR VEHICLES

Eric Wright, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 9, 1981, Ser. No. 310,187
Int. Cl.⁴ F15B *9/03*
U.S. Cl. 364—426 **3 Claims**



1. A brake control system for vehicles comprising fluid braking means, a microprocessor having input brake control means and output fluid brake application means, the output fluid brake application means comprising means responsive to a digital signal characteristic of a desired fluid braking pressure, wherein the brake application means comprises improved fluid pressure regulating means comprising;

(a) fluid pressure chamber means for developing and maintaining a regulated braking fluid pressure,

(b) valve means having a spool selectively operable axially to select brake application, release and lap positions for selectively governing fluid pressure in the braking means and in the fluid pressure chamber,

(c) digital linear actuating means comprising a stepping motor having axially operable shaft means coaxially connected to one end of the spool of the valve means and responsive to the digital signal to actuate the spool axially alternately to application and release brake control positions,

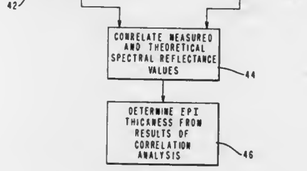
(d) control means including the valve means and a piston carrying the stepping motor operable responsive to changes of fluid pressure in the chamber for maintaining output pressure to the fluid braking means in accordance with the characteristics of the digital signal, and

(e) the piston being biased by a metering spring to permit expansion of the pressure chamber volume in accordance with an increase of fluid pressure within the fluid pressure chamber corresponding to the output pressure.

4,555,767
METHOD AND APPARATUS FOR MEASURING THICKNESS OF EPITAXIAL LAYER BY INFRARED REFLECTANCE

William R. Case, Walden, N.Y., and Wildey E. Johnson, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/US82/00729, § 371 Date Oct. 28, 1982, § 102(e) Date Oct. 28, 1982
PCT Filed May 27, 1982, Ser. No. 442,193
Int. Cl.⁴ G01B *11/02*
U.S. Cl. 364—563 **14 Claims**



1. The method of measuring, by means of an instrument connected to a data processing system (DPS), the thickness of a sample epi layer grown on a substrate, comprising the steps of:

(a) operating said instrument and said DPS to measure the spectral reflectance of IR energy reflected from the surface of the epi layer and from the interface between the epi layer and the substrate;

(b) storing within said DPS values representing the measured spectral reflectance resulting from step (a);

(c) storing within said DPS values representing a series of theoretical spectral reflectances determined for a series of epi layers of different thicknesses within a range including the thickness of the epi layer being measured, said series of epi layers being of like doping concentrations;

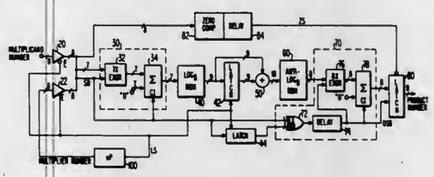
(d) correlating within said DPS values for each of said theoretical spectral reflectances with values of said measured spectral reflectance and providing a quantitative measure of the degree of correlation as a function of epi layer thickness;

and (e) determining within said DPS the thickness of the sample epi layer from the maximum value of said quantitative measure of the degree of correlation.

4,555,768
DIGITAL SIGNAL PROCESSING SYSTEM EMPLOYING LOGARITHMS TO MULTIPLY AND DIVIDE

Henry G. Lewis, Jr., Hamilton Square, and Thomas M. Stiller, Ewing Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 7, 1983, Ser. No. 502,014
Int. Cl.⁴ G06F *7/52*
U.S. Cl. 364—757 **20 Claims**



1. A digital signal processing system for processing digital numbers to produce processed digital numbers comprising:

first memory means for producing N-bit logarithms of said input digital numbers from a table of N-bit logarithms to a base B stored therein;

processing means coupled to said first memory means for digitally processing the N-bit logarithms of said inout digital numbers to produce processed N-bit logarithms; and

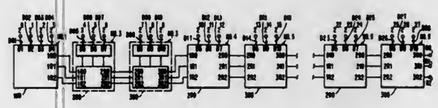
second memory means for producing from a table of antilogarithms to said base B stored therein said processed digital numbers in response to said processed N-bit logarithms;

wherein said base B is selected in accordance with the magnitudes of said processed digital numbers to utilize substantially the entire range of possible magnitudes of said N-bit logarithms.

4,555,769
CIRCUIT APPARATUS FOR GENERATING MODULUS-N RESIDUES

Eric L. Carter, Endicott, and Harold T. Ward, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1983, Ser. No. 498,214
Int. Cl.⁴ G06F *7/72*
U.S. Cl. 364—746 **11 Claims**



1. Circuit apparatus responsive to a digital input signal indicative of a multiple bit number, said apparatus in response to said input signal providing a digital output signal indicative of the modulus-N residue of said input signal, where N is a predetermined odd integer greater than one, said apparatus comprising:

a current source,

an array of multiple modular groups, each said group having plural series-connected successive banks of plural semiconductor current switches, said switches of said banks of each said group having a predetermined cascode current logic tree network configuration,

each of said banks having predetermined signal responsive control means for controlling said switches of the particular said bank thereof, said control means of each one of said series-connected banks of the same group having a different response level with respect to the respective response levels of the other control means of the other banks of said same group,

said array further having N output circuit paths,

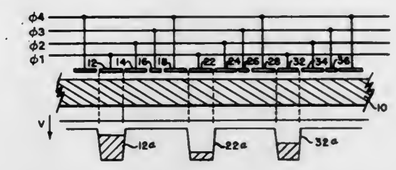
said input signal being received by predetermined ones of said control means of predetermined ones of said groups of said array, and in response to said input signal at said predetermined ones of said control means said switches of said array coact to selectively connect said circuit paths to said current source to provide a current condition in said circuit paths indicative of the numerical value of said modulus-N residue that is associated with the value of the number of said input signal present at said predetermined ones of said control means, and

output means coupled to said circuit paths to provide said output signal thereat in accordance with said current condition of said paths.

4,555,770
CHARGE-COUPLED DEVICE GAUSSIAN CONVOLUTION METHOD

Jay P. Sage, Newton Centre, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 13, 1983, Ser. No. 541,820
Int. Cl.⁴ G06G *7/12, 7/00, 7/02;* H03H *19/00*
U.S. Cl. 364—819 **4 Claims**



1. A method of operating a charge transfer device for producing the Gaussian convolution of a signal charge pattern stored therein, said charge transfer device having a semiconductor substrate in which pluralities of signal wells, mixing wells and interposed transfer wells are induced in regions situated below electrodes to which multiphase clock pulses are applied for the storage and selective transfer of signal charge packets, comprising the steps of:

(a) intermixing the charge stored in each of said plurality of mixing wells with the charge stored in the signal well disposed on a first side thereof by activating the interposed transfer well;

(b) isolating the charge stored in each of said plurality of mixing wells from the charge stored in the signal well disposed on said first side threecf by deactivating the interposed transfer well, whereby a fraction of said intermixed charge remains stored in each of said mixing wells;

(c) intermixing the charge stored in each of said plurality of mixing wells with the charge stored in the signal well disposed on a second side thereof by activating the interposed transfer well;

(d) isolating the charge stored in each of said plurality of mixing wells from the charge stored in the signal well disposed on a second side thereof by deactivating the interposed transfer well, whereby a fraction of said intermixed charge remains stored in each of said mixing wells; and

(e) repeating each of the above steps a sufficient number of times to achieve a Gaussian distribution of a desired width.

4,555,771

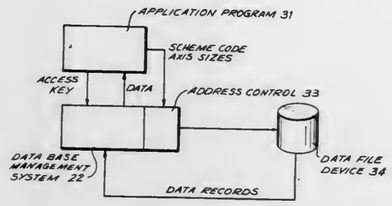
DATA PROCESSING SYSTEM FOR DATA BASE MANAGEMENT OF MATRIX TYPE DATA

Katsumi Hayashi, Ichikawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 328,935, Dec. 9, 1981, abandoned, which is a continuation of Ser. No. 69,762, Aug. 27, 1979, abandoned. This application Mar. 26, 1982, Ser. No. 362,449

Int. Cl.⁴ G06F *5/00*

U.S. Cl. 364—900 **1 Claim**



1. A data processing system for data base management comprising

file means for storing n-dimensional matrix type data on tha basis of one-dimensional address information, said one-dimensional address information having a value equal to

$$(a1-1)A2A3 \ldots An+(a2-1)A3A4 \ldots An+\ldots +(a(n-1)-1)An+an,$$

wherein **a1, a2** . . . an is the n-dimensional coordinate and **A1, A2** . . . An is the coordinate axis;

n-coordinate axes for respectively storing the maximum value of each coordinate axis of an n-dimensional coordinate;

scheme code storage means for storing a code designating any n-hierarchical scheme wherein each of n hierarchies is selected as desired from n coordinates, said n-hierarchical scheme being a single scheme having n hierarchies;

n address storage means, each corresponding to a hierarchy of a specific n-hierarchical scheme and each for storing an address indicating an ordinal number in a specific set in the corresponding hierarchy, n being an integer at least equal to 2;

selecting means connected to said address storage means for selecting a desired one of said address storage means and updating the contents thereof;

updating means connected to said selecting means for updating the contents of the selected address storage means; and

calculating means including a converter means including a converter means, said converter means connected to said n-coordinate axes, said scheme code storage means, said address storage means and said selecting means for calculating the one-dimensional address from the contents of said address storage means, the contents of said scheme code storage means and the contents of said n-coordinate axes, said file means being connected to said calculating means and being accessed by the one-dimensional address output from said calculating means, said converter means providing correspondence between the contents of said selected one of said address storage means and said n-dimensional coordinate in accordance with the contents of said scheme code storage means said converter means including a decoder, responsive to input scheme code signals, for providing different outputs of said converter means for the same inputs from said n-coordinate-axes, said converter means providing an output, and linear expander means for executing operation of said one-dimensional address information value in accordance with the output of said converter means and the contents of said n-coordinate axes, said linear expander means connected to said n-coordinate axes, said selecting means, and said converter means.

4,555,772

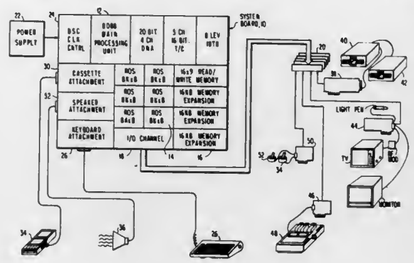
CURRENT CURSOR SYMBOL DEMARKATION

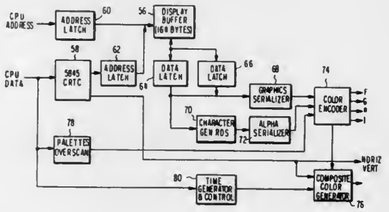
Lawrence K. Stephens, Charlottesville, Va., assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 31, 1983, Ser. No. 499,452

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—900 **2 Claims**





1. A computer system for providing an interactive graphics display comprising:

means for providing a table of selectable cursor graphic characters;

means for selecting one of said cursor graphic characters as the current cursor symbol;

means for displaying the selected cursor graphic character;

means for moving the displayed cursor graphic character on said means for displaying;

means for fixing an image of the currently displayed cursor graphic character on said means for displaying at one or more locations to generate a graphic display, said means for moving thereafter being capable of moving the currently displayed cursor graphic character to another location on said means for displaying; and

means for demarking the currently displayed cursor graphic character by an inverse video display of points of overlap of the cursor character and other graphic characters fixed on said means for displaying by exclusive ORing the data for the cursor character with the corresponding data of an overlapped character on said means for displaying.

4,555,773

PRINTING WITH A DATA STREAM INCLUDING MERGED GRAPHIC AND ALPHANUMERIC DATA

Roy E. Karnes, Jr.; Rex A. McCaskill, and Khoa D. Nguyen, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

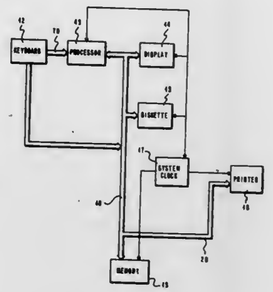
Filed May 11, 1983, Ser. No. 493,402

Int. Cl.⁴ G06F *3/00*

U.S. Cl. 364—900 **13 Claims**

1. In a word processing system having an interactive display terminal for displaying by character generation a data stream representative of alphanumeric characters to be printed on a document and means for printing character by character on said document, the improvement comprising

means for integrating into said data stream, data representative of graphics,



means for converting said integrated graphics data into graphic characters whereby said graphics are also displayed through character generation, and

means for applying the data in said data stream to said printing means whereby said alphanumeric and graphic characters represented by said data stream are printed character by character to provide a document having integrated alphanumeric and graphic information.

4,555,774

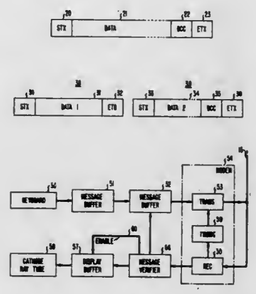
FAST RESPONSE FOR SWITCHED DATA NETWORKS

Lawrence Bernstein, Short Hills, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 19, 1982, Ser. No. 409,645

Int. Cl.⁴ G06F *3/00*

U.S. Cl. 364—900 **9 Claims**



1. An interactive mechanized request-response information handling system comprising

a data storage mechanism;

a data processor for reading, writing, and editing data in said storage mechanism;

a plurality of remote user terminals for providing information requests to said storage mechanism and for displaying responses to said requests as a plurality of successive display increments wherein each of said display increments includes only so much information as can be displayed at one time at any one of said terminals; and

a communications controller for formatting information responses from said data storage mechanism into two message blocks, one block of fixed length equal to the contents of a single one of said display increments to provide fast response to an inquiry, and the other block comprising the balance of the information response.

4,555,775

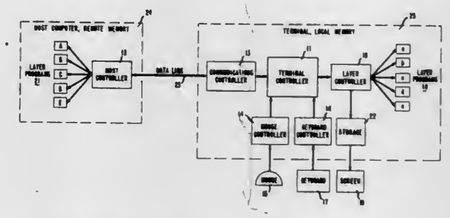
DYNAMIC GENERATION AND OVERLAYING OF GRAPHIC WINDOWS FOR MULTIPLE ACTIVE PROGRAM STORAGE AREAS

Robert C. Pike, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 7, 1982, Ser. No. 433,261

Int. Cl.⁴ G06F *3/00, 7/00*; G06K *15/18*

U.S. Cl. 364—900 **15 Claims**



1. A computer terminal display system comprising

a display surface,

means for simultaneously displaying a plurality of overlapping rectangular graphic layers on said surface, wherein each of said graphic layers comprises an autonomous level of graphical information,

means for associating each of said graphic layers with an independent computer program,

means for storing a complete bitmap for each of said graphic layers, and

means responsive to the associated one of said independent computer programs for continuously updating each of said bitmaps.

4,555,776

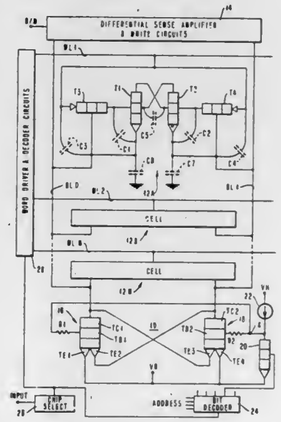
VOLTAGE BALANCING CIRCUIT FOR MEMORY SYSTEMS

Charles J. Masenas, Jr., Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,970

Int. Cl.⁴ G11C *7/00*

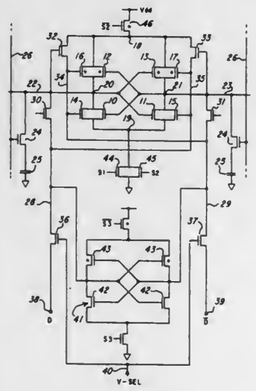
U.S. Cl. 365—202 **23 Claims**



1. A voltage balance circuit comprising

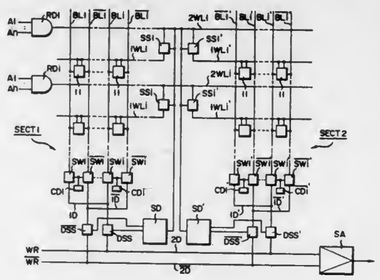
first and second conductive lines,
a point of reference potential,
first and second transistors, said first transistor being disposed between said first conductive line and said point of reference potential and said second transistor being disposed between said second conductive line and said point of reference potential,
means for coupling said first conductive line through said first transistor to said second conductive line,
means for coupling said second conductive line through said second transistor to said first conductive line,
means for applying simultaneously signals of unequal magnitude to a current carrying electrode of said first and second transistors through said first and second conductive lines during a given period of time, and
means for applying simultaneously substantially equal signals to the control electrodes of said transistors during said given period of time.

4,555,777
SENSE AMPLIFIER CIRCUIT FOR DYNAMIC READ/WRITE MEMORY
Ken A. Poteet, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 14, 1984, Ser. No. 640,715
Int. Cl.⁴ G11C *7/00, 11/24*
U.S. Cl. 365—205 **14 Claims**



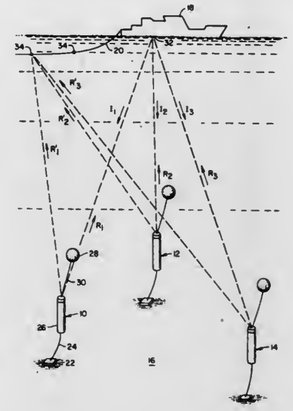
1. A semiconductor memory device comprising:
(a) an array of rows and columns of storage cells,
(b) addressing means for activating one of said rows of storage cells at a first time in an operating cycle,
(c) each column having a sense amplifier including first and second sense nodes connected to a pair of bit lines, the bit lines being coupled to storage cells of a column,
(d) each of said sense amplifiers comprising:
a CMOS cross-coupled flip-flop circuit having first and second N-channel transistors and first and second P-channel transistors, each of said transistors having a source-to-drain path and a gate, the source-to-drain paths of the first and second N-channel transistors being separately connected between said first and second sense nodes and grounding means, the source-to-drain paths of the first and second P-channel transistors being separately connected between said first and second sense nodes and voltage supply means,
third and fourth N-channel transistors and third and fourth P-channel transistors, each of said transistors having a source-to-drain path and a gate, the source-to-drain paths of said third and fourth N-channel transistors being separately connected across the source-to-drain paths of the first and second N-channel transistors, the source-to-drain paths of the third and fourth P-channel transistors being separately connected across the source-to-drain paths of the first and second P-channel transistors,
first and second coupling transistors, each having a source-to-drain path and a gate, the source-to-drain path of the first coupling transistor connecting said gates of the third N-channel and third P-channel tranistors to said second sense node, the source-to-drain path of said second coupling transistor connecting said gates of the fourth N-channel and fourth P-channel transistors to said first sense node,
and means for activating the gates of said first and second coupling transistors during a read operation, and deactivating such gates during a write operation.

4,555,778
SEMICONDUCTOR MEMORY DEVICE
Takayasu Sakurai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Japan
Filed Jul. 31, 1984, Ser. No. 636,220
Claims priority, application Japan, Aug. 31, 1983, 58-159313
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—230 **6 Claims**



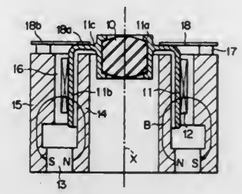
1. A semiconductor memory device comprising:
a group of memory cells comprising of a plurality of memory sections;
a plurality of first word lines provided corresponding to said memory sections;
a plurality of bit lines provided crossing said first word lines;
a plurality of second word lines provided commonly for said memory sections and corresponding to said word lines;
a plurality of section switches respectively provided between said first and second word lines, said section switches selecting one of said memory sections according to the output of a section decoder;
first data lines provided corresponding to said bit lines;
a plurality of switches controlled by the output of a column decoder provided between said bit lines and said first data lines;
a pair of second data lines provided commonly for said memory sections and corresponding to said first data line; and
data line section switches provided between said first data lines and the pair of said second data lines in each of said memory sections, said data line section switches being controlled by the output of said section decoder.

4,555,779
SUBMERGED MARINE STREAMER LOCATOR
F. Alex Roberts, Brea, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 215,195, Dec. 10, 1980, abandoned. This application Mar. 18, 1983, Ser. No. 476,690
Int. Cl.⁴ G01S *15/06;* **G01V** *1/38*
U.S. Cl. 367—19 **10 Claims**



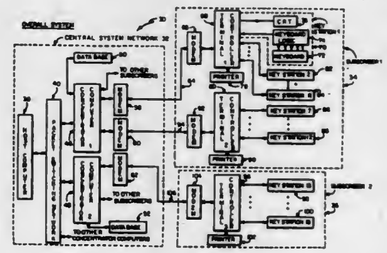
7. A method for determining the location of a submerged marine seismic streamer while being towed by an exploration vessel, which comprises:
positioning at least three transponders at known spaced apart locations on a sea floor;
towing a marine seismic streamer from an exploration vessel in the sea generally above said transponders;
generating an acoustic command signal from said vessel on a periodic basis;
receiving said acoustic command signal by each of said at least three transponders and in response to said acoustic command signal generating a distinctly different acoustic signal from each of said transponders;
detecting each of the transponder acoustic response signals at the vessel receiver;
detecting each of the transponder acoustic response signals at a plurality of receivers spaced apart along said streamer;
relaying a distinct signal along said streamer in response to each of said detected signals for recording thereof at said vessel and separately recording each of said transponder acoustic signals at said vessel;
measuring the time intervals from generation of said command signal to receipt of each of said transponder acoustic response signals by at least one receiver at said vessel;
determining the velocity of said at least one vessel receiver relative to each of said transponders by calculating the rate of change of range from a plurality of said time intervals corresponding to successive signals from each of said transponders being received by said vessel receiver;
calculating the initial time of generation of an acoustic response from said transponders; and
measuring the time intervals from generation of said transponder acoustic response signals to receipt of each of said response signals relayed from said spaced receivers along said streamer;
whereby the distance of each of said streamer receivers from each of said known positions of said transponders may be calculated.

4,555,780
OPTICAL RECORDING AND PLAYBACK UNIT
Hiroshi Koide, Kanagawa, Japan, assignor to Ricoh Co. Ltd., Japan
Filed Nov. 17, 1982, Ser. No. 442,244
Claims priority, application Japan, Nov. 19, 1981, 56-186053; Dec. 11, 1981, 56-199735
Int. Cl.⁴ G11B *7/12*
U.S. Cl. 369—43 **8 Claims**



1. An optical recording and playback unit for use with a disc having information marked on its surface, the unit comprising: an optical lens, a bobbin for supporting at least the optical lens and having a portion on which, a composite coil assembly is disposed, including at least a first coil which is disposed at a first non-perpendicular angle with respect to the center axis of the bobbin and a second coil disposed at a second given angle with respect to the center axis, a magnetic circuit having a gap which defines a magnetic flux passing through the composite coil assembly in a direction substantially perpendicular to the center axis of the bobbin, and means for supporting the bobbin so as to be freely movable within the gap.

4,555,781
CONVERSATIONAL VIDEO SYSTEM HAVING LOCAL NETWORK CONTROL
Kenneth Baldry, Isleworth, and Martin Davids, Leigh-on-Sea, both of England, assignors to Reuters Ltd., London, England
Filed Mar. 30, 1983, Ser. No. 480,211
Int. Cl.⁴ H04Q *11/04*
U.S. Cl. 370—60 **41 Claims**



1. In a video communication network capable of providing textual data messages to a plurality of subscriber terminals throughout said network, at least a portion of said plurality of subscriber terminals comprising subscriber keystations, each of said subscriber keystations comprising a keyboard means for operator input of textual data messages and associated data control signals to said network via said keyboard means and a video display means for providing a textual video display of at least keyboard generated data input to said network; the improvement comprising at least one message switching interface means for routing video conversational textual data message calls throughout said network, said data messages being transmitted through said network in a plurality of data packets, a plurality of said keystations being operatively connected to

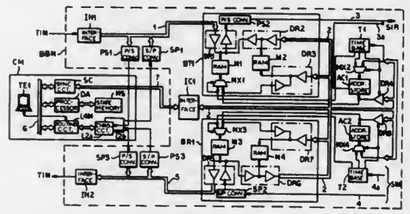
said one message switching interface means, said one message switching interface means comprising message routing logic means and storage means operatively connected to said message routing logic means for providing message routing logic control signals and further comprising display control logic means and local video display storage means for locally storing video conversational textual data for providing a video display thereof to at least a pair of said keystations which are operatively connected together through said one interface means in a completed call in said network, said keyboard means comprising means for providing unique calling signals to said interface means for initiating calls to a designated keystation portion of said plurality of keystations in said network, said one interface means further comprising means for receiving said calling signals provided thereto for completing a call to said designated connected keystation, said message routing logic means comprising means for controlling the routing of said calling signals and said data packets to said designated keystations to control the completion and conducting of said initiated calls, said display control logic means comprising means for providing on said pair of connected keystation video display means a video display of video conversational textual data transmitted in said data packets between said connected keystations in said network with which said call has been completed via said separate keyboard means associated with said pair of connected keystations, said keyboard means calling signal providing means further comprising means for providing said data packets to said interface means for providing said video conversational textual data messages between said connected keystations during a call therebetween, said one message switching interface means storage means comprising means for retrievably storing a packet routing control program for controlling the routing of said data packets between said connected keystations during said call therebetween, said switching interface means message routing logic means comprising means capable of accessing said packet routing control program in response to said calling signals and said data packet provision for connecting and routing said provided data packets between said connected keystations, said one message switching interface means comprising at least one node computer message routing means, at least one pair of switching concentrator computer message routing means operatively connected to said one node computer message routing means and to each other via a message communications link and at least one keystation terminal controller interface means operatively connected between each of said keystations between which said call is completed and each of said pair of switching concentrator computer message routing means, said node computer message routing means comprising said message routing logic means and said storage means operatively connected thereto, each of said switching concentrator computer message routing means comprising a local message routing logic means and a local storage means operatively connected thereto, each of said local storage means comprising means for locally retrievably storing a copy of said packet routing control program, each of said local message routing logic means comprising means capable of accessing said locally retrievably stored packet routing control program in response to said calling signals and said data packet provision between said keystations connected to said switching concentrator computer message routing means for enabling direct routing of calls between said keystations connected to said switching concentrator computer message routing means.

4,555,782

BASE-BAND EQUIPMENT FOR GROUND STATIONS OF SATELLITE TELECOMMUNICATION SYSTEM

Gian B. Alaria, Turin; Silvano Appiano, Montafia d'Asti; Paolo Destefanis, and Cesare Poggio, both of Turin, all of Italy, assignors to Cselt Centro Studi e Laboratori Telecomunicazioni SpA, Turin, Italy

Filed Jan. 20, 1984, Ser. No. 572,578
Claims priority, application Italy, Jan. 21, 1983, 67069 A/83
Int. Cl.[4] H04J *3/06*
U.S. Cl. 370—104 **7 Claims**



1. In a time-division multiple access (TDMA) system for the exchange of digitized message samples between ground stations via a relay station aboard a communication satellite, each ground station transmitting data words from terrestrial sources in respective channels of outgoing TDMA frames via a radio-frequency up-link to said relay station for transfer to respective channels of incoming TDMA frames, each ground station receiving incoming TDMA frames via a radio-frequency down-link for distribution to terrestrial destinations,

the improvement wherein each ground station is provided with base-band equipment comprising a transmitting section, a receiving section and a control unit, interconnected via a bidirectional internal bus said transmitting section communicating with associated terrestrial sources via a first bus provided with a multiplicity of conductors carrying parallel bits of data words to be sent out, said receiving section communicating with associated terrestrial destinations via a second bus provided with a multiplicity of conductors carrying parallel bits of data words to be distributed;

said transmitting section including a first random-access frame memory having inputs connected to said first bus, a first random-access ancillary memory having inputs connected via said bidirectional internal bus to said control unit, first parallel/series conversion means connected to certain conductors of said first bus for extracting service information from the outgoing bit stream and feeding such information to said control unit, timing means connected to said frame memory establishing alternate first writing and reading phases for said first frame memory and supplying writing addresses thereto first storage means connected to said first timing means, said bidirectional internal bus said first frame memory and said first ancillary memory said first storage means being said readable by said first timing means for supplying reading addresses to said first frame memory during said first reading phases and to said first ancillary memory during certain of said first writing phases, said first ancillary memory being loadable by said control unit with extracted service information during said first reading phases through said internal bus, said first frame and ancillary memories having outputs connected by way of a parallel/series converter to a radio-frequency stage, and first series/parallel conversion means connected to certain conductors of said first bus for injecting service information from said control unit into the outgoing bit stream;

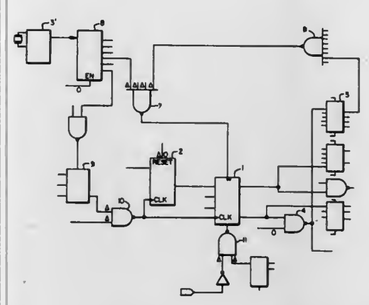
said receiving section including a second random-access frame memory having outputs connected to said second bus, a second random-access ancillary memory having outputs connected via said internal bus to said control unit, second timing means connected to said second frame memory controlled by synchronizing signals in the incoming bit stream for establishing alternate second writing and reading phases for said second frame memory and supplying reading addresses thereto, said parallel/series conversion means connected to certain conductors of said second bus for extracting service information from the incoming bit stream and feeding such information to said control unit, second storage means, connected to said second timing means, said second frame memory and said second ancillary memory, said second storage means being readable by said second timing means for supplying writing addresses to said second frame memory during said second writing phases and to said second ancillary memory during certain of said second reading phases, said second ancillary memory being readable by said control unit through said internal bus during said second writing phases, said second frame and ancillary memories having inputs connected by way of a series/parallel converter to said radio-frequency stage, and second series/parallel conversion means connected to certain conductors of said second bus for injecting service information from said control unit into the incoming bit stream.

4,555,783

METHOD OF COMPUTERIZED IN-CIRCUIT TESTING OF ELECTRICAL COMPONENTS AND THE LIKE WITH AUTOMATIC SPURIOUS SIGNAL SUPPRESSION

Mark Swanson, Arlington, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Apr. 30, 1982, Ser. No. 373,809
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—15 **10 Claims**



1. A method of computerized in-circuit testing of components in circuit boards and the like, that comprises, forcing test signals under computer program control at selected nodes of the circuit that are inputs of the components thereof, effectively to isolate such components from the circuit and enable testing thereof as though such were not a part of the circuit; and suppressing possible spurious signals generated during such testing including the routing by the circuit of an output signal of a component under test via feedback paths to the input in interference with the forcing test signal and other spurious signal sources and paths shared by components, by:

(a) identifying circuit components feeding or processing input signals to the component(s) under test and that can pass said spurious signals; and

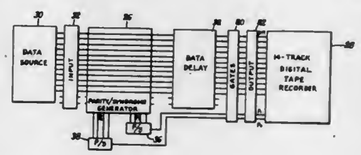
(b) automatically inhibiting potential transmission of spurious signals by applying specific signals to the identified components prior to or during the testing of the component(s) under test.

4,555,784

PARITY AND SYNDROME GENERATION FOR ERROR DETECTION AND CORRECTION IN DIGITAL COMMUNICATION SYSTEMS

Roger W. Wood, Manteca, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 5, 1984, Ser. No. 586,526
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—37 **3 Claims**



1. A parity and/or syndrome generator for generating a block parity check for the detection and/or correction of errors in a multi-channel digital data communication system using a linear code or a coset of such code in which data and parity bytes are intended to be digitally encoded in n by m bit data blocks to form a respective codeword in n parallel bytes of m bits in serial order of significance in the form of a codeword having n elements represented by respective said bytes in the Galois field GF(2^m), such Galois field being defined by an m-order field generator polynomial in integral powers of z between z^0 and z^m, where z is the inverse of the delay operator z^{-1} of such Galois field, said parity generator and/or syndrome comprising:

first means responsive to byte-parallel data block bits of the same significance for producing a first partial parity check having m bits in each byte for the bit of said significance in each of the n elements of the respective codeword,

second means for summing in the Galois field over all elements of the codeword said first partial parity checks to form a second partial parity check having m bits in each byte,

a plurality of m-bit registers for registering bits,

third means for multiplying the bit content of each of said m-bit registers by the inverse of the delay operator in the Galois field and producing respective m-bit products and summing said m-bit products to said second partial parity checks to form a third parity check having m bits in each byte,

clock means for producing clock pulses, and

means responsive to said clock pulses for synchronously clocking said data block bits in the order of significance byte-parallel into said first means, clocking said third parity check into said m-bit registers, and clearing said m-bit registers after m bits.

4,555,785

OPTICAL REPEATER INTEGRATED LASERS

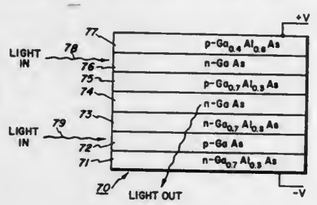
Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 336,750, Jan. 4, 1982, Pat. No. 4,450,567, which is a division of Ser. No. 56,765, Jul. 12, 1979, Pat. No. 4,316,156. This application Mar. 15, 1984, Ser. No. 589,796
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—8 **4 Claims**

1. An optical AND logic element comprising a plural layer semiconductor laser diode which is electrically biased to the point wherein light input causes the laser to commence lasing from an active semiconductor layer such that the improvement is characterized by:

a crystalline structure (60) of intermixed layers of n and p type semiconductor material, the junction of two of said intermixed layers being forward biased at the application of an electrical bias,

wherein when said electrical bias (V) is slightly less than the breakdown voltage of at least two back biased junctions in said crystalline structure and external light is supplied



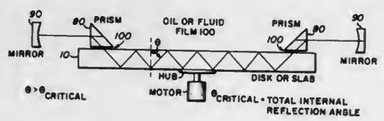
from at least two sources to said back biased junctions simultaneously, said back biased junctions becoming forward biased so as to stimulate the emission of laser light from said active semiconductor layer.

4,555,786

HIGH POWER SOLID STATE LASER

Robert L. Byer, Stanford, Calif., assignor to Board of Trustees of Leland Stanford, Jr. University, Stanford, Calif.

Filed Jun. 24, 1982, Ser. No. 391,529
Int. Cl.[4] H01S *3/091*
U.S. Cl. 372—70 **8 Claims**



1. In a solid state laser of the type characterized by a solid member of lasant meterial having a pair of opposed major faces between which optical lasant energy generated within said member is caused to be internally reflected in a zig-zag path, the improvement comprising:

optical pumping means for passing optical pumping radiation through a selected region of at least one of said major faces and into said member for optically pumping said lasant material; and

moving means for imparting cyclical relative motion between said member of lasant material and the selected region of said member which is illuminated by said optical pumping radiation so as to distribute the heat generated in said member of lasant material by said optical pumping radiation approximately evenly throughout the member of lasant material, whereby thermally induced depolarization and focusing effects are reduced in use.

4,555,787

GAS LASER PREIONIZATION DEVICE

David B. Cohn, Los Angeles, and Eugene E. Conley, Huntington Beach, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Division of Ser. No. 186,663, Sep. 12, 1980, Pat. No. 4,380,079. This application Mar. 21, 1983, Ser. No. 476,946
Int. Cl.[4] H01S *3/097*
U.S. Cl. 372—86 **2 Claims**

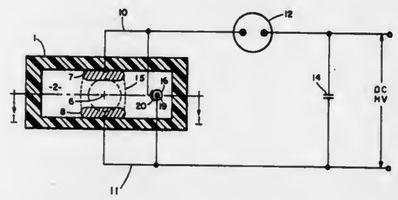
1. Apparatus for producing ultraviolet radiation for preionizing gas in a laser having a high voltage source, electrodes for generating a discharge when energized by said high voltage source, and a resonant cavity containing a gain medium excitable by said discharge from said high voltage source, the preionizing apparatus comprising:

a hollow dielectric tube positioned within said resonant cavity;

an inner wire conductor within said dielectric tube;

at least one outer conductor positioned along the outer surface of said dielectric tube; and

electrical connector means for applying a signal from said high voltage source across said dielectric tube between



said inner wire conductor and said outer conductor to generate ultraviolet radiation in the cavity to preionize the gain medium in the cavity

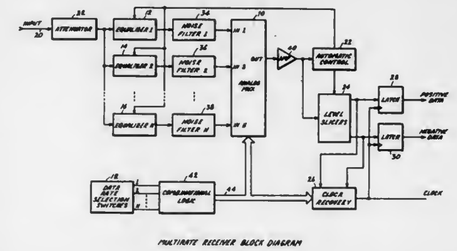
whereby said ultraviolet radiation is caused to create a stable uniform discharge of the gain medium.

4,555,788

MULTIPLE RATE BASEBAND RECEIVER

Dana A. Merrill, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 23, 1984, Ser. No. 583,085
Int. Cl.[4] H04B *3/14*
U.S. Cl. 375—11 **10 Claims**



1. A baseband receiver for receiving bipolar data having positive and negative data pulses at a plurality of data rates, comprising:

a plurality of equalizer means 1—N for equalizing input bipolar data at a plurality of data rates 1—N;

means for selectively coupling said input bipolar data at a plurality of input data rates to a selected one of said equalizer means;

multiplexing means for selecting data from the selected equalizer means, and having an output;

automatic control means common to said equalizing means having the output of said multiplexing means coupled thereto, for providing a feedback adjustment for said equalizer means; and

level slicing means responsive to said selected equalizing means for receiving positive and negative data pulses from the received data in response to decision thresholds.

4,555,789

EQUALIZER CIRCUIT SUITABLE FOR ADAPTIVE USE WITH FIBER OPTICS

Charles R. Hogge, Jr., Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

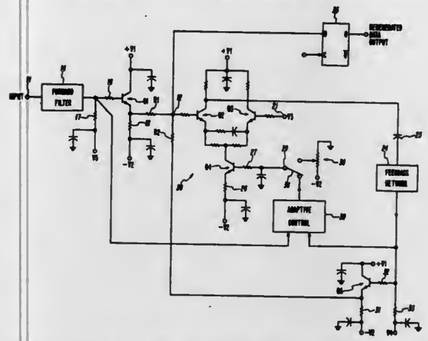
Filed Jul. 26, 1983, Ser. No. 517,318
Int. Cl.[4] H03K *5/08*; H04B *3/14*
U.S. Cl. 375—11 **2 Claims**

1. An equalizer circuit suitable for adaptive or manual control of the equalization of a circuit input signal having digital pulses exhibiting distortion, comprising:

means for providing a waveform which is the sum of signals at first and second summing inputs thereof;

means capable of responding to said circuit input signal to be equalized, for coupling it to the first of said summing inputs;

decision means for providing a first digital state output when said sum waveform assumes a value selected to correspond to a logic one and second digital state output when said sum waveform assumes a value selected to correspond to a logic zero, by responding to a comparison of



said sum waveform and a threshold, switching to provide said digital state outputs, at any time, based on said comparison, without the requirement of a clocking input;

gain control means, associated with said decision means, responsive to a control input level for controlling the magnitude of said digital state output so that said control input level can be adaptively or manually varied to achieve a change in equalization; and

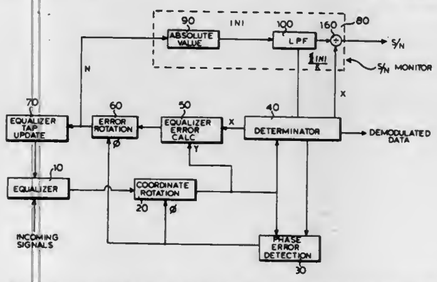
means for processing said digital state outputs to provide an equalizing waveform to said second summing input for combination with the pulses of the circuit input signal to correct said distortion of the pulses.

4,555,790

DIGITAL MODEM HAVING A MONITOR FOR SIGNAL-TO-NOISE RATIO

William L. Betts, 115 Bock Ciega Dr., Madeira Beach, Fla. 33541, and Kenneth Martinez, 6293 109th Ave. N., Pinellas Park, Fla. 33565

Filed Jun. 30, 1983, Ser. No. 509,716
Int. Cl.[4] H03C *5/00*
U.S. Cl. 375—39 **4 Claims**



1. A modem with a signal-to-noise ratio monitor in a digital communication system utilizing QAM- type modulation adapted to receive signals which can be represented as a signal constellation, comprising:

means for determining ideal signals each one of said ideal signals corresponding to a received signal, and;

enabling means for enabling 2 monitoring means only when said received signals are the innermost signals with respect to the origin of said signal constellation;

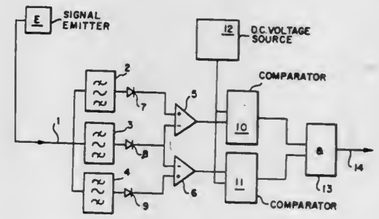
said monitoring means comprising: means for generating a noise signal for said received signals, said noise signal being equal to the difference between said received signals and the corresponding ideal signals; and means for generating the rms value of said noise signals.

4,555,791

METHOD AND APPARATUS FOR DETERMINATION OF THE STATE OF AN ALL-OR-NONE MODULATED ALTERNATING SIGNAL IN A PERTURBED ENVIRONMENT

Jean-Francois Gabillet, Coye la Foret, France, assignor to Jeumont-Schneider Corporation, Puteaux, France

Filed May 13, 1982, Ser. No. 377,803
Claims priority, application France, May 19, 1981, 81 09919
Int. Cl.[4] H04L *27/06*
U.S. Cl. 375—58 **4 Claims**



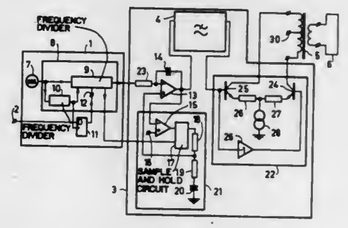
1. A method of determining, on reception, the state of a useful signal emitted at a predetermined frequency and initial amplitude and subjected to a perturbed environment, said signal being all-or-none modulated, comprising emitting into said environment simultaneously with the emission of said useful signal a non-modulated reference signal of the same initial amplitude at a neighboring frequency, receiving said useful and reference signals, continuously generating a difference signal of the amplitude proportional to the difference between the amplitudes of the received useful and reference signals, and comparing the amplitude of said difference signal to a reference value to indicate whether said useful signal is in an all state or in a none state.

4,555,792

TRANSMITTER FOR TRANSMITTING AN FSK-MODULATED SIGNAL

Nicolaas Van Tol, Huizen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,763
Claims priority, application Netherlands, Oct. 2, 1981, 8104487
Int. Cl.[4] H04B *5/00*; H04L *27/12*
U.S. Cl. 375—62 **21 Claims**



1. A transmitter for transmitting an FSK-modulated signal

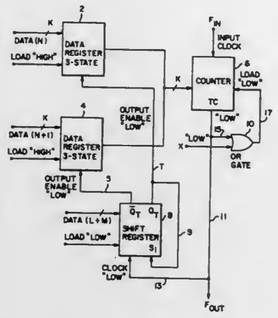
comprising: a frequency controllable signal generator, an inductive aerial, and a control arrangement responsive to an output signal of the signal generator and including a current source and means for controlling the current applied to the inductive aerial so that the amplitude of said aerial current is inversely proportional to the frequency of the signal to be transmitted.

4,555,793

AVERAGING NON-INTEGER FREQUENCY DIVISION APPARATUS

Daniel A. Benamy, Teaneck, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed Nov. 28, 1983, Ser. No. 555,783
Int. Cl.⁴ H03K *21/36*
U.S. Cl. 377—48 **6 Claims**



1. Frequency dividing apparatus, characterized by:

data register means loaded with digital inputs and providing corresponding outputs, said data register means including a first register having a plurality of parallel data input lines and responsive to a load input at a predetermined logic level for loading digital inputs corresponding to an integer N and a second data register having a plurality of parallel data input lines and responsive to the load input at the predetermined logic level for loading digital inputs corresponding to an integer (N+1);

counter means clocked by an input at a frequency to be divided, and responsive to the outputs from the data register means for providing an output at a frequency corresponding to the input frequency divided by the count of the counter means;

shift register means loaded with a perdetermined pattern of bits and clocked by the output of the counter means for providing outputs which enable the data register means, whereby for a predetermined number of clocks to the shift register means the digital inputs loaded into the data register means are loaded into the counter means a predetermined number of times, the shift register means being an (L+M) length shift register, with a pattern of (L+M) bits being loaded into the shift register in response to a load input at a predetermined logic level, and the shift register being clocked by the output of the counter means for providing a first output and a second output complementary to the first output,

one of the first and second data register outputs being enabled by one of the first and second shift register outputs, depending upon the present value of said shift register outputs, for applying one of the N and (N+1) integers to the counter means, and

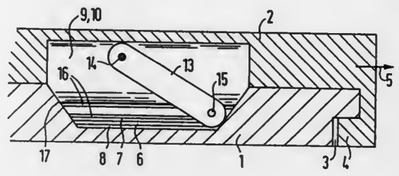
the counter means alternating its count between two integers in the predetermined pattern so that the average count approximates a rational non-integral value between the two integers.

4,555,794

X-RAY FILM HOLDER

Johann Finkenzeller, Erlangen, and Günter Hubert, Baiersdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,369
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1983, 3242639
Int. Cl.⁴ G03B *11/00*
U.S. Cl. 378—187 **2 Claims**



1. An x-ray film holder comprising:

(a) a bottom member for receiving the x-ray film and associated, adjacent image intensifying screens;

(b) a lid member for closing said holder, said lid member and said bottom member having mating grooves and projections on all sides thereof forming a guide system that permits said lid member to slide with respect to said bottom member, and to be interlocked with said bottom member on all sides when in a closed position; and

(c) means, disposed between said film and said intensifying screens on one hand and one of said bottom and said lid members on the other, for pressing said intensifying screens against said film, said pressing means, including:

(1) a foam cushion; and

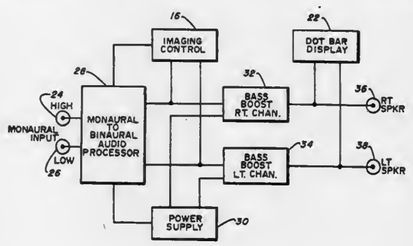
(2) an airtight cover surrounding said foam cushion having an external wall attached to one of said bottom and said lid members and extending over substantially the entire surface of said intensifying screens and said film, said cover and the wall of said one member to which said cover is attached having interconnecting openings to permit evacuation of the interior of said cover, and spring-biased lever means, swivally mounted on one of said members to which said cover is not attached and arranged to be operated by said pressing means, for preventing the opening of said lid member when said pressing means exerts a pressure on said intensifying screens and said film.

4,555,795

MONAURAL TO BINAURAL AUDIO PROCESSOR

John C. Bedini, Sylmar, Calif., assignor to TVI Systems, Ltd., Los Angeles, Calif.

Continuation-in-part of Ser. No. 400,631, Jul. 22, 1982. This application Jul. 21, 1983, Ser. No. 515,581
Int. Cl.⁴ H04R *5/00*
U.S. Cl. 381—17 **39 Claims**



1. A monaural audio processing system comprising:

a monaural audio input;

a pair of audio outputs;

a low impedance drive means;

means coupling said monaural input to said low impedance drive means;

means being driven by said low impedance drive means, said means including phototransistor means for generating an unbalanced pair of outputs; and

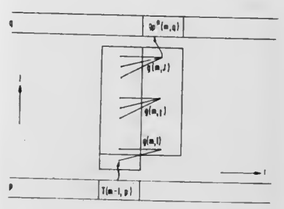
output coupling means for coupling said unbalanced outputs to said audio outputs.

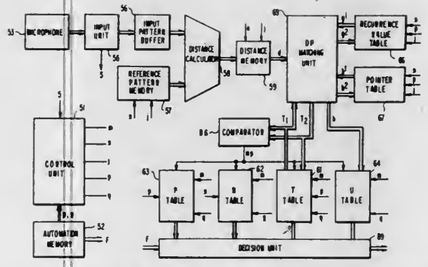
4,555,796

DP MATCHING SYSTEM FOR RECOGNIZING A STRING OF WORDS CONNECTED ACCORDING TO A REGULAR GRAMMAR

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,088
Claims priority, application Japan, Dec. 10, 1981, 56-199098
Int. Cl.⁴ G10L *1/00*
U.S. Cl. 381—43 **1 Claim**





1. A system responsive to an input sequence of input pattern feature vectors representative of an input string of words selected from a word set of first through N-th words and substantially continuously uttered in compliance with a regular grammar for recognizing said input string as an optimum one of word concatenations, each concatenation being a string of words selected from said word set and cancatenated in compliance with said grammar, said grammar specifying a set of transition rules for said first through said N-th words and a set of final states of said concatenations, the transition rule for an n-th word optionally selected from said word set defining a combination of said n-th word and a state pair consisting of a start and an end state of said n-th word, said system comprising:

a reference pattern memory for memorizing reference pattern feature vectors representative of said first through said N-th words, the reference pattern feature vectors representative of said n-th word being consecutively numbered as first through J-th feature vectors according to utterance of said n-th word;

control means for generating a basic timing signal successively specifying first through I-th periods assigned to the respective input pattern feature vectors, a word specifying signal specifying, while an m-th period is specified as each of said first through said I-th periods, said first through said N-th words, and a state specifying signal specifying, while said m-th period is specified, the state pairs of said first through said N-th words;

similarity calculating means responsive to said input sequence and coupled to said reference pattern memory and said control means for calculating, while said n-th word is specified in said m-th period, a plurality of similarity measures between the input pattern feature vector assigned to said m-th period and said first through said J-th feature vectors;

extremum finding means coupled to said control means and said similarity calculating means for calculating, while said n-th word and each state pair of said n-th word are specified in said m-th period, a recurrence value $g_p^n(m, q)$ for said n-th word and said each state pair under a boundary condition iteratively in correspondence to said first through said J-th feature vectors by using the similarity measures calculated for said n-th word before said m-th period, where m represents said m-th period, n represents said n-th word, and p and q represents the start and the end states of said each state pair, for finding, while said m-th period is specified, an extremum T(m, q) of the recurrence values calculated for the words having state pairs including said end state q, and for deciding that particular word and that particular start state of said particular word for which said extremum is found, said boundary condition being given by T(m−1, p);

start period selecting means coupled to said control means and said extremum finding means for selecting, while said m-th period is specified, a particular period from said first through the (m−1)-th periods with reference to said particular start state and said particular word; and

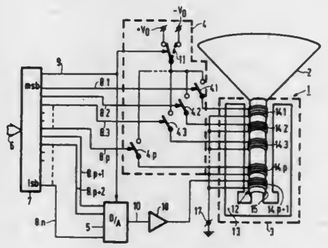
deciding means coupled to said control means, said extremum finding means, and said start period selecting means for deciding the optimum concatenation by referring, after lapse of said I-th period, to the extrema found in said first through said I-th periods, respectively, and to those particular words, those particular start states, and those particular start periods which are decided in said first through said I-th periods.

4,555,797

HYBRID LOUDSPEAKER SYSTEM FOR CONVERTING DIGITAL SIGNALS TO ACOUSTIC SIGNALS

Joris A. M. Nieuwendijk; Wilhelmus D. A. M. van Gijsel; Georgius B. J. Sanders, and Jacob M. van Nieuwland, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1984, Ser. No. 648,428
Claims priority, application Netherlands, Sep. 15, 1983, 8303185
Int. Cl.⁴ H04R *3/08, 9/06*
U.S. Cl. 381—117 **8 Claims**



1. A loudspeaker system for converting a digital electrical signal of N bits into an acoustic signal comprising:

an electromechanical transducer device for converting an

electrical signal into a mechanical quantity for driving a diaphram, said transducer including a plurality of p electrically driven sections, fewer in number than said number N bits of said digital signal, and a p+1 section for receiving an analog voltage;

means for driving each of said p electrical driven sections with one bit from the most significant bits of said electrical signal; and

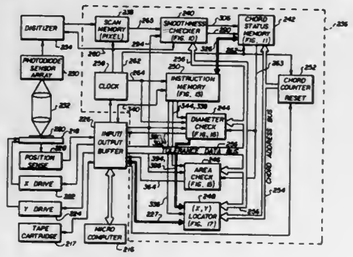
a digital to analog converter for receiving the least significant bits of said digital electric signal, said digital to analog converter connected to said p+1 section of said transducer whereby said transducer receives p digital signals and one analog signal for generating an acoustic signal.

4,555,798

AUTOMATIC SYSTEM AND METHOD FOR INSPECTING HOLE QUALITY

William H. Broadbent, Jr., Sunnyvale; Steve Buchholz, San Jose; Peter Eldredge, Santa Clara, and Mark J. Wihl, San Jose, all of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Jun. 20, 1983, Ser. No. 505,848
Int. Cl.⁴ G06K *9/60*
U.S. Cl. 382—8 **28 Claims**



1. A method for inspecting the perimeter smoothness of a nominally round opening in an object comprising the steps of:

forming a two dimensional representation of the opening, said representation including two dimensional array of uniformly spaced pixels of a size substantially smaller than the size of said opening with each pixel having a range of digital values which indicate the presence, partial presence, or absence of said opening at the spatial position represented by that pixel, said array of pixels representing said opening as a connected group of pixels having first values at one end of said range surrounded by pixels having second values at the other end of the range, with the boundary therebetween representing the perimeter of said opening; and

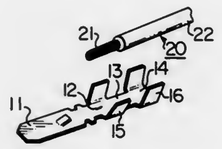
examining the values of the pixels in one or more clusters surrounding said opening, each said cluster being composed of a group of several adjacent pixels arranged in a pattern with its center at said boundary, and determining that said perimeter is smooth at the location of a particular cluster if the number of pixels within said cluster having said first value is close to the number of pixels within said cluster having said second value, and wherein said perimeter is not smooth at said location if the number of pixels within said cluster having said first value is greatly disproportionate to the number of pixels within said cluster having said second value.

4,555,799

METHOD FOR INSPECTING CRIMP BONDED TERMINALS

Hiroaki Kodama, Osaka; Tetsuo Kubo, Kyoto, and Sinkichi Miwa, Yokkaichi, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Oct. 24, 1983, Ser. No. 544,817
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—8 **8 Claims**



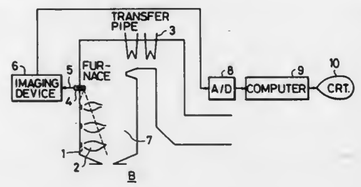
1. In a method for inspecting a sheathed wire crimp bonded terminal, comprising a sheathed wire having an end portion of a bared core of a sheathed wire obtained by removing a portion of said sheathing layer, said terminal crimping said core by a core crimping portion and said sheathing by a sheathing crimping portion, comprising the steps of obtaining a shadow image of a contour and a surrounding area thereof of said crimp bonded terminal by using an image pickup device, measuring the image of the contour and the surrounding area thereof of said crimp bonded terminal and performing processing operations on data obtained by the measurement, and making a decision on acceptance or rejection of said crimp bonded terminal in accordance with a result of the processing operations, said inspection method comprising the steps of selecting a predetermined corner on the periphery of the contour shadow image of said sheathing crimping portion of said crimp bonded terminal as a measurement reference point, scanning the shadow image of the contour and the surrounding area thereof of said crimped bonded terminal on the side of said core crimping portion thereof at preselected locations, determining coordinate values of density inversion boundary points in the image located by said scanning operation, and comparing the coordinate values of the density inversion boundary points in the image with respective predetermined acceptance values thereby to decide the acceptance or rejection of said crimp bonded terminal.

4,555,800

COMBUSTION STATE DIAGNOSTIC METHOD

Mitsuyo Nishikawa, Hitachi, and Nobuo Kurihara, Hitachiohta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,847
Claims priority, application Japan, Sep. 3, 1982, 57-152623
Int. Cl.⁴ G06K *9/00*; G01J *1/10*
U.S. Cl. 382—25 **7 Claims**



1. In an automatic method of diagnosing a combustion state in a furnace of a boiler or the like;

a combustion state diagnostic method comprising the steps of:

classifying shapes of flames into a plurality of patterns in advance, and storing them in advance as reference flames in correspondence with combustion states at the respective flame patterns,

retrieving which of the stored flame shapes a detected flame shape of the furnace is similar to, and

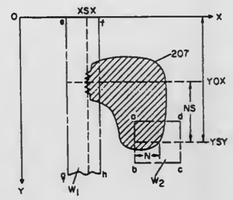
diagnosing the combustion state of the furnace as the combustion state stored in correspondence with the flame shape which has been found the most similar to the detected flame shape by the retrieval.

4,555,801

PATTERN DISCRIMINATOR

Michiaki Miyagawa, Hachiooji; Kouichi Ohki, Tokyo; Matsuhiko Takaya, Hino; Naoto Fujihara, Hino, and Tadayuki Yamada, Hino, all of Japan, assignors to Fuji Electric Co., Ltd., Japan

Division of Ser. No. 483,505, Apr. 11, 1983. This application Jan. 14, 1985, Ser. No. 691,164
Claims priority, application Japan, Apr. 30, 1982, 57-71498; Apr. 30, 1982, 57-71499; Apr. 30, 1982, 57-71500
Int. Cl.⁴ G06K *9/36*
U.S. Cl. 382—44 **5 Claims**



1. In a pattern discriminator which receives scanning data obtained by scanning an object within a defined window region with a photoelectric converter of the two-dimensional scanning type, and having means for converting the scanned data into pixel binary data representing characteristics of the object scanned by using a threshold value, and having means for evaluating the binary data in accordance with predetermined criteria and for producing an output signal indicative of said evaluation, the improvement comprising means for detecting a positional shift of an object being scanned relative to the position of a reference object comprising:

means for detecting the scanning position of reference coordinates for an object being scanned, comprising means for obtaining a first value related to the position of the first scanning line where the length of the scan of said object along a plurality of a first group of adjacent scanning lines within a first reference window exceeds a first threshold level, and for obtaining a second value related to the average length of the scan of said object along a plurality of a second group of adjacent scanning lines within a second reference window; and

means for obtaining the difference between the reference position of said object as indicated by said first and second values and a corresponding reference position of a reference object, whereby the difference obtained is used to shift the defined window regions used for obtaining scanning data.

4,555,802

COMPACTION AND DECOMPACTION OF NON-CODED INFORMATION BEARING SIGNALS

John F. Fedak; Gerald I. Findley, and Terry A. Torr, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,920
Int. Cl.⁴ G06K *9/00*; H04N *7/12*
U.S. Cl. 382—56 **13 Claims**

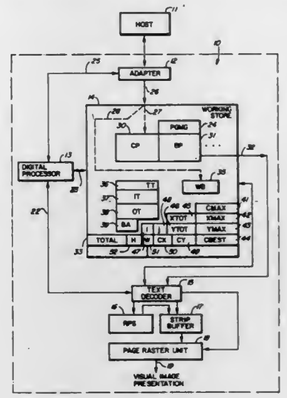
1. The machine-implemented method of processing image-representing signals consisting of an array of binary digital signals wherein a first binary digital signal represents a background image pel and a second binary digital signal represents a foreground image pel;

including the automatic steps of:

dividing said array of binary signals into segments wherein each segment is a subarray of said binary signals having a size relatable to predetermined image-presenting characteristics of a machine which is to present the represented image;

examining all segments in the array for identifying those segments having one or more of said second binary signals;

grouping the identified segments into rectangular groups of segments and assigning a name to each group along with



an identification of the logical position of the group of segments within said array;

storing said groups of segments as addressable units in a data storage device;

receiving a command to present the image represented by said array of digital signals; and

visually presenting said image in accordance with said received command by accessing said stored segments from said data-storage device and visually presenting same as said image in a relative or logical position indicated by said identification of logical position with respect to an array of background pels generated independently of said stored segments as an array of pels having an array size in accordance with said array of binary digital signals.

4,555,803

IMAGE INFORMATION FILING APPARATUS AND METHOD

Kenji Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 30, 1983, Ser. No. 480,272
Claims priority, application Japan, Apr. 2, 1982, 54-55142
Int. Cl.⁴ G06K *9/00*; G11B *7/00*
U.S. Cl. 382—61 **8 Claims**

1. A method comprising the steps of:

(1) determining whether a finish data storing area defined by a first storing medium contains finish data;

(2) reading a recognition code from a first recognition code storing area defined by said first storing medium;

(3) if said determining step (1) determines that said finish data storing area contains no finish data, performing the steps of:

(a) writing the recognition code read by said reading step (2) into a second recognition code storing area defined

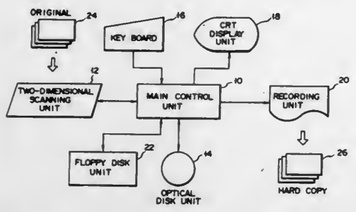
by a second storing medium different from said first storing medium, and

(b) writing finish data into said finish data storing area;

(4) if said determining step (1) determines that said finish data storing area does contain finish data, performing the steps of:

(a) reading a recognition code from said second recognition code storing area, and

(b) determining whether said recognition code read by



said reading step (2) is equal to said recognition code read by said reading step (4)(a); and

(5) subsequent to either of said steps (3) and (4), and provided that said determining step (4)(b) does not determine said read recognition codes are unequal, reading information from and/or writing image information into an image information storing area defined by said first storing medium at least partially in response to retrieval information stored in a retrieval information storing area defined by said second storing medium.

4,555,804

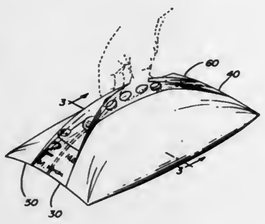
POUCH HANDLE

Howard Canning, Brantford, and Peter Weber, Burlington, both of Canada, assignors to Twinpak, Inc., Dorval, Canada

Filed Jul. 12, 1984, Ser. No. 630,236

Int. Cl.[4] B65D *33/10*

U.S. Cl. 383—25 **2 Claims**



1. A flexible, relatively-limp package, comprising in combination, an elongated, flexible, limp container filled with a fluent material and sealed at opposite, transverse ends; and a relatively flat, flexible strip-handle element extending from end-to-end of said container, intermediately of opposite side edges of said container and lying in juxtaposed relation on the outer surface of the package when the package is at rest, means securing the strip-handle element at opposite ends to the opposite sealed ends of the container and longitudinally along the entire length of said strip handle element to said container and defining on opposite sides of the longitudinal seal, free, finger-grippable portions, the filled, limp package being flexed upwardly from its ends when lifted, said free, finger-grippable portions being juxtaposed, when the package is lifted, said finger-grippable portions having a compound curve configuration from the sealed ends of the package when it is lifted at said finger-grippable portions off a support surface whereby the load of the package is substantially distributed along all said seals when lifted.

4,555,805

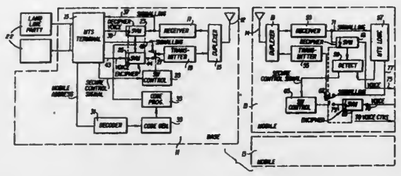
SECURE MOBILE TELEPHONE SYSTEM

Robert D. Talbot, Pittsford, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 130,345, Mar. 14, 1980, Pat. No. 4,411,017. This application Apr. 27, 1983, Ser. No. 489,025

Int. Cl.[4] H04L *9/00*

U.S. Cl. 455—26 **28 Claims**



26. In a radio frequency mobile telephone communication system including a base station and a plurality of mobile stations in which unenciphered communication between a mobile station and the base station may be received and understood by each of the other mobile stations, the improvement wherein:

(a) each of said plurality of mobile stations includes:

(i) means of sending to the base station an unenciphered request for secure communication,

(ii) means responsive to receipt of an encoded communication from the base station to encode subsequent transmissions to the base station in a code unique to the mobile station, and

(iii) means responsive to receipt of an encoded communication for decoding subsequently received transmission from the base station encoded in said unique code; and

(b) wherein said base station includes:

(i) means for receiving an unenciphered request for secure communications from a mobile station,

(ii) means for identifying from the request the particular mobile station and for determining the code unique thereto,

(iii) means for transmitting an encoded communication signal to the mobile station in said unique code,

(iv) means for decoding subsequently received transmissions from the mobile station in said unique code, and

(v) means for encoding subsequent transmissions to said mobile station in said unique code;

whereby the base station and one of the plurality of mobile stations may communicate using a code unique to that mobile station in response to an unenciphered request by the mobile station for secure communications.

4,555,806

SYSTEM FOR THE AUTOMATIC ESTABLISHMENT OF A SHORTWAVE TELEGRAPHY SIGNAL CONNECTION

Wolf-Ruediger Lange, Dachau; Anton Wessel; Udo Böhler, both of Munich; Klaus Volkheimer, Grafing; Günter Greiner, and Peter Islet, both of Munich, all of Fed. Rep. of Germany, assignors to Rohde & Schwarz GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,771

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211325

Int. Cl.[4] H04B *17/00*

U.S. Cl. 455—62 **34 Claims**

15. A method for automatically establishing at a calling station a shortwave telegraphy connection between the calling station and a receiving station on one of a plurality of channels comprising:

(a) searching through the channels with a receiver;

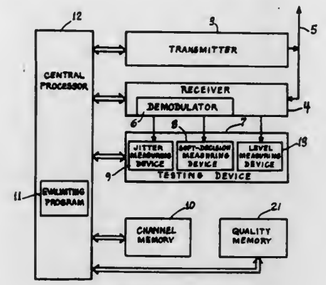
(b) performing a passive channel analysis on each channel, said analysis consisting at least of measuring the strength and jitter of the digital signals received by the receiver on each channel to produce objective measurement values for each channel;

(c) storing the objective measurement values in a memory;

(d) tuning a transmitter to the channel having the best objective measurement value;

(e) sending a call signal through the transmitter over the channel to which it is tuned;

(f) waiting a predetermined amount of time for an acknowledgment signal from the receiving station on the channel used for sending the cell signal and if no signal is received, tuning the transmitter to a next selected one of said channels and performing steps (e) and (f) until an acknowledgment signal is received;



STATION 1 AND STATION 2

(g) commencing message transmitting-and-receiving after receiving an acknowledgment signal over the channel used by the call signal and the acknowledgment signal;

(h) performing an active channel analysis on the channel on which message transmitting-and-receiving has been established, said active channel analysis consisting of at least measuring the strength and jitter of the digital signals on said channel to determine additional objective measurement values of the transmission quality of said channel; and

(i) replacing the objective measurement values obtained by passive channel analysis and stored in said memory with the additional objective measurement values obtained by active channel analysis.

4,555,807

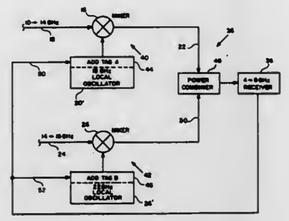
APPARATUS AND METHOD FOR CHANNEL IDENTIFICATION

William E. Bryant, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 8, 1983, Ser. No. 520,927

Int. Cl.[4] H04B *1/26, 17/00*

U.S. Cl. 455—137 **20 Claims**



1. The improvement to a baseband system having a plurality of down converters, each capable of producing a converter output signal, each having a mixer and local oscillator with all the converters feeding a single baseband receiver, comprising:

(a) a plurality of tag producing means operably connected to respective ones of the down converters for selectively adding a tag, identifying the converter producing an output signal, to the output signal from that converter; and

(b) tag initiation means operably connected to said tag producing means for initiating the adding of said tags to the output signals from the converters at a time preset for each tag in response to at least one converter output signal.

4,555,808

TUNER APPARATUS

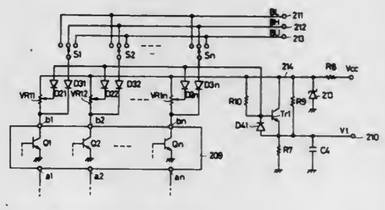
Isao Fujimoto, Katano, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 185,138, Sep. 8, 1980, abandoned. This application Dec. 2, 1982, Ser. No. 446,356

Claims priority, application Japan, Sep. 14, 1979, 55-118597; Jan. 19, 1980, 56-4961

Int. Cl.[4] H03J *3/24;* **H04B** *1/06*

U.S. Cl. 455—180 **11 Claims**



2. A tuner apparatus comprising:

a tuning circuit having a plurality of receiving bands, said tuning circuit including a voltage controlled variable reactance means used for said plurality of receiving bands;

single tuning voltage generating means coupled to said tuning circuit for generating a tuning voltage and applying said tuning voltage to said voltage controlled variable reactance means, said generating means being provided for all of said plurality of receiving bands;

maximum receivable frequency defining means, including a trimmer loop and resonance conductors provided in said tuning circuit for determining the maximum receivable frequency of the highest of said plurality of receiving bands of said tuning circuit with respect to the highest tuning voltage within a predetermined range; and

single upper limit restricting means coupled to said tuning voltage generating means for restricting the upper limit of said tuning voltage applied to said voltage controlled variable reactance means to, or slightly higher than, said highest tuning voltage.

4,555,809

R.F. DIPLEXING AND MULTIPLEXING MEANS

David J. Carlson, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 26, 1983, Ser. No. 545,670

Int. Cl.[4] H04B *1/26;* **H03H** *7/42, 7/46*

U.S. Cl. 455—190 **26 Claims**

20. Apparatus comprising:

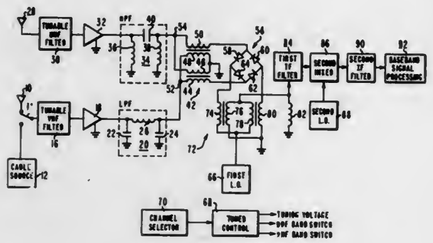
VHF and UHF signal sources;

a first balun having unbalanced and balanced ports, said unbalanced port having a pair of terminals respectively coupled to said sources;

means for selectively grounding a selected one of said terminals;

a mixer coupled to said balanced port;

a second balun having an unbalanced port and a balanced port coupled to said mixer; and



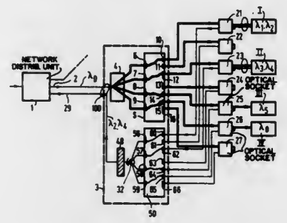
a local oscillator coupled to said second balun unbalanced port.

4,555,810
DISTRIBUTION SYSTEM FOR A LOCAL AREA NETWORK

Giok D. Khoe, and Johannes H. C. van Heuven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,752
Claims priority, application Netherlands, Sep. 4, 1981, 8104104
Int. Cl.⁴ H04B *9/00*
U.S. Cl. 455—612 **6 Claims**

1. A distribution system for a local area network, the distribution system being of the type comprising a distribution unit which is coupled to a plurality of subscriber's premises via optical transmission links, the premises of each subscriber being provided with a common terminal unit having at least one input and a plurality of outputs, the input to the common terminal unit being coupled to an optical transmission link and the outputs being connected to a plurality of sockets via further transmission links, wherein the improvement comprises the input of the common terminal unit is connected to the outputs of the common terminal unit via the series arrangement of a power splitter and a first distribution box the number of inputs of the distribution box being less than the number of outputs thereof and the distribution box comprising means for selectively through-connecting its inputs to an equal number of



outputs, the further transmission links being optical cables and the sockets being optical sockets, wherein the input of the common terminal unit is connected to the distribution unit via first and second optical fibers, the first optical fiber being connected via a power splitter to the first distribution box whose outputs are connected to the respective sockets via a first set of optical fibers, the second optical fiber being connected via an optical filter and a second power splitter to a second distribution box, whose outputs are connected to the respective sockets via a second set of optical fibers.

DESIGNS

NOVEMBER 26, 1985

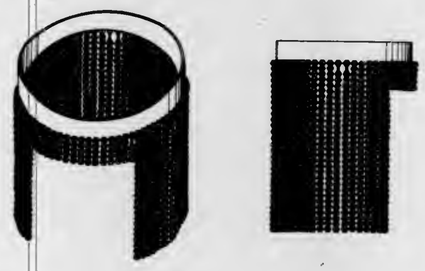
281,455
HAT

Craig P. Woods, 548 Simoron, Ogden, Utah 84404
Filed May 31, 1983, Ser. No. 441,868
Term of patent 14 years
U.S. Cl. D2—243



281,456
BEADED HEADBAND

Lois D. Swedarsky, and Leonard I. Swedarsky, both of 712 E. Haney, South Bend, Ind. 46613
Filed Mar. 17, 1983, Ser. No. 476,335
Term of patent 14 years
U.S. Cl. D2—253



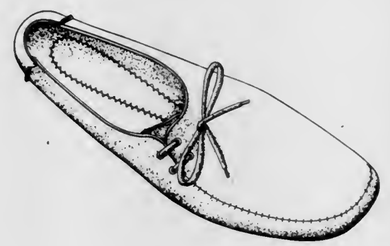
281,457
SHOE

Chan K. Po, Room 1105, 11th Floor, East Town Building, 41 Lockhart Rd., Wanchai, Hong Kong
Filed Feb. 4, 1983, Ser. No. 463,664
Claims priority, application United Kingdom, Aug. 6, 1982, 1008189
Term of patent 14 years
U.S. Cl. D2—310



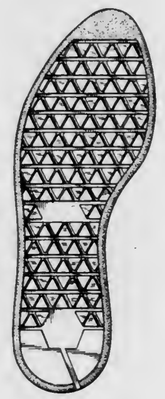
281,458
SHOE

Patrick J. Roberts, Castlebamford, and Kevin P. Hogan, Tevere, both of Ireland, assignors to Padmore & Barnes International Limited, Kilkenny, Ireland
Filed Jan. 28, 1983, Ser. No. 461,929
Claims priority, application Ireland, Jui. 28, 1982, 183/82
Term of patent 14 years
U.S. Cl. D2—313

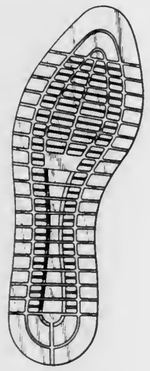


281,459
SHOE OUTSOLE

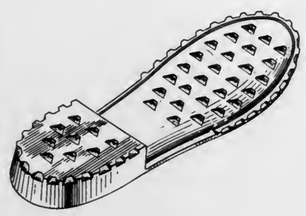
Mark G. Parker, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 21, 1983, Ser. No. 506,412
Term of patent 14 years
U.S. Cl. D2—320



281,460
SHOE OUTSOLE
Mark G. Parker, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 21, 1983, Ser. No. 506,413
Term of patent 14 years
U.S. Cl. D2—320



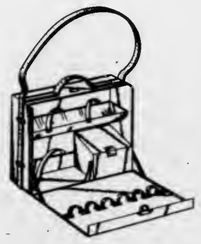
281,461
SHOE SOLE
Charles Bergmans, Sprang Capelle, Netherlands, assignor to Clarks of England, Inc., Kennett Square, Pa.
Filed Mar. 11, 1983, Ser. No. 474,492
Term of patent 14 years
U.S. Cl. D2—320



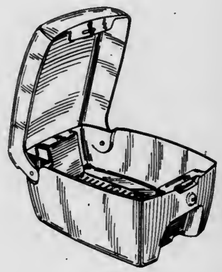
281,462
SHOE SOLE
Nicholas J. Pope, London, England, assignor to Dunlop Limited, London, England
Filed May 12, 1983, Ser. No. 494,027
Claims priority, application United Kingdom, Nov. 12, 1982, 1009683
Term of patent 14 years
U.S. Cl. D2—320

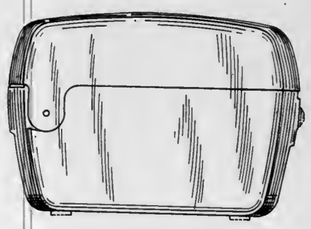


281,463
CARRYING CASE FOR A CAMERA AND ACCESSORIES
Theodore E. Rodrigues, 15 Cottonwood Dr., San Rafael, Calif. 94901
Filed Oct. 17, 1983, Ser. No. 542,380
Term of patent 14 years
U.S. Cl. D3—33



281,464
STORAGE TRAY FOR DISKETTES OR THE LIKE
Craig D. Drake, Muscatine, Iowa, assignor to Ring King Visibles, Inc., Muscatine, Iowa
Filed Apr. 14, 1983, Ser. No. 485,018
Term of patent 14 years
U.S. Cl. D3—35

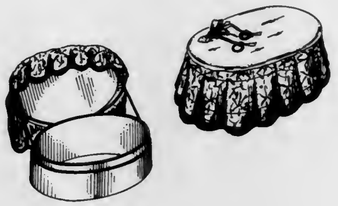




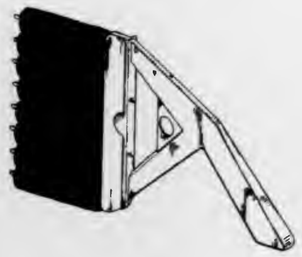
281,465
SOFT-SIDED GARMENT BAG
Harvey Bomes, Wellesley Hill; John Pulichino, Wellesley; Jack Barber, Cambridge, and Max Bell, Milford, all of Mass., assignors to American Tourister, Inc., Warren, R.I.
Filed Aug. 31, 1983, Ser. No. 527,992
Term of patent 14 years
U.S. Cl. D3—71



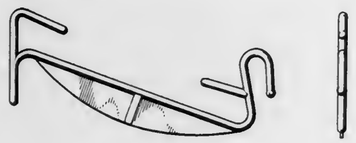
281,466
RING CUSHION MEMENTO CHEST
Richard Minsky, 109-03 86th Ave., Richmond Hill, N.Y. 11418
Filed Jun. 24, 1983, Ser. No. 507,574
Term of patent 14 years
U.S. Cl. D3—78



281,467
BRUSH FOR CLEANING VENETIAN BLIND
Lee Chan-Foun, No. 18-1, Lane 76, Nan Chang St., Feng Shan, Kaohsiung Hsien, Taiwan
Filed Jan. 11, 1983, Ser. No. 457,158
Term of patent 14 years
U.S. Cl. D4—119



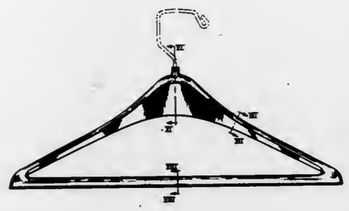
281,468
HOSIERY HANGER
Paul B. Keenan, Millburn, and Barry T. Fisher, Long Valley, both of N.J., assignors to Chipman-Union, Inc., Union Point, Ga.
Filed Aug. 30, 1983, Ser. No. 513,753
Term of patent 14 years
U.S. Cl. D6—317



281,469
STOCKING HOLDER
John R. Honermann, P.O. Box 20502, Bloomington, Minn. 55420
Filed Mar. 17, 1983, Ser. No. 476,036
Term of patent 14 years
U.S. Cl. D6—317

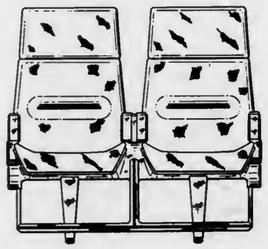


281,470
GARMENT HANGER
John H. Batts, East Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.
Filed Nov. 14, 1983, Ser. No. 551,428
Term of patent 14 years
U.S. Cl. D6—319

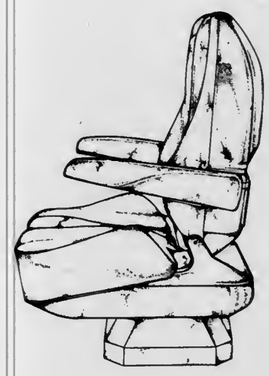




281,471
AIRCRAFT PASSENGER SEAT
Daniel S. Sauter, Montvale, N.J., assignor to Trans World Airlines, Inc., New York, N.Y.
Filed May 6, 1983, Ser. No. 492,371
Term of patent 14 years
U.S. Cl. D6—356



281,472
AIRCRAFT SEAT OR SIMILAR ARTICLE
Richard Soederberg, Mühlacker, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 24, 1983, Ser. No. 478,374
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 5533
Term of patent 14 years
U.S. Cl. D6—356



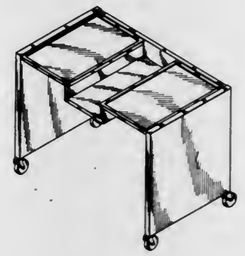
281,473
CHAIR
Mark Singer, 1663 Cambridge St., Cambridge, Mass. 02138
Filed Jul. 19, 1982, Ser. No. 399,377
Term of patent 14 years
U.S. Cl. D6—379



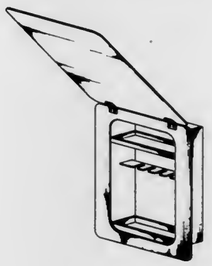
281,474
COMBINED BED AND DESK-TABLE
Pierre A. R. J. M. G. Moorkens, 12, Avenue des Eoliennes Boîte 10, Woluwe St Lambert, Belgium
Filed Jul. 5, 1983, Ser. No. 510,944
Term of patent 14 years
U.S. Cl. D6—384



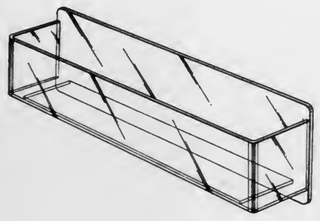
281,475
DESK FOR FILING CANCELLED CHECKS
Peter M. Braunschweig, Orchard Park, and Thomas J. Ruffles, Jr., Tonowanda, both of N.Y., assignors to Astronics Corporation, Orchard Park, N.Y.
Filed Aug. 4, 1983, Ser. No. 520,437
Term of patent 14 years
U.S. Cl. D6—426



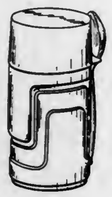
281,476
CABINET FOR TOOTHBRUSHES, TOOTHPASTE OR THE LIKE
Willard G. Smith, Jr., 71 Cemetery Rd., R.F.D. #1, Harwich, Mass. 02645
Filed Feb. 14, 1983, Ser. No. 454,965
Term of patent 14 years
U.S. Cl. D6—559



281,477
RACK
Paul J. Neff, 1143 Mississauga Rd., Mississauga, Ontario, Canada (L5H 2J1)
Filed Jan. 5, 1983, Ser. No. 455,637
Claims priority, application Canada, Nov. 26, 1982, 26-11-2-8
Term of patent 14 years
U.S. Cl. D6—574



281,478
INSULATING VESSEL
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Oct. 12, 1982, Ser. No. 433,634
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, MR 174; Finland, Sep. 16, 1982, 824/82
Term of patent 14 years
U.S. Cl. D7—77



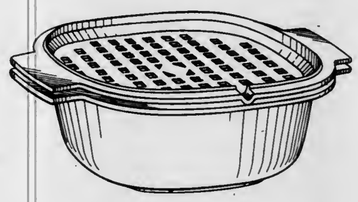
281,479
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Oct. 12, 1982, Ser. No. 433,647
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1982, MR 172
Term of patent 14 years
U.S. Cl. D7—317

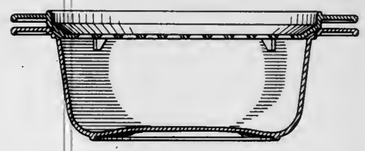


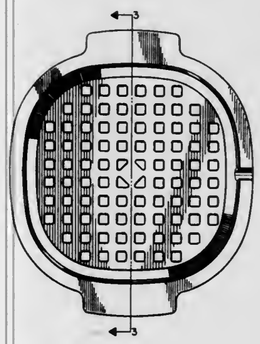




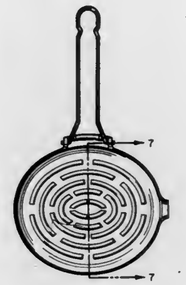
281,480
COMBINED CASSEROLE DISH AND ROASTING RACK
Donald R. McClelland, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 6, 1982, Ser. No. 395,655
Term of patent 14 years
U.S. Cl. D7—356







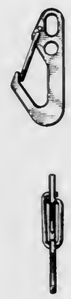
281,481
GRILL
Michel B. Geiser, Paris, France, assignor to Haute Fourneau et Fonderies de Cousances, Ancerville, France
Filed Feb. 23, 1983, Ser. No. 468,953
Claims priority, application France, Aug. 31, 1982, 822951
Term of patent 14 years
U.S. Cl. D7—361



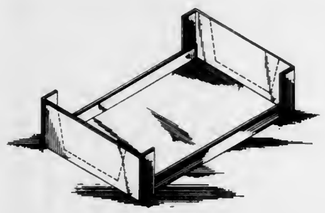
281,482
WINDING REEL
Yoshiaki Suzuki, Yokohama, Japan, assignor to Toko Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1983, Ser. No. 551,143
Claims priority, application Japan, May 11, 1983, 58-19384
Term of patent 14 years
U.S. Cl. D8—358



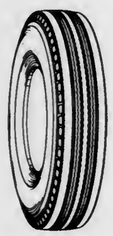
281,483
NAP-HOOK FOR SAIL-SURFING BOARDS
Christian Faidide, Maringues, France, assignor to S.A.R.L. Wichard, Thiers, France
Filed Jul. 20, 1983, Ser. No. 515,483
Claims priority, application France, Jan. 21, 1983, 830197
Term of patent 14 years
U.S. Cl. D8—367



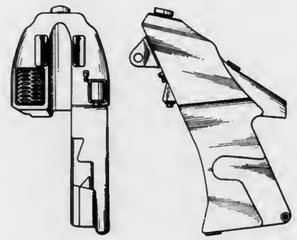
281,484
DESIGN FOR A PACKING TRAY
Theodore W. Dickes, Old Saybrook, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.
Filed Oct. 12, 1982, Ser. No. 433,674
Term of patent 14 years
U.S. Cl. D9—432



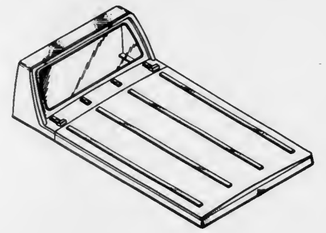
281,485
VEHICLE TIRE
Kenichi Motomura, and Mamoru Mamada, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Jan. 3, 1983, Ser. No. 455,437
Claims priority, application Japan, Jul. 29, 1982, 57-34005
Term of patent 14 years
U.S. Cl. D12—142



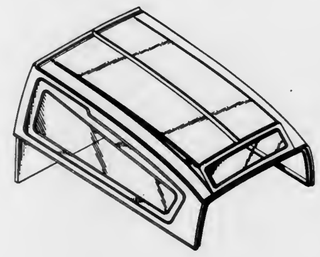
281,486
FUEL TANK FOR MOTORCYCLE
Shigeru Hattori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Jul. 8, 1982, Ser. No. 396,403
Claims priority, application Japan, Jan. 12, 1982, 57-666
Term of patent 14 years
U.S. Cl. D12—155



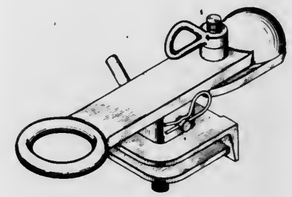
281,487
PICK-UP TRUCK TONNEAU COVER
Scott T. Chapman, Elkhart, Ind., assignor to Bivouac Industries, Inc., Vandalia, Mich.
Filed Jan. 21, 1983, Ser. No. 460,016
Term of patent 14 years
U.S. Cl. D12—156



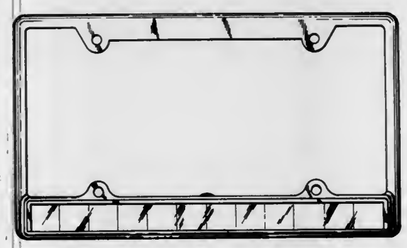
281,488
CAP FOR THE BED OF A PICK-UP TRUCK
John Collins, Elkhart, Ind., assignor to Leer, Incorporated, Elkhart, Ind.
Filed Feb. 18, 1983, Ser. No. 467,779
Term of patent 14 years
U.S. Cl. D12—156



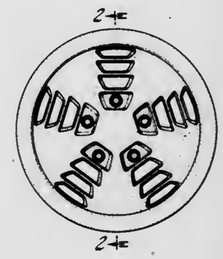
281,489
CONVERTIBLE COUPLER
Roy T. Hancock, Rte. 1, Box 1757 F, West Sacramento, Calif. 95691
Filed Mar. 22, 1983, Ser. No. 477,781
Term of patent 14 years
U.S. Cl. D12—162



281,490
LICENSE PLATE HOLDER AND DISPLAY DEVICE
Paul Lien, 712 N. Jackson, Glendale, Calif. 91206
Filed Nov. 14, 1983, Ser. No. 550,793
Term of patent 14 years
U.S. Cl. D12—193



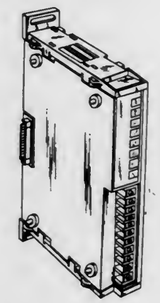
281,491
WHEEL COVER
John R. Schinella, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 22, 1983, Ser. No. 525,018
Term of patent 14 years
U.S. Cl. D12—211



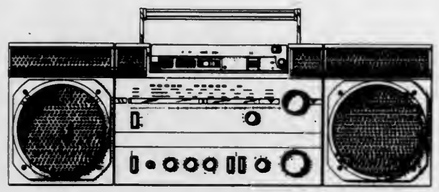
281,492
ENGINE GENERATOR
Tadahiro Yaguchi, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 29, 1983, Ser. No. 527,276
Term of patent 14 years
U.S. Cl. D13—2

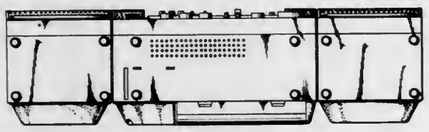


281,493
INPUT/OUTPUT MODULE FOR PROGRAMMABLE CONTROLLER
Jay M. Prager, Nashua, N.H.; Roman Y. Gonzales, Andover, and Charles M. Ault, Winchester, both of Mass., assignors to Gould Inc., Rolling Meadows, Ill.
Filed Sep. 23, 1982, Ser. No. 422,470
Term of patent 14 years
U.S. Cl. D13—40

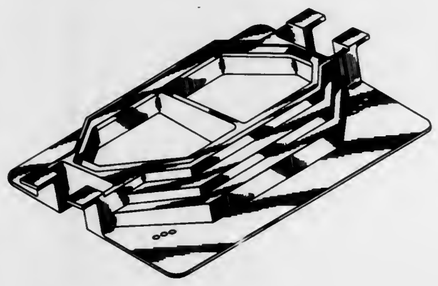


281,494
PORTABLE COMBINED CASSETTE PLAYER, TUNER, AMPLIFIER AND SPEAKERS
Vinod S. Sujanani, Aberdeen, Hong Kong, assignor to The Electronic Sports Collection (Far East) Limited, Central, Hong Kong
Filed Sep. 1, 1982, Ser. No. 413,966
Term of patent 14 years
U.S. Cl. D14—5

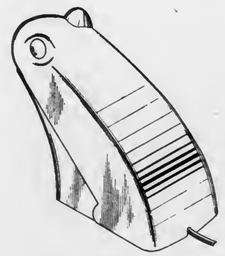




281,495
ADAPTER FOR MOUNTING LOUDSPEAKERS
Pasco C. Ponticelli, 7455 Owensmouth Ave., Canoga Park, Calif. 91303
Filed Aug. 8, 1983, Ser. No. 521,087
Term of patent 14 years
U.S. Cl. D14—37



281,496
HOUSING FOR A TELEPHONE SET
Tung S. Chen, 2-6th Fl. 13, Lane 118, Chung Ching S. Rd. Sec. 1, Taipei, Taiwan
Filed May 13, 1983, Ser. No. 494,514
Term of patent 14 years
U.S. Cl. D14—53





281,497
ILLUMINATED TELEPHONE HANDSET SUPPORT ATTACHMENT
Alexander Behring, 828 Ninth St., Santa Monica, Calif. 90403
Filed Apr. 28, 1983, Ser. No. 489,680
Term of patent 14 years
U.S. Cl. D14—59



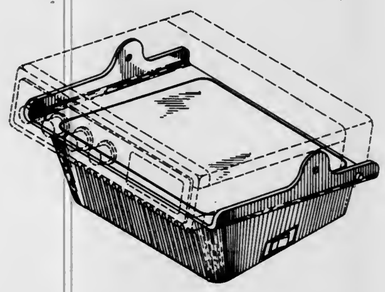


281,498
PUSH BUTTON
Hiroshi Inaba, Yokohama, Japan, assignor to Nippon Tsushin Kogyo Kabushiki Kaisha, Kanagawa, Japan
Filed Apr. 29, 1983, Ser. No. 490,216
Claims priority, application Japan, Dec. 24, 1982, 57-57465
Term of patent 14 years
U.S. Cl. D14—59

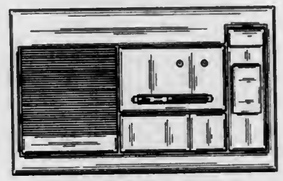


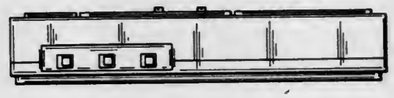


281,499
RADIO BASE MOUNTING UNIT OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 19, 1983, Ser. No. 533,091
Term of patent 14 years
U.S. Cl. D14—76

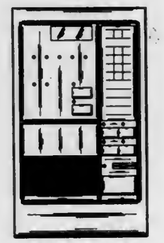


281,500
INTERPHONE
Hiroshi Yamagata, and Kendo Makihara, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 19, 1983, Ser. No. 496,118
Claims priority, application Japan, Nov. 30, 1982, 57-54177
Term of patent 14 years
U.S. Cl. D14—92



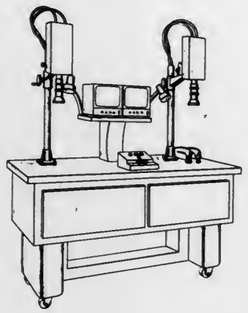


281,501
INTERPHONE
Hiroshi Yamagata, and Kendo Makihara, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 19, 1983, Ser. No. 496,117
Claims priority, application Japan, Nov. 30, 1982, 57-54176
Term of patent 14 years
U.S. Cl. D14—92

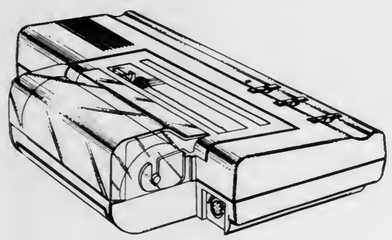




281,502
VIDEOCONFERENCING CONSOLE WITH MULTIPLE VIDEO TRANSMITTING AND RECEIVING DEVICES
William C. Wheeler, Conklin, N.Y., assignor to General Electric Company, Binghamton, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,022
Term of patent 14 years
U.S. Cl. D14—102



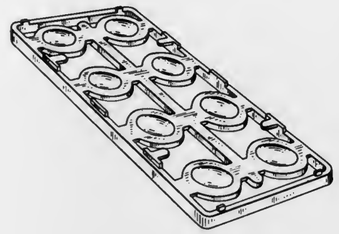
281,503
PRINTER
Ira L. Velinsky, Plainfield, N.J., assignor to Commodore Business Machines Inc., West Chester, Pa.
Filed Apr. 4, 1983, Ser. No. 481,871
Term of patent 14 years
U.S. Cl. D14—111



281,504
PROGRAM CARTRIDGE FOR A PERSONAL COMPUTER
Myron F. Davis; Willis Y. Jordan, III, and Robert Wysong, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 7, 1983, Ser. No. 529,906
Term of patent 14 years
U.S. Cl. D14—114



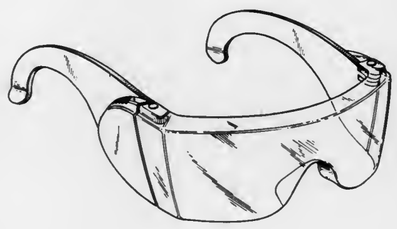
281,505
MOLDING FRAME FOR LENSES
Hans O. Larsen, Farum, and Ture Kindt-Larsen, Vedbaek, both of Denmark, assignors to Mia Lens Production A/S, Kobenhaunk, Denmark
Filed Oct. 17, 1983, Ser. No. 542,862
Term of patent 14 years
U.S. Cl. D15—136



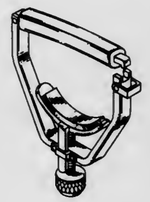
281,506
OVERHEAD PROJECTOR
Vincent E. DeLongis, Yonkers, N.Y., and Henry Kyhl, Leonia, N.J., assignors to Buhl Industries, Inc., Hawthorne, N.J.
Filed Apr. 29, 1983, Ser. No. 490,036
Term of patent 14 years
U.S. Cl. D16—24



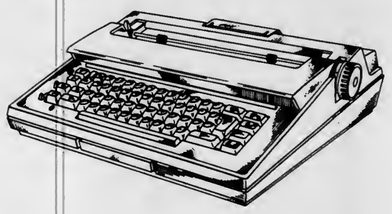
281,507
SPECTACLES
Paul M. Schremmer, Hunters Hill, Australia, assignor to Protector Safety Industries Limited, Guildford, Australia
Filed May 16, 1983, Ser. No. 495,043
Claims priority, application Australia, Feb. 14, 1983, 2885/83
Term of patent 14 years
U.S. Cl. D16—102

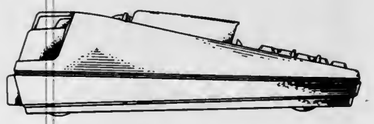


281,508
CAPO FOR A STRINGED MUSICAL INSTRUMENT
Thomas H. McKinney, III, 43 Lancelot La., Asheville, N.C. 28806
Filed Apr. 26, 1983, Ser. No. 488,714
Term of patent 14 years
U.S. Cl. D17—20

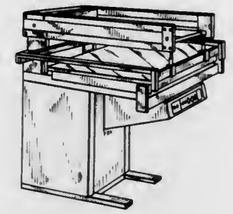


281,509
TYPEWRITER
John E. Jolliffe, Manlius, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,629
Term of patent 14 years
U.S. Cl. D18—1

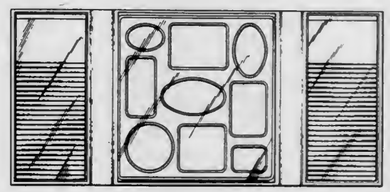




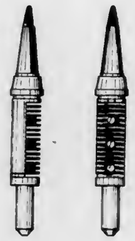
281,510
SCREEN PRINTING PRESS
Henry J. Bubley, Deerfield, Ill., assignor to American Screen Printing Company, Chicago, Ill.
Filed Oct. 26, 1982, Ser. No. 436,661
Term of patent 14 years
U.S. Cl. D18—13



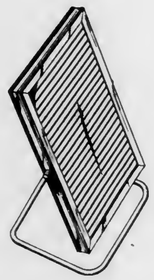
281,511
PHOTO ALBUM OR SIMILAR ARTICLE
Michael Brucoli, Stamford, Conn., assignor to The Holson Company, Wilton, Conn.
Filed Jun. 20, 1983, Ser. No. 505,889
Term of patent 14 years
U.S. Cl. D19—26



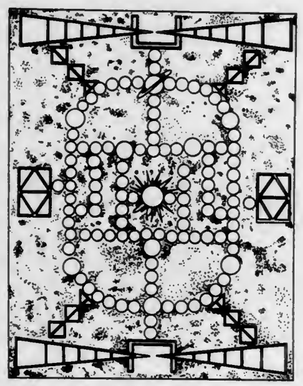
281,512
NIB FOR A FOUNTAIN PEN
Akio Kobori, Tokyo, Japan, assignor to The Sailor Pen Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1983, Ser. No. 513,228
Claims priority, application Japan, Dec. 28, 1982, 57-57639
Term of patent 14 years
U.S. Cl. D19—55



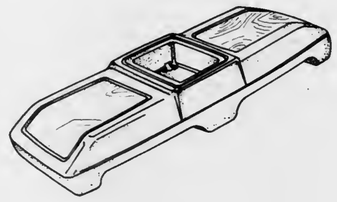
281,513
PORTABLE SIGN AND STAND THEREFOR
Christopher J. Ashton, Barnet, England, assignor to Marler Haley ExpoSystems, Limited, Barnet, England
Filed Mar. 17, 1982, Ser. No. 358,898
Claims priority, application United Kingdom, Sep. 17, 1981, 1002527
Term of patent 14 years
U.S. Cl. D20—21



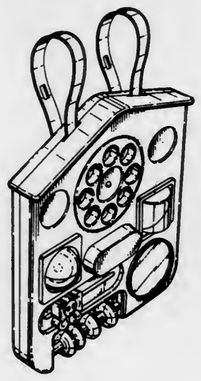
281,514
GAME BOARD
Steven R. Messmer, Rte. 1, Box 48, and Dean A. Pryor, 409 Third Ave., both of Jasper, Ind. 47546
Filed Jun. 6, 1983, Ser. No. 501,497
Term of patent 14 years
U.S. Cl. D21—31



281,515
GAME CONSOLE
Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Dec. 27, 1982, Ser. No. 452,888
Term of patent 14 years
U.S. Cl. D21—48



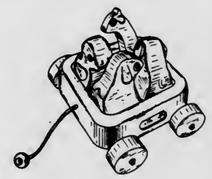
281,516
ACTIVITY TOY
Dennis C. L. Wong, Kowloon, Hong Kong, assignor to Deacon & Co. Limited, Kowloon, Hong Kong
Filed May 2, 1983, Ser. No. 490,427
Claims priority, application United Kingdom, Nov. 8, 1982, 1009610
Term of patent 14 years
U.S. Cl. D21—59



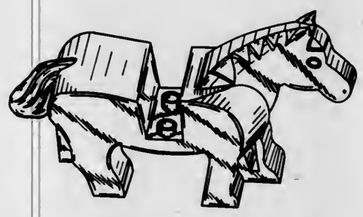
281,517
TOY TELEPHONE
Robert A. Kolich, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 7, 1984, Ser. No. 577,963
Term of patent 14 years
U.S. Cl. D21—111



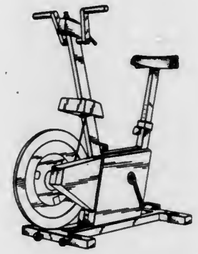
281,518
COMBINED TOY WAGON AND ANIMALS THEREFOR
John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Dec. 15, 1982, Ser. No. 450,059
Term of patent 14 years
U.S. Cl. D21—149



281,519
TOY HORSE FIGURE
Niels M. Pedersen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Dec. 10, 1982, Ser. No. 448,751
Term of patent 14 years
U.S. Cl. D21—165



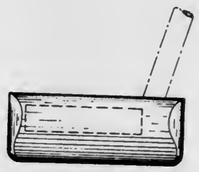
281,520
BICYCLE EXERCISER
Heikki A. Kiiski, Turku, Finland, assignor to Tunturipyora Oy, Turku, Finland
Filed Feb. 24, 1983, Ser. No. 469,268
Claims priority, application Finland, Aug. 26, 1982, 82725
Term of patent 14 years
U.S. Cl. D21—194



281,521
GAME FOOTBAG
Robert J. Stalberger, Jr., Vancouver, and LeRoy F. Kennedy, Camas, both of Wash., assignors to Kenncorp Sports, Inc., Vancouver, Wash.
Filed Apr. 5, 1983, Ser. No. 482,185
Term of patent 14 years
U.S. Cl. D21—203



281,522
GOLF PUTTER HEAD
Samuel J. Ehrlich, 19-08 Radburn Rd., Fair Lawn, N.J. 07410
Filed Nov. 25, 1981, Ser. No. 325,006
Term of patent 14 years
U.S. Cl. D21—219



281,523
PIN SETTER RETURN TRACK MOUNTING BRIDGE
Richard D. Lenhart, Arvada, and Roger D. Lindblad, Westminster, both of Colo., assignors to Zot Manufacturing Company, Arvada, Colo.
Filed Apr. 18, 1983, Ser. No. 485,710
Term of patent 14 years
U.S. Cl. D21—233



281,524
FISH LURE
Gerard F. Yarusso, 13180 Oaklawn Dr., Shakopee, Minn. 55379
Filed Sep. 12, 1983, Ser. No. 531,057
Term of patent 14 years
U.S. Cl. D22—27

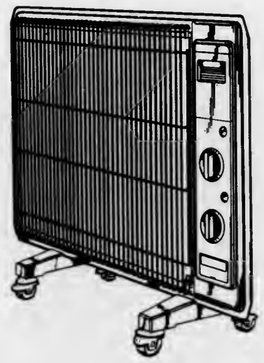


281,525
RESILIENT RING FOR FLUID COUPLING
Robert W. Gilbert, Adelaide, Australia, assignor to Mining Supplies (Minsup) Pty. Ltd., Edwardstown, Australia
Filed Dec. 28, 1981, Ser. No. 334,730
Claims priority, application Australia, Aug. 7, 1981, 84842
Term of patent 14 years
U.S. Cl. D23—47

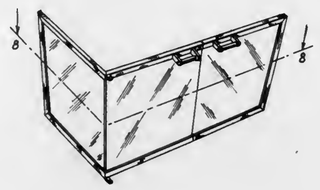




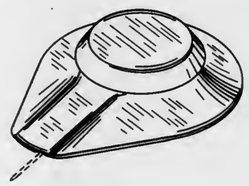
281,526
HEATING PLATE
Jaime F. Cenefels, Barcelona, Spain, assignor to Raivi S.A., Barcelona, Spain
Filed Oct. 27, 1981, Ser. No. 315,483
Term of patent 14 years
U.S. Cl. D23—123



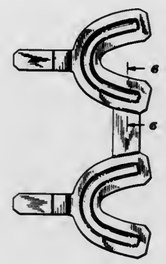
281,527
CORNER FIREPLACE DOORS AND PANEL
Robert J. Ehmke, W169 N10502 Pheasant Run, Germantown, Wis. 53022
Filed Aug. 29, 1983, Ser. No. 527,010
Term of patent 14 years
U.S. Cl. D23—128



281,528
BODY MOUNTED PUMP FOR DISPENSING MEDICATION
John R. Peery, Palo Alto, and James B. Eckenhoff, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Filed Dec. 23, 1982, Ser. No. 452,369
Term of patent 14 years
U.S. Cl. D24—8



281,529
DENTAL TRAY
Paul Seid, New City, and Herbert Wolfe, Pomona, both of N.Y., assignors to Sultan Dental Products Ltd., Englewood, N.J.
Filed Jun. 13, 1983, Ser. No. 503,834
Term of patent 14 years
U.S. Cl. D24—10



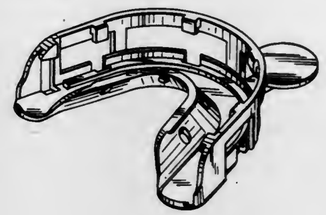
281,530
DENTAL TRAY
Paul Seid, New City, and Herbert Wolfe, Pomona, both of N.Y., assignors to Sultan Dental Products Ltd., Englewood, N.J.
Filed Jun. 13, 1983, Ser. No. 503,835
Term of patent 14 years
U.S. Cl. D24—10



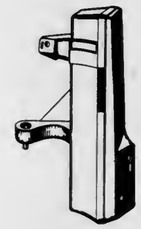
281,531
TOOTH CROWN REMOVER
William H. Harris, 4513 S. Pennsylvania, Oklahoma City, Okla. 73119
Filed Feb. 22, 1983, Ser. No. 468,813
Term of patent 14 years
U.S. Cl. D24—10



281,532
DENTAL IMPRESSION TRAY
Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.
Filed Apr. 29, 1983, Ser. No. 489,943
Term of patent 14 years
U.S. Cl. D24—10



281,533
VISUAL ACUITY METER FOR MEASURING THE POTENTIAL VISUAL ACUITY OF THE EYE OF A PATIENT
Richard Seager, Mystic, Conn., assignor to Mentor O & O, Inc., Hingham, Mass.
Filed Aug. 25, 1982, Ser. No. 411,564
Term of patent 14 years
U.S. Cl. D24—17



281,534
CONTAINER FOR A SAMPLE OF LIQUID SERUM OR THE LIKE
Masao Ushikubo, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 7, 1982, Ser. No. 433,265
Claims priority, application Japan, Apr. 10, 1982, 57-15431
Term of patent 14 years
U.S. Cl. D24—29



281,535
COMBINED MEDICAL SUCTION AND LAVAGE HANDPIECE OR THE LIKE
Robert W. Atkinson, Dover, and Daniel H. Olson, Louisville, both of Ohio, assignors to Snyder Laboratories, Inc., Dover, Ohio
Filed Dec. 1, 1982, Ser. No. 445,881
Term of patent 14 years
U.S. Cl. D24—51



281,536
ROOF TILE
Daniel O'Donnell, Coogee, Australia, assignor to Monier Limited, Australia
Filed Feb. 8, 1983, Ser. No. 465,007
Term of patent 14 years
U.S. Cl. D25—80

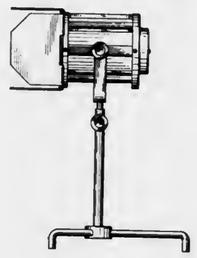




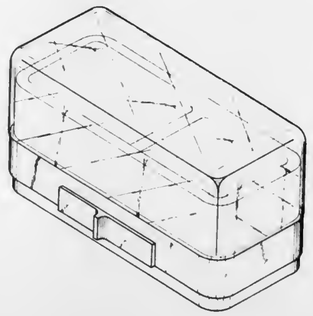
281,537
COMBINED LAMP AND TORCH
Tit-Wing Poon, 12F Lam Uk Village, Chaiwan, Hong Kong
Filed Sep. 22, 1982, Ser. No. 421,560
Claims priority, application United Kingdom, May 27, 1982, 1006957
The portion of the term of this patent subsequent to May 22, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—42



281,538
LAMP
Tony Wang, No. 30, Lane 194, Sung Chiang Rd., Taipei, Taiwan
Filed May 23, 1983, Ser. No. 496,900
Term of patent 14 years
U.S. Cl. D26—64



281,539
ELECTROSONIC CLEANING BATH ENCLOSURE
Mark Harrison, Portsmouth, R.I., assignor to Connoisseurs Products Corporation, Sommerville, Mass.
Filed Aug. 12, 1983, Ser. No. 522,483
Term of patent 14 years
U.S. Cl. D32—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Gibson, Paul W.; and Orthoefer, Frank T., 4,555,417, Cl. 427-361.000.
AB Volvo: *See—*
Persson, Per I.; and Persson, Bengt, 4,555,053, Cl. 228-107.000.
AB Wilh. Becker, Fack: *See—*
Smedberg, Olof R., 4,554,959, Cl. 144-380.000.
Abe, Kiyoto: *See—*
Murayama, Noriaki; and Abe, Kiyoto, 4,555,738, Cl. 360-75.000.
Abe, Kunihiro: *See—*
Ohgami, Masaaki; Hara, Kazuo; and Abe, Kunihiro, 4,555,762, Cl. 364-431.090.
ACD, Inc.: *See—*
Irvine, Michael D., 4,555,637, Cl. 290-52.000.
Aciers et Outillage Peugeot: *See—*
Escaravage, Gerard, 4,554,808, Cl. 70-279.000.
Ackley, Harry E., to Cincinnati Milacron Inc. Automatic toolchanger tapping lubricant dispenser. 4,555,047, Cl. 222-192.000.
ACR Electronics Inc.: *See—*
Dhanji, Shiraz A., 4,555,457, Cl. 429-199.000.
Adams, Kenneth J.; and Dyke, David E., to Imperial Clevite Inc. Inorganic composition adapted for use in bonding a high temperature resistant polymeric material to an aluminum base substrate. 4,555,294, Cl. 156-309.600.
Aday, Jorge L.; and Cerwin, Robert J., to Ethicon, Inc. Three-panel needled suture holder. 4,555,016, Cl. 206-63.300.
Administrators of the Tulane Educational Fund: *See—*
Lertora, Juan J. L.; and King, Lucy W., 4,555,525, Cl. 514-616.000.
Advanced Cardiovascular Systems, Inc.: *See—*
Samson, Wilfred J.; and Solar, Ronald J., 4,554,929, Cl. 128-772.000.
Advanced Energy Concept "81 Ltd.: *See—*
Distin, Robert G., Jr.; Lang, Thomas J.; and Smith, David E., 4,554,846, Cl. 74-805.000.
Advanced Micro Devices, Inc.: *See—*
Williams, Todd E.; and Desch, Steven M., 4,554,942, Cl. 137-240.000.
Aerial Solutions, Inc.: *See—*
Rogers, Randall, deceased, 4,554,781, Cl. 56-235.000.
Aetna Bearing Company: *See—*
Harrington, Richard F.; Dagiel, Richard T.; and Brown, Villy, 4,555,007, Cl. 192-98.000.
Affa, Alfred, to Dr. Johannes Heidenhain GmbH. Measuring system. 4,554,741, Cl. 33-125.00C.
Affarsverket FFV: *See—*
Andersson, Henry, 4,554,843, Cl. 74-493.000.
Agapiou, Agapios; Allan, John L. H.; and Jacobson, Felix I., to Phillips Petroleum Company. Supported polyolefin catalyst components and methods of making and using the same. 4,555,496, Cl. 502-105.000.
AGFA-Gevaert A.G.: *See—*
Vockenhuber, Peter, 4,555,632, Cl. 250-560.000.
Agren, Bengt-Ake. Method for measuring the camouflaging capacity of a smoke. 4,555,628, Cl. 250-341.000.
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Durham, Robert L., 4,555,448, Cl. 428-402.000.
AGVS Installations, Inc.: *See—*
Bantz, Wesley R., 4,554,724, Cl. 29-451.000.
Aiba, Masahiko; Kuranishi, Masaaki; and Miyake, Hideyuki, to Sharp Kabushiki Kaisha. Piezo activated pump in an ink liquid supply system. 4,555,718, Cl. 346-140.00R.
Air Vent Inc.: *See—*
Wolfert, Clarke K., 4,554,862, Cl. 98-42.210.
Aisin Seiki Kabushiki Kaisha: *See—*
Nakamura, Ryuji; and Hayashi, Masaharu, 4,555,004, Cl. 192-58.00B.
Ono, Takuro, 4,554,895, Cl. 123-90.550.
Akada, Masanori: *See—*
Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, 4,555,427, Cl. 428-195.000.
Akashi, Akira: *See—*
Suda, Yasuo; Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; and Ohtaka, Keiji, 4,555,169, Cl. 354-407.000.
Akatsuka, Takao: *See—*
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,555,006, Cl. 192-0.084.
Akebono Brake Industry Company Ltd.: *See—*
Machara, Toshifumi; and Yoshizawa, Hiroyuki, 4,555,145, Cl. 303-92.000.
Akita, Shuichi: *See—*
Ueda, Akio; Akita, Shuichi; and Namizuka, Toshio, 4,555,547, Cl. 525-237.000.
Ueda, Akio; Akita, Shuichi; and Chida, Takeshi, 4,555,548, Cl. 525-237.000.
Akita, Yoshio: *See—*
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Aktiengesellschaft Adolph Saurer: *See—*
Sancini, Aldo; and Stacher, Miguel A., 4,554,950, Cl. 139-25.000.
Akzo nv: *See—*
Gunter, Gerhard; and Haeufler, Hartmut, 4,555,412, Cl. 427-27.000.
Alaria, Gian B.; Appiano, Silvano; Destefanis, Paolo; and Poggio, Cesare, to Cselt Centro Studi e Laboratori Telecomunicazioni SpA. Base-band equipment for ground stations of satellite telecommunication system. 4,555,782, Cl. 370-104.000.
Albany International Corp.: *See—*
Crook, Robert L., 4,555,440, Cl. 428-223.000.
Aldrich, Ralph E.; and Daigneault, Steven M., to Itek Corporation. Method of fabricating long period optical grating. 4,555,162, Cl. 350-162.170.
Ali, Muhammad A. Method of and apparatus for measuring in situ, the subsurface bearing strength, the skin friction, and other subsurface characteristics of the soil. 4,554,819, Cl. 73-9.000.
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Agapiou, Agapios; Allan, John L. H.; and Jacobson, Felix I., 4,555,496, Cl. 502-105.000.
Allen, William W.: *See—*
Bosshart, John; and Allen, William W., 4,554,752, Cl. 38-61.000.
Allied Corporation: *See—*
Benamy, Daniel A., 4,555,793, Cl. 377-48.000.
Kuehling, Guenter F., 4,554,818, Cl. 72-410.000.
Nixon, Richard G., 4,554,871, Cl. 102-489.000.
Roberts, James K., 4,555,001, Cl. 188-79.5GE.
Allis-Chalmers Corporation: *See—*
Kissel, Gary T., 4,555,255, Cl. 55-355.000.
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Hanlet, Jacques M.; and Tarantino, Elia R. J., 4,554,908, Cl. 126-443.000.
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Murayama, Noriaki; and Abe, Kiyoto, 4,555,738, Cl. 360-75.000.
Alsthom-Atlantique: *See—*
Obrecht, Georges, 4,554,983, Cl. 175-107.000.
Alvarez, Manuel R. Practice bat. 4,555,111, Cl. 273-26.00B.
Amax Inc.: *See—*
Sabacky, Bruce J.; and Hepworth, Malcolm T., 4,555,387, Cl. 423-59.000.
Ambros, Peter; and Gatzke, Erich, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Bonding assistant for a support material. 4,555,533, Cl. 523-440.000.
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Robertson, Allan J., 4,555,368, Cl. 260-502.40R.
Schmitt, Joseph M., 4,555,367, Cl. 260-465.900.
Spector, Richard; and Maulding, Donald R., 4,555,537, Cl. 524-97.000.
Wright, William B., Jr.; and Press, Jeffery B., 4,555,519, Cl. 514-340.000.
American Fast Print Limited: *See—*
Calloway, Brian, 4,554,693, Cl. 5-448.000.
American Hospital Supply Corporation: *See—*
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Gregorian, Roubik; and Fotouhi, Bahram, 4,555,668, Cl. 330-9.000.
American Safety Closure Corp.: *See—*
Conti, Vincent N., 4,555,039, Cl. 215-252.000.
American Standard Inc.: *See—*
Bergmann, Konrad, 4,554,948, Cl. 137-625.310.
American Sterilizer Company: *See—*
Tingley, James E., 4,554,936, Cl. 134-146.000.
AMF Incorporated: *See—*
Neville, Richard E., 4,554,933, Cl. 131-304.000.
AMP Incorporated: *See—*
Kourimsky, Friedrich J. A., 4,555,156, Cl. 339-75.00M.
Over, William R.; Wion, Donald A.; and Heffner, Richard M., 4,554,725, Cl. 29-564.400.
Wicks, John L., 4,555,321, Cl. 204-224.00R.
Ampex Corporation: *See—*
Wood, Roger W., 4,555,784, Cl. 371-37.000.

Amtrol, Inc.: *See—*
Hull, Robert; and Lane, Joseph A., 4,555,253, Cl. 55-170.000.
Analogic Corporation: *See—*
Crooke, Arthur W.; and Stebbins, Edwin E., 4,555,765, Cl. 364-571.000.
Anan, Yoshiaki: *See—*
Ishimitsu, Ikuo; Tokunaga, Toshimichi; Tanaka, Takeshi; and Anan, Yoshiaki, 4,555,126, Cl. 280-707.000.
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Danby, Hal C.; and Ritson, Carl, 4,554,837, Cl. 73-705.000.
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Anderson, Clifford E.; Simon, Clarence E.; and Barnes, Phillip E. Bingo card support. 4,555,084, Cl. 248-460.000.
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Anderson, Robert W. Electrically powered sun blind. 4,554,762, Cl. 49-76.000.
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Dominick, Thomas S.; and Anderson, Roy G., 4,555,681, Cl. 333-112.000.
Andersson, Henry, to Affarsverket FFV. Adjustable steering column support. 4,554,843, Cl. 74-493.000.
Ando, Takao: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.
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Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, 4,554,853, Cl. 83-522.000.
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Geurtsen, Friedrich H. H.; Anemaet, John M.; Smith, Donald R.; and Boyd, Mary G., 4,555,436, Cl. 428-200.000.
Angelucci, Richard J.; Cope, Andrew P.; Hallam, Donald E.; and Ladd, Harry E., to Du Pont de Nemours, E. I., and Company. Textile doff servant. 4,555,067, Cl. 242-35.50A.
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Eng, Benjamin, Jr.; Duryee, Peter S.; and Anholm, John M., Jr., 4,555.692, Cl. 340-347.0AD.
Anmin Manufacturing Co., Ltd.: *See—*
Yasue, Kazo, 4,555,421, Cl. 428-6.000.
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, to Schering Aktiengesellschaft. Novel 6, 16-dimethylcorticoids, their preparation and use. 4,555,507, Cl. 514-172.000.
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Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,555,476, Cl. 430-351.000.
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Kawamura, Kouichi; Aotani, Yoshimasa; and Umehara, Akira, 4,555,474, Cl. 430-281.000.
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APM Corporation: *See—*
Morse, Milton, 4,555,600, Cl. 179-184.000.
Appiano, Silvano: *See—*
Alaria, Gian B.; Appiano, Silvano; Destefanis, Paolo; and Poggio, Cesare, 4,555,782, Cl. 370-104.000.
Appleby, A. John, to Electric Power Research, Inc. Method for forming molten carbonate fuel cell component and structure. 4,555,453, Cl. 429-41.000.
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Toyoda, Yoshiaki; Wakimura, Kazuo; Hase, Tadaharu; and Arashiba, Nobumasa, 4,555,583, Cl. 568-473.000.
ARDAC, Inc.: *See—*
Dolejs, Anthony H., 4,554,807, Cl. 70-208.000.
Arends, Albert W.: *See—*
Whiteside, Robert C.; Arends, Albert W.; and Karklin, Roland, 4,555,377, Cl. 264-292.000.
Argentieri, Michael A., to International Telephone and Telegraph Corporation. Enclosure for a power supply. 4,555,587, Cl. 174-11.00R.
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Arita, Koichiro; and Suzuki, Hajime, to Daicel Chemical Industries, Co., Ltd. Copolymer polyamide resin containing polyolefin moiety. 4,555,566, Cl. 528-323.000.
Armbruster, Thomas L., to Comm Stitch. Undergarment with attached absorbent liner. 4,555,245, Cl. 604-396.000.
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Cobb, Jasper E., III, 4,554,947, Cl. 137-596.180.
Armstrong, William D., to Halcon SD Group, Inc., The. Process for preparing silver catalysts. 4,555,501, Cl. 502-243.000.
Armstrong World Industries, Inc.: *See—*
Ollinger, James C.; and Shaub, Melvin H., 4,554,718, Cl. 29-155.00R.
Arnold, Emil; Baumgart, Helmut; and Rossi, Barbara A., to North American Philips Corporation. Method for producing single crystal layers on insulators. 4,555,300, Cl. 156-613.000.
Arway, George; Eremity, Frank; Dick, George; and Pullen, Elaine, to Videojet Systems International, Inc. Ink drop velocity control system. 4,555,712, Cl. 346-75.000.
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Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,555,369, Cl. 260-544.00F.
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Fukui, Tsutomu, 4,555,734, Cl. 358-314.000.
Negoro, Ikuo, 4,555,165, Cl. 350-429.000.
Wakui, Yoshio; Negishi, Kiyoshi; and Tano, Eiichi, 4,555,170, Cl. 354-470.000.
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Shimazaki, Fumio; Asai, Koji; and Ohno, Jiro, 4,555,113, Cl. 273-80.00B.
Asakawa, Teruo, to Telmec Co., Ltd. Two dimensional driving device for use in a positioning device in a semiconductor manufacturing apparatus. 4,555,650, Cl. 318-135.000.
Asami, Kazuto; Baba, Takao; Nakamura, Minoru; and Tanaka, Mitsuaki, to Glory Kogyo Kabushiki Kaisha. Method of feeding a specific length of wrapping paper for a coin packaging machine and device for carrying out said method. 4,554,775, Cl. 53-64.000.
Asami, Masahiro: *See—*
Yano, Takashi; and Asami, Masahiro, 4,555,468, Cl. 430-160.000.
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Asano, Juichi; Okubo, Yasuo; Saito, Hiroshi; and Harada, Shigeru, to Kabushiki Kaisha Komatsu Seisakusho. Pebble-stone crushing device for use in excavator for laying pipelines underground. 4,555,064, Cl. 241-89.300.
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Asaoka, Sachio; and Sendo, Takashi, to Chiyoda Chemical Engineering & Construction Co., Ltd. Process for the preparation of alumina. 4,555,394, Cl. 423-626.000.
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Astoria Fibra-Steel, Inc.: *See—*
Jenkins, Donald, 4,554,764, Cl. 49-501.000.
AT&T Bell Laboratories: *See—*
Bernstein, Lawrence, 4,555,774, Cl. 364-900.000.
Flanagan, James L.; and Kubli, Robert A., 4,555,598, Cl. 179-121.00D.
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., 4,555,594, Cl. 179-18.00B.
Gardner, William B.; Patel, Parbhubhai D.; Philen, Dan L.; and Santana, Manuel R., 4,555,175, Cl. 356-32.000.
Gibson, John M.; Jacobson, Dale C.; Poate, John M.; and Tung, Raymond T., 4,555,301, Cl. 156-617.00R.
Glass, Alastair M.; Johnson, Anthony M.; and Liao, Paul F., 4,555,622, Cl. 250-211.00J.
Hillenius, Steven J.; and Parrillo, Louis C., 4,554,726, Cl. 29-571.000.
Nash, Randy D., 4,555,591, Cl. 178-22.130.
Pike, Robert C., 4,555,775, Cl. 364-900.000.
AT&T Technologies, Inc.: *See—*
Wyatt, Kenneth L., 4,555,105, Cl. 271-264.000.
Atkins, Kenneth E., to Union Carbide Corporation. Uniformly pigmented, low shrinking polyester molding compositions. 4,555,534, Cl. 523-507.000.
Atkins, Walter J., to Chrysler Corporation. Fuel conditioning device. 4,554,902, Cl. 123-557.000.
Atkinson, Robert W., to Snyder Laboratories, Inc. Moveable coil linear motor. 4,555,645, Cl. 310-27.000.
Atomic Energy of Canada Limited: *See—*
Buckley, Leo P.; Burrill, Kenneth A.; Desjardins, Conrad D.; and Salter, Robert S., 4,555,361, Cl. 252-626.000.
Atwood, Brian G.: *See—*
Hewett, Gary E.; Atwood, Brian G.; and Wennberg, Timothy J., 4,554,839, Cl. 73-864.160.
Atzbach, Carl L.: *See—*
Overley, Ronald V.; Tedhams, Michael H.; and Atzbach, Carl L., 4,554,907, Cl. 126-191.000.
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Dixon, Alan G., 4,555,005, Cl. 192-70.270.
Avakian, Roger W., to General Electric Company. Stabilization of flame retardant polycarbonate-polyester compositions. 4,555,540, Cl. 524-130.000.
Averhoff, Wil W. Fence post driving and pulling apparatus. 4,555,090, Cl. 254-29.00R.
Awano, Koichi; Nitta, Yoshifumi; and Ibe, Satoshi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Niigata Kisetsu Kabushiki Kaisha. Method for controlling temperature of water to be fed into water cooling tower. 4,554,964, Cl. 165-39.000.
Baba, Kiyokazu; and Nishida, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Method and device for separating and connecting transfer bar of three upright type transfer press. 4,555,012, Cl. 198-621.000.
Baba, Takao: *See—*
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LiMuti, Charles M.; Babb, Bruce E.; and Mauck, John C., 4,555,483, Cl. 435-19.000.
Bachynsky, Nicholas. Method for anti-cholinergic blockage of withdrawal symptoms in smoking cessation. 4,555,397, Cl. 424-10.000.
Backlund, Lars K., to Santrade Limited. Rotary drill bit. 4,554,985, Cl. 175-371.000.
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Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, 4,555,020, Cl. 206-235.000.
Bahl, Chander P.; and Nunberg, Jack, to Cetus Corporation. Method for using an amino-terminus DNA sequence to synthesize a specific double-stranded DNA. 4,555,486, Cl. 435-91.000.
Baker, Charles D., to Technical Research Associates, Inc. Polymethylmethacrylate bone cements and methods for preparing such bone cements. 4,554,686, Cl. 623-16.000.
Baker International Corporation: *See—*
Goodwin, Alton C.; Junglen, Mark T.; and Kent, John S., 4,554,963, Cl. 165-1.000.
Baker, Peter J., to General Motors Corporation. Combined spring mount and sectioned cage construction. 4,555,002, Cl. 192-45.000.
Baker, Ross G., Jr.; and Calfee, Richard V., to Intermedics, Inc. Microprocessor controlled cardiac pacemaker and method for avoiding pacer sustained tachycardia. 4,554,920, Cl. 128-419.0PG.
Baldry, Kenneth; and Davids, Martin, to Reuters Ltd. Conversational video system having local network control. 4,555,781, Cl. 370-60.000.
Ball Corporation: *See—*
Fights, Michael L.; and Jones, William E., 4,555,416, Cl. 427-248.100.
Ballato, Arthur: *See—*
Vig, John R.; and Ballato, Arthur, 4,554,717, Cl. 29-25.350.
Balzers Aktiengesellschaft: *See—*
Moll, Eberhard, 4,555,611, Cl. 219-121.000.
Bancware, Inc.: *See—*
Citron, Alan L.; Lindquist, Thomas W. F.; and Popp, William E., 4,555,699, Cl. 340-707.000.
Bandelow, Horst: *See—*
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, 4,554,707, Cl. 17-47.000.
Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., to Ortho Pharmaceutical Corporation. Substituted 2(1H)-quinazolinone-1-alkanoic acids and esters. 4,555,571, Cl. 544-286.000.
Bandurco, Victor T.: *See—*
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Banister, Arthur J.; Hauptman, Zdenek V.; and Kendrick, Aidan G., to National Research Development Corporation. Synthesis of poly(sulphur nitride). 4,555,316, Cl. 204-59.00R.
Bansal, Jai P.; Bertin, Claude L.; and Troutman, Ronald R., to International Business Machines Corporation. Structure of stacked, complementary MOS field effect transistor circuits. 4,555,721, Cl. 357-42.000.
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Barazone, Mounque. Apparatus for laying paving fabric. 4,555,073, Cl. 242-86.50R.
Barbas, George A.: *See—*
Sheets, Ronald E.; Barbas, George A.; Doering, Howard W., Jr.; and Bjorkman, John R., 4,555,630, Cl. 250-492.100.
Barbieri, Stephen C.; and Mayer, Linda J., to OMI International Corporation. High speed copper electroplating process and bath therefor. 4,555,315, Cl. 204-52.00R.
Barcelon-Yang, Cynthia: *See—*
Stout, David M.; Yamamoto, Diane M.; and Barcelon-Yang, Cynthia, 4,555,517, Cl. 514-336.000.
Barnes, Phillip E.: *See—*
Anderson, Clifford E.; Simon, Clarence E.; and Barnes, Phillip E., 4,555,084, Cl. 248-460.000.
Barrett, Robert C.; Buscher, John H.; and Putnam, William M., to Eastman Machine Company. Apparatus for supporting and guiding machine for operating on sheet material such as cloth. 4,554,738, Cl. 30-275.000.
Barrett, Terence W., to United States of America, Navy. Method and apparatus for detecting singlet state resonance fluorescence. 4,555,177, Cl. 356-318.000.
Barron, Kimball R.: *See—*
Claney, Robert L.; Walton, Herbert H.; Kehoe, Steven D.; and Barron, Kimball R., 4,554,943, Cl. 137-242.000.
Barry, George W. J.: *See—*
O'Dowd, Dennis H.; and Barry, George W. J., 4,555,347, Cl. 210-752.000.
Barry, Judith A. Automatic depth-determining aquatic sampling device. 4,554,826, Cl. 73-170.00A.
Bartels, Willi. Nutcracker. 4,554,737, Cl. 30-120.300.
Barthell, Barry L.: *See—*
Duchane, David V.; and Barthell, Barry L., 4,555,313, Cl. 204-3.000.
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Camp, Ronald L.; Dexheimer, Edward M.; and Anchor, Michael J., 4,555,549, Cl. 525-409.000.
Christman, Donald L., 4,555,531, Cl. 521-167.000.
Heyman, Duane A., 4,555,527, Cl. 521-67.000.
Patton, John T., Jr.; and Rupert, John P., 4,555,530, Cl. 521-131.000.
Battelle Development Corporation: *See—*
Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., 4,555,366, Cl. 260-404.800.
Batters, Robert C. Electrical therapeutic assembly and method for reducing pain and edema in a hand. 4,554,923, Cl. 128-421.000.
Bauer, Denise; Komornicki, Jacques; and Tellier, Jacques, to Societe Nationale Elf Aquitaine. Process of liquid-liquid extraction of metals, with the aid of a microemulsion, from an aqueous solution. 4,555,343, Cl. 210-643.000.
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans Jurgen, to Bauer, Fritz; and Sohne oHG. Lockable tilting apparatus for chair seats. 4,555,085, Cl. 248-561.000.
Bauer, Hans Jurgen: *See—*
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Hamman, Martin E.; and Baughman, Gary M., 4,555,048, Cl. 222-478.000.
Baumgart, Helmut: *See—*
Arnold, Emil; Baumgart, Helmut; and Rossi, Barbara A., 4,555,300, Cl. 156-613.000.
Bausch & Lomb Incorporated: *See—*
Bridson, William D.; and Esmay, Edward N., 4,555,620, Cl. 250-205.000.
Huckenbeck, Claus O., 4,554,744, Cl. 33-241.000.
Kunzler, Wilhelm F.; and Coombs, William F., 4,555,372, Cl. 264-2.100.
Bay Mills Limited: *See—*
Boucher, Ray, 4,555,298, Cl. 156-523.000.
Bayer Aktiengesellschaft: *See—*
Beck, Gunther, 4,555,577, Cl. 548-200.000.
Goldmann, Siegfried; Bossert, Friedrich; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,555,512, Cl. 514-302.000.
Klauke, Erich; and Findeisen, Kurt, 4,555,370, Cl. 260-545.00R.
Schutze, Detlef-Ingo; Schmitz, Reinold; and Wunderlich, Klaus, 4,555,580, Cl. 549-52.000.
Bayer, Helmut, to Electrovac, Fabrikation elektrotechnischer Spezialartikel Gesellschaft mbH. Thermostat for cooking utensil. 4,555,688, Cl. 337-394.000.
Bayerische Motoren Werke AG: *See—*
Lobe, Hartwig, 4,555,638, Cl. 307-10.00R.
Bayorgeon, Jeffrey T.: *See—*
May, Marvin M.; Billings, Robert C.; Kendall, Harry A.; and Bayorgeon, Jeffrey T., 4,555,091, Cl. 254-267.000.
BBC Brown, Boveri and Company, Limited: *See—*
Hausler, Michael; Huber, Philippe; Pfyl, Walter; and Sadek, Kadry, 4,555,658, Cl. 323-210.000.
Beck, Gunther, to Bayer Aktiengesellschaft. 2,4-Dichloro-5-thiazolecarboxaldehyde and a process for its preparation. 4,555,577, Cl. 548-200.000.
Becton, Dickinson and Company: *See—*
Bennett, Michael C., 4,555,046, Cl. 222-189.000.
Nugent, Edward L.; and Lutkowski, Lawrence, 4,555,336, Cl. 210-232.000.
Nugent, Edward L., 4,555,341, Cl. 210-359.000.
Bedini, John C., to TVI Systems, Ltd. Monaural to binaural audio processor. 4,555,795, Cl. 381-17.000.
Bednarek, Milan B.; and Houze, Eric C., to Du Pont de Nemours, E. I., and Company. Acrylic polyurethane coating composition. 4,555,535, Cl. 524-40.000.
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Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,555,509, Cl. 514-278.000.
Milner, Peter H., 4,555,363, Cl. 260-239.100.
Beehive International: *See—*
Sharma, Gulab, 4,555,649, Cl. 315-382.000.
Beesley, Graham E., to Sinclair Research Limited. F.M. Amplifier for use in I.F. Stages. 4,555,677, Cl. 330-302.000.
Behrens, Gunter; Schmitz, Walter; Kitzer, Peter; and Rusch, Dieter, to Licentia Patent Verwaltungs-GmbH. Foldable solar cell panel apparatus. 4,555,585, Cl. 136-245.000.
Beitz, James V., to United States of America, Energy. Removal of fluoride impurities from UF_6 gas. 4,555,318, Cl. 204-157.10R.
Bekkers, Henricus A. M.; and Reyenga, Tjerk, to Technoplast B.V. Safety closure. 4,555,036, Cl. 215-220.000.
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, to ITT Industries, Inc. Method and apparatus

for controlling and monitoring hydraulic brake slip. 4,555,144, Cl. 303-92.000.

Belly, Robert T.: *See—*
Frank, David S.; and Belly, Robert T., 4,555,396, Cl. 424-3.000.

Benamy, Daniel A., to Allied Corporation. Averaging non-integer frequency division apparatus. 4,555,793, Cl. 377-48.000.

Bendix Corporation: *See—*
Sorensen, Ian W.; and Kiwak, Robert S., 4,555,393, Cl. 423-447.100.

Benham, Thomas, to Mallinckrodt, Inc. Method and apparatus for punching holes in polymer tubes. 4,554,849, Cl. 83-40.000.

Benier B.V.: *See—*
Benier, Johan, 4,555,226, Cl. 425-96.000.

Benier, Johan, to Benier B.V. Apparatus for rolling dough and coiling it. 4,555,226, Cl. 425-96.000.

Bennett, Michael C., to Becton, Dickinson and Company. Pouring spout for a container and a container assembly including same. 4,555,046, Cl. 222-189.000.

Benson, Clark K.: *See—*
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., 4,554,865, Cl. 99-353.000.

Benson, Warren E.; and Breen, Stanley, to Forte Technology, Inc. Method and apparatus for determining dielectric constant. 4,555,661, Cl. 324-61.00R.

Ber-Vac Inc.: *See—*
Vachon, Bertrand, 4,554,977, Cl. 172-177.000.

Berenato, Joseph W., III; Raivel, Earl L., Jr.; and Strepelis, John J., to Bethlehem Steel Corporation. Semi-automatic pusher machine leveler bar control and method. 4,555,209, Cl. 414-163.000.

Beresniewicz, Aleksander, to Du Pont de Nemours, E. I., and Company. Tertiary perfluorinated compounds as rate enhancing additives in PTFE dispersion polymerization. 4,555,556, Cl. 526-212.000.

Bergmann, Konrad, to American Standard Inc. Straight-way valve. 4,554,948, Cl. 137-625.310.

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Dalsin, Bernard L., 4,554,863, Cl. 98-59.000.

Bernhardt, Daniel. Anti-spill recloseable container. 4,555,043, Cl. 220-306.000.

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Bernstein, Lawrence, to AT&T Bell Laboratories. Fast response for switched data networks. 4,555,774, Cl. 364-900.000.

Bertin, Claude L.: *See—*
Bansal, Jai P.; Bertin, Claude L.; and Troutman, Ronald R., 4,555,721, Cl. 357-42.000.

Bethlehem Steel Corporation: *See—*
Berenato, Joseph W., III; Raivel, Earl L., Jr.; and Strepelis, John J., 4,555,209, Cl. 414-163.000.

Betts, William L.; and Martinez, Kenneth. Digital modem having a monitor for signal-to-noise ratio. 4,555,790, Cl. 375-39.000.

Betz Laboratories, Inc.: *See—*
Reid, Dwight K., 4,555,326, Cl. 208-48.00R.

Bhatia, Vinay K., to F. L. Smidth & Co. A/S. Method for removing sulfur oxides from hot flue gases. 4,555,390, Cl. 423-242.000.

Biadigo, Mario; and Zucchi, Gianfranco, to Ideal Standard S.p.A. Automatic machine for the internal fettling of sanitary appliances. 4,555,229, Cl. 425-267.000.

Bialobrzeski, Walter: *See—*
Martin, Richard A.; and Bialobrzeski, Walter, 4,555,378, Cl. 264-292.000.

Bianchi, Angelo, to Sant-Andrea Novara Officine Meccaniche e Fonderie S.p.A. Chain-driven comb head for slivers of textile fibres, particularly for drawing frames. 4,554,709, Cl. 19-218.000.

Biermann, Eberhard, to Robert Bosch GmbH. Damping device of an air flow rate meter disposed in the air intake tube of an internal combustion engine. 4,554,825, Cl. 73-118.000.

Billings, Robert C.: *See—*
May, Marvin M.; Billings, Robert C.; Kendall, Harry A.; and Bayorgeon, Jeffrey T., 4,555,091, Cl. 254-267.000.

Binder, Berthold; and Purrer, Josef, to Kloeckner-Humboldt-Deutz AG. Chopping arrangement. 4,555,065, Cl. 241-241.000.

Bird, Graham J.: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; Farquharson, Graeme J.; and Houston, Timothy L., 4,555,263, Cl. 71-98.000.

Bishopbarn Limited: *See—*
Franklin, Kenneth W., 4,555,013, Cl. 198-689.100.

Bissett, Donald L.; and Mao, Mark H. K., to Procter & Gamble Company, The. Mild detergent compositions. 4,555,360, Cl. 252-541.000.

Bjorkelund, Mats, to Kockumation AB, Remadivisionen. Photoelectric dimension measuring system. 4,555,633, Cl. 250-560.000.

Bjorkman, John R.: *See—*
Sheets, Ronald E.; Barbas, George A.; Doering, Howard W., Jr.; and Bjorkman, John R., 4,555,630, Cl. 250-492.100.

Blackmore, Phillip W., to Fiberglas Canada Inc. Bales of bagged batts. 4,555,017, Cl. 206-83.500.

Blair Industries, Inc.: *See—*
Graetz, Herbert; and Unterreiner, Ronald C., 4,555,290, Cl. 156-245.000.

Blanc, Andre : *See—*
Bloemkolk, Willem, deceased; and Blanc, Andre , 4,555,373, Cl. 264-25.000.

Blanchandin, Monique; Girardat, Roland; and Vanestrenvord, Jean-Michel, to Thomson CSF. Device for compensating temperature drifts of the gain of an ultra-high frequency electric signal amplifier. 4,555,675, Cl. 330-289.000.

Blase, Helmut; and Eiler, Peter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Vehicular crane of high carrying capacity having an extensible arm. 4,555,031, Cl. 212-189.000.

Bleckmann, Hans-Wilhelm: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,555,144, Cl. 303-92.000.

Bliss, Dan E.: *See—*
Fletcher, Aaron N.; McManis, George E., III; and Bliss, Dan E., 4,555,455, Cl. 429-112.000.

Bloemkolk, Christiane, legal representative: *See—*
Bloemkolk, Willem, deceased; and Blanc, Andre , 4,555,373, Cl. 264-25.000.

Bloemkolk, Willem, deceased (by Bloemkolk, Christiane, legal representative); and Blanc, Andre , to Vitrotex Saint-Gobain. Pressing of reinforced thermosetting polymer articles. 4,555,373, Cl. 264-25.000.

Blomley, Peter F., to International Standard Electric Corporation. Loudspeaking telephones. 4,555,596, Cl. 179-81.00B.

Bochinski, Rolf; Eimer, Klaus; Lange, Alois; and Nghiem, Xuan L., to Taprogge Gesellschaft mbH. Ball-measuring system for self-cleaning heat exchanger. 4,554,965, Cl. 165-95.000.

Bodet, Jean A.: *See—*
Chazal, Guy A.; and Bodet, Jean A., 4,555,381, Cl. 264-516.000.

Boeckmann, Eduard F. B.; and Woodworth, Larry A., to GTE Business Communication Systems Inc. Transient resistant key operated pulse generating calling device circuit. 4,555,597, Cl. 179-90.00B.

Boehringer Ingelheim KG: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,555,511, Cl. 514-301.000.

Boettcher, Irmgard: *See—*
Rufer, Clemens; and Boettcher, Irmgard, 4,555,406, Cl. 514-605.000.

Bogdanov, Vladimir M.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.

Boger, Manfred; and Drabek, Jozef, to Ciba Geigy Corporation. Carbamic acid esters useful as pesticides. 4,555,405, Cl. 514-488.000.

Bohler, Udo: *See—*
Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, 4,555,806, Cl. 455-62.000.

Bonicel, Jean-Pierre; Prigent, Madeleine; and Cottevieille, Christian, to Les Cables de Lyon, S.A. Fireproof polymer material. 4,555,539, Cl. 524-127.000.

Bonn, John: *See—*
Graham, Wayne B.; and Bonn, John, 4,554,743, Cl. 33-172.00R.

Bonnet, Bernard; Bressy, Roger; and Sevaille, Jean-Claude, to Commissariat a l'Energie Atomique. Automatic high insulation switch. 4,555,640, Cl. 307-115.000.

Borden, Albert R., to United States of America, Energy. Method and apparatus for making superconductive magnet coils. 4,554,731, Cl. 29-605.000.

Borel, Georg; and Waldvogel, Hartmut, to Hermann Wangner GmbH & Co. Composite fabric for use as clothing for the sheet forming section of a papermaking machine. 4,554,953, Cl. 139-383.00A.

Borg-Warner Corporation: *See—*
Habel, Paul A.; and Kulczycki, Elaine S., 4,555,009, Cl. 192-106.200.

Boris, Allen J.: *See—*
Lockard, Walter G.; Patel, Nathalal G.; and Boris, Allen J., 4,555,121, Cl. 280-30.000.

Born, Siegfried, to Hauni-Werke Korber & Co. KG. Apparatus for severing rod-shaped articles of the tobacco processing industry. 4,554,931, Cl. 131-84.400.

Borovian, Gayle E., to Lever Brothers Company. Synergistic preservative compositions. 4,555,400, Cl. 424-78.000.

Bossennec, Jean-Louis G.; Debuisser, Jean-Claude A.; and Farhi, Philippe F., to International Standard Electric Corporation. System for providing a summarized information on the line spectrum from a Doppler radar spectrum analyzer. 4,555,705, Cl. 343-55.00A.

Bossert, Friedrich: *See—*
Goldmann, Siegfried; Bossert, Friedrich; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,555,512, Cl. 514-302.000.

Bosshart, John; and Allen, William W., to Jensen Corporation. Heated cylinder ironer utilizing a flexible ironing bed. 4,554,752, Cl. 38-61.000.

Bossons, William R., to W. H. Bossons (Sales) Limited. Wall plaques. 4,555,432, Cl. 428-156.000.

Boucher, Ray, to Bay Mills Limited. Tape gun. 4,555,298, Cl. 156-523.000.

Bouliane, Daniel. Trailer gear for small craft. 4,554,884, Cl. 114-344.000.

Boute, Wim; Wittkampf, Frederik H. M.; and van Arragon, Gerrit W., to Vitafin N.V. Dual chamber pacemaker with automatic high rate limit mode determination. 4,554,921, Cl. 128-419.0PG.

Boyd, Mary G.: *See—*
Geurtsen, Friedrich H. H.; Anemaet, John M.; Smith, Donald R.; and Boyd, Mary G., 4,555,436, Cl. 428-200.000.

Boyle, William H., to Envirex Inc. Excess overflow orifice tubes. 4,555,340, Cl. 210-248.000.

Bradfield, James E.: *See—*
Stanley, Roderic K.; Milewits, Marvin; Knauer, Robert C., Jr.; and Bradfield, James E., 4,555,665, Cl. 324-229.000.

Bradley, Irving, to General Electric Company. Truncated motor vehicle headlamp. 4,555,748, Cl. 362-61.000.

Bradshaw, Larry R.: *See—*
Womack, Darryl L.; Noell, Ralph B.; and Bradshaw, Larry R., 4,554,913, Cl. 128-80.00C.

Bradsher, O. D., Jr.: *See—*
Molloy, Michael P., 4,554,758, Cl. 43-61.000.

Brantl, Victor; Teschemacher, Hansjorg; Henschen, Agnes; and Lottspeich, Friedrich. Pharmacologically active peptides and medicaments containing the same. 4,555,403, Cl. 514-17.000.

Breedis, John F.: *See—*
Ashok, Sankaranarayanan; and Breedis, John F., 4,555,272, Cl. 148-3.000.

Breen, Stanley: *See—*
Benson, Warren E.; and Breen, Stanley, 4,555,661, Cl. 324-61.00R.

Bressy, Roger: *See—*
Bonnet, Bernard; Bressy, Roger; and Sevaille, Jean-Claude, 4,555,640, Cl. 307-115.000.

Brettbacher, Franz: *See—*
Hirschmanner, Franz; Buchegger, Rudolf; and Brettbacher, Franz, 4,554,812, Cl. 72-202.000.

Breville Holdings Pyt. Limited: *See—*
O'Brien, William J., 4,555,616, Cl. 219-432.000.

Bricaud, Herve ; and L'Henaff, Patrick, to Socapex. Connector comprising at least one contact having a resiliently deformable arm. 4,555,153, Cl. 339-17.0CF.

Brick, Michael J.; and Dirnberger, Linus R., to Westinghouse Electric Corp. Elevator system with lamp status and malfunction monitoring. 4,555,689, Cl. 340-19.00R.

Bridgewater, Walter F.; De Caro, Robert E.; Larson, Roger; and Wall, Llewellyn E., to Irvine Sensors Corporation. Pre-amplifier in focal plane detector array. 4,555,623, Cl. 250-214.00A.

Bridson, William D.; and Esmay, Edward N., to Bausch & Lomb Incorporated. Automatic illumination control for multi-objective optical instruments such as microscopes. 4,555,620, Cl. 250-205.000.

Briggs, James B., to Media Transference International. Single channel split-sound receiver for use with television set. 4,555,730, Cl. 358-142.000.

Brightman, Barrie; Elliott, George; Lenk, Pedro A.; Shah, Jayantkumar R.; and Stewart, William H., to Stromberg-Carlson Corp. Sampled port data switching system employing interactive processors. 4,555,595, Cl. 179-18.0ES.

British Aerospace Public Limited Company: *See—*
Clark, Frederick; and Moore, Colin, 4,555,698, Cl. 340-680.000.

Broadbent, William H., Jr.; Buchholz, Steve; Eldredge, Peter; and Wihl, Mark J., to KLA Instruments Corporation. Automatic system and method for inspecting hole quality. 4,555,798, Cl. 382-8.000.

Bronfenbrenner, James C.; Foster, Edward P.; and Tewari, Krishna, to International Coal Refining Company. Process for stabilizing the viscosity characteristics of coal derived materials and the stabilized materials obtained thereby. 4,555,248, Cl. 44-78.000.

Bronn, William R., to Riker Laboratories, Inc. Certain 6-benzamidomethyl-2(1H)-pyridone derivatives. 4,555,573, Cl. 546-291.000.

Brooks, Ralf M.; and Lepic, Daniel A., to NCR Canada Ltd.-NCR Canada Ltee. Concurrent, image-based, reject-re-entry repair system and method. 4,555,617, Cl. 235-379.000.

Brot, Michel: *See—*
Vegeais, Patrick; Brot, Michel; and Valet, Jean-Yves, 4,555,715, Cl. 346-76.0PH.

Brown, Anthony R., to Molins PLC. Conveying rod-like articles. 4,555,011, Cl. 198-444.000.

Brown, Donald G. Passageway selective detector mechanism and system. 4,555,696, Cl. 340-551.000.

Brown, Richard K.; and Seiferth, Oscar E., to James River-Norwalk, Inc. Package assembly and method for storing and microwave heating of food. 4,555,605, Cl. 219-10.55E.

Brown, Villy: *See—*
Harrington, Richard F.; Dagiel, Richard T.; and Brown, Villy, 4,555,007, Cl. 192-98.000.

Bruins, Henderikus B.: *See—*
Kramer, Franklin; Bruins, Henderikus B.; Giacone, Joseph; and Carbillet, Luc L., 4,555,407, Cl. 426-5.000.

Brulard, Michel C., to Jeumont-Schneider Corporation. Control circuit for operating a direct current motor during traction or braking. 4,555,652, Cl. 318-375.000.

Brumfield, David L., to Richards Medical Company. Bone fixation frame. 4,554,915, Cl. 128-92.00A.

Bruns, Angelika: *See—*
Harms, Margret; Bruns, Angelika; Luthje, Holger; and Matthiessen, Bernd, 4,555,460, Cl. 430-5.000.

Bruns, Engelbert; and Osterholt, Gerd, to Carl Still GmbH & Co. K.G., Firma. Gas collecting hood for collecting emissions during coke discharge operations. 4,555,308, Cl. 202-263.000.

Bruns, Klaus; and Weber, Ursula, to Henkel Kommanditgesellschaft auf Aktien. Trimethylbicyclo [4.3.0] non-1-ene derivatives. 4,555,359, Cl. 252-522.00R.

Bruyere, Michel: *See—*
Delor, Michel; and Bruyere, Michel, 4,555,382, Cl. 376-216.000.

Bryant, William E., to Sanders Associates, Inc. Apparatus and method for channel identification. 4,555,807, Cl. 455-137.000.

Buchar, Wayne A., to Xerox Corporation. Illumination control system utilizing an integrating feedback detector. 4,555,621, Cl. 250-205.000.

Buchegger, Rudolf: *See—*
Hirschmanner, Franz; Buchegger, Rudolf; and Brettbacher, Franz, 4,554,812, Cl. 72-202.000.

Buchholz, Steve: *See—*
Broadbent, William H., Jr.; Buchholz, Steve; Eldredge, Peter; and Wihl, Mark J., 4,555,798, Cl. 382-8.000.

Buckingham, Robin E.: *See—*
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,555,509, Cl. 514-278.000.

Buckley, Leo P.; Burrill, Kenneth A.; Desjardins, Conrad D.; and Salter, Robert S., to Atomic Energy of Canada Limited. Method of reducing the volume of solid radioactive waste. 4,555,361, Cl. 252-626.000.

Budd Company, The: *See—*
Dickhart, William W., III; Graziani, Dante J., Jr.; Herring, James M., Jr.; Pavlick, Michael J.; and Renn, Edward J., 4,555,095, Cl. 267-4.000.

Budecker, Ludwig; and Obersteiner, Georg, to ITT Industries, Inc. Radial piston machine. 4,555,223, Cl. 417-462.000.

Buell, Kenneth B., to Procter & Gamble Company, The. Waste-containment garment having absorbent body and reuseable side-bridging fastener fitments. 4,555,244, Cl. 604-392.000.

Bumberger, Herbert: *See—*
Schiefer, Bernhard; and Bumberger, Herbert, 4,555,050, Cl. 222-597.000.

Burgdorf, Jochen: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,555,144, Cl. 303-92.000.

Burke, Thomas M.: *See—*
Westervelt, Dean C.; and Burke, Thomas M., 4,554,730, Cl. 29-605.000.

Burkhalter, John F.: *See—*
Rao, S. Prabhakara; and Burkhalter, John F., 4,555,269, Cl. 106-90.000.

Burnham, Robert D.: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,555,785, Cl. 372-8.000.

Burns & Russell Company: *See—*
Sergovic, John A.; and McClinton, John L., 4,555,375, Cl. 264-259.000.

Burny, Camille J., Jr. Rotatable flag support. 4,554,885, Cl. 116-174.000.

Burr, John E., to M/A-COM, Inc. Magnetron tuned programmably using step motor. 4,555,680, Cl. 331-86.000.

Burrill, Kenneth A.: *See—*
Buckley, Leo P.; Burrill, Kenneth A.; Desjardins, Conrad D.; and Salter, Robert S., 4,555,361, Cl. 252-626.000.

Burris, W. Alan. Ozonator feed system. 4,555,335, Cl. 210-192.000.

Burroughs Corporation: *See—*
Donkin, Charles W., 4,555,189, Cl. 384-493.000.

Burroughs, Robert C. Return top. 4,555,235, Cl. 446-250.000.

Burroughs Wellcome Co.: *See—*
Jones, Harry P., 4,555,504, Cl. 514-26.000.

Burtch, John E.; and Hill, James A., to Owens-Illinois, Inc. Universal hot air nozzle and seal bar with adjustable cam. 4,555,296, Cl. 156-446.000.

Burton, James A., to Hydril Company. Apparatus for forming boreholes. 4,554,982, Cl. 175-75.000.

Burwell, Reed & Kinghorn Limited: *See—*
Williamson, Terence J., 4,555,259, Cl. 65-374.120.

Burzin, Klaus: *See—*
Droescher, Michael; Mumcu, Salih; Burzin, Klaus; Gerth, Christian; and Heuer, Horst, 4,555,550, Cl. 525-424.000.

Buscher, John H.: *See—*
Barrett, Robert C.; Buscher, John H.; and Putnam, William M., 4,554,738, Cl. 30-275.000.

Buschor, Josef J., to Five X Corporation. Workpiece holding and positioning mechanism and system. 4,555,216, Cl. 414-728.000.

Butenschon, Rolf, to GIVAG Gastro-Installationen-Vertrieb (Deutschland) GmbH. Glass with stem, particularly a wine glass. 4,555,040, Cl. 215-365.000.

Butler, John D., to Federal-Mogul Corporation. Molding an elastomeric ring while bonding it to a metal case and to a fluorocarbon washer. 4,555,376, Cl. 264-266.000.

Butterworth, Robert M.; and Wells, Martin A., to Lever Brothers Company. Fabric softening compositions. 4,555,349, Cl. 252-8.600.

Byer, Robert L., to Leland Stanford, Jr. University, Board of Trustees of. High power solid state laser. 4,555,786, Cl. 372-70.000.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Rainer, Georg, 4,555,518, Cl. 514-338.000.

Byrne, David S.; and Chen, Evan N., to Warner-Lambert Company. Disposable razor rack. 4,555,030, Cl. 211-49.100.

Cabot Corporation: *See—*
Getz, Marlyn F., 4,555,268, Cl. 75-229.000.

Cadbury Schweppes, Plc: *See—*
Jeans, Edward L., 4,555,371, Cl. 261-122.000.

Cadoret, Genevieve L. Men's combination briefs and hose. 4,554,684, Cl. 2-227.000.

Calfee, Richard V.: *See—*
Baker, Ross G., Jr.; and Calfee, Richard V., 4,554,920, Cl. 128-419.0PG.

Calloway, Brian, to American Fast Print Limited. Mattress, box springs fabric. 4,554,693, Cl. 5-448.000.

Calvert, Rodney K., to Mead Corporation, The. Packaging machine and method. 4,554,778, Cl. 53-398.000.

Camp, Ronald L.; Dexheimer, Edward M.; and Anchor, Michael J., to BASF Wyandotte Corporation. Polyoxyalkylene polymers as lubricants particularly in molding processes. 4,555,549, Cl. 525-409.000.

Campbell, Robert: *See—*
Yoakam, David; Campbell, Robert; and Pehkonen, Robert, 4,554,887, Cl. 118-666.000.
Campbell, Robert K.: *See—*
Weinstein, Richard; Davis, James W.; and Campbell, Robert K., 4,555,058, Cl. 239-223.000.
Campbell Soup Company: *See—*
von Lersner, Wolf A.; Cheeseman, Edward W.; Simpson, Thomas K.; and Weaver, George R., 4,554,955, Cl. 141-1.000.
Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, to New High Glass. Compact. 4,555,020, Cl. 206-235.000.
Canivet, Patrick: *See—*
de la Mettrie, Roland; and Canivet, Patrick, 4,555,247, Cl. 8-405.000.
Canning, Howard; and Weber, Peter, to Twinpak, Inc. Pouch handle. 4,555,804, Cl. 383-25.000.
Canon Kabushiki Kaisha: *See—*
Hasegawa, Tetsuo; and Suematsu, Koushi, 4,555,467, Cl 430-110.000.
Katagiri, Kazuharu; and Oguchi, Yoshihiro, 4,555,472, Cl. 430-278.000.
Ogawa, Kyosuke; Shirai, Shigeru; Saitoh, Keishi; Misumi, Teruo; and Kanbe, Junichiro, 4,555,465, Cl. 430-95.000.
Suda, Yasuo; Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; and Ohtaka, Keiji, 4,555,169, Cl. 354-407.000.
Canron Corp.: *See—*
Coy, Calvin L.; and O'Neal, Keith T., 4,554,697, Cl. 15-55.000.
Cantrell, Ben H., to United States of America, Navy. Environmental mapping system. 4,555,703, Cl. 343-5.0SA.
Capintec Inc.: *See—*
Suzuki, Arata, 4,555,626, Cl. 250-239.000.
Capocci, Gerald A.: *See—*
Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,555,541, Cl. 524-180.000.
Capps, David B., to Warner-Lambert Company. Pyrazolo[3,4,5-kl]acridine compositions and methods for their production and use. 4,555,572, Cl. 546-14.000.
Carbillet, Luc L.: *See—*
Kramer, Franklin; Bruins, Henderikus B.; Giacone, Joseph; and Carbillet, Luc L., 4,555,407, Cl. 426-5.000.
Cardin, Wilfred W.: *See—*
Pejouhy, Radi; and Cardin, Wilfred W., 4,555,686, Cl. 337-102.000.
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., to Heat and Control, Inc. Taco shell forming and cooking apparatus. 4,554,865, Cl. 99-353.000.
Carithers, Val G.: *See—*
Watson, David R.; Carithers, Val G.; and McDaniel, L. Thomas, 4,555,493, Cl. 501-127.000.
Carl Still GmbH & Co. K.G., Firma: *See—*
Bruns, Engelbert; and Osterholt, Gerd, 4,555,308, Cl. 202-263.000.
Carl Walther GmbH: *See—*
Repa, Otto, 4,554,745, Cl. 33-257.000.
Carlson, David J., to RCA Corporation. R.F. Diplexing and multiplexing means. 4,555,809, Cl. 455-190.000.
Carnavos, Theodore C., to Noranda Metal Industries, Inc. Coaxial finned tube heat exchanger. 4,554,969, Cl. 165-154.000.
Carnegie-Mellon University: *See—*
Prinz, Friedrich B.; Hoburg, James F.; and Gunnarsson, Kristjan, 4,554,834, Cl. 73-597.000.
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, to Sirac SpA. Process for purifying lactulose syrup. 4,555,271, Cl. 127-46.200.
Carpenter Paper Company: *See—*
Tell, Joseph M., 4,554,761, Cl. 47-1.410.
Carrier Corporation: *See—*
Haas, Rudy E., 4,554,968, Cl. 165-144.000.
Carter, Carlos R. Apparatus for coating and cutting sheet material. 4,554,886, Cl. 118-42.000.
Carter, Eric L.; and Ward, Harold T., to International Business Machines Corporation. Circuit apparatus for generating modulus-N residues. 4,555,769, Cl. 364-746.000.
Carter, Frank D. Scuba tank positioner. 4,555,083, Cl. 248-313.000.
Carter, Garry L.; and Weeks, Vaughan B., to Medical Engineering Corporation. Toilet mounted urine flow meter. 4,554,687, Cl. 4-144.200.
Cartwright, David, to Imperial Chemical Industries, plc. Process for preparing 2,3-dichloro-5-trichloromethylpyridine. 4,555,575, Cl. 546-345.000.
Carty, Michael W.; and Kraus, Guenther M., to Combustion Engineering, Inc. Method of manufacturing a wear resistant pipe. 4,554,721, Cl. 29-416.000.
Cascini, Michael R.: *See—*
Mosier, Donald E.; and Cascini, Michael R., 4,555,625, Cl. 250-231.0SE.
Case, William R.; and Johnson, Wildey E., to International Business Machines Corporation. Method and apparatus for measuring thickness of epitaxial layer by infrared reflectance. 4,555,767, Cl. 364-563.000.
Casilli, Joseph C., to International Telephone and Telegraph Corporation. Air-operated diaphragm pump and a valve arrangement therefor. 4,555,222, Cl. 417-393.000.
Casket Shells, Inc.: *See—*
Semon, Joseph R., 4,555,119, Cl. 277-207.00R.
Cassidenti, Michael L., to Rockwell International Corporation. Metalworking tools with augmented conductivity. 4,555,204, Cl. 408-144.000.
Castegnier, Adrien, to Elcorsy Inc. Image reproduction by in plane electro-coagulation of a colloid. 4,555,320, Cl. 204-180.900.
Caterpillar Tractor Co.: *See—*
Garman, James A., 4,554,720, Cl. 29-402.010.
Gibson, Dennis H.; Stockner, Alan R.; and Waldman, Donald J., 4,554,901, Cl. 123-450.000.
Caveney, Jack E., to Panduit Corp. Termination tooling for applying connectors to flat cable. 4,554,733, Cl. 29-749.000.
Cebal: *See—*
Houdayer, Bernard; Le Fur, Bernard; Meneghin, Rene ; and Moniod, Jean-Michel, 4,555,208, Cl. 413-2.000.
Celotex Corporation, The: *See—*
Frentzel, Richard L., 4,555,442, Cl. 428-318.400.
Snider, Scott C.; and DeLeon, Alberto, 4,555,418, Cl. 427-373.000.
Cerberus AG: *See—*
Muggli, Jurg; Guttinger, Heinz; and Horvath, Zoltan, 4,555,634, Cl. 250-565.000.
Cerwin, Robert J.: *See—*
Aday, Jorge L.; and Cerwin, Robert J., 4,555,016, Cl. 206-63.300.
Cescon, Lawrence A.; and Millet, Nolan J., Jr., to Du Pont de Nemours, E. I., and Company. Stable nitrate/emulsion explosives and emulsion for use therein. 4,555,278, Cl. 149-21.000.
Cetus Corporation: *See—*
Bahl, Chander P.; and Nunberg, Jack, 4,555,486, Cl. 435-91.000.
Hewett, Gary E.; Atwood, Brian G.; and Wennberg, Timothy J., 4,554,839, Cl. 73-864.160.
Chabal, Joseph, to PPG Industries, Inc. Apparatus for differentially stretching, aligning and cutting sheet material. 4,554,713, Cl. 26-51.000.
Chain Supply Company: *See—*
Krempa, James F., 4,555,014, Cl. 198-852.000.
Champion Spark Plug Company: *See—*
Weinstein, Richard; Davis, James W.; and Campbell, Robert K., 4,555,058, Cl. 239-223.000.
Chan, Keng S.: *See—*
Kalpakci, Bayram; and Chan, Keng S., 4,554,974, Cl. 166-273.000.
Chance, Dudley A.; Reiley, Timothy C.; and Sampogna, Michael, to International Business Machines Corporation. Forming patterns in metallic or ceramic substrates. 4,555,285, Cl. 156-89.000.
Chang, Shih-Chieh. Architectural construction and equipment for concrete. 4,555,088, Cl. 249-192.000.
Chartrain, Armand N.; and Genne, Lee A. Battery post connector. 4,555,159, Cl. 339-239.000.
Chaudhuri, Asit R.: *See—*
Ekdahl, Wendell G.; Chaudhuri, Asit R.; and Miiller, William C., 4,555,492, Cl. 501-38.000.
Chazal, Guy A.; and Bodet, Jean A., to Societe Parisienne d'Impression et de Cartonnage. Process of making folded cardboard container covered by a layer of synthetic material and provided with a peripheral frame. 4,555,381, Cl. 264-516.000.
Cheeseman, Edward W.: *See—*
von Lersner, Wolf A.; Cheeseman, Edward W.; Simpson, Thomas K.; and Weaver, George R., 4,554,955, Cl. 141-1.000.
Chemical Fabrics Corporation: *See—*
Effenberger, John A.; and Keese, Frank M., 4,555,543, Cl. 524-520.000.
Chemische Fabrik Stockhausen GmbH: *See—*
Landscheidt, Alfons, 4,555,581, Cl. 549-463.000.
Chemische Werke Huels, A.G.: *See—*
Droescher, Michael; Mumcu, Salih; Burzin, Klaus; Gerth, Christian; and Heuer, Horst, 4,555,550, Cl. 525-424.000.
Chen, Evan N., to Warner-Lambert Company. One-piece disposable razor. 4,554,735, Cl. 30-47.000.
Chen, Evan N.: *See—*
Byrne, David S.; and Chen, Evan N., 4,555,030, Cl. 211-49.100.
Cheresnowsky, Michael J., to GTE Products Corporation. Process for purifying molybdenum trioxide. 4,555,386, Cl. 423-54.000.
Chesebrough-Pond's, Inc.: *See—*
Engle, Elbert, 4,555,102, Cl. 271-4.000.
Chevron Research Company: *See—*
Roberts, F. Alex, 4,555,779, Cl. 367-19.000.
Chicopee: *See—*
Mays, Alfred T., 4,555,430, Cl. 428-134.000.
Chida, Takeshi: *See—*
Ueda, Akio; Akita, Shuichi; and Chida, Takeshi, 4,555,548, Cl. 525-237.000.
Chikatani, Hajime, to Kabushiki Kaisha Daisei Kikai. Package bag binding apparatus. 4,554,776, Cl. 53-76.000.
Chisso Corporation: *See—*
Oda, Yoshifumi, 4,555,398, Cl. 424-19.000.
Chitil, Manfred, to Klockner CRA Technologie GmbH. Process for making fuel from solid metallic iron-bearing materials. 4,555,267, Cl. 75-46.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Asaoka, Sachio; and Sendo, Takashi, 4,555,394, Cl. 423-626.000.
Cho, Hideyuki. Moving web expanding and guiding apparatus. 4,554,714, Cl. 26-75.000.
Cho, Hyon M. Portable folder type pencil case. 4,555,018, Cl. 206-214.000.
Christman, Donald L., to BASF Wyandotte Corporation. Rigid polyurethane foams employing alkylene oxide adducts of alkanolamines. 4,555,531, Cl. 521-167.000.
Chrysler Corporation: *See—*
Atkins, Walter J., 4,554,902, Cl. 123-557.000.

Chu, Nan S.: *See—*
Rosen, Meyer R.; Fan, You-Ling; and Chu, Nan S., 4,555,346, Cl. 210-734.000.
Ciba Geigy Corporation: *See—*
Boger, Manfred; and Drabek, Jozef, 4,555,405, Cl. 514-488.000.
Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,555,541, Cl. 524-180.000.
Thummel, Rudolph C.; and Fory, Werner, 4,555,262, Cl. 71-92.000.
Zink, Rudolf; and Fletcher, Ian J., 4,555,569, Cl. 544-105.000.
Cincinnati Milacron Inc.: *See—*
Ackley, Harry E., 4,555,047, Cl. 222-192.000.
Wood, David B., III, 4,554,842, Cl. 74-409.000.
Citron, Alan L.; Lindquist, Thomas W. F.; and Popp, William E., to Bancware, Inc. Data-entry system. 4,555,699, Cl. 340-707.000.
Claney, Robert L.; Walton, Herbert H.; Kehoe, Steven D.; and Barron, Kimball R., to Fisher Controls International, Inc. Single disc rotary valve. 4,554,943, Cl. 137-242.000.
Clarion Co., Ltd.: *See—*
Nara, Hirotoshi, 4,555,080, Cl. 248-27.100.
Clark, Benton C., III: *See—*
Thornton, Michael G.; and Clark, Benton C., III, 4,555,331, Cl. 210-99.000.
Clark, Frederick; and Moore, Colin, to British Aerospace Public Limited Company. Detecting machine tool set-up errors. 4,555,698, Cl. 340-680.000.
Clarke, David E.; Davies, James F.; Smart, Colin; and Tune, John B., to Lever Brothers Company. Detergents products. 4,555,354, Cl. 252-90.000.
Clemens Gerhards Holzwarenfabrik KG: *See—*
Gerhards, Ludwig, 4,555,034, Cl. 215-100.00R.
Close, J. Garth. Thin-profile copy holder. 4,554,753, Cl. 40-341.000.
Clouthier, Richard S.; and Rogers, Thomas A., to Schlegel Corporation. Conductive charge/discharge device. 4,555,171, Cl. 355-3.0CH.
Cloyd, Richard A.: *See—*
Smyly, Harold M.; Miller, Charles D.; Cloyd, Richard A.; and Heller, Clarence, 4,554,905, Cl. 124-56.000.
Cobb, Jasper E., III, to Armco Research and Technology. Load recall valve. 4,554,947, Cl. 137-596.180.
Cobb, William O. Tubing anchor assembly. 4,554,971, Cl. 166-88.000.
Coca-Cola Company, The: *See—*
Rodth, Joseph J.; Smith, Ira A., Jr.; and Cornett, Donald F., 4,555,045, Cl. 222-1.000.
Coenen, Rolf: *See—*
Leifeld, Ferdinand; Coenen, Rolf; Oelering, Werner; and Klopp, Ludwig, 4,554,708, Cl. 19-80.00R.
Cohen, Joseph D., to Performance Pool Products, Ltd. Method and apparatus for cleaning a purgible swimming pool strainer. 4,555,334, Cl. 210-169.000.
Cohen, Saul M.; and LeBlanc, John R., to Monsanto Company. Radiation-curable compositions comprising isocyanuric acid-acrolein derivatives. 4,555,319, Cl. 204-159.210.
Cohn, David B.; and Conley, Eugene E., to Northrop Corporation. Gas laser preionization device. 4,555,787, Cl. 372-86.000.
Cole, Tyler L., to Stedman Corporation. Multi-layer unitized fabric construction and method of making same. 4,555,428, Cl. 428-102.000.
Coleco Industries, Inc.: *See—*
Sands, Howard E., 4,555,423, Cl. 428-79.000.
Coleman, Gerald E. Severing apparatus for a loom. 4,554,952, Cl. 139-302.000.
Coleman, William M., III; and Edmondson, Morris S., to Dow Chemical Company, The. Titanium complexes and catalysts prepared therefrom. 4,555,497, Cl. 502-115.000.
Collier, Richard B. Chlorination device. 4,555,323, Cl. 204-258.000.
Collins, C. Neal; and Peter, Joseph E., to Vortec Corporation. Flow-amplifying liquid-atomizing nozzle. 4,555,059, Cl. 239-425.000.
Collins, David A.; Lile, Derek L.; and Zeisse, Carl R., to United States of America, Navy. Furnace transient anneal process. 4,555,273, Cl. 148-1.500.
Collins, Michael F.; and Lordi, Francis D., to General Electric Co. Plasma jet cleaning apparatus and method. 4,555,612, Cl. 219-121.00P.
Comato B.V.: *See—*
Pondes, Alfonsius A. T., 4,555,202, Cl. 407-117.000.
Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J., to Riom Laboratoires C.E.R.M. "RL-CERM" S.A. 3-Alkoxy-2-(N-pyrolidino)-N-pyridyl-N-furyl(or thienyl) methyl-pyropyl amines useful as calcium antagonists. 4,555,514, Cl. 514-343.000.
Combustion Engineering, Inc.: *See—*
Carty, Michael W.; and Kraus, Guenther M., 4,554,721, Cl. 29-416.000.
Francis, Alex W., Jr., 4,555,332, Cl. 210-104.000.
Comm Stitch: *See—*
Armbruster, Thomas L., 4,555,245, Cl. 604-396.000.
Commissariat a l'Energie Atomique: *See—*
Bonnet, Bernard; Bressy, Roger; and Sevaille, Jean-Claude, 4,555,640, Cl. 307-115.000.
David, Bernard; and Pigeon, Michel, 4,555,664, Cl. 324-225.000.
Communication Architecture and Building Research Corporation: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.
Compagnie Electro-Mecanique: *See—*
Hennevin, Bernard, 4,555,754, Cl. 363-132.000.
Compagnie Europeenne d'Accumulateurs, S.A.: *See—*
Mirebeau, Pierre; and Gindre, Jean, 4,555,458, Cl. 429-203.000.
Compagnie Generale des Etablissments Michelin: *See—*
Pompier, Jean-Pierre, 4,554,960, Cl. 152-450.000.
Compagnie Industrielle de Mechanismes: *See—*
Dauvergne, Jean, 4,554,763, Cl. 49-349.000.
Conley, Eugene E.: *See—*
Cohn, David B.; and Conley, Eugene E., 4,555,787, Cl. 372-86.000.
Conley, John L. Device and method for securing overlapping corrugated sheets. 4,554,773, Cl. 52-521.000.
Conlin Bros., Inc.: *See—*
Kirkland, Alvin E., 4,554,681, Cl. 2-2.000.
Connelly, Lawrence J.: *See—*
Sykes, Robert C.; Connelly, Lawrence J.; and Roe, William J., 4,555,329, Cl. 209-5.000.
Connelly, Will A. Television pulsed navigation system. 4,555,707, Cl. 343-387.000.
Connolly, James D. Method of making centrifuge screen baskets. 4,555,055, Cl. 228-155.000.
Conoco Inc.: *See—*
Coon, Julian B.; and Petry, Eston F., 4,554,941, Cl. 137-240.000.
Conrad, Lucas J.; and White, Jackie L., to R. J. Reynolds Tobacco Company. Pressure vessel and method of using same. 4,554,932, Cl. 131-296.000.
Consolidated Foods Corporation: *See—*
Ostrander, Charles, 4,554,749, Cl. 36-102.000.
Conti, Vincent N., to American Safety Closure Corp. Pilfer-proof cap. 4,555,039, Cl. 215-252.000.
Convis, Danny B.; Crehan, Donald T.; and Lovell, Charles J., to International Business Machines Corp. Internal image and bit array for display and printing of graphics. 4,555,700, Cl. 340-721.000.
Coombs, William F.: *See—*
Kunzler, Wilhelm F.; and Coombs, William F., 4,555,372, Cl. 264-2.100.
Coon, Julian B.; and Petry, Eston F., to Conoco Inc. Fluid vibration apparatus. 4,554,941, Cl. 137-240.000.
Cope, Andrew P.: *See—*
Angelucci, Richard J.; Cope, Andrew P.; Hallam, Donald E.; and Ladd, Harry E., 4,555,067, Cl. 242-35.50A.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Phenolic modified urethane elastomer. 4,555,552, Cl. 525-456.000.
Cornett, Donald F.: *See—*
Rodth, Joseph J.; Smith, Ira A., Jr.; and Cornett, Donald F., 4,555,045, Cl. 222-1.000.
Corney, Andrew C.: *See—*
Sealey, Graham P.; and Corney, Andrew C., 4,554,831, Cl. 73-304.00R.
Cosden Technology, Inc.: *See—*
Morris, Jeffrey D.; and Fuller, Robert A., 4,555,384, Cl. 422-109.000.
Cottevieille, Christian: *See—*
Bonicel, Jean-Pierre; Prigent, Madeleine; and Cottevieille, Christian, 4,555,539, Cl. 524-127.000.
Cousens, Donald E.: *See—*
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,555,052, Cl. 228-104.000.
Cousin, Michel: *See—*
Meyer, Nicolas; and Cousin, Michel, 4,555,544, Cl. 524-595.000.
Covault, Mike L.: *See—*
Jackson, Bruce J.; Simmons, Ralph F.; and Covault, Mike L., 4,555,740, Cl. 360-113.000.
Coy, Calvin L.; and O'Neal, Keith T., to Canron Corp. Ballast brooms. 4,554,697, Cl. 15-55.000.
Craig, Richard H.: *See—*
Anderson, Carl; and Craig, Richard H., 4,555,459, Cl. 429-211.000.
Crehan, Donald T.: *See—*
Convis, Danny B.; Crehan, Donald T.; and Lovell, Charles J., 4,555,700, Cl. 340-721.000.
Cressey, John R.; and Meneely, Dennis C., to Rixon, Inc. Synchronous digital QPSK demodulator with carrier error correction. 4,555,667, Cl. 329-50.000.
Crook, Robert L., to Albany International Corp. Multilayered press felt. 4,555,440, Cl. 428-223.000.
Crooke, Arthur W.; and Stebbins, Edwin E., to Analogic Corporation. Multi-mode oscilloscope trigger with compensating trigger delay. 4,555,765, Cl. 364-571.000.
Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. N-Benzylimidazoles as selective inhibitors of the thromboxane synthetase enzyme. 4,555,516, Cl. 514-326.000.
Crossfield Electronic Limited: *See—*
Gamson, Alan R.; and Kellner, Phillip R., 4,555,475, Cl. 430-309.000.
Cselt Centro Studi e Laboratori Telecomunicazioni SpA: *See—*
Alaria, Gian B.; Appiano, Silvano; Destefanis, Paolo; and Poggio, Cesare, 4,555,782, Cl. 370-104.000.
Curiel, Jesus V., to Vitro Tec Fideicomiso. Pressing machine for the manufacture of glass articles. 4,555,258, Cl. 65-319.000.
Cussler, Edward L., to University of Minnesota, Regents of the. Method of size-selective extraction from solutions. 4,555,344, Cl. 210-670.000.
Cusumano, Salvatore V.; and Glassman, Aaron, to P.S.R., Incorporated. Alignment system for a garment accessory-holding jig. 4,554,877, Cl. 112-105.000.

CX Packaging Inc.: *See—*
Hubert, Claudette, 4,554,919, Cl. 128-360.000.

Cyran, Michael J.; and Wang, Kuei-Hsiung, to Intermountain Research & Development Corporation. Dry injection flue gas desulfurization process. 4,555,391, Cl. 423-244.000.

Daghe, Joseph L.; Humes, Dennis W.; and Stanley, Mervin D., to Mueller Co. Operating wrench for tamperproof hydrants. 4,554,944, Cl. 137-296.000.

Dagiel, Richard T.: *See—*
Harrington, Richard F.; Dagiel, Richard T.; and Brown, Villy, 4,555,007, Cl. 192-98.000.

Dahl, Richard E.; Faflak, Daniel P.; and Sendelbach, Lee A., to International Business Machines Corporation. Legibility enhancement for alphanumeric displays. 4,555,701, Cl. 340-736.000.

Dahme, Jerome R., to Decision Data Computer Corp. Method and apparatus for storage and accessing of characters, and electronic printer employing same. 4,555,763, Cl. 364-521.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Maki, Hirohisa; Sano, Takashi; and Yamamoto, Misao, 4,555,536, Cl. 524-66.000.

Dai-Ichi Seiko Co., Ltd.: *See—*
Maruyama, Ryozi, 4,555,685, Cl. 335-303.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, 4,555,427, Cl. 428-195.000.
Nozaka, Yoshiki, 4,555,288, Cl. 156-191.000.

Daicel Chemical Industries, Co., Ltd.: *See—*
Arita, Koichiro; and Suzuki, Hajime, 4,555,566, Cl. 528-323.000.

Daicel Chemical Industries, Ltd.: *See—*
Yano, Takashi; and Asami, Masahiro, 4,555,468, Cl. 430-160.000.
Yuki, Heimei; and Okamoto, Yoshio, 4,555,574, Cl. 546-342.000.

Daido Sanso K. K.: *See—*
Wakui, Tadahiro; and Handa, Tadahiko, 4,555,526, Cl. 518-717.000.

Daigneault, Steven M.: *See—*
Aldrich, Ralph E.; and Daigneault, Steven M., 4,555,162, Cl. 350-162.170.

Daiichi Dentsu, K.K.: *See—*
Doniwa, Tabito, 4,554,980, Cl. 173-12.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Masuda, Tatsunosuke; Hohki, Tetsuo; and Kurusu, Yasuo, 4,555,180, Cl. 356-445.000.

Dalsin, Bernard L., to Bernard Dalsin Manufacturing Company. Chimney damper. 4,554,863, Cl. 98-59.000.

D'Amour, Richard; and D'Amour, Ronald. Bottle cooling device. 4,554,798, Cl. 62-457.000.

D'Amour, Ronald: *See—*
D'Amour, Richard; and D'Amour, Ronald, 4,554,798, Cl. 62-457.000.

Danby, Hal C.; and Ritson, Carl, to Anatros Corporation. Reflective optical fluid pressure sensor. 4,554,837, Cl. 73-705.000.

Danfoss A/S: *See—*
Johansson, Gustav A., 4,554,791, Cl. 62-55.000.

Danielsen, Donald P.; and Lively, Lewell M., Jr., to McDonnell Douglas Corporation. Container restraint release. 4,555,133, Cl. 294-82.240.

Danish, Adel: *See—*
Danish, Sherif; and Danish, Adel, 4,555,693, Cl. 340-365.00S.

Danish, Sherif; and Danish, Adel, to Polytel Corp. Multikey keyboard for inputting data into a computer. 4,555,693, Cl. 340-365.00S.

Dappen, Glen M.: *See—*
LaRossa, Denise D.; Thunberg, Allen L.; Norton, Gary E.; and Dappen, Glen M., 4,555,484, Cl. 435-21.000.

Data Card Corporation: *See—*
Polad, Michael D.; Gerlach, LeRoy E.; and Schmidt, Robert H., 4,555,610, Cl. 219-121.0LA.

Daugherty, Robert O. Patient lifting apparatus. 4,554,691, Cl. 5-81.00R.

Dauvergne, Jean, to Compagnie Industrielle de Mechanismes. Electric glass-raising device for a motor vehicle. 4,554,763, Cl. 49-349.000.

Davenport, John M.: *See—*
Leskovec, Robert A.; Davenport, John M.; and von Herrmann, Pieter J., 4,555,647, Cl. 315-179.000.

David, Bernard; and Pigeon, Michel, to Commissariat a l'Energie Atomique. Process and device for inspecting a surface in simulated manner which differs from the real surface scanning by an eddy current transducer. 4,555,664, Cl. 324-225.000.

Davids, Martin: *See—*
Baldry, Kenneth; and Davids, Martin, 4,555,781, Cl. 370-60.000.

Davies, David L., to Hughes Tool Company. Tubing pressurized firing apparatus for a tubing conveyed perforating gun. 4,554,981, Cl. 175-4.520.

Davies, James F.: *See—*
Clarke, David E.; Davies, James F.; Smart, Colin; and Tune, John B., 4,555,354, Cl. 252-90.000.

Davis, Eugene E., to Johnsen & Jorgensen (Plastics) Limited. Container closure with tunnel member. 4,555,035, Cl. 215-215.000.

Davis, James W.: *See—*
Weinstein, Richard; Davis, James W.; and Campbell, Robert K., 4,555,058, Cl. 239-223.000.

Davlin, Irwin H. Adapter union and improved adapter member therefor. 4,555,129, Cl. 285-3.000.

Dayco Corporation: *See—*
Miranti, Joseph P., Jr., 4,555,239, Cl. 474-93.000.
Orsak, John E.; and Roman, Charles A., 4,555,438, Cl. 428-219.000.

de la Mettrie, Roland; and Canivet, Patrick, to L'Oreal. Hair-dyeing compositions based on nitro direct dyestuffs, and a dyeing process using these compositions. 4,555,247, Cl. 8-405.000.

de Nederlandsche Bank N.V.: *See—*
Klumper, Jan W.; and Visser, Huibert, 4,555,181, Cl. 356-448.000.

Debuisser, Jean-Claude A.: *See—*
Bossennec, Jean-Louis G.; Debuisser, Jean-Claude A.; and Farhi, Philippe F., 4,555,705, Cl. 343-55.00A.

De Caro, Robert E.: *See—*
Bridgewater, Walter F.; De Caro, Robert E.; Larson, Roger; and Wall, Llewellyn E., 4,555,623, Cl. 250-214.00A.

Decision Data Computer Corp.: *See—*
Dahme, Jerome R., 4,555,763, Cl. 364-521.000.

Deckman, Harry W.; Witzke, Horst; Wronski, Christopher; and Yablonovitch, Eli, to Exxon Research & Engineering Company. Method for making optically enhanced thin film photovoltaic device using lithography defined random surfaces. 4,554,727, Cl. 29-572.000.

Decko, Del P.: *See—*
Klammer, Mark S.; and Decko, Del P., 4,555,233, Cl. 440-56.000.

DeFilippis, Stanley J.: *See—*
Everett, Leroy J.; and DeFilippis, Stanley J., 4,555,629, Cl. 250-362.000.

De Garmo, Billy B. Tanning wand. 4,555,196, Cl. 401-220.000.

Deinzer, Gerald J., to Teleconferencing Systems International, Inc. Wireless hands-free conference telephone system. 4,555,592, Cl. 179-2.00E.

DeLeon, Alberto: *See—*
Snider, Scott C.; and DeLeon, Alberto, 4,555,418, Cl. 427-373.000.

Delor, Michel; and Bruyere, Michel, to Framatome & Cie. Method of protection of a pressurized-water nuclear reactor. 4,555,382, Cl. 376-216.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., to Wisconsin Alumni Research Foundation. Method for preparing 1-hydroxyvitamin D compounds. 4,555,364, Cl. 260-397.200.

DenBoer, William: *See—*
Guha, Subhendu; and DenBoer, William, 4,555,586, Cl. 136-259.000.

Denk, Josef; Dietrich, Walter; and Weller, Otto, to Robert Bosch GmbH. Convertible-format packaging machine. 4,554,777, Cl. 53-201.000.

Dennison Manufacturing Co.: *See—*
Geurtsen, Friedrich H. H.; Anemaet, John M.; Smith, Donald R.; and Boyd, Mary G., 4,555,436, Cl. 428-200.000.

Derringer, Gene R., to Monarch Marking Systems, Inc. Fastener assembly and mold for making same. 4,554,711, Cl. 24-150.0FP.

Derrington, Tommy J., to Eagle-Picher Industries, Inc. Method for removing gun barrel evacuator. 4,554,722, Cl. 29-426.500.

DeSantis, Ercele A. Open end ratchet wrench. 4,554,847, Cl. 81-111.000.

Desch, Steven M.: *See—*
Williams, Todd E.; and Desch, Steven M., 4,554,942, Cl. 137-240.000.

Designs for Vision, Inc.: *See—*
Feinbloom, William, 4,555,164, Cl. 350-420.000.

Desjardins, Conrad D.: *See—*
Buckley, Leo P.; Burrill, Kenneth A.; Desjardins, Conrad D.; and Salter, Robert S., 4,555,361, Cl. 252-626.000.

Destefanis, Paolo: *See—*
Alaria, Gian B.; Appiano, Silvano; Destefanis, Paolo; and Poggio, Cesare, 4,555,782, Cl. 370-104.000.

Deutz-Allis Corporation: *See—*
Geiersbach, Allois F.; and Murray, David L., 4,555,725, Cl. 358-93.000.

Devecchi, Daniele; and Torelli, Guido, to SGS-ATES Componenti Elettronici SpA. Output interface for a three-state logic circuit in an integrated circuit using MOS transistors. 4,555,644, Cl. 307-482.000.

Devlin, Barry R. J., to Shell Oil Company. Method for sterilizing male parts of plants. 4,555,260, Cl. 71-88.000.

deVreeze, Joop J.; Tijssen, Zwier; and Doorley, Daniel, to Multigood, b.v. Painting tool. 4,555,195, Cl. 401-218.000.

de Willigen, Hans C.; and Kokken, Johannes E., to U.S. Philips Corporation. Rectilinear guide comprising first and second members which are movable one within the other. 4,555,148, Cl. 308-6.00R.

Dexheimer, Edward M.: *See—*
Camp, Ronald L.; Dexheimer, Edward M.; and Anchor, Michael J., 4,555,549, Cl. 525-409.000.

Dhanji, Shiraz A., to ACR Electronics Inc. Battery cell containing potassium monoperoxysulfate in the cathode mix. 4,555,457, Cl. 429-199.000.

DiBiase, Robert: *See—*
Galani, Zvi; Laton, Richard W.; Waterman, Raymond C., Jr.; and DiBiase, Robert, 4,555,678, Cl. 331-1.00A.

Dick, George: *See—*
Arway, George; Eremity, Frank; Dick, George; and Pullen, Elaine, 4,555,712, Cl. 346-75.000.

Dick Martin Design Ltd.: *See—*
Martin, Richard A.; and Bialobrzeski, Walter, 4,555,378, Cl. 264-292.000.
Martin, Richard A., 4,555,429, Cl. 428-131.000.

Dick, Richard J.: *See—*
Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., 4,555,366, Cl. 260-404.800.

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Steffen, David E., 4,555,624, Cl. 250-223.00R.

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Didier-Werke AG: *See—*
Schiefer, Bernhard; and Bumberger, Herbert, 4,555,050, Cl. 222-597.000.

Diehl, GmbH & Co.: *See—*
Schleicher, Ulrich, 4,554,872, Cl. 102-490.000.

Dier, Stephen A., to TRW Inc. Valve sleeve shaping method. 4,554,817, Cl. 72-370.000.

Dietrich, Walter: *See—*
Denk, Josef; Dietrich, Walter; and Weller, Otto, 4,554,777, Cl. 53-201.000.

Dietzsch, Gunter: *See—*
Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, 4,554,853, Cl. 83-522.000.

Dijkmans, Eise C.: *See—*
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,555,676, Cl. 330-298.000.

Dillon, Benny N. Self-aligning scale assembly and method. 4,554,987, Cl. 177-134.000.

Dirnberger, Linus R.: *See—*
Brick, Michael J.; and Dirnberger, Linus R., 4,555,689, Cl. 340-19.00R.

Distin, Robert G., Jr.; Lang, Thomas J.; and Smith, David E., to Advanced Energy Concept '81 Ltd. Two-piece retainer for epicyclic transmissions. 4,554,846, Cl. 74-805.000.

Ditscheid, Hans L., to U.S. Philips Corporation. Device for injection moulding insulating disks onto the inner conductor of high-frequency coaxial cables. 4,555,227, Cl. 425-122.000.

Ditto, Joseph R. Friction locking hand clamp. 4,555,100, Cl. 269-166.000.

Dixon, Alan G., to Automotive Products plc. Friction clutches. 4,555,005, Cl. 192-70.270.

Dr. Johannes Heidenhain GmbH: *See—*
Affa, Alfred, 4,554,741, Cl. 33-125.00C.

Doering, Howard W., Jr.: *See—*
Sheets, Ronald E.; Barbas, George A.; Doering, Howard W., Jr.; and Bjorkman, John R., 4,555,630, Cl. 250-492.100.

Dohi, Nobuyasu: *See—*
Obata, Keigo; Dohi, Nobuyasu; Okuhama, Yoshiaki; Masaki, Seishi; Okada, Yukiyoshi; and Yoshida, Tadashi, 4,555,314, Cl. 204-44.400.

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Dolejs, Anthony H., to ARDAC, Inc. Door latch mechanism. 4,554,807, Cl. 70-208.000.

Doll, Friedhelm, to Turbo-Werk Messtechnik GmbH. Measuring device for the magneto-inductive measuring of the flow rate of a liquid medium. 4,554,828, Cl. 73-202.000.

Dolorgiet GmbH & Co KG: *See—*
Gruber, Klaus; Lohner, Manfred; Posselt, Klaus; and Wagener, Hans H., 4,555,524, Cl. 514-570.000.

Dombkowski, Otto: *See—*
Voss, Jurgen; Dombkowski, Otto; Kudlich, Walter; and Stodulka, Jan, 4,555,024, Cl. 206-454.000.

Dominick, Thomas S.; and Anderson, Roy G., to Westinghouse Electric Corp. Improved, low-distortion, broadband directional coupler formed by multiple series transformers. 4,555,681, Cl. 333-112.000.

Doniwa, Tabito, to Daiichi Dentsu, K.K. Nut runner using induction motor. 4,554,980, Cl. 173-12.000.

Donkin, Charles W., to Burroughs Corporation. Winchester disc drive. 4,555,189, Cl. 384-493.000.

Doorley, Daniel: *See—*
deVreeze, Joop J.; Tijssen, Zwier; and Doorley, Daniel, 4,555,195, Cl. 401-218.000.

Dorman, William J., to Westinghouse Electric Corp. Interface system for hybrid control loops. 4,555,757, Cl. 364-165.000.

Dornier GmbH: *See—*
Roth, Siegfried; and Stenzenberger, Horst, 4,555,426, Cl. 428-113.000.

Doutre, Don A.; and Guthrie, Roderick I. L., to Limca Research Inc. Method and apparatus for the detection and measurement of particulates in molten metal. 4,555,662, Cl. 324-71.400.

Dow Chemical Company, The: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,555,497, Cl. 502-115.000.
Hefner, Robert E., Jr., 4,555,553, Cl. 525-523.000.
Hefner, Robert E., Jr., 4,555,554, Cl. 525-531.000.
Hefner, Robert E., Jr.; and White, Mary N., 4,555,563, Cl. 528-96.000.

Dow Corning Corporation: *See—*
Lee, Chi-Long; Maxson, Myron T.; and Rabe, James A., 4,555,529, Cl. 521-124.000.

Dozier, William. Table game puck. 4,555,114, Cl. 273-128.00R.

Drabek, Jozef: *See—*
Boger, Manfred; and Drabek, Jozef, 4,555,405, Cl. 514-488.000.

Draft Systems, Inc.: *See—*
Smith, Terry W.; and Fallon, Timothy R., 4,554,864, Cl. 99-340.000.

Dragerwerk Aktiengesellschaft: *See—*
Eckstein, Wolfgang, 4,555,252, Cl. 55-132.000.

Drake, Gerald E., to Minnesota Mining and Manufacturing Company. Bioelectrode connector. 4,555,155, Cl. 339-61.00R.

Dranger, Jan. Furniture construction. 4,555,136, Cl. 297-108.000.

Dresser Industries, Inc.: *See—*
Foley, Robert W.; Storck, Robert C.; Mickus, Donald J., deceased; and Pastors, Debbie, executrix, 4,554,979, Cl. 172-813.000.
Scruggs, David M., 4,555,186, Cl. 384-93.000.

Driessen, Leonardus M. H. E., to U.S. Philips Corporation. System for transmitting television picture information using an error-protection code. 4,555,729, Cl. 358-133.000.

Droescher, Michael; Mumcu, Salih; Burzin, Klaus; Gerth, Christian; and Heuer, Horst, to Chemische Werke Huels, A.G. Molding compositions based on high molecular weight polyether ester amides. 4,555,550, Cl. 525-424.000.

Dryden, Hugh L., Jr; and Hill, John B., to G. D. Searle & Co. Method and intermediates for producing α-L-aspartyl-L-phenylalanine. 4,555,362, Cl. 260-112.50R.

DuBois, Chester G., to Outboard Marine Corporation. Fluid pumping device for use with a fluid pump. 4,555,221, Cl. 417-349.000.

Duchane, David V.; and Barthell, Barry L., to United States of America, Energy. Method of forming a continuous polymeric skin on a cellular foam material. 4,555,313, Cl. 204-3.000.

Dueber, Thomas E.; and Nebe, William J., to Du Pont de Nemours, E. I., and Company. Alkali developable photopolymer crystalline composition. 4,555,473, Cl. 430-281.000.

Dufour, Mark D.: *See—*
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,555,052, Cl. 228-104.000.

Dunaevsky, Leonid M.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.

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Angelucci, Richard J.; Cope, Andrew P.; Hallam, Donald E.; and Ladd, Harry E., 4,555,067, Cl. 242-35.50A.
Bednarek, Milan B.; and Houze, Eric C., 4,555,535, Cl. 524-40.000.
Beresniewicz, Aleksander, 4,555,556, Cl. 526-212.000.
Cescon, Lawrence A.; and Millet, Nolan J., Jr., 4,555,278, Cl. 149-21.000.
Dueber, Thomas E.; and Nebe, William J., 4,555,473, Cl. 430-281.000.
Loomis, Gary L., 4,555,528, Cl. 521-89.000.
Nunn, Gary F., 4,554,716, Cl. 28-263.000.
Petersen, Wallace C., 4,555,261, Cl. 71-90.000.

DuPont, John P., to RTE Corporation. Heat transfer device for electrical connector in insulating housing of high voltage splice or terminator. 4,555,588, Cl. 174-73.00R.

Durand, Charles A.: *See—*
Platter, Sanford; Durand, Charles A.; and Gadsby, Larry R., 4,555,077, Cl. 242-198.000.

Durham, Robert L., to Agritec, Inc. Biogenetic silica insulation. 4,555,448, Cl. 428-402.000.

Duryee, Peter S.: *See—*
Eng, Benjamin, Jr.; Duryee, Peter S.; and Anholm, John M., Jr., 4,555,692, Cl. 340-347.0AD.

Dyke, David E.: *See—*
Adams, Kenneth J.; and Dyke, David E., 4,555,294, Cl. 156-309.600.

Dynacast International Limited: *See—*
Wright, David E., 4,554,962, Cl. 164-132.000.

E. R. Squibb & Sons, Inc.: *See—*
Hall, Steven E.; and Haslanger, Martin F., 4,555,523, Cl. 514-469.000.
Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,555,506, Cl. 514-91.000.
Misra, Raj N.; and Karanewsky, Donald S., 4,555,520, Cl. 514-346.000.
Rovnyak, George C., 4,555,579, Cl. 548-409.000.

Eagle-Picher Industries, Inc.: *See—*
Derrington, Tommy J., 4,554,722, Cl. 29-426.500.

Eagon, Vicki L.; and Showers, Towanda S. Peel package sterile sanitary pads. 4,555,022, Cl. 206-440.000.

Eastman Kodak Company: *See—*
Frank, David S.; and Belly, Robert T., 4,555,396, Cl. 424-3.000.
LaRossa, Denise D.; Thunberg, Allen L.; Norton, Gary E.; and Dappen, Glen M., 4,555,484, Cl. 435-21.000.
LiMuti, Charles M.; Babb, Bruce E.; and Mauck, John C., 4,555,483, Cl. 435-19.000.
Reczek, James A.; and Palumbo, Janice M., 4,555,478, Cl. 430-367.000.
Washburn, William N., 4,555,477, Cl. 430-359.000.

Eastman Machine Company: *See—*
Barrett, Robert C.; Buscher, John H.; and Putnam, William M., 4,554,738, Cl. 30-275.000.

Eaton Corporation: *See—*
Sorger, Gunter U.; and Raicu, Dan, 4,555,683, Cl. 333-202.000.

Ebisawa, Mikio: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,555,369, Cl. 260-544.00F.

Echeverria, Luis. Self-locking-and-measuring ruler for computer-printout forms. 4,554,746, Cl. 33-447.000.

Eck, Leonard F., to Hein-Werner Corporation. Wheel lift device. 4,555,089, Cl. 254-10.00B.

Eckstein, Wolfgang, to Dragerwerk Aktiengesellschaft. Electrostatic filter construction. 4,555,252, Cl. 55-132.000.

Eden, Brent E., to Mud Hog Corporation. Auxiliary hydraulic drive system for road graders and the like. 4,554,991, Cl. 180-243.000.

Edgar, Edward J.: *See—*
Edgar, James W.; and Edgar, Edward J., 4,554,850, Cl. 83-178.000.
Edgar, James W.; and Edgar, Edward J. Machine for cutting V-belts from a V-belt band. 4,554,850, Cl. 83-178.000.
Edling, Robert J.; and Morgan, Karl L., to Research Corporation. Method and means for harvesting crayfish. 4,554,759, Cl. 43-100.000.
Edmondson, Morris S.: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,555,497, Cl. 502-115.000.
Effenberger, John A.; and Keese, Frank M., to Chemical Fabrics Corporation. Fluoropolymer coating and casting compositions and films derived therefrom. 4,555,543, Cl. 524-520.000.
Egbert, Leigh B.: *See—*
Johnson, Richard C.; and Egbert, Leigh B., 4,554,967, Cl. 165-134.100.
Eggendorfer, Gunnar: *See—*
Skolaude, Werner; and Eggendorfer, Gunnar, 4,555,256, Cl. 62-18.000.
Eguchi, Yasukata, to Janome Sewing Machine Industry Co. Ltd. Electronic sewing machine. 4,554,879, Cl. 112-445.000.
Eiler, Peter: *See—*
Blase, Helmut; and Eiler, Peter, 4,555,031, Cl. 212-189.000.
Eimer, Klaus: *See—*
Bochinski, Rolf; Eimer, Klaus; Lange, Alois; and Nghiem, Xuan L., 4,554,965, Cl. 165-95.000.
Eisenhauer, Roy J.; Loeser, Cary A.; and Goodner, Charles G., Jr., to United States of America, Interior. Plugging factor monitor unit. 4,554,822, Cl. 73-61.00R.
Ekdahl, Wendell G.; Chaudhuri, Asit R.; and Miiller, William C., to Manville Service Corporation. High temperature refractory fiber. 4,555,492, Cl. 501-38.000.
Elastogran Maschinenbau GmbH: *See—*
Wallner, Josef; and Kelterbaum, Manfred, 4,555,087, Cl. 249-78.000.
Elcorsy Inc.: *See—*
Castegnier, Adrien, 4,555,320, Cl. 204-180.900.
Eldredge, Peter: *See—*
Broadbent, William H., Jr.; Buchholz, Steve; Eldredge, Peter; and Wihl, Mark J., 4,555,798, Cl. 382-8.000.
Electric Power Research, Inc.: *See—*
Appleby, A. John, 4,555,453, Cl. 429-41.000.
Electronic Processors, Inc.: *See—*
Platter, Sanford; Durand, Charles A.; and Gadsby, Larry R., 4,555,077, Cl. 242-198.000.
Electrovac, Fabrikation elektrotechnischer Spezialartikel Gesellschaft mbH: *See—*
Bayer, Helmut, 4,555,688, Cl. 337-394.000.
Elhaus, Friedrich W. Apparatus for severing extruded light sectional members. 4,554,851, Cl. 83-213.000.
Elliott, George: *See—*
Brightman, Barrie; Elliott, George; Lenk, Pedro A.; Shah, Jayantkumar R.; and Stewart, William H., 4,555,595, Cl. 179-18.0ES.
Elscint Ltd.: *See—*
Fenster, Paul; Netter, Zvi; and Shimoni, Yair, 4,555,728, Cl. 358-111.000.
EMA Company: *See—*
Guglielmo, Richard J., Sr., 4,555,356, Cl. 252-400.00R.
Emerson Electric Co.: *See—*
Spradling, Gene V.; and Stanek, Terrence L., 4,555,654, Cl. 318-751.000.
Endo, Mitsuo. Trigger assembly for rubber band gun. 4,554,904, Cl. 124-18.000.
Energy Conversion Devices, Inc.: *See—*
Guha, Subhendu; and DenBoer, William, 4,555,586, Cl. 136-259.000.
Eng, Benjamin, Jr.; Duryee, Peter S.; and Anholm, John M., Jr., to John Fluke Mfg. Co., Inc. Error correcting apparatus for systems such as analog to digital converters. 4,555,692, Cl. 340-347.0AD.
Engel, Gerhard; and Wessel, Wolf, to Robert Bosch GmbH. Speed governing system for an internal combustion engine with self-ignition. 4,554,899, Cl. 123-357.000.
Engel, John F.; and Puglis, Joseph M., to FMC Corporation. Nematicidal 3-substituted-4-phenyl-1,2,5-thiadiazoles. 4,555,521, Cl. 514-362.000.
Engel, Michael R., to Minnesota Mining and Manufacturing Company. Conductive adhesive and biomedical electrode. 4,554,924, Cl. 128-640.000.
Engle, Elbert, to Chesebrough-Pond's, Inc. Apparatus for separating stacks of cloth. 4,555,102, Cl. 271-4.000.
Enomoto, Masao, to Ichikoh Industries Limited. Electric remote control mirror with half-ball portion. 4,555,166, Cl. 350-634.000.
Enriquez, Emanuel E., to Westinghouse Electric Corp. Elevator system. 4,555,724, Cl. 358-93.000.
Envirex Inc.: *See—*
Boyle, William H., 4,555,340, Cl. 210-248.000.
Erdmann, Fritz; and Simon, Ulrich, to Hoechst Aktiengesellschaft. Process of preparing light-sensitive naphthoquinonediazidesulfonic acid ester. 4,555,469, Cl. 430-168.000.
Eremity, Frank: *See—*
Arway, George; Eremity, Frank; Dick, George; and Pullen, Elaine, 4,555,712, Cl. 346-75.000.
Arway, George; Eremity, Frank; and Huang, Tung M., 4,555,719, Cl. 346-140.00R.
Erickson, Mervin L. Selectively free wheeling or drive hub for vehicles. 4,555,197, Cl. 403-1.000.
Ermanski, Albert G., to Wright Line, Inc. Tiltable and swivable mounting assembly for a video display terminal. 4,555,081, Cl. 248-183.000.
Esaki, Hiroshi, to Kasai, Kunio. Music box with indicator hoist mechanism. 4,554,856, Cl. 84-95.00C.
Escaravage, Gerard, to Aciers et Outillage Peugeot. Exterior control for a vehicle door provided with an electric latch. 4,554,808, Cl. 70-279.000.
Esmay, Edward N.: *See—*
Bridson, William D.; and Esmay, Edward N., 4,555,620, Cl. 250-205.000.
Essex Group, Inc.: *See—*
Pali, Christopher, 4,555,070, Cl. 242-58.100.
Essilor International Cie Generale d'Optique: *See—*
Tagnon, Luc, 4,554,917, Cl. 128-303.100.
Etablissement Public de Diffusion dit Telediffusion de France: *See—*
Mathieu, Michel G.; and Le Rodallec, Andre J. L., 4,555,736, Cl. 358-342.000.
Ethicon, Inc.: *See—*
Aday, Jorge L.; and Cerwin, Robert J., 4,555,016, Cl. 206-63.300.
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, to Beecham Group p.l.c. Anti-hypertensive benzo[b]pyran-3-ols. 4,555,509, Cl. 514-278.000.
Everett, Leroy J.; and DeFilippis, Stanley J., to Packard Instrument Company, Inc. Method and apparatus for determination of sample homogeneity in scintillation counting. 4,555,629, Cl. 250-362.000.
Evertz, Egon; and Pirdzun, Jorg, to Evertz, Egon. Process for the repair of slide plates. 4,555,094, Cl. 266-45.000.
Ewald Dorken AG: *See—*
Jablonka, Dieter; Urban, Klaus; Raidt, Heinz-Peter; and Schepers, Eberhard, 4,555,433, Cl. 428-166.000.
Ex-Cell-O Corporation: *See—*
Plummer, Jeffrey J., 4,555,093, Cl. 254-362.000.
Exxon Research & Engineering Company: *See—*
Deckman, Harry W.; Witzke, Horst; Wronski, Christopher; and Yablonovitch, Eli, 4,554,727, Cl. 29-572.000.
F. L. Smidth & Co. A/S: *See—*
Bhatia, Vinay K., 4,555,390, Cl. 423-242.000.
Hundebol, Soren, 4,555,388, Cl. 423-167.000.
F. Oberdorfer: *See—*
Krenkel, Bernhard; and Joos, Heinz, 4,554,954, Cl. 139-439.000.
Faber, Norman, Jr.: *See—*
Miller, William J.; and Faber, Norman, Jr., 4,555,238, Cl. 464-52.000.
Faflak, Daniel P.: *See—*
Dahl, Richard E.; Faflak, Daniel P.; and Sendelbach, Lee A., 4,555,701, Cl. 340-736.000.
Fairchild Camera & Instrument Corporation: *See—*
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,555,052, Cl. 228-104.000.
Fallon, Timothy R.: *See—*
Smith, Terry W.; and Fallon, Timothy R., 4,554,864, Cl. 99-340.000.
Fan, You-Ling: *See—*
Rosen, Meyer R.; Fan, You-Ling; and Chu, Nan S., 4,555,346, Cl. 210-734.000.
Fanuc Ltd.: *See—*
Inaba, Hajimu; and Sakakibara, Shinsuke, 4,555,758, Cl. 364-174.000.
Fanuc Ltd: *See—*
Kishi, Hajimu; Seki, Masaki; and Tanaka, Kunio, 4,555,590, Cl. 178-18.000.
Farhi, Philippe F.: *See—*
Bossennec, Jean-Louis G.; Debuisser, Jean-Claude A.; and Farhi, Philippe F., 4,555,705, Cl. 343-55.00A.
Farquharson, Graeme J.: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; Farquharson, Graeme J.; and Houston, Timothy L., 4,555,263, Cl. 71-98.000.
Farrow, Desmond J., Sr.: *See—*
Newman, William E., Sr.; and Farrow, Desmond J., Sr., 4,554,906, Cl. 122-26.000.
Fedak, John F.; Findley, Gerald I.; and Torr, Terry A., to International Business Machines Corporation. Compaction and decompaction of non-coded information bearing signals. 4,555,802, Cl. 382-56.000.
Federal-Mogul Corporation: *See—*
Butler, John D., 4,555,376, Cl. 264-266.000.
Fehr, Friedhard: *See—*
Westermeir, Gisela; and Fehr, Friedhard, 4,555,745, Cl. 361-320.000.
Feinberg, Jeffrey N.: *See—*
White, Stephen R.; and Feinberg, Jeffrey N., 4,555,128, Cl. 281-45.000.
Feinbloom, William, to Designs for Vision, Inc. Anamorphic lens system increasing the field of view for the visually handicapped. 4,555,164, Cl. 350-420.000.
Feldmann, Hugo; Gipperich, Theodor; Kirchhoff, Hans; and Stodt, Rolf, to SMS Schloemann-Siemag Aktiengesellschaft. Live-roller feed bed for conveying individual lengths of rolled stock in close succession to cooling beds. 4,554,813, Cl. 72-251.000.
Fenster, Paul; Netter, Zvi; and Shimoni, Yair, to Elscint Ltd. Digital fluorography. 4,555,728, Cl. 358-111.000.
Ferguson, Robert C., to Spar Aerospace Limited. Floating nut. 4,555,207, Cl. 411-366.000.
Fiberglas Canada Inc.: *See—*
Blackmore, Phillip W., 4,555,017, Cl. 206-83.500.

Fields, Ellis K., to Standard Oil Company. Carbamates of beta-hydroxyethylsulfoxides. 4,555,350, Cl. 252-8.55D.
Fields, F. Herbert. GO Game employing hexagonally shaped spaces. 4,555,116, Cl. 273-236.000.
Fights, Michael L.; and Jones, William E., to Ball Corporation. Spray apparatus with self cleaning nozzle. 4,555,416, Cl. 427-248.100.
Findeisen, Kurt: *See—*
Klauke, Erich; and Findeisen, Kurt, 4,555,370, Cl. 260-545.00R.
Findley, Gerald I.: *See—*
Fedak, John F.; Findley, Gerald I.; and Torr, Terry A., 4,555,802, Cl. 382-56.000.
Finkenzeller, Johann; and Hubert, Gunter, to Siemens Aktiengesellschaft. X-Ray film holder. 4,555,794, Cl. 378-187.000.
Fiol, James. Apparatus for the display or the storage of bicycles or like vehicles. 4,555,029, Cl. 211-22.000.
Fischer, Charles, to Strapex AG. Machine for strapping packages and the like. 4,554,779, Cl. 53-589.000.
Fischer, Herbert; Gorzinski, Manfred; Gress, Wolfgang; Meffert, Alfred; and Wegemund, Bernd, to Henkel KGaA. Alkyd resins containing hydroxyl groups. 4,555,564, Cl. 528-295.300.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Ink metering device for a printing machine having an ink trough-ink roller combination. 4,554,870, Cl. 101-365.000.
Fisher, Chester D., to Koppers Company, Inc. Material collector and discharger apparatus. 4,555,254, Cl. 55-345.000.
Fisher Controls International, Inc.: *See—*
Claney, Robert L.; Walton, Herbert H.; Kehoe, Steven D.; and Barron, Kimball R., 4,554,943, Cl. 137-242.000.
Fishkind, Gregory A.: *See—*
Maroney, Ralf P.; and Fishkind, Gregory A., 4,555,744, Cl. 361-212.000.
Five X Corporation: *See—*
Buschor, Josef J., 4,555,216, Cl. 414-728.000.
Flakt Aktiebolag: *See—*
Ziemer, Wolf; and Holle, Wilhelm, 4,554,766, Cl. 52-28.000.
Flanagan, James L.; and Kubli, Robert A., to AT&T Bell Laboratories. Teleconferencing acoustic transducer. 4,555,598, Cl. 179-121.00D.
Fleisch, Theo H.: *See—*
Sirovich, Bruce E.; Sandstrom, Robert L.; and Fleisch, Theo H., 4,555,395, Cl. 423-644.000.
Fletcher, Aaron N.; McManis, George E., III; and Bliss, Dan E., to United States of America, Navy. Ambient temperature thermal battery. 4,555,455, Cl. 429-112.000.
Fletcher, Ian J.: *See—*
Zink, Rudolf; and Fletcher, Ian J., 4,555,569, Cl. 544-105.000.
FMC Corporation: *See—*
Engel, John F.; and Puglis, Joseph M., 4,555,521, Cl. 514-362.000.
Kassai, Denes P., 4,554,992, Cl. 180-307.000.
Lee, Fui-Tseng H.; and Green, Joseph, 4,555,562, Cl. 528-72.000.
Mick, Jon L.; and Wolf, Marvin L., 4,555,032, Cl. 212-189.000.
Foley, Robert W.; Storck, Robert C.; Mickus, Donald J., deceased; and by Pastors, Debbie, executrix, to Dresser Industries, Inc. Conduit arrangement for tilt cylinder of a bulldozer. 4,554,979, Cl. 172-813.000.
Food Equipment Manufacturing Corporation: *See—*
Sauer, Robert L.; Morrissette, Charles G.; Garbaczik, Stanley J., Sr.; and Garbaczik, Stanley J., Jr., 4,554,852, Cl. 83-407.000.
Ford Motor Company: *See—*
Freitag, Otto W., 4,554,742, Cl. 33-143.00L.
King, Francis G.; and Gable, Stewart V., 4,554,824, Cl. 73-117.000.
Pryor, Marc I., 4,555,096, Cl. 267-8.00R.
Forenade Fabriksverken: *See—*
Johansson, Borje; Pramskog, Torbjorn; and Sandberg, Jan-Erik, 4,554,860, Cl. 89-1.700.
Forte Technology, Inc.: *See—*
Benson, Warren E.; and Breen, Stanley, 4,555,661, Cl. 324-61.00R.
Fory, Werner: *See—*
Thummel, Rudolph C.; and Fory, Werner, 4,555,262, Cl. 71-92.000.
Foster, Edward P.: *See—*
Bronfenbrenner, James C.; Foster, Edward P.; and Tewari, Krishna, 4,555,248, Cl. 44-78.000.
Foster, James O., to JFEC Corporation & Associates. Heating and cooling system monitoring apparatus. 4,555,057, Cl. 236-94.000.
Foster Wheeler Energy Corporation: *See—*
Johnson, Richard C.; and Egbert, Leigh B., 4,554,967, Cl. 165-134.100.
Fotouhi, Bahram: *See—*
Gregorian, Roubik; and Fotouhi, Bahram, 4,555,668, Cl. 330-9.000.
Frait, John S.; Lowman, Clark E.; Morris, George W., III; and Tribe, Leonard T., to Kelsey-Hayes Co. Position sensor. 4,555,120, Cl. 280-6.100.
Framatome & Cie: *See—*
Delor, Michel; and Bruyere, Michel, 4,555,382, Cl. 376-216.000.
Franci, Vittorio: *See—*
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, 4,555,271, Cl. 127-46.200.
Francis, Alex W., Jr., to Combustion Engineering, Inc. Treatment of oil well production. 4,555,332, Cl. 210-104.000.
Frank, David S.; and Belly, Robert T., to Eastman Kodak Company. Use of pyrylium and thiapyrylium compounds as biological stains. 4,555,396, Cl. 424-3.000.
Franke, Milton E.: *See—*
Harvell, John K.; and Franke, Milton E., 4,555,079, Cl. 244-207.000.
Franklin, Kenneth W., to Bishopbarn Limited. Conveyor belt having vacuum system for retaining articles thereon. 4,555,013, Cl. 198-689.100.
Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Jablonka, Dieter; Urban, Klaus; Raidt, Heinz-Peter; and Schepers, Eberhard, 4,555,433, Cl. 428-166.000.
Freeland, Verne L. Built-in child's safety seat for vehicles. 4,555,135, Cl. 297-105.000.
Freitag, Otto W., to Ford Motor Company. Dimensional checking tool. 4,554,742, Cl. 33-143.00L.
French, Robert C. Method and apparatus for thermo-bonding seams in thermoplastic material. 4,555,293, Cl. 156-308.400.
Frentzel, Richard L., to Celotex Corporation, The. Polyoxyalkylene/unsaturated diester reaction product for cellular foam stabilization. 4,555,442, Cl. 428-318.400.
Frey, Gary T.; Strong, Douglas H.; and Urbanski, Janet B. Corrosion resistant lubricant coating composite. 4,555,445, Cl. 428-340.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Blase, Helmut; and Eiler, Peter, 4,555,031, Cl. 212-189.000.
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., to AT&T Bell Laboratories. Telephone interexchange signaling protocol. 4,555,594, Cl. 179-18.00B.
Frisbie, Carl W.: *See—*
Mawby, Harold S.; and Frisbie, Carl W., 4,555,049, Cl. 222-517.000.
Frito-Lay, Inc.: *See—*
Kreager, William D., 4,555,289, Cl. 156-203.000.
Frohman, Richard J.: *See—*
Tsutsumi, Masataka; and Frohman, Richard J., 4,555,330, Cl. 209-254.000.
Froom, Thomas W. Carton for packaging ice cream or like frozen, initially liquid or semi-solid material. 4,555,027, Cl. 206-626.000.
Fuchizawa, Tetsuro: *See—*
Shiba, Keisuke; Fuchizawa, Tetsuro; Nakao, Sho; and Ohishi, Chikashi, 4,555,461, Cl. 430-49.000.
Fuesers, Wilhelm G.: *See—*
Stender, Erich; and Fuesers, Wilhelm G., 4,554,816, Cl. 72-368.000.
Fuji Electric Company, Ltd.: *See—*
Fujisawa, Hakubun; Nishiura, Masaharu; Haruki, Hiromu; and Uchida, Yoshiyuki, 4,555,636, Cl. 250-578.000.
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,555,801, Cl. 382-44.000.
Fuji Electric Corporate Research & Development, Ltd.: *See—*
Fujisawa, Hakubun; Nishiura, Masaharu; Haruki, Hiromu; and Uchida, Yoshiyuki, 4,555,636, Cl. 250-578.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Ohgami, Masaaki; Hara, Kazuo; and Abe, Kunihiro, 4,555,762, Cl. 364-431.090.
Fuji Photo Film Co., Ltd.: *See—*
Inoue, Noriyuki; Okazaki, Masaki; Yamamuro, Kiyohiko; and Takei, Haruo, 4,555,482, Cl. 430-574.000.
Kawamura, Kouichi; Aotani, Yoshimasa; and Umehara, Akira, 4,555,474, Cl. 430-281.000.
Kido, Keishiro; Sunagawa, Hiroshi; Kawajiri, Kazuhiro; Iijima, Toshio; and Nozaki, Nobuharu, 4,555,464, Cl. 430-67.000.
Kitajima, Masao; Seshimoto, Osamu; and Mizutani, Shigemitsu, 4,555,274, Cl. 148-6.14R.
Miyatsuka, Hajime, 4,555,431, Cl. 428-141.000.
Sakaguchi, Yukihiko; Sato, Kozo; Naito, Hideki; and Hara, Hiroshi, 4,555,470, Cl. 430-203.000.
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,555,476, Cl. 430-351.000.
Sakai, Nobuo; Okazaki, Masaki; and Inagaki, Yoshio, 4,555,479, Cl. 430-372.000.
Shiba, Keisuke; Fuchizawa, Tetsuro; Nakao, Sho; and Ohishi, Chikashi, 4,555,461, Cl. 430-49.000.
Tamura, Kaoru; and Yamada, Sadami, 4,555,213, Cl. 414-412.000.
Uchiyama, Kaoru, 4,555,076, Cl. 242-195.000.
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; and Toya, Ichizo, 4,555,481, Cl. 430-550.000.
Yokoyama, Shigeki; Nakamura, Koki; Kouda, Jyounichi; and Sekiguchi, Nobuhisa, 4,555,480, Cl. 430-527.000.
Fujihara, Naoto: *See—*
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,555,801, Cl. 382-44.000.
Fujii, Kiyonobu: *See—*
Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, 4,555,439, Cl. 428-221.000.
Fujii, Morizumi; Kakimoto, Hirofumi; and Fujino, Shinji, to Ina Seito Co., Ltd. Adhesive-backed tile panels and method for installation thereof. 4,554,769, Cl. 52-173.00R.
Fujii, Takayoshi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.
Fujii, Tatsuo; and Takeda, Shigetomo, to TDK Corporation. Casing for magnetic tape cassette. 4,555,021, Cl. 206-387.000.
Fujikura Ltd: *See—*
Nakamura, Koichi; Ishibashi, Masashi; Kameda, Hideki; and Makiyo, Minoru, 4,555,422, Cl. 428-36.000.
Fujimori, Motoyuki, to Shiojiri Kogyo Kabushiki Kaisha. Module for combination timepiece. 4,555,184, Cl. 368-88.000.
Fujimoto, Isao, to Sanyo Electric Co., Ltd. Tuner apparatus. 4,555,808, Cl. 455-180.000.

Fujino, Shinji: *See—*
Fujii, Morizumi; Kakimoto, Hirofumi; and Fujino, Shinji, 4,554,769, Cl. 52-173.00R.

Fujisawa, Hakubun; Nishiura, Masaharu; Haruki, Hiromu; and Uchida, Yoshiyuki, to Fuji Electric Company, Ltd.; and Fuji Electric Corporate Research & Development, Ltd. Pattern detector. 4,555,636, Cl. 250-578.000.

Fujita, Shinsaku: *See—*
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,555,476, Cl. 430-351.000.

Fujitsu Limited: *See—*
Gounji, Takashi; Kawatsu, Teruo; Kasai, Yoshihiko; and Takeuchi, Chikao, 4,555,682, Cl. 333-189.000.
Hayashi, Katsumi, 4,555,771, Cl. 364-900.000.
Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,555,466, Cl. 430-106.600.

Fukui, Tsutomu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Video time base and drop out corrector. 4,555,734, Cl. 358-314.000.

Fukuju, Osamu; Inagaki, Yasuhiro; and Minoshima, Katsuji, to NCR Corporation. Overlapping document feed apparatus. 4,555,104, Cl. 271-228.000.

Fukumoto, Yasuhisa; and Moriyama, Noboru, to Kao Soap Co., Ltd. Maleic acid/(meth)acrylic acid copolymer. 4,555,557, Cl. 526-240.000.

Fukushi, Toshio: *See—*
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; Takeya, Yasuo; and Nagai, Satoshi, 4,554,805, Cl. 68-12.00R.

Fukushima, Yoneharu; and Wakai, Kiyoshi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Warning signal generating device for vehicle. 4,555,690, Cl. 340-52.00F.

Fuller, Robert A.: *See—*
Morris, Jeffrey D.; and Fuller, Robert A., 4,555,384, Cl. 422-109.000.

Funk, Richard L., to Hercules Incorporated. Low detonation velocity explosive composition. 4,555,279, Cl. 149-92.000.

Fussell, Theodore J., to Thermometrics Inc. Pressure and temperature sensor. 4,554,927, Cl. 128-670.000.

G. D. Searle & Co.: *See—*
Dryden, Hugh L., Jr; and Hill, John B., 4,555,362, Cl. 260-112.50R.

G.D Societa' per Azioni: *See—*
Mattei, Riccardo; and Osti, Roberto, 4,555,281, Cl. 156-64.000.

Gabillet, Jean-Francois, to Jeumont-Schneider Corporation. Method and apparatus for determination of the state of an all-or-none modulated alternating signal in a perturbed environment. 4,555,791, Cl. 375-58.000.

Gable, Stewart V.: *See—*
King, Francis G.; and Gable, Stewart V., 4,554,824, Cl. 73-117.000.

Gadsby, Larry R.: *See—*
Platter, Sanford; Durand, Charles A.; and Gadsby, Larry R., 4,555,077, Cl. 242-198.000.

Gaida, Wolfram: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,555,511, Cl. 514-301.000.

Galani, Zvi; Laton, Richard W.; Waterman, Raymond C., Jr.; and DiBiase, Robert, to Raytheon Company. Microwave oscillator. 4,555,678, Cl. 331-1.00A.

Galletto, Joseph L. Internal pliers. 4,554,848, Cl. 81-447.000.

Gambro Lundia AB: *See—*
Jonsson, Ernst U.; Lindqvist, Sten-Borje; and Wimmerstedt, Roland V., 4,555,251, Cl. 55-48.000.

Gamson, Alan R.; and Kellner, Phillip R., to Crossfield Electronic Limited. Method of making a planographic printing member with aluminium silicate. 4,555,475, Cl. 430-309.000.

Garbaczik, Stanley J., Jr.: *See—*
Sauer, Robert L.; Morrissette, Charles G.; Garbaczik, Stanley J., Sr.; and Garbaczik, Stanley J., Jr., 4,554,852, Cl. 83-407.000.

Garbaczik, Stanley J., Sr.: *See—*
Sauer, Robert L.; Morrissette, Charles G.; Garbaczik, Stanley J., Sr.; and Garbaczik, Stanley J., Jr., 4,554,852, Cl. 83-407.000.

Garcia, Enrique, to Perkin-Elmer Corporation, The. Image acquisition system. 4,555,733, Cl. 358-293.000.

Gardner, William B.; Patel, Parbhubhai D.; Philen, Dan L.; and Santana, Manuel R., to AT&T Bell Laboratories. Measuring compression of cabled optical fibers. 4,555,175, Cl. 356-32.000.

Gargas, Eugene F., to Wooster Brush Company, The. Plug and filter assembly for paint sprayer. 4,555,337, Cl. 210-238.000.

Garman, James A., to Caterpillar Tractor Co. Apparatus and method for turning a track bushing. 4,554,720, Cl. 29-402.010.

Garner, Alfred V.; and Nalder, William W., to Power-Aid Industries (1980) Ltd. Lubricant additive. 4,555,352, Cl. 252-35.000.

Garner, John N., to Northern Telecom Limited. Manufacture of telecommunications cable core units. 4,554,782, Cl. 57-66.000.

Garrett Corporation, The: *See—*
Klaass, Reinhard M.; and Suriano, Francis J., 4,555,187, Cl. 384-103.000.
Weigand, Francis K.; and Nickel, William H., 4,554,784, Cl. 60-39.020.

Gassner, Theo; Hann, Bruno; and Kindle, Edwin, to Hilti Aktiengesellschaft. Pneumatic nailer. 4,554,861, Cl. 91-446.000.

Gatzke, Erich: *See—*
Ambros, Peter; and Gatzke, Erich, 4,555,533, Cl. 523-440.000.

Gebr. Hofmann GmbH & Co. KG Maschinenfabrik: *See—*
Goebel, Eickhart, 4,554,833, Cl. 73-457.000.
Sander, Rembrandt, 4,554,734, Cl. 29-818.000.

Geiersbach, Allois F.; and Murray, David L., to Deutz-Allis Corporation. Agricultural implement steering guidance system and method. 4,555,725, Cl. 358-93.000.

Gendron, Gary E.: *See—*
Sykes, Donald J.; and Gendron, Gary E., 4,555,023, Cl. 206-446.000.

General Battery Corporation: *See—*
Anderson, Carl; and Craig, Richard H., 4,555,459, Cl. 429-211.000.

General Eastern Instruments Corporation: *See—*
Harding, John C., Jr., 4,554,793, Cl. 62-126.000.

General Electric Company: *See—*
Avakian, Roger W., 4,555,540, Cl. 524-130.000.
Bradley, Irving, 4,555,748, Cl. 362-61.000.
Collins, Michael F.; and Lordi, Francis D., 4,555,612, Cl. 219-121.00P.
Leskovec, Robert A.; Davenport, John M.; and von Herrmann, Pieter J., 4,555,647, Cl. 315-179.000.
Lucas, Gary M., 4,555,420, Cl. 427-387.000.
Napoli, Phillip D.; and Patterson, William R., 4,554,789, Cl. 60-751.000.
Sadlo, James L.; and Musil, Gary D., 4,554,732, Cl. 29-620.000.
Shu, Peter H., 4,555,538, Cl. 524-102.000.

General Foods Corporation: *See—*
Kramer, Franklin; Bruins, Henderikus B.; Giacone, Joseph; and Carbillet, Luc L., 4,555,407, Cl. 426-5.000.

General Instrument Corporation: *See—*
Rifkin, Gary L.; Lawrence, Charles C.; Zilber, Sam; and Hamby, Michael, 4,555,749, Cl. 362-249.000.

General Motors Corporation: *See—*
Baker, Peter J., 4,555,002, Cl. 192-45.000.
Lederman, Frederick E., 4,555,190, Cl. 384-495.000.
Vecellio, Anthony M., 4,554,893, Cl. 123-41.830.

General Safety Corporation: *See—*
Schmidt, Timothy J.; and Heintzleman, Ronald A., 4,555,075, Cl. 242-107.40A.

General Signal Corporation: *See—*
Wright, Eric, 4,555,766, Cl. 364-426.000.

Genne, Lee A.: *See—*
Chartrain, Armand N.; and Genne, Lee A., 4,555,159, Cl. 339-239.000.

GenRad, Inc.: *See—*
Swanson, Mark, 4,555,783, Cl. 371-15.000.

GEO VANN, Inc.: *See—*
Vann, Roy R.; and George, Flint R., 4,554,975, Cl. 166-297.000.

George, Flint R.: *See—*
Vann, Roy R.; and George, Flint R., 4,554,975, Cl. 166-297.000.

Gerhards, Ludwig, to Clemens Gerhards Holzwarenfabrik KG. Beer mug. 4,555,034, Cl. 215-100.00R.

Gerlach, LeRoy E.: *See—*
Polad, Michael D.; Gerlach, LeRoy E.; and Schmidt, Robert H., 4,555,610, Cl. 219-121.0LA.

Gerth, Christian: *See—*
Droescher, Michael; Mumcu, Salih; Burzin, Klaus; Gerth, Christian; and Heuer, Horst, 4,555,550, Cl. 525-424.000.

Getz, Marlyn F., to Cabot Corporation. Method for improving handling properties of a flaked tantalum powder composition. 4,555,268, Cl. 75-229.000.

Geurtsen, Friedrich H. H.; Anemaet, John M.; Smith, Donald R.; and Boyd, Mary G., to Dennison Manufacturing Co. Heat transferable laminate. 4,555,436, Cl. 428-200.000.

Giacone, Joseph: *See—*
Kramer, Franklin; Bruins, Henderikus B.; Giacone, Joseph; and Carbillet, Luc L., 4,555,407, Cl. 426-5.000.

Gibson, Dennis H.; Stockner, Alan R.; and Waldman, Donald J., to Caterpillar Tractor Co. Fluid distributing apparatus. 4,554,901, Cl. 123-450.000.

Gibson, John M.; Jacobson, Dale C.; Poate, John M.; and Tung, Raymond T., to AT&T Bell Laboratories. Formation of heterostructures by pulsed melting of precursor material. 4,555,301, Cl. 156-617.00R.

Gibson, Paul W.; and Orthoefer, Frank T., to A. E. Staley Manufacturing Company. Method for coating a substrate with a foamed proteinaceous product. 4,555,417, Cl. 427-361.000.

Gibson, William D., to Gibson, William D. Replaceable roll for roller mill. 4,555,066, Cl. 241-293.000.

Giddings, David M.; Ries, Donald G.; and Syrinek, Allen R., to Nalco Chemical Company. Terpolymers of 2-acrylamido-2-methylpropanesulfonic acid, sodium salt (AMPS), N,N-dimethylacrylamide, and acrylonitrile. 4,555,558, Cl. 526-287.000.

Gill, David. Pantographs. 4,554,740, Cl. 33-25.00R.

Gindre, Jean: *See—*
Mirebeau, Pierre; and Gindre, Jean, 4,555,458, Cl. 429-203.000.

Giovanni Tradigo S.n.c.: *See—*
Tradigo, Angelo; and Tradigo, Francesco, 4,554,694, Cl. 12-136.00B.

Gipperich, Theodor: *See—*
Feldmann, Hugo; Gipperich, Theodor; Kirchhoff, Hans; and Stodt, Rolf, 4,554,813, Cl. 72-251.000.

Girardat, Roland: *See—*
Blanchandin, Monique; Girardat, Roland; and Vanestrenvord, Jean-Michel, 4,555,675, Cl. 330-289.000.

GIVAG Gastro-Installationen-Vertrieb (Deutschland) GmbH: *See—*
Butenschon, Rolf, 4,555,040, Cl. 215-365.000.

Glass, Alastair M.; Johnson, Anthony M.; and Liao, Paul F., to AT&T Bell Laboratories. Photodetector having semi-insulating material and a contoured, substantially periodic surface. 4,555,622, Cl. 250-211.00J.

Glassman, Aaron: *See—*
Cusumano, Salvatore V.; and Glassman, Aaron, 4,554,877, Cl. 112-105.000.

Glenoit Mills, Inc.: *See—*
Thore, Thomas J., 4,554,801, Cl. 66-9.00B.

Glenwood Manufacturing Corporation: *See—*
Goettsch, Michael R., 4,555,063, Cl. 241-46.040.

Glory Kogyo Kabushiki Kaisha: *See—*
Asami, Kazuto; Baba, Takao; Nakamura, Minoru; and Tanaka, Mitsuaki, 4,554,775, Cl. 53-64.000.

Goebel, Eickhart, to Gebr. Hofmann GmbH & Co. KG Maschinenfabrik. Method and apparatus for determining the unbalance of wheels mounted on the drive axle of an automobile. 4,554,833, Cl. 73-457.000.

Goettsch, Michael R., to Glenwood Manufacturing Corporation. Liquid waste agitating and pumping apparatus. 4,555,063, Cl. 241-46.040.

Gojo, Tomomi, to Ricoh Company, Ltd. Method of reducing character font. 4,555,191, Cl. 400-121.000.

Goldmann, Siegfried; Bossert, Friedrich; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, to Bayer Aktiengesellschaft. Circulation-active novel chromone- and thiochromone-substituted 1,4-dihydropyridine-lactones. 4,555,512, Cl. 514-302.000.

Goldner, Walther, to Keiper Recaro GmbH & Co. Back rest for a vehicle seat, particularly a motor vehicle seat. 4,555,137, Cl. 297-284.000.

Goldstein, Vladimir. Thermal storage heat exchanger systems of heat pumps. 4,554,797, Cl. 62-434.000.

Goller, Ernst; Ploppa, Jurgen; and Walker, Fritz, to H. Stoll GmbH & Company. Adjustment of stitch cams in a knitting machine. 4,554,802, Cl. 66-71.000.

Goodfellow, Anthony G., to W & A Bates Ltd. Method for building tires. 4,555,287, Cl. 156-127.000.

Goodlove, Gerol L. Safety hitch pin. 4,555,125, Cl. 280-515.000.

Goodner, Charles G., Jr.: *See—*
Eisenhauer, Roy J.; Loeser, Cary A.; and Goodner, Charles G., Jr., 4,554,822, Cl. 73-61.00R.

Goodwin, Alton C.; Junglen, Mark T.; and Kent, John S., to Baker International Corporation. Method and apparatus for a fluidized bed heat exchanger. 4,554,963, Cl. 165-1.000.

Goodyear Aerospace Corporation: *See—*
Uram, John R., Jr., 4,555,450, Cl. 428-412.000.

Goodyear Tire & Rubber Company, The: *See—*
Wenning, Thomas J.; and Lynn, Charles E., 4,555,198, Cl. 403-130.000.

Goris, Heinrich: *See—*
Holz, Joachim; Meier, Wolfgang; Schwarting, Karl-Heinz; Goris, Heinrich; and Ogorek, Kurt, 4,555,142, Cl. 299-43.000.

Gorzinski, Manfred: *See—*
Fischer, Herbert; Gorzinski, Manfred; Gress, Wolfgang; Meffert, Alfred; and Wegemund, Bernd, 4,555,564, Cl. 528-295.300.

Goscenski, Edward J., Jr. Positive drive and secondary clutch means therefor. 4,554,845, Cl. 74-650.000.

Goto, Kazuhiro; Yaoka, Osamu; and Oe, Takanori, to Yoshitomi Pharmaceutical Industries, Ltd. Therapeutic agent for hypertension. 4,555,510, Cl. 514-291.000.

Gottlieb, Milton; and Steinbruegge, Kenneth B., to Westinghouse Electric Corp. Method and apparatus for strain relieving transducers bonded to acousto-optic devices. 4,555,160, Cl. 350-358.000.

Gotzke, Wolfgang: *See—*
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,554,715, Cl. 28-107.000.
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,555,424, Cl. 428-91.000.
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,555,425, Cl. 428-91.000.

Gould, Inc.: *See—*
Shuster, Nicholas, 4,555,454, Cl. 429-51.000.

Gounji, Takashi; Kawatsu, Teruo; Kasai, Yoshihiko; and Takeuchi, Chikao, to Fujitsu Limited. Mechanical filter. 4,555,682, Cl. 333-189.000.

Grachtrup, Heinz, to Krupp Polysius AG. Rotary kiln with cooler. 4,554,876, Cl. 110-246.000.

Graetz, Herbert; and Unterreiner, Ronald C., to Blair Industries, Inc. Method of making cassette holders. 4,555,290, Cl. 156-245.000.

Graham, Wayne B.; and Bonn, John, to Tentel Corporation. Universal head protrusion gauge for video recorders. 4,554,743, Cl. 33-172.00R.

Grant, Blake F. Ribbon filter apparatus. 4,555,342, Cl. 210-488.000.

Grant, Charles R. Tie tack. 4,554,710, Cl. 24-49.0CF.

Graves, James E.; and Graves, Joan M. K. Cooking grease collection pot. 4,555,339, Cl. 210-244.000.

Graves, Joan M. K.: *See—*
Graves, James E.; and Graves, Joan M. K., 4,555,339, Cl. 210-244.000.

Gray, Randall C.; and Jarrett, Robert B., to Motorola, Inc. Short detection circuit and method for an electrical load. 4,555,742, Cl. 361-93.000.

Graziani, Dante J., Jr.: *See—*
Dickhart, William W., III; Graziani, Dante J., Jr.; Herring, James M., Jr.; Pavlick, Michael J.; and Renn, Edward J., 4,555,095, Cl. 267-4.000.

Great Bend Manufacturing Co., Inc.: *See—*
Schneider, David E., 4,554,978, Cl. 172-247.000.

Grecksch, Hans: *See—*
Raasch, Hans; and Grecksch, Hans, 4,555,215, Cl. 414-564.000.

Green Cross Corporation, The: *See—*
Arimura, Hirofumi; Uemura, Yahiro; and Okuno, Yoshiomi, 4,555,401, Cl. 424-89.000.

Green, Joseph: *See—*
Lee, Fui-Tseng H.; and Green, Joseph, 4,555,562, Cl. 528-72.000.

Greenberg, Dan. Ejector device and method for producing same. 4,554,956, Cl. 141-65.000.

Greene, Thomas V.: *See—*
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., 4,555,594, Cl. 179-18.00B.

Greeson, Arnold J., to Mead Corporation, The. Ink reconstitution system and method for ink drop printer. 4,555,709, Cl. 346-1.100.

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Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., 4,554,814, Cl. 72-345.000.

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Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, 4,555,806, Cl. 455-62.000.

Greschke, Manfred: *See—*
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,554,715, Cl. 28-107.000.
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,555,424, Cl. 428-91.000.
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Gress, Wolfgang: *See—*
Fischer, Herbert; Gorzinski, Manfred; Gress, Wolfgang; Meffert, Alfred; and Wegemund, Bernd, 4,555,564, Cl. 528-295.300.

Grimes, John R.: *See—*
Grimes, Philip M.; and Grimes, John R., 4,554,765, Cl. 51-401.000.

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Grognard, Leon L., to Societe Belge d'Exploitation de la Navigation Aerienne (SABENA). Apparatus for the suspension of an aircraft engine cowling. 4,555,078, Cl. 244-54.000.

Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, to L'Oreal. Process for preparing a hair dye or hair bleach composition; a composition for use in this process; and the use of said composition to dye or bleach hair. 4,555,246, Cl. 8-405.000.

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Goldmann, Siegfried; Bossert, Friedrich; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,555,512, Cl. 514-302.000.

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Gruber, Klaus; Lohner, Manfred; Posselt, Klaus; and Wagener, Hans H., to Dolorgiet GmbH & Co KG. Transdermal 2-(4-isobutylphenyl)-propionic acid medication and methods. 4,555,524, Cl. 514-570.000.

Gruich, Peter; and Stopke, J. Lawrence. Multimotor modular electric drive powertrain system for turbine powered vehicles. 4,554,989, Cl. 180-65.400.

Grumman Aerospace Corporation: *See—*
Tobin, Albert G., 4,555,275, Cl. 148-6.300.

Gruna, Leo, to Gruna, Leo. Crush resistant motor vehicle body. 4,555,134, Cl. 296-189.000.

GTE Business Communication Systems Inc.: *See—*
Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,555,597, Cl. 179-90.00B.

GTE Communication Systems Corporation: *See—*
Neese, Wayne E.; and Stepan, William E., 4,555,151, Cl. 339-17.0CF.

GTE Products Corporation: *See—*
Cheresnowsky, Michael J., 4,555,386, Cl. 423-54.000.

Guelph Elastic Hosiery Company Limited: *See—*
Kent, David, 4,555,234, Cl. 441-106.000.

Gueussier, Andre; and Vachiery, Edmond, to Vallourec. Method of treating steel with calcium, to obtain a steel well adapted to cold forming, with a low silicon content. 4,555,265, Cl. 75-53.000.

Guglielmo, Richard J., Sr., to EMA Company.. Wood preservative system composition. 4,555,356, Cl. 252-400.00R.

Guha, Subhendu; and DenBoer, William, to Energy Conversion Devices, Inc. Photovoltiac device having long term energy conversion stability and method of producing same. 4,555,586, Cl. 136-259.000.

Gunnarsson, Kristjan: *See—*
Prinz, Friedrich B.; Hoburg, James F.; and Gunnarsson, Kristjan, 4,554,834, Cl. 73-597.000.

Gunter, Gerhard; and Haeufler, Hartmut, to Akzo nv. Process for applying a coating to a substrate and a liquid aqueous composition to be used therein. 4,555,412, Cl. 427-27.000.

Guthrie, Roderick I. L.: *See—*
Doutre, Don A.; and Guthrie, Roderick I. L., 4,555,662, Cl. 324-71.400.

Guttinger, Heinz: *See—*
Muggli, Jurg; Guttinger, Heinz; and Horvath, Zoltan, 4,555,634, Cl. 250-565.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Static VAR generator system having improved response time. 4,555,659, Cl. 323-210.000.

H. H. Robertson Company: *See—*
Marwah, Ashok K.; and Norris, Charles H., Jr., 4,554,771, Cl. 52-221.000.

H. Stoll GmbH & Company: *See—*
Goller, Ernst; Ploppa, Jurgen; and Walker, Fritz, 4,554,802, Cl. 66-71.000.
Schmodde, Hermann; and Haltenhof, Hans-Gunter, 4,554,803, Cl. 66-75.200.

Haas, Rudy E., to Carrier Corporation. Wrapped fin heat exchanger circuiting. 4,554,968, Cl. 165-144.000.

Haase, Donald A., to Mobil Oil Corporation. Animal repellent bag package and method of preparing the same. 4,555,015, Cl. 206-0.500.

Habel, Paul A.; and Kulczycki, Elaine S., to Borg-Warner Corporation. Minimum complexity vibration damper. 4,555,009, Cl. 192-106.200.

Haberman, Louis J. Plastic orthotic therapeutic device. 4,554,912, Cl. 128-80.00E.

Hackett-Jones, Francis C.; and Kiko, Frederick H., to Telspec Limited. Signal transmission devices. 4,555,599, Cl. 179-170.00R.

Hada, Hiroshi; and Hirayama, Tsutomu, to NEC Corporation. Pulse signal control circuits with improved turn-off characteristic. 4,555,641, Cl. 307-254.000.

Haeufler, Hartmut: *See—*
Gunter, Gerhard; and Haeufler, Hartmut, 4,555,412, Cl. 427-27.000.

Hafner, Udo: *See—*
Knapp, Heinrich; Sauer, Rudolf; Krauss, Rudolf; and Hafner, Udo, 4,555,060, Cl. 239-585.000.

Hagen, Glenn E., to Williams, Inc. Sea water distillation system. 4,555,307, Cl. 202-177.000.

Hagyuda, Nobuyoshi: *See—*
Iida, Yoshikazu; and Hagyuda, Nobuyoshi, 4,555,648, Cl. 315-241.00P.

Hai-Ping, Kuo. Ball-hitting training device. 4,555,110, Cl. 273-26.00E.

Hajime Industries, Ltd.: *See—*
Yoshida, Hajime, 4,555,635, Cl. 250-572.000.

Hakes, Gary A., to Ingersoll-Rand Company. Drill box support mechanism for mining bolter machines. 4,554,984, Cl. 175-170.000.

Halcon SD Group, Inc., The: *See—*
Armstrong, William D., 4,555,501, Cl. 502-243.000.

Hall, Dale E., to Inco Alloys International, Inc. Process for preparing H_2 evolution cathodes. 4,555,413, Cl. 427-34.000.

Hall, George D.: *See—*
Hynes, Joseph H.; Morrill, Charles D.; and Hall, George D., 4,554,976, Cl. 166-341.000.

Hall, Randall C., to O. I. Corporation. Electrolytic conductivity detector. 4,555,383, Cl. 422-89.000.

Hall, Richard W.; Sonnenberg, Sven; and Mahal, Harbhajan S., to Towler Hydraulics, Inc. Regeneration system for a hydraulic intensifier unit. 4,555,220, Cl. 417-342.000.

Hall, Steven E.; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted thio prostaglandin analogs and their use in the treatment of thrombolytic disease. 4,555,523, Cl. 514-469.000.

Hallam, Donald E.: *See—*
Angelucci, Richard J.; Cope, Andrew P.; Hallam, Donald E.; and Ladd, Harry E., 4,555,067, Cl. 242-35.50A.

Halldorsson, Thorsteinn: *See—*
Langerholc, John; and Halldorsson, Thorsteinn, 4,555,179, Cl. 356-342.000.

Halliburton Company: *See—*
Rao, S. Prabhakara; and Burkhalter, John F., 4,555,269, Cl. 106-90.000.

Haltenhof, Hans-Gunter: *See—*
Schmodde, Hermann; and Haltenhof, Hans-Gunter, 4,554,803, Cl. 66-75.200.

Hamada, Masaaki; Okamaoto, Kaoru; and Kurosaki, Teikichi, to Nippon Zoki Pharmaceutical Co. 1,2 Dihydro- and 1,2,3,4-tetrahydro quinolylacetic acids and analgesic use thereof. 4,555,513, Cl. 514-311.000.

Hamano, Hideo, to Toyota Jidosha Kabushiki Kaisha. Air breather for power transmission unit. 4,554,844, Cl. 74-606.00R.

Hamby, Michael: *See—*
Rifkin, Gary L.; Lawrence, Charles C.; Zilber, Sam; and Hamby, Michael, 4,555,749, Cl. 362-249.000.

Hamman, Martin E.; and Baughman, Gary M., to Rieke Corporation. Vented nestable pouring spout. 4,555,048, Cl. 222-478.000.

Hammond, Geoffrey R., to Reckitt & Colman Products Limited. Applicator with resilient valve. 4,555,194, Cl. 401-206.000.

Hampton, Ernestine. Mechanical egg breaker and separator. 4,554,866, Cl. 99-499.000.

Hampton, Steve: *See—*
Andrus, Robert E.; and Hampton, Steve, 4,555,297, Cl. 156-461.000.

Hanaoka, Naohiro, to Olympus Optical Co., Ltd. Magnetic recording medium and method for manufacturing the same. 4,555,444, Cl. 428-336.000.

Handa, Tadahiko: *See—*
Wakui, Tadahiro; and Handa, Tadahiko, 4,555,526, Cl. 518-717.000.

Handicart Limited: *See—*
Millington, Michael J., 4,555,124, Cl. 280-289.0WC.

Hane, Toshioki: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,555,369, Cl. 260-544.00F.

Hanlet, Jacques M.; and Tarantino, Elia R. J., to Alpha-Omega Development Inc. Electromagnetic energy absorber. 4,554,908, Cl. 126-443.000.

Hanly, Leo D. V. Bow stroke simulator. 4,554,859, Cl. 84-283.000.

Hann, Bruno: *See—*
Gassner, Theo; Hann, Bruno; and Kindle, Edwin, 4,554,861, Cl. 91-446.000.

Hara, Hiroshi: *See—*
Sakaguchi, Yukihiko; Sato, Kozo; Naito, Hideki; and Hara, Hiroshi, 4,555,470, Cl. 430-203.000.

Hara, Kazuo: *See—*
Ohgami, Masaaki; Hara, Kazuo; and Abe, Kunihiro, 4,555,762, Cl. 364-431.090.

Harada, Hiroyuki: *See—*
Komatsu, Hideo; Harada, Hiroyuki; and Matsuki, Tomiji, 4,555,542, Cl. 524-178.000.

Harada, Koji: *See—*
Matsushita, Yasuo; Nakamura, Kousuke; and Harada, Koji, 4,555,358, Cl. 252-516.000.

Harada, Shigeru: *See—*
Asano, Juichi; Okubo, Yasuo; Saito, Hiroshi; and Harada, Shigeru, 4,555,064, Cl. 241-89.300.

Harding, John C., Jr., to General Eastern Instruments Corporation. Controlled power converter for thermoelectric heat pump drive. 4,554,793, Cl. 62-126.000.

Harjunmaa, Hannu, to Labsystems Oy. Method for the measurement of the difference in the optical properties dependent on the light direction of two samples. 4,555,178, Cl. 356-339.000.

Harklau, Lanny L.: *See—*
Tait, William C.; and Harklau, Lanny L., 4,555,291, Cl. 156-250.000.

Harms, Margret; Bruns, Angelika; Luthje, Holger; and Matthiessen, Bernd, to U.S. Philips Corporation. Mask for the formation of patterns in lacquer layers by means of X-ray lithography and method of manufacturing same. 4,555,460, Cl. 430-5.000.

Harrington, Richard F.; Dagiel, Richard T.; and Brown, Villy, to Aetna Bearing Company. Self adjusting thrust, low angular contact bearing. 4,555,007, Cl. 192-98.000.

Harris Corporation: *See—*
Talbot, Robert D., 4,555,805, Cl. 455-26.000.

Harrod, Lawrence R.; and Perego, Lucio C., to Pines of America, Inc. Storage battery with built-in fuse. 4,555,451, Cl. 429-1.000.

Hart, Edwin R. Cereal processing. 4,555,409, Cl. 426-242.000.

Hartmann, Joseph C. Exercising machine. 4,555,109, Cl. 272-73.000.

Haruki, Hiromu: *See—*
Fujisawa, Hakubun; Nishiura, Masaharu; Haruki, Hiromu; and Uchida, Yoshiyuki, 4,555,636, Cl. 250-578.000.

Harvell, John K.; and Franke, Milton E., to United States of America, Air Force. Multiple jet blowing around the blunt trailing edge of a circulation controlled airfoil. 4,555,079, Cl. 244-207.000.

Harvey, Kenneth C. Tracking scooter and the like and method of operation. 4,555,122, Cl. 280-87.04R.

Harwood, Leopold A.; and Shanley, Robert L., II, to RCA Corporation. Tri-level sandcastle pulse decoder. 4,555,722, Cl. 358-17.000.

Hase, Tadaharu: *See—*
Toyoda, Yoshiaki; Wakimura, Kazuo; Hase, Tadaharu; and Arashiba, Nobumasa, 4,555,583, Cl. 568-473.000.

Hasegawa, Tetsuo; and Suematsu, Koushi, to Canon Kabushiki Kaisha. Developer having improved flow characteristics and a process for producing same. 4,555,467, Cl. 430-110.000.

Hasegawa, Toshiaki; and Hirose, Yasuo, to Nippon Furnace Kogyo Kaisha, Ltd. Simulator of fluid flow in field of flow entailing combustion or reaction. 4,554,832, Cl. 73-432.00R.

Hashimoto, Mitsuru, to Ricoh Co., Ltd. 2,6-Disazo anthraquinone compounds. 4,555,567, Cl. 534-654.000.

Haslanger, Martin F.: *See—*
Hall, Steven E.; and Haslanger, Martin F., 4,555,523, Cl. 514-469.000.

Haslberger, Richard: *See—*
Kern, Hans; and Haslberger, Richard, 4,554,939, Cl. 137-99.000.

Hatano, Yuji: *See—*
Kotera, Nobuo; Hatano, Yuji; Asano, Atsushi; and Kawabe, Ushio, 4,555,643, Cl. 307-476.000.

Hauni-Werke Korber & Co. KG: *See—*
Born, Siegfried, 4,554,931, Cl. 131-84.400.

Haupt, Randy L. Simultaneous nulling in the sum and difference patterns of a monopulse radar antenna. 4,555,706, Cl. 343-379.000.

Hauptman, Zdenek V.: *See—*
Banister, Arthur J.; Hauptman, Zdenek V.; and Kendrick, Aidan G., 4,555,316, Cl. 204-59.00R.

Hausler, Michael; Huber, Philippe; Pfyl, Walter; and Sadek, Kadry, to BBC Brown, Boveri and Company, Limited. Circuit arrangement for the compensation of reactive power in an electrical alternating-current power system. 4,555,658, Cl. 323-210.000.

Hayashi, Katsumi, to Fujitsu Limited. Data processing system for data base management of matrix type data. 4,555,771, Cl. 364-900.000.

Hayashi, Kiyotaka: *See—*
Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,554,990, Cl. 180-197.000.

Hayashi, Masaharu: *See—*
Nakamura, Ryuji; and Hayashi, Masaharu, 4,555,004, Cl. 192-58.00B.

Hayashi, Takehiko; Ikuta, Hiroyuki; and Ohta, Takanori, to Toyoda Koki Kabushiki Kaisha. Crankpin rolling apparatus. 4,554,811, Cl. 72-110.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Coolant level control arrangement for internal combustion engine. 4,554,891, Cl. 123-41.210.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Pulley for cogged belt and method for producing same. 4,555,240, Cl. 474-152.000.

Hayashibara, Ken: *See—*
Masaki, Kazumi, 4,555,741, Cl. 361-58.000.

Hayashida, Morimasa: *See—*
Umeno, Hiroshi; Saito, Gunji; and Hayashida, Morimasa, 4,554,780, Cl. 56-11.800.

Hazaki, Eiichi; Imai, Masaya; Tojo, Kenji; and Shiibayashi, Masao, to Hitachi, Ltd. Oil feeding device for scroll fluid apparatus. 4,555,224, Cl. 418-55.000.

Health Education Publication Company, Inc.: *See—*
Lally, James J., 4,554,910, Cl. 128-28.000.

Heat and Control, Inc.: *See—*
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., 4,554,865, Cl. 99-353.000.

Heffner, Richard M.: *See—*
Over, William R.; Wion, Donald A.; and Heffner, Richard M., 4,554,725, Cl. 29-564.400.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Hydroxyaromatic oligomers of a mixed cyanate and aromatic polyamine and epoxy resins thereof. 4,555,553, Cl. 525-523.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Oligomeric vinyl ester resin compositions containing triazine groups and imino carbamate linkages. 4,555,554, Cl. 525-531.000.

Hefner, Robert E., Jr.; and White, Mary N., to Dow Chemical Company, The. Imide functional polyphenols; thermosettable compositions containing same and cured products therefrom. 4,555,563, Cl. 528-96.000.

Heilmann, Horst: *See—*
Ploch, Siegfrid; Rossler, Sonja; Zeisberg, Peter; and Heilmann, Horst, 4,554,804, Cl. 66-214.000.

Hein-Werner Corporation: *See—*
Eck, Leonard F., 4,555,089, Cl. 254-10.00B.

Heintzleman, Ronald A.: *See—*
Schmidt, Timothy J.; and Heintzleman, Ronald A., 4,555,075, Cl. 242-107.40A.

Heitmann, Jurgen, to Robert Bosch GmbH. Method of providing smooth transition from one to another of two sequences of digitally coded sound signals (fading). 4,555,737, Cl. 360-13.000.

Heller, Clarence: *See—*
Smyly, Harold M.; Miller, Charles D.; Cloyd, Richard A.; and Heller, Clarence, 4,554,905, Cl. 124-56.000.

Hendry, James W., to Lang Fastener Corporation. Apparatus for making a twin-wall, internally corrugated plastic structural part with a smooth non-cellular skin. 4,555,225, Cl. 425-4.00R.

Henkel KGaA: *See—*
Fischer, Herbert; Gorzinski, Manfred; Gress, Wolfgang; Meffert, Alfred; and Wegemund, Bernd, 4,555,564, Cl. 528-295.300.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Bruns, Klaus; and Weber, Ursula, 4,555,359, Cl. 252-522.00R.

Hennevin, Bernard, to Compagnie Electro-Mecanique. Equalizer circuit for switches connected in series. 4,555,754, Cl. 363-132.000.

Henschen, Agnes: *See—*
Brantl, Victor; Teschemacher, Hansjorg; Henschen, Agnes; and Lottspeich, Friedrich, 4,555,403, Cl. 514-17.000.

Henson, Donald E.: *See—*
Sack, Michael C.; Henson, Donald E.; and Sack, Russell M., 4,555,082, Cl. 248-220.100.

Hepburn, John J.: *See—*
Moran, David P. J.; Hepburn, John J.; and Sharp, David G., 4,555,411, Cl. 426-603.000.

Hepworth, Malcolm T.: *See—*
Sabacky, Bruce J.; and Hepworth, Malcolm T., 4,555,387, Cl. 423-59.000.

Hercules Incorporated: *See—*
Funk, Richard L., 4,555,279, Cl. 149-92.000.
Winston, Scott, 4,555,276, Cl. 149-6.000.

Hermann Wangner GmbH & Co.: *See—*
Borel, Georg; and Waldvogel, Hartmut, 4,554,953, Cl. 139-383.00A.

Herring, James M., Jr.: *See—*
Dickhart, William W., III; Graziani, Dante J., Jr.; Herring, James M., Jr.; Pavlick, Michael J.; and Renn, Edward J., 4,555,095, Cl. 267-4.000.

Heuer, Horst: *See—*
Droescher, Michael; Mumcu, Salih; Burzin, Klaus; Gerth, Christian; and Heuer, Horst, 4,555,550, Cl. 525-424.000.

Hewett, Gary E.; Atwood, Brian G.; and Wennberg, Timothy J., to Cetus Corporation. Multiple trough vessel for automated liquid handling apparatus. 4,554,839, Cl. 73-864.160.

Hewins, Doris J. Motor driven mini-wringer. 4,554,806, Cl. 68-257.000.

Hewitt, Edward G.; and Pasquale, William D., to New England Mfg. Co. Envelope. 4,555,026, Cl. 206-521.000.

Hewlett-Packard Company: *See—*
Jackson, Bruce J.; Simmons, Ralph F.; and Covault, Mike L., 4,555,740, Cl. 360-113.000.
You, Young S., 4,555,062, Cl. 239-690.000.

Heyman, Duane A., to BASF Wyandotte Corporation. Process for the preparation of acrylamide graft polymer dispersions. 4,555,527, Cl. 521-67.000.

Hiatt, Sidney A., to Leggett & Platt, Incorporated. Combination round coil spring and rectangular torsion coil spring assembly. 4,555,097, Cl. 267-100.000.

Hideaki Yamada: *See—*
Yamada, Hideaki; and Ryuno, Koitchiro, 4,555,487, Cl. 435-253.000.

Hill, James A.: *See—*
Burtch, John E.; and Hill, James A., 4,555,296, Cl. 156-446.000.

Hill, John B.: *See—*
Dryden, Hugh L., Jr; and Hill, John B., 4,555,362, Cl. 260-112.50R.

Hillenius, Steven J.; and Parrillo, Louis C., to AT&T Bell Laboratories. CMOS Integrated circuit technology utilizing dual implantation of slow and fast diffusing donor ions to form the n-well. 4,554,726, Cl. 29-571.000.

Hillquist, Paul A. Convertible jacket. 4,554,682, Cl. 2-70.000.

Hilti Aktiengesellschaft: *See—*
Gassner, Theo; Hann, Bruno; and Kindle, Edwin, 4,554,861, Cl. 91-446.000.

Hilton, Allan R., to Hilton (Products) Limited. Workbenches. 4,555,099, Cl. 269-88.000.

Hilton (Products) Limited: *See—*
Hilton, Allan R., 4,555,099, Cl. 269-88.000.

Hiramatsu, Akira: *See—*
Suda, Yasuo; Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; and Ohtaka, Keiji, 4,555,169, Cl. 354-407.000.

Hirano, Fumiya: *See—*
Nishihata, Ken; Iinuma, Katsuharu; Yamada, Hitoshi; Hirano, Fumiya; and Tsuruoka, Takashi, 4,555,404, Cl. 514-201.000.

Hirano, Hideo; and Kimbara, Masahiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of regulating warp yarn tension in a weaving machine. 4,554,951, Cl. 139-105.000.

Hirano, Masatoshi: *See—*
Kokubu, Sadao; Hirano, Masatoshi; and Sakakibara, Takao, 4,555,743, Cl. 361-196.000.

Hirayama, Noriaki: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.

Hirayama, Tsutomu: *See—*
Hada, Hiroshi; and Hirayama, Tsutomu, 4,555,641, Cl. 307-254.000.

Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; Takeya, Yasuo; and Nagai, Satoshi, to Kaisha, Kentetsuco., Ltd. Agitating type washing machine. 4,554,805, Cl. 68-12.00R.

Hirose, Fumio: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.

Hirose, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Image information filing apparatus and method. 4,555,803, Cl. 382-61.000.

Hirose, Yasuo: *See—*
Hasegawa, Toshiaki; and Hirose, Yasuo, 4,554,832, Cl. 73-432.00R.

Hiroyasu, Minoru; Yamashita, Hideo; Ohguro, Tamotsu; Yamagishi, Shigeru; and Shino, Shigenari, to Honda Giken Kogyo Kabushiki Kaisha. Reamer holding device for machining valve seats. 4,555,205, Cl. 408-150.000.

Hirschmanner, Franz; Buchegger, Rudolf; and Brettbacher, Franz, to Voest-Alpine Aktiengesellschaft. Heat shield for a rolling mill. 4,554,812, Cl. 72-202.000.

Hitachi, Ltd.: *See—*
Aoyama, Takanobu, 4,555,603, Cl. 200-144.0AP.
Hazaki, Eiichi; Imai, Masaya; Tojo, Kenji; and Shiibayashi, Masao, 4,555,224, Cl. 418-55.000.
Kahara, Toshiki; Mori, Toshikatsu; Imahashi, Jinichi; Honji, Akio; and Tamura, Kohki, 4,555,452, Cl. 429-13.000.
Kanehori, Keiichi; Miyauchi, Katsuki; Ito, Yukio; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,555,456, Cl. 429-131.000.
Kotera, Nobuo; Hatano, Yuji; Asano, Atsushi; and Kawabe, Ushio, 4,555,643, Cl. 307-476.000.
Matsushita, Yasuo; Nakamura, Kousuke; and Harada, Koji, 4,555,358, Cl. 252-516.000.
Matsuura, Shigeo; Ito, Uji; and Yakushiji, Yasuhiro, 4,555,702, Cl. 340-825.640.
Nishikawa, Mitsuyo; and Kurihara, Nobuo, 4,555,800, Cl. 382-25.000.
Tanaka, Isamu; Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,555,532, Cl. 523-400.000.
Tanimura, Nobuyoshi; and Yasui, Tokumasa, 4,554,729, Cl. 29-577.00C.

Hitomi, Yasuhiro, to Shimano Industrial Company Limited. Drag mechanism for a spinning reel. 4,555,072, Cl. 242-84.50R.

Hoburg, James F.: *See—*
Prinz, Friedrich B.; Hoburg, James F.; and Gunnarsson, Kristjan, 4,554,834, Cl. 73-597.000.

Hochiki Kabushiki Kaisha: *See—*
Machida, Haruchika; and Yuchi, Sadataka, 4,555,695, Cl. 340-538.000.

Hoechst Aktiengesellschaft: *See—*
Erdmann, Fritz; and Simon, Ulrich, 4,555,469, Cl. 430-168.000.
Hunger, Klaus, 4,555,568, Cl. 534-801.000.

Hoefke, Wolfgang: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,555,511, Cl. 514-301.000.

Hofmeister, Helmut: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, 4,555,507, Cl. 514-172.000.

Hogge, Charles R., Jr., to Rockwell International Corporation. Equalizer circuit suitable for adaptive use with fiber optics. 4,555,789, Cl. 375-11.000.

Hohki, Tetsuo: *See—*
Masuda, Tatsunosuke; Hohki, Tetsuo; and Kurusu, Yasuo, 4,555,180, Cl. 356-445.000.

Hokama, Yosh, to International Beauty Distributors, Inc. Artificial fingernail with holes to receive liquid adhesive. 4,554,935, Cl. 132-73.000.

Holle, Wilhelm: *See—*
Ziemer, Wolf; and Holle, Wilhelm, 4,554,766, Cl. 52-28.000.

Holoch, Klaus: *See—*
Barzynski, Helmut; and Holoch, Klaus, 4,555,471, Cl. 430-273.000.

Holz, Joachim; Meier, Wolfgang; Schwarting, Karl-Heinz; Goris, Heinrich; and Ogorek, Kurt, to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG. Supply of liquid media for a hydraulic-mechanically operating mine working machine with sword. 4,555,142, Cl. 299-43.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hiroyasu, Minoru; Yamashita, Hideo; Ohguro, Tamotsu; Yamagishi, Shigeru; and Shino, Shigenari, 4,555,205, Cl. 408-150.000.
Hosaka, Takefumi; Imai, Takeshi; and Senzaki, Takaya, 4,555,691, Cl. 340-52.00R.
Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,554,990, Cl. 180-197.000.
Munakata, Shunsaku; Ukai, Hitoshi; Noguchi, Mitsuru; and Sawai, Shinichi, 4,555,380, Cl. 264-510.000.
Oike, Ikuo, 4,554,785, Cl. 60-314.000.
Takeuchi, Hiroo; and Miyazaki, Kazuo, 4,554,786, Cl. 60-397.000.
Umeno, Hiroshi; Saito, Gunji; and Hayashida, Morimasa, 4,554,780, Cl. 56-11.800.

Honji, Akio: *See—*
Kahara, Toshiki; Mori, Toshikatsu; Imahashi, Jinichi; Honji, Akio; and Tamura, Kohki, 4,555,452, Cl. 429-13.000.

Hoover Company, The: *See—*
Rennecker, David B.; and Taylor, Walt S., 4,554,698, Cl. 15-339.000.

Hoover, Merwin F.; Salamone, Ann B.; and Vandebult, Jan, to Polyonics Corporation. Process for producing composite product having patterned metal layer. 4,555,414, Cl. 427-43.100.

Hor, Ah-Mee; and Loutfy, Rafik O., to Xerox Corporation. Photoresponsive imaging members with chloroindium phthalocyanine compositions. 4,555,463, Cl. 430-59.000.

Horie, Shin'ichi; Matsuzaki, Yutaka; and Kagawa, Fumio, to Showa Denko Kabushiki Kaisha. Grinding sheet and process for preparing same. 4,555,250, Cl. 51-309.000.

Horodysky, Andrew G.; and Landis, Phillip S., to Mobil Oil Corporation. Borated phosphonates as lubricant and fuel additives. 4,555,353, Cl. 252-49.600.

Horvath, Zoltan: *See—*
Muggli, Jurg; Guttinger, Heinz; and Horvath, Zoltan, 4,555,634, Cl. 250-565.000.

Hosaka, Takefumi; Imai, Takeshi; and Senzaki, Takaya, to Honda Giken Kogyo Kabushiki Kaisha. Shift indicating system for speed change gears of a manual transmission. 4,555,691, Cl. 340-52.00R.

Hosokawa, Yasuhiko: *See—*
Matsumura, Susumu; Hosokawa, Yasuhiko; Katsuki, Kanji; and Yano, Masao, 4,555,750, Cl. 363-37.000.

Houdayer, Bernard; Le Fur, Bernard; Meneghin, Rene ; and Moniod, Jean-Michel, to Cebal. Method of fitting a metal closure. 4,555,208, Cl. 413-2.000.

Houng, Huang-Kiang. Inflight headset for civil aircraft. 4,554,993, Cl. 181-130.000.

Houston, Timothy L.: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; Farquharson, Graeme J.; and Houston, Timothy L., 4,555,263, Cl. 71-98.000.

Houze, Eric C.: *See—*
Bednarek, Milan B.; and Houze, Eric C., 4,555,535, Cl. 524-40.000.

Howard, Kenneth G.; and Little, Ian E., to Standard Telephones and Cables Public Limited Company. Optical fibre pulling tower. 4,555,257, Cl. 65-13.000.

Hsiao, Charles H., to Key Pharmaceuticals, Inc. Aspirin tablet. 4,555,399, Cl. 424-35.000.

Hsu, Jeng-Hsiung. Seating device for fishing reel. 4,554,755, Cl. 43-22.000.

Hsu, Li-Chen. Ring-chain polymer containing triaryl-s-triazine ring and other heat-resistant heterocyclic rings. 4,555,565, Cl. 528-322.000.

Huang, Tung M.: *See—*
Arway, George; Eremity, Frank; and Huang, Tung M., 4,555,719, Cl. 346-140.00R.

Huber, Philippe: *See—*
Hausler, Michael; Huber, Philippe; Pfyl, Walter; and Sadek, Kadry, 4,555,658, Cl. 323-210.000.

Hubert, Claudette, to CX Packaging Inc. Musical pacifier. 4,554,919, Cl. 128-360.000.

Hubert, Gunter: *See—*
Finkenzeller, Johann; and Hubert, Gunter, 4,555,794, Cl. 378-187.000.

Huck Manufacturing Company: *See—*
Paus, Lloyd L., 4,554,838, Cl. 73-761.000.

Huckenbeck, Claus O., to Bausch & Lomb Incorporated. Switch assembly for riflescope. 4,554,744, Cl. 33-241.000.

Huckfeldt, Gebhard: *See—*
Gregor, Barbara; and Huckfeldt, Gebhard, 4,555,408, Cl. 426-90.000.

Huckfeldt & Thorlichen: *See—*
Gregor, Barbara; and Huckfeldt, Gebhard, 4,555,408, Cl. 426-90.000.

Hughes, Robert S., to R. S. Hughes Ind. Inc. Nurse's seat. 4,555,138, Cl. 297-346.000.

Hughes Tool Company: *See—*
Davies, David L., 4,554,981, Cl. 175-4.520.

Huhn, Karl; and von Au, Gunter, to Wacker-Chemie GmbH. Method of impregnating textile materials made from organic fibers. 4,555,419, Cl. 427-387.000.

Huijsing, Johan H.; and van de Plassche, Rudy J., to Signetics Corporation. Differential amplifier with rail-to-rail input capability and controlled transconductance. 4,555,673, Cl. 330-258.000.

Hull, Robert; and Lane, Joseph A., to Amtrol, Inc. Gas-liquid vortex separator-eliminator. 4,555,253, Cl. 55-170.000.

Humes, Dennis W.: *See—*
Daghe, Joseph L.; Humes, Dennis W.; and Stanley, Mervin D., 4,554,944, Cl. 137-296.000.

Hundebol, Soren, to F. L. Smidth & Co. A/S. Method and apparatus for calcining raw phosphate material. 4,555,388, Cl. 423-167.000.

Hunger, Klaus, to Hoechst Aktiengesellschaft. Monoazo compounds derived from 3-nitro-4-amino-benzoates and 5-(2'-hydroxy-3'-naphthoylamino)-benzimidazolones. 4,555,568, Cl. 534-801.000.

Hunt Manufacturing Co.: *See—*
Turnbull, Clyde D., 4,555,150, Cl. 312-250.000.

Hurley, James E.: *See—*
Thomas, Calvin J.; and Hurley, James E., 4,555,606, Cl. 219-10.55R.

Hwang, Eddie Y.; Szabo, Andras I.; and Shung, Wu-shi, to Westinghouse Electric Corp. Turbine valve control system. 4,554,788, Cl. 60-646.000.

Hydril Company: *See—*
Burton, James A., 4,554,982, Cl. 175-75.000.
Hynes, Joseph H.; Morrill, Charles D.; and Hall, George D., 4,554,976, Cl. 166-341.000.

Hynes, Joseph H.; Morrill, Charles D.; and Hall, George D., to Hydril Company. Test tool for subsea blowout preventer stack. 4,554,976, Cl. 166-341.000.

Ibe, Satoshi: *See—*
Awano, Koichi; Nitta, Yoshifumi; and Ibe, Satoshi, 4,554,964, Cl. 165-39.000.

Ibigawa Electric Industry Company, Ltd.: *See—*
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, 4,555,615, Cl. 219-145.210.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Compressor oil return system for refrigeration apparatus and method. 4,554,795, Cl. 62-175.000.

Ichikoh Industries Limited: *See—*
Enomoto, Masao, 4,555,166, Cl. 350-634.000.

ICI Australia Limited: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; Farquharson, Graeme J.; and Houston, Timothy L., 4,555,263, Cl. 71-98.000.

Ideal Standard S.p.A.: *See—*
Biadigo, Mario; and Zucchi, Gianfranco, 4,555,229, Cl. 425-267.000.

Idenden, Frederick W.: *See—*
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., 4,555,594, Cl. 179-18.00B.

Iida, Takao: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.

Iida, Yoshikazu; and Hagyuda, Nobuyoshi, to Nippon Kogaku K.K. Electronic flash unit utilizing pre-flash illumination of flashtube. 4,555,648, Cl. 315-241.00P.

Iijima, Toshio: *See—*
Kido, Keishiro; Sunagawa, Hiroshi; Kawajiri, Kazuhiro; Iijima, Toshio; and Nozaki, Nobuharu, 4,555,464, Cl. 430-67.000.

Iinuma, Katsuharu: *See—*
Nishihata, Ken; Iinuma, Katsuharu; Yamada, Hitoshi; Hirano, Fumiya; and Tsuruoka, Takashi, 4,555,404, Cl. 514-201.000.

Ikenaga, Yukio: *See—*
Kausga, Takuzo; Ikenaga, Yukio; and Suzuki, Kunio, 4,555,357, Cl. 252-511.000.

Ikonomou, Aristarchos S. Earthquake guarding system. 4,554,767, Cl. 52-167.000.

Ikuta, Hiroyuki: *See—*
Hayashi, Takehiko; Ikuta, Hiroyuki; and Ohta, Takanori, 4,554,811, Cl. 72-110.000.

Ikuzawa, Masanori: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.

Illirrie Holdings Pty Ltd.: *See—*
Lane, Leonard A., 4,554,881, Cl. 114-39.000.

Imahashi, Jinichi: *See—*
Kahara, Toshiki; Mori, Toshikatsu; Imahashi, Jinichi; Honji, Akio; and Tamura, Kohki, 4,555,452, Cl. 429-13.000.

Imai, Masaya: *See—*
Hazaki, Eiichi; Imai, Masaya; Tojo, Kenji; and Shiibayashi, Masao, 4,555,224, Cl. 418-55.000.

Imai, Takeshi: *See—*
Hosaka, Takefumi; Imai, Takeshi; and Senzaki, Takaya, 4,555,691, Cl. 340-52.00R.

Imperial Chemical Industries, plc: *See—*
Cartwright, David, 4,555,575, Cl. 546-345.000.

Imperial Clevite Inc.: *See—*
Adams, Kenneth J.; and Dyke, David E., 4,555,294, Cl. 156-309.600.
Shtarkman, Emile M., 4,555,098, Cl. 267-140.100.

Ina Seito Co., Ltd.: *See—*
Fujii, Morizumi; Kakimoto, Hirofumi; and Fujino, Shinji, 4,554,769, Cl. 52-173.00R.

Inaba, Hajimu; and Sakakibara, Shinsuke, to Fanuc Ltd. Method and apparatus for controlling the acceleration and deceleration of a movable element without abrupt changes in motion. 4,555,758, Cl. 364-174.000.

Inagaki, Yasuhiro: *See—*
Fukuju, Osamu; Inagaki, Yasuhiro; and Minoshima, Katsuji, 4,555,104, Cl. 271-228.000.

Inagaki, Yoshio: *See—*
Sakai, Nobuo; Okazaki, Masaki; and Inagaki, Yoshio, 4,555,479, Cl. 430-372.000.

Inco Alloys International, Inc.: *See—*
Hall, Dale E., 4,555,413, Cl. 427-34.000.

Ingersoll-Rand Company: *See—*
Hakes, Gary A., 4,554,984, Cl. 175-170.000.

Inoue, Noriyuki; Okazaki, Masaki; Yamamuro, Kiyohiko; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 4,555,482, Cl. 430-574.000.

Intelledex Incorporated: *See—*
Wright, Allen J., 4,555,217, Cl. 414-735.000.

Intermedics, Inc.: *See—*
Baker, Ross G., Jr.; and Calfee, Richard V., 4,554,920, Cl. 128-419.0PG.

Intermountain Research & Development Corporation: *See—*
Cyran, Michael J.; and Wang, Kuei-Hsiung, 4,555,391, Cl. 423-244.000.

International Beauty Distributors, Inc.: *See—*
Hokama, Yosh, 4,554,935, Cl. 132-73.000.

International Business Machines Corporation: *See—*
Bansal, Jai P.; Bertin, Claude L.; and Troutman, Ronald R., 4,555,721, Cl. 357-42.000.
Carter, Eric L.; and Ward, Harold T., 4,555,769, Cl. 364-746.000.
Case, William R.; and Johnson, Wildey E., 4,555,767, Cl. 364-563.000.
Chance, Dudley A.; Reiley, Timothy C.; and Sampogna, Michael, 4,555,285, Cl. 156-89.000.
Convis, Danny B.; Crehan, Donald T.; and Lovell, Charles J., 4,555,700, Cl. 340-721.000.
Dahl, Richard E.; Faflak, Daniel P.; and Sendelbach, Lee A., 4,555,701, Cl. 340-736.000.
Fedak, John F.; Findley, Gerald I.; and Torr, Terry A., 4,555,802, Cl. 382-56.000.
Karnes, Roy E., Jr.; McCaskill, Rex A.; and Nguyen, Khoa D., 4,555,773, Cl. 364-900.000.
Le Van, Dien; and Wallace, Jesse T., 4,555,739, Cl. 360-103.000.
Masenas, Charles J., Jr., 4,555,776, Cl. 365-202.000.
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,555,759, Cl. 364-300.000.
Shepard, Joseph F., 4,554,728, Cl. 29-576.00W.
Stephens, Lawrence K., 4,555,772, Cl. 364-900.000.

International Coal Refining Company: *See—*
Bronfenbrenner, James C.; Foster, Edward P.; and Tewari, Krishna, 4,555,248, Cl. 44-78.000.

International Standard Electric Corporation: *See—*
Blomley, Peter F., 4,555,596, Cl. 179-81.00B.
Bossennec, Jean-Louis G.; Debuisser, Jean-Claude A.; and Farhi, Philippe F., 4,555,705, Cl. 343-55.00A.

International Telephone and Telegraph Corporation: *See—*
Argentieri, Michael A., 4,555,587, Cl. 174-11.00R.
Casilli, Joseph C., 4,555,222, Cl. 417-393.000.
Sugars, John A., 4,555,154, Cl. 339-59.00R.

Invacare Corporation: *See—*
Lockard, Walter G.; Patel, Nathalal G.; and Boris, Allen J., 4,555,121, Cl. 280-30.000.

Iowa State University Research Foundation, Inc.: *See—*
Kuehn, Thomas H., 4,555,764, Cl. 364-557.000.
Spurlin, Stanford R.; and Yeung, Edward S., 4,555,491, Cl. 436-120.000.

Irvine, Michael D., to ACD, Inc. High speed turbogenerator for power recovery from fluid flow within conduit. 4,555,637, Cl. 290-52.000.

Irvine Sensors Corporation: *See—*
Bridgewater, Walter F.; De Caro, Robert E.; Larson, Roger; and Wall, Llewellyn E., 4,555,623, Cl. 250-214.00A.

Irwin, Dennis V. Portable shelter. 4,554,937, Cl. 135-100.000.

Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,555,173, Cl. 355-3.00R.

Ishibashi, Masashi: *See—*
Nakamura, Koichi; Ishibashi, Masashi; Kameda, Hideki; and Makiyo, Minoru, 4,555,422, Cl. 428-36.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Awano, Koichi; Nitta, Yoshifumi; and Ibe, Satoshi, 4,554,964, Cl. 165-39.000.

Ishima, Kazumi, to Ricoh Company, Ltd. Power source device for ink jet printer. 4,555,713, Cl. 346-75.000.

Ishimitsu, Ikuo; Tokunaga, Toshimichi; Tanaka, Takeshi; and Anan, Yoshiaki, to Mazda Motor Corporation. Vehicle suspension system. 4,555,126, Cl. 280-707.000.

Ishizaki, Akira: *See—*
Suda, Yasuo; Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; and Ohtaka, Keiji, 4,555,169, Cl. 354-407.000.

Islet, Peter: *See—*
Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, 4,555,806, Cl. 455-62.000.

Itakiyo, Masanori: *See—*
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.

Itek Corporation: *See—*
Aldrich, Ralph E.; and Daigneault, Steven M., 4,555,162, Cl. 350-162.170.

Ito, Uji: *See—*
Matsuura, Shigeo; Ito, Uji; and Yakushiji, Yasuhiro, 4,555,702, Cl. 340-825.640.

Ito, Yukio: *See—*
Kanehori, Keiichi; Miyauchi, Katsuki; Ito, Yukio; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,555,456, Cl. 429-131.000.

ITS-Intern Transport System A/S: *See—*
Solund, Jorgen, 4,555,010, Cl. 198-361.000.

ITT Corporation: *See—*
Merrill, Dana A., 4,555,788, Cl. 375-11.000.

ITT Industries, Inc.: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,555,144, Cl. 303-92.000.
Budecker, Ludwig; and Obersteiner, Georg, 4,555,223, Cl. 417-462.000.

Iwahashi, Kazuyuki: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.

Iwai, Yasuro: *See—*
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, 4,555,615, Cl. 219-145.210.

Izhar, Rafi: *See—*
Nun, Emmanuel B.; Izhar, Rafi; and Karpol, Avner, 4,555,727, Cl. 358-106.000.

J.F.S., Inc.: *See—*
Johnson, David A., 4,555,051, Cl. 224-150.000.

J. M. Voith GmbH: *See—*
Steiner, Karl; Schiel, Christian; Meinecke, Albrecht; Mullner, Josef; and Weiss, Hans, 4,555,305, Cl. 162-205.000.

Jablonka, Dieter; Urban, Klaus; Raidt, Heinz-Peter; and Schepers, Eberhard, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.; and Ewald Dorken AG. Sound-absorbing element. 4,555,433, Cl. 428-166.000.

Jackson, Bruce J.; Simmons, Ralph F.; and Covault, Mike L., to Hewlett-Packard Company. Thin film transducer head for inductive recording and magnetoresistive reading. 4,555,740, Cl. 360-113.000.

Jackson, David L. Drawer slide mounting bracket. 4,555,147, Cl. 308-3.800.

Jacobsen, Jan: *See—*
Meier, Walter; and Jacobsen, Jan, 4,555,168, Cl. 353-7.000.

Jacobson, Dale C.: *See—*
Gibson, John M.; Jacobson, Dale C.; Poate, John M.; and Tung, Raymond T., 4,555,301, Cl. 156-617.00R.

Jacobson, Felix I.: *See—*
Agapiou, Agapios; Allan, John L. H.; and Jacobson, Felix I., 4,555,496, Cl. 502-105.000.

Jain, Gyan P., to Phillips Petroleum Company. Control of a fractional distillation process. 4,555,309, Cl. 203-1.000.

James River-Norwalk, Inc.: *See—*
Brown, Richard K.; and Seiferth, Oscar E., 4,555,605, Cl. 219-10.55E.

Jamsa, Hannu, to Satoturve Oy. Apparatus for collecting peat from a peat field. 4,554,750, Cl. 37-3.000.

Janome Sewing Machine Industry Co. Ltd.: *See—*
Eguchi, Yasukata, 4,554,879, Cl. 112-445.000.
Kongoh, Takeshi, 4,554,880, Cl. 112-454.000.

Japan: *See—*
Nemoto, Akira, 4,555,140, Cl. 297-452.000.

Jarrett, Robert B.: *See—*
Gray, Randall C.; and Jarrett, Robert B., 4,555,742, Cl. 361-93.000.

Jeans, Edward L., to Cadbury Schweppes, Plc. Carbonator for a beverage dispenser. 4,555,371, Cl. 261-122.000.

Jeffery, Philip A. E.; and Luecke, Greg R., to United Technologies Corporation. Hub-mounted actuators for blade pitch collective control. 4,555,219, Cl. 416-158.000.

Jenkins, Donald, to Astoria Fibra-Steel, Inc. Gasket-sealed molded door and framing member therefor. 4,554,764, Cl. 49-501.000.

Jensen Corporation: *See—*
Bosshart, John; and Allen, William W., 4,554,752, Cl. 38-61.000.

Jeumont-Schneider Corporation: *See—*
Brulard, Michel C., 4,555,652, Cl. 318-375.000.
Gabillet, Jean-Francois, 4,555,791, Cl. 375-58.000.

JFEC Corporation & Associates: *See—*
Foster, James O., 4,555,057, Cl. 236-94.000.

Johansson, Borje; Pramskog, Torbjorn; and Sandberg, Jan-Erik, to Forenade Fabriksverken. Pressure damper for recoilless weapons. 4,554,860, Cl. 89-1.700.

Johansson, Gustav A., to Danfoss A/S. Apparatus for conveying liquids. 4,554,791, Cl. 62-55.000.

John Fluke Mfg. Co., Inc.: *See—*
Eng, Benjamin, Jr.; Duryee, Peter S.; and Anholm, John M., Jr., 4,555,692, Cl. 340-347.0AD.

Johnsen & Jorgensen (Plastics) Limited: *See—*
Davis, Eugene E., 4,555,035, Cl. 215-215.000.

Johnson, Anthony M.: *See—*
Glass, Alastair M.; Johnson, Anthony M.; and Liao, Paul F., 4,555,622, Cl. 250-211.00J.

Johnson, David A., to J.F.S., Inc. Sling for shoulder weapon. 4,555,051, Cl. 224-150.000.

Johnson, Donald L.; and Lingenfelter, Lowell R., to Teledyne Industries, Inc. Leadless integrated circuit connector. 4,555,152, Cl. 339-17.00L.

Johnson, Donald L.; and Kordis, Thomas F., to Teledyne Industries, Inc. Electrical connector for visual display and method of making same. 4,555,157, Cl. 339-75.0MP.

Johnson Fishing, Inc.: *See—*
Klammer, Mark S.; and Decko, Del P., 4,555,233, Cl. 440-56.000.

Johnson, Richard C.; and Egbert, Leigh B., to Foster Wheeler Energy Corporation. Erosion resistant waterwall. 4,554,967, Cl. 165-134.100.

Johnson, Wildey E.: *See—*
Case, William R.; and Johnson, Wildey E., 4,555,767, Cl. 364-563.000.

Johnson, Wilfred B. Twin piston-per-cylinder engine. 4,554,894, Cl. 123-53.0AA.

Jones, Cameron W.: *See—*
Alonso, Sydney A.; and Jones, Cameron W., 4,554,855, Cl. 84-122.000.

Jones, Harry P., to Burroughs Wellcome Co. Inclusion complex of β-cyclodextrin and digoxin. 4,555,504, Cl. 514-26.000.

Jones, Howard: *See—*
Suh, John T.; Regan, John R.; Piwinski, John J.; Menard, Paul; and Jones, Howard, 4,555,508, Cl. 514-211.000.

Jones, Kenneth W., to Reed Rock Bit Company. Rotary drill bit having drag cutting elements. 4,554,986, Cl. 175-397.000.

Jones, Robert C. Apparatus for rupturing carrier bags. 4,555,212, Cl. 414-412.000.

Jones, William E.: *See—*
Fights, Michael L.; and Jones, William E., 4,555,416, Cl. 427-248.100.

Jonsson, Arne; Nyman, Sigurd; Olelind, Eskil K.; and Olofsson, Bjorn, to Jonsson Pumpkonsult. Turbo machine of the rotodynamic type. 4,555,218, Cl. 416-17.000.

Jonsson, Ernst U.; Lindqvist, Sten-Borje; and Wimmerstedt, Roland V., to Gambro Lundia AB. Process for the separation of gaseous mixtures used in sterilization processes. 4,555,251, Cl. 55-48.000.

Jonsson Pumpkonsult: *See—*
Jonsson, Arne; Nyman, Sigurd; Olelind, Eskil K.; and Olofsson, Bjorn, 4,555,218, Cl. 416-17.000.

Joos, Heinz: *See—*
Krenkel, Bernhard; and Joos, Heinz, 4,554,954, Cl. 139-439.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Rupprechter, Helmut, 4,554,706, Cl. 16-237.000.

Jung, Friedrich: *See—*
Kiesewetter, Holger; Jung, Friedrich; and Roggenkamp, Hans-Gunther, 4,554,821, Cl. 73-55.000.

Junglen, Mark T.: *See—*
Goodwin, Alton C.; Junglen, Mark T.; and Kent, John S., 4,554,963, Cl. 165-1.000.

Jurus, Kevin D., to Motor Wheel Corporation. Draw-spinning of integral vehicle wheel rim and disc segments. 4,554,810, Cl. 72-70.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Nagano, Tamio, 4,555,008, Cl. 192-106.100.

Kabushiki Kaisha Daisei Kikai: *See—*
Chikatani, Hajime, 4,554,776, Cl. 53-76.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Asano, Juichi; Okubo, Yasuo; Saito, Hiroshi; and Harada, Shigeru, 4,555,064, Cl. 241-89.300.
Baba, Kiyokazu; and Nishida, Kenji, 4,555,012, Cl. 198-621.000.
Tamura, Yukio; and Kaminishi, Masashi, 4,555,146, Cl. 305-10.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Fukushima, Yoneharu; and Wakai, Kiyoshi, 4,555,690, Cl. 340-52.00F.

Kabushiki Kaisha Sunpak: *See—*
Tsuruta, Yuzo, 4,555,747, Cl. 362-3.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Kokubu, Sadao; Hirano, Masatoshi; and Sakakibara, Takao, 4,555,743, Cl. 361-196.000.

Kabushiki Kaisha Toshiba: *See—*
Kurosawa, Ryoichi, 4,555,752, Cl. 363-68.000.
Nakagome, Hideki; and Yasuda, Satoshi, 4,554,790, Cl. 62-3.000.
Sakurai, Takayasu, 4,555,778, Cl. 365-230.000.
Tanaka, Tatsuo, 4,555,670, Cl. 330-252.000.
Ueno, Mitsushi; Shirogami, Tamotsu; and Mikogami, Yukihiro, 4,555,324, Cl. 204-284.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Hirano, Hideo; and Kimbara, Masahiko, 4,554,951, Cl. 139-105.000.

Kagawa, Fumio: *See—*
Horie, Shin'ichi; Matsuzaki, Yutaka; and Kagawa, Fumio, 4,555,250, Cl. 51-309.000.

Kahara, Toshiki; Mori, Toshikatsu; Imahashi, Jinichi; Honji, Akio; and Tamura, Kohki, to Hitachi, Ltd. Method for operating fuel cell. 4,555,452, Cl. 429-13.000.

Kaisha, Kentetsuco, Ltd.: *See—*
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; Takeya, Yasuo; and Nagai, Satoshi, 4,554,805, Cl. 68-12.00R.

Kajita, Hiroshi: *See—*
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.

Kakimoto, Hirofumi: *See—*
Fujii, Morizumi; Kakimoto, Hirofumi; and Fujino, Shinji, 4,554,769, Cl. 52-173.00R.

Kalpakci, Bayram; and Chan, Keng S., to Standard Oil Company, The. Method of enhanced oil recovery employing thickened amphoteric surfactant solutions. 4,554,974, Cl. 166-273.000.

Kamaike, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for A.C. elevator. 4,554,999, Cl. 187-29.00R.

Kameda, Hideki: *See—*
Nakamura, Koichi; Ishibashi, Masashi; Kameda, Hideki; and Makiyo, Minoru, 4,555,422, Cl. 428-36.000.

Kamienski, Conrad W., to Lithium Corporation of America. Preparation of certain alkaline earth metal organometallic compounds. 4,555,498, Cl. 502-153.000.

Kaminishi, Masashi: *See—*
Tamura, Yukio; and Kaminishi, Masashi, 4,555,146, Cl. 305-10.000.

Kamiya, Tadashi; and Hayashi, Kiyotaka, to Honda Giken Kogyo Kabushiki Kaisha. Anti-slip system for wheeled vehicle. 4,554,990, Cl. 180-197.000.

Kamp, Heinz, to W. Schlafhorst & Co. Method for calling a bobbin-changing device. 4,555,068, Cl. 242-36.000.

Kanbe, Junichiro: *See—*
Ogawa, Kyosuke; Shirai, Shigeru; Saitoh, Keishi; Misumi, Teruo; and Kanbe, Junichiro, 4,555,465, Cl. 430-95.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Toyooka, Eietsu; Tomishima, Yoshio; and Nojima, Yasuhiro, 4,555,555, Cl. 526-62.000.

Kanehori, Keiichi; Miyauchi, Katsuki; Ito, Yukio; Kirino, Fumiyoshi; and Kudo, Tetsuichi, to Hitachi, Ltd. Cathode structure for thin film battery. 4,555,456, Cl. 429-131.000.

Kanojia, Ramesh M.; Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., to Ortho Pharmaceutical Corporation. Substituted 4-alkyl-2-(1H) quinazolinone-1-alkanoic acid derivatives. 4,555,570, Cl. 544-286.000.

Kao Soap Co., Ltd.: *See—*
Fukumoto, Yasuhisa; and Moriyama, Noboru, 4,555,557, Cl. 526-240.000.

Kapp, John P.; and Smith, Robert R. Prosthetic vertebral body. 4,554,914, Cl. 128-92.00C.

Karanewsky, Donald S.; and Petrillo, Edward W., Jr., to E. R. Squibb & Sons, Inc. Phosphorus containing compounds and use as hypotensives. 4,555,506, Cl. 514-91.000.

Karanewsky, Donald S.: *See—*
Misra, Raj N.; and Karanewsky, Donald S., 4,555,520, Cl. 514-346.000.

Karklin, Roland: *See—*
Whiteside, Robert C.; Arends, Albert W.; and Karklin, Roland, 4,555,377, Cl. 264-292.000.

Karnes, Roy E., Jr.; McCaskill, Rex A.; and Nguyen, Khoa D., to International Business Machines Corporation. Printing with a data stream including merged graphic and alphanumeric data. 4,555,773, Cl. 364-900.000.

Karpol, Avner: *See—*
Nun, Emmanuel B.; Izhar, Rafi; and Karpol, Avner, 4,555,727, Cl. 358-106.000.

Karsten Solheim: *See—*
Valehrach, Emil M., 4,555,028, Cl. 209-599.000.

Kasai, Kunio: *See—*
Esaki, Hiroshi, 4,554,856, Cl. 84-95.00C.

Kasai, Yoshihiko: *See—*
Gounji, Takashi; Kawatsu, Teruo; Kasai, Yoshihiko; and Takeuchi, Chikao, 4,555,682, Cl. 333-189.000.

Kase, Hiroshi: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.

Kassai, Denes P., to FMC Corporation. Hydraulically operated four wheel sweeper. 4,554,992, Cl. 180-307.000.

Katagiri, Kazuharu; and Oguchi, Yoshihiro, to Canon Kabushiki Kaisha. Organic coating film and radiation-sensitive member having the film. 4,555,472, Cl. 430-278.000.

Kato, Hidetoshi; Maruyama, Toshinori; Matsuhashi, Hajime; and Akita, Yoshio, to Nippondenso Co., Ltd. Voltage regulator for alternator of vehicle. 4,555,657, Cl. 320-64.000.

Kato, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic rhythm performing apparatus. 4,554,854, Cl. 84-1.030.

Kato, Shigeru: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.

Katoh, Mitsumi: *See—*
Wachi, Masatada; and Katoh, Mitsumi, 4,554,858, Cl. 84-1.190.

Katsuki, Kanji: *See—*
Matsumura, Susumu; Hosokawa, Yasuhiko; Katsuki, Kanji; and Yano, Masao, 4,555,750, Cl. 363-37.000.

Katsuyama, Hitoshi, to Pioneer Video Corporation. Detection circuit for detecting synchronous and asynchronous states in a phase-locked loop circuit. 4,555,679, Cl. 331-17.000.

Kausga, Takuzo; Ikenaga, Yukio; and Suzuki, Kunio, to Polyplastics Company, Ltd. Polyacetal resin composition. 4,555,357, Cl. 252-511.000.

Kawabe, Toshihiko: *See—*
Amemori, Koichi; and Kawabe, Toshihiko, 4,554,892, Cl. 123-41.82R.

Kawabe, Ushio: *See—*
Kotera, Nobuo; Hatano, Yuji; Asano, Atsushi; and Kawabe, Ushio, 4,555,643, Cl. 307-476.000.

Kawada, Yasuyuki: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,555,351, Cl. 252-8.55D.

Kawaguchiko Seimitsu Company Limited: *See—*
Yokoyama, Eisuke, 4,554,783, Cl. 59-82.000.

Kawai, Osamu; and Ono, Katsuyasu, to NSK-Warner K.K. Webbing retractor. 4,555,074, Cl. 242-107.40A.

Kawai, Osamu, to NSK-Warner K.K. Passive seat belt system. 4,555,127, Cl. 280-806.000.

Kawajiri, Kazuhiro: *See—*
Kido, Keishiro; Sunagawa, Hiroshi; Kawajiri, Kazuhiro; Iijima, Toshio; and Nozaki, Nobuharu, 4,555,464, Cl. 430-67.000.

Kawamori, Yoshizo: *See—*
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.

Kawamoto, Masuo: *See—*
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.

Kawamura, Kouichi; Aotani, Yoshimasa; and Umehara, Akira, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 4,555,474, Cl. 430-281.000.

Kawamura, Takahide: *See—*
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,555,006, Cl. 192-0.084.

Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transferable sheet. 4,555,427, Cl. 428-195.000.

Kawatsu, Teruo: *See—*
Gounji, Takashi; Kawatsu, Teruo; Kasai, Yoshihiko; and Takeuchi, Chikao, 4,555,682, Cl. 333-189.000.

Kays, William A.: *See—*
Sieloff, Ronald F.; and Kays, William A., 4,555,447, Cl. 428-392.000.

Keese, Frank M.: *See—*
Effenberger, John A.; and Keese, Frank M., 4,555,543, Cl. 524-520.000.

Kehoe, Steven D.: *See—*
Claney, Robert L.; Walton, Herbert H.; Kehoe, Steven D.; and Barron, Kimball R., 4,554,943, Cl. 137-242.000.

Keiper Recaro GmbH & Co.: *See—*
Goldner, Walther, 4,555,137, Cl. 297-284.000.

Kellner, Phillip R.: *See—*
Gamson, Alan R.; and Kellner, Phillip R., 4,555,475, Cl. 430-309.000.

Kelsey-Hayes Co.: *See—*
Frait, John S.; Lowman, Clark E.; Morris, George W., III; and Tribe, Leonard T., 4,555,120, Cl. 280-6.100.

Kelterbaum, Manfred: *See—*
Wallner, Josef; and Kelterbaum, Manfred, 4,555,087, Cl. 249-78.000.

Kendall, Harry A.: *See—*
May, Marvin M.; Billings, Robert C.; Kendall, Harry A.; and Bayorgeon, Jeffrey T., 4,555,091, Cl. 254-267.000.

Kendrick, Aidan G.: *See—*
Banister, Arthur J.; Hauptman, Zdenek V.; and Kendrick, Aidan G., 4,555,316, Cl. 204-59.00R.

Kenny, John. Speedometer cable lubricating device. 4,554,998, Cl. 184-15.100.

Kent, David, to Guelph Elastic Hosiery Company Limited. Flotation vest construction. 4,555,234, Cl. 441-106.000.

Kent, John S.: *See—*
Goodwin, Alton C.; Junglen, Mark T.; and Kent, John S., 4,554,963, Cl. 165-1.000.

Kern, Hans; and Haslberger, Richard, to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Metering apparatus. 4,554,939, Cl. 137-99.000.

Kerr, Paul R.: *See—*
Makhlouf, Joseph M.; McCollum, Gregory J.; and Kerr, Paul R., 4,555,551, Cl. 525-455.000.

Key Pharmaceuticals, Inc.: *See—*
Hsiao, Charles H., 4,555,399, Cl. 424-35.000.

Khan, Aman U., to Whirlpool Corporation. Condensate receptacle support for dehumidifier. 4,554,794, Cl. 62-150.000.

Khoe, Giok D.; and van Heuven, Johannes H. C., to U.S. Philips Corporation. Distribution system for a local area network. 4,555,810, Cl. 455-612.000.

Khoi, Danny J., to Materiel et Auxiliaire de Signalisation et de Controle pour l'Automation-Auxitrol. Level detection head for hydrostatic effect with protection. 4,554,830, Cl. 73-299.000.

Kido, Keishiro; Sunagawa, Hiroshi; Kawajiri, Kazuhiro; Iijima, Toshio; and Nozaki, Nobuharu, to Fuji Photo Film Co., Ltd. Amorphous silicon electrophotographic photosensitive materials. 4,555,464, Cl. 430-67.000.

Kiesewetter, Holger; Jung, Friedrich; and Roggenkamp, Hans-Gunther. Apparatus for determining the viscosity of fluids, in particular blood plasma. 4,554,821, Cl. 73-55.000.

Kiko, Frederick H.: *See—*
Hackett-Jones, Francis C.; and Kiko, Frederick H., 4,555,599, Cl. 179-170.00R.

Kikuchi, Hiroshi: *See—*
Tanaka, Isamu; Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,555,532, Cl. 523-400.000.

Kikugawa, Shozo; and Yasufuku, Yoshitaka, to Konishiroku Photo Industry Co., Ltd. Magnetic recording medium. 4,555,443, Cl. 428-336.000.

Kimbara, Masahiko: *See—*
Hirano, Hideo; and Kimbara, Masahiko, 4,554,951, Cl. 139-105.000.

Kimble, James B.: *See—*
Kukes, Simon G.; and Kimble, James B., 4,555,499, Cl. 502-208.000.

Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, to Asahi Kasei Kogyo Kabushiki Kaisha. Fluorinated ether acyl fluorides having alkylthio or alkylsulfone groups. 4,555,369, Cl. 260-544.00F.

Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, to Toshiba Silicone Co., Ltd. Composition for coating. 4,555,545, Cl. 524-858.000.

Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, to Toshiba Silicone Co., Ltd. Method for making novel copolymer. 4,555,559, Cl. 528-16.000.

Kindle, Edwin: *See—*
Gassner, Theo; Hann, Bruno; and Kindle, Edwin, 4,554,861, Cl. 91-446.000.

Kindlein, Irmgard: *See—*
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,554,715, Cl. 28-107.000.
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,555,424, Cl. 428-91.000.
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,555,425, Cl. 428-91.000.

King, Francis G.; and Gable, Stewart V., to Ford Motor Company. Automated manual transmission shifter with electronic control actuators external of the vehicle. 4,554,824, Cl. 73-117.000.

King, James B.: *See—*
Raccah, Edward R.; and King, James B., 4,555,232, Cl. 432-222.000.

King, Lucy W.: *See—*
Lertora, Juan J. L.; and King, Lucy W., 4,555,525, Cl. 514-616.000.

Kirby-Smith, Trevor R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Wind indicators. 4,554,827, Cl. 73-189.000.

Kircher, Dieter: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,555,144, Cl. 303-92.000.

Kirchhoff, Hans: *See—*
Feldmann, Hugo; Gipperich, Theodor; Kirchhoff, Hans; and Stodt, Rolf, 4,554,813, Cl. 72-251.000.

Kirino, Fumiyoshi: *See—*
Kanehori, Keiichi; Miyauchi, Katsuki; Ito, Yukio; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,555,456, Cl. 429-131.000.

Kirkland, Alvin E., to Conlin Bros., Inc. Replaceable shoulder padding for football and the like. 4,554,681, Cl. 2-2.000.

Kirsch, Albert J. Hemming rule. 4,554,739, Cl. 33-2.00H.

Kiselev, Vladimir G.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.

Kishi, Hajimu; Seki, Masaki; and Tanaka, Kunio, to Fanuc Ltd. Method and apparatus for entering graphics. 4,555,590, Cl. 178-18.000.

Kissel, Gary T., to Allis-Chalmers Corporation. Corner connector clip in an air filter grid. 4,555,255, Cl. 55-355.000.

Kitajima, Masao; Seshimoto, Osamu; and Mizutani, Shigemitsu, to Fuji Photo Film Co., Ltd. Ion selective electrode and process of preparing the same. 4,555,274, Cl. 148-6.14R.

Kitamura, Hiroki: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.

Kitzer, Peter: *See—*
Behrens, Gunter; Schmitz, Walter; Kitzer, Peter; and Rusch, Dieter, 4,555,585, Cl. 136-245.000.

Kiuchi, Tsutomu: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.

Kiwak, Robert S.: *See—*
Sorensen, Ian W.; and Kiwak, Robert S., 4,555,393, Cl. 423-447.100.

Kiyotomo, Tsutomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Plastic molding apparatus. 4,555,086, Cl. 249-67.000.

KLA Instruments Corporation: *See—*
Broadbent, William H., Jr.; Buchholz, Steve; Eldredge, Peter; and Wihl, Mark J., 4,555,798, Cl. 382-8.000.

Klaass, Reinhard M.; and Suriano, Francis J., to Garrett Corporation, The. Foil bearing alignment. 4,555,187, Cl. 384-103.000.

Klammer, Mark S.; and Decko, Del P., to Johnson Fishing, Inc. Shock-absorbing bow mount for trolling motor. 4,555,233, Cl. 440-56.000.

Klauke, Erich; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of acyl cyanides. 4,555,370, Cl. 260-545.00R.

Klein, Lawrence F.: *See—*
Caridis, Andrew A.; Benson, Clark K.; and Klein, Lawrence F., 4,554,865, Cl. 99-353.000.

Klockner CRA Technologie GmbH: *See—*
Chitil, Manfred, 4,555,267, Cl. 75-46.000.

Kloeckner-Humboldt-Deutz AG: *See—*
Binder, Berthold; and Purrer, Josef, 4,555,065, Cl. 241-241.000.

Klopp, Ludwig: *See—*
Leifeld, Ferdinand; Coenen, Rolf; Oelering, Werner; and Klopp, Ludwig, 4,554,708, Cl. 19-80.00R.

Klumper, Jan W.; and Visser, Huibert, to de Nederlandsche Bank N.V. Apparatus for automatically detecting and evaluating the characteristics of prints. 4,555,181, Cl. 356-448.000.

Knapp, Heinrich; Sauer, Rudolf; Krauss, Rudolf; and Hafner, Udo, to Robert Bosch GmbH. Electromagnetically actuated valve, in particular a fuel injection valve for fuel injection systems. 4,555,060, Cl. 239-585.000.

Knapp, Scott R.; and Kolada, Paul P., to Kohler Co. Water distribution system for showers. 4,554,690, Cl. 4-601.000.

Knauer, Robert C., Jr.: *See—*
Stanley, Roderic K.; Milewits, Marvin; Knauer, Robert C., Jr.; and Bradfield, James E., 4,555,665, Cl. 324-229.000.

Kochte, Werner W.; and Nimon, Susan K., to Scott & Fetzer Company, The. Vacuum driven tool. 4,554,702, Cl. 15-372.000.

Kockumation AB, Remadivisionen: *See—*
Bjorkelund, Mats, 4,555,633, Cl. 250-560.000.

Kodama, Hiroaki; Kubo, Tetsuo; and Miwa, Sinkichi, to Sumitomo Electric Industries, Ltd. Method for inspecting crimp bonded terminals. 4,555,799, Cl. 382-8.000.

Koga, Yoshiro; and Nakao, Kenji, to Onkyo Kabushiki Kaisha. Rectified and smoothed DC supplying circuitry. 4,555,751, Cl. 363-44.000.

Kohler Co.: *See—*
Knapp, Scott R.; and Kolada, Paul P., 4,554,690, Cl. 4-601.000.

Koide, Hiroshi, to Ricoh Co. Ltd. Optical recording and playback unit. 4,555,780, Cl. 369-43.000.

Koike, Mitsuhiro: *See—*
Sakuragi, Toshio; Nakayama, Kazuo; Sato, Masaaki; and Koike, Mitsuhiro, 4,554,835, Cl. 73-640.000.

Koike, Takahisa, to Ricoh Company, Ltd. Charge-controlled ink-jet printing method and apparatus. 4,555,710, Cl. 346-1.100.

Kokken, Johannes E.: *See—*
de Willigen, Hans C.; and Kokken, Johannes E., 4,555,148, Cl. 308-6.00R.

Kokubu, Sadao; Hirano, Masatoshi; and Sakakibara, Takao, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Timer circuit. 4,555,743, Cl. 361-196.000.

Kolada, Paul P.: *See—*
Knapp, Scott R.; and Kolada, Paul P., 4,554,690, Cl. 4-601.000.

Koleske, Joseph V.; Peacock, Glenn S.; and Kwiatkowski, George T., to Union Carbide Corporation. Magnetic recording medium. 4,555,449, Cl. 428-411.100.

Komatsu, Hideo; Harada, Hiroyuki; and Matsuki, Tomiji, to Toray Industries, Inc. Polyester-polyether copolymer composition. 4,555,542, Cl. 524-178.000.

Komoda, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for controlling ignition timing of an internal combustion engine. 4,554,900, Cl. 123-418.000.

Komornicki, Jacques: *See—*
Bauer, Denise; Komornicki, Jacques; and Tellier, Jacques, 4,555,343, Cl. 210-643.000.

Kongoh, Takeshi, to Janome Sewing Machine Industry Co., Ltd. Electronic sewing machine. 4,554,880, Cl. 112-454.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kikugawa, Shozo; and Yasufuku, Yoshitaka, 4,555,443, Cl. 428-336.000.
Mogi, Michio, 4,555,172, Cl. 355-3.0DD.

Koomey, Inc.: *See—*
Loup, Ronald L., 4,554,940, Cl. 137-116.000.

Koppers Company, Inc.: *See—*
Fisher, Chester D., 4,555,254, Cl. 55-345.000.

Korber, Klaus: *See—*
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, 4,554,707, Cl. 17-47.000.

Kordis, Thomas F.: *See—*
Johnson, Donald L.; and Kordis, Thomas F., 4,555,157, Cl. 339-75.0MP.

Korf Technologies, Inc.: *See—*
Wells, William, 4,555,266, Cl. 75-53.000.

Kotera, Nobuo; Hatano, Yuji; Asano, Atsushi; and Kawabe, Ushio, to Hitachi, Ltd. Superconducting logic circuit and superconducting switching device therefor. 4,555,643, Cl. 307-476.000.

Kotzur, Joachim, to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG. Liquid shaft packing having a reduced slide ring temperature. 4,555,117, Cl. 277-173.000.

Kouda, Jyounichi: *See—*
Yokoyama, Shigeki; Nakamura, Koki; Kouda, Jyounichi; and Sekiguchi, Nobuhisa, 4,555,480, Cl. 430-527.000.

Kourimsky, Friedrich J. A., to AMP Incorporated. Electrical connector assembly having mating and unmating removable keys. 4,555,156, Cl. 339-75.00M.

Koyama, Hiroyasu: *See—*
Tahara, Yoshiyuki; Takahashi, Toshihiro; Koyama, Hiroyasu; Suzuki, Yoshikuni; and Yasuda, Masatoshi, 4,555,365, Cl. 260-404.000.

Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., to Mobil Oil Corporation. Method and apparatus for injecting liquid hydrocarbon feed and steam into a catalytic cracking zone. 4,555,328, Cl. 208-157.000.

Kramer, Franklin; Bruins, Henderikus B.; Giacone, Joseph; and Carbillet, Luc L., to General Foods Corporation. Continuous chewing gum method. 4,555,407, Cl. 426-5.000.

Kramer, George J., to Minnesota Mining and Manufacturing Company. Magnetically attractable developer material transport apparatus. 4,555,174, Cl. 355-3.0DD.

Krasborn, Gottfried: *See—*
Roentgen, Paul; Krumm, Helmut; Krasborn, Gottfried; and Lenzen, Gunter, 4,555,607, Cl. 219-10.570.

Kraus, Guenther M.: *See—*
Carty, Michael W.; and Kraus, Guenther M., 4,554,721, Cl. 29-416.000.

Krauss, Rudolf: *See—*
Knapp, Heinrich; Sauer, Rudolf; Krauss, Rudolf; and Hafner, Udo, 4,555,060, Cl. 239-585.000.

Kreager, William D., to Frito-Lay, Inc. Method and apparatus forming fin-type back seal using cohesive sealants without externally applied heat. 4,555,289, Cl. 156-203.000.

Krempa, James F., to Chain Supply Company. Conveyor chain link structure. 4,555,014, Cl. 198-852.000.

Krenkel, Bernhard; and Joos, Heinz, to F. Oberdorfer. Loom for weaving flat fabric. 4,554,954, Cl. 139-439.000.

Kress, Donald W. Pressure sensing device and method for preventing ulcer formation. 4,554,930, Cl. 128-774.000.

Krishnamurthy, Sowmithri, to Mobil Oil Corporation. Reactivation of noble metal-containing zeolite catalyst materials. 4,555,495, Cl. 502-50.000.

Krumm, Helmut: *See—*
Roentgen, Paul; Krumm, Helmut; Krasborn, Gottfried; and Lenzen, Gunter, 4,555,607, Cl. 219-10.570.

Krupp Polysius AG: *See—*
Grachtrup, Heinz, 4,554,876, Cl. 110-246.000.

Kubli, Robert A.: *See—*
Flanagan, James L.; and Kubli, Robert A., 4,555,598, Cl. 179-121.00D.

Kubo, Tetsuo: *See—*
Kodama, Hiroaki; Kubo, Tetsuo; and Miwa, Sinkichi, 4,555,799, Cl. 382-8.000.

Kudlich, Walter: *See—*
Voss, Jurgen; Dombkowski, Otto; Kudlich, Walter; and Stodulka, Jan, 4,555,024, Cl. 206-454.000.

Kudo, Tetsuichi: *See—*
Kanehori, Keiichi; Miyauchi, Katsuki; Ito, Yukio; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,555,456, Cl. 429-131.000.

Kuehling, Guenter F., to Allied Corporation. Manual cable clamp closure. 4,554,818, Cl. 72-410.000.

Kuehn, Thomas H., to Iowa State University Research Foundation, Inc. Net energy transfer measurement methods, apparatus and systems with solar energy and control applications. 4,555,764, Cl. 364-557.000.

Kukes, Simon G.; and Kimble, James B., to Phillips Petroleum Company. Catalyst for demetallization of hydrocarbon containing feed streams. 4,555,499, Cl. 502-208.000.

Kukes, Simon G., to Phillips Petroleum Company. Catalyst for hydrofining process for hydrocarbon-containing feed streams. 4,555,500, Cl. 502-334.000.

Kulczycki, Elaine S.: *See—*
Habel, Paul A.; and Kulczycki, Elaine S., 4,555,009, Cl. 192-106.200.

Kumamura, Masaaki: *See—*
Nishiike, Naritoshi; Nishimaki, Takashi; Miura, Yasushi; and Kumamura, Masaaki, 4,555,228, Cl. 425-185.000.

Kunert, Heinz, to Saint-Gobain Vitrage. Anti-glare glass pane for a vehicle. 4,555,434, Cl. 428-194.000.

Kuno, Akira: *See—*
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,555,761, Cl. 364-424.000.

Kunzler, Wilhelm F.; and Coombs, William F., to Bausch & Lomb Incorporated. Rotational molding of contact lenses. 4,555,372, Cl. 264-2.100.

Kuranishi, Masaaki: *See—*
Aiba, Masahiko; Kuranishi, Masaaki; and Miyake, Hideyuki, 4,555,718, Cl. 346-140.00R.

Kuraray Company, Ltd.: *See—*
Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, 4,555,439, Cl. 428-221.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.

Kurihara, Nobuo: *See—*
Nishikawa, Mitsuyo; and Kurihara, Nobuo, 4,555,800, Cl. 382-25.000.

Kurosaki, Teikichi: *See—*
Hamada, Masaaki; Okamaoto, Kaoru; and Kurosaki, Teikichi, 4,555,513, Cl. 514-311.000.

Kurosawa, Ryoichi, to Kabushiki Kaisha Toshiba. AC Power converter with commutation circuit for reducing reactive power. 4,555,752, Cl. 363-68.000.

Kurosawa, Ryoichi; and Shimamura, Takeo, to Tokyo Shibaura Denki Kabushiki Kaisha. AC Current control system. 4,555,755, Cl. 363-160.000.

Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., to Fairchild Camera & Instrument Corporation. Lead wire bond attempt detection. 4,555,052, Cl. 228-104.000.

Kurusu, Yasuo: *See—*
Masuda, Tatsunosuke; Hohki, Tetsuo; and Kurusu, Yasuo, 4,555,180, Cl. 356-445.000.

Kustka, D. Lucinda. Unity candle. 4,555,231, Cl. 431-288.000.

Kusumoto, Hiroshi: *See—*
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.

Kwiatkowski, George T.: *See—*
Koleske, Joseph V.; Peacock, Glenn S.; and Kwiatkowski, George T., 4,555,449, Cl. 428-411.100.

Kyowa Hakko Kogyo Co. Ltd.: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.

Labenz, Gary F. Boot guard for sewer manhole construction. 4,554,772, Cl. 52-396.000.

Labsystems Oy: *See—*
Harjunmaa, Hannu, 4,555,178, Cl. 356-339.000.

Ladd, Harry E.: *See—*
Angelucci, Richard J.; Cope, Andrew P.; Hallam, Donald E.; and Ladd, Harry E., 4,555,067, Cl. 242-35.50A.

Laidig, Manfred R., to Singer Company, The. Sewing machine presser device with feed drift control. 4,554,878, Cl. 112-235.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Marbic, Gerard; Schaff, Didier; and Remy, Francis, 4,555,609, Cl. 219-121.0PC.

Lally, James J., to Health Education Publication Company, Inc. Cardio pulmonary resuscitation pressure indicator. 4,554,910, Cl. 128-28.000.

Lam, Ping H., to Wallace Companies, Inc., The. Modular connector and system containing the same. 4,555,158, Cl. 339-99.00R.

Landis, Phillip S.: *See—*
Horodysky, Andrew G.; and Landis, Phillip S., 4,555,353, Cl. 252-49.600.

Landscheidt, Alfons, to Chemische Fabrik Stockhausen GmbH. Process for the production of 7-oxabicyclo (2.2.1)hept-5-ene derivatives. 4,555,581, Cl. 549-463.000.

Lane, Joseph A.: *See—*
Hull, Robert; and Lane, Joseph A., 4,555,253, Cl. 55-170.000.

Lane, Leonard A., to Illirrie Holdings Pty Ltd. Trapeze system. 4,554,881, Cl. 114-39.000.

Lane, Wallace W. Modular floating structure. 4,554,883, Cl. 114-266.000.

Lang Fastener Corporation: *See—*
Hendry, James W., 4,555,225, Cl. 425-4.00R.

Lang, Thomas J.: *See—*
Distin, Robert G., Jr.; Lang, Thomas J.; and Smith, David E., 4,554,846, Cl. 74-805.000.

Lange, Alois: *See—*
Bochinski, Rolf; Eimer, Klaus; Lange, Alois; and Nghiem, Xuan L., 4,554,965, Cl. 165-95.000.

Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, to Rohde & Schwarz GmbH & Co. KG. System for the automatic establishment of a shortwave telegraphy signal connection. 4,555,806, Cl. 455-62.000.

Langerholc, John; and Halldorsson, Thorsteinn. Detection and imaging of objects in scattering media by light irradiation. 4,555,179, Cl. 356-342.000.

LaRossa, Denise D.; Thunberg, Allen L.; Norton, Gary E.; and Dappen, Glen M., to Eastman Kodak Company. Analytical element and method for alkaline phosphatase assay. 4,555,484, Cl. 435-21.000.

Larson, Bradley W., to Mead Corporation, The. Bottom level sheet feeding apparatus. 4,555,103, Cl. 271-35.000.

Larson, Roger: *See—*
Bridgewater, Walter F.; De Caro, Robert E.; Larson, Roger; and Wall, Llewellyn E., 4,555,623, Cl. 250-214.00A.

Laton, Richard W.: *See—*
Galani, Zvi; Laton, Richard W.; Waterman, Raymond C., Jr.; and DiBiase, Robert, 4,555,678, Cl. 331-1.00A.

Laurent, Henry: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, 4,555,507, Cl. 514-172.000.

Laval, Claude C., Jr. Self-purging separator. 4,555,333, Cl. 210-113.000.

Lawrence, Charles C.: *See—*
Rifkin, Gary L.; Lawrence, Charles C.; Zilber, Sam; and Hamby, Michael, 4,555,749, Cl. 362-249.000.

Leas, Arnold M. Solid fuel gasifying unit and gas fractionating unit. 4,555,249, Cl. 48-62.00R.

Le Beon, Roger M. Safety hooks. 4,554,712, Cl. 24-241.0PP.

LeBlanc, John R.: *See—*
Cohen, Saul M.; and LeBlanc, John R., 4,555,319, Cl. 204-159.210.

Lederman, Frederick E., to General Motors Corporation. Clutch release bearing assembly. 4,555,190, Cl. 384-495.000.

Lee, Chi-Long; Maxson, Myron T.; and Rabe, James A., to Dow Corning Corporation. Foamable polyorganosiloxane compositions. 4,555,529, Cl. 521-124.000.

Lee, Fui-Tseng H.; and Green, Joseph, to FMC Corporation. Polyurethane elastomer composition. 4,555,562, Cl. 528-72.000.

Lee, Seok H.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,555,364, Cl. 260-397.200.

Leesona Corporation: *See—*
Whiteside, Robert C.; Arends, Albert W.; and Karklin, Roland, 4,555,377, Cl. 264-292.000.

Le Fur, Bernard: *See—*
Houdayer, Bernard; Le Fur, Bernard; Meneghin, Rene ; and Moniod, Jean-Michel, 4,555,208, Cl. 413-2.000.

Legge, Ronald; Rice, M. John, Jr.; and Sarma, Kalluri R., to Motorola, Inc. Oxidation of material in high pressure oxygen plasma. 4,555,303, Cl. 156-643.000.

Leggett & Platt, Incorporated: *See—*
Hiatt, Sidney A., 4,555,097, Cl. 267-100.000.
Whitehead, Larry W., 4,554,692, Cl. 5-411.000.

Leib, Roger K. Patient's defined-motion chair. 4,555,139, Cl. 297-460.000.

Leifeld, Ferdinand; Coenen, Rolf; Oelering, Werner; and Klopp, Ludwig, to Trutzschler GmbH & Co. KG. Method and apparatus for spraying textile fiber bales. 4,554,708, Cl. 19-80.00R.

Leland Stanford, Jr. University, Board of Trustees of: *See—*
Byer, Robert L., 4,555,786, Cl. 372-70.000.

Lemmens, Rudolphus P. M., to Vredestein N.V. Fender system. 4,554,882, Cl. 114-219.000.

Lenk, Pedro A.: *See—*
Brightman, Barrie; Elliott, George; Lenk, Pedro A.; Shah, Jayantkumar R.; and Stewart, William H., 4,555,595, Cl. 179-18.0ES.

Lenzen, Gunter: *See—*
Roentgen, Paul; Krumm, Helmut; Krasborn, Gottfried; and Lenzen, Gunter, 4,555,607, Cl. 219-10.570.

Lepic, Daniel A.: *See—*
Brooks, Ralf M.; and Lepic, Daniel A., 4,555,617, Cl. 235-379.000.

Le Rodallec, Andre J. L.: *See—*
Mathieu, Michel G.; and Le Rodallec, Andre J. L., 4,555,736, Cl. 358-342.000.

Lertora, Juan J. L.; and King, Lucy W., to Administrators of the Tulane Educational Fund. Use of desethyl-N-acetylprocainamide (NAPADE) as an inotropic agent. 4,555,525, Cl. 514-616.000.

Les Cables de Lyon, S.A.: *See—*
Bonicel, Jean-Pierre; Prigent, Madeleine; and Cottevieille, Christian, 4,555,539, Cl. 524-127.000.

Leskovec, Robert A.; Davenport, John M.; and von Herrmann, Pieter J., to General Electric Company. Ballast circuit for gas discharge tubes utilizing time-pulse additions. 4,555,647, Cl. 315-179.000.

Le Van, Dien; and Wallace, Jesse T., to International Business Machines Corporation. Semi self-loading ferrite head. 4,555,739, Cl. 360-103.000.

Lever Brothers Company: *See—*
Borovian, Gayle E., 4,555,400, Cl. 424-78.000.
Butterworth, Robert M.; and Wells, Martin A., 4,555,349, Cl. 252-8.600.
Clarke, David E.; Davies, James F.; Smart, Colin; and Tune, John B., 4,555,354, Cl. 252-90.000.
Moran, David P. J.; Hepburn, John J.; and Sharp, David G., 4,555,411, Cl. 426-603.000.

Levine, Seymour D.: *See—*
Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,571, Cl. 544-286.000.
Kanojia, Ramesh M.; Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,570, Cl. 544-286.000.

Levinthal, Michael L., to Morton Thiokol, Inc. Process for simultaneously crystallizing components of EAK explosive. 4,555,280, Cl. 149-109.600.

Lewis, Henry G., Jr.; and Stiller, Thomas M., to RCA Corporation. Digital signal processing system employing logarithms to multiply and divide. 4,555,768, Cl. 364-757.000.

Lewis, James H., to Nutech Energy Systems, Inc. Machine and method for the manufacture of an air-to-air heat exchanger. 4,554,719, Cl. 29-157.30R.

L'Henaff, Patrick: *See—*
Bricaud, Herve ; and L'Henaff, Patrick, 4,555,153, Cl. 339-17.0CF.

Liao, Paul F.: *See—*
Glass, Alastair M.; Johnson, Anthony M.; and Liao, Paul F., 4,555,622, Cl. 250-211.00J.

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Behrens, Gunter; Schmitz, Walter; Kitzer, Peter; and Rusch, Dieter, 4,555,585, Cl. 136-245.000.

Lile, Derek L.: *See—*
Collins, David A.; Lile, Derek L.; and Zeisse, Carl R., 4,555,273, Cl. 148-1.500.

Lilley, Jay S., to United States of America, Army. Method for burning rate characterization of solid propellants. 4,554,823, Cl. 73-116.000.

Lilly, Gerard P., to Westinghouse Electric Corp. Hybrid preheat/recirculating steam generator. 4,554,889, Cl. 122-32.000.

Limca Research Inc.: *See—*
Doutre, Don A.; and Guthrie, Roderick I. L., 4,555,662, Cl. 324-71.400.

LiMuti, Charles M.; Babb, Bruce E.; and Mauck, John C., to Eastman Kodak Company. Methods, compositions and elements for the determination of lipase. 4,555,483, Cl. 435-19.000.

Linde Aktiengesellschaft: *See—*
Skolaude, Werner; and Eggendorfer, Gunnar, 4,555,256, Cl. 62-18.000.

Linde, Gilbert W., to Sperry Corporation. Manure spreader expeller flail. 4,555,061, Cl. 239-675.000.

Lindquist, Thomas W. F.: *See—*
Citron, Alan L.; Lindquist, Thomas W. F.; and Popp, William E., 4,555,699, Cl. 340-707.000.

Lindqvist, Sten-Borje: *See—*
Jonsson, Ernst U.; Lindqvist, Sten-Borje; and Wimmerstedt, Roland V., 4,555,251, Cl. 55-48.000.

Lingenfelter, Lowell R.: *See—*
Johnson, Donald L.; and Lingenfelter, Lowell R., 4,555,152, Cl. 339-17.00L.

Linhoff & Thesenfitz Maschinenbau GmbH: *See—*
Thesenfitz, Klaus, 4,555,283, Cl. 156-71.000.

Lion Corporation: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,555,351, Cl. 252-8.55D.

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Kamienski, Conrad W., 4,555,498, Cl. 502-153.000.

Litman, Ira. Method and apparatus for obtaining the combined aroma of several substances. 4,554,820, Cl. 73-23.000.

Little, Ian E.: *See—*
Howard, Kenneth G.; and Little, Ian E., 4,555,257, Cl. 65-13.000.

Lively, Lewell M., Jr.: *See—*
Danielsen, Donald P.; and Lively, Lewell M., Jr., 4,555,133, Cl. 294-82.240.

Lobe, Hartwig, to Bayerische Motoren Werke AG. Fuse and distribution arrangement box for motor vehicles. 4,555,638, Cl. 307-10.00R.

Lobregt, Steven: *See—*
Op de Beek, Johannes C. A.; and Lobregt, Steven, 4,555,760, Cl. 364-414.000.

Lockard, Walter G.; Patel, Nathalal G.; and Boris, Allen J., to Invacare Corporation. Invalid's chair to facilitate transfer to an automobile. 4,555,121, Cl. 280-30.000.

Lockhart, Bobby: *See—*
Molloy, Michael P., 4,554,758, Cl. 43-61.000.

Loeser, Cary A.: *See—*
Eisenhauer, Roy J.; Loeser, Cary A.; and Goodner, Charles G., Jr., 4,554,822, Cl. 73-61.00R.

Lohner, Manfred: *See—*
Gruber, Klaus; Lohner, Manfred; Posselt, Klaus; and Wagener, Hans H., 4,555,524, Cl. 514-570.000.

Loomis, Gary L., to Du Pont de Nemours, E. I., and Company. Process for making foamed, sulfur-cured polymer blend compositions. 4,555,528, Cl. 521-89.000.

Lordi, Francis D.: *See—*
Collins, Michael F.; and Lordi, Francis D., 4,555,612, Cl. 219-121.00P.

L'Oreal: *See—*
de la Mettrie, Roland; and Canivet, Patrick, 4,555,247, Cl. 8-405.000.
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,555,246, Cl. 8-405.000.

Losel, Walter: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,555,511, Cl. 514-301.000.

Lottspeich, Friedrich: *See—*
Brantl, Victor; Teschemacher, Hansjorg; Henschen, Agnes; and Lottspeich, Friedrich, 4,555,403, Cl. 514-17.000.

Loup, Ronald L., to Koomey, Inc. Pressure reducing and regulating valve. 4,554,940, Cl. 137-116.000.

Loutfy, Rafik O.: *See—*
Hor, Ah-Mee; and Loutfy, Rafik O., 4,555,463, Cl. 430-59.000.

Lovell, Charles J.: *See—*
Convis, Danny B.; Crehan, Donald T.; and Lovell, Charles J., 4,555,700, Cl. 340-721.000.

Lowman, Clark E.: *See—*
Frait, John S.; Lowman, Clark E.; Morris, George W., III; and Tribe, Leonard T., 4,555,120, Cl. 280-6.100.

Lucas, Gary M., to General Electric Company. Curable silicone compositions and processes. 4,555,420, Cl. 427-387.000.

Ludwig, Peter; and Steiner, Meinrad, to Mettler Instrumente AG. Method and system for displaying relative values on a multi-segment display. 4,554,988, Cl. 177-178.000.

Luecke, Greg R.: *See—*
Jeffery, Philip A. E.; and Luecke, Greg R., 4,555,219, Cl. 416-158.000.

Lukens General Industries, Inc.: *See—*
Schmitt, Dallas L.; and Spencer, Kenneth E., 4,554,875, Cl. 105-221.00R.

Lukens, William E.: *See—*
Morris, Richard A.; Lukens, William E.; and Zanis, Charles A., 4,555,614, Cl. 219-130.010.

Lundstrom, Kristian, to Tamfelt Oy Ab. Method and means for removing water from a web in a press of a papermaking machine. 4,555,306, Cl. 162-205.000.

Lupke, Manfred A. A. Calibrator for use in the manufacture of double walled thermoplastic pipe. 4,555,230, Cl. 425-325.000.

Luthje, Holger: *See—*
Harms, Margret; Bruns, Angelika; Luthje, Holger; and Matthiessen, Bernd, 4,555,460, Cl. 430-5.000.

Lutkowski, Lawrence: *See—*
Nugent, Edward L.; and Lutkowski, Lawrence, 4,555,336, Cl. 210-232.000.

Lutz, James F.: *See—*
Margulefsky, Allen L.; and Lutz, James F., 4,554,792, Cl. 62-77.000.

Lyman, John B., to Whirlpool Corporation. Invisible hinge means for lid and hood of a canister vacuum cleaner. 4,554,700, Cl. 15-323.000.

Lynn, Charles E.: *See—*
Wenning, Thomas J.; and Lynn, Charles E., 4,555,198, Cl. 403-130.000.

M/A-COM, Inc.: *See—*
Burr, John E., 4,555,680, Cl. 331-86.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg AG: *See—*
Holz, Joachim; Meier, Wolfgang; Schwarting, Karl-Heinz; Goris, Heinrich; and Ogorek, Kurt, 4,555,142, Cl. 299-43.000.
Kotzur, Joachim, 4,555,117, Cl. 277-173.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Thudt, Hubert; and Winkler, Harald, 4,554,874, Cl. 104-247.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,554,870, Cl. 101-365.000.

Machida, Haruchika; and Yuchi, Sadataka, to Hochiki Kabushiki Kaisha. Fire alarm system. 4,555,695, Cl. 340-538.000.

Maeda, Yoshiyasu; Ueura, Akira; Sato, Kazuyoshi; and Watanabe, Katsunori, to Murata Kikai Kabushiki Kaisha. Yarn winding apparatus and method. 4,555,069, Cl. 242-43.00R.

Maehara, Toshifumi; and Yoshizawa, Hiroyuki, to Akebono Brake Industry Company Ltd. Anti-lock system for vehicles. 4,555,145, Cl. 303-92.000.

Mahal, Harbhajan S.: *See—*
Hall, Richard W.; Sonnenberg, Sven; and Mahal, Harbhajan S., 4,555,220, Cl. 417-342.000.

Maier, Alfred E.; and Ricci, Louis N., to Westinghouse Electric Corp. Circuit breaker having improved stab assembly. 4,555,604, Cl. 200-255.000.

Maier, Peter; Schirrmacher, Roland; and Simen, Rolf. Support for endless grinding sleeves. 4,555,199, Cl. 403-370.000.

Maier, Wilfried: *See—*
Wrulich, Herwig; Schetina, Otto; Siebenhofer, Gottfried; and Maier, Wilfried, 4,555,143, Cl. 299-81.000.

Makhlouf, Joseph M.; McCollum, Gregory J.; and Kerr, Paul R., to PPG Industries, Inc. Method of molding. 4,555,551, Cl. 525-455.000.

Maki, Hirohisa; Sano, Takashi; and Yamamoto, Misao, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Anti-corrosive coating composition. 4,555,536, Cl. 524-66.000.

Makiyo, Minoru: *See—*
Nakamura, Koichi; Ishibashi, Masashi; Kameda, Hideki; and Makiyo, Minoru, 4,555,422, Cl. 428-36.000.

Mallinckrodt, Inc.: *See—*
Benham, Thomas, 4,554,849, Cl. 83-40.000.

Mannesmann Aktiengesellschaft A.G.: *See—*
Stender, Erich; and Fuesers, Wilhelm G., 4,554,816, Cl. 72-368.000.

Manville Service Corporation: *See—*
Ekdahl, Wendell G.; Chaudhuri, Asit R.; and Miiller, William C., 4,555,492, Cl. 501-38.000.

Mao, Mark H. K.: *See—*
Bissett, Donald L.; and Mao, Mark H. K., 4,555,360, Cl. 252-541.000.

Marathon Oil Company: *See—*
Plummer, Mark A., 4,555,327, Cl. 208-108.000.

Marchenko, Anatoly M.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.

Marchesi, Franco, to Rockwell-Rimoldi S.p.A. Anti-wobble device for a connecting rod. 4,554,840, Cl. 74-42.000.

Marchionda, Tony. Oil spill collector. 4,555,338, Cl. 210-242.400.

Margulefsky, Allen L.; and Lutz, James F. Method and apparatus for rehabilitating refrigerant. 4,554,792, Cl. 62-77.000.

Marhic, Gerard; Schaff, Didier; and Remy, Francis, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Arc working torches. 4,555,609, Cl. 219-121.0PC.

Maringer, Melvin F.; and Morgan, Fred K., to National Distillers and Chemical Corporation. Cross-linkable rotational molding compositions. 4,555,379, Cl. 264-310.000.

Markham, Charles W. Flexible and protective guide device for use with aspirating needles. 4,555,243, Cl. 604-263.000.

Maroney, Ralf P.; and Fishkind, Gregory A., to Plug-In Storage Systems, Inc. Storage cabinet. 4,555,744, Cl. 361-212.000.

Marpac Industries, Inc.: *See—*
Sykes, Donald J.; and Gendron, Gary E., 4,555,023, Cl. 206-446.000.

Marrelli, Ronald E., to Phillips Petroleum Company. Method of utilizing energy of high pressure condensate. 4,555,310, Cl. 203-10.000.

Marsh, Robert A., to Ranks Hovis McDougall, PLC. Production of edible protein containing substances. 4,555,485, Cl. 435-68.000.

Martens, Gerhard, to U.S. Philips Corporation. Apparatus for transmitting signals between two relatively rotatable parts. 4,555,631, Cl. 250-551.000.

Martin, Bernard K., to T & R Chemicals, Inc. Antithrombotic and/or antihypertensive compositions. 4,555,522, Cl. 514-449.000.

Martin, Frederick W. Energy-stable accelerator with needle-like source and focused particle beam. 4,555,666, Cl. 326-233.000.

Martin Marietta Corporation: *See—*
Thornton, Michael G.; and Clark, Benton C., III, 4,555,331, Cl. 210-99.000.

Martin, Richard A.; and Bialobrzeski, Walter, to Dick Martin Design Ltd. Method of forming thermoplastic perforated sheet. 4,555,378, Cl. 264-292.000.

Martin, Richard A., to Dick Martin Design, Ltd. Curved needlepoint canvas. 4,555,429, Cl. 428-131.000.

Martinez, Kenneth: *See—*
Betts, William L.; and Martinez, Kenneth, 4,555,790, Cl. 375-39.000.

Maruyama, Ryozi, to Dai-Ichi Seiko Co., Ltd. Formed permanent magnet. 4,555,685, Cl. 335-303.000.

Maruyama, Toshinori: *See—*
Kato, Hidetoshi; Maruyama, Toshinori; Matsuhashi, Hajime; and Akita, Yoshio, 4,555,657, Cl. 320-64.000.

Marwah, Ashok K.; and Norris, Charles H., Jr., to H. H. Robertson Company. Field-assembled cellular decking unit. 4,554,771, Cl. 52-221.000.

Masaki, Kazumi, to Hayashibara, Ken. Device for eliminating inrush-current. 4,555,741, Cl. 361-58.000.

Masaki, Seishi: *See—*
Obata, Keigo; Dohi, Nobuyasu; Okuhama, Yoshiaki; Masaki, Seishi; Okada, Yukiyoshi; and Yoshida, Tadashi, 4,555,314, Cl. 204-44.400.

Masenas, Charles J., Jr., to International Business Machines Corporation. Voltage balancing circuit for memory systems. 4,555,776, Cl. 365-202.000.

Masghati, Mohammad, to Wilson Sporting Goods Company. Golf club shafts with matched frequencies of vibration. 4,555,112, Cl. 273-77.00A.

Masuda, Takashi: *See—*
Takeshita, Takeaki; Oba, Katuyuki; Shimoyama, Yoshiaki; and Masuda, Takashi, 4,555,264, Cl. 75-49.000.

Masuda, Tatsunosuke; Hohki, Tetsuo; and Kurusu, Yasuo, to Dainippon Screen Mfg. Co., Ltd. Printed area measuring apparatus. 4,555,180, Cl. 356-445.000.

Materiel et Auxiliaire de Signalisation et de Controle pour l'Automation-Auxitrol: *See—*
Khoi, Danny J., 4,554,830, Cl. 73-299.000.

Mathieu, Michel G.; and Le Rodallec, Andre J. L., to Etablissement Public de Diffusion dit Telediffusion de France; and Le Rodallec, Andre J. L. Disc and videodisc reader head positioning control system. 4,555,736, Cl. 358-342.000.

Matsuda, Ikuo: *See—*
Okimoto, Haruo; and Matsuda, Ikuo, 4,554,890, Cl. 123-26.000.

Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, to Kyowa Hakko Kogyo Co. Ltd. Physiologically active substance K-252, process for producing same and pharmaceutical composition containing same. 4,555,402, Cl. 424-122.000.

Matsuhashi, Hajime: *See—*
Kato, Hidetoshi; Maruyama, Toshinori; Matsuhashi, Hajime; and Akita, Yoshio, 4,555,657, Cl. 320-64.000.

Matsui, Masaaki: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.

Matsuki, Tomiji: *See—*
Komatsu, Hideo; Harada, Hiroyuki; and Matsuki, Tomiji, 4,555,542, Cl. 524-178.000.

Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, to Nippon Soken, Inc. Direction detection for a vehicle. 4,555,761, Cl. 364-424.000.

Matsumura, Susumu; Hosokawa, Yasuhiko; Katsuki, Kanji; and Yano, Masao, to Matsumura, Susumu; and Mitsubishi Denki Kabushiki Kaisha. Control apparatus for D.C. power transmission system. 4,555,750, Cl. 363-37.000.

Matsunaga, Kenichi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.

Matsuo, Yoshihiro: *See—*
Nishida, Masamitsu; Ouchi, Hiromu; and Matsuo, Yoshihiro, 4,555,494, Cl. 501-134.000.

Matsushita Electric Industrial Company, Limited: *See—*
Miura, Masayoshi; and Naito, Hiroshi, 4,555,717, Cl. 346-140.00R.
Mizukawa, Takumi; Ogino, Yoshio; Ohmori, Hideki; and Sato, Taketoshi, 4,555,608, Cl. 219-10.770.
Mochizuki, Hideaki; and Tamura, Tooru, 4,555,746, Cl. 361-323.000.
Nishida, Masamitsu; Ouchi, Hiromu; and Matsuo, Yoshihiro, 4,555,494, Cl. 501-134.000.
Usuki, Hiroshi; and Taniguchi, Hiroshi, 4,555,735, Cl. 358-330.000.

Matsushita, Yasuo; Nakamura, Kousuke; and Harada, Koji, to Hitachi, Ltd. Electrically conductive sintered ceramics and ceramic heaters. 4,555,358, Cl. 252-516.000.

Matsuura, Shigeo; Ito, Uji; and Yakushiji, Yasuhiro, to Hitachi, Ltd. Remote control signal reproducing circuit. 4,555,702, Cl. 340-825.640.

Matsuzaki, Yutaka: *See—*
Horie, Shin'ichi; Matsuzaki, Yutaka; and Kagawa, Fumio, 4,555,250, Cl. 51-309.000.

Mattei, Riccardo; and Osti, Roberto, to G.D Societa' per Azioni. Method for automatically setting and joining reel-fed label strips or similar. 4,555,281, Cl. 156-64.000.

Matthiessen, Bernd: *See—*
Harms, Margret; Bruns, Angelika; Luthje, Holger; and Matthiessen, Bernd, 4,555,460, Cl. 430-5.000.

Matuki, Shouzo, to Taiyo Yuden Co., Ltd. Magnetic eraser dust collector. 4,554,703, Cl. 15-424.000.

Mauck, John C.: *See—*
LiMuti, Charles M.; Babb, Bruce E.; and Mauck, John C., 4,555,483, Cl. 435-19.000.

Maulding, Donald R.: *See—*
Spector, Richard; and Maulding, Donald R., 4,555,537, Cl. 524-97.000.

Mawby, Harold S.; and Frisbie, Carl W., to White Consolidated Industries, Inc. Ice door mechanism. 4,555,049, Cl. 222-517.000.

Maxson, Myron T.: *See—*
Lee, Chi-Long; Maxson, Myron T.; and Rabe, James A., 4,555,529, Cl. 521-124.000.

May, Marvin M.; Billings, Robert C.; Kendall, Harry A.; and Bayorgeon, Jeffrey T., to Power Climber, Inc. Efficient lightweight hoist with multiple-cable-size traction and safety systems. 4,555,091, Cl. 254-267.000.

Mayer, Linda J.: *See—*
Barbieri, Stephen C.; and Mayer, Linda J., 4,555,315, Cl. 204-52.00R.

Mays, Alfred T., to Chicopee. Entangled nonwoven fabric made of two fibers having different lengths in which the shorter fiber is a conjugate fiber in which an exposed component thereof has a lower melting temperature than the longer fiber and method of making same. 4,555,430, Cl. 428-134.000.

Mazda Motor Corporation: *See—*
Ishimitsu, Ikuo; Tokunaga, Toshimichi; Tanaka, Takeshi; and Anan, Yoshiaki, 4,555,126, Cl. 280-707.000.
Okimoto, Haruo; and Matsuda, Ikuo, 4,554,890, Cl. 123-26.000.

Mazur, Edward J.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., 4,555,299, Cl. 156-552.000.

McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., to International Business Machines Corp. Selective use of restored file setups. 4,555,759, Cl. 364-300.000.

McCaskill, Rex A.: *See—*
Karnes, Roy E., Jr.; McCaskill, Rex A.; and Nguyen, Khoa D., 4,555,773, Cl. 364-900.000.

McClain, D. Wayne, to United States of America, Navy. Diver's umbilical quick-disconnect device. 4,555,130, Cl. 285-26.000.

McClinton, John L.: *See—*
Sergovic, John A.; and McClinton, John L., 4,555,375, Cl. 264-259.000.

McCollum, Gregory J.: *See—*
Makhlouf, Joseph M.; McCollum, Gregory J.; and Kerr, Paul R., 4,555,551, Cl. 525-455.000.

McCreedy, Ryan D.: *See—*
Nicolosi, Carl T.; Nicolosi, Thomas F.; and McCreedy, Ryan D., 4,554,751, Cl. 37-234.000.

McDaniel, L. Thomas: *See—*
Watson, David R.; Carithers, Val G.; and McDaniel, L. Thomas, 4,555,493, Cl. 501-127.000.

McDonnell Douglas Corporation: *See—*
Danielsen, Donald P.; and Lively, Lewell M., Jr., 4,555,133, Cl. 294-82.240.

McGinnis, Vincent D.: *See—*
Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., 4,555,366, Cl. 260-404.800.

McGovern, Stephen J.: *See—*
Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., 4,555,328, Cl. 208-157.000.

McInroy, John W.: *See—*
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,555,759, Cl. 364-300.000.

McKay, Michael L., to Orbital Engine Company Proprietary Limited. Liquid metering apparatus. 4,554,945, Cl. 137-312.000.

McManis, George E., III: *See—*
Fletcher, Aaron N.; McManis, George E., III; and Bliss, Dan E., 4,555,455, Cl. 429-112.000.

McRae, Thomas G., Jr., to United States of America, Energy. Backscatter absorption gas imaging system. 4,555,627, Cl. 250-334.000.

Mead Corporation, The: *See—*
Calvert, Rodney K., 4,554,778, Cl. 53-398.000.
Greeson, Arnold J., 4,555,709, Cl. 346-1.100.
Larson, Bradley W., 4,555,103, Cl. 271-35.000.

Media Transference International: *See—*
Briggs, James B., 4,555,730, Cl. 358-142.000.

Medical Engineering Corporation: *See—*
Carter, Garry L.; and Weeks, Vaughan B., 4,554,687, Cl. 4-144.200.

Meffert, Alfred: *See—*
Fischer, Herbert; Gorzinski, Manfred; Gress, Wolfgang; Meffert, Alfred; and Wegemund, Bernd, 4,555,564, Cl. 528-295.300.

Meier, Walter; and Jacobsen, Jan, to Walter Meier. Device for projecting steroscopic, anamorphotically compressed pairs of images on to a spherically curved wide-screen surface. 4,555,168, Cl. 353-7.000.

Meier, Wolfgang: *See*—
Holz, Joachim; Meier, Wolfgang; Schwarting, Karl-Heinz; Goris, Heinrich; and Ogorek, Kurt, 4,555,142, Cl. 299-43.000.
Meiji Seika Kaisha, Ltd.: *See*—
Nishihata, Ken; Iinuma, Katsuharu; Yamada, Hitoshi; Hirano, Fumiya; and Tsuruoka, Takashi, 4,555,404, Cl. 514-201.000.
Meinecke, Albrecht: *See*—
Steiner, Karl; Schiel, Christian; Meinecke, Albrecht; Mullner, Josef; and Weiss, Hans, 4,555,305, Cl. 162-205.000.
Melek, Bernard. Money-operated unit control system. 4,555,639, Cl. 307-38.000.
Melocik, Grant C.; and Pickering, William, to Towmotor Corporation. Motor speed control apparatus. 4,555,651, Cl. 318-341.000.
Menard, Paul: *See*—
Suh, John T.; Regan, John R.; Piwinski, John J.; Menard, Paul; and Jones, Howard, 4,555,508, Cl. 514-211.000.
Mendenhall, Robert L. Apparatus and method for recycling asphaltic concrete. 4,555,182, Cl. 366-25.000.
Meneely, Dennis C.: *See*—
Cressey, John R.; and Meneely, Dennis C., 4,555,667, Cl. 329-50.000.
Meneghin, Rene : *See*—
Houdayer, Bernard; Le Fur, Bernard; Meneghin, Rene ; and Moniod, Jean-Michel, 4,555,208, Cl. 413-2.000.
Mennell, Thomas W., to Y.S. Securities Limited. Draw out switchgear and operating mechanism. 4,555,602, Cl. 200-50.0AA.
Merck & Co., Inc.: *See*—
Patchett, Arthur A.; and Wu, Mu T., 4,555,502, Cl. 514-19.000.
Patchett, Arthur A., 4,555,503, Cl. 514-19.000.
Merckaert, Louis: *See*—
Nicolas, Edgard; and Merckaert, Louis, 4,555,317, Cl. 204-129.000.
Merril, Carl R., to United States of America, Health and Human Services. Rapid visualization system for gel electrophoresis. 4,555,490, Cl. 436-86.000.
Merrill, Dana A., to ITT Corporation. Multiple rate baseband receiver. 4,555,788, Cl. 375-11.000.
Merritt, David T., to Otis Engineering Corporation. Well tool locking device. 4,554,972, Cl. 166-137.000.
Mettler Instrumente AG: *See*—
Ludwig, Peter; and Steiner, Meinrad, 4,554,988, Cl. 177-178.000.
Metz, Donald L. Truck locking device. 4,555,211, Cl. 414-401.000.
Meyer, Nicolas; and Cousin, Michel, to Societe Chimique des Charbonnages CDF Chimie, S.A. Hardening phenol-formaldehyde resols in the presence of aniline. 4,555,544, Cl. 524-595.000.
Mick, Jon L.; and Wolf, Marvin L., to FMC Corporation. Heavy lift crane. 4,555,032, Cl. 212-189.000.
Mickus, Donald J., deceased: *See*—
Foley, Robert W.; Storck, Robert C.; Mickus, Donald J., deceased; and Pastors, Debbie, executrix, 4,554,979, Cl. 172-813.000.
Microcommunications, Inc.: *See*—
O'Dea, Orrin B., 4,555,593, Cl. 179-18.0GD.
Microdot Inc.: *See*—
Repella, James A., 4,554,723, Cl. 29-430.000.
Midwestern Industries, Inc.: *See*—
Tsutsumi, Masataka; and Frohman, Richard J., 4,555,330, Cl. 209-254.000.
Miiller, William C.: *See*—
Ekdahl, Wendell G.; Chaudhuri, Asit R.; and Miiller, William C., 4,555,492, Cl. 501-38.000.
Mikami, Ryuzo: *See*—
Saruyama, Toshio; and Mikami, Ryuzo, 4,555,560, Cl. 528-17.000.
Mikogami, Yukihiro: *See*—
Ueno, Mitsushi; Shirogami, Tamotsu; and Mikogami, Yukihiro, 4,555,324, Cl. 204-284.000.
Miletti, Sandro: *See*—
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, 4,555,271, Cl. 127-46.200.
Milewits, Marvin: *See*—
Stanley, Roderic K.; Milewits, Marvin; Knauer, Robert C., Jr.; and Bradfield, James E., 4,555,665, Cl. 324-229.000.
Miller, Charles D.: *See*—
Smyly, Harold M.; Miller, Charles D.; Cloyd, Richard A.; and Heller, Clarence, 4,554,905, Cl. 124-56.000.
Miller, Roy W., to Pullman Standard, Inc. Slackless non-cushioned drawbar arrangement for railway car underframe. 4,555,033, Cl. 213-51.000.
Miller, William J.; and Faber, Norman, Jr., to Wacker Corporation. Flexible shaft having detachable end connections. 4,555,238, Cl. 464-52.000.
Millet, Nolan J., Jr.: *See*—
Cescon, Lawrence A.; and Millet, Nolan J., Jr., 4,555,278, Cl. 149-21.000.
Milliken Research Corporation: *See*—
Murray, John H., 4,554,705, Cl. 16-110.00R.
Millington, Michael J., to Handicart Limited. Trolley for use with a wheelchair. 4,555,124, Cl. 280-289.0WC.
Milner, Peter H., to Beecham Group p.l.c. Process for the preparation of β-lactam compounds. 4,555,363, Cl. 260-239.100.
Minnesota Mining and Manufacturing Company: *See*—
Drake, Gerald E., 4,555,155, Cl. 339-61.00R.
Engel, Michael R., 4,554,924, Cl. 128-640.000.
Kramer, George J., 4,555,174, Cl. 355-3.0DD.
Tait, William C.; and Harklau, Lanny L., 4,555,291, Cl. 156-250.000.
Minoshima, Katsuji: *See*—
Fukuju, Osamu; Inagaki, Yasuhiro; and Minoshima, Katsuji, 4,555,104, Cl. 271-228.000.
Minster Machine Company, The: *See*—
Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., 4,554,814, Cl. 72-345.000.
Miram, George V.; and Mizuhara, Yosuke M., to Varian Associates, Inc. Adjustable beam permanent-magnet-focused linear-beam microwave tube. 4,555,646, Cl. 315-5.350.
Miranti, Joseph P., Jr., to Dayco Corporation. Belt pulley and method of making the same. 4,555,239, Cl. 474-93.000.
Mirebeau, Pierre; and Gindre, Jean, to Compagnie Europeenne d'Accumulateurs, S.A. Electrolyte for a lead acid accumulator, and an accumulator using said electrolyte. 4,555,458, Cl. 429-203.000.
Mirtsch, Frank: *See*—
Wolowski, Eckard; and Mirtsch, Frank, 4,555,325, Cl. 208-10.000.
Misra, Raj N.; and Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. 2-Pyridylcarboxamides which inhibit arachidonic acid release. 4,555,520, Cl. 514-346.000.
Misumi, Teruo: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Saitoh, Keishi; Misumi, Teruo; and Kanbe, Junichiro, 4,555,465, Cl. 430-95.000.
Mita Industrial Co., Ltd.: *See*—
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Kamaike, Hiroshi, 4,554,999, Cl. 187-29.00R.
Matsumura, Susumu; Hosokawa, Yasuhiko; Katsuki, Kanji; and Yano, Masao, 4,555,750, Cl. 363-37.000.
Sakuragi, Toshio; Nakayama, Kazuo; Sato, Masaaki; and Koike, Mitsuhiro, 4,554,835, Cl. 73-640.000.
Umeda, Yasukazu, 4,555,000, Cl. 187-29.00R.
Yamanaka, Kimio, 4,555,756, Cl. 364-130.000.
Mitsuboshi Belting, Ltd.: *See*—
Takano, Hiroshi; and Shiinoki, Kunikatsu, 4,555,241, Cl. 474-261.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Toyoda, Yoshiaki; Wakimura, Kazuo; Hase, Tadaharu; and Arashiba, Nobumasa, 4,555,583, Cl. 568-473.000.
Yamada, Yasuyuki; Tanaka, Tadaaki; Tukahara, Ryoichi; and Nishizawa, Tsutomu, 4,555,355, Cl. 252-299.100.
Miura, Masayoshi; and Naito, Hiroshi, to Matsushita Electric Industrial Company, Limited. Ink jet printing head utilizing pressure and potential gradients. 4,555,717, Cl. 346-140.00R.
Miura, Yasushi: *See*—
Nishiike, Naritoshi; Nishimaki, Takashi; Miura, Yasushi; and Kumamura, Masaaki, 4,555,228, Cl. 425-185.000.
Miwa, Sinkichi: *See*—
Kodama, Hiroaki; Kubo, Tetsuo; and Miwa, Sinkichi, 4,555,799, Cl. 382-8.000.
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, to Fuji Electric Co., Ltd. Pattern discriminator. 4,555,801, Cl. 382-44.000.
Miyake, Hideyuki: *See*—
Aiba, Masahiko; Kuranishi, Masaaki; and Miyake, Hideyuki, 4,555,718, Cl. 346-140.00R.
Miyashita, Yoshikazu; Muranaka, Shiaru; and Tanaka, Hideo, to Shibuya Kogyo Co., Ltd. System for synchronizing two or more process units. 4,554,774, Cl. 53-52.000.
Miyatsuka, Hajime, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,555,431, Cl. 428-141.000.
Miyauchi, Hirotsugu: *See*—
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,555,369, Cl. 260-544.00F.
Miyauchi, Katsuki: *See*—
Kanehori, Keiichi; Miyauchi, Katsuki; Ito, Yukio; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,555,456, Cl. 429-131.000.
Miyazaki, Kazuo: *See*—
Takeuchi, Hiroo; and Miyazaki, Kazuo, 4,554,786, Cl. 60-397.000.
Mizuhara, Yosuke M.: *See*—
Miram, George V.; and Mizuhara, Yosuke M., 4,555,646, Cl. 315-5.350.
Mizukawa, Takumi; Ogino, Yoshio; Ohmori, Hideki; and Sato, Taketoshi, to Matsushita Electric Industrial Co., Ltd. Inverter device for induction heating. 4,555,608, Cl. 219-10.770.
Mizushina, Masaaki: *See*—
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,897, Cl. 123-188.0AA.
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,898, Cl. 123-188.0AA.
Mizutani, Shigemitsu: *See*—
Kitajima, Masao; Seshimoto, Osamu; and Mizutani, Shigemitsu, 4,555,274, Cl. 148-6.14R.
Mizutani, Takayuki: *See*—
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, 4,555,615, Cl. 219-145.210.
Mobil Oil Corporation: *See*—
Haase, Donald A., 4,555,015, Cl. 206-0.500.
Horodysky, Andrew G.; and Landis, Phillip S., 4,555,353, Cl. 252-49.600.
Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., 4,555,328, Cl. 208-157.000.
Krishnamurthy, Sowmithri, 4,555,495, Cl. 502-50.000.
Saliger, Kenneth C., 4,555,118, Cl. 277-188.00R.
Schmitt, Kirk D., 4,555,488, Cl. 436-27.000.

Schmitt, Kirk D., 4,555,489, Cl. 436-27.000.
Mochizuki, Hideaki; and Tamura, Tooru, to Matsushita Electric Industrial Co., Ltd. Organic chip capacitor. 4,555,746, Cl. 361-323.000.
Moeller, Kenneth L.: *See*—
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., 4,555,594, Cl. 179-18.00B.
Mogi, Michio, to Konishiroku Photo Industry Co., Ltd. Developing apparatus. 4,555,172, Cl. 355-3.0DD.
Molins PLC: *See*—
Brown, Anthony R., 4,555,011, Cl. 198-444.000.
Moll, Eberhard, to Balzers Aktiengesellschaft. Method and apparatus for uniformly heating articles in a vacuum container. 4,555,611, Cl. 219-121.000.
Molloy, Michael P., to Lockhart, Bobby; and Bradsher, O. D., Jr., part interest to each. Tunnel trap. 4,554,758, Cl. 43-61.000.
Monarch Marking Systems, Inc.: *See*—
Derringer, Gene R., 4,554,711, Cl. 24-150.0FP.
Moniod, Jean-Michel: *See*—
Houdayer, Bernard; Le Fur, Bernard; Meneghin, Rene ; and Moniod, Jean-Michel, 4,555,208, Cl. 413-2.000.
Monnais, Christian: *See*—
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,555,246, Cl. 8-405.000.
Monsanto Company: *See*—
Cohen, Saul M.; and LeBlanc, John R., 4,555,319, Cl. 204-159.210.
Coran, Aubert Y.; and Patel, Raman, 4,555,552, Cl. 525-456.000.
Patel, Raman, 4,555,546, Cl. 525-194.000.
Monteil, Andre J.: *See*—
Combourieu, Michel· Simond, Jacques A. L.; and Monteil, Andre J., 4,555,514, Cl. 514-343.000.
Monteiro, Frank G. Exercising and physical-conditioning apparatus. 4,555,108, Cl. 272-69.000.
Moon, Richard D. Jewelry arrangement. 4,554,800, Cl. 63-23.000.
Mooneyhan, Betty F. Hair clamp device. 4,554,934, Cl. 132-40.000.
Moore, Colin: *See*—
Clark, Frederick; and Moore, Colin, 4,555,698, Cl. 340-680.000.
Moore, David S.; and Schmidt, Stephen C., to United States of America, Energy. Method and apparatus for determining pressure-induced frequency-shifts in shock-compressed materials. 4,555,176, Cl. 356-301.000.
Moorehead, Eric L.: *See*—
Robinson, Paul R.; and Moorehead, Eric L., 4,555,584, Cl. 585-623.000.
Morales, Louis J., to Standard Microsystems Corporation. Low power CMOS input buffer circuit. 4,555,642, Cl. 307-475.000.
Moran, David P. J.; Hepburn, John J.; and Sharp, David G., to Lever Brothers Company. Process for producing a reduced fat spread. 4,555,411, Cl. 426-603.000.
Moran, James C., to Sybron Chemicals Inc. Liquid buffer system. 4,555,348, Cl. 252-1.000.
Morgan, Fred K.: *See*—
Maringer, Melvin F.; and Morgan, Fred K., 4,555,379, Cl. 264-310.000.
Morgan, Karl L.: *See*—
Edling, Robert J.; and Morgan, Karl L., 4,554,759, Cl. 43-100.000.
Morgun, Valery A.: *See*—
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.
Mori, Ikurou: *See*—
Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, 4,555,545, Cl. 524-858.000.
Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, 4,555,559, Cl. 528-16.000.
Mori, Tomoyuki: *See*—
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.
Mori, Toshikatsu: *See*—
Kahara, Toshiki; Mori, Toshikatsu; Imahashi, Jinichi; Honji, Akio; and Tamura, Kohki, 4,555,452, Cl. 429-13.000.
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, to Lion Corporation. Micellar slug for oil recovery. 4,555,351, Cl. 252-8.55D.
Moriyama, Noboru: *See*—
Fukumoto, Yasuhisa; and Moriyama, Noboru, 4,555,557, Cl. 526-240.000.
Morrill, Charles D.: *See*—
Hynes, Joseph H.; Morrill, Charles D.; and Hall, George D., 4,554,976, Cl. 166-341.000.
Morris, George W., III: *See*—
Frait, John S.; Lowman, Clark E.; Morris, George W., III; and Tribe, Leonard T., 4,555,120, Cl. 280-6.100.
Morris, Jeffrey D.; and Fuller, Robert A., to Cosden Technology, Inc. Apparatus for producing styrenic/alkenylnitrile copolymers. 4,555,384, Cl. 422-109.000.
Morris, Richard A.; Lukens, William E.; and Zanis, Charles A., to United States of America, Navy. Weld metal cooling rate indicator system. 4,555,614, Cl. 219-130.010.
Morrison, Donald R. Hydraulically-powered material spreader. 4,555,200, Cl. 404-72.000.
Morrissette, Charles G.: *See*—
Sauer, Robert L.; Morrissette, Charles G.; Garbaczik, Stanley J., Sr.; and Garbaczik, Stanley J., Jr., 4,554,852, Cl. 83-407.000.
Morse, Milton, to APM Corporation. Vandal-resistant shield for telephone keypad. 4,555,600, Cl. 179-184.000.
Morton, James F. Tow bar for semi-tractors having triangulated support system and adjustable dual cylinder hydraulic control. 4,555,214, Cl. 414-563.000.
Morton Thiokol, Inc.: *See*—
Levinthal, Michael L., 4,555,280, Cl. 149-109.600.
Mosier, Donald E.; and Cascini, Michael R., to Rockwell International Corporation. Precision drum encoder. 4,555,625, Cl. 250-231.0SE.
Motor Wheel Corporation: *See*—
Jurus, Kevin D., 4,554,810, Cl. 72-70.000.
Motorola, Inc.: *See*—
Gray, Randall C.; and Jarrett, Robert B., 4,555,742, Cl. 361-93.000.
Legge, Ronald; Rice, M. John, Jr.; and Sarma, Kalluri R., 4,555,303, Cl. 156-643.000.
Mud Hog Corporation: *See*—
Eden, Brent E., 4,554,991, Cl. 180-243.000.
Muehl, Herman D. Tank valve apparatus. 4,555,041, Cl. 220-204.000.
Mueller Co.: *See*—
Daghe, Joseph L.; Humes, Dennis W.; and Stanley, Mervin D., 4,554,944, Cl. 137-296.000.
Muggli, Jurg; Guttinger, Heinz; and Horvath, Zoltan, to Cerberus AG. Optical smoke detector with contamination detection circuitry. 4,555,634, Cl. 250-565.000.
Mullner, Josef: *See*—
Steiner, Karl; Schiel, Christian; Meinecke, Albrecht; Mullner, Josef; and Weiss, Hans, 4,555,305, Cl. 162-205.000.
Multigood, b.v.: *See*—
deVreeze, Joop J.; Tijssen, Zwier; and Doorley, Daniel, 4,555,195, Cl. 401-218.000.
Mulvey, Dennis M.: *See*—
Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,571, Cl. 544-286.000.
Kanojia, Ramesh M.; Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,570, Cl. 544-286.000.
Mumcu, Salih: *See*—
Droescher, Michael; Mumcu, Salih; Burzin, Klaus; Gerth, Christian; and Heuer, Horst, 4,555,550, Cl. 525-424.000.
Mumford, John L. C.; and Price, Roger F., to TI (Group Services) Limited. Vitreous enamels. 4,555,415, Cl. 427-193.000.
Munakata, Shunsaku; Ukai, Hitoshi; Noguchi, Mitsuru; and Sawai, Shinichi, to Honda Giken Kogyo Kabushiki Kaisha; and Tokyo Seat Co., Ltd. Air-pressure method. 4,555,380, Cl. 264-510.000.
Murai, Bunjirou: *See*—
Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, 4,555,545, Cl. 524-858.000.
Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, 4,555,559, Cl. 528-16.000.
Muranaka, Shiaru: *See*—
Miyashita, Yoshikazu; Muranaka, Shiaru; and Tanaka, Hideo, 4,554,774, Cl. 53-52.000.
Murata Kikai Kabushiki Kaisha: *See*—
Maeda, Yoshiyasu; Ueura, Akira; Sato, Kazuyoshi; and Watanabe, Katsunori, 4,555,069, Cl. 242-43.00R.
Murayama, Noriaki; and Abe, Kiyoto, to Alps Electric Co., Ltd. Head adjusting disk. 4,555,738, Cl. 360-75.000.
Murray, David L.: *See*—
Geiersbach, Allois F.; and Murray, David L., 4,555,725, Cl. 358-93.000.
Murray, John H., to Milliken Research Corporation. Encapsulated fiberglass mop handle. 4,554,705, Cl. 16-110.00R.
Musen, Robert M.: *See*—
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., 4,555,594, Cl. 179-18.00B.
Musil, Gary D.: *See*—
Sadlo, James L.; and Musil, Gary D., 4,554,732, Cl. 29-620.000.
Nagai, Satoshi: *See*—
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; Takeya, Yasuo; and Nagai, Satoshi, 4,554,805, Cl. 68-12.00R.
Nagano, Tamio, to Kabushiki Kaisha Daikin Seisakusho. Damper disc suitable for automobile clutch. 4,555,008, Cl. 192-106.100.
Nagata, Wataru; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Mercaptotetrazolylalkanohydroxamic acids, salts and ester thereof. 4,555,578, Cl. 548-251.000.
Nagel, James H., Jr. Tamper-evident resealable cap. 4,555,038, Cl. 215-235.000.
Naito, Hideki: *See*—
Sakaguchi, Yukihiko; Sato, Kozo; Naito, Hideki; and Hara, Hiroshi, 4,555,470, Cl. 430-203.000.
Naito, Hiroshi: *See*—
Miura, Masayoshi; and Naito, Hiroshi, 4,555,717, Cl. 346-140.00R.
Nakagome, Hideki; and Yasuda, Satoshi, to Kabushiki Kaisha Toshiba. Magnetic refrigerating apparatus. 4,554,790, Cl. 62-3.000.
Nakamura, Koichi; Ishibashi, Masashi; Kameda, Hideki; and Makiyo, Minoru, to Fujikura Ltd. Heat shrinkable magnetic shielding article. 4,555,422, Cl. 428-36.000.
Nakamura, Koki: *See*—
Yokoyama, Shigeki; Nakamura, Koki; Kouda, Jyounichi; and Sekiguchi, Nobuhisa, 4,555,480, Cl. 430-527.000.

Nakamura, Kousuke: *See—*
Matsushita, Yasuo; Nakamura, Kousuke; and Harada, Koji, 4,555,358, Cl. 252-516.000.

Nakamura, Minoru: *See—*
Asami, Kazuto; Baba, Takao; Nakamura, Minoru; and Tanaka, Mitsuaki, 4,554,775, Cl. 53-64.000.

Nakamura, Ryuji; and Hayashi, Masaharu, to Aisin Seiki Kabushiki Kaisha. Temperature responsive fluid coupling device. 4,555,004, Cl. 192-58.00B.

Nakao, Kenji: *See—*
Koga, Yoshiro; and Nakao, Kenji, 4,555,751, Cl. 363-44.000.

Nakao, Sho: *See—*
Shiba, Keisuke; Fuchizawa, Tetsuro; Nakao, Sho; and Ohishi, Chikashi, 4,555,461, Cl. 430-49.000.

Nakayama, Kazuo: *See—*
Sakuragi, Toshio; Nakayama, Kazuo; Sato, Masaaki; and Koike, Mitsuhiro, 4,554,835, Cl. 73-640.000.

Nalco Chemical Company: *See—*
Giddings, David M.; Ries, Donald G.; and Syrinek, Allen R., 4,555,558, Cl. 526-287.000.
Sykes, Robert C.; Connelly, Lawrence J.; and Roe, William J., 4,555,329, Cl. 209-5.000.

Nalder, William W.: *See—*
Garner, Alfred V.; and Nalder, William W., 4,555,352, Cl. 252-35.000.

Namiki, Yasuomi, to Victor Company of Japan. Noise reduction by linear interpolation using a single sample-and-hold circuit. 4,555,669, Cl. 330-149.000.

Namizuka, Toshio: *See—*
Ueda, Akio; Akita, Shuichi; and Namizuka, Toshio, 4,555,547, Cl. 525-237.000.

Napoli, Phillip D.; and Patterson, William R., to General Electric Company. Seal cooling apparatus. 4,554,789, Cl. 60-751.000.

Nara, Hirotoshi, to Clarion Co., Ltd. Auto device mounting structure. 4,555,080, Cl. 248-27.100.

Narukawa, Hiroshi: *See—*
Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, 4,555,439, Cl. 428-221.000.

Narusawa, Toshiaki: *See—*
Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,555,466, Cl. 430-106.600.

Nash, Randy D., to AT&T Bell Laboratories. Integrated circuit devices for secure data encryption. 4,555,591, Cl. 178-22.130.

National Distillers and Chemical Corporation: *See—*
Maringer, Melvin F.; and Morgan, Fred K., 4,555,379, Cl. 264-310.000.

National Gypsum Company: *See—*
Anders, Dennis F., 4,554,770, Cl. 52-207.000.

National Research Development Corporation: *See—*
Banister, Arthur J.; Hauptman, Zdenek V.; and Kendrick, Aidan G., 4,555,316, Cl. 204-59.00R.

Nawata, Yoshiaki; and Tanimoto, Yasufumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pulse motor driving apparatus. 4,555,653, Cl. 318-696.000.

NCR Canada Ltd.-NCR Canada Ltee: *See—*
Brooks, Ralf M.; and Lepic, Daniel A., 4,555,617, Cl. 235-379.000.

NCR Corporation: *See—*
Fukuju, Osamu; Inagaki, Yasuhiro; and Minoshima, Katsuji, 4,555,104, Cl. 271-228.000.

Neal, Hubert W. T., to SKF (U.K.) Limited. Bearing and seal assembly. 4,555,188, Cl. 384-482.000.

Nebe, William J.: *See—*
Dueber, Thomas E.; and Nebe, William J., 4,555,473, Cl. 430-281.000.

NEC Corporation: *See—*
Hada, Hiroshi; and Hirayama, Tsutomu, 4,555,641, Cl. 307-254.000.

Neese, Wayne E.; and Stepan, William E., to GTE Communication Systems Corporation. Contact terminal device for connecting hybrid circuit modules to a printed circuit board. 4,555,151, Cl. 339-17.0CF.

Negishi, Kiyoshi: *See—*
Wakui, Yoshio; Negishi, Kiyoshi; and Tano, Eiichi, 4,555,170, Cl. 354-470.000.

Negoro, Ikuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens barrel for variable magnification type copying machine. 4,555,165, Cl. 350-429.000.

Nemoto, Akira, to Japan. Vehicle seat. 4,555,140, Cl. 297-452.000.

Nemoto, Akira, to Tachikawa Spring Co. Ltd. Vehicle seat. 4,555,141, Cl. 297-452.000.

Nesvit, Vasily A.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.

Netter, Zvi: *See—*
Fenster, Paul; Netter, Zvi; and Shimoni, Yair, 4,555,728, Cl. 358-111.000.

Neville, Richard E., to AMF Incorporated. Tobacco opening and conditioning apparatus. 4,554,933, Cl. 131-304.000.

New England Digital Corporation: *See—*
Alonso, Sydney A.; and Jones, Cameron W., 4,554,855, Cl. 84-122.000.

New England Mfg. Co.: *See—*
Hewitt, Edward G.; and Pasquale, William D., 4,555,026, Cl. 206-521.000.

New High Glass: *See—*
Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, 4,555,020, Cl. 206-235.000.

Newman, William E., Sr.; and Farrow, Desmond J., Sr. Tankless friction boiler system. 4,554,906, Cl. 122-26.000.

Nghiem, Xuan L.: *See—*
Bochinski, Rolf; Eimer, Klaus; Lange, Alois; and Nghiem, Xuan L., 4,554,965, Cl. 165-95.000.

Nguyen, Khoa D.: *See—*
Karnes, Roy E., Jr.; McCaskill, Rex A.; and Nguyen, Khoa D., 4,555,773, Cl. 364-900.000.

Nickel, William H.: *See—*
Weigand, Francis K.; and Nickel, William H., 4,554,784, Cl. 60-39.020.

Nicolas, Edgard; and Merckaert, Louis, to Solvay & Cie. Cathode for the electrolytic production of hydrogen and its use. 4,555,317, Cl. 204-129.000.

Nicolosi, Carl T.; Nicolosi, Thomas F.; and McCreedy, Ryan D. Multifunction vehicular gear shift lever for snowplow operation. 4,554,751, Cl. 37-234.000.

Nicolosi, Thomas F.: *See—*
Nicolosi, Carl T.; Nicolosi, Thomas F.; and McCreedy, Ryan D., 4,554,751, Cl. 37-234.000.

Nielsen, Margaret J. Massaging tool and method for lower-eyelids and zygomatic skin. 4,554,911, Cl. 128-57.000.

Nieuwendijk, Joris A. M.; van Gijsel, Wilhelmus D. A. M.; Sanders, Georgius B. J.; and van Nieuwland, Jacob M., to U.S. Philips Corporation. Hybrid loudspeaker system for converting digital signals to acoustic signals. 4,555,797, Cl. 381-117.000.

Nifco Inc.: *See—*
Osada, Hiroshi, 4,555,589, Cl. 174-156.000.

Niigata Kisetsu Kabushiki Kaisha: *See—*
Awano, Koichi; Nitta, Yoshifumi; and Ibe, Satoshi, 4,554,964, Cl. 165-39.000.

Nikaido, Teruo, to Tomy Kogyo Company, Incorporated. Walking and rolling toy. 4,555,237, Cl. 446-355.000.

Nimon, Susan K.: *See—*
Kochte, Werner W.; and Nimon, Susan K., 4,554,702, Cl. 15-372.000.

Nippon Electric Co., Ltd.: *See—*
Sakoe, Hiroaki, 4,555,796, Cl. 381-43.000.

Nippon Furnace Kogyo Kaisha, Ltd.: *See—*
Hasegawa, Toshiaki; and Hirose, Yasuo, 4,554,832, Cl. 73-432.00R.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kato, Mitsumi, 4,554,854, Cl. 84-1.030.
Nishimoto, Tetsuo, 4,554,857, Cl. 84-1.190.
Wachi, Masatada; and Katoh, Mitsumi, 4,554,858, Cl. 84-1.190.

Nippon Kogaku K.K.: *See—*
Iida, Yoshikazu; and Hagyuda, Nobuyoshi, 4,555,648, Cl. 315-241.00P.

Nippon Kokan Kabushiki Kaisha: *See—*
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,897, Cl. 123-188.0AA.
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,898, Cl. 123-188.0AA.

Nippon Seiko Kabushiki Kaisha: *See—*
Okoshi, Hideo, 4,554,841, Cl. 74-200.000.

Nippon Soken, Inc.: *See—*
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,555,761, Cl. 364-424.000.

Nippon Steel Corporation: *See—*
Takeshita, Takeaki; Oba, Katuyuki; Shimoyama, Yoshiaki; and Masuda, Takashi, 4,555,264, Cl. 75-49.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.

Nippon Zeon Co. Ltd.: *See—*
Ogura, Shunichiro, 4,555,312, Cl. 203-29.000.
Ueda, Akio; Akita, Shuichi; and Namizuka, Toshio, 4,555,547, Cl. 525-237.000.
Ueda, Akio; Akita, Shuichi; and Chida, Takeshi, 4,555,548, Cl. 525-237.000.

Nippon Zoki Pharmaceutical Co.: *See—*
Hamada, Masaaki; Okamaoto, Kaoru; and Kurosaki, Teikichi, 4,555,513, Cl. 514-311.000.

Nippondenso Co., Ltd.: *See—*
Kato, Hidetoshi; Maruyama, Toshinori; Matsuhashi, Hajime; and Akita, Yoshio, 4,555,657, Cl. 320-64.000.

Nishida, Kenji: *See—*
Baba, Kiyokazu; and Nishida, Kenji, 4,555,012, Cl. 198-621.000.

Nishida, Masamitsu; Ouchi, Hiromu; and Matsuo, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic compositions. 4,555,494, Cl. 501-134.000.

Nishihata, Ken; Iinuma, Katsuharu; Yamada, Hitoshi; Hirano, Fumiya; and Tsuruoka, Takashi, to Meiji Seika Kaisha, Ltd. Sodium 7β-(2D-2-amino-2-carboxyethylthioacetamido)-7α-methoxy-3-(1-methyl-1H-tetrazol-5-yl)thiomethyl-3-cephem-4-carboxylate heptahydrate and process for its preparation. 4,555,404, Cl. 514-201.000.

Nishiike, Naritoshi; Nishimaki, Takashi; Miura, Yasushi; and Kumamura, Masaaki, to Sumitomo Heavy Industries, Ltd. Apparatus for automatically exchanging die for injection molding. 4,555,228, Cl. 425-185.000.

Nishikawa, Mitsuyo; and Kurihara, Nobuo, to Hitachi, Ltd. Combustion state diagnostic method. 4,555,800, Cl. 382-25.000.

Nishimaki, Takashi: *See—*
Nishiike, Naritoshi; Nishimaki, Takashi; Miura, Yasushi; and Kumamura, Masaaki, 4,555,228, Cl. 425-185.000.

Nishimoto, Tetsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument capable of varying a tone synthesis operation algorithm. 4,554,857, Cl. 84-1.190.

Nishiura, Masaharu: *See—*
Fujisawa, Hakubun; Nishiura, Masaharu; Haruki, Hiromu; and Uchida, Yoshiyuki, 4,555,636, Cl. 250-578.000.

Nishizawa, Tsutomu: *See—*
Yamada, Yasuyuki; Tanaka, Tadaaki; Tukahara, Ryoichi; and Nishizawa, Tsutomu, 4,555,355, Cl. 252-299.100.

Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa, 4,554,891, Cl. 123-41.210.
Hayashi, Yoshimasa, 4,555,240, Cl. 474-152.000.
Yanagishima, Takayuki; and Seko, Yasutoshi, 4,555,694, Cl. 340-524.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Tahara, Yoshiyuki; Takahashi, Toshihiro; Koyama, Hiroyasu; Suzuki, Yoshikuni; and Yasuda, Masatoshi, 4,555,365, Cl. 260-404.000.

Nissin Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Hiroo; and Miyazaki, Kazuo, 4,554,786, Cl. 60-397.000.

Nitro Nobel AB: *See—*
Persson, Per I.; and Persson, Bengt, 4,555,053, Cl. 228-107.000.

Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, to Andreas Stihl. Safety arrangement for a saw chain of a power-driven chain saw. 4,554,853, Cl. 83-522.000.

Nitta, Yoshifumi: *See—*
Awano, Koichi; Nitta, Yoshifumi; and Ibe, Satoshi, 4,554,964, Cl. 165-39.000.

Nitto Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamada, Hideaki; and Ryuno, Koitchiro, 4,555,487, Cl. 435-253.000.

Nitto Kohki Co., Ltd.: *See—*
Takahashi, Shiro, 4,555,203, Cl. 408-119.000.

Nixon, Richard G., to Allied Corporation. Dispensed guided submunition. 4,554,871, Cl. 102-489.000.

Nixon, Robert J., Jr. Multi-segment seal ring for rotary equipment. 4,554,748, Cl. 34-242.000.

NJM, Inc.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., 4,555,299, Cl. 156-552.000.

Noell, Ralph B.: *See—*
Womack, Darryl L.; Noell, Ralph B.; and Bradshaw, Larry R., 4,554,913, Cl. 128-80.00C.

Noguchi, Mitsuru: *See—*
Munakata, Shunsaku; Ukai, Hitoshi; Noguchi, Mitsuru; and Sawai, Shinichi, 4,555,380, Cl. 264-510.000.

Nojima, Yasuhiro: *See—*
Toyooka, Eietsu; Tomishima, Yoshio; and Nojima, Yasuhiro, 4,555,555, Cl. 526-62.000.

Noranda Metal Industries, Inc.: *See—*
Carnavos, Theodore C., 4,554,969, Cl. 165-154.000.

Nordlof, Richard D. Stock reel dancer. 4,555,071, Cl. 242-75.500.

Norris, Charles H., Jr.: *See—*
Marwah, Ashok K.; and Norris, Charles H., Jr., 4,554,771, Cl. 52-221.000.

North American Philips Corporation: *See—*
Arnold, Emil; Baumgart, Helmut; and Rossi, Barbara A., 4,555,300, Cl. 156-613.000.

Northern Telecom Limited: *See—*
Garner, John N., 4,554,782, Cl. 57-66.000.

Northrop Corporation: *See—*
Cohn, David B.; and Conley, Eugene E., 4,555,787, Cl. 372-86.000.

Norton, Gary E.: *See—*
LaRossa, Denise D.; Thunberg, Allen L.; Norton, Gary E.; and Dappen, Glen M., 4,555,484, Cl. 435-21.000.

Nozaka, Yoshiki, to Dai Nippon Insatsu Kabushiki Kaisha. Method of and device for preparing paper rolls for rotary presses and the like. 4,555,288, Cl. 156-191.000.

Nozaki, Nobuharu: *See—*
Kido, Keishiro; Sunagawa, Hiroshi; Kawajiri, Kazuhiro; Iijima, Toshio; and Nozaki, Nobuharu, 4,555,464, Cl. 430-67.000.

NSK-Warner K.K.: *See—*
Kawai, Osamu; and Ono, Katsuyasu, 4,555,074, Cl. 242-107.40A.
Kawai, Osamu, 4,555,127, Cl. 280-806.000.

Nugent, Edward L.; and Lutkowski, Lawrence, to Becton, Dickinson and Company. Pour spout for container with improved pouring feature. 4,555,336, Cl. 210-232.000.

Nugent, Edward L., to Becton, Dickinson and Company. Pour spout for a container with improved screening feature. 4,555,341, Cl. 210-359.000.

Numata, Koji: *See—*
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,555,761, Cl. 364-424.000.

Numata, Tatsuo, to Pioneer Electronic Corporation. Circuit for driving a signal meter for a receiver. 4,555,671, Cl. 330-252.000.

Nun, Emmanuel B.; Izhar, Rafi; and Karpol, Avner, to Optrotech Ltd. Optical scanning apparatus. 4,555,727, Cl. 358-106.000.

Nunberg, Jack: *See—*
Bahl, Chander P.; and Nunberg, Jack, 4,555,486, Cl. 435-91.000.

Nunn, Gary F., to Du Pont de Nemours, E. I., and Company. Apparatus for tensioning and forwarding tow. 4,554,716, Cl. 28-263.000.

Nutech Energy Systems, Inc.: *See—*
Lewis, James H., 4,554,719, Cl. 29-157.30R.

Nye, Gerald P., Jr. Golf club grip cleaner. 4,554,696, Cl. 15-21.00D.

Nyman, Sigurd: *See—*
Jonsson, Arne; Nyman, Sigurd; Olelind, Eskil K.; and Olofsson, Bjorn, 4,555,218, Cl. 416-17.000.

O. I. Corporation: *See—*
Hall, Randall C., 4,555,383, Cl. 422-89.000.

Oba, Katuyuki: *See—*
Takeshita, Takeaki; Oba, Katuyuki; Shimoyama, Yoshiaki; and Masuda, Takashi, 4,555,264, Cl. 75-49.000.

Obata, Keigo; Dohi, Nobuyasu; Okuhama, Yoshiaki; Masaki, Seishi; Okada, Yukiyoshi; and Yoshida, Tadashi. Tin-lead alloy plating bath. 4,555,314, Cl. 204-44.400.

Obersteiner, Georg: *See—*
Budecker, Ludwig; and Obersteiner, Georg, 4,555,223, Cl. 417-462.000.

Obrecht, Georges, to Alsthom-Atlantique. Oscillating friction ring assembly for applying axial thrust to a shaft. 4,554,983, Cl. 175-107.000.

O'Brien, William J., to Breville Holdings Pyt. Limited. Electrically heated wok. 4,555,616, Cl. 219-432.000.

Ochiai, Kuniaki, to Tokyo Electric Co., Ltd. Release type dot printer head. 4,555,192, Cl. 400-124.000.

Oda, Yoshifumi, to Chisso Corporation. Sustained-release vasodilator. 4,555,398, Cl. 424-19.000.

Odawara, Kazuharu; and Tago, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical disk having elastic deformable spacer. 4,555,716, Cl. 346-137.000.

O'Dea, Orrin B., to Microcommunications, Inc. Electronic telephone relay. 4,555,593, Cl. 179-18.0GD.

O'Dowd, Dennis H.; and Barry, George W. J. Iodine disinfection dispenser. 4,555,347, Cl. 210-752.000.

Oe, Takanori: *See—*
Goto, Kazuhiro; Yaoka, Osamu; and Oe, Takanori, 4,555,510, Cl. 514-291.000.

Oelering, Werner: *See—*
Leifeld, Ferdinand; Coenen, Rolf; Oelering, Werner; and Klopp, Ludwig, 4,554,708, Cl. 19-80.00R.

Ogawa, Kyosuke; Shirai, Shigeru; Saitoh, Keishi; Misumi, Teruo; and Kanbe, Junichiro, to Canon Kabushiki Kaisha. Photoconductive member of amorphous silicon. 4,555,465, Cl. 430-95.000.

Ogino, Yoshio: *See—*
Mizukawa, Takumi; Ogino, Yoshio; Ohmori, Hideki; and Sato, Taketoshi, 4,555,608, Cl. 219-10.770.

Ogorek, Kurt: *See—*
Holz, Joachim; Meier, Wolfgang; Schwarting, Karl-Heinz; Goris, Heinrich; and Ogorek, Kurt, 4,555,142, Cl. 299-43.000.

Oguchi, Yoshihiro: *See—*
Katagiri, Kazuharu; and Oguchi, Yoshihiro, 4,555,472, Cl. 430-278.000.

Ogura, Shunichiro, to Nippon Zeon Co. Ltd. Process for separating highly pure butene-1 or butene-1/isobutene mixture from C_4 hydrocarbon fraction. 4,555,312, Cl. 203-29.000.

O'Hara, John F., Jr.: *See—*
Friedes, Albert; Greene, Thomas V.; Idenden, Frederick W.; Moeller, Kenneth L.; Musen, Robert M.; and O'Hara, John F., Jr., 4,555,594, Cl. 179-18.00B.

Ohara, Makoto: *See—*
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.

Ohara, Minoru: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.

Ohara, Terumi: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.

Ohgami, Masaaki; Hara, Kazuo; and Abe, Kunihiro, to Fuji Jukogyo Kabushiki Kaisha. Engine speed control system. 4,555,762, Cl. 364-431.090.

Ohguro, Tamotsu: *See—*
Hiroyasu, Minoru; Yamashita, Hideo; Ohguro, Tamotsu; Yamagishi, Shigeru; and Shino, Shigenari, 4,555,205, Cl. 408-150.000.

Ohishi, Chikashi: *See—*
Shiba, Keisuke; Fuchizawa, Tetsuro; Nakao, Sho; and Ohishi, Chikashi, 4,555,461, Cl. 430-49.000.

Ohki, Kouichi: *See—*
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,555,801, Cl. 382-44.000.

Ohmori, Hideki: *See—*
Mizukawa, Takumi; Ogino, Yoshio; Ohmori, Hideki; and Sato, Taketoshi, 4,555,608, Cl. 219-10.770.

Ohmura, Jukichi: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,555,369, Cl. 260-544.00F.

Ohmura, Yoshio: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, 4,555,505, Cl. 514-42.000.

Ohno, Jiro: *See—*
Shimazaki, Fumio; Asai, Koji; and Ohno, Jiro, 4,555,113, Cl. 273-80.00B.

Ohta, Takanori: *See—*
Hayashi, Takehiko; Ikuta, Hiroyuki; and Ohta, Takanori, 4,554,811, Cl. 72-110.000.

Ohtaka, Keiji: *See—*
Suda, Yasuo; Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; and Ohtaka, Keiji, 4,555,169, Cl. 354-407.000.

Oike, Ikuo, to Honda Giken Kogyo Kabushiki Kaisha. Engine exhaust apparatus. 4,554,785, Cl. 60-314.000.

Ok Tedi Mining Limited: *See—*
Stone, Alan M., 4,555,385, Cl. 423-30.000.

Oka, Hitoshi: *See—*
Tanaka, Isamu; Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,555,532, Cl. 523-400.000.

Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, to Fujitsu Limited. Developer comprising a carrier coated with Fe_3O_4 dispersed in a butadiene polymer, and a toner. 4,555,466, Cl. 430-106.600.

Okada, Yukiyoshi: *See—*
Obata, Keigo; Dohi, Nobuyasu; Okuhama, Yoshiaki; Masaki, Seishi; Okada, Yukiyoshi; and Yoshida, Tadashi, 4,555,314, Cl. 204-44.400.

Okamaoto, Kaoru: *See—*
Hamada, Masaaki; Okamaoto, Kaoru; and Kurosaki, Teikichi, 4,555,513, Cl. 514-311.000.

Okamoto, Hiromi: *See—*
Yamada, Takemi; Satoh, Tamataro; Mizushiña, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,897, Cl. 123-188.0AA.
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,898, Cl. 123-188.0AA.

Okamoto, Yoshio: *See—*
Yuki, Heimei; and Okamoto, Yoshio, 4,555,574, Cl. 546-342.000.

Okazaki, Masaki: *See—*
Inoue, Noriyuki; Okazaki, Masaki; Yamamuro, Kiyohiko; and Takei, Haruo, 4,555,482, Cl. 430-574.000.
Sakai, Nobuo; Okazaki, Masaki; and Inagaki, Yoshio, 4,555,479, Cl. 430-372.000.
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; and Toya, Ichizo, 4,555,481, Cl. 430-550.000.

Okimoto, Haruo; and Matsuda, Ikuo, to Mazda Motor Corporation. Engine intake system. 4,554,890, Cl. 123-26.000.

Okoshi, Hideo, to Nippon Seiko Kabushiki Kaisha. Speed control device of a toric type infinitely variable transmission. 4,554,841, Cl. 74-200.000.

Okubo, Yasuo: *See—*
Asano, Juichi; Okubo, Yasuo; Saito, Hiroshi; and Harada, Shigeru, 4,555,064, Cl. 241-89.300.

Okuhama, Yoshiaki: *See—*
Obata, Keigo; Dohi, Nobuyasu; Okuhama, Yoshiaki; Masaki, Seishi; Okada, Yukiyoshi; and Yoshida, Tadashi, 4,555,314, Cl. 204-44.400.

Okuno, Yoshiomi: *See—*
Arimura, Hirofumi; Uemura, Yahiro; and Okuno, Yoshiomi, 4,555,401, Cl. 424-89.000.

Okuyama, Hirofumi: *See—*
Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,555,466, Cl. 430-106.600.

Olelind, Eskil K.: *See—*
Jonsson, Arne; Nyman, Sigurd; Olelind, Eskil K.; and Olofsson, Bjorn, 4,555,218, Cl. 416-17.000.

Olin Corporation: *See—*
Ashok, Sankaranarayanan; and Breedis, John F., 4,555,272, Cl. 148-3.000.
Winter, Joseph; and Pryor, Michael J., 4,555,054, Cl. 228-148.000.

Ollinger, James C.; and Shaub, Melvin H., to Armstrong World Industries, Inc. Method of reinforcing a ceiling runner. 4,554,718, Cl. 29-155.00R.

Olofsson, Bjorn: *See—*
Jonsson, Arne; Nyman, Sigurd; Olelind, Eskil K.; and Olofsson, Bjorn, 4,555,218, Cl. 416-17.000.

Olympus Optical Co., Ltd.: *See—*
Hanaoka, Naohiro, 4,555,444, Cl. 428-336.000.

Omega SA: *See—*
Vuilleumier, Cyril, 4,555,185, Cl. 368-190.000.

OMI International Corporation: *See—*
Barbieri, Stephen C.; and Mayer, Linda J., 4,555,315, Cl. 204-52.00R.

O'Neal, Keith T.: *See—*
Coy, Calvin L.; and O'Neal, Keith T., 4,554,697, Cl. 15-55.000.

Onkyo Kabushiki Kaisha: *See—*
Koga, Yoshiro; and Nakao, Kenji, 4,555,751, Cl. 363-44.000.

Ono, Katsuyasu: *See—*
Kawai, Osamu; and Ono, Katsuyasu, 4,555,074, Cl. 242-107.40A.

Ono, Takuro, to Aisin Seiki Kabushiki Kaisha. Hydraulic lifter for internal combustion engines. 4,554,895, Cl. 123-90.550.

Op de Beek, Johannes C. A.; and Lobregt, Steven, to U.S. Philips Corporation. Method and computer tomography device for determining a tomographic image with elevated resolution. 4,555,760, Cl. 364-414.000.

Optrotech Ltd.: *See—*
Nun, Emmanuel B.; Izhar, Rafi; and Karpol, Avner, 4,555,727, Cl. 358-106.000.

Orbital Engine Company Proprietary Limited: *See—*
McKay, Michael L., 4,554,945, Cl. 137-312.000.

Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, to Nippon Telegraph and Telephone Public Corporation; Sho-Bond Construction Co., Ltd.; and Communication Architecture and Building Research Corporation. Apparatus for and a method of repairing by filling with an adhesive. 4,555,286, Cl. 156-94.000.

Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, to Nippon Telegraph and Telephone Public Corporation; Sho-Bond Construction Co., Ltd.; and Communication Architecture and Building Research Corporation. Adhesive filler apparatus. 4,555,295, Cl. 156-349.000.

Orsak, John E.; and Roman, Charles A., to Dayco Corporation. Fragrant wall covering having an emollient moisturizer and a method of making same. 4,555,438, Cl. 428-219.000.

Ortho Pharmaceutical Corporation: *See—*
Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,571, Cl. 544-286.000.
Kanojia, Ramesh M.; Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,570, Cl. 544-286.000.

Orthoefer, Frank T.: *See—*
Gibson, Paul W.; and Orthoefer, Frank T., 4,555,417, Cl. 427-361.000.

Osada, Hiroshi, to Nifco Inc. Lead wire retainer. 4,555,589, Cl. 174-156.000.

Osawa, Shigeru; and Yamoto, Hisayoshi, to Topy Industries Limited. Wheel rim with split locking ring. 4,554,961, Cl. 152-410.000.

Osterholt, Gerd: *See—*
Bruns, Engelbert; and Osterholt, Gerd, 4,555,308, Cl. 202-263.000.

Osti, Roberto: *See—*
Mattei, Riccardo; and Osti, Roberto, 4,555,281, Cl. 156-64.000.

Ostrander, Charles, to Consolidated Foods Corporation. Slipper. 4,554,749, Cl. 36-102.000.

Otis Engineering Corporation: *See—*
Merritt, David T., 4,554,972, Cl. 166-137.000.

Otto, Lance M. Uneven bars. 4,555,107, Cl. 272-63.000.

Ouchi, Hiromu: *See—*
Nishida, Masamitsu; Ouchi, Hiromu; and Matsuo, Yoshihiro, 4,555,494, Cl. 501-134.000.

Oude Alink, Bernardus A., to Petrolite Corporation. 4,5-Dihydrothiazoles and preparation thereof. 4,555,576, Cl. 548-146.000.

Outboard Marine Corporation: *See—*
DuBois, Chester G., 4,555,221, Cl. 417-349.000.

Over, William R.; Wion, Donald A.; and Heffner, Richard M., to AMP Incorporated. Modular lead maker. 4,554,725, Cl. 29-564.400.

Overholt, Mark. System for operation of a direct drive dual drum winch. 4,555,092, Cl. 254-291.000.

Overley, Ronald V.; Tedhams, Michael H.; and Atzbach, Carl L., to Whirlpool Corporation. Latch for self-cleaning oven door. 4,554,907, Cl. 126-191.000.

Owens-Corning Fiberglas Corporation: *See—*
Sieloff, Ronald F.; and Kays, William A., 4,555,447, Cl. 428-392.000.

Owens-Illinois, Inc.: *See—*
Burtch, John E.; and Hill, James A., 4,555,296, Cl. 156-446.000.

P.S.R., Incorporated: *See—*
Cusumano, Salvatore V.; and Glassman, Aaron, 4,554,877, Cl. 112-105.000.

PA Incorporated: *See—*
Stanley, Roderic K.; Milewits, Marvin; Knauer, Robert C., Jr.; and Bradfield, James E., 4,555,665, Cl. 324-229.000.

Packard Instrument Company, Inc.: *See—*
Everett, Leroy J.; and DeFilippis, Stanley J., 4,555,629, Cl. 250-362.000.

Palara, Sergio; and Torazzina, Aldo, to SGS-ATES Componenti Elettronici S.p.A. Power audio-amplifier with automatic adjustment of the bias current absorbed by the final stage. 4,555,674, Cl. 330-267.000.

Pali, Christopher, to Essex Group, Inc. Method and apparatus for unwinding and splicing successive rolls. 4,555,070, Cl. 242-58.100.

Pallanch, Francis T., to Vilter Manufacturing Corporation. Multi-stage gas compressor system and desuperheater means therefor. 4,554,799, Cl. 62-509.000.

Palumbo, Janice M.: *See—*
Reczek, James A.; and Palumbo, Janice M., 4,555,478, Cl. 430-367.000.

Panduit Corp.: *See—*
Caveney, Jack E., 4,554,733, Cl. 29-749.000.

Paoluccio, John A. Sediment dike apparatus and methods. 4,555,201, Cl. 405-117.000.

Parrillo, Louis C.: *See—*
Hillenius, Steven J.; and Parrillo, Louis C., 4,554,726, Cl. 29-571.000.

Pasquale, William D.: *See—*
Hewitt, Edward G.; and Pasquale, William D., 4,555,026, Cl. 206-521.000.

Pasternak, Stephen F.; and Wohrstein, Franz X., to Peerless of America, Inc. Heat exchangers and method of making same. 4,554,970, Cl. 165-181.000.

Pastors, Debbie, executrix: *See—*
Foley, Robert W.; Storck, Robert C.; Mickus, Donald J., deceased; and Pastors, Debbie, executrix, 4,554,979, Cl. 172-813.000.

Patchett, Arthur A.; and Wu, Mu T., to Merck & Co., Inc. Aminoacyl-containing dipeptide derivatives useful as antihypertensives. 4,555,502, Cl. 514-19.000.

Patchett, Arthur A., to Merck & Co., Inc. N^2-(Substituted)carboxymethyl-N^6-(substituted)-lysyl-and α-(ε-aminoalkyl)glycyl amino acid antihypertensive agents. 4,555,503, Cl. 514-19.000.

Patel, Nathalal G.: *See—*
Lockard, Walter G.; Patel, Nathalal G.; and Boris, Allen J., 4,555,121, Cl. 280-30.000.

Patel, Parbhubhai D.: *See—*
Gardner, William B.; Patel, Parbhubhai D.; Philen, Dan L.; and Santana, Manuel R., 4,555,175, Cl. 356-32.000.

Patel, Raman, to Monsanto Company. Compatibilized blends of acrylic ester. 4,555,546, Cl. 525-194.000.

Patel, Raman: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,555,552, Cl. 525-456.000.

Patterson, William R.: *See—*
Napoli, Phillip D.; and Patterson, William R., 4,554,789, Cl. 60-751.000.

Patton, John T., Jr.; and Rupert, John P., to BASF Wyandotte Corporation. Halogenated phenolic polyols and rigid cellular compositions made therefrom. 4,555,530, Cl. 521-131.000.

Paus, Lloyd L., to Huck Manufacturing Company. Fastener tester. 4,554,838, Cl. 73-761.000.

Pavlick, Michael J.: *See—*
Dickhart, William W., III; Graziani, Dante J., Jr.; Herring, James M., Jr.; Pavlick, Michael J.; and Renn, Edward J., 4,555,095, Cl. 267-4.000.

Peacock, Glenn S.: *See—*
Koleske, Joseph V.; Peacock, Glenn S.; and Kwiatkowski, George T., 4,555,449, Cl. 428-411.100.

Pearo, John M. Tamper-proof pill dispenser. 4,555,044, Cl. 221-19.000.

Peerless of America, Inc.: *See—*
Pasternak, Stephen F.; and Wohrstein, Franz X., 4,554,970, Cl. 165-181.000.

Pehkonen, Robert: *See—*
Yoakam, David; Campbell, Robert; and Pehkonen, Robert, 4,554,887, Cl. 118-666.000.

Pejouhy, Radi; and Cardin, Wilfred W., to Texas Instruments Incorporated. Snap-acting thermostatic switch assembly. 4,555,686, Cl. 337-102.000.

Perego, Lucio C.: *See—*
Harrod, Lawrence R.; and Perego, Lucio C., 4,555,451, Cl. 429-1.000.

Performance Pool Products, Ltd.: *See—*
Cohen, Joseph D., 4,555,334, Cl. 210-169.000.

Peritz, Lyonel: *See—*
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,555,246, Cl. 8-405.000.

Perkin-Elmer Corporation, The: *See—*
Garcia, Enrique, 4,555,733, Cl. 358-293.000.

Persson, Bengt: *See—*
Persson, Per I.; and Persson, Bengt, 4,555,053, Cl. 228-107.000.

Persson, Per I.; and Persson, Bengt, to Nitro Nobel AB; and AB Volvo. Method of joining together two pipe ends to form a pipe of metal. 4,555,053, Cl. 228-107.000.

Peter, Joseph E.: *See—*
Collins, C. Neal; and Peter, Joseph E., 4,555,059, Cl. 239-425.000.

Petersen, Wallace C., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,555,261, Cl. 71-90.000.

Petrillo, Edward W., Jr.: *See—*
Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,555,506, Cl. 514-91.000.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A., 4,555,576, Cl. 548-146.000.

Petry, Eston F.: *See—*
Coon, Julian B.; and Petry, Eston F., 4,554,941, Cl. 137-240.000.

Peyton, Jeffrey L. Hand actuated puppet and kit. 4,555,236, Cl. 446-329.000.

Pfizer Inc.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,555,516, Cl. 514-326.000.

Pfyl, Walter: *See—*
Hausler, Michael; Huber, Philippe; Pfyl, Walter; and Sadek, Kadry, 4,555,658, Cl. 323-210.000.

Phelps, Mary E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,555,364, Cl. 260-397.200.

Philen, Dan L.: *See—*
Gardner, William B.; Patel, Parbhubhai D.; Philen, Dan L.; and Santana, Manuel R., 4,555,175, Cl. 356-32.000.

Phillips, Howard L. Split engine clutch. 4,555,003, Cl. 192-53.00B.

Phillips Petroleum Company: *See—*
Agapiou, Agapios; Allan, John L. H.; and Jacobson, Felix I., 4,555,496, Cl. 502-105.000.
Jain, Gyan P., 4,555,309, Cl. 203-1.000.
Kukes, Simon G.; and Kimble, James B., 4,555,499, Cl. 502-208.000.
Kukes, Simon G., 4,555,500, Cl. 502-334.000.
Marrelli, Ronald E., 4,555,310, Cl. 203-10.000.

Picker International, Ltd.: *See—*
Young, Ian R., 4,554,925, Cl. 128-653.000.

Pickering, William: *See—*
Melocik, Grant C.; and Pickering, William, 4,555,651, Cl. 318-341.000.

Pigeon, Michel: *See—*
David, Bernard; and Pigeon, Michel, 4,555,664, Cl. 324-225.000.

Pike, Robert C., to AT&T Bell Laboratories. Dynamic generation and overlaying of graphic windows for multiple active program storage areas. 4,555,775, Cl. 364-900.000.

Pines of America, Inc.: *See—*
Harrod, Lawrence R.; and Perego, Lucio C., 4,555,451, Cl. 429-1.000.

Pino y Torres, Jose L. Vaginal applicator. 4,554,909, Cl. 128-1.200.

Pioneer Electronic Corporation: *See—*
Numata, Tatsuo, 4,555,671, Cl. 330-252.000.

Pioneer Video Corporation: *See—*
Katsuyama, Hitoshi, 4,555,679, Cl. 331-17.000.

Pirdzun, Jorg: *See—*
Evertz, Egon; and Pirdzun, Jorg, 4,555,094, Cl. 266-45.000.

Piwinski, John J.: *See—*
Suh, John T.; Regan, John R.; Piwinski, John J.; Menard, Paul; and Jones, Howard, 4,555,508, Cl. 514-211.000.

Platter, Sanford; Durand, Charles A.; and Gadsby, Larry R., to Electronic Processors, Inc. Tape cartridge. 4,555,077, Cl. 242-198.000.

Plessey Overseas Limited: *See—*
Rex, Michael P., 4,554,873, Cl. 104-88.000.

Ploch, Siegfrid; Rossler, Sonja; Zeisberg, Peter; and Heilmann, Horst, to VEB Kombinat Textima. Apparatus and method for the production of textile surface configurations. 4,554,804, Cl. 66-214.000.

Ploppa, Jurgen: *See—*
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Hoover, Merwin F.; Salamone, Ann B.; and Vandebult, Jan, 4,555,414, Cl. 427-43.100.

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Kausga, Takuzo; Ikenaga, Yukio; and Suzuki, Kunio, 4,555,357, Cl. 252-511.000.

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Garner, Alfred V.; and Nalder, William W., 4,555,352, Cl. 252-35.000.

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May, Marvin M.; Billings, Robert C.; Kendall, Harry A.; and Bayorgeon, Jeffrey T., 4,555,091, Cl. 254-267.000.

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Chabal, Joseph, 4,554,713, Cl. 26-51.000.
Makhlouf, Joseph M.; McCollum, Gregory J.; and Kerr, Paul R., 4,555,551, Cl. 525-455.000.

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Ambros, Peter; and Gatzke, Erich, 4,555,533, Cl. 523-440.000.
Westermeir, Gisela; and Fehr, Friedhard, 4,555,745, Cl. 361-320.000.
Press, Jeffery B.: *See—*
Wright, William B., Jr.; and Press, Jeffery B., 4,555,519, Cl. 514-340.000.
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Mumford, John L. C.; and Price, Roger F., 4,555,415, Cl. 427-193.000.
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Weishalla, Gale F., 4,554,815, Cl. 72-349.000.
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Prinz, Friedrich B.; Hoburg, James F.; and Gunnarsson, Kristjan, to Carnegie-Mellon University. Acoustic sensor and method of using same for determining the position of a tool relative to a workpiece. 4,554,834, Cl. 73-597.000.
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Engel, John F.; and Puglis, Joseph M., 4,555,521, Cl. 514-362.000.
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Arway, George; Eremity, Frank; Dick, George; and Pullen, Elaine, 4,555,712, Cl. 346-75.000.
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Miller, Roy W., 4,555,033, Cl. 213-51.000.
Purrer, Josef: *See—*
Binder, Berthold; and Purrer, Josef, 4,555,065, Cl. 241-241.000.
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R L Associates: *See—*
Riskin, Bernard N., 4,555,618, Cl. 235-384.000.
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Hughes, Robert S., 4,555,138, Cl. 297-346.000.
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Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, 4,555,020, Cl. 206-235.000.
Raccah, Edward R.; and King, James B. Hair drying apparatus. 4,555,232, Cl. 432-222.000.
Raffaeli, Lidio P., to Stewart-Warner Corporation. Corrosion resistant caster. 4,554,704, Cl. 16-21.000.
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Sorger, Gunter U.; and Raicu, Dan, 4,555,683, Cl. 333-202.000.
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Ranks Hovis McDougall, PLC: *See—*
Marsh, Robert A., 4,555,485, Cl. 435-68.000.
Ranno, Edward N., Sr. Auxiliary form roller apparatus for rotary offset lithographic duplicating machines. 4,554,869, Cl. 101-145.000.
Rao, S. Prabhakara; and Burkhalter, John F., to Halliburton Company. Hydrolytically stable polymers for use in oil field cementing methods and compositions. 4,555,269, Cl. 106-90.000.
Rathbun, Willard J. Tamper resistant container and closure assembly. 4,555,042, Cl. 220-277.000.
Ray, Hugh C. Underwear. 4,554,685, Cl. 2-403.000.
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Galani, Zvi; Laton, Richard W.; Waterman, Raymond C., Jr.; and DiBiase, Robert, 4,555,678, Cl. 331-1.00A.
Thomas, Calvin J.; and Hurley, James E., 4,555,606, Cl. 219-10.55R.
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Carlson, David J., 4,555,809, Cl. 455-190.000.
Harwood, Leopold A.; and Shanley, Robert L., II, 4,555,722, Cl. 358-17.000.
Lewis, Henry G., Jr.; and Stiller, Thomas M., 4,555,768, Cl. 364-757.000.
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Hammond, Geoffrey R., 4,555,194, Cl. 401-206.000.
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Jones, Kenneth W., 4,554,986, Cl. 175-397.000.
Reese Scientific Corporation: *See—*
Thomas, Rees D., 4,555,183, Cl. 366-208.000.
Reflexite Corporation: *See—*
Rowland, William P., 4,555,161, Cl. 350-103.000.
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Suh, John T.; Regan, John R.; Piwinski, John J.; Menard, Paul; and Jones, Howard, 4,555,508, Cl. 514-211.000.
Rehrig, Houston. Protective flange for wheel castor housing. 4,555,123, Cl. 280-160.000.
Reid, Dwight K., to Betz Laboratories, Inc. Methods and compositions for boronizing metallic surfaces. 4,555,326, Cl. 208-48.00R.
Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., to Ciba-Geigy Corporation. Benzoate-stabilized rigid polyvinyl chloride compositions. 4,555,541, Cl. 524-180.000.
Reiley, Timothy C.: *See—*
Chance, Dudley A.; Reiley, Timothy C.; and Sampogna, Michael, 4,555,285, Cl. 156-89.000.
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, to VEB Forster Tuchfabriken. Method for the finishing of textile sheets. 4,554,715, Cl. 28-107.000.
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Marhic, Gerard; Schaff, Didier; and Remy, Francis, 4,555,609, Cl. 219-121.0PC.
Renn, Edward J.: *See—*
Dickhart, William W., III; Graziani, Dante J., Jr.; Herring, James M., Jr.; Pavlick, Michael J.; and Renn, Edward J., 4,555,095, Cl. 267-4.000.
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Repa, Otto, to Carl Walther GmbH. Device for aligning an adjustable sight element in a sight system for rifles. 4,554,745, Cl. 33-257.000.
Repella, James A., to Microdot Inc. Transfer apparatus and method. 4,554,723, Cl. 29-430.000.
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Edling, Robert J.; and Morgan, Karl L., 4,554,759, Cl. 43-100.000.
Reuters Ltd.: *See—*
Baldry, Kenneth; and Davids, Martin, 4,555,781, Cl. 370-60.000.
Rex, Michael P., to Plessey Overseas Limited. Material handling and sorting system. 4,554,873, Cl. 104-88.000.
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Bekkers, Henricus A. M.; and Reyenga, Tjerk, 4,555,036, Cl. 215-220.000.
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Watson, David R.; Carithers, Val G.; and McDaniel, L. Thomas, 4,555,493, Cl. 501-127.000.
Rhees, John T. Tamper evident inner seal for containers. 4,555,037, Cl. 215-232.000.
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Maier, Alfred E.; and Ricci, Louis N., 4,555,604, Cl. 200-255.000.
Rice, M. John, Jr.: *See—*
Legge, Ronald; Rice, M. John, Jr.; and Sarma, Kalluri R., 4,555,303, Cl. 156-643.000.
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Brumfield, David L., 4,554,915, Cl. 128-92.00A.
Ricoh Company, Ltd.: *See—*
Gojo, Tomomi, 4,555,191, Cl. 400-121.000.
Hashimoto, Mitsuru, 4,555,567, Cl. 534-654.000.
Ishima, Kazumi, 4,555,713, Cl. 346-75.000.

Koide, Hiroshi, 4,555,780, Cl. 369-43.000.
Koike, Takahisa, 4,555,710, Cl. 346-1.100.
Sato, Tsutomu, 4,555,711, Cl. 346-75.000.
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Hamman, Martin E.; and Baughman, Gary M., 4,555,048, Cl. 222-478.000.
Ries, Donald G.: *See—*
Giddings, David M.; Ries, Donald G.; and Syrinek, Allen R., 4,555,558, Cl. 526-287.000.
Rifkin, Gary L.; Lawrence, Charles C.; Zilber, Sam; and Hamby, Michael, to General Instrument Corporation. LED Circuit board indicator housing and tie-bar assembly. 4,555,749, Cl. 362-249.000.
Riker Laboratories, Inc.: *See—*
Bronn, William R., 4,555,573, Cl. 546-291.000.
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Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J., 4,555,514, Cl. 514-343.000.
Riskin, Bernard N., to R L Associates. Method and means for collecting highway tolls. 4,555,618, Cl. 235-384.000.
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Danby, Hal C.; and Ritson, Carl, 4,554,837, Cl. 73-705.000.
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Cressey, John R.; and Meneely, Dennis C., 4,555,667, Cl. 329-50.000.
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Biermann, Eberhard, 4,554,825, Cl. 73-118.000.
Denk, Josef; Dietrich, Walter; and Weller, Otto, 4,554,777, Cl. 53-201.000.
Engel, Gerhard; and Wessel, Wolf, 4,554,899, Cl. 123-357.000.
Heitmann, Jurgen, 4,555,737, Cl. 360-13.000.
Knapp, Heinrich; Sauer, Rudolf; Krauss, Rudolf; and Hafner, Udo, 4,555,060, Cl. 239-585.000.
Straubel, Max; and Zimmermann, Klaus-Dieter, 4,554,903, Cl. 123-575.000.
Sumal, Jaihind S., 4,554,829, Cl. 73-204.000.
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Roberts, James K., to Allied Corporation. Overtravel device for an automatic brake adjuster. 4,555,001, Cl. 188-79.5GE.
Robertson, Allan J., to American Cyanamid Company. Process for synthesizing diorganomonothiophosphinates. 4,555,368, Cl. 260-502.40R.
Robinson, Paul R.; and Moorehead, Eric L., to Union Oil Company of California. Process for producing conjugated dienes. 4,555,584, Cl. 585-623.000.
Rock, Erich; and Rupprechter, Helmut, to Julius Blum Gesellschaft m.b.H. Mounting plate of a hinge for mounting a door on furniture frames of varying thickness. 4,554,706, Cl. 16-237.000.
Rockwell International Corporation: *See—*
Anderson, Eric G., 4,555,619, Cl. 235-492.000.
Cassidenti, Michael L., 4,555,204, Cl. 408-144.000.
Hogge, Charles R., Jr., 4,555,789, Cl. 375-11.000.
Mosier, Donald E.; and Cascini, Michael R., 4,555,625, Cl. 250-231.0SE.
Treise, Jan E., 4,555,704, Cl. 343-7.300.
Rockwell-Rimoldi S.p.A.: *See—*
Marchesi, Franco, 4,554,840, Cl. 74-42.000.
Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., to Battelle Development Corporation. Non-emissive, flame-retardant coating compositions. 4,555,366, Cl. 260-404.800.
Rodriguez, David F. Nutcracker. 4,554,736, Cl. 30-120.300.
Rodth, Joseph J.; Smith, Ira A., Jr.; and Cornett, Donald F., to Coca-Cola Company, The. Ice-cooled dispensing system. 4,555,045, Cl. 222-1.000.
Roe, William J.: *See—*
Sykes, Robert C.; Connelly, Lawrence J.; and Roe, William J., 4,555,329, Cl. 209-5.000.
Roentgen, Paul; Krumm, Helmut; Krasborn, Gottfried; and Lenzen, Gunter, Process for installation and removal of glass pane from a frame. 4,555,607, Cl. 219-10.570.
Rogers, Mary L., administrator: *See—*
Rogers, Randall, deceased, 4,554,781, Cl. 56-235.000.
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Clouthier, Richard S.; and Rogers, Thomas A., 4,555,171, Cl. 355-3.0CH.
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Kiesewetter, Holger; Jung, Friedrich; and Roggenkamp, Hans-Gunther, 4,554,821, Cl. 73-55.000.
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Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, 4,555,806, Cl. 455-62.000.
Roland, Anthony M. Multiple sound picture projection cinema. 4,555,167, Cl. 352-133.000.
Roman, Charles A.: *See—*
Orsak, John E.; and Roman, Charles A., 4,555,438, Cl. 428-219.000.
Roos, Otto: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,555,511, Cl. 514-301.000.
Roschmann, Peter, to U.S. Philips Corporation. Method of manufacturing a disc resonator. 4,555,374, Cl. 264-40.100.
Rosen, Meyer R.; Fan, You-Ling; and Chu, Nan S., to Union Carbide Corporation. Process for flocculating phophatic slimes. 4,555,346, Cl. 210-734.000.
Rossi, Barbara A.: *See—*
Arnold, Emil; Baumgart, Helmut; and Rossi, Barbara A., 4,555,300, Cl. 156-613.000.
Rossler, Sonja: *See—*
Ploch, Siegfrid; Rossler, Sonja; Zeisberg, Peter; and Heilmann, Horst, 4,554,804, Cl. 66-214.000.
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Rothenberg, Irwin P., to Stik-Trim Industries, Incorporated. Self-adhesive wall covering or the like and method of making same. 4,555,441, Cl. 428-284.000.
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RTE Corporation: *See—*
DuPont, John P., 4,555,588, Cl. 174-73.00R.
Rudd, Michael J., to United States of America, Navy. Laser vibrometer. 4,554,836, Cl. 73-657.000.
Rudnev, Evgeny A.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.
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Wolowski, Eckard; and Mirtsch, Frank, 4,555,325, Cl. 208-10.000.
Rupert, John P.: *See—*
Patton, John T., Jr.; and Rupert, John P., 4,555,530, Cl. 521-131.000.
Rupprechter, Helmut: *See—*
Rock, Erich; and Rupprechter, Helmut, 4,554,706, Cl. 16-237.000.
Rusch, Dieter: *See—*
Behrens, Gunter; Schmitz, Walter; Kitzer, Peter; and Rusch, Dieter, 4,555,585, Cl. 136-245.000.
RY AB, Fack: *See—*
Smedberg, Olof R., 4,554,959, Cl. 144-380.000.
Ryan, David. Generator and rechargeable battery system for pedal powered vehicles. 4,555,656, Cl. 320-5.000.
Ryuno, Koitchiro: *See—*
Yamada, Hideaki; and Ryuno, Koitchiro, 4,555,487, Cl. 435-253.000.
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Sack, Michael C.; Henson, Donald E.; and Sack, Russell M., to Sack, Michael C. Shelf assembly and a support bracket for use therein. 4,555,082, Cl. 248-220.100.
Sack, Russell M.: *See—*
Sack, Michael C.; Henson, Donald E.; and Sack, Russell M., 4,555,082, Cl. 248-220.100.
Sadek, Kadry: *See—*
Hausler, Michael; Huber, Philippe; Pfyl, Walter; and Sadek, Kadry, 4,555,658, Cl. 323-210.000.
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Kunert, Heinz, 4,555,434, Cl. 428-194.000.
Saito, Gunji: *See—*
Umeno, Hiroshi; Saito, Gunji; and Hayashida, Morimasa, 4,554,780, Cl. 56-11.800.
Saito, Hiroshi: *See—*
Asano, Juichi; Okubo, Yasuo; Saito, Hiroshi; and Harada, Shigeru, 4,555,064, Cl. 241-89.300.
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.
Saito, Kazumasa: *See—*
Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,555,466, Cl. 430-106.600.
Saitoh, Keishi: *See—*
Ogawa, Kyosuke; Shirai, Shigeru; Saitoh, Keishi; Misumi, Teruo; and Kanbe, Junichiro, 4,555,465, Cl. 430-95.000.
Sakaguchi, Yukihiko; Sato, Kozo; Naito, Hideki; and Hara, Hiroshi, to Fuji Photo Film Co., Ltd. Heat-developable color photographic material with heat fusible compound. 4,555,470, Cl. 430-203.000.

Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Heat development process with stabilizer. 4,555,476, Cl. 430-351.000.
Sakai, Nobuo; Okazaki, Masaki; and Inagaki, Yoshio, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,555,479, Cl. 430-372.000.
Sakakibara, Shinsuke: *See—*
Inaba, Hajimu; and Sakakibara, Shinsuke, 4,555,758, Cl. 364-174.000.
Sakakibara, Takao: *See—*
Kokubu, Sadao; Hirano, Masatoshi; and Sakakibara, Takao, 4,555,743, Cl. 361-196.000.
Sakoe, Hiroaki, to Nippon Electric Co., Ltd. DP Matching system for recognizing a string of words connected according to a regular grammar. 4,555,796, Cl. 381-43.000.
Sakuragi, Toshio; Nakayama, Kazuo; Sato, Masaaki; and Koike, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Automatic flaw detection device. 4,554,835, Cl. 73-640.000.
Sakurai, Takayasu, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 4,555,778, Cl. 365-230.000.
Sakuta, Daniel, Jr. Trolling bucket. 4,554,757, Cl. 43-55.000.
Salamone, Ann B.: *See—*
Hoover, Merwin F.; Salamone, Ann B.; and Vandebult, Jan, 4,555,414, Cl. 427-43.100.
Saliger, Kenneth C., to Mobil Oil Corporation. Seal construction for fluid swivel joints. 4,555,118, Cl. 277-188.00R.
Salter, Robert S.: *See—*
Buckley, Leo P.; Burrill, Kenneth A.; Desjardins, Conrad D.; and Salter, Robert S., 4,555,361, Cl. 252-626.000.
Salvarezza, Robert M. Rope ladder with molded hard elastomer steps and replacement steps and collars therefor. 4,554,996, Cl. 182-199.000.
Salzle, Erich. Method of polishing glass articles in an acid bath. 4,555,304, Cl. 156-663.000.
Sampogna, Michael: *See—*
Chance, Dudley A.; Reiley, Timothy C.; and Sampogna, Michael, 4,555,285, Cl. 156-89.000.
Samson, Wilfred J.; and Solar, Ronald J., to Advanced Cardiovascular Systems, Inc. Catheter guide wire with short spring tip and method of using the same. 4,554,929, Cl. 128-772.000.
Sancini, Aldo; and Stacher, Miguel A., to Aktiengesellschaft Adolph Saurer. Weaving machine, especially a terry cloth weaving machine. 4,554,950, Cl. 139-25.000.
Sandberg, Jan-Erik: *See—*
Johansson, Borje; Pramskog, Torbjorn; and Sandberg, Jan-Erik, 4,554,860, Cl. 89-1.700.
Sander, Rembrandt, to Gebr. Hofmann GmbH & Co. KG Maschinenfabrik. Apparatus for automatic insertion of balance weights for use in automobile-wheel balancing equipment. 4,554,734, Cl. 29-818.000.
Sanders Associates, Inc.: *See—*
Bryant, William E., 4,555,807, Cl. 455-137.000.
Sanders, Georgius B. J.: *See—*
Nieuwendijk, Joris A. M.; van Gijsel, Wilhelmus D. A. M.; Sanders, Georgius B. J.; and van Nieuwland, Jacob M., 4,555,797, Cl. 381-117.000.
Sands, Howard E., to Coleco Industries, Inc. Multicolored unitary thermoformed article. 4,555,423, Cl. 428-79.000.
Sandstrom, Robert L.: *See—*
Sirovich, Bruce E.; Sandstrom, Robert L.; and Fleisch, Theo H., 4,555,395, Cl. 423-644.000.
Sanji, Koichiro: *See—*
Sugimori, Masaru; and Sanji, Koichiro, 4,555,561, Cl. 528-26.000.
Sankyo Yuki Kabushiki Kaisha: *See—*
Yoshida, Tadayuki, 4,555,345, Cl. 210-705.000.
Sano, Takashi: *See—*
Maki, Hirohisa; Sano, Takashi; and Yamamoto, Misao, 4,555,536, Cl. 524-66.000.
Sanshin Kogyo Kabushiki Kaisha: *See—*
Sougawa, Masafumi, 4,554,896, Cl. 123-179.00G.
Sant-Andrea Novara Officine Meccaniche e Fonderie S.p.A.: *See—*
Bianchi, Angelo, 4,554,709, Cl. 19-218.000.
Santana, Manuel R.: *See—*
Gardner, William B.; Patel, Parbhubhai D.; Philen, Dan L.; and Santana, Manuel R., 4,555,175, Cl. 356-32.000.
Santrade Limited: *See—*
Backlund, Lars K., 4,554,985, Cl. 175-371.000.
Sanyo Electric Co., Ltd.: *See—*
Fujimoto, Isao, 4,555,808, Cl. 455-180.000.
Sarma, Kalluri R.: *See—*
Legge, Ronald; Rice, M. John, Jr.; and Sarma, Kalluri R., 4,555,303, Cl. 156-643.000.
Saruyama, Toshio; and Mikami, Ryuzo, to Toray Silicone Company, Ltd. Room temperature vulcanizable polyorganosiloxane compositions containing ketoximosilanes and organotitanates. 4,555,560, Cl. 528-17.000.
Sato, Kazuyoshi: *See—*
Maeda, Yoshiyasu; Ueura, Akira; Sato, Kazuyoshi; and Watanabe, Katsunori, 4,555,069, Cl. 242-43.00R.
Sato, Kozo: *See—*
Sakaguchi, Yukihiko; Sato, Kozo; Naito, Hideki; and Hara, Hiroshi, 4,555,470, Cl. 430-203.000.
Sato, Masaaki: *See—*
Sakuragi, Toshio; Nakayama, Kazuo; Sato, Masaaki; and Koike, Mitsuhiro, 4,554,835, Cl. 73-640.000.
Sato, Taketoshi: *See—*
Mizukawa, Takumi; Ogino, Yoshio; Ohmori, Hideki; and Sato, Taketoshi, 4,555,608, Cl. 219-10.770.
Sato, Tsutomu, to Ricoh Company, Ltd. Deflection control ink jet operation adjustment control. 4,555,711, Cl. 346-75.000.
Satoh, Tamataro: *See—*
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,897, Cl. 123-188.0AA.
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,898, Cl. 123-188.0AA.
Satoturve Oy: *See—*
Jamsa, Hannu, 4,554,750, Cl. 37-3.000.
Saudagar, Abdul S. Urinary drainage appliance. 4,555,242, Cl. 604-96.000.
Sauer, John E.: *See—*
Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., 4,555,328, Cl. 208-157.000.
Sauer, Robert L.; Morrissette, Charles G.; Garbaczik, Stanley J., Sr.; and Garbaczik, Stanley J., Jr., to Food Equipment Manufacturing Corporation. Cutting machine for slicing circular articles into wedges. 4,554,852, Cl. 83-407.000.
Sauer, Rudolf: *See—*
Knapp, Heinrich; Sauer, Rudolf; Krauss, Rudolf; and Hafner, Udo, 4,555,060, Cl. 239-585.000.
Sawai, Shinichi: *See—*
Munakata, Shunsaku; Ukai, Hitoshi; Noguchi, Mitsuru; and Sawai, Shinichi, 4,555,380, Cl. 264-510.000.
Sawatari, Norio: *See—*
Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,555,466, Cl. 430-106.600.
Schaff, Didier: *See—*
Marhic, Gerard; Schaff, Didier; and Remy, Francis, 4,555,609, Cl. 219-121.0PC.
Schepers, Eberhard: *See—*
Jablonka, Dieter; Urban, Klaus; Raidt, Heinz-Peter; and Schepers, Eberhard, 4,555,433, Cl. 428-166.000.
Scherer, Michael: *See—*
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, 4,554,707, Cl. 17-47.000.
Schering Aktiengesellschaft: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, 4,555,507, Cl. 514-172.000.
Rufer, Clemens; and Boettcher, Irmgard, 4,555,406, Cl. 514-605.000.
Schetina, Otto: *See—*
Wrulich, Herwig; Schetina, Otto; Siebenhofer, Gottfried; and Maier, Wilfried, 4,555,143, Cl. 299-81.000.
Schiefer, Bernhard; and Bumberger, Herbert, to Didier-Werke AG; and Voest-Alpine AG. Closure mechanism with gas seal. 4,555,050, Cl. 222-597.000.
Schiel, Christian: *See—*
Steiner, Karl; Schiel, Christian; Meinecke, Albrecht; Mullner, Josef; and Weiss, Hans, 4,555,305, Cl. 162-205.000.
Schirrmacher, Roland: *See—*
Maier, Peter; Schirrmacher, Roland; and Simen, Rolf, 4,555,199, Cl. 403-370.000.
Schlack, Ronald A. Arrangement for providing heat to a personnel bucket of an aerial lift vehicle. 4,554,995, Cl. 182-129.000.
Schlegel Corporation: *See—*
Clouthier, Richard S.; and Rogers, Thomas A., 4,555,171, Cl. 355-3.0CH.
Schleicher, Ulrich, to Diehl, GmbH & Co. Arrangement for reducing the base drag in projectiles. 4,554,872, Cl. 102-490.000.
Schlumberger Technology Corporation: *See—*
Shonrock, Clinton O.; and Wambaugh, John O., 4,554,973, Cl. 166-192.000.
Schmidt, Charles J., to Temple, Arthur, III, a part interest. Apparatus for rounding the circumference of a log. 4,554,958, Cl. 144-4.000.
Schmidt, Robert H.: *See—*
Polad, Michael D.; Gerlach, LeRoy E.; and Schmidt, Robert H., 4,555,610, Cl. 219-121.0LA.
Schmidt, Stephen C.: *See—*
Moore, David S.; and Schmidt, Stephen C., 4,555,176, Cl. 356-301.000.
Schmidt, Timothy J.; and Heintzleman, Ronald A., to General Safety Corporation. Dual mode seat belt retractor assembly. 4,555,075, Cl. 242-107.40A.
Schmitt, Dallas L.; and Spencer, Kenneth E., to Lukens General Industries, Inc. Pedestal tie bar arrangement. 4,554,875, Cl. 105-221.00R.
Schmitt, Joseph M., to American Cyanamid Company. Purification of acrylonitrile. 4,555,367, Cl. 260-465.900.
Schmitt, Kirk D., to Mobil Oil Corporation. Method for determining flow patterns in subterranean petroleum and mineral containing formations using organonitrogen tracers. 4,555,488, Cl. 436-27.000.
Schmitt, Kirk D., to Mobil Oil Corporation. Method for determining flow patterns in subterranean petroleum and mineral containing formations using organosulfur tracers. 4,555,489, Cl. 436-27.000.
Schmitz, Reinold: *See—*
Schutze, Detlef-Ingo; Schmitz, Reinold; and Wunderlich, Klaus, 4,555,580, Cl. 549-52.000.
Schmitz, Walter: *See—*
Behrens, Gunter; Schmitz, Walter; Kitzer, Peter; and Rusch, Dieter, 4,555,585, Cl. 136-245.000.

Schmodde, Hermann; and Haltenhof, Hans-Gunter, to H. Stoll GmbH & Co. Flat-bed knitting machine having electro-mechanical selection. 4,554,803, Cl. 66-75.200.
Schneider, David E., to Great Bend Manufacturing Co., Inc. Quick attach tractor mounting assembly for agricultural dozer and loader implement. 4,554,978, Cl. 172-247.000.
Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,555,364, Cl. 260-397.200.
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, to Boehringer Ingelheim KG. Thieno [3,2,C]pyridines useful as antihypertensives. 4,555,511, Cl. 514-301.000.
Schramm, Matthias: *See—*
Goldmann, Siegfried; Bossert, Friedrich; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,555,512, Cl. 514-302.000.
Schutze, Detlef-Ingo; Schmitz, Reinold; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of thioindigo compounds. 4,555,580, Cl. 549-52.000.
Schwarting, Karl-Heinz: *See—*
Holz, Joachim; Meier, Wolfgang; Schwarting, Karl-Heinz; Goris, Heinrich; and Ogorek, Kurt, 4,555,142, Cl. 299-43.000.
Schwenzer, Alfred F.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., 4,555,299, Cl. 156-552.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Optical repeater integrated lasers. 4,555,785, Cl. 372-8.000.
Scott & Fetzer Company, The: *See—*
Kochte, Werner W.; and Nimon, Susan K., 4,554,702, Cl. 15-372.000.
Scott Orthopedics, Inc.: *See—*
Womack, Darryl L.; Noell, Ralph B.; and Bradshaw, Larry R., 4,554,913, Cl. 128-80.00C.
Scribner, Kenneth J., to United States of America, Energy. Extrusion cast explosive. 4,555,277, Cl. 149-19.400.
Scruggs, David M., to Dresser Industries, Inc. Amorphous alloy plain bearings. 4,555,186, Cl. 384-93.000.
Sealey, Graham P.; and Corney, Andrew C., to Tru Test Distributors Limited. Arrangement and method for liquid level measurement. 4,554,831, Cl. 73-304.00R.
Segal, Brahm R. High-fidelity audio frequency amplifier. 4,555,672, Cl. 330-255.000.
Segler, Calvin A. Strength saver commode. 4,554,689, Cl. 4-254.000.
Seiferth, Oscar E.: *See—*
Brown, Richard K.; and Seiferth, Oscar E., 4,555,605, Cl. 219-10.55E.
Seisan Nippon Sha, Ltd.: *See—*
Yano, Mitsuru, 4,555,282, Cl. 156-66.000.
Seki, Masaki: *See—*
Kishi, Hajimu; Seki, Masaki; and Tanaka, Kunio, 4,555,590, Cl. 178-18.000.
Sekiguchi, Nobuhisa: *See—*
Yokoyama, Shigeki; Nakamura, Koki; Kouda, Jyounichi; and Sekiguchi, Nobuhisa, 4,555,480, Cl. 430-527.000.
Seko, Yasutoshi: *See—*
Yanagishima, Takayuki; and Seko, Yasutoshi, 4,555,694, Cl. 340-524.000.
Sell, James. Sewer outlet connecting and capping arrangement. 4,554,949, Cl. 137-899.000.
Semon, Joseph R., to Casket Shells, Inc. Casket sealing gasket. 4,555,119, Cl. 277-207.00R.
Sendelbach, Lee A.: *See—*
Dahl, Richard E.; Faflak, Daniel P.; and Sendelbach, Lee A., 4,555,701, Cl. 340-736.000.
Sendo, Takashi: *See—*
Asaoka, Sachio; and Sendo, Takashi, 4,555,394, Cl. 423-626.000.
Senzaki, Takaya: *See—*
Hosaka, Takefumi; Imai, Takeshi; and Senzaki, Takaya, 4,555,691, Cl. 340-52.00R.
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; Farquharson, Graeme J.; and Houston, Timothy L., to ICI Australia Limited. Herbicidal cyclohexane-1,3-dione derivatives. 4,555,263, Cl. 71-98.000.
Sergovic, John A.; and McClinton, John L., to Burns & Russell Company. Method and apparatus for in mold coating. 4,555,375, Cl. 264-259.000.
Seshimoto, Osamu: *See—*
Kitajima, Masao; Seshimoto, Osamu; and Mizutani, Shigemitsu, 4,555,274, Cl. 148-6.14R.
Sevaille, Jean-Claude: *See—*
Bonnet, Bernard; Bressy, Roger; and Sevaille, Jean-Claude, 4,555,640, Cl. 307-115.000.
Seyfried, Donald N.: *See—*
Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., 4,554,814, Cl. 72-345.000.
SGS-ATES Componenti Elettronici S.p.A.: *See—*
Palara, Sergio; and Torazzina, Aldo, 4,555,674, Cl. 330-267.000.
SGS-ATES Componenti Elettronici SpA: *See—*
Devecchi, Daniele; and Torelli, Guido, 4,555,644, Cl. 307-482.000.
Shah, Jayantkumar R.: *See—*
Brightman, Barrie; Elliott, George; Lenk, Pedro A.; Shah, Jayantkumar R.; and Stewart, William H., 4,555,595, Cl. 179-18.0ES.
Shanley, Robert L., II: *See—*
Harwood, Leopold A.; and Shanley, Robert L., II, 4,555,722, Cl. 358-17.000.
Sharma, Gulab, to Beehive International. Cathode ray tube focusing circuitry. 4,555,649, Cl. 315-382.000.
Sharp, David G.: *See—*
Moran, David P. J.; Hepburn, John J.; and Sharp, David G., 4,555,411, Cl. 426-603.000.
Sharp Kabushiki Kaisha: *See—*
Aiba, Masahiko; Kuranishi, Masaaki; and Miyake, Hideyuki, 4,555,718, Cl. 346-140.00R.
Taguchi, Toshimichi, 4,555,601, Cl. 200-5.00A.
Shaub, Melvin H.: *See—*
Ollinger, James C.; and Shaub, Melvin H., 4,554,718, Cl. 29-155.00R.
Sheets, Ronald E.; Barbas, George A.; Doering, Howard W., Jr.; and Bjorkman, John R., to Tamarack Scientific Co., Inc. Automatic system for exposing and handling double-sided printed circuit boards. 4,555,630, Cl. 250-492.100.
Shell Oil Company: *See—*
Devlin, Barry R. J., 4,555,260, Cl. 71-88.000.
Shepard, Joseph F., to International Business Machines Corporation. Simplified planarization process for polysilicon filled trenches. 4,554,728, Cl. 29-576.00W.
Shey, Por-Jiy. Emergency descent device. 4,554,997, Cl. 182-238.000.
Shiba, Keisuke; Fuchizawa, Tetsuro; Nakao, Sho; and Ohishi, Chikashi, to Fuji Photo Film Co., Ltd. Process for preparing a lithographic printing plate. 4,555,461, Cl. 430-49.000.
Shibata, Komei: *See—*
Shimazaki, Fumio; Asai, Koji; and Ohno, Jiro, 4,555,113, Cl. 273-80.00B.
Shibuya Kogyo Co., Ltd.: *See—*
Miyashita, Yoshikazu; Muranaka, Shiaru; and Tanaka, Hideo, 4,554,774, Cl. 53-52.000.
Shigetomi, Masayoshi: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.
Shiibayashi, Masao: *See—*
Hazaki, Eiichi; Imai, Masaya; Tojo, Kenji; and Shiibayashi, Masao, 4,555,224, Cl. 418-55.000.
Shiinoki, Kunikatsu: *See—*
Takano, Hiroshi; and Shiinoki, Kunikatsu, 4,555,241, Cl. 474-261.000.
Shimamura, Takeo: *See—*
Kurosawa, Ryoichi; and Shimamura, Takeo, 4,555,755, Cl. 363-160.000.
Shimano Industrial Company Limited: *See—*
Hitomi, Yasuhiro, 4,555,072, Cl. 242-84.50R.
Shimazaki, Fumio; Asai, Koji; and Ohno, Jiro, to Shibata, Komei. Shaft and a method for producing the same. 4,555,113, Cl. 273-80.00B.
Shimizu, Masao, to Takeda Riken Co., Ltd. Test pattern generating apparatus. 4,555,663, Cl. 324-73.00R.
Shimoni, Yair: *See—*
Fenster, Paul; Netter, Zvi; and Shimoni, Yair, 4,555,728, Cl. 358-111.000.
Shimoyama, Yoshiaki: *See—*
Takeshita, Takeaki; Oba, Katuyuki; Shimoyama, Yoshiaki; and Masuda, Takashi, 4,555,264, Cl. 75-49.000.
Shino, Shigenari: *See—*
Hiroyasu, Minoru; Yamashita, Hideo; Ohguro, Tamotsu; Yamagishi, Shigeru; and Shino, Shigenari, 4,555,205, Cl. 408-150.000.
Shiojiri Kogyo Kabushiki Kaisha: *See—*
Fujimori, Motoyuki, 4,555,184, Cl. 368-88.000.
Shionogi & Co., Ltd.: *See—*
Nagata, Wataru; and Aoki, Tsutomu, 4,555,578, Cl. 548-251.000.
Shirahata, Kunikatsu: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.
Shirai, Shigeru: *See—*
Ogawa, Kyosuke; Shirai, Shigeru; Saitoh, Keishi; Misumi, Teruo; and Kanbe, Junichiro, 4,555,465, Cl. 430-95.000.
Shirasaka, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic pulse Doppler blood flow meter with provision to create ultrasonic test waves which, when reflected from a stationary object, result in echoes similar to those produced by a moving object. 4,554,926, Cl. 128-663.000.
Shirogami, Tamotsu: *See—*
Ueno, Mitsushi; Shirogami, Tamotsu; and Mikogami, Yukihiro, 4,555,324, Cl. 204-284.000.
Sho-Bond Construction Co., Ltd.: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.
Shonrock, Clinton O.; and Wambaugh, John O., to Schlumberger Technology Corporation. Apparatus for sealing a well casing. 4,554,973, Cl. 166-192.000.
Showa Denko Kabushiki Kaisha: *See—*
Horie, Shin'ichi; Matsuzaki, Yutaka; and Kagawa, Fumio, 4,555,250, Cl. 51-309.000.

Showers, Towanda S.: *See—*
Eagon, Vicki L.; and Showers, Towanda S., 4,555,022, Cl. 206-440.000.
Shtarkman, Emile M., to Imperial Clevite Inc. Self-stabilizing dry viscous spring damper. 4,555,098, Cl. 267-140.100.
Shu, Peter H., to General Electric Company. Compositions of polyphenylene ether resin and high impact polystyrene resin having improved ultraviolet light resistance. 4,555,538, Cl. 524-102.000.
Shulman, Burt H., to Unimation, Inc. Image sensing and welding arrangement for manipulator welding apparatus. 4,555,613, Cl. 219-124.340.
Shung, Wu-shi: *See—*
Hwang, Eddie Y.; Szabo, Andras I.; and Shung, Wu-shi, 4,554,788, Cl. 60-646.000.
Shuster, Nicholas, to Gould, Inc. Reinforced consumable electrode, electrochemical cell and method. 4,555,454, Cl. 429-51.000.
Shuto, Katsuichi: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.
Siebenhofer, Gottfried: *See—*
Wrulich, Herwig; Schetina, Otto; Siebenhofer, Gottfried; and Maier, Wilfried, 4,555,143, Cl. 299-81.000.
Sieloff, Ronald F.; and Kays, William A., to Owens-Corning Fiberglas Corporation. Blowing wool insulation. 4,555,447, Cl. 428-392.000.
Siemens Aktiengesellschaft: *See—*
Finkenzeller, Johann; and Hubert, Gunter, 4,555,794, Cl. 378-187.000.
Quella, Ferdinand; and Steinwender, Bernd, 4,555,284, Cl. 156-79.000.
von Winnicki, Kalixt, 4,555,660, Cl. 323-224.000.
Signetics Corporation: *See—*
Huijsing, Johan H.; and van de Plassche, Rudy J., 4,555,673, Cl. 330-258.000.
Simen, Rolf: *See—*
Maier, Peter; Schirrmacher, Roland; and Simen, Rolf, 4,555,199, Cl. 403-370.000.
Simmons, Ralph F.: *See—*
Jackson, Bruce J.; Simmons, Ralph F.; and Covault, Mike L., 4,555,740, Cl. 360-113.000.
Simmons, Stanley J. Flexible brush. 4,554,699, Cl. 15-201.000.
Simon, Clarence E.: *See—*
Anderson, Clifford E.; Simon, Clarence E.; and Barnes, Phillip E., 4,555,084, Cl. 248-460.000.
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, to VE Fleischkombinat Berlin. Method of treating pigskin. 4,554,707, Cl. 17-47.000.
Simon, Ulrich: *See—*
Erdmann, Fritz; and Simon, Ulrich, 4,555,469, Cl. 430-168.000.
Simond, Jacques A. L.: *See—*
Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J., 4,555,514, Cl. 514-343.000.
Simpson, Thomas K.: *See—*
von Lersner, Wolf A.; Cheeseman, Edward W.; Simpson, Thomas K.; and Weaver, George R., 4,554,955, Cl. 141-1.000.
Sinclair Research Limited: *See—*
Beesley, Graham E., 4,555,677, Cl. 330-302.000.
Singer Company, The: *See—*
Laidig, Manfred R., 4,554,878, Cl. 112-235.000.
Sirac SpA: *See—*
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, 4,555,271, Cl. 127-46.200.
Sirovich, Bruce E.; Sandstrom, Robert L.; and Fleisch, Theo H., to Standard Oil Company. Hydride compositions. 4,555,395, Cl. 423-644.000.
SKF (U.K.) Limited: *See—*
Neal, Hubert W. T., 4,555,188, Cl. 384-482.000.
Skolaude, Werner; and Eggendorfer, Gunnar, to Linde Aktiengesellschaft. Process and device for the production of gaseous oxygen at elevated pressure. 4,555,256, Cl. 62-18.000.
Slack, Douglas J., to Texas Instruments Incorporated. Motor starting device. 4,555,684, Cl. 335-66.000.
Smart, Colin: *See—*
Clarke, David E.; Davies, James F.; Smart, Colin; and Tune, John B., 4,555,354, Cl. 252-90.000.
Smedberg, Olof R., to RY AB, Fack; and AB Wilh. Becker, Fack. Surface treatment of sheet material. 4,554,959, Cl. 144-380.000.
Smith, David E.: *See—*
Distin, Robert G., Jr.; Lang, Thomas J.; and Smith, David E., 4,554,846, Cl. 74-805.000.
Smith, Donald R.: *See—*
Geurtsen, Friedrich H. H.; Anemaet, John M.; Smith, Donald R.; and Boyd, Mary G., 4,555,436, Cl. 428-200.000.
Smith, Ira A., Jr.: *See—*
Rodth, Joseph J.; Smith, Ira A., Jr.; and Cornett, Donald F., 4,555,045, Cl. 222-1.000.
Smith, Robert R.: *See—*
Kapp, John P.; and Smith, Robert R., 4,554,914, Cl. 128-92.00C.
Smith, Terry W.; and Fallon, Timothy R., to Draft Systems, Inc. Food cooker. 4,554,864, Cl. 99-340.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Feldmann, Hugo; Gipperich, Theodor; Kirchhoff, Hans; and Stodt, Rolf, 4,554,813, Cl. 72-251.000.
Smyly, Harold M.; Miller, Charles D.; Cloyd, Richard A.; and Heller, Clarence, to United States of America, National Aeronautics and Space Administration. Space probe/satellite ejection apparatus for spacecraft. 4,554,905, Cl. 124-56.000.
Snider, Scott C.; and DeLeon, Alberto, to Celotex Corporation, The. Alkoxylated aromatic amine-aromatic polyester polyol blend and polyisocyanurate foam therefrom. 4,555,418, Cl. 427-373.000.
Snyder Laboratories, Inc.: *See—*
Atkinson, Robert W., 4,555,645, Cl. 310-27.000.
Socapex: *See—*
Bricaud, Herve ; and L'Henaff, Patrick, 4,555,153, Cl. 339-17.0CF.
Societe Belge d'Exploitation de la Navigation Aerienne (SABENA): *See—*
Grognard, Leon L., 4,555,078, Cl. 244-54.000.
Societe Chimique des Charbonnages CDF Chimie, S.A.: *See—*
Meyer, Nicolas; and Cousin, Michel, 4,555,544, Cl. 524-595.000.
Societe d'Applications Generales d'Electricite et de Mecaniques Sagem: *See—*
Vegeais, Patrick; Brot, Michel; and Valet, Jean-Yves, 4,555,715, Cl. 346-76.0PH.
Societe Nationale Elf Aquitaine: *See—*
Bauer, Denise; Komornicki, Jacques; and Tellier, Jacques, 4,555,343, Cl. 210-643.000.
Societe Parisienne d'Impression et de Cartonnage: *See—*
Chazal, Guy A.; and Bodet, Jean A., 4,555,381, Cl. 264-516.000.
Soda, Hiroshi: *See—*
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.
Sohne oHG: *See—*
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans Jurgen, 4,555,085, Cl. 248-561.000.
Solar, Ronald J.: *See—*
Samson, Wilfred J.; and Solar, Ronald J., 4,554,929, Cl. 128-772.000.
Solund, Jorgen, to ITS-Intern Transport System A/S. Junction diverter for a transport system. 4,555,010, Cl. 198-361.000.
Solvay & Cie: *See—*
Nicolas, Edgard; and Merckaert, Louis, 4,555,317, Cl. 204-129.000.
Soneta, Eietsu; and Urata, Tetsukazu, to Toyo Sanso Co., Ltd. Method of and apparatus for burning exhaust gases containing gaseous silane. 4,555,389, Cl. 423-210.000.
Sonnenberg, Sven: *See—*
Hall, Richard W.; Sonnenberg, Sven; and Mahal, Harbhajan S., 4,555,220, Cl. 417-342.000.
Sorensen, Ian W.; and Kiwak, Robert S., to Bendix Corporation. Method for making carbon microfibers. 4,555,393, Cl. 423-447.100.
Sorger, Gunter U.; and Raicu, Dan, to Eaton Corporation. Magnetically tunable resonators and tunable devices such as filters and resonant circuits for oscillators using magnetically tuned resonators. 4,555,683, Cl. 333-202.000.
Sosta, Pierluigi: *See—*
Campello, Ugo; Racca, Enrico; Sosta, Pierluigi; and Baggiolini, Deris, 4,555,020, Cl. 206-235.000.
Sougawa, Masafumi, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Fuel control system for internal combustion engines. 4,554,896, Cl. 123-179.00G.
Spar Aerospace Limited: *See—*
Ferguson, Robert C., 4,555,207, Cl. 411-366.000.
Spector, Richard; and Maulding, Donald R., to American Cyanamid Company. Hetero nitrogen containing compounds and polymerms light stabilized with said compounds. 4,555,537, Cl. 524-97.000.
Spencer, Kenneth E.: *See—*
Schmitt, Dallas L.; and Spencer, Kenneth E., 4,554,875, Cl. 105-221.00R.
Spendel, Wolfgang U., to Procter & Gamble Company, The. Packaged detergent composition with instructions for use in a laundering process. 4,555,019, Cl. 206-223.000.
Sperry Corporation: *See—*
Linde, Gilbert W., 4,555,061, Cl. 239-675.000.
Spivack, John D.: *See—*
Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,555,541, Cl. 524-180.000.
Spradling, Gene V.; and Stanek, Terrence L., to Emerson Electric Co. Means for reversing operation of a motor. 4,555,654, Cl. 318-751.000.
Spurlin, Stanford R.; and Yeung, Edward S., to Iowa State University Research Foundation, Inc. Sulfide chemiluminescence detection. 4,555,491, Cl. 436-120.000.
Srajer, Reinhard, to Woodford Manufacturing Company. Dock seal with adjustable top seal. 4,554,768, Cl. 52-173.0DS.
Stacher, Miguel A.: *See—*
Sancini, Aldo; and Stacher, Miguel A., 4,554,950, Cl. 139-25.000.
Standard Microsystems Corporation: *See—*
Morales, Louis J., 4,555,642, Cl. 307-475.000.
Standard Oil Company: *See—*
Fields, Ellis K., 4,555,350, Cl. 252-8.55D.
Kalpakci, Bayram; and Chan, Keng S., 4,554,974, Cl. 166-273.000.
Sirovich, Bruce E.; Sandstrom, Robert L.; and Fleisch, Theo H., 4,555,395, Cl. 423-644.000.
Standard Telephones and Cables Public Limited Company: *See—*
Howard, Kenneth G.; and Little, Ian E., 4,555,257, Cl. 65-13.000.
Stanek, Terrence L.: *See—*
Spradling, Gene V.; and Stanek, Terrence L., 4,555,654, Cl. 318-751.000.
Stankard, James M., to White Consolidated Industries, Inc. Split system air conditioner. 4,554,796, Cl. 62-326.000.

Stanley, Mervin D.: *See—*
Daghe, Joseph L.; Humes, Dennis W.; and Stanley, Mervin D., 4,554,944, Cl. 137-296.000.
Stanley, Roderic K.; Milewits, Marvin; Knauer, Robert C., Jr.; and Bradfield, James E., to PA Incorporated. Magnetic flux method for measuring tubular wall thickness. 4,555,665, Cl. 324-229.000.
Stauffer Chemical Co.: *See—*
Wong, Rayman Y., 4,555,515, Cl. 514-357.000.
Stebbins, Edwin E.: *See—*
Crooke, Arthur W.; and Stebbins, Edwin E., 4,555,765, Cl. 364-571.000.
Stedman Corporation: *See—*
Cole, Tyler L., 4,555,428, Cl. 428-102.000.
Steffen, David E., to DICKEY-john Corporation. High rate seed sensor. 4,555,624, Cl. 250-223.00R.
Steinberg, Meyer, to United States of America, Energy. Portland cement for SO_2 control in coal-fired power plants. 4,555,392, Cl. 423-244.000.
Steinbruegge, Kenneth B.: *See—*
Gottlieb, Milton; and Steinbruegge, Kenneth B., 4,555,160, Cl. 350-358.000.
Steiner, Karl; Schiel, Christian; Meinecke, Albrecht; Mullner, Josef; and Weiss, Hans, to J. M. Voith GmbH. Apparatus and method for cooling a belt pressing unit in a paper machine. 4,555,305, Cl. 162-205.000.
Steiner, Meinrad: *See—*
Ludwig, Peter; and Steiner, Meinrad, 4,554,988, Cl. 177-178.000.
Steinwender, Bernd: *See—*
Quella, Ferdinand; and Steinwender, Bernd, 4,555,284, Cl. 156-79.000.
Stender, Erich; and Fuesers, Wilhelm G., to Mannesmann Aktiengesellschaft A.G. Method for the manufacture of a pipe bend. 4,554,816, Cl. 72-368.000.
Stenzenberger, Horst: *See—*
Roth, Siegfried; and Stenzenberger, Horst, 4,555,426, Cl. 428-113.000.
Stepan, William E.: *See—*
Neese, Wayne E.; and Stepan, William E., 4,555,151, Cl. 339-17.0CF.
Stephens, Lawrence K., to International Business Machines Corp. Current cursor symbol demarkation. 4,555,772, Cl. 364-900.000.
Stewart-Warner Corporation: *See—*
Raffaeli, Lidio P., 4,554,704, Cl. 16-21.000.
Stewart, William H.: *See—*
Brightman, Barrie; Elliott, George; Lenk, Pedro A.; Shah, Jayantkumar R.; and Stewart, William H., 4,555,595, Cl. 179-18.0ES.
Stik-Trim Industries, Incorporated: *See—*
Rothenberg, Irwin P., 4,555,441, Cl. 428-284.000.
Stiller, Thomas M.: *See—*
Lewis, Henry G., Jr.; and Stiller, Thomas M., 4,555,768, Cl. 364-757.000.
Stilling, Johann. Sign with flexible face. 4,554,754, Cl. 40-603.000.
Stobb, Anton R., deceased (by Stobb, Walter J., executor), to Stobb, Inc. Method and apparatus for separating signatures from a stack. 4,555,101, Cl. 270-58.000.
Stobb, Inc.: *See—*
Stobb, Anton R., deceased, 4,555,101, Cl. 270-58.000.
Thumm, Klaus A., 4,554,867, Cl. 100-3.000.
Stobb, Walter J., executor: *See—*
Stobb, Anton R., deceased, 4,555,101, Cl. 270-58.000.
Stockner, Alan R.: *See—*
Gibson, Dennis H.; Stockner, Alan R.; and Waldman, Donald J., 4,554,901, Cl. 123-450.000.
Stodt, Rolf: *See—*
Feldmann, Hugo; Gipperich, Theodor; Kirchhoff, Hans; and Stodt, Rolf, 4,554,813, Cl. 72-251.000.
Stodulka, Jan: *See—*
Voss, Jurgen; Dombkowski, Otto; Kudlich, Walter; and Stodulka, Jan, 4,555,024, Cl. 206-454.000.
Stone, Alan M., to Ok Tedi Mining Limited. Elution process and apparatus and extraction of particulate material from a vessel. 4,555,385, Cl. 423-30.000.
Stone, Philip J. Keyboards including color coding and one handed operation. 4,555,193, Cl. 400-486.000.
Stopke, J. Lawrence: *See—*
Gruich, Peter; and Stopke, J. Lawrence, 4,554,989, Cl. 180-65.400.
Storck, Robert C.: *See—*
Foley, Robert W.; Storck, Robert C.; Mickus, Donald J., deceased; and Pastors, Debbie, executrix, 4,554,979, Cl. 172-813.000.
Stout, David M.; Yamamoto, Diane M.; and Barcelon-Yang, Cynthia, to American Hospital Supply Corporation. Pyridone esters as inotropic agents. 4,555,517, Cl. 514-336.000.
Strapex AG: *See—*
Fischer, Charles, 4,554,779, Cl. 53-589.000.
Straubel, Max; and Zimmermann, Klaus-Dieter, to Robert Bosch GmbH. Fuel injection apparatus for injecting a fuel mixture comprising at least two components. 4,554,903, Cl. 123-575.000.
Streifer, William: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,555,785, Cl. 372-8.000.
Strepelis, John J.: *See—*
Berenato, Joseph W., III; Raivel, Earl L., Jr.; and Strepelis, John J., 4,555,209, Cl. 414-163.000.
Stromberg-Carlson Corp.: *See—*
Brightman, Barrie; Elliott, George; Lenk, Pedro A.; Shah, Jayantkumar R.; and Stewart, William H., 4,555,595, Cl. 179-18.0ES.
Strong, Douglas H.: *See—*
Frey, Gary T.; Strong, Douglas H.; and Urbanski, Janet B., 4,555,445, Cl. 428-340.000.
Suda, Yasuo; Akashi, Akira; Ishizaki, Akira; Hiramatsu, Akira; and Ohtaka, Keiji, to Canon Kabushiki Kaisha. Focus detecting device for a camera. 4,555,169, Cl. 354-407.000.
Suematsu, Koushi: *See—*
Hasegawa, Tetsuo; and Suematsu, Koushi, 4,555,467, Cl. 430-110.000.
Sugars, John A., to International Telephone & Telegraph Corp. Electrical connector contact retention assembly. 4,555,154, Cl. 339-59.00R.
Sugimori, Masaru; and Sanji, Koichiro, to Sun Star Giken Kabushiki Kaisha. Polyurethane resin composition. 4,555,561, Cl. 528-26.000.
Suh, John T.; Regan, John R.; Piwinski, John J.; Menard, Paul; and Jones, Howard, to USV Pharmaceutical Corp. Antihypertensive spiro-cyclic compounds. 4,555,508, Cl. 514-211.000.
Sumal, Jaihind S., to Robert Bosch GmbH. Device for measuring the mass of a flowing medium. 4,554,829, Cl. 73-204.000.
Sumida, Atsushi; and Watanabe, Shizuo, to Toray Industries, Incorporated. Carbon fiber and process for preparing same. 4,555,446, Cl. 428-367.000.
Sumitomo Electric Industries, Ltd.: *See—*
Kodama, Hiroaki; Kubo, Tetsuo; and Miwa, Sinkichi, 4,555,799, Cl. 382-8.000.
Sumitomo Heavy Industries, Ltd.: *See—*
Nishiike, Naritoshi; Nishimaki, Takashi; Miura, Yasushi; and Kumamura, Masaaki, 4,555,228, Cl. 425-185.000.
Sun Star Giken Kabushiki Kaisha: *See—*
Sugimori, Masaru; and Sanji, Koichiro, 4,555,561, Cl. 528-26.000.
Sunagawa, Hiroshi: *See—*
Kido, Keishiro; Sunagawa, Hiroshi; Kawajiri, Kazuhiro; Iijima, Toshio; and Nozaki, Nobuharu, 4,555,464, Cl. 430-67.000.
Suriano, Francis J.: *See—*
Klaass, Reinhard M.; and Suriano, Francis J., 4,555,187, Cl. 384-103.000.
Suzuki, Arata, to Capintec Inc. Radiation shield in light detector and/or assembly. 4,555,626, Cl. 250-239.000.
Suzuki, Hajime: *See—*
Arita, Koichiro; and Suzuki, Hajime, 4,555,566, Cl. 528-323.000.
Suzuki, Kunio: *See—*
Kausga, Takuzo; Ikenaga, Yukio; and Suzuki, Kunio, 4,555,357, Cl. 252-511.000.
Suzuki, Yoshikuni: *See—*
Tahara, Yoshiyuki; Takahashi, Toshihiro; Koyama, Hiroyasu; Suzuki, Yoshikuni; and Yasuda, Masatoshi, 4,555,365, Cl. 260-404.000.
Swanson, Mark, to GenRad, Inc. Method of computerized in-circuit testing of electrical components and the like with automatic spurious signal suppression. 4,555,783, Cl. 371-15.000.
Sweeney, Theodore J., to Theodore Sweeney & Co. Adhesively securable fastener. 4,555,206, Cl. 411-23.000.
Sybron Chemicals Inc.: *See—*
Moran, James C., 4,555,348, Cl. 252-1.000.
Sykes, Donald J.; and Gendron, Gary E., to Marpac Industries, Inc. Drum containers. 4,555,023, Cl. 206-446.000.
Sykes, Robert C.; Connelly, Lawrence J.; and Roe, William J., to Nalco Chemical Company. Selective flocculation of coal. 4,555,329, Cl. 209-5.000.
Syrinek, Allen R.: *See—*
Giddings, David M.; Ries, Donald G.; and Syrinek, Allen R., 4,555,558, Cl. 526-287.000.
Szabo, Andras I.: *See—*
Hwang, Eddie Y.; Szabo, Andras I.; and Shung, Wu-shi, 4,554,788, Cl. 60-646.000.
T & R Chemicals, Inc.: *See—*
Martin, Bernard K., 4,555,522, Cl. 514-449.000.
Tachikawa Spring Co. Ltd.: *See—*
Nemoto, Akira, 4,555,141, Cl. 297-452.000.
Tagnon, Luc, to Essilor International Cie Generale d'Optique. Laser ophthalmological surgical device. 4,554,917, Cl. 128-303.100.
Tago, Yoshiaki: *See—*
Odawara, Kazuharu; and Tago, Yoshiaki, 4,555,716, Cl. 346-137.000.
Taguchi, Toshimichi, to Sharp Kabushiki Kaisha. Membrane keyboard. 4,555,601, Cl. 200-5.00A.
Tahara, Yoshiyuki; Takahashi, Toshihiro; Koyama, Hiroyasu; Suzuki, Yoshikuni; and Yasuda, Masatoshi, to Nisshin Flour Milling Co., Ltd. Isoprenylic acid amide derivatives. 4,555,365, Cl. 260-404.000.
Tait, William C.; and Harklau, Lanny L., to Minnesota Mining and Manufacturing Company. Method of constructing an LC network. 4,555,291, Cl. 156-250.000.
Taiyo Yuden Co., Ltd.: *See—*
Matuki, Shouzo, 4,554,703, Cl. 15-424.000.
Takahashi, Makoto, to TDK Co., Ltd. Rectifier circuit with two rectifiers. 4,555,753, Cl. 363-126.000.
Takahashi, Shiro, to Nitto Kohki Co., Ltd. Drilling machine. 4,555,203, Cl. 408-119.000.
Takahashi, Toshihiro: *See—*
Tahara, Yoshiyuki; Takahashi, Toshihiro; Koyama, Hiroyasu; Suzuki, Yoshikuni; and Yasuda, Masatoshi, 4,555,365, Cl. 260-404.000.
Takahashi, Toshinori: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.

Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, to Victor Company of Japan, Ltd. Apparatus and method for thermal ink transfer printing. 4,555,714, Cl. 346-76.0PH.

Takano, Hiroshi; and Shiinoki, Kunikatsu, to Mitsuboshi Belting, Ltd. Reinforced drive belt structure. 4,555,241, Cl. 474-261.000.

Takaya, Matsuhiko: *See—*
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,555,801, Cl. 382-44.000.

Takeda Riken Co., Ltd.: *See—*
Shimizu, Masao, 4,555,663, Cl. 324-73.00R.

Takeda, Shigetomo: *See—*
Fujii, Tatsuo; and Takeda, Shigetomo, 4,555,021, Cl. 206-387.000.

Takei, Haruo: *See—*
Inoue, Noriyuki; Okazaki, Masaki; Yamamuro, Kiyohiko; and Takei, Haruo, 4,555,482, Cl. 430-574.000.
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; and Toya, Ichizo, 4,555,481, Cl. 430-550.000.

Takeshita, Takeaki; Oba, Katuyuki; Shimoyama, Yoshiaki; and Masuda, Takashi, to Nippon Steel Corporation. Process for producing steel for an electrical steel sheet. 4,555,264, Cl. 75-49.000.

Takeuchi, Chikao: *See—*
Gounji, Takashi; Kawatsu, Teruo; Kasai, Yoshihiko; and Takeuchi, Chikao, 4,555,682, Cl. 333-189.000.

Takeuchi, Hiroo; and Miyazaki, Kazuo, to Nissin Kogyo Kabushiki Kaisha; and Honda Giken Kogyo Kabushiki Kaisha. Vacuum source device for vacuum booster for vehicles. 4,554,786, Cl. 60-397.000.

Takeya, Yasuo: *See—*
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; Takeya, Yasuo; and Nagai, Satoshi, 4,554,805, Cl. 68-12.00R.

Takoushian, John. Portable canine commode. 4,555,132, Cl. 294-1.500.

Talbot, Robert D., to Harris Corporation. Secure mobile telephone system. 4,555,805, Cl. 455-26.000.

Tamarack Scientific Co., Inc.: *See—*
Sheets, Ronald E.; Barbas, George A.; Doering, Howard W., Jr.; and Bjorkman, John R., 4,555,630, Cl. 250-492.100.

Tamfelt Oy Ab: *See—*
Lundstrom, Kristian, 4,555,306, Cl. 162-205.000.

Tamura, Kaoru; and Yamada, Sadami, to Fuji Photo Film Co., Ltd. Daylight film loading method and apparatus. 4,555,213, Cl. 414-412.000.

Tamura, Kohki: *See—*
Kahara, Toshiki; Mori, Toshikatsu; Imahashi, Jinichi; Honji, Akio; and Tamura, Kohki, 4,555,452, Cl. 429-13.000.

Tamura, Tooru: *See—*
Mochizuki, Hideaki; and Tamura, Tooru, 4,555,746, Cl. 361-323.000.

Tamura, Yukio; and Kaminishi, Masashi, to Kabushiki Kaisha Komatsu Seisakusho. Track-type vehicle undercarriage. 4,555,146, Cl. 305-10.000.

Tanaka, Hideo: *See—*
Miyashita, Yoshikazu; Muranaka, Shiaru; and Tanaka, Hideo, 4,554,774, Cl. 53-52.000.

Tanaka, Hideshi: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.

Tanaka, Isamu; Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, to Hitachi, Ltd. Epoxy resin composition. 4,555,532, Cl. 523-400.000.

Tanaka, Kunio: *See—*
Kishi, Hajimu; Seki, Masaki; and Tanaka, Kunio, 4,555,590, Cl. 178-18.000.

Tanaka, Mitsuaki: *See—*
Asami, Kazuto; Baba, Takao; Nakamura, Minoru; and Tanaka, Mitsuaki, 4,554,775, Cl. 53-64.000.

Tanaka, Tadaaki: *See—*
Yamada, Yasuyuki; Tanaka, Tadaaki; Tukahara, Ryoichi; and Nishizawa, Tsutomu, 4,555,355, Cl. 252-299.100.

Tanaka, Takeshi: *See—*
Ishimitsu, Ikuo; Tokunaga, Toshimichi; Tanaka, Takeshi; and Anan, Yoshiaki, 4,555,126, Cl. 280-707.000.

Tanaka, Tatsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Charging-/discharging circuit. 4,555,655, Cl. 320-1.000.

Tanaka, Tatsuo, to Kabushiki Kaisha Toshiba. Differential amplifier. 4,555,670, Cl. 330-252.000.

Tanck, Elinor J., to Xidex Corporation. Transparent ink jet recording medium. 4,555,437, Cl. 428-212.000.

Taniguchi, Hiroshi: *See—*
Usuki, Hiroshi; and Taniguchi, Hiroshi, 4,555,735, Cl. 358-330.000.

Tanimoto, Yasufumi: *See—*
Nawata, Yoshiaki; and Tanimoto, Yasufumi, 4,555,653, Cl. 318-696.000.

Tanimura, Nobuyoshi; and Yasui, Tokumasa, to Hitachi, Ltd. Method of making semiconductor memory device. 4,554,729, Cl. 29-577.00C.

Tano, Eiichi: *See—*
Wakui, Yoshio; Negishi, Kiyoshi; and Tano, Eiichi, 4,555,170, Cl. 354-470.000.

Taprogge Gesellschaft mbH: *See—*
Bochinski, Rolf; Eimer, Klaus; Lange, Alois; and Nghiem, Xuan L., 4,554,965, Cl. 165-95.000.

Tarantino, Elia R. J.: *See—*
Hanlet, Jacques M.; and Tarantino, Elia R. J., 4,554,908, Cl. 126-443.000.

Taylor, Walt S.: *See—*
Rennecker, David B.; and Taylor, Walt S., 4,554,698, Cl. 15-339.000.

TDK Co., Ltd.: *See—*
Takahashi, Makoto, 4,555,753, Cl. 363-126.000.

TDK Corporation: *See—*
Fujii, Tatsuo; and Takeda, Shigetomo, 4,555,021, Cl. 206-387.000.

Technical Research Associates, Inc.: *See—*
Baker, Charles D., 4,554,686, Cl. 623-16.000.

Technochemie GmbH-Verfahrenstechnik: *See—*
Roth, Siegfried; and Stenzenberger, Horst, 4,555,426, Cl. 428-113.000.

Technoplast B.V.: *See—*
Bekkers, Henricus A. M.; and Reyenga, Tjerk, 4,555,036, Cl. 215-220.000.

Tedhams, Michael H.: *See—*
Overley, Ronald V.; Tedhams, Michael H.; and Atzbach, Carl L., 4,554,907, Cl. 126-191.000.

Teeter, Brent A., to United States of America, Navy. Video target track valid indicator. 4,555,726, Cl. 358-93.000.

Teleconferencing Systems International, Inc.: *See—*
Deinzer, Gerald J., 4,555,592, Cl. 179-2.00E.

Teledyne Industries, Inc.: *See—*
Johnson, Donald L.; and Lingenfelter, Lowell R., 4,555,152, Cl. 339-17.00L.
Johnson, Donald L.; and Kordis, Thomas F., 4,555,157, Cl. 339-75.0MP.

Tell, Joseph M., to Carpenter Paper Company. Pollinating bag. 4,554,761, Cl. 47-1.410.

Tellier, Jacques: *See—*
Bauer, Denise; Komornicki, Jacques; and Tellier, Jacques, 4,555,343, Cl. 210-643.000.

Telmec Co., Ltd.: *See—*
Asakawa, Teruo, 4,555,650, Cl. 318-135.000.

Telspec Limited: *See—*
Hackett-Jones, Francis C.; and Kiko, Frederick H., 4,555,599, Cl. 179-170.00R.

Temple, Arthur, III: *See—*
Schmidt, Charles J., 4,554,958, Cl. 144-4.000.

Tentel Corporation: *See—*
Graham, Wayne B.; and Bonn, John, 4,554,743, Cl. 33-172.00R.

Teramachi, Hiroshi. Linear slide bearing and linear slide table using this bearing. 4,555,149, Cl. 308-6.00C.

Teschemacher, Hansjorg: *See—*
Brantl, Victor; Teschemacher, Hansjorg; Henschen, Agnes; and Lottspeich, Friedrich, 4,555,403, Cl. 514-17.000.

Tewari, Krishna: *See—*
Bronfenbrenner, James C.; Foster, Edward P.; and Tewari, Krishna, 4,555,248, Cl. 44-78.000.

Texaco Inc.: *See—*
Vanderpool, Steven H., 4,555,582, Cl. 564-479.000.

Texas Instruments Incorporated: *See—*
Pejouhy, Radi; and Cardin, Wilfred W., 4,555,686, Cl. 337-102.000.
Poteet, Ken A., 4,555,777, Cl. 365-205.000.
Slack, Douglas J., 4,555,684, Cl. 335-66.000.
Walstra, Hidde, 4,555,687, Cl. 337-370.000.

Thackrey, James D. Teeth-held head tilt alarm. 4,555,697, Cl. 340-575.000.

Theodore Sweeney & Co.: *See—*
Sweeney, Theodore J., 4,555,206, Cl. 411-23.000.

Thermometrics Inc.: *See—*
Fussell, Theodore J., 4,554,927, Cl. 128-670.000.

Thesenfitz, Klaus, to Linhoff & Thesenfitz Maschinenbau GmbH. Method of forming a storage tank for bitumen in the liquid state. 4,555,283, Cl. 156-71.000.

Thom-McI, Inc.: *See—*
Thompson, Thomas L., 4,555,292, Cl. 156-279.000.

Thomas, Calvin J.; and Hurley, James E., to Raytheon Company. Air flow system for common cavity oven. 4,555,606, Cl. 219-10.55R.

Thomas, Gunter: *See—*
Goldmann, Siegfried; Bossert, Friedrich; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,555,512, Cl. 514-302.000.

Thomas, Mit. Fishing hook system having a sealed bait container, and method of making same. 4,554,756, Cl. 43-44.990.

Thomas, Rees D., to Reese Scientific Corporation. High speed test tube agitator apparatus. 4,555,183, Cl. 366-208.000.

Thompson, Thomas L., to Thom-McI, Inc. Method of forming a non-skid surface wood panel. 4,555,292, Cl. 156-279.000.

Thomson CSF: *See—*
Blanchandin, Monique; Girardat, Roland; and Vanestrenvord, Jean-Michel, 4,555,675, Cl. 330-289.000.

Thore, Thomas J., to Glenoit Mills, Inc. Pile fabric method and apparatus. 4,554,801, Cl. 66-9.00B.

Thornton, Michael G.; and Clark, Benton C., III, to Martin Marietta Corporation. Self-metering semi-automatic quantitative filtration assembly. 4,555,331, Cl. 210-99.000.

Thron, Werner: *See—*
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, 4,554,707, Cl. 17-47.000.

Thudt, Hubert; and Winkler, Harald, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Roller guide device for use on a vehicle. 4,554,874, Cl. 104-247.000.

Thumm, Klaus A., to Stobb, Inc. Method and apparatus for handling a stack of sheets. 4,554,867, Cl. 100-3.000.

Thummel, Rudolph C.; and Fory, Werner, to Ciba-Geigy Corporation. N-Azidophenylsulfonyl-N'-pyrimidinyl ureas. 4,555,262, Cl. 71-92.000.

Thunberg, Allen L.: *See—*
LaRossa, Denise D.; Thunberg, Allen L.; Norton, Gary E.; and Dappen, Glen M., 4,555,484, Cl. 435-21.000.

TI (Group Services) Limited: *See—*
Mumford, John L. C.; and Price, Roger F., 4,555,415, Cl. 427-193.000.

Tijssen, Zwier: *See—*
deVreeze, Joop J.; Tijssen, Zwier; and Doorley, Daniel, 4,555,195, Cl. 401-218.000.

Tingley, James E., to American Sterilizer Company. Washing machine container coupling apparatus. 4,554,936, Cl. 134-146.000.

Tobia, Alfonso J.: *See—*
Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,571, Cl. 544-286.000.
Kanojia, Ramesh M.; Bandurco, Victor T.; Levine, Seymour D.; Mulvey, Dennis M.; and Tobia, Alfonso J., 4,555,570, Cl. 544-286.000.

Tobin, Albert G., to Grumman Aerospace Corporation. Hydrogen permeation protection for metals. 4,555,275, Cl. 148-6.300.

Tochimoto, Kunio: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.

Toepert, Michael: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, 4,555,507, Cl. 514-172.000.

Tojo, Kenji: *See—*
Hazaki, Eiichi; Imai, Masaya; Tojo, Kenji; and Shiibayashi, Masao, 4,555,224, Cl. 418-55.000.

Tokunaga, Toshimichi: *See—*
Ishimitsu, Ikuo; Tokunaga, Toshimichi; Tanaka, Takeshi; and Anan, Yoshiaki, 4,555,126, Cl. 280-707.000.

Tokyo Electric Co., Ltd.: *See—*
Ochiai, Kuniaki, 4,555,192, Cl. 400-124.000.

Tokyo Seat Co., Ltd.: *See—*
Munakata, Shunsaku; Ukai, Hitoshi; Noguchi, Mitsuru; and Sawai, Shinichi, 4,555,380, Cl. 264-510.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hirose, Kenji, 4,555,803, Cl. 382-61.000.
Kiyotomo, Tsutomu, 4,555,086, Cl. 249-67.000.
Kurosawa, Ryoichi; and Shimamura, Takeo, 4,555,755, Cl. 363-160.000.
Nawata, Yoshiaki; and Tanimoto, Yasufumi, 4,555,653, Cl. 318-696.000.
Odawara, Kazuharu; and Tago, Yoshiaki, 4,555,716, Cl. 346-137.000.
Shirasaka, Toshio, 4,554,926, Cl. 128-663.000.
Tanaka, Tatsuo, 4,555,655, Cl. 320-1.000.

Tomishima, Yoshio: *See—*
Toyooka, Eietsu; Tomishima, Yoshio; and Nojima, Yasuhiro, 4,555,555, Cl. 526-62.000.

Tomizawa, Akira: *See—*
Tanaka, Isamu; Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,555,532, Cl. 523-400.000.

Tomy Kogyo Company, Incorporated: *See—*
Nikaido, Teruo, 4,555,237, Cl. 446-355.000.

Topy Industries Limited: *See—*
Osawa, Shigeru; and Yamoto, Hisayoshi, 4,554,961, Cl. 152-410.000.

Toray Industries, Inc.: *See—*
Komatsu, Hideo; Harada, Hiroyuki; and Matsuki, Tomiji, 4,555,542, Cl. 524-178.000.
Sumida, Atsushi; and Watanabe, Shizuo, 4,555,446, Cl. 428-367.000.

Toray Silicone Company, Ltd.: *See—*
Saruyama, Toshio; and Mikami, Ryuzo, 4,555,560, Cl. 528-17.000.

Torazzina, Aldo: *See—*
Palara, Sergio; and Torazzina, Aldo, 4,555,674, Cl. 330-267.000.

Torelli, Guido: *See—*
Devecchi, Daniele; and Torelli, Guido, 4,555,644, Cl. 307-482.000.

Torr, Terry A.: *See—*
Fedak, John F.; Findley, Gerald I.; and Torr, Terry A., 4,555,802, Cl. 382-56.000.

Toshiba Silicone Co., Ltd.: *See—*
Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, 4,555,545, Cl. 524-858.000.
Kimura, Hiroshi; Mori, Ikurou; and Murai, Bunjirou, 4,555,559, Cl. 528-16.000.

Towler Hydraulics, Inc.: *See—*
Hall, Richard W.; Sonnenberg, Sven; and Mahal, Harbhajan S., 4,555,220, Cl. 417-342.000.

Towmotor Corporation: *See—*
Melocik, Grant C.; and Pickering, William, 4,555,651, Cl. 318-341.000.

Toya, Ichizo: *See—*
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; and Toya, Ichizo, 4,555,481, Cl. 430-550.000.

Toyo Sanso Co., Ltd.: *See—*
Soneta, Eietsu; and Urata, Tetsukazu, 4,555,389, Cl. 423-210.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Hayashi, Takehiko; Ikuta, Hiroyuki; and Ohta, Takanori, 4,554,811, Cl. 72-110.000.

Toyoda, Yoshiaki; Wakimura, Kazuo; Hase, Tadaharu; and Arashiba, Nobumasa, to Mitsui Toatsu Chemicals, Incorporated. Preparation process for glyoxal. 4,555,583, Cl. 568-473.000.

Toyooka, Eietsu; Tomishima, Yoshio; and Nojima, Yasuhiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for polymerizing vinyl chloride with a scale prevention compound coated on a reaction surface. 4,555,555, Cl. 526-62.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Hamano, Hideo, 4,554,844, Cl. 74-606.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Komoda, Takao, 4,554,900, Cl. 123-418.000.
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,555,006, Cl. 192-0.084.

Toyota, Koji: *See—*
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,897, Cl. 123-188.0AA.
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,554,898, Cl. 123-188.0AA.

Tradigo, Angelo; and Tradigo, Francesco, to Giovanni Tradigo S.n.c. Extensible shoe shaper. 4,554,694, Cl. 12-136.00B.

Tradigo, Francesco: *See—*
Tradigo, Angelo; and Tradigo, Francesco, 4,554,694, Cl. 12-136.00B.

Treise, Jan E., to Rockwell International Corporation. Range reply search apparatus. 4,555,704, Cl. 343-7.300.

Tribe, Leonard T.: *See—*
Frait, John S.; Lowman, Clark E.; Morris, George W., III; and Tribe, Leonard T., 4,555,120, Cl. 280-6.100.

Troutman, Ronald R.: *See—*
Bansal, Jai P.; Bertin, Claude L.; and Troutman, Ronald R., 4,555,721, Cl. 357-42.000.

Tru Test Distributors Limited: *See—*
Sealey, Graham P.; and Corney, Andrew C., 4,554,831, Cl. 73-304.00R.

Trutzschler GmbH & Co. KG: *See—*
Leifeld, Ferdinand; Coenen, Rolf; Oelering, Werner; and Klopp, Ludwig, 4,554,708, Cl. 19-80.00R.

TRW Inc.: *See—*
Dier, Stephen A., 4,554,817, Cl. 72-370.000.

Tsuruoka, Takashi: *See—*
Nishihata, Ken; Iinuma, Katsuharu; Yamada, Hitoshi; Hirano, Fumiya; and Tsuruoka, Takashi, 4,555,404, Cl. 514-201.000.

Tsuruta, Yuzo, to Kabushiki Kaisha Sunpak. Coupling mechanism of photographic flash device. 4,555,747, Cl. 362-3.000.

Tsutsumi, Masataka; and Frohman, Richard J., to Midwestern Industries, Inc. Method and apparatus for separating material. 4,555,330, Cl. 209-254.000.

Tuhro, Richard H., to Xerox Corporation. Image sensor correction system. 4,555,732, Cl. 358-213.000.

Tukahara, Ryoichi: *See—*
Yamada, Yasuyuki; Tanaka, Tadaaki; Tukahara, Ryoichi; and Nishizawa, Tsutomu, 4,555,355, Cl. 252-299.100.

Tune, John B.: *See—*
Clarke, David E.; Davies, James F.; Smart, Colin; and Tune, John B., 4,555,354, Cl. 252-90.000.

Tung, Raymond T.: *See—*
Gibson, John M.; Jacobson, Dale C.; Poate, John M.; and Tung, Raymond T., 4,555,301, Cl. 156-617.00R.

Turbo-Werk Messtechnik GmbH: *See—*
Doll, Friedhelm, 4,554,828, Cl. 73-202.000.

Turnbull, Clyde D., to Hunt Manufacturing Co. Work station. 4,555,150, Cl. 312-250.000.

Tverdokhleb, Nikolai F.: *See—*
Vasiliev, Leonard L.; Kiselev, Vladimir G.; Morgun, Valery A.; Marchenko, Anatoly M.; Rudnev, Evgeny A.; Nesvit, Vasily A.; Dunaevsky, Leonid M.; Tverdokhleb, Nikolai F.; Bogdanov, Vladimir M.; and Rabetsky, Mikhail I., 4,554,966, Cl. 165-104.210.

TVI Systems, Ltd.: *See—*
Bedini, John C., 4,555,795, Cl. 381-17.000.

Twinpak, Inc.: *See—*
Canning, Howard; and Weber, Peter, 4,555,804, Cl. 383-25.000.

Twisselmann, Lorenz, to VDO Adolf Schindling AG. Device for converting electric signals into pneumatic signals. 4,554,938, Cl. 137-82.000.

Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,554,795, Cl. 62-175.000.

Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic engine stop and start system. 4,555,006, Cl. 192-0.084.

Uchida, Yoshiyuki: *See—*
Fujisawa, Hakubun; Nishiura, Masaharu; Haruki, Hiromu; and Uchida, Yoshiyuki, 4,555,636, Cl. 250-578.000.

Uchiyama, Kaoru, to Fuji Photo Film Co., Ltd. Film handling device. 4,555,076, Cl. 242-195.000.

Ueda, Akio; Akita, Shuichi; and Namizuka, Toshio, to Nippon Zeon Co. Ltd. Rubber composition for tire treads. 4,555,547, Cl. 525-237.000.

Ueda, Akio; Akita, Shuichi; and Chida, Takeshi, to Nippon Zeon Co. Ltd. Rubber composition for tire treads. 4,555,548, Cl. 525-237.000.

Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, to Kuraray Company, Ltd. Tough thermoplastic resin sheet-like material. 4,555,439, Cl. 428-221.000.

Uemura, Yahiro: *See—*
Arimura, Hirofumi; Uemura, Yahiro; and Okuno, Yoshiomi, 4,555,401, Cl. 424-89.000.

Ueno, Mitsushi; Shirogami, Tamotsu; and Mikogami, Yukihiro, to Kabushiki Kaisha Toshiba. Porous gas diffusion electrode and method of producing the same. 4,555,324, Cl. 204-284.000.

Ueura, Akira: *See—*
Maeda, Yoshiyasu; Ueura, Akira; Sato, Kazuyoshi; and Watanabe, Katsunori, 4,555,069, Cl. 242-43.00R.
Ukai, Hitoshi: *See—*
Munakata, Shunsaku; Ukai, Hitoshi; Noguchi, Mitsuru; and Sawai, Shinichi, 4,555,380, Cl. 264-510.000.
Ukai, Toshinao; Okazaki, Masaki; Takei, Haruo; and Toya, Ichizo, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions containing benzimidazolocarbocyanine dye having fluoroalkyl group at the nitrogen atom of benzimidazole. 4,555,481, Cl. 430-550.000.
Ukigai, Toshiyuki: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,555,351, Cl. 252-8.55D.
Umeda, Yasukazu, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for operating an elevator. 4,555,000, Cl. 187-29.00R.
Umehara, Akira: *See—*
Kawamura, Kouichi; Aotani, Yoshimasa; and Umehara, Akira, 4,555,474, Cl. 430-281.000.
Umeno, Hiroshi; Saito, Gunji; and Hayashida, Morimasa, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission apparatus in mobile type lawn mower. 4,554,780, Cl. 56-11.800.
Unimation, Inc.: *See—*
Shulman, Burt H., 4,555,613, Cl. 219-124.340.
Union Carbide Corporation: *See—*
Atkins, Kenneth E., 4,555,534, Cl. 523-507.000.
Koleske, Joseph V.; Peacock, Glenn S.; and Kwiatkowski, George T., 4,555,449, Cl. 428-411.100.
Rosen, Meyer R.; Fan, You-Ling; and Chu, Nan S., 4,555,346, Cl. 210-734.000.
Union Nationale des Cooperatives Agricoles de Transformation de la Betterave: *See—*
Ponant, Jacques, 4,555,270, Cl. 127-44.000.
Union Oil Company of California: *See—*
Robinson, Paul R.; and Moorehead, Eric L., 4,555,584, Cl. 585-623.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Kirby-Smith, Trevor R., 4,554,827, Cl. 73-189.000.
United States of America
Air Force: *See—*
Harvell, John K.; and Franke, Milton E., 4,555,079, Cl. 244-207.000.
Sage, Jay P., 4,555,770, Cl. 364-819.000.
Waineo, Douglas K.; and Wong, Sam S., 4,555,708, Cl. 343-799.000.
Army: *See—*
Lilley, Jay S., 4,554,823, Cl. 73-116.000.
Vig, John R.; and Ballato, Arthur, 4,554,717, Cl. 29-25.350.
Energy: *See—*
Beitz, James V., 4,555,318, Cl. 204-157.10R.
Borden, Albert R., 4,554,731, Cl. 29-605.000.
Duchane, David V.; and Barthell, Barry L., 4,555,313, Cl. 204-3.000.
McRae, Thomas G., Jr., 4,555,627, Cl. 250-334.000.
Moore, David S.; and Schmidt, Stephen C., 4,555,176, Cl. 356-301.000.
Scribner, Kenneth J., 4,555,277, Cl. 149-19.400.
Steinberg, Meyer, 4,555,392, Cl. 423-244.000.
Health and Human Services: *See—*
Merril, Carl R., 4,555,490, Cl. 436-86.000.
Interior: *See—*
Eisenhauer, Roy J.; Loeser, Cary A.; and Goodner, Charles G., Jr., 4,554,822, Cl. 73-61.00R.
National Aeronautics and Space Administration: *See—*
Smyly, Harold M.; Miller, Charles D.; Cloyd, Richard A.; and Heller, Clarence, 4,554,905, Cl. 124-56.000.
Navy: *See—*
Barrett, Terence W., 4,555,177, Cl. 356-318.000.
Cantrell, Ben H., 4,555,703, Cl. 343-5.0SA.
Collins, David A.; Lile, Derek L.; and Zeisse, Carl R., 4,555,273, Cl. 148-1.500.
Fletcher, Aaron N.; McManis, George E., III; and Bliss, Dan E., 4,555,455, Cl. 429-112.000.
McClain, D. Wayne, 4,555,130, Cl. 285-26.000.
Morris, Richard A.; Lukens, William E.; and Zanis, Charles A., 4,555,614, Cl. 219-130.010.
Rudd, Michael J., 4,554,836, Cl. 73-657.000.
Teeter, Brent A., 4,555,726, Cl. 358-93.000.
U.S. Philips Corporation: *See—*
de Willigen, Hans C.; and Kokken, Johannes E., 4,555,148, Cl. 308-6.00R.
Ditscheid, Hans L., 4,555,227, Cl. 425-122.000.
Driessen, Leonardus M. H. E., 4,555,729, Cl. 358-133.000.
Harms, Margret; Bruns, Angelika; Luthje, Holger; and Matthiessen, Bernd, 4,555,460, Cl. 430-5.000.
Khoe, Giok D.; and van Heuven, Johannes H. C., 4,555,810, Cl. 455-612.000.
Martens, Gerhard, 4,555,631, Cl. 250-551.000.
Nieuwendijk, Joris A. M.; van Gijsel, Wilhelmus D. A. M.; Sanders, Georgius B. J.; and van Nieuwland, Jacob M., 4,555,797, Cl. 381-117.000.
Op de Beek, Johannes C. A.; and Lobregt, Steven, 4,555,760, Cl. 364-414.000.
Readhead, John B., 4,555,720, Cl. 357-30.000.
Roschmann, Peter, 4,555,374, Cl. 264-40.100.
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,555,676, Cl. 330-298.000.
Van Tol, Nicolaas, 4,555,792, Cl. 375-62.000.
United Technologies Corporation: *See—*
Jeffery, Philip A. E.; and Luecke, Greg R., 4,555,219, Cl. 416-158.000.
University of Minnesota, Regents of the: *See—*
Cussler, Edward L., 4,555,344, Cl. 210-670.000.
Unterreiner, Ronald C.: *See—*
Graetz, Herbert; and Unterreiner, Ronald C., 4,555,290, Cl. 156-245.000.
UOP Inc.: *See—*
Ward, Dennis J., 4,555,311, Cl. 203-21.000.
Uram, John R., Jr., to Goodyear Aerospace Corporation. Moisture-resistant transparent mercaptan compositions. 4,555,450, Cl. 428-412.000.
Urata, Tetsukazu: *See—*
Soneta, Eietsu; and Urata, Tetsukazu, 4,555,389, Cl. 423-210.000.
Urban, Klaus: *See—*
Jablonka, Dieter; Urban, Klaus; Raidt, Heinz-Peter; and Schepers, Eberhard, 4,555,433, Cl. 428-166.000.
Urbanik, John C. Method and apparatus for ultrasonic etching of printing plates. 4,555,302, Cl. 156-637.000.
Urbanski, Janet B.: *See—*
Frey, Gary T.; Strong, Douglas H.; and Urbanski, Janet B., 4,555,445, Cl. 428-340.000.
Usuki, Hiroshi; and Taniguchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Interconnection system between image pickup device and recording device. 4,555,735, Cl. 358-330.000.
USV Pharmaceutical Corp.: *See—*
Suh, John T.; Regan, John R.; Piwinski, John J.; Menard, Paul; and Jones, Howard, 4,555,508, Cl. 514-211.000.
Vachiery, Edmond: *See—*
Gueussier, Andre; and Vachiery, Edmond, 4,555,265, Cl. 75-53.000.
Vachon, Bertrand, to Ber-Vac Inc. Combined harrow and harrow bar. 4,554,977, Cl. 172-177.000.
Valehrach, Emil M., to Karsten Solheim. Apparatus for compression testing and sorting golf balls. 4,555,028, Cl. 209-599.000.
Valet, Jean-Yves: *See—*
Vegeais, Patrick; Brot, Michel; and Valet, Jean-Yves, 4,555,715, Cl. 346-76.0PH.
Vallourec: *See—*
Gueussier, Andre; and Vachiery, Edmond, 4,555,265, Cl. 75-53.000.
van Arragon, Gerrit W.: *See—*
Boute, Wim; Wittkampf, Frederik H. M.; and van Arragon, Gerrit W., 4,554,921, Cl. 128-419.0PG.
Vandebult, Jan: *See—*
Hoover, Merwin F.; Salamone, Ann B.; and Vandebult, Jan, 4,555,414, Cl. 427-43.100.
van de Plassche, Rudy J.; and Dijkmans, Eise C., to U.S. Philips Corporation. Dual-section amplifier arrangement having a protection circuit. 4,555,676, Cl. 330-298.000.
van de Plassche, Rudy J.: *See—*
Huijsing, Johan H.; and van de Plassche, Rudy J., 4,555,673, Cl. 330-258.000.
Vanderpool, Steven H., to Texaco Inc. Catalytic preparation of linear polyethylenepolyamines [with supported catalyst]. 4,555,582, Cl. 564-479.000.
Vanestrenvord, Jean-Michel: *See—*
Blanchandin, Monique; Girardat, Roland; and Vanestrenvord, Jean-Michel, 4,555,675, Cl. 330-289.000.
van Gijsel, Wilhelmus D. A. M.: *See—*
Nieuwendijk, Joris A. M.; van Gijsel, Wilhelmus D. A. M.; Sanders, Georgius B. J.; and van Nieuwland, Jacob M., 4,555,797, Cl. 381-117.000.
van Heuven, Johannes H. C.: *See—*
Khoe, Giok D.; and van Heuven, Johannes H. C., 4,555,810, Cl. 455-612.000.
Vann, Roy R.; and George, Flint R., to GEO VANN, Inc. Hold down apparatus for wireline operated gun. 4,554,975, Cl. 166-297.000.
van Nieuwland, Jacob M.: *See—*
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Van Tol, Nicolaas, to U.S. Philips Corporation. Transmitter for transmitting an FSK-modulated signal. 4,555,792, Cl. 375-62.000.
Varian Associates, Inc.: *See—*
Miram, George V.; and Mizuhara, Yosuke M., 4,555,646, Cl. 315-5.350.
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VDO Adolf Schindling AG: *See—*
Twisselmann, Lorenz, 4,554,938, Cl. 137-82.000.
VE Fleischkombinat Berlin: *See—*
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, 4,554,707, Cl. 17-47.000.
VEB Forst: *See—*
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,555,424, Cl. 428-91.000.
VEB Forster Tuchfabriken: *See—*
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VEB Kombinat Textima: *See—*
Ploch, Siegfrid; Rossler, Sonja; Zeisberg, Peter; and Heilmann, Horst, 4,554,804, Cl. 66-214.000.
Vecellio, Anthony M., to General Motors Corporation. Lightweight engine. 4,554,893, Cl. 123-41.830.
Vector Corporation: *See—*
Yoakam, David; Campbell, Robert; and Pehkonen, Robert, 4,554,887, Cl. 118-666.000.
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Kern, Hans; and Haslberger, Richard, 4,554,939, Cl. 137-99.000.
VEV Forster Tuchfabriken: *See—*
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Victor Company of Japan: *See—*
Namiki, Yasuomi, 4,555,669, Cl. 330-149.000.
Victor Company of Japan, Ltd.: *See—*
Takanashi, Itsuo; Tanaka, Hideshi; Ohara, Terumi; Takahashi, Toshinori; Kato, Shigeru; Kiuchi, Tsutomu; and Kitamura, Hiroki, 4,555,714, Cl. 346-76.0PH.
Videojet Systems International, Inc.: *See—*
Arway, George; Eremity, Frank; Dick, George; and Pullen, Elaine, 4,555,712, Cl. 346-75.000.
Arway, George; Eremity, Frank; and Huang, Tung M., 4,555,719, Cl. 346-140.00R.
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Vilter Manufacturing Corporation: *See—*
Pallanch, Francis T., 4,554,799, Cl. 62-509.000.
Visser, Huibert: *See—*
Klumper, Jan W.; and Visser, Huibert, 4,555,181, Cl. 356-448.000.
Vitafin N.V.: *See—*
Boute, Wim; Wittkampf, Frederik H. M.; and van Arragon, Gerrit W., 4,554,921, Cl. 128-419.0PG.
Vitro Tec Fideicomiso: *See—*
Curiel, Jesus V., 4,555,258, Cl. 65-319.000.
Vitrotex Saint-Gobain: *See—*
Bloemkolk, Willem, deceased; and Blanc, Andre , 4,555,373, Cl. 264-25.000.
Vockenhuber, Peter, to AGFA-Gevaert A.G. Method and apparatus for ascertaining the dimensions and positions of film frames on coherent roll films. 4,555,632, Cl. 250-560.000.
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Schiefer, Bernhard; and Bumberger, Herbert, 4,555,050, Cl. 222-597.000.
Voest-Alpine Aktiengesellschaft: *See—*
Hirschmanner, Franz; Buchegger, Rudolf; and Brettbacher, Franz, 4,554,812, Cl. 72-202.000.
Wrulich, Herwig; Schetina, Otto; Siebenhofer, Gottfried; and Maier, Wilfried, 4,555,143, Cl. 299-81.000.
Volkheimer, Klaus: *See—*
Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, 4,555,806, Cl. 455-62.000.
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., to NJM, Inc. Literature applying mechanism. 4,555,299, Cl. 156-552.000.
von Au, Gunter: *See—*
Huhn, Karl; and von Au, Gunter, 4,555,419, Cl. 427-387.000.
von Herrmann, Pieter J.: *See—*
Leskovec, Robert A.; Davenport, John M.; and von Herrmann, Pieter J., 4,555,647, Cl. 315-179.000.
von Lersner, Wolf A.; Cheeseman, Edward W.; Simpson, Thomas K.; and Weaver, George R., to Campbell Soup Company. Method and apparatus for assembling food ingredients. 4,554,955, Cl. 141-1.000.
von Winnicki, Kalixt, to Siemens Aktiengesellschaft. Current supply device for series-fed electronic circuits. 4,555,660, Cl. 323-224.000.
Vortec Corporation: *See—*
Collins, C. Neal; and Peter, Joseph E., 4,555,059, Cl. 239-425.000.
Voso, Philip T.: *See—*
Weinberg, Alan S.; Wofford, B. Gary; and Voso, Philip T., 4,555,025, Cl. 206-497.000.
Voss, Jurgen; Dombkowski, Otto; Kudlich, Walter; and Stodulka, Jan, to Wacker-Chemie GmbH. Packaging unit for semiconductor wafers. 4,555,024, Cl. 206-454.000.
Vredestein N.V.: *See—*
Lemmens, Rudolphus P. M., 4,554,882, Cl. 114-219.000.
Vuilleumier, Cyril, to Omega SA. Time setting mechanism for a timepiece having an analog mechanical display. 4,555,185, Cl. 368-190.000.
W & A Bates Ltd.: *See—*
Goodfellow, Anthony G., 4,555,287, Cl. 156-127.000.
W. H. Bossons (Sales) Limited: *See—*
Bossons, William R., 4,555,432, Cl. 428-156.000.
W. R. Grace & Co., Cryovac Div.: *See—*
Weinberg, Alan S.; Wofford, B. Gary; and Voso, Philip T., 4,555,025, Cl. 206-497.000.
W. Schlafhorst & Co.: *See—*
Kamp, Heinz, 4,555,068, Cl. 242-36.000.
Raasch, Hans; and Grecksch, Hans, 4,555,215, Cl. 414-564.000.
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Wacker-Chemie GmbH: *See—*
Huhn, Karl; and von Au, Gunter, 4,555,419, Cl. 427-387.000.
Voss, Jurgen; Dombkowski, Otto; Kudlich, Walter; and Stodulka, Jan, 4,555,024, Cl. 206-454.000.
Wacker Corporation: *See—*
Miller, William J.; and Faber, Norman, Jr., 4,555,238, Cl. 464-52.000.
Wagener, Hans H.: *See—*
Gruber, Klaus; Lohner, Manfred; Posselt, Klaus; and Wagener, Hans H., 4,555,524, Cl. 514-570.000.
Wagner, Theodor M., to RCA Corporation. Complementary color splitting filters used in a color camera. 4,555,163, Cl. 350-172.000.
Wahnberger, Dieter: *See—*
Reim, Ingeborg; Pohl, Gerhard; Gotzke, Wolfgang; Wahnberger, Dieter; Postel, Lothar; Kindlein, Irmgard; Vatter, Rudolf; and Greschke, Manfred, 4,554,715, Cl. 28-107.000.
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Waineo, Douglas K.; and Wong, Sam S., to United States of America, Air Force. Dipole ring array antenna for circularly polarized pattern. 4,555,708, Cl. 343-799.000.
Wakai, Kiyoshi: *See—*
Fukushima, Yoneharu; and Wakai, Kiyoshi, 4,555,690, Cl. 340-52.00F.
Wakimura, Kazuo: *See—*
Toyoda, Yoshiaki; Wakimura, Kazuo; Hase, Tadaharu; and Arashiba, Nobumasa, 4,555,583, Cl. 568-473.000.
Wakui, Tadahiro; and Handa, Tadahiko, to Daido Sanso K. K. Method for producing hydrocarbons. 4,555,526, Cl. 518-717.000.
Wakui, Yoshio; Negishi, Kiyoshi; and Tano, Eiichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for illuminating display unit in viewfinder. 4,555,170, Cl. 354-470.000.
Waldman, Donald J.: *See—*
Gibson, Dennis H.; Stockner, Alan R.; and Waldman, Donald J., 4,554,901, Cl. 123-450.000.
Waldo, Paul D.: *See—*
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,555,759, Cl. 364-300.000.
Waldvogel, Hartmut: *See—*
Borel, Georg; and Waldvogel, Hartmut, 4,554,953, Cl. 139-383.00A.
Walker, Fritz: *See—*
Goller, Ernst; Ploppa, Jurgen; and Walker, Fritz, 4,554,802, Cl. 66-71.000.
Wall, Llewellyn E.: *See—*
Bridgewater, Walter F.; De Caro, Robert E.; Larson, Roger; and Wall, Llewellyn E., 4,555,623, Cl. 250-214.00A.
Wallace Companies, Inc., The: *See—*
Lam, Ping H., 4,555,158, Cl. 339-99.00R.
Wallace, Jesse T.: *See—*
Le Van, Dien; and Wallace, Jesse T., 4,555,739, Cl. 360-103.000.
Wallner, Josef; and Kelterbaum, Manfred, to Elastogran Maschinenbau GmbH. Split mold for multi-component plastics, especially polyurethanes. 4,555,087, Cl. 249-78.000.
Walstra, Hidde, to Texas Instruments Incorporated. Fuel supply system with electric choke and control therefor. 4,555,687, Cl. 337-370.000.
Walter, Ernest J. Interchangeable identification apparatus for racing animals and event contestants and method for making same. 4,555,435, Cl. 428-79.000.
Walter Meier: *See—*
Meier, Walter; and Jacobsen, Jan, 4,555,168, Cl. 353-7.000.
Walton, Herbert H.: *See—*
Claney, Robert L.; Walton, Herbert H.; Kehoe, Steven D.; and Barron, Kimball R., 4,554,943, Cl. 137-242.000.
Wambaugh, John O.: *See—*
Shonrock, Clinton O.; and Wambaugh, John O., 4,554,973, Cl. 166-192.000.
Wang, Kuei-Hsiung: *See—*
Cyran, Michael J.; and Wang, Kuei-Hsiung, 4,555,391, Cl. 423-244.000.
Ward, Dennis J., to UOP Inc. Integrated fractionation in the recovery of alkylaromatic hydrocarbons. 4,555,311, Cl. 203-21.000.
Ward, Harold T.: *See—*
Carter, Eric L.; and Ward, Harold T., 4,555,769, Cl. 364-746.000.
Warner-Lambert Company: *See—*
Byrne, David S.; and Chen, Evan N., 4,555,030, Cl. 211-49.100.

Capps, David B., 4,555,572, Cl. 546-14.000.
Chen, Evan N., 4,554,735, Cl. 30-47.000.

Washburn, William N., to Eastman Kodak Company. Photographic element and process utilizing metal complex color masking dyes. 4,555,477, Cl. 430-359.000.

Watanabe, Isao: *See—*
Okada, Seiji; Watanabe, Isao; Sawatari, Norio; Saito, Kazumasa; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,555,466, Cl. 430-106.600.

Watanabe, Katsunori: *See—*
Maeda, Yoshiyasu; Ueura, Akira; Sato, Kazuyoshi; and Watanabe, Katsunori, 4,555,069, Cl. 242-43.00R.

Watanabe, Shizuo: *See—*
Sumida, Atsushi; and Watanabe, Shizuo, 4,555,446, Cl. 428-367.000.

Waterman, Raymond C., Jr.: *See—*
Galani, Zvi; Laton, Richard W.; Waterman, Raymond C., Jr.; and DiBiase, Robert, 4,555,678, Cl. 331-1.00A.

Watson, David R.; Carithers, Val G.; and McDaniel, L. Thomas, to Reynolds Metals Company. Aluminosilicate ceramic proppant for gas and oil well fracturing and method of forming same. 4,555,493, Cl. 501-127.000.

Watson, Keith G.: *See—*
Serban, Alexander; Watson, Keith G.; Bird, Graham J.; Farquharson, Graeme J.; and Houston, Timothy L., 4,555,263, Cl. 71-98.000.

Watt, James. Rotary proportioning inhalator. 4,554,916, Cl. 128-203.120.

Weaver, George R.: *See—*
von Lersner, Wolf A.; Cheeseman, Edward W.; Simpson, Thomas K.; and Weaver, George R., 4,554,955, Cl. 141-1.000.

Weber, Peter: *See—*
Canning, Howard; and Weber, Peter, 4,555,804, Cl. 383-25.000.

Weber, Ursula: *See—*
Bruns, Klaus; and Weber, Ursula, 4,555,359, Cl. 252-522.00R.

Webster, Wilton W., Jr. Electrophysiological switching unit. 4,554,928, Cl. 128-709.000.

Weeks, Vaughan B.: *See—*
Carter, Garry L.; and Weeks, Vaughan B., 4,554,687, Cl. 4-144.200.

Wegemund, Bernd: *See—*
Fischer, Herbert; Gorzinski, Manfred; Gress, Wolfgang; Meffert, Alfred; and Wegemund, Bernd, 4,555,564, Cl. 528-295.300.

Weigand, Francis K.; and Nickel, William H., to Garrett Corporation, The. Emergency power unit and method. 4,554,784, Cl. 60-39.020.

Weinberg, Alan S.; Wofford, B. Gary; and Voso, Philip T., to W. R. Grace & Co., Cryovac Div. Shrink bag with integral handle. 4,555,025, Cl. 206-497.000.

Weiner, Robert I. Ladder safety indicator. 4,554,994, Cl. 182-18.000.

Weinhold, Karl. Coupling for connecting hose or pipe ends. 4,555,131, Cl. 285-91.000.

Weinstein, Richard; Davis, James W.; and Campbell, Robert K., to Champion Spark Plug Company. Rotary atomizer coater. 4,555,058, Cl. 239-223.000.

Weise, Lutz: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,555,144, Cl. 303-92.000.

Weishalla, Gale F., to Pride Machine, Inc. Tool pack assembly. 4,554,815, Cl. 72-349.000.

Weiss, Hans: *See—*
Steiner, Karl; Schiel, Christian; Meinecke, Albrecht; Mullner, Josef; and Weiss, Hans, 4,555,305, Cl. 162-205.000.

Weller, Otto: *See—*
Denk, Josef; Dietrich, Walter; and Weller, Otto, 4,554,777, Cl. 53-201.000.

Wells, Martin A.: *See—*
Butterworth, Robert M.; and Wells, Martin A., 4,555,349, Cl. 252-8.600.

Wells, William, to Korf Technologies, Inc. Method and apparatus for treating liquid metal in a vessel. 4,555,266, Cl. 75-53.000.

Wendt, Hans: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, 4,555,507, Cl. 514-172.000.

Wennberg, Timothy J.: *See—*
Hewett, Gary E.; Atwood, Brian G.; and Wennberg, Timothy J., 4,554,839, Cl. 73-864.160.

Wenning, Thomas J.; and Lynn, Charles E., to Goodyear Tire & Rubber Company, The. Rubberized ball rod stud for automotive steering assembly. 4,555,198, Cl. 403-130.000.

Wessel, Anton: *See—*
Lange, Wolf-Ruediger; Wessel, Anton; Bohler, Udo; Volkheimer, Klaus; Greiner, Gunter; and Islet, Peter, 4,555,806, Cl. 455-62.000.

Wessel, Wolf: *See—*
Engel, Gerhard; and Wessel, Wolf, 4,554,899, Cl. 123-357.000.

Westermeir, Gisela; and Fehr, Friedhard, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Thick-film capacitor manufactured by printed-circuit techniques. 4,555,745, Cl. 361-320.000.

Westervelt, Dean C.; and Burke, Thomas M., to Westinghouse Electric Corp. Method of making a void-free non-cellulose electrical winding. 4,554,730, Cl. 29-605.000.

Westinghouse Electric Corp.: *See—*
Brick, Michael J.; and Dirnberger, Linus R., 4,555,689, Cl. 340-19.00R.
Dominick, Thomas S.; and Anderson, Roy G., 4,555,681, Cl. 333-112.000.
Dorman, William J., 4,555,757, Cl. 364-165.000.
Enriquez, Emanuel E., 4,555,724, Cl. 358-93.000.
Gottlieb, Milton; and Steinbruegge, Kenneth B., 4,555,160, Cl. 350-358.000.
Gyugyi, Laszlo, 4,555,659, Cl. 323-210.000.
Hwang, Eddie Y.; Szabo, Andras I.; and Shung, Wu-shi, 4,554,788, Cl. 60-646.000.
Lilly, Gerard P., 4,554,889, Cl. 122-32.000.
Maier, Alfred E.; and Ricci, Louis N., 4,555,604, Cl. 200-255.000.
Westervelt, Dean C.; and Burke, Thomas M., 4,554,730, Cl. 29-605.000.

Whirlpool Corporation: *See—*
Khan, Aman U., 4,554,794, Cl. 62-150.000.
Lyman, John B., 4,554,700, Cl. 15-323.000.
Overley, Ronald V.; Tedhams, Michael H.; and Atzbach, Carl L., 4,554,907, Cl. 126-191.000.

White Consolidated Industries, Inc.: *See—*
Mawby, Harold S.; and Frisbie, Carl W., 4,555,049, Cl. 222-517.000.
Stankard, James M., 4,554,796, Cl. 62-326.000.

White, Jackie L.: *See—*
Conrad, Lucas J.; and White, Jackie L., 4,554,932, Cl. 131-296.000.

White, Mary N.: *See—*
Hefner, Robert E., Jr.; and White, Mary N., 4,555,563, Cl. 528-96.000.

White, Stephen R.; and Feinberg, Jeffrey N. Foldable support stand. 4,555,128, Cl. 281-45.000.

White, Thomas C. Ocular pressure relief device. 4,554,918, Cl. 604-10.000.

Whitehead, Larry W., to Leggett & Platt, Incorporated. Adjustable box spring retainer bracket. 4,554,692, Cl. 5-411.000.

Whiteside, Robert C.; Arends, Albert W.; and Karklin, Roland, to Leesona Corporation. Thermoforming methods and apparatus. 4,555,377, Cl. 264-292.000.

Wicks, John L., to AMP Incorporated. Selective plating apparatus. 4,555,321, Cl. 204-224.00R.

Wiechert, Rudolf: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Toepert, Michael; and Wendt, Hans, 4,555,507, Cl. 514-172.000.

Wiedemann, Ingrid: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,555,511, Cl. 514-301.000.

Wigram, Stig. Spreader device in a storage container for uniform filling of the container with granular storage goods. 4,555,210, Cl. 414-301.000.

Wihl, Mark J.: *See—*
Broadbent, William H., Jr.; Buchholz, Steve; Eldredge, Peter; and Wihl, Mark J., 4,555,798, Cl. 382-8.000.

Wilhelm, Camille; Wilhelm, Camille; and Wilhelm, Robert. Supercharged internal combustion engine. 4,554,787, Cl. 60-605.000.

Wilhelm, Camille: *See—*
Wilhelm, Camille; Wilhelm, Camille; and Wilhelm, Robert, 4,554,787, Cl. 60-605.000.

Wilhelm, Robert: *See—*
Wilhelm, Camille; Wilhelm, Camille; and Wilhelm, Robert, 4,554,787, Cl. 60-605.000.

Wilke, Dieter: *See—*
Simon, Fritz; Korber, Klaus; Bandelow, Horst; Scherer, Michael; Wilke, Dieter; Thron, Werner; and Preuk, Gerhard, 4,554,707, Cl. 17-47.000.

Willcocks, Kenneth: *See—*
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,555,509, Cl. 514-278.000.

Williams, Inc.: *See—*
Hagen, Glenn E., 4,555,307, Cl. 202-177.000.

Williams, Robert G. Convex radius gauge. 4,554,747, Cl. 33-553.000.

Williams, Todd E.; and Desch, Steven M., to Advanced Micro Devices, Inc. Process gas controller. 4,554,942, Cl. 137-240.000.

Williamson, Terence J., to Burwell, Reed & Kinghorn Limited. Component. 4,555,259, Cl. 65-374.120.

Wilson Sporting Goods Company: *See—*
Masghati, Mohammad, 4,555,112, Cl. 273-77.00A.

Wimmerstedt, Roland V.: *See—*
Jonsson, Ernst U.; Lindqvist, Sten-Borje; and Wimmerstedt, Roland V., 4,555,251, Cl. 55-48.000.

Winkler, Harald: *See—*
Thudt, Hubert; and Winkler, Harald, 4,554,874, Cl. 104-247.000.

Winston, Scott, to Hercules Incorporated. High density pressure resistant invert blasting emulsions. 4,555,276, Cl. 149-6.000.

Winter, Joseph; and Pryor, Michael J., to Olin Corporation. Process and apparatus for fabricating optical fiber cables. 4,555,054, Cl. 228-148.000.

Wion, Donald A.: *See—*
Over, William R.; Wion, Donald A.; and Heffner, Richard M., 4,554,725, Cl. 29-564.400.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,555,364, Cl. 260-397.200.

Wittkampf, Frederik H. M.: *See—*
Boute, Wim; Wittkampf, Frederik H. M.; and van Arragon, Gerrit W., 4,554,921, Cl. 128-419.0PG.

Witzke, Horst: *See—*
Deckman, Harry W.; Witzke, Horst; Wronski, Christopher; and Yablonovitch, Eli, 4,554,727, Cl. 29-572.000.

Wofford, B. Gary: *See—*
Weinberg, Alan S.; Wofford, B. Gary; and Voso, Philip T., 4,555,025, Cl. 206-497.000.

Wohrstein, Franz X.: *See—*
Pasternak, Stephen F.; and Wohrstein, Franz X., 4,554,970, Cl. 165-181.000.

Wolf, Marvin L.: *See—*
Mick, Jon L.; and Wolf, Marvin L., 4,555,032, Cl. 212-189.000.

Wolfert, Clarke K., to Air Vent Inc. Roof ridge ventilator for retarding microbe growth in shingle roofs. 4,554,862, Cl. 98-42.210.

Wolowski, Eckard; and Mirtsch, Frank, to Ruhrkohle Aktiengesellschaft. Method for interconnecting thermally and pressure-stressed multi-phase reactors. 4,555,325, Cl. 208-10.000.

Womack, Darryl L.; Noell, Ralph B.; and Bradshaw, Larry R., to Scott Orthopedics, Inc. Adjustable joint for a knee brace. 4,554,913, Cl. 128-80.00C.

Wong, Albert H., to Wong Technology, Inc. Protective enclosure having self-contained air supply. 4,554,683, Cl. 2-202.000.

Wong, Rayman Y., to Stauffer Chemical Co. Pyridylpropyl carbamates as insect repellents. 4,555,515, Cl. 514-357.000.

Wong, Sam S.: *See—*
Waineo, Douglas K.; and Wong, Sam S., 4,555,708, Cl. 343-799.000.

Wong Technology, Inc.: *See—*
Wong, Albert H., 4,554,683, Cl. 2-202.000.

Wood, David B., III, to Cincinnati Milacron Inc. Anti-backlash mechanism for machine drive. 4,554,842, Cl. 74-409.000.

Wood, Roger W., to Ampex Corporation. Parity and syndrome generation for error detection and correction in digital communication systems. 4,555,784, Cl. 371-37.000.

Woodford Manufacturing Company: *See—*
Srajer, Reinhard, 4,554,768, Cl. 52-173.0DS.

Woodworth, Larry A.: *See—*
Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,555,597, Cl. 179-90.00B.

Wooster Brush Company, The: *See—*
Gargas, Eugene F., 4,555,337, Cl. 210-238.000.

Wright, Allen J., to Intelledex Incorporated. Robot arm with split wrist motion. 4,555,217, Cl. 414-735.000.

Wright, David E., to Dynacast International Limited. Method and apparatus for forming an internally screw-threaded article. 4,554,962, Cl. 164-132.000.

Wright, Eric, to General Signal Corporation. Brake control system for vehicles. 4,555,766, Cl. 364-426.000.

Wright Line, Inc.: *See—*
Ermanski, Albert G., 4,555,081, Cl. 248-183.000.

Wright, William B., Jr.; and Press, Jeffery B., to American Cyanamid Company. Thromboxane synthetase enzyme inhibiting N-[(1H-imidazol-1-yl) and (1H-1,2,4-triazol-1-yl)alkyl]pyridinecarboxamides. 4,555,519, Cl. 514-340.000.

Wronski, Christopher: *See—*
Deckman, Harry W.; Witzke, Horst; Wronski, Christopher; and Yablonovitch, Eli, 4,554,727, Cl. 29-572.000.

Wrulich, Herwig; Schetina, Otto; Siebenhofer, Gottfried; and Maier, Wilfried, to Voest-Alpine Aktiengesellschaft. Apparatus for cutting rock. 4,555,143, Cl. 299-81.000.

Wu, Mu T.: *See—*
Patchett, Arthur A.; and Wu, Mu T., 4,555,502, Cl. 514-19.000.

Wunderlich, Klaus: *See—*
Schutze, Detlef-Ingo; Schmitz, Reinold; and Wunderlich, Klaus, 4,555,580, Cl. 549-52.000.

Wyatt, Kenneth L., to AT&T Technologies, Inc. Method and apparatus utilizing magnetically coupled rollers to feed sheets. 4,555,105, Cl. 271-264.000.

Xerox Corporation: *See—*
Buchar, Wayne A., 4,555,621, Cl. 250-205.000.
Hor, Ah-Mee; and Loutfy, Rafik O., 4,555,463, Cl. 430-59.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,555,785, Cl. 372-8.000.
Tuhro, Richard H., 4,555,732, Cl. 358-213.000.

Xidex Corporation: *See—*
Tanck, Elinor J., 4,555,437, Cl. 428-212.000.

Y.S. Securities Limited: *See—*
Mennell, Thomas W., 4,555,602, Cl. 200-50.0AA.

Yablonovitch, Eli: *See—*
Deckman, Harry W.; Witzke, Horst; Wronski, Christopher; and Yablonovitch, Eli, 4,554,727, Cl. 29-572.000.

Yakushiji, Yasuhiro: *See—*
Matsuura, Shigeo; Ito, Uji; and Yakushiji, Yasuhiro, 4,555,702, Cl. 340-825.640.

Yamada, Hideaki; and Ryuno, Koitchiro, to Nitto Kagaku Kogyo Kabushiki Kaisha; and Hideaki Yamada. Method for cultivation of Pseudomonas bacteria. 4,555,487, Cl. 435-253.000.

Yamada, Hitoshi: *See—*
Nishihata, Ken; Iinuma, Katsuharu; Yamada, Hitoshi; Hirano, Fumiya; and Tsuruoka, Takashi, 4,555,404, Cl. 514-201.000.

Yamada, Junichi: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,555,351, Cl. 252-8.55D.

Yamada, Koji: *See—*
Matsuda, Yuzuru; Iwahashi, Kazuyuki; Iida, Takao; Hirayama, Noriaki; Asano, Kozo; Shuto, Katsuichi; Yamada, Koji; Shirahata, Kunikatsu; and Kase, Hiroshi, 4,555,402, Cl. 424-122.000.

Yamada, Sadami: *See—*
Tamura, Kaoru; and Yamada, Sadami, 4,555,213, Cl. 414-412.000.

Yamada, Tadayuki: *See—*
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,555,801, Cl. 382-44.000.

Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, to Nippon Kokan Kabushiki Kaisha. Exhaust valve for Diesel engine and production thereof. 4,554,897, Cl. 123-188.0AA.

Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, to Nippon Kokan Kabushiki Kaisha. Exhaust valve for diesel engine and production thereof. 4,554,898, Cl. 123-188.0AA.

Yamada, Yasuyuki; Tanaka, Tadaaki; Tukahara, Ryoichi; and Nishizawa, Tsutomu, to Mitsui Toatsu Chemicals, Inc. Composition for liquid crystal color display. 4,555,355, Cl. 252-299.100.

Yamaga, Katsuji: *See—*
Orikasa, Wataru; Tochimoto, Kunio; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; and Saito, Hiroshi, 4,555,286, Cl. 156-94.000.
Orikasa, Wataru; Ohara, Makoto; Mori, Tomoyuki; Shigetomi, Masayoshi; Yamaga, Katsuji; Matsui, Masaaki; Saito, Hiroshi; and Soda, Hiroshi, 4,555,295, Cl. 156-349.000.

Yamagishi, Shigeru: *See—*
Hiroyasu, Minoru; Yamashita, Hideo; Ohguro, Tamotsu; Yamagishi, Shigeru; and Shino, Shigenari, 4,555,205, Cl. 408-150.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Sougawa, Masafumi, 4,554,896, Cl. 123-179.00G.

Yamamoto, Diane M.: *See—*
Stout, David M.; Yamamoto, Diane M.; and Barcelon-Yang, Cynthia, 4,555,517, Cl. 514-336.000.

Yamamoto, Misao: *See—*
Maki, Hirohisa; Sano, Takashi; and Yamamoto, Misao, 4,555,536, Cl. 524-66.000.

Yamamuro, Kiyohiko: *See—*
Inoue, Noriyuki; Okazaki, Masaki; Yamamuro, Kiyohiko; and Takei, Haruo, 4,555,482, Cl. 430-574.000.

Yamanaka, Kimio, to Mitsubishi Denki Kabushiki Kaisha. Plant controller simulator with structure for combining simuation signals with actual process I/O signals. 4,555,756, Cl. 364-130.000.

Yamane, Akiyoshi. Process for the production of controlled freezing point dried foods. 4,555,410, Cl. 426-384.000.

Yamashita, Hideo: *See—*
Hiroyasu, Minoru; Yamashita, Hideo; Ohguro, Tamotsu; Yamagishi, Shigeru; and Shino, Shigenari, 4,555,205, Cl. 408-150.000.

Yamauchi, Mineo: *See—*
Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, 4,555,427, Cl. 428-195.000.

Yamazaki, Shunpei. Printing member for electrostatic photocopying. 4,555,462, Cl. 430-57.000.

Yamoto, Hisayoshi: *See—*
Osawa, Shigeru; and Yamoto, Hisayoshi, 4,554,961, Cl. 152-410.000.

Yanagishima, Takayuki; and Seko, Yasutoshi, to Nissan Motor Company, Limited. Display device for a vehicle. 4,555,694, Cl. 340-524.000.

Yang, Yaw Kuen. Combination locking device for suitcases. 4,554,809, Cl. 70-312.000.

Yanmar Diesel Engine Co., Ltd.: *See—*
Amemori, Koichi; and Kawabe, Toshihiko, 4,554,892, Cl. 123-41.82R.

Yano, Masao: *See—*
Matsumura, Susumu; Hosokawa, Yasuhiko; Katsuki, Kanji; and Yano, Masao, 4,555,750, Cl. 363-37.000.

Yano, Mitsuru, to Seisan Nippon Sha, Ltd. Method of and means for bonding synthetic resin profiled fasteners to film substrate. 4,555,282, Cl. 156-66.000.

Yano, Takashi; and Asami, Masahiro, to Daicel Chemical Industries, Ltd. Photosensitive diazonium material with precoat of graft polymer prepared by grafting cellulose derivation with radical polymerizable monomer. 4,555,468, Cl. 430-160.000.

Yaoka, Osamu: *See—*
Goto, Kazuhiro; Yaoka, Osamu; and Oe, Takanori, 4,555,510, Cl. 514-291.000.

Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, to Ibigawa Electric Industry Company, Ltd. Carbon rod assembly for arc gouging and blasting of metallic article. 4,555,615, Cl. 219-145.210.

Yasuda, Masatoshi: *See—*
Tahara, Yoshiyuki; Takahashi, Toshihiro; Koyama, Hiroyasu; Suzuki, Yoshikuni; and Yasuda, Masatoshi, 4,555,365, Cl. 260-404.000.

Yasuda, Satoshi: *See—*
Nakagome, Hideki; and Yasuda, Satoshi, 4,554,790, Cl. 62-3.000.

Yasue, Kazo, to Anmin Manufacturing Co., Ltd. Filling material. 4,555,421, Cl. 428-6.000.

Yasufuku, Yoshitaka: *See—*
Kikugawa, Shozo; and Yasufuku, Yoshitaka, 4,555,443, Cl. 428-336.000.

Yasui, Tokumasa: *See—*
Tanimura, Nobuyoshi; and Yasui, Tokumasa, 4,554,729, Cl. 29-577.00C.

Yeung, Edward S.: *See—*
Spurlin, Stanford R.; and Yeung, Edward S., 4,555,491, Cl. 436-120.000.

Yoakam, David; Campbell, Robert; and Pehkonen, Robert, to Vector Corporation. Apparatus for coating tablets with computer control. 4,554,887, Cl. 118-666.000.

Yokoyama, Eisuke, to Kawaguchiko Seimitsu Company Limited. Link for watch band and bracelet. 4,554,783, Cl. 59-82.000.

Yokoyama, Shigeki; Nakamura, Koki; Kouda, Jyounichi; and Sekiguchi, Nobuhisa, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material containing a polyoxyethylene surfactant and a nitron compound. 4,555,480, Cl. 430-527.000.

Yoshida, Hajime, to Hajime Industries, Ltd. Surface flaw inspection apparatus for a convex body. 4,555,635, Cl. 250-572.000.

Yoshida, Kunihiko: *See—*
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, 4,555,615, Cl. 219-145.210.

Yoshida, Tadashi: *See—*
Obata, Keigo; Dohi, Nobuyasu; Okuhama, Yoshiaki; Masaki, Seishi; Okada, Yukiyoshi; and Yoshida, Tadashi, 4,555,314, Cl. 204-44.400.

Yoshida, Tadayuki, to Sankyo Yuki Kabushiki Kaisha; and Arai Shoji Kabushiki Kaisha. Method of treatment for separation of oil from oil-containing slurry waste. 4,555,345, Cl. 210-705.000.

Yoshida, Yoshio: *See—*
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; Takeya, Yasuo; and Nagai, Satoshi, 4,554,805, Cl. 68-12.00R.

Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for the treatment of hyperglycemia using p-aminobenzoate-N-L-rhamnoside. 4,555,505, Cl. 514-42.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Goto, Kazuhiro; Yaoka, Osamu; and Oe, Takanori, 4,555,510, Cl. 514-291.000.

Yoshiyama, Toshio: *See—*
Iseki, Masahide; Yoshiyama, Toshio; Kajita, Hiroshi; Itakiyo, Masanori; Kusumoto, Hiroshi; Kawamori, Yoshizo; and Kawamoto, Masuo, 4,555,173, Cl. 355-3.00R.

Yoshizawa, Hiroyuki: *See—*
Maehara, Toshifumi; and Yoshizawa, Hiroyuki, 4,555,145, Cl. 303-92.000.

You, Chin-San. Golf club head construction. 4,555,115, Cl. 273-167.00R.

You, Young S., to Hewlett-Packard Company. Anti-wetting in fluid nozzles. 4,555,062, Cl. 239-690.000.

Young, Ian R., to Picker International, Ltd. Nuclear magnetic resonance imaging method. 4,554,925, Cl. 128-653.000.

Yuchi, Sadataka: *See—*
Machida, Haruchika; and Yuchi, Sadataka, 4,555,695, Cl. 340-538.000.

Yuki, Heimei; and Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Methacrylic ester useful as an optical resolving agent. 4,555,574, Cl. 546-342.000.

Zanis, Charles A.: *See—*
Morris, Richard A.; Lukens, William E.; and Zanis, Charles A., 4,555,614, Cl. 219-130.010.

Zappia, Jean M.: *See—*
Reid, William J.; Zappia, Jean M.; Capocci, Gerald A.; and Spivack, John D., 4,555,541, Cl. 524-180.000.

Zayat, Charles. Rotary resurfacing tool. 4,554,957, Cl. 144-2.00R.

Zeisberg, Peter: *See—*
Ploch, Siegfrid; Rossler, Sonja; Zeisberg, Peter; and Heilmann, Horst, 4,554,804, Cl. 66-214.000.

Zeisse, Carl R.: *See—*
Collins, David A.; Lile, Derek L.; and Zeisse, Carl R., 4,555,273, Cl. 148-1.500.

Ziemer, Wolf; and Holle, Wilhelm, to Flakt Aktiebolag. Ceiling construction for clean rooms. 4,554,766, Cl. 52-28.000.

Zilber, Sam: *See—*
Rifkin, Gary L.; Lawrence, Charles C.; Zilber, Sam; and Hamby, Michael, 4,555,749, Cl. 362-249.000.

Zimmer, John C. Apparatus for compacting refuse with stabilizers. 4,554,868, Cl. 100-229.00R.

Zimmermann, Klaus-Dieter: *See—*
Straubel, Max; and Zimmermann, Klaus-Dieter, 4,554,903, Cl. 123-575.000.

Zinchuk, Michael, to Polaroid Corporation. Electronic imaging camera with microchannel plate. 4,555,731, Cl. 358-209.000.

Zink, Rudolf; and Fletcher, Ian J., to Ciba-Geigy Corporation. Chromogenic quinazolines. 4,555,569, Cl. 544-105.000.

Zipes, Douglas P.: *See—*
Prystowsky, Eric N.; and Zipes, Douglas P., 4,554,922, Cl. 128-419.0PG.

Zucchi, Gianfranco: *See—*
Biadigo, Mario; and Zucchi, Gianfranco, 4,555,229, Cl. 425-267.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bagley, Alan S., to Hewlett-Packard Company. Calculator apparatus with electronically alterable key symbols. Re. 32,040, Cl. 364-900.000.

Clear, Theodore E. Methods for manufacturing cementitious reinforced panels. Re. 32,037, Cl. 156-44.000.

Clear, Theodore E.; and Dinkel, Paul E. Methods for manufacturing cementitious reinforced panels. Re. 32,038, Cl. 156-44.000.

Dennis, Mahlon, to Strata Bit Corporation. Drill bit. Re. 32,036, Cl. 175-329.000.

Dinkel, Paul E.: *See—*
Clear, Theodore E.; and Dinkel, Paul E., Re. 32,038, Cl. 156-44.000.

Eastman Kodak Company: *See—*
Hollister, Kenneth R.; and Thomas, Harold T., Re. 32,039, Cl. 430-14.000.

Friedrich Wilh. Schwing, GmbH: *See—*
Heckmann, Horst; and Nawroth, Werner, Re. 32,041, Cl. 137-454.200.

Heckmann, Horst; and Nawroth, Werner, to Friedrich Wilh. Schwing, GmbH. Control valve for viscous material pumps. Re. 32,041, Cl. 137-454.200.

Hewlett-Packard Company: *See—*
Bagley, Alan S., Re. 32,040, Cl. 364-900.000.

Hollister, Kenneth R.; and Thomas, Harold T., to Eastman Kodak Company. Thermal and mechanical barrier layers for optical recording elements. Re. 32,039, Cl. 430-14.000.

Nawroth, Werner: *See—*
Heckmann, Horst; and Nawroth, Werner, Re. 32,041, Cl. 137-454.200.

Strata Bit Corporation: *See—*
Dennis, Mahlon, Re. 32,036, Cl. 175-329.000.

Thomas, Harold T.: *See—*
Hollister, Kenneth R.; and Thomas, Harold T., Re. 32,039, Cl. 430-14.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Atwater, Charles B., to Syntex Inc. Buffered solutions which have a reduced corrosive nature. B1 4,401,624, 11-26-85, Cl. 422-12.000.

Syntex Inc.: *See—*
Atwater, Charles B., B1 4,401,624, Cl. 422-12.000.

LIST OF DESIGN PATENTEES

ALZA Corporation: *See—*
Peery, John R.; and Eckenhoff, James B., 281,528, Cl. D24-8.000.

American Screen Printing Company: *See—*
Bubley, Henry J., 281,510, Cl. D18-13.000.

American Tourister, Inc.: *See—*
Bomes, Harvey; Pulichino, John; Barber, Jack; and Bell, Max, 281,465, Cl. D3-71.000.

Ashton, Christopher J., to Marler Haley ExpoSystems, Limited. Portable sign and stand therefor. 281,513, 11-26-85, Cl. D20-21.000.

Astronics Corporation: *See—*
Braunschweig, Peter M.; and Ruffles, Thomas J., Jr., 281,475, Cl. D6-426.000.

Atkinson, Robert W.; and Olson, Daniel H., to Snyder Laboratories, Inc. Combined medical suction and lavage handpiece or the like. 281,535, 11-26-85, Cl. D24-51.000.

Ault, Charles M.: *See—*
Prager, Jay M.; Gonzales, Roman Y.; and Ault, Charles M., 281,493, Cl. D13-40.000.

Barber, Jack: *See—*
Bomes, Harvey; Pulichino, John; Barber, Jack; and Bell, Max, 281,465, Cl. D3-71.000.

Batts, John H., to John Thomas Batts, Inc. Garment hanger. 281,470, 11-26-85, Cl. D6-319.000.

Behring, Alexander. Illuminated telephone handset support attachment. 281,497, 11-26-85, Cl. D14-59.000.

Bell, Max: *See—*
Bomes, Harvey; Pulichino, John; Barber, Jack; and Bell, Max, 281,465, Cl. D3-71.000.

Bergmans, Charles, to Clarks of England, Inc. Shoe sole. 281,461, 11-26-85, Cl. D2-320.000.

Bivouac Industries, Inc.: *See—*
Chapman, Scott T., 281,487, Cl. D12-156.000.

Bomes, Harvey; Pulichino, John; Barber, Jack; and Bell, Max, to American Tourister, Inc. Soft-sided garment bag. 281,465, 11-26-85, Cl. D3-71.000.

Braunschweig, Peter M.; and Ruffles, Thomas J., Jr., to Astronics Corporation. Desk for filing cancelled checks. 281,475, 11-26-85, Cl. D6-426.000.

Bridgestone Tire Company Limited: *See—*
Motomura, Kenichi; and Mamada, Mamoru, 281,485, Cl. D12-142.000.

Brucoli, Michael, to Holson Company, The. Photo album or similar article. 281,511, 11-26-85, Cl. D19-26.000.

Bubley, Henry J., to American Screen Printing Company. Screen printing press. 281,510, 11-26-85, Cl. D18-13.000.

Buhl Industries, Inc.: *See—*
DeLongis, Vincent E.; and Kyhl, Henry, 281,506, Cl. D16-24.000.

Cenefels, Jaime F., to Raivi S.A. Heating plate. 281,526, 11-26-85, Cl. D23-123.000.

Chan-Foun, Lee. Brush for cleaning venetian blind. 281,467, 11-26-85, Cl. D4-119.000.

Chapman, Scott T., to Bivouac Industries, Inc. Pick-up truck tonneau cover. 281,487, 11-26-85, Cl. D12-156.000.

Chen, Tung S. Housing for a telephone set. 281,496, 11-26-85, Cl. D14-53.000.

Chipman-Union, Inc.: *See—*
Keenan, Paul B.; and Fisher, Barry T., 281,468, Cl. D6-317.000.

Clarks of England, Inc.: *See—*
Bergmans, Charles, 281,461, Cl. D2-320.000.

Collins, John, to Leer, Incorporated. Cap for the bed of a pick-up truck. 281,488, 11-26-85, Cl. D12-156.000.

Commodore Business Machines Inc.: *See—*
Velinsky, Ira L., 281,503, Cl. D14-111.000.

Connoisseurs Products Corporation: *See—*
Harrison, Mark, 281,539, Cl. D32-1.000.

Davis, Myron F.; Jordan, Willis Y., III; and Wysong, Robert, to International Business Machines Corporation. Program cartridge for a personal computer. 281,504, 11-26-85, Cl. D14-114.000.

Deacon & Co. Limited: *See—*
Wong, Dennis C. L., 281,516, Cl. D21-59.000.

DeLongis, Vincent E.; and Kyhl, Henry, to Buhl Industries, Inc. Overhead projector. 281,506, 11-26-85, Cl. D16-24.000.
Dickes, Theodore W., to Standard-Knapp, Inc. Design for a packing tray. 281,484, 11-26-85, Cl. D9-432.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Soederberg, Richard, 281,472, Cl. D6-356.000.
Drake, Craig D., to Ring King Visibles, Inc. Storage tray for diskettes or the like. 281,464, 11-26-85, Cl. D3-35.000.
Dunlop Limited: *See*—
Pope, Nicholas J., 281,462, Cl. D2-320.000.
Eckenhoff, James B.: *See*—
Peery, John R.; and Eckenhoff, James B., 281,528, Cl. D24-8.000.
Ehmke, Robert J. Corner fireplace doors and panel. 281,527, 11-26-85, Cl. D23-128.000.
Ehrlich, Samuel J. Golf putter head. 281,522, 11-26-85, Cl. D21-219.000.
Electronic Sports Collection (Far East) Limited, The: *See*—
Sujanani, Vinod S., 281,494, Cl. D14-5.000.
Faidide, Christian, to S.A.R.L. Wichard. Nap-hook for sail-surfing boards. 281,483, 11-26-85, Cl. D8-367.000.
Fisher, Barry T.: *See*—
Keenan, Paul B.; and Fisher, Barry T., 281,468, Cl. D6-317.000.
Geiser, Michel B., to Haute Fourneau et Fonderies de Cousances. Grill. 281,481, 11-26-85, Cl. D7-361.000.
General Electric Company: *See*—
Wheeler, William C., 281,502, Cl. D14-102.000.
General Motors Corporation: *See*—
Schinella, John R., 281,491, Cl. D12-211.000.
Gilbert, Robert W., to Mining Supplies (Minsup) Pty. Ltd. Resilient ring for fluid coupling. 281,525, 11-26-85, Cl. D23-47.000.
Gonzales, Roman Y.: *See*—
Prager, Jay M.; Gonzales, Roman Y.; and Ault, Charles M., 281,493, Cl. D13-40.000.
Gould Inc.: *See*—
Prager, Jay M.; Gonzales, Roman Y.; and Ault, Charles M., 281,493, Cl. D13-40.000.
Hancock, Roy T. Convertible coupler. 281,489, 11-26-85, Cl. D12-162.000.
Handi-Pac, Inc.: *See*—
Klawitter, Ronald R., 281,515, Cl. D21-48.000.
Harris, William H. Tooth crown remover. 281,531, 11-26-85, Cl. D24-10.000.
Harrison, Mark, to Connoisseurs Products Corporation. Electrosonic cleaning bath enclosure. 281,539, 11-26-85, Cl. D32-1.000.
Hattori, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha. Fuel tank for motorcycle. 281,486, 11-26-85, Cl. D12-155.000.
Haute Fourneau et Fonderies de Cousances: *See*—
Geiser, Michel B., 281,481, Cl. D7-361.000.
Hogan, Kevin P.: *See*—
Roberts, Patrick J.; and Hogan, Kevin P., 281,458, Cl. D2-313.000.
Holson Company, The: *See*—
Brucoli, Michael, 281,511, Cl. D19-26.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hattori, Shigeru, 281,486, Cl. D12-155.000.
Yaguchi, Tadahiro, 281,492, Cl. D13-2.000.
Honermann, John R. Stocking holder. 281,469, 11-26-85, Cl. D6-317.000.
Inaba, Hiroshi, to Nippon Tsushin Kogyo Kabushiki Kaisha. Push button. 281,498, 11-26-85, Cl. D14-59.000.
Interlego A.G.: *See*—
Pedersen, Niels M., 281,519, Cl. D21-165.000.
International Business Machines Corporation: *See*—
Davis, Myron F.; Jordan, Willis Y., III; and Wysong, Robert, 281,504, Cl. D14-114.000.
IPCO Corporation: *See*—
Weissman, Bernard, 281,532, Cl. D24-10.000.
John Thomas Batts, Inc.: *See*—
Batts, John H., 281,470, Cl. D6-319.000.
Jolliffe, John E., to SCM Corporation. Typewriter. 281,509, 11-26-85, Cl. D18-1.000.
Jordan, Willis Y., III: *See*—
Davis, Myron F.; Jordan, Willis Y., III; and Wysong, Robert, 281,504, Cl. D14-114.000.
Keenan, Paul B.; and Fisher, Barry T., to Chipman-Union, Inc. Hosiery hanger. 281,468, 11-26-85, Cl. D6-317.000.
Kenncorp Sports, Inc.: *See*—
Stalberger, Robert J., Jr.; and Kennedy, LeRoy F., 281,521, Cl. D21-203.000.
Kennedy, LeRoy F.: *See*—
Stalberger, Robert J., Jr.; and Kennedy, LeRoy F., 281,521, Cl. D21-203.000.
Kiiski, Heikki A., to Tunturipyora Oy. Bicycle exerciser. 281,520, 11-26-85, Cl. D21-194.000.
Kindt-Larsen, Ture: *See*—
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Lenhart, Richard D.; and Lindblad, Roger D., 281,523, Cl. D21-233.000.
Makihara, Kendo: *See*—
Yamagata, Hiroshi; and Makihara, Kendo, 281,500, Cl. D14-92.000.
Yamagata, Hiroshi; and Makihara, Kendo, 281,501, Cl. D14-92.000.
Mamada, Mamoru: *See*—
Motomura, Kenichi; and Mamada, Mamoru, 281,485, Cl. D12-142.000.
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Ashton, Christopher J., 281,513, Cl. D20-21.000.
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Seager, Richard, 281,533, Cl. D24-17.000.
Messmer, Steven R.; and Pryor, Dean A. Game board. 281,514, 11-26-85, Cl. D21-31.000.
Mia Lens Production A/S: *See*—
Larsen, Hans O.; and Kindt-Larsen, Ture, 281,505, Cl. D15-136.000.
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Gilbert, Robert W., 281,525, Cl. D23-47.000.
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O'Donnell, Daniel, 281,536, Cl. D25-80.000.
Moorkens, Pierre A. R. J. M. G. Combined bed and desk-table. 281,474, 11-26-85, Cl. D6-384.000.
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Nagele, Albert L., 281,499, Cl. D14-76.000.
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Neff, Paul J. Rack. 281,477, 11-26-85, Cl. D6-574.000.
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Inaba, Hiroshi, 281,498, Cl. D14-59.000.
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Atkinson, Robert W.; and Olson, Daniel H., 281,535, Cl. D24-51.000.
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Ushikubo, Masao, 281,534, Cl. D24-29.000.
Padmore & Barnes International Limited: *See*—
Roberts, Patrick J.; and Hogan, Kevin P., 281,458, Cl. D2-313.000.
Parker, Mark G., to Nike, Inc. Shoe outsole. 281,459, 11-26-85, Cl. D2-320.000.
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Schremmer, Paul M., 281,507, Cl. D16-102.000.
Pryor, Dean A.: *See*—
Messmer, Steven R.; and Pryor, Dean A., 281,514, Cl. D21-31.000.
Pulichino, John: *See*—
Bomes, Harvey; Pulichino, John; Barber, Jack; and Bell, Max, 281,465, Cl. D3-71.000.
Quaker Oats Company, The: *See*—
Kolich, Robert A., 281,517, Cl. D21-111.000.
Raivi S.A.: *See*—
Cenefels, Jaime F., 281,526, Cl. D23-123.000.
Ring King Visibles, Inc.: *See*—
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Zimmermann, Anso, 281,478, Cl. D7-77.000.
Zimmermann, Anso, 281,479, Cl. D7-317.000.
Rubbermaid Incorporated: *See*—
McClelland, Donald R., 281,480, Cl. D7-356.000.
Ruffles, Thomas J., Jr.: *See*—
Braunschweig, Peter M.; and Ruffles, Thomas J., Jr., 281,475, Cl. D6-426.000.
S.A.R.L. Wichard: *See*—
Faidide, Christian, 281,483, Cl. D8-367.000.
Sailor Pen Co., Ltd., The: *See*—
Kobori, Akio, 281,512, Cl. D19-55.000.
Sauter, Daniel S., to Trans World Airlines, Inc. Aircraft passenger seat. 281,471, 11-26-85, Cl. D6-356.000.
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Yamagata, Hiroshi; and Makihara, Kendo, 281,500, Cl. D14-92.000.
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Atkinson, Robert W.; and Olson, Daniel H., 281,535, Cl. D24-51.000.
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Spirk, John W., Jr.: *See*—
Nottingham, John R.; and Spirk, John W., Jr., 281,518, Cl. D21-149.000.
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Swedarsky, Lois D.; and Swedarsky, Leonard I., 281,456, Cl. D2-253.000.
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Suzuki, Yoshiaki, 281,482, Cl. D8-358.000.
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Sauter, Daniel S., 281,471, Cl. D6-356.000.
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Kiiski, Heikki A., 281,520, Cl. D21-194.000.
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Seid, Paul; and Wolfe, Herbert, 281,529, Cl. D24-10.000.
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Woods, Craig P. Hat. 281,455, 11-26-85, Cl. D2-243.000.
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Davis, Myron F.; Jordan, Willis Y., III; and Wysong, Robert, 281,504, Cl. D14-114.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2 4,554,681
70 4,554,682
202 4,554,683
227 4,554,684
403 4,554,685

CLASS 4

144.2 4,554,687
191 4,554,688
254 4,554,689
601 4,554,690

CLASS 5

81 R 4,554,691
411 4,554,692
448 4,554,693

CLASS 8

405 4,555,246
4,555,247

CLASS 12

136 B 4,554,694

CLASS 14

69.5 4,554,695

CLASS 15

21 D 4,554,696
55 4,554,697
201 4,554,699
323 4,554,700
339 4,554,698
340 4,554,701
372 4,554,702
424 4,554,703

CLASS 16

21 4,554,704
110 R 4,554,705
237 4,554,706

CLASS 17

47 4,554,707

CLASS 19

80 R 4,554,708
218 4,554,709

CLASS 24

49 CF 4,554,710
150 FP 4,554,711
241 PP 4,554,712

CLASS 26

51 4,554,713
75 4,554,714

CLASS 28

107 4,554,715
263 4,554,716

CLASS 29

25.35 4,554,717
155 R 4,554,718
157.3 R 4,554,719
402.01 4,554,720
416 4,554,721
426.5 4,554,722
430 4,554,723
451 4,554,724
564.4 4,554,725
571 4,554,726
572 4,554,727
576 W 4,554,728
577 C 4,554,729
605 4,554,730
4,554,731
620 4,554,732
749 4,554,733
818 4,554,734

CLASS 30

47 4,554,735
120.3 4,554,736
4,554,737
275 4,554,738

CLASS 33

2 H 4,554,739
25 R 4,554,740
125 C 4,554,741
143 L 4,554,742
172 R 4,554,743
241 4,554,744
257 4,554,745
447 4,554,746
553 4,554,747

CLASS 34

242 4,554,748

CLASS 36

102 4,554,749

CLASS 37

3 4,554,750
234 4,554,751

CLASS 38

61 4,554,752

CLASS 40

341 4,554,753
603 4,554,754

CLASS 43

22 4,554,755
44.99 4,554,756
55 4,554,757
61 4,554,758
100 4,554,759
105 4,554,760

CLASS 44

78 4,555,248

CLASS 47

1.41 4,554,761

CLASS 48

62 R 4,555,249

CLASS 49

76 4,554,762
349 4,554,763
501 4,554,764

CLASS 51

309 4,555,250
401 4,554,765

CLASS 52

28 4,554,766
167 4,554,767
173 DS 4,554,768
173 R 4,554,769
207 4,554,770
221 4,554,771
396 4,554,772
521 4,554,773

CLASS 53

52 4,554,774
64 4,554,775
76 4,554,776
201 4,554,777
398 4,554,778
589 4,554,779

CLASS 55

48 4,555,251
132 4,555,252
170 4,555,253
345 4,555,254
355 4,555,255

CLASS 56

11.8 4,554,780
235 4,554,781

CLASS 57

66 4,554,782

CLASS 59

82 4,554,783

CLASS 60

39.02 4,554,784
314 4,554,785
397 4,554,786
605 4,554,787
646 4,554,788
751 4,554,789

CLASS 62

3 4,554,790
18 4,555,256
55 4,554,791
77 4,554,792
126 4,554,793
150 4,554,794
175 4,554,795
326 4,554,796
434 4,554,797
457 4,554,798
509 4,554,799

CLASS 63

23 4,554,800

CLASS 65

13 4,555,257
319 4,555,258
374.12 4,555,259

CLASS 66

9 B 4,554,801
71 4,554,802
75.2 4,554,803
214 4,554,804

CLASS 68

12 R 4,554,805
257 4,554,806

CLASS 70

208 4,554,807
279 4,554,808
312 4,554,809

CLASS 71

88 4,555,260
90 4,555,261
92 4,555,262
98 4,555,263

CLASS 72

70 4,554,810
110 4,554,811
202 4,554,812
251 4,554,813
345 4,554,814
349 4,554,815
368 4,554,816
370 4,554,817
410 4,554,818

CLASS 73

9 4,554,819
23 4,554,820
55 4,554,821
61 R 4,554,822
116 4,554,823
117 4,554,824
118 4,554,825
170 A 4,554,826
189 4,554,827
202 4,554,828
204 4,554,829
299 4,554,830
304 R 4,554,831
432 R 4,554,832
457 4,554,833
597 4,554,834
640 4,554,835
657 4,554,836
705 4,554,837
761 4,554,838
864.16 4,554,839

CLASS 74

42 4,554,840
200 4,554,841
409 4,554,842
493 4,554,843
606 R 4,554,844
650 4,554,845
805 4,554,846

CLASS 75

46 4,555,267
49 4,555,264
53 4,555,265
4,555,266
229 4,555,268

CLASS 81

111 4,554,847
447 4,554,848

CLASS 83

40 4,554,849
178 4,554,850
213 4,554,851
407 4,554,852
522 4,554,853

CLASS 84

1.03 4,554,854
1.19 4,554,857
4,554,858
95 C 4,554,856
122 4,554,855
283 4,554,859

CLASS 89

1.7 4,554,860

CLASS 91

446 4,554,861

CLASS 98

42.21 4,554,862
59 4,554,863

CLASS 99

340 4,554,864
353 4,554,865
499 4,554,866

CLASS 100

3 4,554,867
229 R 4,554,868

CLASS 101

145 4,554,869
365 4,554,870

CLASS 102

489 4,554,871
490 4,554,872

CLASS 104

88 4,554,873
247 4,554,874

CLASS 105

221 R 4,554,875

CLASS 106

90 4,555,269

CLASS 110

246 4,554,876

CLASS 112

105 4,554,877
235 4,554,878
445 4,554,879
454 4,554,880

CLASS 114

39 4,554,881
219 4,554,882
266 4,554,883
344 4,554,884

CLASS 116

174 4,554,885

CLASS 118

42 4,554,886
666 4,554,887

CLASS 119

53 4,554,888

CLASS 122

26 4,554,906
32 4,554,889

CLASS 123

26 4,554,890
41.21 4,554,891
41.82 R 4,554,892
41.83 4,554,893
53 AA 4,554,894
90.55 4,554,895
179 G 4,554,896
188 AA 4,554,897
4,554,898
357 4,554,899
418 4,554,900
450 4,554,901
557 4,554,902
575 4,554,903

CLASS 124

18 4,554,904
56 4,554,905

CLASS 126

191 4,554,907
443 4,554,908

CLASS 127

44 4,555,270
46.2 4,555,271

CLASS 128

1.2 4,554,909
28 4,554,910
57 4,554,911
80 C 4,554,913
80 E 4,554,912
92 A 4,554,915
92 C 4,554,914
203.12 4,554,916
303.1 4,554,917
360 4,554,919
419 PG 4,554,920
4,554,921
4,554,922
421 4,554,923
640 4,554,924
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663 4,554,926
670 4,554,927
709 4,554,928
772 4,554,929
774 4,554,930

CLASS 131

84.4 4,554,931
296 4,554,932
304 4,554,933

CLASS 132

40 4,554,934
73 4,554,935

CLASS 134

146 4,554,936

CLASS 135

100 4,554,937

CLASS 136

245 4,555,585
259 4,555,586

CLASS 137

82 4,554,938
99 4,554,939
116 4,554,940
240 4,554,941
4,554,942
242 4,554,943
296 4,554,944
312 4,554,945
384.2 4,554,946
454.2 Re.32,041
596.18 4,554,947
625.31 4,554,948
899 4,554,949

CLASS 139

25 4,554,950
105 4,554,951
302 4,554,952
383 A 4,554,953
439 4,554,954

CLASS 141

1 4,554,955
65 4,554,956

CLASS 144

2 R 4,554,957
4 4,554,958
380 4,554,959

CLASS 148

1.5 4,555,273
3 4,555,272
6.14 R 4,555,274
6.3 4,555,275

CLASS 149

6 4,555,276
19.4 4,555,277
21 4,555,278
92 4,555,279
109.6 4,555,280

CLASS 152

410 4,554,961
450 4,554,960

CLASS 156

44 Re.32,037
Re.32,038
64 4,555,281
66 4,555,282
71 4,555,283
79 4,555,284
89 4,555,285
94 4,555,286
127 4,555,287
191 4,555,288
203 4,555,289
245 4,555,290
250 4,555,291
279 4,555,292
308.4 4,555,293
309.6 4,555,294
349 4,555,295
446 4,555,296
461 4,555,297
523 4,555,298
552 4,555,299
613 4,555,300
617 R 4,555,301
637 4,555,302
643 4,555,303
663 4,555,304

CLASS 162

205 4,555,305
4,555,306

CLASS 164

132 4,554,962

CLASS 165

1 4,554,963
39 4,554,964
95 4,554,965
104.21 4,554,966
134.1 4,554,967
144 4,554,968
154 4,554,969
181 4,554,970

CLASS 166

88 4,554,971
137 4,554,972
192 4,554,973
273 4,554,974
297 4,554,975
341 4,554,976

CLASS 172

177 4,554,977
247 4,554,978
813 4,554,979

CLASS 173

12 4,554,980

CLASS 174

11 R 4,555,587
73 R 4,555,588
156 4,555,589

CLASS 175

4.52 4,554,981
75 4,554,982
107 4,554,983
170 4,554,984
329 Re.32,036
371 4,554,985
397 4,554,986

CLASS 177

134 4,554,987
178 4,554,988

CLASS 178

18 4,555,590
22.13 4,555,591

CLASS 179

2 E 4,555,592
18 B 4,555,594
18 ES 4,555,595
18 GD 4,555,593

81 B 4,555,596
90 B 4,555,597
121 D 4,555,598
170 R 4,555,599
184 4,555,600

CLASS 180

65.4 4,554,989
197 4,554,990
243 4,554,991
307 4,554,992

CLASS 181

130 4,554,993

CLASS 182

18 4,554,994
129 4,554,995
199 4,554,996
238 4,554,997

CLASS 184

15.1 4,554,998

CLASS 187

29 R 4,554,999
4,555,000

CLASS 188

79.5 GE 4,555,001

CLASS 192

0.084 4,555,006
45 4,555,002
53 B 4,555,003
58 B 4,555,004
70.27 4,555,005
98 4,555,007
106.1 4,555,008
106.2 4,555,009

CLASS 198

361 4,555,010
444 4,555,011
621 4,555,012
689.1 4,555,013
852 4,555,014

CLASS 200

5 A 4,555,601
50 AA 4,555,602
144 AP 4,555,603
255 4,555,604

CLASS 202

177 4,555,307
263 4,555,308

CLASS 203

1 4,555,309
10 4,555,310
21 4,555,311
29 4,555,312

CLASS 204

3 4,555,313
44.4 4,555,314
52 R 4,555,315
59 R 4,555,316
129 4,555,317
157.1 R 4,555,318
159.21 4,555,319
180.9 4,555,320
224 R 4,555,321
258 4,555,323
284 4,555,324

CLASS 206

0.5 4,555,015
63.3 4,555,016
83.5 4,555,017
214 4,555,018
223 4,555,019
235 4,555,020
387 4,555,021
440 4,555,022
446 4,555,023
454 4,555,024
497 4,555,025
521 4,555,026
626 4,555,027

CLASS 208

10 4,555,325
48 R 4,555,326
108 4,555,327
157 4,555,328

CLASS 209

5 4,555,329
254 4,555,330
599 4,555,028

CLASS 210

99 4,555,331
104 4,555,332
113 4,555,333
169 4,555,334
192 4,555,335
232 4,555,336
238 4,555,337
242.4 4,555,338
244 4,555,339
248 4,555,340
359 4,555,341
488 4,555,342
643 4,555,343
670 4,555,344
705 4,555,345
734 4,555,346
752 4,555,347

CLASS 211

22 4,555,029
49.1 4,555,030

CLASS 212

189 4,555,031
4,555,032

CLASS 213

51 4,555,033

CLASS 215

100 R 4,555,034
215 4,555,035
220 4,555,036
232 4,555,037
235 4,555,038
252 4,555,039
365 4,555,040

CLASS 219

10.55 E 4,555,605
10.55 R 4,555,606
10.57 4,555,607
10.77 4,555,608
121 4,555,611
121 LA 4,555,610
121 P 4,555,612
121 PC 4,555,609
124.34 4,555,613
130.01 4,555,614
145.21 4,555,615
432 4,555,616

CLASS 220

204 4,555,041
277 4,555,042
306 4,555,043

CLASS 221

19 4,555,044

CLASS 222

1 4,555,045
189 4,555,046
192 4,555,047
478 4,555,048
517 4,555,049
597 4,555,050

CLASS 224

150 4,555,051

CLASS 228

104 4,555,052
107 4,555,053
148 4,555,054
155 4,555,055

CLASS 229

45 R 4,555,056

CLASS 235

379 4,555,617
384 4,555,618
492 4,555,619

CLASS 236

94 4,555,057

CLASS 239

223 4,555,058
425 4,555,059
585 4,555,060
675 4,555,061
690 4,555,062

CLASS 241

46.04 4,555,063
89.3 4,555,064
241 4,555,065
293 4,555,066

CLASS 242

35.5 A 4,555,067
36 4,555,068
43 R 4,555,069
58.1 4,555,070
75.5 4,555,071
84.5 R 4,555,072
86.5 R 4,555,073
107.4 A 4,555,074
4,555,075
195 4,555,076
198 4,555,077

CLASS 244

54 4,555,078
207 4,555,079

CLASS 248

27.1 4,555,080
183 4,555,081
220.1 4,555,082
313 4,555,083
460 4,555,084
561 4,555,085

CLASS 249

67 4,555,086
78 4,555,087
192 4,555,088

CLASS 250

205 4,555,620
4,555,621
211 J 4,555,622
214 A 4,555,623
223 R 4,555,624
231 SE 4,555,625
239 4,555,626
334 4,555,627
341 4,555,628
362 4,555,629
492.1 4,555,630
551 4,555,631
560 4,555,632
4,555,633
565 4,555,634
572 4,555,635
578 4,555,636

CLASS 252

1 4,555,348
8.55 D 4,555,350
4,555,351
8.6 4,555,349
35 4,555,352
49.6 4,555,353
90 4,555,354
299.1 4,555,355
400 R 4,555,356
511 4,555,357
516 4,555,358
522 R 4,555,359
541 4,555,360
626 4,555,361

CLASS 254

10 B 4,555,089
29 R 4,555,090
267 4,555,091
291 4,555,092
362 4,555,093

CLASS 260

112.5 R 4,555,362
239.1 4,555,363
397.2 4,555,364
404 4,555,365
404.8 4,555,366
465.9 4,555,367
502.4 R 4,555,368
544 F 4,555,369
545 R 4,555,370

CLASS 261

122 4,555,371

CLASS 264

2.1 4,555,372
25 4,555,373
40.1 4,555,374
259 4,555,375
266 4,555,376
292 4,555,377
4,555,378
310 4,555,379
510 4,555,380
516 4,555,381

CLASS 266

45 4,555,094

CLASS 267

4 4,555,095
8 R 4,555,096
100 4,555,097
140.1 4,555,098

CLASS 269

88 4,555,099
166 4,555,100

CLASS 270

58 4,555,101

CLASS 271

4 4,555,102
35 4,555,103
228 4,555,104
264 4,555,105
297 4,555,106

CLASS 272

63 4,555,107
69 4,555,108
73 4,555,109

CLASS 273

26 B 4,555,111
26 E 4,555,110
77 A 4,555,112
80 B 4,555,113
128 R 4,555,114
167 R 4,555,115
236 4,555,116

CLASS 277

173 4,555,117
188 R 4,555,118
207 R 4,555,119

CLASS 280

6.1 4,555,120
30 4,555,121
87.04 R 4,555,122
160 4,555,123
289 WC 4,555,124
515 4,555,125
707 4,555,126
806 4,555,127

CLASS 281

45 4,555,128

CLASS 285

3 4,555,129
26 4,555,130
91 4,555,131

CLASS 290

52 4,555,637

CLASS 294

1.5 4,555,132
82.24 4,555,133

CLASS 296

189 4,555,134

CLASS 297

105 4,555,135
108 4,555,136
284 4,555,137
346 4,555,138
452 4,555,140
4,555,141
460 4,555,139

CLASS 299

43 4,555,142
81 4,555,143

CLASS 303

92 4,555,144
4,555,145

CLASS 305

10 4,555,146

CLASS 307

10 R 4,555,638
38 4,555,639
115 4,555,640
254 4,555,641
475 4,555,642
476 4,555,643
482 4,555,644

CLASS 308

3.8 4,555,147
6 C 4,555,149
6 R 4,555,148

CLASS 310

27 4,555,645

CLASS 312

250 4,555,150

CLASS 315

5.35 4,555,646
179 4,555,647
241 P 4,555,648
382 4,555,649

CLASS 318

135 4,555,650
341 4,555,651
375 4,555,652
696 4,555,653
751 4,555,654

CLASS 320

1 4,555,655
5 4,555,656
64 4,555,657

CLASS 323

210 4,555,658
4,555,659
224 4,555,660

CLASS 324

61 R 4,555,661
71.4 4,555,662
73 R 4,555,663
225 4,555,664
229 4,555,665

CLASS 326

233 4,555,666

CLASS 329

50 4,555,667

CLASS 330

9 4,555,668
149 4,555,669
252 4,555,670
4,555,671
255 4,555,672
258 4,555,673
267 4,555,674
289 4,555,675
298 4,555,676
302 4,555,677

CLASS 331

1 A 4,555,678
17 4,555,679
86 4,555,680

CLASS 333

112 4,555,681
189 4,555,682
202 4,555,683

CLASS 335

66 4,555,684
303 4,555,685

CLASS 337

102 4,555,686
370 4,555,687
394 4,555,688

CLASS 339

17 CF 4,555,151
4,555,153
17 L 4,555,152
59 R 4,555,154
61 R 4,555,155
75 M 4,555,156
75 MP 4,555,157
99 R 4,555,158
239 4,555,159

CLASS 340

19 R 4,555,689
52 F 4,555,690
52 R 4,555,691
347 AD 4,555,692
365 S 4,555,693
524 4,555,694
538 4,555,695
551 4,555,696
575 4,555,697
680 4,555,698
707 4,555,699
721 4,555,700
736 4,555,701
825.64 4,555,702

CLASS 343

5 SA 4,555,703
7.3 4,555,704
55 A 4,555,705
379 4,555,706
387 4,555,707
799 4,555,708

CLASS 346

1.1 4,555,70[illegible]
4,555,710
75 4,555,711
4,555,712
4,555,713
76 PH 4,555,714
4,555,715
137 4,555,716
140 R 4,555,717
4,555,718
4,555,719

CLASS 350

103 4,555,161
162.17 4,555,162
172 4,555,163
358 4,555,160
420 4,555,164
429 4,555,165
634 4,555,166

CLASS 352

133 4,555,167

CLASS 353

7 4,555,168

CLASS 354

407 4,555,169
470 4,555,170

CLASS 355

3 CH 4,555,171
3 DD 4,555,172
4,555,174
3 R 4,555,173

CLASS 356

32 4,555,175
301 4,555,176
318 4,555,177
339 4,555,178
342 4,555,179
445 4,555,180
448 4,555,181

CLASS 357

30 4,555,720
42 4,555,721

CLASS 358

17 4,555,722
31 4,555,723
93 4,555,724
4,555,725
106 4,555,726
111 4,555,727
133 4,555,728
142 4,555,729
209 4,555,730
213 4,555,731
293 4,555,732
314 4,555,733
330 4,555,734
342 4,555,735
4,555,736

CLASS 360

13 4,555,737
75 4,555,738
103 4,555,739
113 4,555,740

CLASS 361

58 4,555,741
93 4,555,742
196 4,555,743
212 4,555,744
320 4,555,745
323 4,555,746

CLASS 362

3 4,555,747
61 4,555,748
249 4,555,749

CLASS 363

37 4,555,750
44 4,555,751
68 4,555,752
126 4,555,753
132 4,555,754
160 4,555,755

CLASS 364

130 4,555,756
165 4,555,757
174 4,555,758
300 4,555,759
414 4,555,760
424 4,555,761
426 4,555,766
431.09 4,555,762
521 4,555,763
557 4,555,764
563 4,555,767
571 4,555,765
746 4,555,769
757 4,555,768
819 4,555,770
900 Re.32,040
4,555,771
4,555,772
4,555,773
4,555,774
4,555,775

CLASS 365

202 4,555,776
205 4,555,777
230 4,555,778

CLASS 366

25 4,555,182
208 4,555,183

CLASS 367

19 4,555,779

CLASS 368

88 4,555,184
190 4,555,185

CLASS 369

43 4,555,780

CLASS 370

60 4,555,781
104 4,555,782

CLASS 371

15 4,555,783
37 4,555,784

CLASS 372

8 4,555,785
70 4,555,786
86 4,555,787

CLASS 375

11 4,555,788
4,555,789
39 4,555,790
58 4,555,791
62 4,555,792

CLASS 376

216 4,555,382

CLASS 377

48 4,555,793

CLASS 378

187 4,555,794

CLASS 381

17 4,555,795
43 4,555,796
117 4,555,797

CLASS 382

8 4,555,798
4,555,799
25 4,555,800
44 4,555,801
56 4,555,802
61 4,555,803

CLASS 383

25 4,555,804

CLASS 384

93 4,555,186
103 4,555,187
482 4,555,188
493 4,555,189
495 4,555,190

CLASS 400

121 4,555,191
124 4,555,192
486 4,555,193

CLASS 401

206 4,555,194
218 4,555,195
220 4,555,196

CLASS 403

1 4,555,197
130 4,555,198
370 4,555,199

CLASS 404

72 4,555,200

CLASS 405

117 4,555,201

CLASS 407

4,555,202

CLASS 408

119 4,555,203
144 4,555,204
150 4,555,205

CLASS 411

23 4,555,206
366 4,555,207

CLASS 413

2 4,555,208

CLASS 414

163 4,555,209
301 4,555,210
401 4,555,211
412 4,555,212
4,555,213
563 4,555,214
564 4,555,215
728 4,555,216
735 4,555,217

CLASS 416

17 4,555,218
158 4,555,219

CLASS 417

342 4,555,220
349 4,555,221
393 4,555,222
462 4,555,223

CLASS 418

55 4,555,224

CLASS 422

12 B1 4,401,624
89 4,555,383
109 4,555,384

CLASS 423

30 4,555,385
54 4,555,386
59 4,555,387
167 4,555,388
210 4,555,389
242 4,555,390
244 4,555,391
4,555,392
447.1 4,555,393
626 4,555,394
644 4,555,395

CLASS 424

3 4,555,396
10 4,555,397
19 4,555,398
35 4,555,399
78 4,555,400
89 4,555,401
122 4,555,402

CLASS 425

4 R 4,555,225
96 4,555,226
122 4,555,227
185 4,555,228
267 4,555,229
325 4,555,230

CLASS 426

5 4,555,407
90 4,555,408
242 4,555,409
384 4,555,410
603 4,555,411

CLASS 427

27 4,555,412
34 4,555,413
43.1 4,555,414
193 4,555,415
248.1 4,555,416
361 4,555,417
373 4,555,418
387 4,555,419
4,555,420

CLASS 428

6 4,555,421
36 4,555,422
79 4,555,423
4,555,435
91 4,555,424
4,555,425
102 4,555,428
113 4,555,426
131 4,555,429
134 4,555,430
141 4,555,431
156 4,555,432
166 4,555,433
194 4,555,434
195 4,555,427
200 4,555,436
212 4,555,437
219 4,555,438
221 4,555,439
223 4,555,440
284 4,555,441
318.4 4,555,442
336 4,555,443
4,555,444
340 4,555,445
367 4,555,446
392 4,555,447
402 4,555,448
411.1 4,555,449
412 4,555,450

CLASS 429

1 4,555,451
13 4,555,452
41 4,555,453
51 4,555,454
112 4,555,455
131 4,555,456
199 4,555,457
203 4,555,458
211 4,555,459

CLASS 430

5 4,555,460
14 Re.32,039
49 4,555,461
57 4,555,462
59 4,555,463
67 4,555,464
95 4,555,465
106.6 4,555,466
110 4,555,467
160 4,555,468
168 4,555,469
203 4,555,470
273 4,555,471
278 4,555,472
281 4,555,473
4,555,474
309 4,555,475
351 4,555,476
359 4,555,477
367 4,555,478
372 4,555,479
527 4,555,480
550 4,555,481
574 4,555,482

CLASS 431

288 4,555,231

CLASS 432

222 4,555,232

CLASS 435

19 4,555,483
21 4,555,484
68 4,555,485
91 4,555,486
253 4,555,487

CLASS 436

27 4,555,488
4,555,489
86 4,555,490
120 4,555,491

CLASS 440

56 4,555,233

CLASS 441

106 4,555,234

CLASS 446

250 4,555,235
329 4,555,236
355 4,555,237

CLASS 455

26 4,555,805
62 4,555,806
137 4,555,807
180 4,555,808
190 4,555,809
612 4,555,810

CLASS 464

52 4,555,238

CLASS 474

93 4,555,239
152 4,555,240
261 4,555,241

CLASS 501

38 4,555,492
127 4,555,493
134 4,555,494

CLASS 502

50 4,555,495
105 4,555,496
115 4,555,497
153 4,555,498
208 4,555,499
243 4,555,501
334 4,555,500

CLASS 514

17 4,555,403
19 4,555,502
4,555,503
26 4,555,504
42 4,555,505
91 4,555,506
172 4,555,507
201 4,555,404
211 4,555,508
278 4,555,509
291 4,555,510
301 4,555,511
302 4,555,512
311 4,555,513
326 4,555,516
336 4,555,517
338 4,555,518
340 4,555,519
343 4,555,514
346 4,555,520
357 4,555,515
362 4,555,521
449 4,555,522
469 4,555,523
488 4,555,405
570 4,555,524
605 4,555,406
616 4,555,525

CLASS 518

717 4,555,526

CLASS 521

67 4,555,527
89 4,555,528
124 4,555,529
131 4,555,530
167 4,555,531

CLASS 523

400 4,555,532
440 4,555,533
507 4,555,534

CLASS 524

40 4,555,535
66 4,555,536
97 4,555,537
102 4,555,538
127 4,555,539
130 4,555,540
178 4,555,542
180 4,555,541
520 4,555,543
595 4,555,544
858 4,555,545

CLASS 525

194 4,555,546
237 4,555,547
4,555,548
409 4,555,549
424 4,555,550
455 4,555,551
456 4,555,552
523 4,555,553
531 4,555,554

CLASS 526

62 4,555,555
212 4,555,556
240 4,555,557
287 4,555,558

CLASS 528

16 4,555,559
17 4,555,560
26 4,555,561
72 4,555,562
96 4,555,563
295.3 4,555,564
322 4,555,565
323 4,555,566

CLASS 534

654 4,555,567
801 4,555,568

CLASS 544

105 4,555,569
286 4,555,570
4,555,571

CLASS 546

14 4,555,572
291 4,555,573
342 4,555,574
345 4,555,575

CLASS 548

146 4,555,576
200 4,555,577
251 4,555,578
409 4,555,579

CLASS 549

52 4,555,580
463 4,555,581

CLASS 564

479 4,555,582

CLASS 568

473 4,555,583

CLASS 585

623 4,555,584

CLASS 604

10 4,554,918
96 4,555,242
263 4,555,243
392 4,555,244
396 4,555,245

CLASS 623

16 4,554,686

CLASSIFICATION OF DESIGNS

D2— 243 281,455
253 281,456
310 281,457
313 281,458
320 281,459
281,460
281,461
281,462
D3— 33 281,463
35 281,464
71 281,465
78 281,466
D4— 119 281,467
D6— 317 281,468
281,469
319 281,470
356 281,471
281,472
379 281,473
384 281,474
426 281,475
559 281,476
574 281,477
D7— 77 281,478
317 281,479
356 281,480
361 281,481
D8— 358 281,482
367 281,483
D9— 432 281,484
D12— 142 281,485
155 281,486
156 281,487
281,488
162 281,489
193 281,490
211 281,491
D13— 2 281,492
40 281,493
D14— 5 281,494
37 281,495
53 281,496
59 281,497
281,498
76 281,499
92 281,500
281,501
102 281,502
111 281,503
114 281,504
136 281,505
D15— 24 281,506
D16— 102 281,507
20 281,508
D17— 1 281,509
D18— 13 281,510
26 281,511
D19— 55 281,512
D20— 21 281,513
D21— 31 281,514
48 281,515
59 281,516
111 281,517
149 281,518
165 281,519
194 281,520
203 281,521
219 281,522
233 281,523
D22— 27 281,524
47 281,525
D23— 123 281,526
128 281,527
D24— 8 281,528
10 281,529
281,530
281,531
281,532
17 281,533
29 281,534
51 281,535
D25— 80 281,536
D26— 42 281,537
64 281,538
D32— 1 281,539

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,554,685
4,554,823
4,554,905
4,554,963
4,555,102
4,555,597
04 : 4,555,003
4,555,028
4,555,147
4,555,187
4,555,303
4,555,450
4,555,742
4,555,802
05 : 4,554,781
4,555,114
4,555,493
06 : Re.32,040
4,554,681
4,554,683
4,554,699
4,554,710
4,554,731
4,554,736
4,554,743
4,554,744
4,554,746
4,554,773
4,554,784
4,554,800
4,554,837
4,554,838
4,554,839
4,554,865
4,554,866
4,554,928
4,554,929
4,554,935
4,554,942
4,554,992
4,554,996
4,555,038
4,555,041
4,555,062
4,555,073
4,555,083
4,555,091
4,555,100
4,555,108
4,555,111
4,555,116
4,555,123
4,555,133

4,555,139
4,555,152
4,555,157
4,555,159
4,555,186
4,555,201
4,555,204
4,555,216
4,555,242
4,555,273
4,555,277
4,555,292
4,555,293
4,555,333
4,555,339
4,555,435
4,555,437
4,555,453
4,555,455
4,555,486
4,555,515
4,555,584
4,555,593
4,555,623
4,555,627
4,555,630
4,555,637
4,555,646
4,555,656
4,555,668
4,555,676
4,555,683
4,555,693
4,555,697
4,555,708
4,555,726
4,555,730
4,555,739
4,555,779
4,555,784
4,555,785
4,555,786
4,555,787
4,555,795
4,555,798
4,401,624
08 : 4,554,768
4,554,806
4,554,822
4,554,846
4,554,913
4,554,937
4,555,077

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